# GnuCOBOL Sample Programs

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# 1.  FileStat-Msgs

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

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

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

Here's the FileStat-Msgs.cpy copybook:

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

# 2. COBDUMP

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

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

For now though, I'll keep using my good ol' "COBDUMP" routine. It's been my 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.

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)        **
```
====================================================================================================

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

====== ===========================================================================================
    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
```
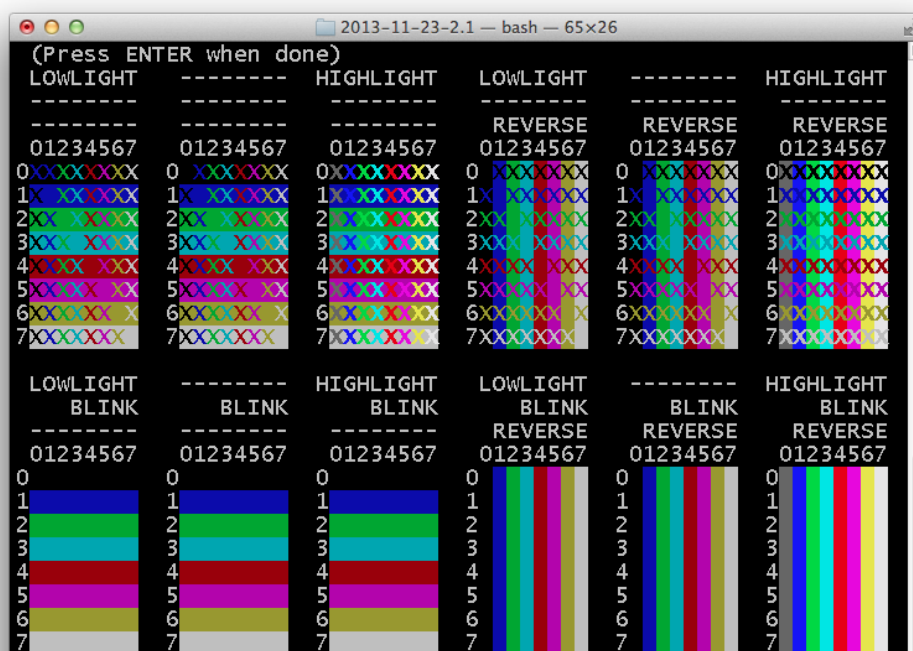
# 3. Colors

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.

====== ==========================================================================================
     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.

====================================================================================================

```
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'.
```

```
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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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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```
  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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GNU COBOL 2.1 23NOV2013 Source Listing                                    2014/03/27
                                 C:/Users/tda010/Documents/Programs/Samples/colors.cbl
Line    Statement                                                            Page: 12
======  =================================================================================
   540 10 COL 02  BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 LOWLIGHT BLINK VALUE 'X'.
   541 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 LOWLIGHT BLINK VALUE 'X'.
   542 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 LOWLIGHT BLINK VALUE 'X'.
   543 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 LOWLIGHT BLINK VALUE 'X'.
   544 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 LOWLIGHT BLINK VALUE 'X'.
   545 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 LOWLIGHT BLINK VALUE 'X'.
   546 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 LOWLIGHT BLINK VALUE 'X'.
   547 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 LOWLIGHT BLINK VALUE 'X'.
   548 05 LINE + 1.
   549 10 COL 02  BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 LOWLIGHT BLINK VALUE 'X'.
   550 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 LOWLIGHT BLINK VALUE 'X'.
   551 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 LOWLIGHT BLINK VALUE 'X'.
   552 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 LOWLIGHT BLINK VALUE 'X'.
   553 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 LOWLIGHT BLINK VALUE 'X'.
   554 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 LOWLIGHT BLINK VALUE 'X'.
   555 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 LOWLIGHT BLINK VALUE 'X'.
   556 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 LOWLIGHT BLINK VALUE 'X'.
   557 05 LINE + 1.
   558 10 COL 02  BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 LOWLIGHT BLINK VALUE 'X'.
   559 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 LOWLIGHT BLINK VALUE 'X'.
   560 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 LOWLIGHT BLINK VALUE 'X'.
   561 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 LOWLIGHT BLINK VALUE 'X'.
   562 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 LOWLIGHT BLINK VALUE 'X'.
   563 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 LOWLIGHT BLINK VALUE 'X'.
   564 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 LOWLIGHT BLINK VALUE 'X'.
   565 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 LOWLIGHT BLINK VALUE 'X'.
   566 *> #8
   567 05 LINE 17.
   568 10 COL 12  BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 BLINK VALUE 'X'.
   569 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 BLINK VALUE 'X'.
   570 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 BLINK VALUE 'X'.
   571 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 BLINK VALUE 'X'.
   572 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 BLINK VALUE 'X'.
   573 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 BLINK VALUE 'X'.
   574 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 BLINK VALUE 'X'.
   575 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 BLINK VALUE 'X'.
   576 05 LINE + 1.
   577 10 COL 12  BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 BLINK VALUE 'X'.
   578 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 BLINK VALUE 'X'.
   579 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 BLINK VALUE 'X'.
   580 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 BLINK VALUE 'X'.
   581 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 BLINK VALUE 'X'.
   582 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 BLINK VALUE 'X'.
   583 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 BLINK VALUE 'X'.
   584 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 BLINK VALUE 'X'.
   585 05 LINE + 1.
   586 10 COL 12  BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 BLINK VALUE 'X'.
   587 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 BLINK VALUE 'X'.
   588 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 BLINK VALUE 'X'.

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GNU COBOL 2.1 23NOV2013 Source Listing                                      2014/03/27
                                   C:/Users/tda010/Documents/Programs/Samples/colors.cbl
Line    Statement                                                             Page: 13
======  ================================================================================
   589 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 BLINK VALUE 'X'.
   590 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 BLINK VALUE 'X'.
   591 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 BLINK VALUE 'X'.
   592 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 BLINK VALUE 'X'.
   593 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 BLINK VALUE 'X'.
   594 05 LINE + 1.
   595 10 COL 12  BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 BLINK VALUE 'X'.
   596 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 BLINK VALUE 'X'.
   597 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 BLINK VALUE 'X'.
   598 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 BLINK VALUE 'X'.
   599 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 BLINK VALUE 'X'.
   600 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 BLINK VALUE 'X'.
   601 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 BLINK VALUE 'X'.
   602 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 BLINK VALUE 'X'.
   603 05 LINE + 1.
   604 10 COL 12  BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 BLINK VALUE 'X'.
   605 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 BLINK VALUE 'X'.
   606 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 BLINK VALUE 'X'.
   607 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 BLINK VALUE 'X'.
   608 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 BLINK VALUE 'X'.
   609 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 BLINK VALUE 'X'.
   610 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 BLINK VALUE 'X'.
   611 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 BLINK VALUE 'X'.
   612 05 LINE + 1.
   613 10 COL 12  BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 BLINK VALUE 'X'.
   614 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 BLINK VALUE 'X'.
   615 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 BLINK VALUE 'X'.
   616 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 BLINK VALUE 'X'.
   617 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 BLINK VALUE 'X'.
   618 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 BLINK VALUE 'X'.
   619 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 BLINK VALUE 'X'.
   620 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 BLINK VALUE 'X'.
   621 05 LINE + 1.
   622 10 COL 12  BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 BLINK VALUE 'X'.
   623 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 BLINK VALUE 'X'.
   624 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 BLINK VALUE 'X'.
   625 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 BLINK VALUE 'X'.
   626 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 BLINK VALUE 'X'.
   627 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 BLINK VALUE 'X'.
   628 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 BLINK VALUE 'X'.
   629 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 BLINK VALUE 'X'.
   630 05 LINE + 1.
   631 10 COL 12  BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 BLINK VALUE 'X'.
   632 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 BLINK VALUE 'X'.
   633 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 BLINK VALUE 'X'.
   634 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 BLINK VALUE 'X'.
   635 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 BLINK VALUE 'X'.
   636 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 BLINK VALUE 'X'.
   637 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 BLINK VALUE 'X'.


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GNU COBOL 2.1 23NOV2013 Source Listing                                    2014/03/27
                                    C:/Users/tda010/Documents/Programs/Samples/colors.cbl
Line    Statement                                                            Page: 14
======  ===============================================================================
  638 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 BLINK VALUE 'X'.
  639 *> #9
  640 05 LINE 17.
  641 10 COL 22  BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 HIGHLIGHT BLINK VALUE 'X'.
  642 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 HIGHLIGHT BLINK VALUE 'X'.
  643 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 HIGHLIGHT BLINK VALUE 'X'.
  644 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 HIGHLIGHT BLINK VALUE 'X'.
  645 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 HIGHLIGHT BLINK VALUE 'X'.
  646 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 HIGHLIGHT BLINK VALUE 'X'.
  647 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 HIGHLIGHT BLINK VALUE 'X'.
  648 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 HIGHLIGHT BLINK VALUE 'X'.
  649 05 LINE + 1.
  650 10 COL 22  BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 HIGHLIGHT BLINK VALUE 'X'.
  651 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 HIGHLIGHT BLINK VALUE 'X'.
  652 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 HIGHLIGHT BLINK VALUE 'X'.
  653 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 HIGHLIGHT BLINK VALUE 'X'.
  654 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 HIGHLIGHT BLINK VALUE 'X'.
  655 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 HIGHLIGHT BLINK VALUE 'X'.
  656 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 HIGHLIGHT BLINK VALUE 'X'.
  657 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 HIGHLIGHT BLINK VALUE 'X'.
  658 05 LINE + 1.
  659 10 COL 22  BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 HIGHLIGHT BLINK VALUE 'X'.
  660 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 HIGHLIGHT BLINK VALUE 'X'.
  661 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 HIGHLIGHT BLINK VALUE 'X'.
  662 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 HIGHLIGHT BLINK VALUE 'X'.
  663 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 HIGHLIGHT BLINK VALUE 'X'.
  664 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 HIGHLIGHT BLINK VALUE 'X'.
  665 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 HIGHLIGHT BLINK VALUE 'X'.
  666 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 HIGHLIGHT BLINK VALUE 'X'.
  667 05 LINE + 1.
  668 10 COL 22  BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 HIGHLIGHT BLINK VALUE 'X'.
  669 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 HIGHLIGHT BLINK VALUE 'X'.
  670 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 HIGHLIGHT BLINK VALUE 'X'.
  671 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 HIGHLIGHT BLINK VALUE 'X'.
  672 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 HIGHLIGHT BLINK VALUE 'X'.
  673 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 HIGHLIGHT BLINK VALUE 'X'.
  674 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 HIGHLIGHT BLINK VALUE 'X'.
  675 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 HIGHLIGHT BLINK VALUE 'X'.
  676 05 LINE + 1.
  677 10 COL 22  BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 HIGHLIGHT BLINK VALUE 'X'.
  678 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 HIGHLIGHT BLINK VALUE 'X'.
  679 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 HIGHLIGHT BLINK VALUE 'X'.
  680 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 HIGHLIGHT BLINK VALUE 'X'.
  681 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 HIGHLIGHT BLINK VALUE 'X'.
  682 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 HIGHLIGHT BLINK VALUE 'X'.
  683 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 HIGHLIGHT BLINK VALUE 'X'.
  684 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 HIGHLIGHT BLINK VALUE 'X'.
  685 05 LINE + 1.
  686 10 COL 22  BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 HIGHLIGHT BLINK VALUE 'X'.
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```
  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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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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GCic for Windows/MinGW Copyright (C) 2009-2014, Gary L. Cutler, GPL          Page: 17
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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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Line    Statement                                                          Page: 19
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   883 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   884 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   885 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   886 05 LINE + 1.
   887 10 COL 52  BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   888 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   889 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   890 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   891 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   892 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   893 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   894 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   895 05 LINE + 1.
   896 10 COL 52  BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   897 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   898 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   899 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   900 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   901 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   902 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   903 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   904 05 LINE + 1.
   905 10 COL 52  BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   906 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   907 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   908 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   909 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   910 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   911 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   912 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   913 05 LINE + 1.
   914 10 COL 52  BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   915 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   916 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   917 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   918 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   919 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   920 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   921 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   922 05 LINE + 1.
   923 10 COL 52  BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   924 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   925 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   926 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   927 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   928 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   929 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   930 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   931 PROCEDURE DIVISION.


==================================================================================================

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
```

```
=================================================================================================
GCic for Windows/MinGW Copyright (C) 2009-2014, Gary L. Cutler, GPL                  Page: 21
```

# 4. DAY-FROM-DATE

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

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

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

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

- Coding a GnuCOBOL user-defined function

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

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

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

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

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

```
GNU COBOL 2.1 23NOV2013 Source Listing                                    2014/03/27
                            C:/Users/tda010/Documents/Programs/Samples/DAY-FROM-DATE.cbl
Line    Statement                                                              Page: 1
======  ==============================================================================
     1          >>SOURCE FORMAT IS FIXED
     2           IDENTIFICATION DIVISION.
     3           FUNCTION-ID. DAY-FROM-DATE.
     4          *>****************************************************************
     5          *> This GNU COBOL user-defined function converts a Gregorian or **
     6          *> Julian date into a numeric day of the week.                 **
     7          *>****************************************************************
     8          *> Arguments:                                                  **
     9          *>                                                             **
    10          *> Calendar-Date    A PIC 9 data item or numeric literal which **
    11          *>                  will be treated as a calendar date as fol- **
    12          *>                  lows:                                      **
    13          *>                                                             **
    14          *>                  7-digit value: Interpreted as a Julian date **
    15          *>                                 in the form yyyyddd         **
    16          *>                  8-digit value: Interpreted as a Gregorian  **
    17          *>                                 date in the form yyyymmdd   **
    18          *>                                                             **
    19          *> The result returned will be one of the following:          **
    20          *>                                                             **
    21          *> 0:  The supplied date is invalid                           **
    22          *> 1:  The supplied date is a Sunday                          **
    23          *> 2:  The supplied date is a Monday                          **
    24          *> .                                                          **
    25          *> .                                                          **
    26          *> .                                                          **
    27          *> 7:  The supplied date is a Saturday                        **
    28          *>****************************************************************
    29           ENVIRONMENT DIVISION.
    30           CONFIGURATION SECTION.
    31           REPOSITORY.
    32               FUNCTION ALL INTRINSIC.
    33           DATA DIVISION.
    34           WORKING-STORAGE SECTION.
    35           01  WS-Input-Date-DT.
    36               05 WS-ID-YYYY-NUM                 PIC 9(4).
    37               05 WS-ID-MM-NUM                   PIC 9(2).
    38               05 WS-ID-DD-NUM                   PIC 9(2).
    39           01  WS-Y-NUM                          BINARY-LONG.
    40           01  WS-M-NUM                          BINARY-LONG.
    41           01  WS-Temp-NUM                       BINARY-LONG.
    42           LINKAGE SECTION.
    43           01  L-Input-Date-DT                   PIC 9 ANY LENGTH.
    44           01  L-Output-Day-NUM                  USAGE BINARY-LONG
    45                                                 SIGNED.
    46           PROCEDURE DIVISION USING L-Input-Date-DT
    47                       RETURNING L-Output-Day-NUM.
    48           000-Main SECTION.
    49               CALL "C$PARAMSIZE" USING 1

================================================================================================
GCic for OSX Copyright (C) 2009-2014, Gary L. Cutler, GPL                           Page: 1
```

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

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

# 5.  GCic

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

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

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

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

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

- Creating a GnuCOBOL compilation unit that consists of multiple programs

- Using CDF conditional compilation facilities

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

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

- Using "FILE-STATUS"

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

- Using the following statements:

    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 3.0 24DEC2017  Source Listing                                      2017/12/24
                                          /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                               Page: 1
======  =====================================================================================
     1        >>SOURCE FORMAT IS FIXED
     2        *> CONFIGURATION SETTINGS: Set these switches before compiling:
     3        *>
     4        *> LINEDRAW Set to:
     5        *>    0   To use spaces (no lines)
     6        *>    1   To use the line-drawing 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) 2009-2018, 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 3.0 24DEC2017  Source Listing                                    2017/12/24
                                          /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        **

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

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                 2017/12/24
                                    /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       *> VC1217 Update compiler version to v3.0 24DEC2017.           **
   155       *>        and copyright to 2018 (in 3 places).                 **
   156       *>************************************************************
   157       *>
   158        ENVIRONMENT DIVISION.
   159        CONFIGURATION SECTION.
   160        REPOSITORY.
   161            FUNCTION ALL INTRINSIC.
   162        INPUT-OUTPUT SECTION.
   163        FILE-CONTROL.
   164 GC1010     SELECT F-Cobc-Output-FILE   ASSIGN TO WS-Listing-Filename-TXT
   165                                         ORGANIZATION IS LINE SEQUENTIAL.
   166
   167            SELECT F-Source-Code-FILE   ASSIGN TO WS-File-Name-TXT
   168                                         ORGANIZATION IS LINE SEQUENTIAL
   169                                         FILE STATUS IS WS-FSM-Status-CD.
```

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

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

====================================================================================================

GNUCOBOL 3.0 24DEC2017  Source Listing                       2017/12/24
                                     /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line     Statement                                                   Page: 7

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


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

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                     2017/12/24
                                         /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                              Page: 8
======  ================================================================================
  233
  234 GC0712 01  WS-Cmd-End-Quote-CHR                  PIC X(1).
  235
  236 GC0712 01  WS-Cmd-SUB                            USAGE BINARY-LONG.
  237
  238        01  WS-Cobc-Cmd-TXT                       PIC X(256).
  239
  240        01  WS-Config-Fn-TXT                      PIC X(12).
  241
  242 GC1113 01  WS-Delete-Fn-TXT                      PIC X(256).
  243
  244        01  WS-File-Name-TXT.
  245            05 WS-FN-CHR                          OCCURS 256 TIMES
  246                                                  PIC X(1).
  247
  248        01  WS-File-Status-Message-TXT.
  249            05 VALUE 'Status Code: '              PIC X(13).
  250            05 WS-FSM-Status-CD                   PIC 9(2).
  251            05 VALUE ', Meaning: '                PIC X(11).
  252            05 WS-FSM-Msg-TXT                     PIC X(25).
  253
  254 GC0909 01  WS-Horizontal-Line-TXT               PIC X(80).
  255 GC0909
  256        01  WS-I-SUB                             USAGE BINARY-LONG.
  257
  258        01  WS-J-SUB                             USAGE BINARY-LONG.
  259
  260 GC1213 01  WS-Listing-CD VALUE F5               PIC 9(1).
  261
  262 GC0712 01  WS-Listing-Filename-TXT              PIC X(256).
  263
  264 GC1213 01  WS-Listing-TXT VALUE SPACES          PIC X(27).
  265
  266        01  WS-OC-Compile-DT                     PIC XXXX/XX/XXBXX/XX.
  267
  268 GC0712 >>IF OS = 'CYGWIN'
  269 GC0712 01  WS-OS-Dir-CHR         VALUE '/'       PIC X(1).
  270 GC0712 78  WS-OS-Exe-Ext-CONST   VALUE '.exe'.
  271 GC0712 78  WS-OS-Lib-Ext-CONST   VALUE '.dll'.
  272 GC0712 78  WS-OS-Lib-Type-CONST  VALUE 'DLL)'.
  273 GC0712 01  WS-OS-Type-CD         VALUE 2         PIC 9(1).
  274 GC0712 >>ELIF OS = 'MINGW'
  275 GC0712 01  WS-OS-Dir-CHR         VALUE '\'       PIC X(1).
  276 GC0712 78  WS-OS-Exe-Ext-CONST   VALUE '.exe'.
  277 GC0712 78  WS-OS-Lib-Ext-CONST   VALUE '.dll'.
  278 GC0712 78  WS-OS-Lib-Type-CONST  VALUE 'DLL)'.
  279 GC0712 01  WS-OS-Type-CD         VALUE 5         PIC 9(1).
  280 GC0712 >>ELIF OS = 'OSX'
  281 GC0712 01  WS-OS-Dir-CHR         VALUE '/'       PIC X(1).
  282 GC0712 78  WS-OS-Exe-Ext-CONST   VALUE ' '.
  283 GC0712 78  WS-OS-Lib-Ext-CONST   VALUE '.dylib'.
  284 GC0712 78  WS-OS-Lib-Type-CONST  VALUE 'DYLIB)'.
  285 GC0712 01  WS-OS-Type-CD         VALUE 4         PIC 9(1).
```

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GCic for UNIX/Linux Copyright (C) 2009-2018, Gary L. Cutler, GPL                Page: 8

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                        2017/12/24
                                              /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                               Page: 9
====== =================================================================================
   286 GC0712 >>ELIF OS = 'UNIX'
   287 GC0712 01  WS-OS-Dir-CHR          VALUE '/'       PIC X(1).
   288 GC0712 78  WS-OS-Exe-Ext-CONST    VALUE ' '.
   289 GC0712 78  WS-OS-Lib-Ext-CONST    VALUE '.so'.
   290 GC0712 78  WS-OS-Lib-Type-CONST   VALUE 'SO)'.
   291 GC0712 01  WS-OS-Type-CD          VALUE 3         PIC 9(1).
   292 GC0712 >>ELIF OS = 'WINDOWS'
   293 GC0712 01  WS-OS-Dir-CHR          VALUE '\'       PIC X(1).
   294 GC0712 78  WS-OS-Exe-Ext-CONST    VALUE '.exe'.
   295 GC0712 78  WS-OS-Lib-Ext-CONST    VALUE '.dll'.
   296 GC0712 78  WS-OS-Lib-Type-CONST   VALUE 'DLL)'.
   297 GC0712 01  WS-OS-Type-CD          VALUE 1         PIC 9(1).
   298 GC0712 >>END-IF
   299 GC0909     88 WS-OS-Windows-BOOL VALUE 1, 5.
   300 GC0909     88 WS-OS-Cygwin-BOOL  VALUE 2.
   301 GC0712     88 WS-OS-UNIX-BOOL    VALUE 3, 4.
   302 GC0712     88 WS-OS-OSX-BOOL     VALUE 4.
   303
   304        01  WS-OS-Type-FILLER-TXT.
   305            05 VALUE 'Windows'               PIC X(14).
   306            05 VALUE 'Windows/Cygwin'        PIC X(14).
   307            05 VALUE 'UNIX/Linux'            PIC X(14).
   308            05 VALUE 'OSX'                   PIC X(14).
   309            05 VALUE 'Windows/MinGW'         PIC X(14).
   310        01  WS-OS-Types-TXT REDEFINES WS-OS-Type-FILLER-TXT.
   311            05 WS-OS-Type-TXT               OCCURS 5 TIMES
   312                                            PIC X(14).
   313
   314        01  WS-Output-Msg-TXT               PIC X(80).
   315
   316        01  WS-Path-Delimiter-CHR           PIC X(1).
   317
   318        01  WS-Prog-Extension-TXT           PIC X(256).
   319
   320        01  WS-Prog-Folder-TXT              PIC X(256).
   321
   322 GC0712 01  WS-Prog-File-Name-TXT.
   323 GC0712     05 WS-PFN-CHR                   OCCURS 256 TIMES
   324 GC0712                                     PIC X(1).
   325
   326 GC0712 01  WS-Pgm-Nm-TXT                   PIC X(31).
   327
   328        01  WS-Runtime-Switches-TXT.
   329            05 WS-RS-Compile-OK-CHR         PIC X(1).
   330               88 WS-RS-Compile-OK-BOOL         VALUE 'Y'.
   331 GC0909        88 WS-RS-Compile-OK-Warn-BOOL    VALUE 'W'.
   332               88 WS-RS-Compile-Failed-BOOL     VALUE 'N'.
   333 GC0609     05 WS-RS-Complete-CHR           PIC X(1).
   334 GC0609        88 WS-RS-Complete-BOOL           VALUE 'Y'.
   335 GC0609        88 WS-RS-Not-Complete-BOOL       VALUE 'N'.
   336 GC0712     05 WS-RS-Quote-CHR              PIC X(1).
   337 GC0712        88 WS-RS-Double-Quote-Used-BOOL  VALUE 'Y' FALSE 'N'.
   338 GC0809     05 WS-RS-IDENT-DIV-CHR          PIC X(1).

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GCic for UNIX/Linux Copyright (C) 2009-2018, Gary L. Cutler, GPL             Page: 9
```

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

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                    2017/12/24
                                       /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                          Page: 11
======  ========================================================================

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

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GCic for UNIX/Linux Copyright (C) 2009-2018, Gary L. Cutler, GPL                Page: 11

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                     2017/12/24
                                          /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                            Page: 12
====== =================================================================================
   409        *> simply by setting their 'terminal' application's font to "Lucida Console".
   410        *>
   411        >>IF LINEDRAW IS EQUAL TO 0
   412        78 LD-UL-Corner                 VALUE ' '.
   413        78 LD-LL-Corner                 VALUE ' '.
   414        78 LD-UR-Corner                 VALUE ' '.
   415        78 LD-LR-Corner                 VALUE ' '.
   416        78 LD-Upper-T                   VALUE ' '.
   417        78 LD-Lower-T                   VALUE ' '.
   418        78 LD-Horiz-Line                VALUE ' '.
   419        78 LD-Vert-Line                 VALUE ' '.
   420        >>ELIF LINEDRAW IS EQUAL TO 1
   421        78 LD-UL-Corner                 VALUE X'DA'.
   422        78 LD-LL-Corner                 VALUE X'C0'.
   423        78 LD-UR-Corner                 VALUE X'BF'.
   424        78 LD-LR-Corner                 VALUE X'D9'.
   425        78 LD-Upper-T                   VALUE X'C2'.
   426        78 LD-Lower-T                   VALUE X'C1'.
   427        78 LD-Horiz-Line                VALUE X'C4'.
   428        78 LD-Vert-Line                 VALUE X'B3'.
   429        >>ELSE
   430        78 LD-UL-Corner                 VALUE '+'.
   431        78 LD-LL-Corner                 VALUE '+'.
   432        78 LD-UR-Corner                 VALUE '+'.
   433        78 LD-LR-Corner                 VALUE '+'.
   434        78 LD-Upper-T                   VALUE '+'.
   435        78 LD-Lower-T                   VALUE '+'.
   436        78 LD-Horiz-Line                VALUE '-'.
   437        78 LD-Vert-Line                 VALUE '|'.
   438        >>END-IF
   439
   440        01 S-Blank-SCR LINE 1 COLUMN 1 BLANK SCREEN.
   441
   442        01 S-Switches-SCR BACKGROUND-COLOR COB-COLOR-BLACK
   443                          FOREGROUND-COLOR COB-COLOR-WHITE AUTO.
   444        *>
   445        *> GENERAL SCREEN FRAMEWORK
   446        *>
   447            03 BACKGROUND-COLOR COB-COLOR-BLACK
   448               FOREGROUND-COLOR COB-COLOR-GREEN HIGHLIGHT.
   449 GC0712     05 LINE 02 COL 01          VALUE LD-UL-Corner.
   450 GC0712     05         COL 02 PIC X(78) FROM  WS-Horizontal-Line-TXT.
   451            05         COL 80          VALUE LD-UR-Corner.
   452
   453 GC0712     05 LINE 03 COL 01          VALUE LD-Vert-Line.
   454            05         COL 80          VALUE LD-Vert-Line.
   455
   456 GC0712     05 LINE 04 COL 01          VALUE LD-Vert-Line.
   457            05         COL 80          VALUE LD-Vert-Line.
   458
   459 GC0712     05 LINE 05 COL 01          VALUE LD-LL-Corner.
   460 GC0712     05         COL 02 PIC X(78) FROM  WS-Horizontal-Line-TXT.
   461            05         COL 80          VALUE LD-LR-Corner.


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GCic for UNIX/Linux Copyright (C) 2009-2018, Gary L. Cutler, GPL            Page: 12
```

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                    2017/12/24
                                           /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                             Page: 13
======  ===================================================================================
   462
   463 GC0712      05 LINE 07 COL 01           VALUE LD-UL-Corner.
   464 GC0712      05         COL 02 PIC X(65) FROM  WS-Horizontal-Line-TXT.
   465 GC0712      05         COL 67           VALUE LD-Upper-T.
   466 GC0712      05         COL 68 PIC X(12) FROM  WS-Horizontal-Line-TXT.
   467         05         COL 80           VALUE LD-UR-Corner.
   468
   469 GC0712      05 LINE 08 COL 01           VALUE LD-Vert-Line.
   470 GC0712      05         COL 67           VALUE LD-Vert-Line.
   471         05         COL 80           VALUE LD-Vert-Line.
   472
   473 GC0712      05 LINE 09 COL 01           VALUE LD-Vert-Line.
   474 GC0712      05         COL 67           VALUE LD-Vert-Line.
   475         05         COL 80           VALUE LD-Vert-Line.
   476
   477 GC0712      05 LINE 10 COL 01           VALUE LD-Vert-Line.
   478 GC0712      05         COL 67           VALUE LD-Vert-Line.
   479         05         COL 80           VALUE LD-Vert-Line.
   480
   481 GC0712      05 LINE 11 COL 01           VALUE LD-Vert-Line.
   482 GC0712      05         COL 67           VALUE LD-Vert-Line.
   483         05         COL 80           VALUE LD-Vert-Line.
   484
   485 GC0712      05 LINE 12 COL 01           VALUE LD-Vert-Line.
   486 GC0712      05         COL 67           VALUE LD-Vert-Line.
   487         05         COL 80           VALUE LD-Vert-Line.
   488
   489 GC0712      05 LINE 13 COL 01           VALUE LD-LL-Corner.
   490 GC0712      05         COL 02 PIC X(65) FROM  WS-Horizontal-Line-TXT.
   491 GC0712      05         COL 67           VALUE LD-Lower-T.
   492 GC0712      05         COL 68 PIC X(12) FROM  WS-Horizontal-Line-TXT.
   493         05         COL 80           VALUE LD-LR-Corner.
   494
   495 GC0712      05 LINE 15 COL 01           VALUE LD-UL-Corner.
   496 GC0712      05         COL 02 PIC X(78) FROM  WS-Horizontal-Line-TXT.
   497         05         COL 80           VALUE LD-UR-Corner.
   498
   499 GC0712      05 LINE 16 COL 01           VALUE LD-Vert-Line.
   500         05         COL 80           VALUE LD-Vert-Line.
   501
   502 GC0712      05 LINE 17 COL 01           VALUE LD-Vert-Line.
   503         05         COL 80           VALUE LD-Vert-Line.
   504
   505 GC0712      05 LINE 18 COL 01           VALUE LD-LL-Corner.
   506 GC0712      05         COL 02 PIC X(78) FROM  WS-Horizontal-Line-TXT.
   507         05         COL 80           VALUE LD-LR-Corner.
   508
   509 GC0712      05 LINE 20 COL 01           VALUE LD-UL-Corner.
   510 GC0712      05         COL 02 PIC X(78) FROM  WS-Horizontal-Line-TXT.
   511         05         COL 80           VALUE LD-UR-Corner.
   512
   513 GC0712      05 LINE 21 COL 01           VALUE LD-Vert-Line.
   514         05         COL 80           VALUE LD-Vert-Line.

======================================================================================================
GCic for UNIX/Linux Copyright (C) 2009-2018, Gary L. Cutler, GPL              Page: 13
@end smallformat
@page
@smallformat
```

```
@verbatim
GNUCOBOL 3.0 24DEC2017  Source Listing                                        2017/12/24
                                            /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                              Page: 14
======  ========================================================================================
   515
   516 GC0712       05 LINE 22 COL 01           VALUE LD-Vert-Line.
   517              05         COL 80           VALUE LD-Vert-Line.
   518
   519 GC0712       05 LINE 23 COL 01           VALUE LD-LL-Corner.
   520 GC0712       05         COL 02 PIC X(78) FROM  WS-Horizontal-Line-TXT.
   521              05         COL 80           VALUE LD-LR-Corner.
   522     *>
   523     *> TOP AND BOTTOM LINES
   524     *>
   525 GC0712    03 BACKGROUND-COLOR COB-COLOR-BLUE
   526           FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
   527 GC0410       05 LINE 01 COL 01 VALUE ' GCic ('.
   528 GC0410       05         COL 08 PIC X(16) FROM WS-OC-Compile-DT.
   529 GC1213       05         COL 24 VALUE ') GNUCOBOL 3.0 24DEC2017 ' &
   530 GC0410                          'Interactive Compilation        '.
   531 VC0617    03 BACKGROUND-COLOR COB-COLOR-RED
   532 GC0712       FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
   533 GC0712       05 LINE 24 COL 01 PIC X(80) FROM WS-Output-Msg-TXT.
   534     *>
   535     *> LABELS
   536     *>
   537           03 BACKGROUND-COLOR COB-COLOR-BLACK
   538              FOREGROUND-COLOR COB-COLOR-CYAN  HIGHLIGHT.
   539 GC0712       05 LINE 06 COL 02 VALUE 'Set/Clr Switches Via F1-F9; ' &
   540 GC0712                          'Set Config Via F12; Enter Key ' &
   541 GC0712                          'Compiles; Esc Quits'.
   542 GC0712       05 LINE 14 COL 02 VALUE 'Extra "cobc" Switches, If Any ' &
   543 GC0712                          '("-save-temps=xxx" Prevents ' &
   544 GC0712                          'Listings):'.
   545 GC0712       05 LINE 19 COL 02 VALUE 'Program Execution Arguments, ' &
   546 GC0712                          'If Any:'.
   547 GC0712    03 BACKGROUND-COLOR COB-COLOR-BLACK
   548 GC0712       FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
   549 GC0712       05 LINE 06 COL 23 VALUE 'F1'.
   550 GC0712       05         COL 26 VALUE 'F9'.
   551 GC0712       05         COL 45 VALUE 'F12'.
   552 GC0712       05         COL 50 VALUE 'ENTER'.
   553 GC0712       05         COL 70 VALUE 'ESC'.
   554     *>
   555     *> TOP SECTION BACKGROUND
   556     *>
   557           03 BACKGROUND-COLOR COB-COLOR-BLACK
   558              FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
   559 GC0712       05 LINE 03 COL 62 VALUE 'Enter'.
   560 GC0712       05 LINE 04 COL 62 VALUE 'Esc'.
   561
   562           03 BACKGROUND-COLOR COB-COLOR-BLACK
   563              FOREGROUND-COLOR COB-COLOR-GREEN HIGHLIGHT.
   564 GC0712       05 LINE 04 COL 03 VALUE 'Folder:  '.
   565 GC0712       05 LINE 03 COL 03 VALUE 'Filename: '.
   566
   567 GC0712       05 LINE 03 COL 67 VALUE ': Compile  '.

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```

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                     2017/12/24
                                             /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                               Page: 15
======  ===============================================================================
   568 GC0712       05 LINE 04 COL 65 VALUE ':   Quit       '.
   569      *>
   570      *> TOP SECTION PROGRAM INFO
   571      *>
   572          03 BACKGROUND-COLOR COB-COLOR-BLACK
   573             FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
   574 GC0712       05 LINE 03 COL 13 PIC X(66) FROM WS-Prog-File-Name-TXT.
   575 GC0712       05 LINE 04 COL 13 PIC X(66) FROM WS-Prog-Folder-TXT.
   576      *>
   577      *> MIDDLE LEFT SECTION F-KEYS
   578      *>
   579          03 BACKGROUND-COLOR COB-COLOR-BLACK
   580             FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
   581 GC0712       05 LINE 08 COL 03 VALUE 'F1'.
   582 GC0712       05 LINE 09 COL 03 VALUE 'F2'.
   583 GC0712       05 LINE 10 COL 03 VALUE 'F3'.
   584 GC0712       05 LINE 11 COL 03 VALUE 'F4'.
   585 GC0712       05 LINE 12 COL 03 VALUE 'F5'.
   586
   587 GC0712       05 LINE 08 COL 35 VALUE 'F6'.
   588 GC0712       05 LINE 09 COL 35 VALUE 'F7'.
   589 GC0712       05 LINE 10 COL 35 VALUE 'F8'.
   590 GC0712       05 LINE 11 COL 35 VALUE 'F9'.
   591      *>
   592      *> MIDDLE LEFT SECTION SWITCHES
   593      *>
   594          03 BACKGROUND-COLOR COB-COLOR-BLACK
   595             FOREGROUND-COLOR COB-COLOR-RED   HIGHLIGHT.
   596 GC0712       05 LINE 08 COL 06 PIC X(1) FROM WS-CS-DEBUG-CHR.
   597 GC0712       05 LINE 09 COL 06 PIC X(1) FROM WS-CS-TRACEALL-CHR.
   598 GC0712       05 LINE 10 COL 06 PIC X(1) FROM WS-CS-LIBRARY-CHR.
   599 GC0712       05 LINE 11 COL 06 PIC X(1) FROM WS-CS-EXECUTE-CHR.
   600 GC0712       05 LINE 12 COL 06 PIC X(1) FROM WS-CS-LISTING-CHR.
   601
   602 GC0712       05 LINE 08 COL 38 PIC X(1) FROM WS-CS-NOFUNC-CHR.
   603 GC0712       05 LINE 09 COL 38 PIC X(1) FROM WS-CS-WARNALL-CHR.
   604 GC0712       05 LINE 10 COL 38 PIC X(1) FROM WS-CS-FREE-CHR.
   605 GC0712       05 LINE 11 COL 38 PIC X(1) FROM WS-CS-NOTRUNC-CHR.
   606      *>
   607      *> MIDDLE LEFT SECTION BACKGROUND
   608      *>
   609          03 BACKGROUND-COLOR COB-COLOR-BLACK
   610             FOREGROUND-COLOR COB-COLOR-GREEN HIGHLIGHT.
   611 GC0712       05 LINE 08 COL 07 VALUE 'Assume WITH DEBUGGING MODE'.
   612 GC0712       05 LINE 09 COL 07 VALUE 'Procedure+Statement Trace '.
   613 GC0712       05 LINE 10 COL 07 VALUE 'Make a Library ('.
   614 GC0712       05         COL 23 VALUE WS-OS-Lib-Type-CONST.
   615 GC0712       05 LINE 11 COL 07 VALUE 'Execute If Compilation OK '.
   616 GC1213       05 LINE 12 COL 07 FROM  WS-Listing-TXT.
   617
   618 GC0712       05 LINE 08 COL 39 VALUE '"FUNCTION" Is Optional   '.
   619 GC0712       05 LINE 09 COL 39 VALUE 'Enable All Warnings      '.
   620 GC0712       05 LINE 10 COL 39 VALUE 'Source Is Free-Format    '.

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

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                   2017/12/24
                                           /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line   Statement                                                         Page: 16
=====  ==========================================================================================
  621 GC0712      05 LINE 11 COL 39 VALUE 'No COMP/BINARY Truncation '.
  622      *>
  623      *> MIDDLE RIGHT SECTION Text
  624      *>
  625         03 BACKGROUND-COLOR COB-COLOR-BLACK
  626            FOREGROUND-COLOR COB-COLOR-GREEN HIGHLIGHT.
  627 GC0712      05 LINE 08 COL 69 VALUE 'Current'.
  628 GC0712      05 LINE 09 COL 69 VALUE 'Config:'.
  629      *>
  630      *> MIDDLE RIGHT SECTION CONFIG FILE
  631      *>
  632         03 BACKGROUND-COLOR COB-COLOR-BLACK
  633            FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
  634 GC0712      05 LINE 10 COL 69 PIC X(10)
  635 GC0712         FROM WS-CS-Filename-TXT (WS-CS-Config-NUM).
  636      *>
  637      *> FREE-FORM OPTIONS FIELDS
  638      *>
  639         03 BACKGROUND-COLOR COB-COLOR-BLACK
  640            FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
  641 GC0712      05 LINE 16 COL 03 PIC X(76) USING WS-CS-Extra-H1-TXT.
  642 GC0712      05 LINE 17 COL 03 PIC X(76) USING WS-CS-Extra-H2-TXT.
  643 GC0712      05 LINE 21 COL 03 PIC X(76) USING WS-CS-Arg-H1-TXT.
  644 GC0712      05 LINE 22 COL 03 PIC X(76) USING WS-CS-Arg-H2-TXT.
```

```
=============================================================================================
GCic for UNIX/Linux Copyright (C) 2009-2018, Gary L. Cutler, GPL              Page: 16
```

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

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                   2017/12/24
                                         /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                          Page: 18
======  ==========================================================================
   666                   TRIM(WS-File-Name-TXT,TRAILING)
   667                   ,'"'
   668             ELSE
   669                DISPLAY
   670                   'Error accessing file: "'
   671                   TRIM(WS-File-Name-TXT,TRAILING)
   672                   ,'"'
   673             END-IF
   674             GOBACK
   675             .
   676         END DECLARATIVES.
   677
   678         000-Main SECTION.
   679             PERFORM 100-Initialization
   680 GC0609    SET WS-RS-Not-Complete-BOOL TO TRUE
   681 GC0609    PERFORM UNTIL WS-RS-Complete-BOOL
   682 GC0609       PERFORM 200-Let-User-Set-Switches
   683 GC0609       PERFORM 210-Run-Compiler
   684 GC0410       IF (WS-RS-Compile-OK-BOOL OR WS-RS-Compile-OK-Warn-BOOL)
   685 GC0712       AND (WS-CS-LISTING-CHR > SPACE)
   686 GC0712          DISPLAY S-Blank-SCR
   687 GC0410          PERFORM 220-Make-Listing
   688 GC0410       END-IF
   689 GC0709       IF  (WS-CS-EXECUTE-CHR NOT = SPACES)
   690 GC0709       AND (WS-RS-Output-File-Avail-BOOL)
   691 GC0609          PERFORM 230-Run-Program
   692 GC0609       END-IF
   693 GC0712       PERFORM 250-Autoload-Listing
   694 GC0609    END-PERFORM
   695             PERFORM 900-Terminate
   696       * -- Control will NOT return
   697             .
```

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

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

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                    2017/12/24
                                         /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                         Page: 21
====== ================================================================================
   804 GC0909     MOVE ALL LD-Horiz-Line TO WS-Horizontal-Line-TXT.
   805 GC0410     MOVE CONCATENATE(' GCic for '
   806 GC0410                      TRIM(WS-OS-Type-TXT(WS-OS-Type-CD),Trailing)
   807 GC1213                      ' Copyright (C) 2009-2018, Gary L. '
   808 GC0410                      'Cutler, GPL')
   809 GC0410        TO WS-Output-Msg-TXT.
   810 GC0909
```

```
====================================================================================
GCic for UNIX/Linux Copyright (C) 2009-2018, Gary L. Cutler, GPL          Page: 21
```

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

======================================================================================

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

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

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                    2017/12/24
                                            /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                             Page: 25
======= ===============================================================================
    956 GC0712           WITH POINTER WS-I-SUB
    957 GC0712      END-IF
    958 GC0712      IF WS-CS-FREE-CHR NOT = ' '
    959 GC0712          STRING '-free '
    960 GC0712              DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
    961 GC0712              WITH POINTER WS-I-SUB
    962 GC0712      ELSE
    963 GC0712          STRING '-fixed '
    964 GC0712              DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
    965 GC0712              WITH POINTER WS-I-SUB
    966 GC0712      END-IF
    967
    968 GC0712      MOVE 0 TO WS-Tally-QTY
    969 GC0712      INSPECT WS-CS-Extra-TXT
    970 GC0712          TALLYING WS-Tally-QTY FOR ALL '-save-temps'
    971 GC0712      IF WS-CS-LISTING-CHR > SPACE
    972 GC0712      AND WS-Tally-QTY > 0
    973 GC0712          MOVE SPACE TO WS-CS-LISTING-CHR *> Can't generate listing if -save-temps u
        sed
    974 GC0712      END-IF
    975 GC0712      IF WS-CS-LISTING-CHR > SPACE
    976 GC1010          STRING '-save-temps '
    977 GC1010              DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
    978 GC1010              WITH POINTER WS-I-SUB
    979 GC1010      END-IF
    980
    981 GC0709      IF WS-CS-Extra-TXT > SPACES
    982 GC0709          STRING ' '
    983 GC0709                 TRIM(WS-CS-Extra-TXT,TRAILING)
    984 GC0709                 ' '
    985 GC0709              DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
    986 GC0709              WITH POINTER WS-I-SUB
    987 GC0709      END-IF
    988 GC0909      STRING TRIM(WS-Prog-File-Name-TXT,TRAILING)
    989 GC0909          DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
    990 GC0909          WITH POINTER WS-I-SUB
    991         *>*************************************************************
    992         *> Prepare the compilation listing file                    **
    993         *>*************************************************************
    994 GC1113      MOVE CONCATENATE(TRIM(WS-Pgm-Nm-TXT,Trailing),'.gclst')
    995 GC0712        TO WS-Listing-Filename-TXT
    996 GC0712      CALL 'CBL_DELETE_FILE' USING WS-Listing-Filename-TXT
    997         *>*************************************************************
    998         *> Now execute the 'cobc' command                          **
    999         *>*************************************************************
   1000 GC0410      MOVE ' Compiling...' TO WS-Output-Msg-TXT
   1001 GC0410      DISPLAY S-Switches-SCR
   1002 GC0609      SET WS-RS-Output-File-Avail-BOOL TO TRUE
   1003             MOVE SPACES TO WS-Cmd-TXT
   1004             STRING TRIM(WS-Cobc-Cmd-TXT,TRAILING)
   1005 GC0712             ' >' WS-Listing-Filename-TXT
   1006 GC0712             ' 2>&1'
   1007                 DELIMITED SIZE
======================================================================================
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```

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                2017/12/24
                                          /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                       Page: 26
====== ========================================================================
  1008                   INTO WS-Cmd-TXT
  1009 DEBUG D    DISPLAY WS-Cmd-TXT UPON SYSERR
  1010            CALL 'SYSTEM' USING TRIM(WS-Cmd-TXT,TRAILING)
  1011 GC0712     OPEN EXTEND F-Cobc-Output-FILE
  1012 GC0712     WRITE F-Cobc-Output-REC FROM SPACES
  1013 GC0712     IF RETURN-CODE = 0
  1014 GC0712         SET WS-RS-Compile-OK-BOOL TO TRUE
  1015 GC0712         MOVE ' Compilation Was Successful' TO WS-Output-Msg-TXT
  1016 GC0712         MOVE CONCATENATE('GNU COBOL',WS-Output-Msg-TXT)
  1017 GC0712            TO F-Cobc-Output-REC
  1018 GC0712         WRITE F-Cobc-Output-REC
  1019 GC0712         SET WS-RS-Complete-BOOL TO TRUE
  1020 GC0712     ELSE
  1021 GC0712         SET WS-RS-Compile-Failed-BOOL TO TRUE
  1022 GC0712         MOVE CONCATENATE(' Compilation Failed - See ',
  1023 GC0712                   TRIM(WS-Listing-Filename-TXT,Trailing))
  1024 GC0712            TO WS-Output-Msg-TXT
  1025 GC0712         MOVE 'GNU COBOL Compilation HAS FAILED - See Above'
  1026 GC0712            TO F-Cobc-Output-REC
  1027 GC0712         WRITE F-Cobc-Output-REC
  1028 GC0712     END-IF
  1029 GC0712     CLOSE F-Cobc-Output-FILE
  1030 GC0712     DISPLAY S-Switches-SCR
  1031 GC0712     CALL 'C$SLEEP' USING 2
  1032 GC0712     MOVE SPACES TO WS-Output-Msg-TXT
  1033            IF WS-RS-Compile-Failed-BOOL
  1034 GC0712         PERFORM 250-Autoload-Listing
  1035                PERFORM 900-Terminate
  1036        *> ----- Control will not return
  1037            END-IF
  1038            .
```

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

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

====================================================================================================
GCic for UNIX/Linux Copyright (C) 2009-2018, Gary L. Cutler, GPL                    Page: 28

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                    2017/12/24
                                          /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                           Page: 29
====== =================================================================================
  1123 GC0909      ELSE
  1124 GC0909          IF WS-OS-Cygwin-BOOL OR WS-OS-UNIX-BOOL
  1125 GC0909              STRING './'
  1126 GC0909                  INTO WS-Cmd-TXT
  1127 GC0909                  WITH POINTER WS-I-SUB
  1128 GC0909          END-IF
  1129             END-IF
  1130         *>************************************************************
  1131         *> Insert program filename                                **
  1132         *>************************************************************
  1133 GC0909      STRING TRIM(WS-Pgm-Nm-TXT,TRAILING)
  1134 GC0909          INTO WS-Cmd-TXT
  1135 GC0909          WITH POINTER WS-I-SUB
  1136         *>************************************************************
  1137         *> Insert proper extension                                **
  1138         *>************************************************************
  1139 GC0712      IF WS-CS-LIBRARY-CHR = ' '
  1140 GC0712          IF WS-OS-Exe-Ext-CONST > ' '
  1141 GC0712              STRING WS-OS-Exe-Ext-CONST DELIMITED SPACE
  1142 GC0712                  INTO WS-Cmd-TXT
  1143 GC0712                  WITH POINTER WS-I-SUB
  1144 GC0712          END-IF
  1145 GC0712      ELSE
  1146 GC0712          IF WS-OS-Lib-Ext-CONST > ' '
  1147 GC0712              STRING WS-OS-Lib-Ext-CONST DELIMITED SPACE
  1148 GC0712                  INTO WS-Cmd-TXT
  1149 GC0712                  WITH POINTER WS-I-SUB
  1150 GC0712          END-IF
  1151 GC0712      END-IF
  1152 GC0712      IF WS-RS-Double-Quote-Used-BOOL
  1153 GC0712          STRING '"' DELIMITED SIZE
  1154 GC0712              INTO WS-Cmd-TXT
  1155 GC0712              WITH POINTER WS-I-SUB
  1156 GC0712      END-IF
  1157             IF WS-CS-Args-TXT NOT = SPACES
  1158 GC0809          STRING ' ' TRIM(WS-CS-Args-TXT,TRAILING)
  1159                     INTO WS-Cmd-TXT
  1160                     WITH POINTER WS-I-SUB
  1161             END-IF
  1162         *>************************************************************
  1163         *> Run the program                                        **
  1164         *>************************************************************
  1165 GC0114      CALL X'E4'
  1166             CALL 'SYSTEM' USING TRIM(WS-Cmd-TXT,TRAILING)
  1167 GC0712      MOVE SPACES TO WS-Output-Msg-TXT
  1168 GC0114      ACCEPT WS-Output-Msg-TXT(1:1) AT 0101
  1169             PERFORM 900-Terminate
  1170         * -- Control will NOT return
  1171                 .
```

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

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

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                2017/12/24
                                         /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line   Statement                                                        Page: 32
====== =========================================================================

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

```
================================================================================
GCic for UNIX/Linux Copyright (C) 2009-2018, Gary L. Cutler, GPL         Page: 32
```

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                    2017/12/24
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                           Page: 33
====== ==============================================================================
  1272        IDENTIFICATION DIVISION.
  1273        PROGRAM-ID.  CHECKSRC.
  1274        *>**************************************************************
  1275        *> This subprogram will scan a line of source code it is given **
  1276        *> looking for 'LINKAGE SECTION' or 'IDENTIFICATION DIVISION'. **
  1277        *>                                                           **
  1278        *>  ****NOTE****   ****NOTE****    ****NOTE****   ****NOTE*** **
  1279        *>                                                           **
  1280        *> These two strings must be found IN THEIR ENTIRETY within   **
  1281        *> the 1st 80 columns of program source records, and cannot   **
  1282        *> follow either a '*>' sequence OR a '*' in col 7.          **
  1283        *>**************************************************************
  1284        *>  DATE  CHANGE DESCRIPTION                                 **
  1285        *> ====== ================================================= **
  1286        *> GC0809 Initial coding.                                    **
  1287        *>**************************************************************
  1288        ENVIRONMENT DIVISION.
  1289        CONFIGURATION SECTION.
  1290        REPOSITORY.
  1291            FUNCTION ALL INTRINSIC.
  1292        DATA DIVISION.
  1293        WORKING-STORAGE SECTION.
  1294        01  WS-Compressed-Src-TXT.
  1295            05 WS-CS-CHR                      OCCURS 80 TIMES
  1296                                              PIC X(1).
  1297
  1298        01  WS-Runtime-Switches-TXT.
  1299            05 WS-RS-Found-SPACE-CHR          PIC X(1).
  1300              88 WS-RS-Skipping-SPACE-BOOL     VALUE 'Y'.
  1301              88 WS-RS-Not-Skipping-SPACE-BOOL VALUE 'N'.
  1302
  1303        01  WS-I-SUB                          USAGE BINARY-CHAR.
  1304
  1305        01  WS-J-SUB                          USAGE BINARY-CHAR.
  1306        LINKAGE SECTION.
  1307        01  L-Argument-1-TXT.
  1308            02 L-A1-CHR                       OCCURS 80 TIMES
  1309                                              PIC X(1).
  1310
  1311        01  L-Argument-2-CHR                  PIC X(1).
  1312            88 L-A2-LINKAGE-SECTION-BOOL VALUE 'L'.
  1313            88 L-A2-IDENT-DIVISION-BOOL  VALUE 'I'.
  1314            88 L-A2-Nothing-Special-BOOL VALUE ' '.
```

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

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                    2017/12/24
                                           /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                          Page: 35
======  =================================================================================
  1368          END-PERFORM
  1369      *>
  1370      *> If we get to here, we never found anything!
  1371      *>
  1372 +        GOBACK
  1373          .
  1374      END PROGRAM CHECKSRC.
  1375
  1376      IDENTIFICATION DIVISION.
  1377      PROGRAM-ID.  LISTING.
  1378      *>************************************************************
  1379      *> This subprogram generates a cross-reference listing of an  **
  1380      *> GNU COBOL program.                                         **
  1381      *>************************************************************
  1382      *>                                                           **
  1383      *> AUTHOR:      GARY L. CUTLER                                **
  1384      *>              Copyright (C) 2010, Gary L. Cutler, GPL        **
  1385      *>                                                           **
  1386      *> DATE-WRITTEN: April 1, 2010                                **
  1387      *>                                                           **
  1388      *>************************************************************
  1389      *>  DATE   CHANGE DESCRIPTION                                 **
  1390      *> ====== =================================================== **
  1391      *> GCO410 Initial coding                                      **
  1392      *> GCO711 Updates to accommodate the 12MAR2010 version of OC  **
  1393      *> GCO710 Handle duplicate data names (i.e. 'CORRESPONDING' or **
  1394      *>        qualified items) better; ignore 'END PROGRAM' recs  **
  1395      *>        so program name doesn't appear in listing.          **
  1396      *> GCO313 Fix problem where the first procedure name defined   **
  1397      *>        in the PROCEDURE DIVISION lacks a "Defined" line     **
  1398      *>        number.                                             **
  1399      *> GC1213 Updated for 23NOV2013 version of GNU COBOL 2.1; Stop **
  1400      *>        showing functions as if they were identifiers in the **
  1401      *>        xref listing; Flag all CALL argument references with **
  1402      *>        a "C" rather than "*" because they aren't necessari- **
  1403      *>        ly altered; Fixed assorted formatting bugs; DOWN-    **
  1404      *>        WARD COMPATIBLE WITH GNU COBOL 2.0 SYNTAX            **
  1405      *> GCO314 Fix problem where 1st char of 1st token on a line is **
  1406      *>        lost if >>SOURCE MODE IS FREE is in effect and the   **
  1407      *>        1st character is non-blank.                         **
  1408      *> VC1217 Updated compiler version & date to v3.0 & 24DEC2017. **
  1409      *>************************************************************
  1410      ENVIRONMENT DIVISION.
  1411      CONFIGURATION SECTION.
  1412      REPOSITORY.
  1413          FUNCTION ALL INTRINSIC.
  1414      INPUT-OUTPUT SECTION.
  1415      FILE-CONTROL.
  1416          SELECT F-Expanded-Src-FILE  ASSIGN TO WS-Expanded-Src-Fn-TXT
  1417                                      ORGANIZATION IS LINE SEQUENTIAL.
  1418 GCO712   SELECT F-Listing-FILE      ASSIGN TO L-Listing-Fn-TXT
  1419                                      ORGANIZATION IS LINE SEQUENTIAL.
  1420          SELECT F-Original-Src-FILE  ASSIGN TO L-Src-Fn-TXT

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

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                    2017/12/24
                                             /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                            Page: 36
======  =============================================================================
 1421                                          ORGANIZATION IS LINE SEQUENTIAL.
 1422                   SELECT F-Sort-Work-FILE     ASSIGN TO DISK.
 1423          DATA DIVISION.
 1424          FILE SECTION.
 1425          FD  F-Expanded-Src-FILE.
 1426          01  F-Expanded-Src-REC.
 1427              05 F-ES-1-CHR                  PIC X.
 1428              05 F-ES-2-256-TXT-256          PIC X(256).
 1429 GC0712 01  F-Expanded-Src2-REC.
 1430 GC0712     05 F-ES-1-7-TXT                  PIC X(7).
 1431 GC0712     05 F-ES-8-256-TXT                PIC X(249).
 1432
 1433 GC0712 FD  F-Listing-FILE.
 1434 GC1213 01  F-Listing-96-REC                 PIC X(96).
 1435 GC1213 01  F-Listing-135-REC                PIC X(135).
 1436        01  F-Listing-REC                    PIC X(135).
 1437
 1438          FD  F-Original-Src-FILE.
 1439          01  F-Original-Src-REC.
 1440 GC0410     05 F-OS-1-128-TXT.
 1441 GC0410        10 FILLER                      PIC X(6).
 1442 GC0410        10 F-OS-7-CHR                  PIC X(1).
 1443 GC0712        10 F-OS-8-72-TXT               PIC X(65).
 1444 GC0712        10 FILLER                      PIC X(56).
 1445              05 F-OS-129-256-TXT            PIC X(128).
 1446
 1447          SD  F-Sort-Work-FILE.
 1448          01  F-Sort-Work-REC.
 1449              05 F-SW-Prog-ID-TXT             PIC X(15).
 1450              05 F-SW-Token-Uc-TXT            PIC X(32).
 1451              05 F-SW-Token-TXT               PIC X(32).
 1452              05 F-SW-Section-TXT             PIC X(15).
 1453              05 F-SW-Def-Line-NUM            PIC 9(6).
 1454              05 F-SW-Reference-TXT.
 1455                 10 F-SW-Ref-Line-NUM         PIC 9(6).
 1456                 10 F-SW-Ref-Flag-CHR         PIC X(1).
 1457
 1458          WORKING-STORAGE SECTION.
 1459 GC1213 01  WS-Copyright-TXT                  PIC X(86).
 1460
 1461        01  WS-Curr-CHR                       PIC X(1).
 1462              88 WS-Curr-Char-Is-Punct-BOOL   VALUE '=', '(', ')',
 1463                                                    '*', '/', '&',
 1464                                                    ';', ',', '<',
 1465                                                    '>', ':'.
 1466              88 WS-Curr-Char-Is-Quote-BOOL   VALUE "'", '"'.
 1467              88 WS-Curr-Char-Is-X-BOOL       VALUE 'x', 'X'.
 1468              88 WS-Curr-Char-Is-Z-BOOL       VALUE 'z', 'Z'.
 1469
 1470        01  WS-Curr-Division-TXT              PIC X(1).
 1471 GC1010     88 WS-CD-In-IDENT-DIV-BOOL        VALUE 'i', 'I', '?'.
 1472 GC1010     88 WS-CD-In-ENV-DIV-BOOL          VALUE 'e', 'E'.
 1473 GC1010     88 WS-CD-In-DATA-DIV-BOOL         VALUE 'd', 'D'.

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

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                      2017/12/24
                                                 /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                               Page: 37
====== ================================================================================
 1474 GC1010     88 WS-CD-In-PROC-DIV-BOOL              VALUE 'p', 'P'.
 1475
 1476         01  WS-Curr-Line-NUM                      PIC 9(6).
 1477
 1478         01  WS-Curr-Prog-ID-TXT.
 1479             05 FILLER                             PIC X(12).
 1480             05 WS-CPI-13-15-TXT                   PIC X(3).
 1481 GC0712      05 WS-CPI-16-CHR                      PIC X(1).
 1482
 1483         01  WS-Curr-Section-TXT.
 1484             05 WS-CS-1-CHR                        PIC X(1).
 1485             05 WS-CS-2-14-TXT.
 1486                10 FILLER                          PIC X(10).
 1487                10 WS-CS-11-14-TXT                 PIC X(3).
 1488             05 WS-CS-15-CHR                       PIC X(1).
 1489
 1490         01  WS-Curr-Verb-TXT                      PIC X(12).
 1491
 1492         01  WS-Delim-TXT                          PIC X(2).
 1493
 1494         01  WS-Dummy-TXT                          PIC X(1).
 1495
 1496         01  WS-Expanded-Src-Fn-TXT                PIC X(256).
 1497
 1498         01  WS-Filename-TXT                       PIC X(256).
 1499
 1500 GC1213 01  WS-Flags-TXT.
 1501 GC1213     05 WS-Suppress-FF-CHR                  PIC X(1).
 1502
 1503 GC1213 01  WS-Formatted-DT                        PIC 9999/99/99.
 1504
 1505         01  WS-Group-Indicators-TXT.
 1506             05 WS-GI-Prog-ID-TXT                  PIC X(15).
 1507             05 WS-GI-Token-TXT                    PIC X(32).
 1508
 1509         01  WS-Held-Reference-TXT                 PIC X(100).
 1510
 1511         01  WS-I-SUB                              USAGE BINARY-LONG.
 1512
 1513         01  WS-J-SUB                              USAGE BINARY-LONG.
 1514
 1515         01  WS-Lines-Left-NUM                     USAGE BINARY-LONG.
 1516
 1517         01  WS-Lines-Per-Page-NUM                 USAGE BINARY-LONG.
 1518
 1519         01  WS-Lines-Per-Page-Env-TXT             PIC X(256).
 1520
 1521 GC1010 01  WS-Main-Module-Name-TXT                PIC X(256).
 1522
 1523         01  WS-Next-CHR                           PIC X(1).
 1524             88 WS-Next-Char-Is-Quote-BOOL         VALUE '"', '''.
 1525
 1526         01  WS-OS-Type-FILLER-TXT.

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====== =========================================================================================
 1527           05 VALUE 'Windows'              PIC X(14).
 1528           05 VALUE 'Windows/Cygwin'       PIC X(14).
 1529           05 VALUE 'UNIX/Linux'           PIC X(14).
 1530           05 VALUE 'OSX'                  PIC X(14).
 1531           05 VALUE 'Windows/MinGW'        PIC X(14).
 1532        01 WS-OS-Types-TXT REDEFINES WS-OS-Type-FILLER-TXT.
 1533           05 WS-OS-Type-TXT               PIC X(14)
 1534                                     OCCURS 5 TIMES .
 1535
 1536 GC0712 01  WS-Page-NUM                    USAGE BINARY-LONG.
 1537
 1538 GC0712 01  WS-Page-No-TXT.
 1539 GC0712     05 WS-PN-Literal-TXT           PIC X(6).
 1540 GC0712     05 WS-PN-Page-NUM              PIC Z(3)9.
 1541
 1542 GC1213 01  WS-Program-Path-TXT           PIC X(135).
 1543
 1544        01  WS-Reserved-Words-TXT.
 1545           05 VALUE '                    ' PIC X(33).
 1546 GC1213     05 VALUE 'FABS                ' PIC X(33).
 1547           05 VALUE 'VACCEPT             ' PIC X(33).
 1548           05 VALUE ' ACCESS             ' PIC X(33).
 1549 GC1213     05 VALUE 'FACOS               ' PIC X(33).
 1550           05 VALUE ' ACTIVE-CLASS       ' PIC X(33).      UNIMPLEMENTED
 1551           05 VALUE 'VADD                ' PIC X(33).
 1552           05 VALUE ' ADDRESS            ' PIC X(33).
 1553           05 VALUE ' ADVANCING          ' PIC X(33).
 1554           05 VALUE 'KAFTER              ' PIC X(33).
 1555           05 VALUE ' ALIGNED            ' PIC X(33).      UNIMPLEMENTED
 1556           05 VALUE ' ALL                ' PIC X(33).
 1557           05 VALUE 'VALLOCATE           ' PIC X(33).
 1558           05 VALUE ' ALPHABET           ' PIC X(33).
 1559           05 VALUE ' ALPHABETIC         ' PIC X(33).
 1560           05 VALUE ' ALPHABETIC-LOWER   ' PIC X(33).
 1561           05 VALUE ' ALPHABETIC-UPPER   ' PIC X(33).
 1562           05 VALUE ' ALPHANUMERIC       ' PIC X(33).
 1563           05 VALUE ' ALPHANUMERIC-EDITED ' PIC X(33).
 1564           05 VALUE ' ALSO               ' PIC X(33).
 1565           05 VALUE 'VALTER              ' PIC X(33).
 1566           05 VALUE ' ALTERNATE          ' PIC X(33).
 1567           05 VALUE ' AND                ' PIC X(33).
 1568 GC1213     05 VALUE 'FANNUITY            ' PIC X(33).
 1569           05 VALUE ' ANY                ' PIC X(33).
 1570           05 VALUE ' ANYCASE            ' PIC X(33).      UNIMPLEMENTED
 1571           05 VALUE ' ARE                ' PIC X(33).
 1572           05 VALUE ' AREA               ' PIC X(33).
 1573           05 VALUE ' AREAS              ' PIC X(33).
 1574           05 VALUE ' ARGUMENT-NUMBER    ' PIC X(33).
 1575           05 VALUE ' ARGUMENT-VALUE     ' PIC X(33).
 1576           05 VALUE ' ARITHMETIC         ' PIC X(33).      UNIMPLEMENTED
 1577           05 VALUE ' AS                 ' PIC X(33).
 1578           05 VALUE ' ASCENDING          ' PIC X(33).
 1579           05 VALUE ' ASCII              ' PIC X(33).
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====== ==================================================================================
 1580 GC1213      05 VALUE 'FASIN                      ' PIC X(33).
 1581             05 VALUE ' ASSIGN                    ' PIC X(33).
 1582             05 VALUE ' AT                        ' PIC X(33).
 1583 GC1213      05 VALUE 'FATAN                      ' PIC X(33).
 1584 GC0711      05 VALUE ' ATTRIBUTE                 ' PIC X(33).
 1585             05 VALUE ' AUTHOR                    ' PIC X(33).      OBSOLETE
 1586             05 VALUE ' AUTO                      ' PIC X(33).
 1587             05 VALUE ' AUTO-SKIP                 ' PIC X(33).
 1588             05 VALUE ' AUTOMATIC                 ' PIC X(33).
 1589             05 VALUE ' AUTOTERMINATE             ' PIC X(33).
 1590             05 VALUE ' AWAY-FROM-ZERO            ' PIC X(33).
 1591             05 VALUE ' B-AND                     ' PIC X(33).      UNIMPLEMENTED
 1592             05 VALUE ' B-NOT                     ' PIC X(33).      UNIMPLEMENTED
 1593             05 VALUE ' B-OR                      ' PIC X(33).      UNIMPLEMENTED
 1594             05 VALUE ' B-XOR                     ' PIC X(33).      UNIMPLEMENTED
 1595             05 VALUE ' BACKGROUND-COLOR          ' PIC X(33).
 1596             05 VALUE ' BACKGROUND-COLOUR         ' PIC X(33).
 1597             05 VALUE ' BASED                     ' PIC X(33).
 1598             05 VALUE ' BEEP                      ' PIC X(33).
 1599             05 VALUE ' BEFORE                    ' PIC X(33).
 1600             05 VALUE ' BELL                      ' PIC X(33).
 1601             05 VALUE ' BINARY                    ' PIC X(33).
 1602             05 VALUE ' BINARY-C-LONG             ' PIC X(33).
 1603             05 VALUE ' BINARY-CHAR               ' PIC X(33).
 1604             05 VALUE ' BINARY-DOUBLE             ' PIC X(33).
 1605             05 VALUE ' BINARY-INT                ' PIC X(33).
 1606             05 VALUE ' BINARY-LONG               ' PIC X(33).
 1607             05 VALUE ' BINARY-LONG-LONG          ' PIC X(33).
 1608             05 VALUE ' BINARY-SHORT              ' PIC X(33).
 1609             05 VALUE ' BIT                       ' PIC X(33).      UNIMPLEMENTED
 1610             05 VALUE ' BLANK                     ' PIC X(33).
 1611             05 VALUE ' BLINK                     ' PIC X(33).
 1612             05 VALUE ' BLOCK                     ' PIC X(33).
 1613             05 VALUE ' BOOLEAN                   ' PIC X(33).      UNIMPLEMENTED
 1614 GC1213      05 VALUE 'FBOOLEAN-OF-INTEGER        ' PIC X(33).      UNIMPLEMENTED
 1615             05 VALUE ' BOTTOM                    ' PIC X(33).
 1616             05 VALUE 'YBY                        ' PIC X(33).
 1617 GC1213      05 VALUE 'FBYTE-LENGTH               ' PIC X(33).
 1618             05 VALUE 'MC01                       ' PIC X(33).
 1619             05 VALUE 'MC02                       ' PIC X(33).
 1620             05 VALUE 'MC03                       ' PIC X(33).
 1621             05 VALUE 'MC04                       ' PIC X(33).
 1622             05 VALUE 'MC05                       ' PIC X(33).
 1623             05 VALUE 'MC06                       ' PIC X(33).
 1624             05 VALUE 'MC07                       ' PIC X(33).
 1625             05 VALUE 'MC08                       ' PIC X(33).
 1626             05 VALUE 'MC09                       ' PIC X(33).
 1627             05 VALUE 'MC10                       ' PIC X(33).
 1628             05 VALUE 'MC11                       ' PIC X(33).
 1629             05 VALUE 'MC12                       ' PIC X(33).
 1630             05 VALUE 'VCALL                      ' PIC X(33).
 1631             05 VALUE 'MCALL-CONVENTION           ' PIC X(33).
 1632             05 VALUE 'VCANCEL                    ' PIC X(33).

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====== ================================================================================
 1633           05 VALUE ' CAPACITY                    ' PIC X(33).    UNIMPLEMENTED
 1634           05 VALUE ' CD                          ' PIC X(33).    OBSOLETE
 1635           05 VALUE ' CENTER                      ' PIC X(33).    UNIMPLEMENTED
 1636           05 VALUE ' CF                          ' PIC X(33).
 1637           05 VALUE ' CH                          ' PIC X(33).
 1638           05 VALUE ' CHAIN                       ' PIC X(33).    UNIMPLEMENTED
 1639           05 VALUE ' CHAINING                    ' PIC X(33).
 1640 GC1213    05 VALUE 'FCHAR                        ' PIC X(33).
 1641 GC1213    05 VALUE 'FCHAR-NATIONAL               ' PIC X(33).    UNIMPLEMENTED
 1642           05 VALUE ' CHARACTER                   ' PIC X(33).
 1643           05 VALUE ' CHARACTERS                  ' PIC X(33).
 1644           05 VALUE ' CLASS                       ' PIC X(33).
 1645           05 VALUE ' CLASS-ID                    ' PIC X(33).    UNIMPLEMENTED
 1646 GC0711    05 VALUE ' CLASSIFICATION              ' PIC X(33).
 1647           05 VALUE 'VCLOSE                       ' PIC X(33).
 1648 GC1213    05 VALUE 'FCOB-CRT-STATUS              ' PIC X(33).
 1649           05 VALUE ' CODE                        ' PIC X(33).
 1650           05 VALUE ' CODE-SET                    ' PIC X(33).
 1651           05 VALUE ' COL                         ' PIC X(33).
 1652           05 VALUE ' COLLATING                   ' PIC X(33).
 1653           05 VALUE ' COLS                        ' PIC X(33).
 1654           05 VALUE ' COLUMN                      ' PIC X(33).
 1655           05 VALUE ' COLUMNS                     ' PIC X(33).
 1656 GC1213    05 VALUE 'FCOMBINED-DATETIME           ' PIC X(33).
 1657           05 VALUE ' COMMA                       ' PIC X(33).
 1658           05 VALUE ' COMMAND-LINE                ' PIC X(33).
 1659           05 VALUE 'VCOMMIT                      ' PIC X(33).
 1660           05 VALUE ' COMMON                      ' PIC X(33).
 1661           05 VALUE ' COMMUNICATION               ' PIC X(33).    OBSOLETE
 1662           05 VALUE ' COMP                        ' PIC X(33).
 1663           05 VALUE ' COMP-1                      ' PIC X(33).
 1664           05 VALUE ' COMP-2                      ' PIC X(33).
 1665           05 VALUE ' COMP-3                      ' PIC X(33).
 1666           05 VALUE ' COMP-4                      ' PIC X(33).
 1667           05 VALUE ' COMP-5                      ' PIC X(33).
 1668           05 VALUE ' COMP-6                      ' PIC X(33).
 1669           05 VALUE ' COMP-X                      ' PIC X(33).
 1670           05 VALUE ' COMPUTATIONAL               ' PIC X(33).
 1671           05 VALUE ' COMPUTATIONAL-1             ' PIC X(33).
 1672           05 VALUE ' COMPUTATIONAL-2             ' PIC X(33).
 1673           05 VALUE ' COMPUTATIONAL-3             ' PIC X(33).
 1674           05 VALUE ' COMPUTATIONAL-4             ' PIC X(33).
 1675           05 VALUE ' COMPUTATIONAL-5             ' PIC X(33).
 1676           05 VALUE ' COMPUTATIONAL-X             ' PIC X(33).
 1677           05 VALUE 'VCOMPUTE                     ' PIC X(33).
 1678 GC1213    05 VALUE 'FCONCATENATE                 ' PIC X(33).
 1679 GC0712    05 VALUE ' CONDITION                   ' PIC X(33).
 1680           05 VALUE 'KCONFIGURATION               ' PIC X(33).
 1681           05 VALUE 'MCONSOLE                     ' PIC X(33).
 1682           05 VALUE ' CONSTANT                    ' PIC X(33).
 1683           05 VALUE ' CONTAINS                    ' PIC X(33).
 1684 GC0712    05 VALUE 'ACONTENT                     ' PIC X(33).
 1685           05 VALUE 'VCONTINUE                    ' PIC X(33).

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======  ================================================================================
  1686           05 VALUE ' CONTROL                     ' PIC X(33).
  1687           05 VALUE ' CONTROLS                    ' PIC X(33).
  1688 GC0711    05 VALUE ' CONVERSION                  ' PIC X(33).
  1689           05 VALUE 'KCONVERTING                  ' PIC X(33).
  1690           05 VALUE ' COPY                        ' PIC X(33).
  1691           05 VALUE ' CORR                        ' PIC X(33).
  1692           05 VALUE ' CORRESPONDING               ' PIC X(33).
  1693 GC1213    05 VALUE 'FCOS                         ' PIC X(33).
  1694           05 VALUE 'KCOUNT                       ' PIC X(33).
  1695           05 VALUE ' CRT                         ' PIC X(33).
  1696           05 VALUE ' CRT-UNDER                   ' PIC X(33).
  1697           05 VALUE 'MCSP                         ' PIC X(33).
  1698           05 VALUE ' CURRENCY                    ' PIC X(33).
  1699 GC1213    05 VALUE 'FCURRENCY-SYMBOL             ' PIC X(33).
  1700 GC1213    05 VALUE 'FCURRENT-DATE                ' PIC X(33).
  1701           05 VALUE ' CURSOR                      ' PIC X(33).
  1702           05 VALUE ' CYCLE                       ' PIC X(33).
  1703           05 VALUE 'KDATA                        ' PIC X(33).
  1704           05 VALUE ' DATA-POINTER                ' PIC X(33).    UNIMPLEMENTED
  1705           05 VALUE ' DATE                        ' PIC X(33).
  1706           05 VALUE ' DATE-COMPILED               ' PIC X(33).    OBSOLETE
  1707           05 VALUE ' DATE-MODIFIED               ' PIC X(33).    OBSOLETE
  1708 GC1213    05 VALUE 'FDATE-OF-INTEGER             ' PIC X(33).
  1709 GC1213    05 VALUE 'FDATE-TO-YYYYMMDD            ' PIC X(33).
  1710           05 VALUE ' DATE-WRITTEN                ' PIC X(33).    OBSOLETE
  1711           05 VALUE ' DAY                         ' PIC X(33).
  1712 GC1213    05 VALUE 'FDAY-OF-INTEGER              ' PIC X(33).
  1713           05 VALUE ' DAY-OF-WEEK                 ' PIC X(33).
  1714 GC1213    05 VALUE 'IDAY-TO-YYYYDDD              ' PIC X(33).
  1715           05 VALUE ' DE                          ' PIC X(33).
  1716 GC0712    05 VALUE 'IDEBUG-CONTENTS              ' PIC X(33).
  1717 GC0712    05 VALUE 'IDEBUG-ITEM                  ' PIC X(33).
  1718 GC0712    05 VALUE 'IDEBUG-LINE                  ' PIC X(33).
  1719 GC0712    05 VALUE 'IDEBUG-NAME                  ' PIC X(33).
  1720 GC0712    05 VALUE 'IDEBUG-SUB-1                 ' PIC X(33).
  1721 GC0712    05 VALUE 'IDEBUG-SUB-2                 ' PIC X(33).
  1722 GC0712    05 VALUE 'IDEBUG-SUB-3                 ' PIC X(33).
  1723           05 VALUE ' DEBUGGING                   ' PIC X(33).
  1724           05 VALUE ' DECIMAL-POINT               ' PIC X(33).
  1725           05 VALUE ' DECLARATIVES                ' PIC X(33).
  1726           05 VALUE ' DEFAULT                     ' PIC X(33).
  1727           05 VALUE 'VDELETE                      ' PIC X(33).
  1728           05 VALUE ' DELIMITED                   ' PIC X(33).
  1729           05 VALUE 'KDELIMITER                   ' PIC X(33).
  1730           05 VALUE ' DEPENDING                   ' PIC X(33).
  1731           05 VALUE ' DESCENDING                  ' PIC X(33).
  1732           05 VALUE ' DESTINATION                 ' PIC X(33).    UNIMPLEMENTED
  1733           05 VALUE ' DETAIL                      ' PIC X(33).
  1734 GC0711    05 VALUE ' DISC                        ' PIC X(33).
  1735           05 VALUE ' DISK                        ' PIC X(33).
  1736           05 VALUE 'VDISPLAY                     ' PIC X(33).
  1737 GC1213    05 VALUE 'FDISPLAY-OF                  ' PIC X(33).    UNIMPLEMENTED
  1738           05 VALUE 'VDIVIDE                      ' PIC X(33).

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=====  =================================================================================
 1739           05 VALUE 'KDIVISION                        ' PIC X(33).
 1740           05 VALUE 'KDOWN                            ' PIC X(33).
 1741           05 VALUE ' DUPLICATES                      ' PIC X(33).
 1742           05 VALUE ' DYNAMIC                         ' PIC X(33).
 1743 GC1213    05 VALUE 'FE                               ' PIC X(33).
 1744           05 VALUE ' EBCDIC                          ' PIC X(33).
 1745 GC0712    05 VALUE ' EC                              ' PIC X(33).
 1746           05 VALUE ' EGI                             ' PIC X(33).    OBSOLETE
 1747           05 VALUE 'VELSE                            ' PIC X(33).
 1748           05 VALUE ' EMI                             ' PIC X(33).    OBSOLETE
 1749           05 VALUE ' EMPTY-CHECK                     ' PIC X(33).
 1750           05 VALUE 'VENABLE                          ' PIC X(33).    OBSOLETE
 1751 GC0710    05 VALUE 'KEND                             ' PIC X(33).
 1752           05 VALUE ' END-ACCEPT                      ' PIC X(33).
 1753           05 VALUE ' END-ADD                         ' PIC X(33).
 1754           05 VALUE ' END-CALL                        ' PIC X(33).
 1755           05 VALUE ' END-CHAIN                       ' PIC X(33).    UNIMPLEMENTED
 1756           05 VALUE ' END-COMPUTE                     ' PIC X(33).
 1757           05 VALUE ' END-DELETE                      ' PIC X(33).
 1758           05 VALUE ' END-DISPLAY                     ' PIC X(33).
 1759           05 VALUE ' END-DIVIDE                      ' PIC X(33).
 1760           05 VALUE ' END-EVALUATE                    ' PIC X(33).
 1761           05 VALUE ' END-IF                          ' PIC X(33).
 1762           05 VALUE ' END-MULTIPLY                    ' PIC X(33).
 1763           05 VALUE ' END-OF-PAGE                     ' PIC X(33).
 1764           05 VALUE ' END-PERFORM                     ' PIC X(33).
 1765           05 VALUE ' END-READ                        ' PIC X(33).
 1766           05 VALUE ' END-RECEIVE                     ' PIC X(33).    OBSOLETE
 1767           05 VALUE ' END-RETURN                      ' PIC X(33).
 1768           05 VALUE ' END-REWRITE                     ' PIC X(33).
 1769           05 VALUE ' END-SEARCH                      ' PIC X(33).
 1770           05 VALUE ' END-START                       ' PIC X(33).
 1771           05 VALUE ' END-STRING                      ' PIC X(33).
 1772           05 VALUE ' END-SUBTRACT                    ' PIC X(33).
 1773           05 VALUE ' END-UNSTRING                    ' PIC X(33).
 1774           05 VALUE ' END-WRITE                       ' PIC X(33).
 1775           05 VALUE 'VENTRY                           ' PIC X(33).
 1776           05 VALUE ' ENTRY-CONVENTION                ' PIC X(33).    UNIMPLEMENTED
 1777           05 VALUE 'KENVIRONMENT                     ' PIC X(33).
 1778           05 VALUE ' ENVIRONMENT-NAME                ' PIC X(33).
 1779           05 VALUE ' ENVIRONMENT-VALUE               ' PIC X(33).
 1780           05 VALUE ' EO                              ' PIC X(33).    UNIMPLEMENTED
 1781           05 VALUE ' EOL                             ' PIC X(33).
 1782           05 VALUE ' EOP                             ' PIC X(33).
 1783           05 VALUE ' EOS                             ' PIC X(33).
 1784           05 VALUE ' EQUAL                           ' PIC X(33).
 1785           05 VALUE 'KEQUALS                          ' PIC X(33).
 1786           05 VALUE ' ERASE                           ' PIC X(33).
 1787           05 VALUE ' ERROR                           ' PIC X(33).
 1788           05 VALUE ' ESCAPE                          ' PIC X(33).
 1789           05 VALUE ' ESI                             ' PIC X(33).    OBSOLETE
 1790           05 VALUE 'VEVALUATE                        ' PIC X(33).
 1791           05 VALUE ' EXCEPTION                       ' PIC X(33).
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====== ===================================================================================
  1792 GC1213      05 VALUE 'FEXCEPTION-FILE            ' PIC X(33).
  1793 GC1213      05 VALUE 'FEXCEPTION-FILE-N          ' PIC X(33).     UNIMPLEMENTED
  1794 GC1213      05 VALUE 'FEXCEPTION-LOCATION        ' PIC X(33).
  1795 GC1213      05 VALUE 'FEXCEPTION-LOCATION-N      ' PIC X(33).     UNIMPLEMENTED
  1796             05 VALUE ' EXCEPTION-OBJECT          ' PIC X(33).     UNIMPLEMENTED
  1797 GC1213      05 VALUE 'FEXCEPTION-STATEMENT       ' PIC X(33).
  1798 GC1213      05 VALUE 'FEXCEPTION-STATUS          ' PIC X(33).
  1799             05 VALUE ' EXCLUSIVE                 ' PIC X(33).
  1800             05 VALUE 'VEXIT                      ' PIC X(33).
  1801 GC1213      05 VALUE 'FEXP                       ' PIC X(33).
  1802 GC1213      05 VALUE 'FEXP10                     ' PIC X(33).
  1803             05 VALUE ' EXPANDS                   ' PIC X(33).     UNIMPLEMENTED
  1804             05 VALUE ' EXTEND                    ' PIC X(33).
  1805             05 VALUE ' EXTERNAL                  ' PIC X(33).
  1806 GC1213      05 VALUE 'FFACTORIAL                 ' PIC X(33).
  1807             05 VALUE ' FACTORY                   ' PIC X(33).     UNIMPLEMENTED
  1808             05 VALUE ' FALSE                     ' PIC X(33).
  1809             05 VALUE 'KFD                        ' PIC X(33).
  1810             05 VALUE 'KFILE                      ' PIC X(33).
  1811             05 VALUE ' FILE-CONTROL              ' PIC X(33).
  1812             05 VALUE ' FILE-ID                   ' PIC X(33).
  1813 GC1113      05 VALUE ' FILLER                    ' PIC X(33).
  1814             05 VALUE ' FINAL                     ' PIC X(33).
  1815             05 VALUE ' FIRST                     ' PIC X(33).
  1816 GC0712      05 VALUE ' FLOAT-BINARY-128          ' PIC X(33).     UNIMPLEMENTED
  1817 GC0712      05 VALUE ' FLOAT-BINARY-32           ' PIC X(33).     UNIMPLEMENTED
  1818 GC0712      05 VALUE ' FLOAT-BINARY-64           ' PIC X(33).     UNIMPLEMENTED
  1819             05 VALUE ' FLOAT-DECIMAL-16          ' PIC X(33).
  1820             05 VALUE ' FLOAT-DECIMAL-34          ' PIC X(33).
  1821             05 VALUE ' FLOAT-EXTENDED            ' PIC X(33).     UNIMPLEMENTED
  1822 GC0712      05 VALUE ' FLOAT-INFINITY            ' PIC X(33).     UNIMPLEMENTED
  1823             05 VALUE ' FLOAT-LONG                ' PIC X(33).
  1824 GC0712      05 VALUE ' FLOAT-NOT-A-NUMBER        ' PIC X(33).     UNIMPLEMENTED
  1825             05 VALUE ' FLOAT-SHORT               ' PIC X(33).
  1826             05 VALUE ' FOOTING                   ' PIC X(33).
  1827             05 VALUE ' FOR                       ' PIC X(33).
  1828             05 VALUE ' FOREGROUND-COLOR          ' PIC X(33).
  1829             05 VALUE ' FOREGROUND-COLOUR         ' PIC X(33).
  1830 GC0711      05 VALUE ' FOREVER                   ' PIC X(33).
  1831             05 VALUE ' FORMAT                    ' PIC X(33).     UNIMPLEMENTED
  1832 GC1213      05 VALUE 'FFORMATTED-CURRENT-DATE     ' PIC X(33).     UNIMPLEMENTED
  1833 GC1213      05 VALUE 'FFORMATTED-DATE            ' PIC X(33).     UNIMPLEMENTED
  1834 GC1213      05 VALUE 'FFORMATTED-DATETIME        ' PIC X(33).     UNIMPLEMENTED
  1835 GC1213      05 VALUE 'FFORMATTED-TIME            ' PIC X(33).     UNIMPLEMENTED
  1836             05 VALUE 'MFORMFEED                  ' PIC X(33).
  1837 GC1213      05 VALUE 'FFRACTION-PART             ' PIC X(33).
  1838             05 VALUE 'VFREE                      ' PIC X(33).
  1839             05 VALUE ' FROM                      ' PIC X(33).
  1840             05 VALUE ' FULL                      ' PIC X(33).
  1841             05 VALUE ' FUNCTION                  ' PIC X(33).
  1842 GC0712      05 VALUE 'KFUNCTION-ID               ' PIC X(33).
  1843             05 VALUE ' FUNCTION-POINTER          ' PIC X(33).     UNIMPLEMENTED
  1844             05 VALUE 'VGENERATE                  ' PIC X(33).
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 1845           05 VALUE ' GET                     ' PIC X(33).    UNIMPLEMENTED
 1846           05 VALUE 'KGIVING                   ' PIC X(33).
 1847           05 VALUE ' GLOBAL                   ' PIC X(33).
 1848           05 VALUE 'VGO                       ' PIC X(33).
 1849           05 VALUE 'VGOBACK                   ' PIC X(33).
 1850           05 VALUE ' GREATER                  ' PIC X(33).
 1851           05 VALUE ' GROUP                    ' PIC X(33).
 1852           05 VALUE ' GROUP-USAGE              ' PIC X(33).    UNIMPLEMENTED
 1853           05 VALUE ' HEADING                  ' PIC X(33).
 1854           05 VALUE ' HIGH-VALUE               ' PIC X(33).
 1855           05 VALUE ' HIGH-VALUES              ' PIC X(33).
 1856 GC1213    05 VALUE 'FHIGHEST-ALGEBRAIC        ' PIC X(33).
 1857           05 VALUE ' HIGHLIGHT                ' PIC X(33).
 1858           05 VALUE ' I-O                      ' PIC X(33).
 1859           05 VALUE ' I-O-CONTROL              ' PIC X(33).
 1860           05 VALUE 'KID                       ' PIC X(33).
 1861           05 VALUE 'KIDENTIFICATION           ' PIC X(33).
 1862           05 VALUE 'VIF                       ' PIC X(33).
 1863           05 VALUE ' IGNORE                   ' PIC X(33).
 1864           05 VALUE ' IGNORING                 ' PIC X(33).
 1865           05 VALUE ' IMPLEMENTS               ' PIC X(33).    UNIMPLEMENTED
 1866           05 VALUE ' IN                       ' PIC X(33).
 1867           05 VALUE ' INDEX                    ' PIC X(33).
 1868           05 VALUE 'KINDEXED                  ' PIC X(33).
 1869           05 VALUE ' INDICATE                 ' PIC X(33).
 1870           05 VALUE ' INDIRECT                 ' PIC X(33).    UNIMPLEMENTED
 1871           05 VALUE ' INHERITS                 ' PIC X(33).    UNIMPLEMENTED
 1872           05 VALUE ' INITIAL                  ' PIC X(33).
 1873           05 VALUE 'VINITIALISE               ' PIC X(33).
 1874           05 VALUE ' INITIALISED              ' PIC X(33).
 1875           05 VALUE 'VINITIALIZE               ' PIC X(33).
 1876           05 VALUE ' INITIALIZED              ' PIC X(33).
 1877           05 VALUE 'VINITIATE                 ' PIC X(33).
 1878           05 VALUE ' INPUT                    ' PIC X(33).
 1879           05 VALUE 'KINPUT-OUTPUT             ' PIC X(33).
 1880           05 VALUE 'VINSPECT                  ' PIC X(33).
 1881           05 VALUE ' INSTALLATION             ' PIC X(33).    OBSOLETE
 1882 GC1213    05 VALUE 'FINTEGER                  ' PIC X(33).
 1883 GC1213    05 VALUE 'FINTEGER-OF-BOOLEAN       ' PIC X(33).    UNIMPLEMENTED
 1884 GC1213    05 VALUE 'FINTEGER-OF-DATE          ' PIC X(33).
 1885 GC1213    05 VALUE 'FINTEGER-OF-DAY           ' PIC X(33).
 1886 GC1213    05 VALUE 'FINTEGER-OF-FORMATTED-DATE ' PIC X(33).   UNIMPLEMENTED
 1887 GC1213    05 VALUE 'FINTEGER-PART             ' PIC X(33).
 1888           05 VALUE ' INTERFACE                ' PIC X(33).    UNIMPLEMENTED
 1889           05 VALUE ' INTERFACE-ID             ' PIC X(33).    UNIMPLEMENTED
 1890           05 VALUE ' INTERMEDIATE             ' PIC X(33).    UNIMPLEMENTED
 1891           05 VALUE 'KINTO                     ' PIC X(33).
 1892           05 VALUE ' INTRINSIC                ' PIC X(33).
 1893           05 VALUE ' INVALID                  ' PIC X(33).
 1894           05 VALUE ' INVOKE                   ' PIC X(33).    UNIMPLEMENTED
 1895           05 VALUE ' IS                       ' PIC X(33).
 1896           05 VALUE ' JUST                     ' PIC X(33).
 1897           05 VALUE ' JUSTIFIED                ' PIC X(33).
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 1899            05 VALUE ' KEY                         ' PIC X(33).
 1900            05 VALUE ' KEYBOARD                    ' PIC X(33).
 1901            05 VALUE ' LABEL                       ' PIC X(33).
 1902            05 VALUE ' LAST                        ' PIC X(33).
 1903            05 VALUE ' LC_ALL                      ' PIC X(33).     UNIMPLEMENTED
 1904            05 VALUE ' LC_COLLATE                  ' PIC X(33).     UNIMPLEMENTED
 1905            05 VALUE ' LC_CTYPE                    ' PIC X(33).     UNIMPLEMENTED
 1906            05 VALUE ' LC_MESSAGES                 ' PIC X(33).     UNIMPLEMENTED
 1907            05 VALUE ' LC_MONETARY                 ' PIC X(33).     UNIMPLEMENTED
 1908            05 VALUE ' LC_NUMERIC                  ' PIC X(33).     UNIMPLEMENTED
 1909            05 VALUE ' LC_TIME                     ' PIC X(33).     UNIMPLEMENTED
 1910            05 VALUE ' LEADING                     ' PIC X(33).
 1911            05 VALUE ' LEFT                        ' PIC X(33).
 1912            05 VALUE ' LEFT-JUSTIFY                ' PIC X(33).     UNIMPLEMENTED
 1913            05 VALUE ' LEFTLINE                    ' PIC X(33).
 1914 GC1213     05 VALUE 'FLENGTH                      ' PIC X(33).
 1915 GC1213     05 VALUE 'FLENGTH-AN                   ' PIC X(33).
 1916            05 VALUE ' LENGTH-CHECK                ' PIC X(33).
 1917            05 VALUE ' LESS                        ' PIC X(33).
 1918            05 VALUE ' LIMIT                       ' PIC X(33).
 1919            05 VALUE ' LIMITS                      ' PIC X(33).
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 1922            05 VALUE ' LINE                        ' PIC X(33).
 1923 GC1213     05 VALUE 'ILINE-COUNTER                ' PIC X(33).
 1924            05 VALUE ' LINES                       ' PIC X(33).
 1925            05 VALUE 'KLINKAGE                     ' PIC X(33).
 1926            05 VALUE 'KLOCAL-STORAGE               ' PIC X(33).
 1927            05 VALUE ' LOCALE                      ' PIC X(33).
 1928 GC1213     05 VALUE 'FLOCALE-COMPARE              ' PIC X(33).
 1929 GC1213     05 VALUE 'FLOCALE-DATE                 ' PIC X(33).
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 1931 GC1213     05 VALUE 'FLOCALE-TIME-FROM-SECONDS    ' PIC X(33).
 1932            05 VALUE ' LOCK                        ' PIC X(33).
 1933 GC1213     05 VALUE 'FLOG                         ' PIC X(33).
 1934 GC1213     05 VALUE 'FLOG10                       ' PIC X(33).
 1935            05 VALUE ' LOW-VALUE                   ' PIC X(33).
 1936            05 VALUE ' LOW-VALUES                  ' PIC X(33).
 1937            05 VALUE ' LOWER                       ' PIC X(33).
 1938 GC1213     05 VALUE 'FLOWER-CASE                  ' PIC X(33).
 1939 GC1213     05 VALUE 'FLOWEST-ALGEBRAIC            ' PIC X(33).
 1940            05 VALUE ' LOWLIGHT                    ' PIC X(33).
 1941            05 VALUE ' MANUAL                      ' PIC X(33).
 1942 GC1213     05 VALUE 'FMAX                         ' PIC X(33).
 1943 GC1213     05 VALUE 'FMEAN                        ' PIC X(33).
 1944 GC1213     05 VALUE 'FMEDIAN                      ' PIC X(33).
 1945            05 VALUE ' MEMORY                      ' PIC X(33).
 1946            05 VALUE 'VMERGE                       ' PIC X(33).
 1947            05 VALUE ' MESSAGE                     ' PIC X(33).     OBSOLETE
 1948            05 VALUE ' METHOD                      ' PIC X(33).     UNIMPLEMENTED
 1949            05 VALUE ' METHOD-ID                   ' PIC X(33).     UNIMPLEMENTED
 1950 GC1213     05 VALUE 'FMIDRANGE                    ' PIC X(33).

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 1952              05 VALUE ' MINUS                          ' PIC X(33).
 1953 GC1213      05 VALUE 'FMOD                            ' PIC X(33).
 1954              05 VALUE ' MODE                           ' PIC X(33).
 1955 GC1213      05 VALUE 'FMODULE-CALLER-ID               ' PIC X(33).
 1956 GC1213      05 VALUE 'FMODULE-DATE                    ' PIC X(33).
 1957 GC1213      05 VALUE 'FMODULE-FORMATTED-DATE          ' PIC X(33).
 1958 GC1213      05 VALUE 'FMODULE-ID                      ' PIC X(33).
 1959 GC1213      05 VALUE 'FMODULE-PATH                    ' PIC X(33).
 1960 GC1213      05 VALUE 'FMODULE-SOURCE                  ' PIC X(33).
 1961 GC1213      05 VALUE 'FMODULE-TIME                    ' PIC X(33).
 1962 GC1213      05 VALUE 'FMONETARY-DECIMAL-POINT         ' PIC X(33).
 1963 GC1213      05 VALUE 'FMONETARY-THOUSANDS-SEPARATOR   ' PIC X(33).
 1964              05 VALUE 'VMOVE                           ' PIC X(33).
 1965              05 VALUE ' MULTIPLE                       ' PIC X(33).
 1966              05 VALUE 'VMULTIPLY                       ' PIC X(33).
 1967 GC0711      05 VALUE ' NAME                           ' PIC X(33).
 1968              05 VALUE ' NATIONAL                       ' PIC X(33).
 1969              05 VALUE ' NATIONAL-EDITED                ' PIC X(33).
 1970 GC1213      05 VALUE 'FNATIONAL-OF                    ' PIC X(33).      UNIMPLEMENTED
 1971              05 VALUE ' NATIVE                         ' PIC X(33).
 1972              05 VALUE ' NEAREST-AWAY-FROM-ZERO         ' PIC X(33).
 1973              05 VALUE ' NEAREST-EVEN                   ' PIC X(33).
 1974              05 VALUE ' NEAREST-TOWARD-ZERO            ' PIC X(33).
 1975              05 VALUE ' NEGATIVE                       ' PIC X(33).
 1976              05 VALUE ' NESTED                         ' PIC X(33).      UNIMPLEMENTED
 1977              05 VALUE 'VNEXT                           ' PIC X(33).
 1978              05 VALUE ' NO                             ' PIC X(33).
 1979              05 VALUE ' NO-ECHO                        ' PIC X(33).
 1980              05 VALUE ' NONE                           ' PIC X(33).      UNIMPLEMENTED
 1981              05 VALUE ' NORMAL                         ' PIC X(33).
 1982              05 VALUE ' NOT                            ' PIC X(33).
 1983              05 VALUE ' NULL                           ' PIC X(33).
 1984              05 VALUE ' NULLS                          ' PIC X(33).
 1985              05 VALUE ' NUMBER                         ' PIC X(33).
 1986              05 VALUE 'INUMBER-OF-CALL-PARAMETERS      ' PIC X(33).
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 1989 GC1213      05 VALUE 'FNUMERIC-DECIMAL-POINT          ' PIC X(33).
 1990              05 VALUE ' NUMERIC-EDITED                 ' PIC X(33).
 1991 GC1213      05 VALUE 'FNUMERIC-THOUSANDS-SEPARATOR    ' PIC X(33).
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 1994 GC1213      05 VALUE 'FNUMVAL-F                       ' PIC X(33).
 1995              05 VALUE ' OBJECT                         ' PIC X(33).      UNIMPLEMENTED
 1996              05 VALUE ' OBJECT-COMPUTER                ' PIC X(33).
 1997              05 VALUE ' OBJECT-REFERENCE               ' PIC X(33).      UNIMPLEMENTED
 1998              05 VALUE ' OCCURS                         ' PIC X(33).
 1999              05 VALUE ' OF                             ' PIC X(33).
 2000              05 VALUE ' OFF                            ' PIC X(33).
 2001              05 VALUE ' OMITTED                        ' PIC X(33).
 2002              05 VALUE ' ON                             ' PIC X(33).
 2003              05 VALUE ' ONLY                           ' PIC X(33).

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 2004           05 VALUE 'VOPEN                  ' PIC X(33).
 2005           05 VALUE ' OPTIONAL              ' PIC X(33).
 2006           05 VALUE ' OPTIONS               ' PIC X(33).      UNIMPLEMENTED
 2007           05 VALUE ' OR                    ' PIC X(33).
 2008 GC1213    05 VALUE 'FORD                   ' PIC X(33).
 2009 GC1213    05 VALUE 'FORD-MAX               ' PIC X(33).
 2010 GC1213    05 VALUE 'FORD-MIN               ' PIC X(33).
 2011           05 VALUE ' ORDER                 ' PIC X(33).
 2012           05 VALUE ' ORGANISATION          ' PIC X(33).
 2013           05 VALUE ' ORGANIZATION          ' PIC X(33).
 2014           05 VALUE ' OTHER                 ' PIC X(33).
 2015           05 VALUE ' OUTPUT                ' PIC X(33).
 2016           05 VALUE ' OVERFLOW              ' PIC X(33).
 2017           05 VALUE ' OVERLINE              ' PIC X(33).
 2018           05 VALUE ' OVERRIDE              ' PIC X(33).
 2019           05 VALUE ' PACKED-DECIMAL        ' PIC X(33).
 2020           05 VALUE ' PADDING               ' PIC X(33).
 2021           05 VALUE ' PAGE                  ' PIC X(33).
 2022 GC1213    05 VALUE 'IPAGE-COUNTER          ' PIC X(33).
 2023           05 VALUE ' PARAGRAPH             ' PIC X(33).
 2024           05 VALUE 'VPERFORM               ' PIC X(33).
 2025           05 VALUE ' PF                    ' PIC X(33).
 2026           05 VALUE ' PH                    ' PIC X(33).
 2027 GC1213    05 VALUE 'FPI                    ' PIC X(33).
 2028           05 VALUE 'KPIC                   ' PIC X(33).
 2029           05 VALUE 'KPICTURE               ' PIC X(33).
 2030           05 VALUE ' PLUS                  ' PIC X(33).
 2031           05 VALUE 'KPOINTER               ' PIC X(33).
 2032           05 VALUE ' POSITION              ' PIC X(33).
 2033           05 VALUE ' POSITIVE              ' PIC X(33).
 2034           05 VALUE ' PREFIXED              ' PIC X(33).      UNIMPLEMENTED
 2035           05 VALUE ' PRESENT               ' PIC X(33).
 2036 GC1213    05 VALUE 'FPRESENT-VALUE         ' PIC X(33).
 2037           05 VALUE ' PREVIOUS              ' PIC X(33).
 2038           05 VALUE 'MPRINTER               ' PIC X(33).
 2039           05 VALUE ' PRINTING              ' PIC X(33).
 2040           05 VALUE 'KPROCEDURE             ' PIC X(33).
 2041           05 VALUE ' PROCEDURE-POINTER     ' PIC X(33).
 2042           05 VALUE ' PROCEDURES            ' PIC X(33).
 2043           05 VALUE ' PROCEED               ' PIC X(33).
 2044           05 VALUE ' PROGRAM               ' PIC X(33).
 2045           05 VALUE 'KPROGRAM-ID            ' PIC X(33).
 2046           05 VALUE ' PROGRAM-POINTER       ' PIC X(33).
 2047           05 VALUE ' PROHIBITED            ' PIC X(33).
 2048           05 VALUE ' PROMPT                ' PIC X(33).
 2049           05 VALUE ' PROPERTY              ' PIC X(33).      UNIMPLEMENTED
 2050           05 VALUE ' PROTOTYPE             ' PIC X(33).      UNIMPLEMENTED
 2051           05 VALUE ' PURGE                 ' PIC X(33).      OBSOLETE
 2052           05 VALUE ' QUEUE                 ' PIC X(33).      OBSOLETE
 2053           05 VALUE ' QUOTE                 ' PIC X(33).
 2054           05 VALUE ' QUOTES                ' PIC X(33).
 2055           05 VALUE ' RAISE                 ' PIC X(33).      UNIMPLEMENTED
 2056           05 VALUE ' RAISING               ' PIC X(33).      UNIMPLEMENTED
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 2057 GC1213      05 VALUE 'FRANDOM                        ' PIC X(33).
 2058 GC1213      05 VALUE 'FRANGE                         ' PIC X(33).
 2059 GC1213      05 VALUE 'KRD                            ' PIC X(33).
 2060             05 VALUE 'VREAD                          ' PIC X(33).
 2061             05 VALUE 'VREADY                         ' PIC X(33).
 2062             05 VALUE 'VRECEIVE                       ' PIC X(33).     OBSOLETE
 2063             05 VALUE ' RECORD                        ' PIC X(33).
 2064             05 VALUE ' RECORDING                     ' PIC X(33).
 2065             05 VALUE ' RECORDS                       ' PIC X(33).
 2066             05 VALUE ' RECURSIVE                     ' PIC X(33).
 2067             05 VALUE 'KREDEFINES                     ' PIC X(33).
 2068             05 VALUE ' REEL                          ' PIC X(33).
 2069 GC0712      05 VALUE 'AREFERENCE                     ' PIC X(33).
 2070             05 VALUE ' REFERENCES                    ' PIC X(33).
 2071             05 VALUE ' RELATION                      ' PIC X(33).     UNIMPLEMENTED
 2072             05 VALUE ' RELATIVE                      ' PIC X(33).
 2073             05 VALUE 'VRELEASE                       ' PIC X(33).
 2074 GC1213      05 VALUE 'FREM                           ' PIC X(33).
 2075             05 VALUE ' REMAINDER                     ' PIC X(33).
 2076             05 VALUE ' REMARKS                       ' PIC X(33).     OBSOLETE
 2077             05 VALUE ' REMOVAL                       ' PIC X(33).
 2078             05 VALUE 'KRENAMES                       ' PIC X(33).
 2079             05 VALUE ' REPLACE                       ' PIC X(33).
 2080             05 VALUE 'KREPLACING                     ' PIC X(33).
 2081             05 VALUE 'KREPORT                        ' PIC X(33).
 2082             05 VALUE ' REPORTING                     ' PIC X(33).
 2083             05 VALUE ' REPORTS                       ' PIC X(33).
 2084             05 VALUE ' REPOSITORY                    ' PIC X(33).
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 2086             05 VALUE ' RESERVE                       ' PIC X(33).
 2087             05 VALUE 'VRESET                         ' PIC X(33).
 2088             05 VALUE ' RESUME                        ' PIC X(33).     UNIMPLEMENTED
 2089             05 VALUE ' RETRY                         ' PIC X(33).     UNIMPLEMENTED
 2090             05 VALUE 'VRETURN                        ' PIC X(33).
 2091             05 VALUE 'IRETURN-CODE                   ' PIC X(33).
 2092             05 VALUE 'KRETURNING                     ' PIC X(33).
 2093 GC1213      05 VALUE 'FREVERSE                       ' PIC X(33).
 2094             05 VALUE ' REVERSE-VIDEO                 ' PIC X(33).
 2095             05 VALUE ' REVERSED                      ' PIC X(33).
 2096             05 VALUE ' REWIND                        ' PIC X(33).
 2097             05 VALUE 'VREWRITE                       ' PIC X(33).
 2098             05 VALUE ' RF                            ' PIC X(33).
 2099             05 VALUE ' RH                            ' PIC X(33).
 2100             05 VALUE ' RIGHT                         ' PIC X(33).
 2101             05 VALUE ' RIGHT-JUSTIFY                 ' PIC X(33).     UNIMPLEMENTED
 2102             05 VALUE 'VROLLBACK                      ' PIC X(33).
 2103             05 VALUE ' ROUNDED                       ' PIC X(33).
 2104             05 VALUE ' ROUNDING                      ' PIC X(33).     UNIMPLEMENTED
 2105             05 VALUE ' RUN                           ' PIC X(33).
 2106             05 VALUE ' SAME                          ' PIC X(33).
 2107             05 VALUE 'KSCREEN                        ' PIC X(33).
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 2109             05 VALUE 'KSD                            ' PIC X(33).
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 2111            05 VALUE ' SECONDS                  ' PIC X(33).      UNIMPLEMENTED
 2112 GC1213     05 VALUE 'FSECONDS-FROM-FORMATTED-TIME ' PIC X(33).
 2113 GC1213     05 VALUE 'FSECONDS-PAST-MIDNIGHT    ' PIC X(33).
 2114            05 VALUE 'KSECTION                  ' PIC X(33).
 2115            05 VALUE ' SECURE                   ' PIC X(33).
 2116            05 VALUE ' SECURITY                 ' PIC X(33).      OBSOLETE
 2117            05 VALUE ' SEGMENT                  ' PIC X(33).      OBSOLETE
 2118            05 VALUE ' SEGMENT-LIMIT            ' PIC X(33).
 2119            05 VALUE ' SELECT                   ' PIC X(33).
 2120            05 VALUE ' SELF                     ' PIC X(33).      UNIMPLEMENTED
 2121            05 VALUE 'VSEND                     ' PIC X(33).      OBSOLETE
 2122            05 VALUE ' SENTENCE                 ' PIC X(33).
 2123            05 VALUE ' SEPARATE                 ' PIC X(33).
 2124            05 VALUE ' SEQUENCE                 ' PIC X(33).
 2125            05 VALUE ' SEQUENTIAL               ' PIC X(33).
 2126            05 VALUE 'VSET                      ' PIC X(33).
 2127            05 VALUE ' SHARING                  ' PIC X(33).
 2128 GC1213     05 VALUE 'FSIGN                     ' PIC X(33).
 2129            05 VALUE ' SIGNED                   ' PIC X(33).
 2130            05 VALUE ' SIGNED-INT               ' PIC X(33).
 2131            05 VALUE ' SIGNED-LONG              ' PIC X(33).
 2132            05 VALUE ' SIGNED-SHORT             ' PIC X(33).
 2133 GC1213     05 VALUE 'FSIN                      ' PIC X(33).
 2134            05 VALUE ' SIZE                     ' PIC X(33).
 2135            05 VALUE 'VSORT                     ' PIC X(33).
 2136            05 VALUE ' SORT-MERGE               ' PIC X(33).
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 2138            05 VALUE ' SOURCE                   ' PIC X(33).
 2139            05 VALUE ' SOURCE-COMPUTER          ' PIC X(33).
 2140            05 VALUE ' SOURCES                  ' PIC X(33).      UNIMPLEMENTED
 2141            05 VALUE ' SPACE                    ' PIC X(33).
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 2143            05 VALUE ' SPACES                   ' PIC X(33).
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 2145 GC1213     05 VALUE 'FSQRT                     ' PIC X(33).
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 2149            05 VALUE ' STANDARD-BINARY          ' PIC X(33).      UNIMPLEMENTED
 2150 GC1213     05 VALUE 'FSTANDARD-COMPARE         ' PIC X(33).      UNIMPLEMENTED
 2151            05 VALUE ' STANDARD-DECIMAL         ' PIC X(33).      UNIMPLEMENTED
 2152 GC1213     05 VALUE 'FSTANDARD-DEVIATION       ' PIC X(33).
 2153            05 VALUE 'VSTART                    ' PIC X(33).
 2154            05 VALUE ' STATEMENT                ' PIC X(33).      UNIMPLEMENTED
 2155            05 VALUE ' STATIC                   ' PIC X(33).
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 2157            05 VALUE ' STDCALL                  ' PIC X(33).
 2158            05 VALUE 'MSTDERR                   ' PIC X(33).
 2159            05 VALUE 'MSTDIN                    ' PIC X(33).
 2160            05 VALUE 'MSTDOUT                   ' PIC X(33).
 2161            05 VALUE ' STEP                     ' PIC X(33).
 2162            05 VALUE 'VSTOP                     ' PIC X(33).

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 2164             05 VALUE 'VSTRING                        ' PIC X(33).
 2165             05 VALUE ' STRONG                        ' PIC X(33).     UNIMPLEMENTED
 2166             05 VALUE ' SUB-QUEUE-1                   ' PIC X(33).     OBSOLETE
 2167             05 VALUE ' SUB-QUEUE-2                   ' PIC X(33).     OBSOLETE
 2168             05 VALUE ' SUB-QUEUE-3                   ' PIC X(33).     OBSOLETE
 2169 GC1213      05 VALUE 'FSUBSTITUTE                    ' PIC X(33).
 2170 GC1213      05 VALUE 'FSUBSTITUTE-CASE               ' PIC X(33).
 2171             05 VALUE 'VSUBTRACT                      ' PIC X(33).
 2172 GC1213      05 VALUE 'FSUM                           ' PIC X(33).
 2173             05 VALUE ' SUPER                         ' PIC X(33).     UNIMPLEMENTED
 2174             05 VALUE 'VSUPPRESS                      ' PIC X(33).
 2175             05 VALUE 'MSW0                           ' PIC X(33).
 2176             05 VALUE 'MSW1                           ' PIC X(33).
 2177             05 VALUE 'MSW10                          ' PIC X(33).
 2178             05 VALUE 'MSW11                          ' PIC X(33).
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 2181             05 VALUE 'MSW14                          ' PIC X(33).
 2182             05 VALUE 'MSW15                          ' PIC X(33).
 2183             05 VALUE 'MSW2                           ' PIC X(33).
 2184             05 VALUE 'MSW3                           ' PIC X(33).
 2185             05 VALUE 'MSW4                           ' PIC X(33).
 2186             05 VALUE 'MSW5                           ' PIC X(33).
 2187             05 VALUE 'MSW6                           ' PIC X(33).
 2188             05 VALUE 'MSW7                           ' PIC X(33).
 2189             05 VALUE 'MSW8                           ' PIC X(33).
 2190             05 VALUE 'MSW9                           ' PIC X(33).
 2191             05 VALUE 'MSWITCH-0                      ' PIC X(33).
 2192             05 VALUE 'MSWITCH-1                      ' PIC X(33).
 2193             05 VALUE 'MSWITCH-10                     ' PIC X(33).
 2194             05 VALUE 'MSWITCH-11                     ' PIC X(33).
 2195             05 VALUE 'MSWITCH-12                     ' PIC X(33).
 2196             05 VALUE 'MSWITCH-13                     ' PIC X(33).
 2197             05 VALUE 'MSWITCH-14                     ' PIC X(33).
 2198             05 VALUE 'MSWITCH-15                     ' PIC X(33).
 2199             05 VALUE 'MSWITCH-2                      ' PIC X(33).
 2200             05 VALUE 'MSWITCH-3                      ' PIC X(33).
 2201             05 VALUE 'MSWITCH-4                      ' PIC X(33).
 2202             05 VALUE 'MSWITCH-5                      ' PIC X(33).
 2203             05 VALUE 'MSWITCH-6                      ' PIC X(33).
 2204             05 VALUE 'MSWITCH-7                      ' PIC X(33).
 2205             05 VALUE 'MSWITCH-8                      ' PIC X(33).
 2206             05 VALUE 'MSWITCH-9                      ' PIC X(33).
 2207             05 VALUE ' SYMBOL                        ' PIC X(33).     UNIMPLEMENTED
 2208             05 VALUE ' SYMBOLIC                      ' PIC X(33).
 2209             05 VALUE ' SYNC                          ' PIC X(33).
 2210             05 VALUE ' SYNCHRONISED                  ' PIC X(33).
 2211             05 VALUE ' SYNCHRONIZED                  ' PIC X(33).
 2212             05 VALUE 'MSYSERR                        ' PIC X(33).
 2213             05 VALUE 'MSYSIN                         ' PIC X(33).
 2214             05 VALUE 'MSYSIPT                        ' PIC X(33).
 2215             05 VALUE 'MSYSLIST                       ' PIC X(33).

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

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                    2017/12/24
                                         /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                            Page: 51
======  ========================================================================================
  2216           05 VALUE 'MSYSLST                          ' PIC X(33).
  2217           05 VALUE 'MSYSOUT                          ' PIC X(33).
  2218           05 VALUE ' SYSTEM-DEFAULT                  ' PIC X(33).
  2219           05 VALUE ' TABLE                           ' PIC X(33).      UNIMPLEMENTED
  2220           05 VALUE 'KTALLYING                        ' PIC X(33).
  2221 GC1213    05 VALUE 'FTAN                             ' PIC X(33).
  2222           05 VALUE ' TAPE                            ' PIC X(33).
  2223           05 VALUE ' TERMINAL                        ' PIC X(33).      OBSOLETE
  2224           05 VALUE 'VTERMINATE                       ' PIC X(33).
  2225           05 VALUE ' TEST                            ' PIC X(33).
  2226 GC1213    05 VALUE 'FTEST-DATE-YYYYMMDD              ' PIC X(33).
  2227 GC1213    05 VALUE 'FTEST-DAY-YYYYDDD                ' PIC X(33).
  2228 GC1213    05 VALUE 'FTEST-FORMATTED-DATETIME         ' PIC X(33).      UNIMPLEMENTED
  2229 GC1213    05 VALUE 'FTEST-NUMVAL                     ' PIC X(33).
  2230 GC1213    05 VALUE 'FTEST-NUMVAL-C                   ' PIC X(33).
  2231 GC1213    05 VALUE 'FTEST-NUMVAL-F                   ' PIC X(33).
  2232           05 VALUE ' TEXT                            ' PIC X(33).      OBSOLETE
  2233           05 VALUE ' THAN                            ' PIC X(33).
  2234           05 VALUE ' THEN                            ' PIC X(33).
  2235           05 VALUE ' THROUGH                         ' PIC X(33).
  2236           05 VALUE ' THRU                            ' PIC X(33).
  2237           05 VALUE ' TIME                            ' PIC X(33).
  2238 GC0711    05 VALUE ' TIME-OUT                        ' PIC X(33).
  2239 GC0711    05 VALUE ' TIMEOUT                         ' PIC X(33).
  2240           05 VALUE ' TIMES                           ' PIC X(33).
  2241           05 VALUE 'KTO                              ' PIC X(33).
  2242           05 VALUE ' TOP                             ' PIC X(33).
  2243           05 VALUE ' TOWARD-GREATER                  ' PIC X(33).
  2244           05 VALUE ' TOWARD-LESSER                   ' PIC X(33).
  2245           05 VALUE ' TRAILING                        ' PIC X(33).
  2246           05 VALUE ' TRAILING-SIGN                   ' PIC X(33).      UNIMPLEMENTED
  2247           05 VALUE 'VTRANSFORM                       ' PIC X(33).
  2248 GC1213    05 VALUE 'FTRIM                            ' PIC X(33).
  2249           05 VALUE ' TRUE                            ' PIC X(33).
  2250           05 VALUE ' TRUNCATION                      ' PIC X(33).
  2251           05 VALUE ' TYPE                            ' PIC X(33).
  2252           05 VALUE ' TYPEDEF                         ' PIC X(33).      UNIMPLEMENTED
  2253           05 VALUE ' UCS-4                           ' PIC X(33).      UNIMPLEMENTED
  2254           05 VALUE ' UNDERLINE                       ' PIC X(33).
  2255           05 VALUE ' UNIT                            ' PIC X(33).
  2256           05 VALUE ' UNIVERSAL                       ' PIC X(33).      UNIMPLEMENTED
  2257           05 VALUE 'VUNLOCK                          ' PIC X(33).
  2258           05 VALUE ' UNSIGNED                        ' PIC X(33).
  2259           05 VALUE ' UNSIGNED-INT                    ' PIC X(33).
  2260           05 VALUE ' UNSIGNED-LONG                   ' PIC X(33).
  2261           05 VALUE ' UNSIGNED-SHORT                  ' PIC X(33).
  2262           05 VALUE 'VUNSTRING                        ' PIC X(33).
  2263           05 VALUE ' UNTIL                           ' PIC X(33).
  2264           05 VALUE 'KUP                              ' PIC X(33).
  2265           05 VALUE ' UPDATE                          ' PIC X(33).
  2266           05 VALUE ' UPON                            ' PIC X(33).
  2267           05 VALUE ' UPPER                           ' PIC X(33).
  2268 GC1213    05 VALUE 'FUPPER-CASE                      ' PIC X(33).

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GNUCOBOL 3.0 24DEC2017  Source Listing                                          2017/12/24
                                           /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                                 Page: 52
======  =========================================================================================
 2269            05 VALUE ' USAGE                      ' PIC X(33).
 2270            05 VALUE 'VUSE                         ' PIC X(33).
 2271 GC0711     05 VALUE ' USER                        ' PIC X(33).
 2272            05 VALUE ' USER-DEFAULT                ' PIC X(33).
 2273            05 VALUE 'KUSING                       ' PIC X(33).
 2274            05 VALUE ' UTF-16                      ' PIC X(33).      UNIMPLEMENTED
 2275            05 VALUE ' UTF-8                       ' PIC X(33).      UNIMPLEMENTED
 2276            05 VALUE ' VAL-STATUS                  ' PIC X(33).      UNIMPLEMENTED
 2277            05 VALUE ' VALID                       ' PIC X(33).      UNIMPLEMENTED
 2278            05 VALUE ' VALIDATE                    ' PIC X(33).      UNIMPLEMENTED
 2279            05 VALUE ' VALIDATE-STATUS             ' PIC X(33).      UNIMPLEMENTED
 2280 GC0712     05 VALUE 'AVALUE                       ' PIC X(33).
 2281            05 VALUE ' VALUES                      ' PIC X(33).
 2282 GC1213     05 VALUE 'FVARIANCE                    ' PIC X(33).
 2283            05 VALUE 'KVARYING                     ' PIC X(33).
 2284            05 VALUE ' VDISABLE                    ' PIC X(33).      UNIMPLEMENTED
 2285            05 VALUE ' WAIT                        ' PIC X(33).
 2286            05 VALUE 'VWHEN                        ' PIC X(33).
 2287 GC1213     05 VALUE 'FWHEN-COMPILED               ' PIC X(33).
 2288            05 VALUE ' WITH                        ' PIC X(33).
 2289            05 VALUE ' WORDS                       ' PIC X(33).
 2290            05 VALUE 'KWORKING-STORAGE             ' PIC X(33).
 2291            05 VALUE 'VWRITE                       ' PIC X(33).
 2292 GC1213     05 VALUE 'FYEAR-TO-YYYY                ' PIC X(33).
 2293            05 VALUE ' YYYYDDD                     ' PIC X(33).
 2294            05 VALUE ' YYYYMMDD                    ' PIC X(33).
 2295            05 VALUE ' ZERO                        ' PIC X(33).
 2296            05 VALUE ' ZERO-FILL                   ' PIC X(33).      UNIMPLEMENTED
 2297            05 VALUE ' ZEROES                      ' PIC X(33).
 2298            05 VALUE ' ZEROS                       ' PIC X(33).
 2299       01  WS-Reserved-Word-Table-TXT REDEFINES WS-Reserved-Words-TXT.
 2300 GC1113     05 WS-Reserved-Word-TXT        OCCURS 754 TIMES
 2301                                           ASCENDING KEY
 2302                                             WS-RW-Word-TXT
 2303                                           INDEXED WS-RW-IDX.
 2304              10 WS-RW-Type-CD          PIC X(1).
 2305              10 WS-RW-Word-TXT         PIC X(32).
 2306
 2307       01  WS-Runtime-Switches.
 2308 GC0710     05 WS-RS-Duplicate-CHR          PIC X(1).
 2309            05 WS-RS-In-Which-Pgm-CHR       PIC X(1).
 2310              88 WS-RS-In-Main-Module-BOOL     VALUE 'M'.
 2311              88 WS-RS-In-Copybook-BOOL        VALUE 'C'.
 2312            05 WS-RS-Last-Token-Ended-Sent-CHR  PIC X(1).
 2313            05 WS-RS-Processing-PICTURE-CHR  PIC X(1).
 2314            05 WS-RS-Token-Ended-Sentence-CHR  PIC X(1).
 2315 GC0710     05 WS-RS-Verb-Has-Been-Found-CHR  PIC X(1).
 2316
 2317       01  WS-Saved-Section-TXT             PIC X(15).
 2318
 2319 GC1213 01  WS-Src-Dashes-TXT.
 2320 GC0712     05 VALUE '======'                 PIC X(7).
 2321 GC0712     05 VALUE ALL '='                  PIC X(128).


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```
GNUCOBOL 3.0 24DEC2017  Source Listing                                    2017/12/24
                                          /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                             Page: 53
====== =======================================================================================
  2322
  2323        01  WS-Src-Detail-Line-TXT.
  2324            05 WS-SDL-Line-NUM                PIC ZZZZZ9.
  2325            05 FILLER                         PIC X(1).
  2326            05 WS-SDL-Statement-TXT           PIC X(256).
  2327
  2328 GC1213 01  WS-Src-Hold-TXT                   PIC X(256).
  2329
  2330        01  WS-Src-Line-NUM                   PIC 9(6).
  2331
  2332 GC1213 01  WS-Src-Lines-NUM                  USAGE BINARY-LONG.
  2333
  2334        01  WS-Src-SUB                        USAGE BINARY-LONG.
  2335
  2336        01  WS-Tally-QTY                      USAGE BINARY-LONG.
  2337
  2338        01  WS-Temp-10-Chars-TXT              PIC X(10).
  2339
  2340        01  WS-Temp-32-Chars-1-TXT            PIC X(32).
  2341
  2342 GC0711 01  WS-Temp-32-Chars-2-TXT            PIC X(32).
  2343
  2344 GC0711 01  WS-Temp-32-Chars-3-TXT            PIC X(32).
  2345
  2346 GC0712 01  WS-Temp-65-Chars-TXT              PIC X(65).
  2347
  2348        01  WS-Temp-256-Chars-TXT             PIC X(256).
  2349
  2350        01  WS-Today-DT                       PIC 9(8).
  2351
  2352        01  WS-Token-Curr-TXT                 PIC X(32).
  2353
  2354        01  WS-Token-Curr-Uc-TXT              PIC X(32).
  2355
  2356        01  WS-Token-Prev-TXT                 PIC X(32).
  2357
  2358        01  WS-Token-Search-TXT               PIC X(32).
  2359
  2360        01  WS-Token-Type-CD                  PIC X(1).
  2361 GC0712     88 WS-TT-Token-Is-Argtype-BOOL    VALUE 'A'.
  2362            88 WS-TT-Token-Is-EOF-BOOL        VALUE HIGH-VALUES.
  2363 GC1213     88 WS-TT-Token-Is-Function-BOOL   VALUE 'F'.
  2364            88 WS-TT-Token-Is-Identifier-BOOL VALUE 'I'.
  2365 GC0712     88 WS-TT-Token-Is-Keyword-BOOL    VALUE 'K', 'V', 'A'.
  2366            88 WS-TT-Token-Is-Lit-Alpha-BOOL  VALUE 'L'.
  2367            88 WS-TT-Token-Is-Lit-Number-BOOL VALUE 'N'.
  2368            88 WS-TT-Token-Is-Verb-BOOL       VALUE 'V'.
  2369 GC1213     88 WS-TT-Token-Is-Reserved-Wd-BOOL VALUE ' ', 'F'.
  2370
  2371        01  WS-Usernames-QTY                  USAGE BINARY-LONG.
  2372
  2373        01  WS-Version-TXT                    PIC X(23).
  2374
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```

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                    2017/12/24
                                          /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                             Page: 54
======  ==========================================================================
  2375        01  WS-Xref-Detail-Line-TXT.
  2376            05 WS-XDL-Prog-ID-TXT                 PIC X(15).
  2377            05 FILLER                             PIC X(1).
  2378            05 WS-XDL-Token-TXT                   PIC X(32).
  2379            05 FILLER                             PIC X(1).
  2380            05 WS-XDL-Def-Line-NUM                PIC ZZZZZ9.
  2381            05 FILLER                             PIC X(1).
  2382            05 WS-XDL-Section-TXT                 PIC X(15).
  2383            05 FILLER                             PIC X(1).
  2384            05 WS-XDL-Reference-TXT               OCCURS 8 TIMES.
  2385               10 WS-XDL-Ref-Line-NUM             PIC ZZZZZ9.
  2386               10 WS-XDL-Ref-Flag-CHR             PIC X(1).
  2387               10 FILLER                          PIC X(1).
  2388
  2389 GC1213 01  WS-Xref-Lines-Per-Rec-NUM            PIC 9(1).
  2390
  2391        LINKAGE SECTION.
  2392 GC0712 01  L-Listing-Fn-TXT                     PIC X(256).
  2393
  2394        01  L-Src-Fn-TXT                         PIC X(256).
  2395
  2396 GC0712 01  L-OS-Type-CD                         PIC 9(1).
  2397
  2398 GC1213 01  L-LPP-NUM                            USAGE BINARY-LONG.
  2399
  2400 GC1213 01  L-LPP-Port-NUM                       USAGE BINARY-LONG.
  2401
  2402 GC1213 01  L-Listing-CD                         PIC 9(1).
```

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                        2017/12/24
                                              /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                              Page: 55
======  ==========================================================================================

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

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```

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

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```
GNUCOBOL 3.0 24DEC2017  Source Listing                                        2017/12/24
                                              /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                                 Page: 57
======  ========================================================================================
  2474 GC1010             '.i'
  2475 GC1010               DELIMITED SIZE
  2476 GC1010               INTO WS-Expanded-Src-Fn-TXT
  2477 GC1010       CALL 'CBL_CHECK_FILE_EXIST' USING WS-Expanded-Src-Fn-TXT
  2478 GC1010                                         WS-Temp-256-Chars-TXT
  2479 GC1010       IF RETURN-CODE NOT = 0
  2480 GC1010          GOBACK
  2481 GC1010       END-IF
  2482          IF WS-Lines-Per-Page-Env-TXT NOT = SPACES
  2483              MOVE NUMVAL(WS-Lines-Per-Page-Env-TXT)
  2484                TO WS-Lines-Per-Page-NUM
  2485          ELSE
  2486 GC1213       IF L-LISTING-CD = 1 *> LANDSCAPE
  2487 GC1213          MOVE L-LPP-NUM TO WS-Lines-Per-Page-NUM
  2488 GC1213       ELSE                *> PORTRAIT
  2489 GC1213          MOVE L-LPP-Port-NUM TO WS-Lines-Per-Page-NUM
  2490 GC1213       END-IF
  2491          END-IF
  2492 GC1213   SUBTRACT 3 FROM WS-Lines-Per-Page-NUM *> FOR PAGE FOOTER
  2493          ACCEPT WS-Today-DT FROM DATE YYYYMMDD
  2494 GC1213   MOVE WS-Today-DT TO WS-Formatted-DT
  2495          MOVE '????????????...' TO WS-Curr-Prog-ID-TXT
  2496          MOVE SPACES           TO WS-Curr-Verb-TXT
  2497                                   WS-Held-Reference-TXT
  2498          .
```

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

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

=================================================================================================

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

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                    2017/12/24
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                              Page: 61
====== ====================================================================================
  2656                    MOVE 'Y' TO WS-RS-Token-Ended-Sentence-CHR
  2657                    ADD 1 TO WS-Src-SUB
  2658                END-IF
  2659                IF UPPER-CASE(WS-Token-Curr-TXT) = 'IS'
  2660                    MOVE SPACE TO WS-Token-Type-CD
  2661                    EXIT SECTION
  2662                ELSE
  2663                    MOVE 'N' TO WS-RS-Processing-PICTURE-CHR
  2664                    MOVE SPACE TO WS-Token-Type-CD
  2665                    EXIT SECTION
  2666                END-IF
  2667            END-IF
  2668            UNSTRING F-Expanded-Src-REC
  2669                DELIMITED BY '. ' OR ' ' OR '=' OR '(' OR ')' OR '*'
  2670                                 OR '/' OR '&' OR ';' OR ',' OR '<'
  2671                                 OR '>' OR ':'
  2672                INTO WS-Token-Curr-TXT
  2673                DELIMITER IN WS-Delim-TXT
  2674                WITH POINTER WS-Src-SUB
  2675            IF WS-Delim-TXT = '. '
  2676                MOVE 'Y' TO WS-RS-Token-Ended-Sentence-CHR
  2677            END-IF
  2678            IF WS-Delim-TXT NOT = '. ' AND ' '
  2679                SUBTRACT 1 FROM WS-Src-SUB
  2680            END-IF
  2681     *>-- Classify Token
  2682            MOVE UPPER-CASE(WS-Token-Curr-TXT) TO WS-Token-Search-TXT
  2683            IF WS-Token-Search-TXT = 'EQUAL' OR 'EQUALS'
  2684                MOVE 'EQUALS' TO WS-Token-Curr-TXT
  2685                MOVE 'K'      TO WS-Token-Type-CD
  2686                EXIT SECTION
  2687            END-IF
  2688            SEARCH ALL WS-Reserved-Word-TXT
  2689                WHEN WS-RW-Word-TXT (WS-RW-IDX) = WS-Token-Search-TXT
  2690                    MOVE WS-RW-Type-CD (WS-RW-IDX) TO WS-Token-Type-CD
  2691 GC0710             IF WS-TT-Token-Is-Verb-BOOL
  2692 GC0710                 MOVE 'Y' TO WS-RS-Verb-Has-Been-Found-CHR
  2693 GC0710             END-IF
  2694                    EXIT SECTION
  2695            END-SEARCH
  2696     *>-- Not a reserved word, must be a user name
  2697            SET WS-TT-Token-Is-Identifier-BOOL TO TRUE
  2698            PERFORM 313-Check-For-Numeric-Token
  2699            IF WS-TT-Token-Is-Lit-Number-BOOL
  2700                IF  (WS-RS-Last-Token-Ended-Sent-CHR = 'Y')
  2701                AND (WS-Curr-Division-TXT = 'D')
  2702                    MOVE 'LEVEL #' TO WS-Token-Curr-TXT
  2703                    MOVE 'K'       TO WS-Token-Type-CD
  2704                    EXIT SECTION
  2705                ELSE
  2706                    EXIT SECTION
  2707                END-IF
  2708            END-IF
====================================================================================================
GCic for UNIX/Linux Copyright (C) 2009-2018, Gary L. Cutler, GPL                    Page: 61
```

```
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                                      /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                      Page: 62
====== =================================================================================
  2709              .
```

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

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                    2017/12/24
                                          /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                           Page: 64
====== =================================================================================

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

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

====== ========================================================================================

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

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

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                    2017/12/24
                                           /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                           Page: 68
======  =============================================================================

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

```
GNUCOBOL 3.0 24DEC2017   Source Listing                                    2017/12/24
                                             /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                            Page: 69
====== =====================================================================================
  2908              EXIT SECTION
  2909          END-IF
  2910          .
```

====== ==================================================================================

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

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```
GNUCOBOL 3.0 24DEC2017  Source Listing                                       2017/12/24
                                              /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                               Page: 71
====== =======================================================================================
  2964            WHEN 'PERFORM'
  2965                PERFORM 351-PERFORM
  2966            WHEN 'SET'
  2967                PERFORM 351-SET
  2968            WHEN 'STRING'
  2969                PERFORM 351-STRING
  2970            WHEN 'SUBTRACT'
  2971                PERFORM 351-SUBTRACT
  2972 GC1213     WHEN 'TERMINATE'
  2973 GC1213         PERFORM 351-GENERATE
  2974            WHEN 'TRANSFORM'
  2975                PERFORM 351-TRANSFORM
  2976            WHEN 'UNSTRING'
  2977                PERFORM 351-UNSTRING
  2978            WHEN OTHER
  2979                PERFORM 361-Release-Ref
  2980            END-EVALUATE
  2981            .
```

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

================================================================================================

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

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

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```
 3141                  PERFORM 361-Release-Ref
 3142              END-EVALUATE
 3143                  .
 3144
 3145          351-SET SECTION.
 3146              EVALUATE WS-Token-Prev-TXT
 3147              WHEN 'SET'
 3148                  PERFORM 362-Release-Upd
 3149              WHEN OTHER
 3150                  PERFORM 361-Release-Ref
 3151              END-EVALUATE
 3152                  .
 3153
 3154          351-STRING SECTION.
 3155              EVALUATE WS-Token-Prev-TXT
 3156              WHEN 'INTO'
 3157                  PERFORM 362-Release-Upd
 3158              WHEN 'POINTER'
 3159                  PERFORM 362-Release-Upd
 3160              WHEN OTHER
 3161                  PERFORM 361-Release-Ref
 3162              END-EVALUATE
 3163                  .
 3164
 3165          351-SUBTRACT SECTION.
 3166              EVALUATE WS-Token-Prev-TXT
 3167              WHEN 'GIVING'
 3168                  PERFORM 362-Release-Upd
 3169              WHEN 'FROM'
 3170                  PERFORM 362-Release-Upd
 3171              WHEN OTHER
 3172                  PERFORM 361-Release-Ref
 3173              END-EVALUATE
 3174                  .
 3175
 3176 GC1213 351-TERMINATE SECTION.
 3177 GC1213     PERFORM 362-Release-Upd
 3178 GC1213         .
 3179
 3180          351-TRANSFORM SECTION.
 3181              EVALUATE WS-Token-Prev-TXT
 3182              WHEN 'TRANSFORM'
 3183                  PERFORM 362-Release-Upd
 3184                  MOVE SPACES TO WS-Token-Prev-TXT
 3185              WHEN OTHER
 3186                  PERFORM 361-Release-Ref
 3187              END-EVALUATE
 3188                  .
 3189
 3190          351-UNSTRING SECTION.
 3191              EVALUATE WS-Token-Prev-TXT
 3192              WHEN 'INTO'
 3193                  PERFORM 362-Release-Upd
```
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```
GNUCOBOL 3.0 24DEC2017  Source Listing                                        2017/12/24
                                             /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                                Page: 76
======  =========================================================================================
 3194          WHEN 'DELIMITER'
 3195              PERFORM 362-Release-Upd
 3196          WHEN 'COUNT'
 3197              PERFORM 362-Release-Upd
 3198          WHEN 'POINTER'
 3199              PERFORM 362-Release-Upd
 3200          WHEN 'TALLYING'
 3201              PERFORM 362-Release-Upd
 3202          WHEN OTHER
 3203              PERFORM 361-Release-Ref
 3204          END-EVALUATE
 3205          .
 3206
 3207      360-Release-Def SECTION.
 3208          MOVE SPACES               TO F-Sort-Work-REC
 3209          MOVE WS-Curr-Prog-ID-TXT   TO F-SW-Prog-ID-TXT
 3210          MOVE WS-Token-Curr-Uc-TXT  TO F-SW-Token-Uc-TXT
 3211          MOVE WS-Token-Curr-TXT     TO F-SW-Token-TXT
 3212          MOVE WS-Curr-Section-TXT   TO F-SW-Section-TXT
 3213          MOVE WS-Curr-Line-NUM      TO F-SW-Def-Line-NUM
 3214          MOVE 0                     TO F-SW-Ref-Line-NUM
 3215          RELEASE F-Sort-Work-REC
 3216          .
 3217
 3218      361-Release-Ref SECTION.
 3219          PERFORM 364-Set-Ref
 3220          RELEASE F-Sort-Work-REC
 3221          .
 3222
 3223      362-Release-Upd SECTION.
 3224          PERFORM 363-Set-Upd
 3225          RELEASE F-Sort-Work-REC
 3226          .
 3227
 3228      363-Set-Upd SECTION.
 3229          MOVE SPACES               TO F-Sort-Work-REC
 3230          MOVE WS-Curr-Prog-ID-TXT   TO F-SW-Prog-ID-TXT
 3231          MOVE WS-Token-Curr-Uc-TXT  TO F-SW-Token-Uc-TXT
 3232          MOVE WS-Token-Curr-TXT     TO F-SW-Token-TXT
 3233          MOVE WS-Curr-Section-TXT   TO F-SW-Section-TXT
 3234          MOVE WS-Curr-Line-NUM      TO F-SW-Ref-Line-NUM
 3235          MOVE '*'                   TO F-SW-Ref-Flag-CHR
 3236          .
 3237
 3238      364-Set-Ref SECTION.
 3239          MOVE SPACES               TO F-Sort-Work-REC
 3240          MOVE WS-Curr-Prog-ID-TXT   TO F-SW-Prog-ID-TXT
 3241          MOVE WS-Token-Curr-Uc-TXT  TO F-SW-Token-Uc-TXT
 3242          MOVE WS-Token-Curr-TXT     TO F-SW-Token-TXT
 3243          MOVE WS-Curr-Section-TXT   TO F-SW-Section-TXT
 3244          MOVE WS-Curr-Line-NUM      TO F-SW-Ref-Line-NUM
 3245          .
 3246
=========================================================================================
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```

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                    2017/12/24
                                             /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                            Page: 77
====== =====================================================================================
 3247 GC1213 365-Release-Arg SECTION.
 3248 GC1213     PERFORM 366-Set-Arg
 3249 GC1213     RELEASE F-Sort-Work-REC
 3250 GC1213     .
 3251
 3252 GC1213 366-Set-Arg SECTION.
 3253 GC1213     MOVE SPACES                TO F-Sort-Work-REC
 3254 GC1213     MOVE WS-Curr-Prog-ID-TXT   TO F-SW-Prog-ID-TXT
 3255 GC1213     MOVE WS-Token-Curr-Uc-TXT  TO F-SW-Token-Uc-TXT
 3256 GC1213     MOVE WS-Token-Curr-TXT     TO F-SW-Token-TXT
 3257 GC1213     MOVE WS-Curr-Section-TXT   TO F-SW-Section-TXT
 3258 GC1213     MOVE WS-Curr-Line-NUM      TO F-SW-Ref-Line-NUM
 3259 GC1213     MOVE 'C'                   TO F-SW-Ref-Flag-CHR
 3260 GC1213     .
 3261
```

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```

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                    2017/12/24
                                              /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                              Page: 78
======  ==================================================================================

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

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```
GNUCOBOL 3.0 24DEC2017  Source Listing                                    2017/12/24
                                      /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line   Statement                                                            Page: 79
====== ==============================================================================
  3315 GC0710        END-IF
  3316               IF WS-Xref-Detail-Line-TXT = SPACES
  3317                   MOVE F-SW-Prog-ID-TXT TO WS-XDL-Prog-ID-TXT
  3318                   MOVE F-SW-Token-TXT TO WS-XDL-Token-TXT
  3319                   MOVE F-SW-Section-TXT TO WS-XDL-Section-TXT
  3320                   IF F-SW-Def-Line-NUM NOT = SPACES
  3321                       MOVE F-SW-Def-Line-NUM TO WS-XDL-Def-Line-NUM
  3322                   END-IF
  3323               END-IF
  3324               IF F-SW-Reference-TXT > '000000'
  3325                   ADD 1 TO WS-I-SUB
  3326                   IF WS-I-SUB > WS-Xref-Lines-Per-Rec-NUM
  3327                       PERFORM 410-Generate-Report-Line
  3328                       MOVE 1 TO WS-I-SUB
  3329                   END-IF
  3330                   MOVE F-SW-Ref-Line-NUM
  3331                     TO WS-XDL-Ref-Line-NUM (WS-I-SUB)
  3332                   MOVE F-SW-Ref-Flag-CHR
  3333                     TO WS-XDL-Ref-Flag-CHR (WS-I-SUB)
  3334               END-IF
  3335           END-PERFORM
  3336           IF WS-Xref-Detail-Line-TXT NOT = SPACES
  3337               PERFORM 410-Generate-Report-Line
  3338           END-IF
  3339               .
```

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                      2017/12/24
                                            /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                             Page: 80
======  ====================================================================================

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

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```
GNUCOBOL 3.0 24DEC2017  Source Listing                                    2017/12/24
                                            /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                              Page: 81
======  ========================================================================================
  3393 GC1213                      F-Listing-96-REC(72:1)
  3394 GC1213           WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #4
  3395 GC1213         END-IF
  3396 GC1213         COMPUTE WS-Lines-Left-NUM = WS-Lines-Per-Page-NUM - 4
  3397              END-IF
  3398 GC1213     IF L-Listing-CD = 1 *> LANDSCAPE
  3399 GC1213         WRITE F-Listing-135-REC FROM WS-Xref-Detail-Line-TXT
  3400 GC1213             BEFORE 1
  3401 GC1213     ELSE              *> PORTRAIT
  3402 GC1213         WRITE F-Listing-96-REC FROM WS-Xref-Detail-Line-TXT
  3403 GC1213             BEFORE 1
  3404 GC1213     END-IF
  3405              MOVE SPACES TO WS-Xref-Detail-Line-TXT
  3406              MOVE 0 TO WS-I-SUB
  3407              SUBTRACT 1 FROM WS-Lines-Left-NUM
  3408                  .
  3409 GC1213 420-Generate-Xref-Footer SECTION.
  3410 GC1213     IF L-Listing-CD = 1 *> LANDSCAPE
  3411 GC1213         WRITE F-Listing-135-REC FROM SPACES BEFORE 1 *> Footer Line #1
  3412 GC1213         MOVE ALL '='
  3413 GC1213           TO F-Listing-135-REC
  3414 GC1213         WRITE F-Listing-135-REC BEFORE 1 *> Footer Line #2
  3415 GC1213         MOVE WS-Copyright-TXT
  3416 GC1213           TO F-Listing-135-REC
  3417 GC1213         MOVE WS-Page-No-TXT
  3418 GC1213           TO F-Listing-135-REC(126:10)
  3419 GC1213         IF WS-Suppress-FF-CHR = 'Y'
  3420 GC1213            WRITE F-Listing-135-REC BEFORE 1 *> Footer Line #3
  3421 GC1213         ELSE
  3422 GC1213            WRITE F-Listing-135-REC BEFORE PAGE *> Footer Line #3
  3423 GC1213            WRITE F-Listing-135-REC FROM SPACES BEFORE 1 *> Spaces After FF Charac
       ter
  3424 GC1213         END-IF
  3425 GC1213     ELSE              *> PORTRAIT
  3426 GC1213         WRITE F-Listing-96-REC FROM SPACES BEFORE 1 *> Footer Line #1
  3427 GC1213         MOVE ALL '='
  3428 GC1213           TO F-Listing-96-REC
  3429 GC1213         WRITE F-Listing-96-REC BEFORE 1 *> Footer Line #2
  3430 GC1213         MOVE WS-Copyright-TXT
  3431 GC1213           TO F-Listing-96-REC
  3432 GC1213         MOVE WS-Page-No-TXT
  3433 GC1213           TO F-Listing-96-REC(87:10)
  3434 GC1213         IF WS-Suppress-FF-CHR = 'Y'
  3435 GC1213            WRITE F-Listing-96-REC BEFORE 1 *> Footer Line #3
  3436 GC1213         ELSE
  3437 GC1213            WRITE F-Listing-96-REC BEFORE PAGE *> Footer Line #3
  3438 GC1213            WRITE F-Listing-96-REC FROM SPACES BEFORE 1 *> Spaces After FF Charact
       er
  3439 GC1213         END-IF
  3440 GC1213     END-IF
  3441 GC1213         .


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

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

```
  3483          520-Expanded-Src-Record SECTION.
  3484              IF WS-RS-In-Main-Module-BOOL
  3485                  ADD 1 To WS-Curr-Line-NUM
  3486 GC0712          READ F-Original-Src-FILE AT END CONTINUE END-READ
  3487                  ADD 1 TO WS-Src-Line-NUM
  3488                  MOVE SPACES TO WS-Src-Detail-Line-TXT
  3489                  MOVE WS-Src-Line-NUM TO WS-SDL-Line-NUM
  3490 GC1213          MOVE F-Original-Src-REC TO WS-SDL-Statement-TXT
  3491 GC0712          MOVE LOWER-CASE(TRIM(F-OS-8-72-TXT,LEADING))
  3492 GC0712            TO WS-Temp-65-Chars-TXT
  3493 GC0712          INSPECT WS-Temp-65-Chars-TXT REPLACING ALL '.' BY SPACE
  3494 GC0712          EVALUATE TRUE
  3495 GC0712              WHEN F-OS-7-CHR = '/'
  3496 GC1213                  MOVE SPACES TO WS-Src-Detail-Line-TXT
  3497 GC1213                  PERFORM 530-Generate-Source-Line
  3498 GC1213                      UNTIL WS-Lines-Left-NUM = 0
  3499 GC0712              WHEN WS-Temp-65-Chars-TXT = "eject"
  3500 GC1213                  MOVE SPACES TO WS-Src-Detail-Line-TXT
  3501 GC1213                  PERFORM 530-Generate-Source-Line
  3502 GC1213                      UNTIL WS-Lines-Left-NUM = 0
  3503 GC0712                  EXIT SECTION
  3504 GC0712              WHEN WS-Temp-65-Chars-TXT = "skip1"
  3505 GC0712                  MOVE SPACES TO WS-Src-Detail-Line-TXT
  3506 GC0712                  PERFORM 530-Generate-Source-Line
  3507 GC0712                  EXIT SECTION
  3508 GC0712              WHEN WS-Temp-65-Chars-TXT = "skip2"
  3509 GC0712                  MOVE SPACES TO WS-Src-Detail-Line-TXT
  3510 GC0712                  PERFORM 530-Generate-Source-Line 2 TIMES
  3511 GC0712                  EXIT SECTION
  3512 GC0712              WHEN WS-Temp-65-Chars-TXT = "skip3"
  3513 GC0712                  MOVE SPACES TO WS-Src-Detail-Line-TXT
  3514 GC0712                  PERFORM 530-Generate-Source-Line 3 TIMES
  3515 GC0712                  EXIT SECTION
  3516 GC0712          END-EVALUATE
  3517                  PERFORM 530-Generate-Source-Line
  3518              ELSE
  3519                  IF F-Expanded-Src-REC NOT = SPACES
  3520                      MOVE SPACES TO WS-Src-Detail-Line-TXT
  3521 GC1213              MOVE F-Expanded-Src-REC
  3522                        TO WS-SDL-Statement-TXT
  3523 GC0712              MOVE LOWER-CASE(TRIM(F-OS-8-72-TXT,LEADING))
  3524 GC0712                TO WS-Temp-65-Chars-TXT
  3525 GC0712              INSPECT WS-Temp-65-Chars-TXT
  3526 GC0712                  REPLACING ALL '.' BY SPACE
  3527 GC0712              EVALUATE TRUE
  3528 GC0712                  WHEN WS-Temp-65-Chars-TXT = "eject"
  3529 GC0712                      MOVE 0 TO WS-Lines-Left-NUM
  3530 GC0712                      EXIT SECTION
  3531 GC0712                  WHEN WS-Temp-65-Chars-TXT = "skip1"
  3532 GC0712                      MOVE SPACES TO WS-Src-Detail-Line-TXT
  3533 GC0712                      PERFORM 530-Generate-Source-Line
  3534 GC0712                      EXIT SECTION
```

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                     2017/12/24
                                          /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                         Page: 85
====== ================================================================================
  3535 GC0712                 WHEN WS-Temp-65-Chars-TXT = "skip2"
  3536 GC0712                     MOVE SPACES TO WS-Src-Detail-Line-TXT
  3537 GC0712                     PERFORM 530-Generate-Source-Line 2 TIMES
  3538 GC0712                     EXIT SECTION
  3539 GC0712                 WHEN WS-Temp-65-Chars-TXT = "skip3"
  3540 GC0712                     MOVE SPACES TO WS-Src-Detail-Line-TXT
  3541 GC0712                     PERFORM 530-Generate-Source-Line 3 TIMES
  3542 GC0712                     EXIT SECTION
  3543 GC0712             END-EVALUATE
  3544                     PERFORM 530-Generate-Source-Line
  3545                 END-IF
  3546             END-IF
  3547                 .
```

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```

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                    2017/12/24
                                          /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                             Page: 86
======  ===================================================================================

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

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```

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                        2017/12/24
                                            /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                             Page: 87
======  ================================================================================
  3599 GC1213          END-IF
  3600 GC1213         END-IF
  3601 GC1213         ADD  1         TO WS-Page-NUM
  3602 GC1213         MOVE 'Page:'   TO WS-PN-Literal-TXT
  3603 GC1213         MOVE WS-Page-NUM TO WS-PN-Page-NUM
  3604 GC1213         CALL 'C$JUSTIFY' USING WS-PN-Page-NUM, 'Left'
  3605 GC1213         CALL 'C$JUSTIFY' USING WS-Page-No-TXT, 'Right'
  3606 GC1213         IF L-Listing-CD = 1 *> LANDSCAPE
  3607 GC1213            MOVE WS-Version-TXT
  3608 GC1213              TO F-Listing-135-REC
  3609 GC1213            MOVE 'Source Listing'
  3610 GC1213              TO F-Listing-135-REC(25:14)
  3611 GC1213            MOVE WS-Formatted-DT
  3612 GC1213              TO F-Listing-135-REC(126:10)
  3613 GC1213            WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #1
  3614 GC1213            MOVE WS-Program-Path-TXT
  3615 GC1213              TO F-Listing-135-REC
  3616 GC1213            WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #2
  3617 GC1213            MOVE 'Line   Statement'
  3618 GC1213              TO F-Listing-135-REC
  3619 GC1213            MOVE WS-Page-No-TXT
  3620 GC1213              TO F-Listing-135-REC(126:10)
  3621 GC1213            WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #3
  3622 GC1213            MOVE WS-Src-Dashes-TXT
  3623 GC1213              TO F-Listing-135-REC
  3624 GC1213            WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #4
  3625 GC1213         ELSE                *> PORTRAIT
  3626 GC1213            MOVE WS-Version-TXT
  3627 GC1213              TO F-Listing-96-REC
  3628 GC1213            MOVE 'Source Listing'
  3629 GC1213              TO F-Listing-96-REC(25:14)
  3630 GC1213            MOVE WS-Formatted-DT
  3631 GC1213              TO F-Listing-96-REC(87:10)
  3632 GC1213            WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #1
  3633 GC1213            MOVE WS-Program-Path-TXT(40:96)
  3634 GC1213              TO F-Listing-96-REC
  3635 GC1213            WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #2
  3636 GC1213            MOVE 'Line   Statement'
  3637 GC1213              TO F-Listing-96-REC
  3638 GC1213            MOVE WS-Page-No-TXT
  3639 GC1213              TO F-Listing-96-REC(87:10)
  3640 GC1213            WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #3
  3641 GC1213            MOVE WS-Src-Dashes-TXT
  3642 GC1213              TO F-Listing-96-REC
  3643 GC1213            WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #4
  3644 GC1213         END-IF
  3645 GC1213         COMPUTE WS-Lines-Left-NUM = WS-Lines-Per-Page-NUM - 4
  3646 GC1213       END-IF
  3647 GC1213       IF L-Listing-CD = 1 *> LANDSCAPE
  3648 GC1213          EVALUATE WS-Src-Lines-NUM
  3649 GC1213          WHEN 1
  3650 GC1213             MOVE WS-Src-Detail-Line-TXT TO F-Listing-135-REC
  3651 GC1213             WRITE F-Listing-96-REC BEFORE 1
======  ================================================================================
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```

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                    2017/12/24
                                             /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                            Page: 88
======  =================================================================================
  3652 GC1213          SUBTRACT 1 FROM WS-Lines-Left-NUM
  3653 GC1213        WHEN 2
  3654 GC1213            MOVE WS-SDL-Statement-TXT TO WS-Src-Hold-TXT
  3655 GC1213            MOVE WS-Src-Detail-Line-TXT TO F-Listing-135-REC
  3656 GC1213            WRITE F-Listing-135-REC BEFORE 1 *> Prints chars 1-128 of stmnt
  3657 GC1213            MOVE SPACES TO WS-Src-Detail-Line-TXT
  3658 GC1213            MOVE WS-Src-Hold-TXT(129:128) TO WS-SDL-Statement-TXT
  3659 GC1213            MOVE WS-Src-Detail-Line-TXT TO F-Listing-135-REC
  3660 GC1213            WRITE F-Listing-135-REC BEFORE 1 *> Prints chars 129-256 of stmnt
  3661 GC1213            SUBTRACT 2 FROM WS-Lines-Left-NUM
  3662 GC1213        END-EVALUATE
  3663 GC1213      ELSE                *> PORTRAIT
  3664 GC1213        EVALUATE WS-Src-Lines-NUM
  3665 GC1213        WHEN 1 *> Print only chars 1-89 of stmnt
  3666 GC1213            WRITE F-Listing-96-REC FROM WS-Src-Detail-Line-TXT
  3667 GC1213                BEFORE 1
  3668 GC1213            SUBTRACT 1 FROM WS-Lines-Left-NUM
  3669 GC1213        WHEN 2 *> Print only chars 1-89 and 90-178 of text
  3670 GC1213            MOVE WS-SDL-Statement-TXT TO WS-Src-Hold-TXT
  3671 GC1213            WRITE F-Listing-96-REC FROM WS-Src-Detail-Line-TXT
  3672 GC1213                BEFORE 1
  3673 GC1213            MOVE SPACES TO WS-Src-Detail-Line-TXT
  3674 GC1213            MOVE WS-Src-Hold-TXT(90:89) TO WS-SDL-Statement-TXT
  3675 GC1213            WRITE F-Listing-96-REC FROM WS-Src-Detail-Line-TXT
  3676 GC1213                BEFORE 1
  3677 GC1213            SUBTRACT 2 FROM WS-Lines-Left-NUM
  3678 GC1213        WHEN 3 *> Print chars 1-89, 90-178 and 179-256 of stmnt
  3679 GC1213            MOVE WS-SDL-Statement-TXT TO WS-Src-Hold-TXT
  3680 GC1213            WRITE F-Listing-96-REC FROM WS-Src-Detail-Line-TXT
  3681 GC1213                BEFORE 1
  3682 GC1213            MOVE SPACES TO WS-Src-Detail-Line-TXT
  3683 GC1213            MOVE WS-Src-Hold-TXT(90:89) TO WS-SDL-Statement-TXT
  3684 GC1213            WRITE F-Listing-96-REC FROM WS-Src-Detail-Line-TXT
  3685 GC1213                BEFORE 1
  3686 GC1213            MOVE SPACES TO WS-Src-Detail-Line-TXT
  3687 GC1213            MOVE WS-Src-Hold-TXT(179:78) TO WS-SDL-Statement-TXT
  3688 GC1213            WRITE F-Listing-96-REC FROM WS-Src-Detail-Line-TXT
  3689 GC1213                BEFORE 1
  3690 GC1213            SUBTRACT 3 FROM WS-Lines-Left-NUM
  3691 GC1213        END-EVALUATE
  3692 GC1213      END-IF
  3693          MOVE SPACES TO WS-Src-Detail-Line-TXT
  3694          .
  3695
  3696      END PROGRAM LISTING.
```

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

```
GNUCOBOL 3.0 24DEC2017  Cross-Reference Listing                      2017/12/24
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
PROGRAM-ID      Identifier/Register/Function    Defn   Where Defined   References      Page: 89
==============  ===============================  ======  ==============  ========================
CHECKSRC        000-Main                         1318 PROCEDURE
CHECKSRC        L-A1-CHR                         1308 LINKAGE         1320    1332    1335
                                                                     1342
CHECKSRC        L-A2-IDENT-DIVISION-BOOL         1313 LINKAGE         1364*
CHECKSRC        L-A2-LINKAGE-SECTION-BOOL        1312 LINKAGE         1358*
CHECKSRC        L-A2-Nothing-Special-BOOL        1314 LINKAGE         1319*
CHECKSRC        L-Argument-1-TXT                 1307 LINKAGE         1316
CHECKSRC        L-Argument-2-CHR                 1311 LINKAGE         1317
CHECKSRC        WS-Compressed-Src-TXT            1294 WORKING-STORAGE 1329*   1352    1356
                                                                     1362
CHECKSRC        WS-CS-CHR                        1295 WORKING-STORAGE 1336*   1342*   1351
                                                                     1355    1361
CHECKSRC        WS-I-SUB                         1303 WORKING-STORAGE 1330*   1331    1332
                                                                     1335    1342    1348*
                                                                     1349    1351    1352
                                                                     1355    1355    1356
                                                                     1361    1361    1362
CHECKSRC        WS-J-SUB                         1305 WORKING-STORAGE 1328*   1334*   1336
                                                                     1341*   1342
CHECKSRC        WS-RS-Found-SPACE-CHR            1299 WORKING-STORAGE
CHECKSRC        WS-RS-Not-Skipping-SPACE-BOOL    1301 WORKING-STORAGE 1327*   1333    1340*
CHECKSRC        WS-RS-Skipping-SPACE-BOOL        1300 WORKING-STORAGE 1337*
CHECKSRC        WS-Runtime-Switches-TXT          1298 WORKING-STORAGE
```

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```

```
GNUCOBOL 3.0 24DEC2017  Cross-Reference Listing                          2017/12/24
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
PROGRAM-ID      Identifier/Register/Function   Defn   Where Defined    References      Page: 90
==============  =============================== ======  ==============  =========================
GCic            000-File-Error                  657 PROCEDURE
GCic            000-Main                        678 PROCEDURE
GCic            100-Initialization              702 PROCEDURE              679
GCic            200-Let-User-Set-Switches       816 PROCEDURE              682
GCic            210-Run-Compiler                907 PROCEDURE              683
GCic            220-Make-Listing               1043 PROCEDURE              687
GCic            230-Run-Program                1074 PROCEDURE              691
GCic            240-Find-LINKAGE-SECTION       1176 PROCEDURE              750
GCic            250-Autoload-Listing           1215 PROCEDURE              693     1034     1068
GCic            900-Terminate                  1261 PROCEDURE              695      744      887
                                                                         1035     1169
GCic            COB-COLOR-BLACK                 181 [screenio    ]        442      447      537
                                                                          547      557      562
                                                                          572      579      594
                                                                          609      625      632
                                                                          639
GCic            COB-COLOR-BLUE                  181 [screenio    ]        525
GCic            COB-COLOR-CYAN                  181 [screenio    ]        538
GCic            COB-COLOR-GREEN                 181 [screenio    ]        448      563      610
                                                                          626
GCic            COB-COLOR-MAGENTA               181 [screenio    ]
GCic            COB-COLOR-RED                   181 [screenio    ]        531      595
GCic            COB-COLOR-WHITE                 181 [screenio    ]        443      526      532
                                                                          548      558      573
                                                                          580      633      640
GCic            COB-COLOR-YELLOW                181 [screenio    ]
GCic            COB-SCR-BACK-TAB                181 [screenio    ]
GCic            COB-SCR-BACKSPACE               181 [screenio    ]
GCic            COB-SCR-DELETE                  181 [screenio    ]
GCic            COB-SCR-ESC                     181 [screenio    ]        886
GCic            COB-SCR-F1                      181 [screenio    ]        833
GCic            COB-SCR-F10                     181 [screenio    ]
GCic            COB-SCR-F11                     181 [screenio    ]
GCic            COB-SCR-F12                     181 [screenio    ]        889
GCic            COB-SCR-F13                     181 [screenio    ]
GCic            COB-SCR-F14                     181 [screenio    ]
GCic            COB-SCR-F15                     181 [screenio    ]
GCic            COB-SCR-F16                     181 [screenio    ]
GCic            COB-SCR-F17                     181 [screenio    ]
GCic            COB-SCR-F18                     181 [screenio    ]
GCic            COB-SCR-F19                     181 [screenio    ]
GCic            COB-SCR-F2                      181 [screenio    ]        839
GCic            COB-SCR-F20                     181 [screenio    ]
GCic            COB-SCR-F21                     181 [screenio    ]
GCic            COB-SCR-F22                     181 [screenio    ]
GCic            COB-SCR-F23                     181 [screenio    ]
GCic            COB-SCR-F24                     181 [screenio    ]
GCic            COB-SCR-F25                     181 [screenio    ]
GCic            COB-SCR-F26                     181 [screenio    ]
GCic            COB-SCR-F27                     181 [screenio    ]
GCic            COB-SCR-F28                     181 [screenio    ]
GCic            COB-SCR-F29                     181 [screenio    ]
GCic            COB-SCR-F3                      181 [screenio    ]        845

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GNUCOBOL 3.0 24DEC2017  Cross-Reference Listing                          2017/12/24
                                            /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
PROGRAM-ID      Identifier/Register/Function   Defn   Where Defined   References     Page: 91
==============  =============================   ======  ==============  ========================
GCic            COB-SCR-F30                      181 [screenio     ]
GCic            COB-SCR-F31                      181 [screenio     ]
GCic            COB-SCR-F32                      181 [screenio     ]
GCic            COB-SCR-F33                      181 [screenio     ]
GCic            COB-SCR-F34                      181 [screenio     ]
GCic            COB-SCR-F35                      181 [screenio     ]
GCic            COB-SCR-F36                      181 [screenio     ]
GCic            COB-SCR-F37                      181 [screenio     ]
GCic            COB-SCR-F38                      181 [screenio     ]
GCic            COB-SCR-F39                      181 [screenio     ]
GCic            COB-SCR-F4                       181 [screenio     ]     851
GCic            COB-SCR-F40                      181 [screenio     ]
GCic            COB-SCR-F41                      181 [screenio     ]
GCic            COB-SCR-F42                      181 [screenio     ]
GCic            COB-SCR-F43                      181 [screenio     ]
GCic            COB-SCR-F44                      181 [screenio     ]
GCic            COB-SCR-F45                      181 [screenio     ]
GCic            COB-SCR-F46                      181 [screenio     ]
GCic            COB-SCR-F47                      181 [screenio     ]
GCic            COB-SCR-F48                      181 [screenio     ]
GCic            COB-SCR-F49                      181 [screenio     ]
GCic            COB-SCR-F5                       181 [screenio     ]     857
GCic            COB-SCR-F50                      181 [screenio     ]
GCic            COB-SCR-F51                      181 [screenio     ]
GCic            COB-SCR-F52                      181 [screenio     ]
GCic            COB-SCR-F53                      181 [screenio     ]
GCic            COB-SCR-F54                      181 [screenio     ]
GCic            COB-SCR-F55                      181 [screenio     ]
GCic            COB-SCR-F56                      181 [screenio     ]
GCic            COB-SCR-F57                      181 [screenio     ]
GCic            COB-SCR-F58                      181 [screenio     ]
GCic            COB-SCR-F59                      181 [screenio     ]
GCic            COB-SCR-F6                       181 [screenio     ]     862
GCic            COB-SCR-F60                      181 [screenio     ]
GCic            COB-SCR-F61                      181 [screenio     ]
GCic            COB-SCR-F62                      181 [screenio     ]
GCic            COB-SCR-F63                      181 [screenio     ]
GCic            COB-SCR-F64                      181 [screenio     ]
GCic            COB-SCR-F7                       181 [screenio     ]     868
GCic            COB-SCR-F8                       181 [screenio     ]     874
GCic            COB-SCR-F9                       181 [screenio     ]     880
GCic            COB-SCR-FATAL                    181 [screenio     ]
GCic            COB-SCR-INSERT                   181 [screenio     ]
GCic            COB-SCR-KEY-DOWN                 181 [screenio     ]
GCic            COB-SCR-KEY-END                  181 [screenio     ]
GCic            COB-SCR-KEY-HOME                 181 [screenio     ]
GCic            COB-SCR-KEY-LEFT                 181 [screenio     ]
GCic            COB-SCR-KEY-RIGHT                181 [screenio     ]
GCic            COB-SCR-KEY-UP                   181 [screenio     ]
GCic            COB-SCR-KEY_DOWN                 181 [screenio     ]
GCic            COB-SCR-KEY_UP                   181 [screenio     ]
GCic            COB-SCR-MAX-FIELD                181 [screenio     ]
GCic            COB-SCR-NO-FIELD                 181 [screenio     ]

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```
GNUCOBOL 3.0 24DEC2017  Cross-Reference Listing                          2017/12/24
                                       /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
PROGRAM-ID      Identifier/Register/Function   Defn   Where Defined    References       Page: 92
==============  =============================== ====== =============== ========================
GCic            COB-SCR-OK                       181 [screenio    ]
GCic            COB-SCR-PAGE-DOWN                181 [screenio    ]
GCic            COB-SCR-PAGE-UP                  181 [screenio    ]
GCic            Cob-Scr-Page_Down                181 [screenio    ]
GCic            Cob-Scr-Page_Up                  181 [screenio    ]
GCic            COB-SCR-PRINT                    181 [screenio    ]
GCic            COB-SCR-TAB                      181 [screenio    ]
GCic            COB-SCR-TIME-OUT                 181 [screenio    ]
GCic            F-Cobc-Output-FILE               173 FILE              164     1011    1029
GCic            F-Cobc-Output-REC                174 FILE             1012    1017*    1018
                                                                      1026*    1027
GCic            F-Source-Code-FILE               176 FILE              167      658    1177
                                                                      1181     1182    1195
                                                                      1196     1203
GCic            F-Source-Code-REC                177 FILE             1186C    1200C
GCic            F1                                   WORKING-STORAGE   209
GCic            F12                                  WORKING-STORAGE   203
GCic            F2                                   WORKING-STORAGE   216
GCic            F3                                   WORKING-STORAGE   212
GCic            F4                                   WORKING-STORAGE   210
GCic            F5                                   WORKING-STORAGE   213      260
GCic            F6                                   WORKING-STORAGE   214
GCic            F7                                   WORKING-STORAGE   217
GCic            F8                                   WORKING-STORAGE   211
GCic            F9                                   WORKING-STORAGE   215
GCic            LD-Horiz-Line                    436 SCREEN            804
GCic            LD-LL-Corner                     431 SCREEN            459      489     505
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GCic            LD-Lower-T                       435 SCREEN            491
GCic            LD-LR-Corner                     433 SCREEN            461      493     507
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GCic            LD-UL-Corner                     430 SCREEN            449      463     495
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GCic            LD-Upper-T                       434 SCREEN            465
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GCic              WS-Cmd-Args-TXT                 232   WORKING-STORAGE 726*     728      729
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GCic              WS-Cmd-End-Quote-CHR            234   WORKING-STORAGE 730*     733
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GCic              WS-Compilation-Switches-TXT     183   WORKING-STORAGE
GCic              WS-Config-Fn-TXT                240   WORKING-STORAGE 914*     920
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GCic              WS-CS-Args-TXT                  184   WORKING-STORAGE 1157     1158
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GCic              WS-CS-DEBUG-CHR                 220   WORKING-STORAGE 596      834      835*
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GCic              WS-CS-EXECUTE-CHR               221   WORKING-STORAGE 599      689      852
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GCic              WS-CS-Extra-H1-TXT              206   WORKING-STORAGE 641*
GCic              WS-CS-Extra-H2-TXT              207   WORKING-STORAGE 642*
GCic              WS-CS-Extra-TXT                 205   WORKING-STORAGE 981      983
GCic              WS-CS-Filename-TXT              196   WORKING-STORAGE 635      913
GCic              WS-CS-Filenames-Table-TXT       195   WORKING-STORAGE
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GCic              WS-CS-FREE-CHR                  222   WORKING-STORAGE 604      875      876*
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GCic              WS-CS-LIBRARY-CHR               223   WORKING-STORAGE 598      846      847*
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GCic              WS-CS-LISTING-CHR               224   WORKING-STORAGE 600      685      822*
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GCic              WS-CS-NOFUNC-CHR                225   WORKING-STORAGE 602      863      864*

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GCic            WS-CS-WARNALL-CHR               228 WORKING-STORAGE    603     869     870*
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GCic            WS-File-Name-TXT                244 WORKING-STORAGE    167     666     671
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GCic            WS-FN-CHR                       245 WORKING-STORAGE    760     767*    771*
GCic            WS-FSM-Msg-TXT                  252 WORKING-STORAGE    661*    661*    661*
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GCic            WS-OS-UNIX-BOOL                 301  WORKING-STORAGE  1124
GCic            WS-OS-Windows-BOOL              299  WORKING-STORAGE  1217      1238
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GCic            WS-RS-Compile-OK-Warn-BOOL      331  WORKING-STORAGE  684
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LISTING         WS-Curr-Char-Is-X-BOOL          1467  WORKING-STORAGE  2623
LISTING         WS-Curr-Char-Is-Z-BOOL          1468  WORKING-STORAGE  2636
LISTING         WS-Curr-CHR                     1461  WORKING-STORAGE  2581*  2584   2586
                                                                       2592   2600   2606
                                                                       2613
LISTING         WS-Curr-Division-TXT            1470  WORKING-STORAGE  2506*  2542   2593
                                                                       2601   2701   2817*
                                                                       2836*  2862*  2918*
                                                                       2923*
LISTING         WS-Curr-Line-NUM                1476  WORKING-STORAGE  2505*  2565*  2724*
                                                                       2764*  3213   3234
                                                                       3244   3258   3485*
LISTING         WS-Curr-Prog-ID-TXT             1478  WORKING-STORAGE  2495*  2822*  3209
                                                                       3230   3240   3254
LISTING         WS-Curr-Section-TXT             1483  WORKING-STORAGE  2727*  2732   2841*
                                                                       2867*  2913   2914*
                                                                       3212   3233   3243
                                                                       3257
LISTING         WS-Curr-Verb-TXT                1490  WORKING-STORAGE  2496*  2520*  2544*
                                                                       2928   2937
LISTING         WS-Delim-TXT                    1492  WORKING-STORAGE  2653*  2655   2673*
                                                                       2675   2678
LISTING         WS-Dummy-TXT                    1494  WORKING-STORAGE  2471*  2716*  2745*
                                                                       2778*  2783*  2784
                                                                       3471*
LISTING         WS-Expanded-Src-Fn-TXT          1496  WORKING-STORAGE  1416   2476*  2477C
LISTING         WS-Filename-TXT                 1498  WORKING-STORAGE  2470*  2473   2744*
                                                                       2747
LISTING         WS-Flags-TXT                    1500  WORKING-STORAGE
LISTING         WS-Formatted-DT                 1503  WORKING-STORAGE  2494*  3354   3377
                                                                       3611   3630
LISTING         WS-GI-Prog-ID-TXT               1506  WORKING-STORAGE  3281   3287   3292*

==============================================================================================
GCic for UNIX/Linux Copyright (C) 2009-2018, Gary L. Cutler, GPL                 Page: 100
```

```
GNUCOBOL 3.0 24DEC2017  Cross-Reference Listing                            2017/12/24
                                           /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
PROGRAM-ID       Identifier/Register/Function   Defn   Where Defined   References        Page: 101
===============  ==============================  ======  ==============  ========================
LISTING          WS-GI-Token-TXT                 1507  WORKING-STORAGE  3282     3293*    3295
                                                                        3307
LISTING          WS-Group-Indicators-TXT         1505  WORKING-STORAGE  3265*
LISTING          WS-Held-Reference-TXT           1509  WORKING-STORAGE  2497*    2522     2523
                                                                        2524*    2559     2560
                                                                        2561*    3040*    3042
                                                                        3043     3044*    3081*
                                                                        3087     3088     3089*
                                                                        3095     3096     3097*
                                                                        3120*    3122     3123*
LISTING          WS-I-SUB                        1511  WORKING-STORAGE  2438*    2439     2440
                                                                        2442     2445*    2446
                                                                        2461*    2463     2464
                                                                        2465     2468     2721*
                                                                        2724     2735*    2737
                                                                        2738     2739     2742
                                                                        3266*    3300*    3312*
                                                                        3325*    3326     3328*
                                                                        3331     3333     3406*
LISTING          WS-J-SUB                        1513  WORKING-STORAGE  2462*    2466*    2468
                                                                        2736*    2740*    2742
LISTING          WS-Lines-Left-NUM               1515  WORKING-STORAGE  3267*    3276     3290
                                                                        3342     3396*    3407
                                                                        3451     3498     3502
                                                                        3529*    3563     3645*
                                                                        3652     3661     3668
                                                                        3677     3690
LISTING          WS-Lines-Per-Page-Env-TXT       1519  WORKING-STORAGE  2451*    2455*    2482
                                                                        2483
LISTING          WS-Lines-Per-Page-NUM           1517  WORKING-STORAGE  2484*    2487*    2489*
                                                                        2492     3396     3645
LISTING          WS-Main-Module-Name-TXT         1521  WORKING-STORAGE  2443*    2447*    2723
                                                                        3473
LISTING          WS-Next-Char-Is-Quote-BOOL      1524  WORKING-STORAGE  2623     2636
LISTING          WS-Next-CHR                     1523  WORKING-STORAGE  2583*    2626     2639
LISTING          WS-OS-Type-FILLER-TXT           1526  WORKING-STORAGE  1532
LISTING          WS-OS-Type-TXT                  1533  WORKING-STORAGE  2432
LISTING          WS-OS-Types-TXT                 1532  WORKING-STORAGE
LISTING          WS-Page-No-TXT                  1538  WORKING-STORAGE  3348C    3363     3386
                                                                        3417     3432     3575
                                                                        3595     3605C    3619
                                                                        3638
LISTING          WS-Page-NUM                     1536  WORKING-STORAGE  2428*    3344*    3346
                                                                        3564     3601*    3603
LISTING          WS-PN-Literal-TXT               1539  WORKING-STORAGE  3345*    3602*
LISTING          WS-PN-Page-NUM                  1540  WORKING-STORAGE  3346*    3347C    3603*
                                                                        3604C
LISTING          WS-Program-Path-TXT             1542  WORKING-STORAGE  2459*    2460C    3357
                                                                        3380     3614     3633
LISTING          WS-Reserved-Word-Table-TXT      2299  WORKING-STORAGE
LISTING          WS-Reserved-Word-TXT            2300  WORKING-STORAGE  2688
LISTING          WS-Reserved-Words-TXT           1544  WORKING-STORAGE  2299
LISTING          WS-RS-Duplicate-CHR             2308  WORKING-STORAGE  3268*    3283*    3298*

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```

```
GNUCOBOL 3.0 24DEC2017  Cross-Reference Listing                         2017/12/24
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
PROGRAM-ID      Identifier/Register/Function     Defn  Where Defined   References      Page: 102
==============  ==============================  ======  ==============  ========================
                                                        3309    3310*
LISTING         WS-RS-In-Copybook-BOOL            2311  WORKING-STORAGE 2730*   3479*
LISTING         WS-RS-In-Main-Module-BOOL         2310  WORKING-STORAGE 2725*   2763    3474*
                                                        3484
LISTING         WS-RS-In-Which-Pgm-CHR            2309  WORKING-STORAGE
LISTING         WS-RS-Last-Token-Ended-Sent-CHR   2312  WORKING-STORAGE 2554*   2700
LISTING         WS-RS-Processing-PICTURE-CHR      2313  WORKING-STORAGE 2649    2663*   2872*
LISTING         WS-RS-Token-Ended-Sentence-CHR    2314  WORKING-STORAGE 2541    2553    2555*
                                                        2588*   2617    2630*
                                                        2643*   2656    2676*
LISTING         WS-RS-Verb-Has-Been-Found-CHR     2315  WORKING-STORAGE 2507*   2692*   2814*
LISTING         WS-Runtime-Switches               2307  WORKING-STORAGE
LISTING         WS-RW-IDX                         2303  WORKING-STORAGE 2689    2690
LISTING         WS-RW-Type-CD                     2304  WORKING-STORAGE 2690
LISTING         WS-RW-Word-TXT                    2305  WORKING-STORAGE 2302    2689
LISTING         WS-Saved-Section-TXT              2317  WORKING-STORAGE 2726    2727    2731
                                                        2732*
LISTING         WS-SDL-Line-NUM                   2324  WORKING-STORAGE 3489*
LISTING         WS-SDL-Statement-TXT              2326  WORKING-STORAGE 3490*   3522*   3552
                                                        3556    3558    3654
                                                        3658*   3670    3674*
                                                        3679    3683*   3687*
LISTING         WS-Src-Dashes-TXT                 2319  WORKING-STORAGE 3622    3641
LISTING         WS-Src-Detail-Line-TXT            2323  WORKING-STORAGE 3449*   3488*   3496*
                                                        3500*   3505*   3509*
                                                        3513*   3520*   3532*
                                                        3536*   3540*   3650
                                                        3655    3657*   3659
                                                        3666    3671    3673*
                                                        3675    3680    3682*
                                                        3684    3686*   3688
                                                        3693*
LISTING         WS-Src-Hold-TXT                   2328  WORKING-STORAGE 3654*   3658    3670*
                                                        3674    3679*   3683
                                                        3687
LISTING         WS-Src-Line-NUM                   2330  WORKING-STORAGE 3446*   3475    3487*
                                                        3489
LISTING         WS-Src-Lines-NUM                  2332  WORKING-STORAGE 3550*   3553*   3557*
                                                        3559*   3563    3566
                                                        3580    3648    3664
LISTING         WS-Src-SUB                        2334  WORKING-STORAGE 2503*   2556    2557
                                                        2576*   2580    2582
                                                        2585*   2594*   2605*
                                                        2611*   2615    2616
                                                        2618*   2624*   2628*
                                                        2629    2631*   2637*
                                                        2641*   2642    2644*
                                                        2654*   2657*   2674*
                                                        2679    2754*   2759*
                                                        2761*
LISTING         WS-Suppress-FF-CHR                1501  WORKING-STORAGE 2429*   3277*   3419
                                                        3434
LISTING         WS-Tally-QTY                      2336  WORKING-STORAGE 2793*   2795*   2796

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```

```
GNUCOBOL 3.0 24DEC2017  Cross-Reference Listing                          2017/12/24
                                          /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
PROGRAM-ID       Identifier/Register/Function   Defn   Where Defined   References      Page: 103
===============  ==============================  ======  ===============  ========================
                                                                          2800*    2801
LISTING          WS-Temp-10-Chars-TXT            2338 WORKING-STORAGE   2714*    2718    2719*
                                                                          2721     3469*
LISTING          WS-Temp-256-Chars-TXT           2348 WORKING-STORAGE   2478C    2715*    2722
                                                                          2734     2737     2742
                                                                          3470*    3472
LISTING          WS-Temp-32-Chars-1-TXT          2340 WORKING-STORAGE   2769*    2772     2779
LISTING          WS-Temp-32-Chars-2-TXT          2342 WORKING-STORAGE   2776*    2781*    2787
                                                                          2788*    2804
LISTING          WS-Temp-32-Chars-3-TXT          2344 WORKING-STORAGE   2777*    2782*    2790
                                                                          2791*    2804
LISTING          WS-Temp-65-Chars-TXT            2346 WORKING-STORAGE   3492*    3499     3504
                                                                          3508     3512     3524*
                                                                          3528     3531     3535
                                                                          3539
LISTING          WS-Today-DT                     2350 WORKING-STORAGE   2493*    2494
LISTING          WS-Token-Curr-TXT               2352 WORKING-STORAGE   2513     2517*    2586*
                                                                          2595*    2606*    2614*
                                                                          2627*    2640*    2652*
                                                                          2659     2672*    2682
                                                                          2684*    2702*    2769
                                                                          2816     2822     2835
                                                                          2840     2861     2866
                                                                          2870     2904     2922
                                                                          3211     3232     3242
                                                                          3256
LISTING          WS-Token-Curr-Uc-TXT            2354 WORKING-STORAGE   2514*    2517     2520
                                                                          2539     2916     3210
                                                                          3231     3241     3255
LISTING          WS-Token-Prev-TXT               2356 WORKING-STORAGE   2521*    2539*    2543*
                                                                          2602*    2817     2820
                                                                          2821*    2836     2841
                                                                          2845     2862     2867
                                                                          2876     2877*    2881
                                                                          2884*    2887*    2890*
                                                                          2893*    2896*    2899*
                                                                          2902*    2917     2923
                                                                          2927     2931*    2984
                                                                          2987*    2994     3005
                                                                          3008*    3017     3028
                                                                          3037     3065     3078
                                                                          3082*    3085*    3093*
                                                                          3101*    3108     3117
                                                                          3133     3136*    3139*
                                                                          3146     3155     3166
                                                                          3181     3184*    3191
LISTING          WS-Token-Search-TXT             2358 WORKING-STORAGE   2682*    2683     2689
LISTING          WS-Token-Type-CD                2360 WORKING-STORAGE   2587*    2596*    2607*
                                                                          2660*    2664*    2685*
                                                                          2690*    2703*
LISTING          WS-TT-Token-Is-Argtype-BOOL     2361 WORKING-STORAGE   2811     2831     2857
LISTING          WS-TT-Token-Is-EOF-BOOL         2362 WORKING-STORAGE   2510     2564*
LISTING          WS-TT-Token-Is-Function-BOOL    2363 WORKING-STORAGE   2851

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

```
GNUCOBOL 3.0 24DEC2017  Cross-Reference Listing                         2017/12/24
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
PROGRAM-ID      Identifier/Register/Function   Defn  Where Defined   References     Page: 104
==============  ==============================  ====  ==============  ========================
LISTING         WS-TT-Token-Is-Identifier-BOOL  2364 WORKING-STORAGE  2697*  2844    2880
                                                                      2926   2934
LISTING         WS-TT-Token-Is-Keyword-BOOL     2365 WORKING-STORAGE  2515   2538    2815
                                                                      2834   2839    2860
                                                                      2865   2871    2921
LISTING         WS-TT-Token-Is-Lit-Alpha-BOOL   2366 WORKING-STORAGE  2620*  2646*
LISTING         WS-TT-Token-Is-Lit-Number-BOOL  2367 WORKING-STORAGE  2633*  2699    2773*
                                                                      2805*
LISTING         WS-TT-Token-Is-Reserved-Wd-BOOL 2369 WORKING-STORAGE  2516   2812*   2832*
                                                                      2858*  2875
LISTING         WS-TT-Token-Is-Verb-BOOL        2368 WORKING-STORAGE  2519   2691
LISTING         WS-Usernames-QTY                2371 WORKING-STORAGE  2504*
LISTING         WS-Version-TXT                  2373 WORKING-STORAGE  2436*  3350    3373
                                                                      3607   3626
LISTING         WS-XDL-Def-Line-NUM             2380 WORKING-STORAGE  3304*  3321*
LISTING         WS-XDL-Prog-ID-TXT              2376 WORKING-STORAGE  3301*  3313*   3317*
LISTING         WS-XDL-Ref-Flag-CHR             2386 WORKING-STORAGE  3333*
LISTING         WS-XDL-Ref-Line-NUM             2385 WORKING-STORAGE  3331*
LISTING         WS-XDL-Reference-TXT            2384 WORKING-STORAGE
LISTING         WS-XDL-Section-TXT              2382 WORKING-STORAGE  3303*  3319*
LISTING         WS-XDL-Token-TXT                2378 WORKING-STORAGE  3302*  3314*   3318*
LISTING         WS-Xref-Detail-Line-TXT         2375 WORKING-STORAGE  3264*  3271    3274*
                                                                      3284   3288*   3297
                                                                      3316   3336    3399
                                                                      3402   3405*
LISTING         WS-Xref-Lines-Per-Rec-NUM       2389 WORKING-STORAGE  2450*  2454*   3326
```

# 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.

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

==================================================================================================
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```
GNU COBOL 2.1 23NOV2013 Source Listing                                      2014/03/27
                                 C:/Users/tda010/Documents/Programs/Samples/STREAMIO.cbl
Line    Statement                                                              Page: 2
======  =========================================================================
    50        *> The control block format is as follows.  This structure must **
    51        *> be defined under an 01-level data item of your creation and  **
    52        *> should be INITIALIZEd before any items within it are used.    **
    53        *>                                                                **
    54        *> 05 SCB-Handle-NUM                PIC X(4) COMP-X.              **
    55        *> 05 SCB-Mode-CD                   PIC X(1).                     **
    56        *>    88 SCB-Mode-Input-BOOL        VALUE 'I', 'i'.              **
    57        *>    88 SCB-Mode-Output-BOOL       VALUE 'O', 'o'.              **
    58        *>    88 SCB-Mode-Both-BOOL         VALUE 'B', 'b'.              **
    59        *> 05 SCB-Function-CD               PIC X(2).                     **
    60        *>    88 SCB-Func-CLOSE-BOOL        VALUE 'C ', 'c '.            **
    61        *>    88 SCB-Func-DELETE-BOOL       VALUE 'D ', 'd '.            **
    62        *>    88 SCB-Func-OPEN-BOOL         VALUE 'O ', 'o '.            **
    63        *>    88 SCB-Func-READ-BOOL         VALUE 'R ', 'r '.            **
    64        *>    88 SCB-Func-READ-Delim-BOOL   VALUE 'RD', 'rd',           **
    65        *>                                        'rD', 'Rd'.            **
    66        *>    88 SCB-Func-WRITE-BOOL        VALUE 'W ', 'w '.            **
    67        *>    88 SCB-Func-WRITE-Delim-BOOL  VALUE 'WD', 'wd',           **
    68        *>                                        'wD', 'Wd'.            **
    69        *> 05 SCB-Delimiter-Mode-CD         PIC X(1).                     **
    70        *>    88 SCB-Delim-Unix-BOOL        VALUE 'U', 'u'.              **
    71        *>    88 SCB-Delim-Windows-BOOL     VALUE 'W', 'w'.              **
    72        *> 05 SCB-Offset-NUM                PIC X(8) COMP-X.              **
    73        *> 05 SCB-Error-Routine-PTR         USAGE PROGRAM-POINTER.        **
    74        *> 05 SCB-Error-Routine-NUM REDEFINES SCB-Error-Routine-PTR      **
    75        *>                                  USAGE BINARY-LONG.            **
    76        *> 05 SCB-Return-CD                 USAGE BINARY-LONG.            **
    77        *> 05 SCB-Filename-TXT              PIC X(256).                   **
    78        *>                                                                **
    79        *> Such a structure is defined for your use using the copybook   **
    80        *> "STREAMIOcb.cpy" (you may also define your own, provided it    **
    81        *> conforms to the above layout).                                **
    82        *>------------------------------------------------------------**
    83        *> SCB-Handle-NUM                                               **
    84        *>------------------------------------------------------------**
    85        *>                                                                **
    86        *> Serves as a file handle to the file once it has been opened  **
    87        *> (via the "SCB-Func-OPEN-BOOL" function).                      **
    88        *>                                                                **
    89        *>------------------------------------------------------------**
    90        *> SCB-Mode-CD                                                  **
    91        *>------------------------------------------------------------**
    92        *>                                                                **
    93        *> Prior to calling "STREAMIO" for the first time for a file,    **
    94        *> the appropriate subordinate level-88 must be set to TRUE to   **
    95        *> select an I/O mode.  You may also simply move one of the      **
    96        *> string values listed on the level-88 items to "SCB-Mode-CD". **
    97        *>                                                                **
    98        *>------------------------------------------------------------**

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

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

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

```
GNU COBOL 2.1 23NOV2013 Source Listing                                    2014/03/27
                                C:/Users/tda010/Documents/Programs/Samples/STREAMIO.cbl
Line    Statement                                                            Page: 4
====== =============================================================================
   148       *>                                                        **
   149       *>     This function invokes a standard CBL_READ_FILE against  **
   150       *>     the file specified in the control block (see        **
   151       *>     SCB-Filename-TXT).                                  **
   152       *>                                                        **
   153       *>     The buffer into which you wish to read data must be  **
   154       *>     supplied as "arg2".  The size of that buffer, in bytes, **
   155       *>     will define the "byte-count" value supplied to the  **
   156       *>     CBL_READ_FILE subroutine.  The buffer data item will be **
   157       *>     set to SPACES before the read takes place.         **
   158       *>                                                        **
   159       *>     If the file-offset value (SCB-Offset-NUM) is greater  **
   160       *>     than the size of the file, a "no more data" return code **
   161       *>     (01) will be passed back in SCB-Return-CD and the  **
   162       *>     buffer will have been set to SPACES.               **
   163       *>                                                        **
   164       *>     At the conclusion of a successful SCB-Func-READ-BOOL,  **
   165       *>     the value of SCB-Offset-NUM will have been automati-  **
   166       *>     cally incremented by the byte-count size of "arg2".  **
   167       *>                                                        **
   168       *> SCB-Func-WRITE-BOOL                                    **
   169       *>                                                        **
   170       *>     This function invokes a standard CBL_WRITE_FILE against **
   171       *>     the file specified in the control block (see        **
   172       *>     SCB-Filename-TXT).                                  **
   173       *>                                                        **
   174       *>     The buffer from which data will be written to the file  **
   175       *>     must be supplied as "arg2".  The size of that buffer,  **
   176       *>     in bytes, will define the "byte-count" value supplied  **
   177       *>     CBL_WRITE_FILE subroutine.  The buffer data will be  **
   178       *>     written to the file-offset position defined by the  **
   179       *>     SCB-Offset-NUM value.  You may specify "arg2" either  **
   180       *>     as an actual alphanumeric data item or as an alpha-  **
   181       *>     numeric literal.                                   **
   182       *>                                                        **
   183       *>     If the file-offset value (SCB-Offset-NUM) is greater  **
   184       *>     than the size of the file, a "no more data" return code **
   185       *>     will be passed back in SCB-Return-CD and the buffer  **
   186       *>     will have been set to SPACES.                     **
   187       *>                                                        **
   188       *>     At the conclusion of a successful SCB-Func-WRITE-BOOL  **
   189       *>     operation, the value of SCB-Offset-NUM will have been  **
   190       *>     automatically incremented by the byte-count size of  **
   191       *>     "arg2".                                           **
   192       *>                                                        **
   193       *> SCB-Func-READ-Delim-BOOL                               **
   194       *>                                                        **
   195       *>     SCB-Func-READ-Delim-BOOL bahaves like the SCB-FUNC-  **
   196       *>     READ function, with the following behavioral dif-  **

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```

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

=================================================================================

```
  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"**
```

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.          **

================================================================================================

====== =========================================================================
```
    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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                                     C:/Users/tda010/Documents/Programs/Samples/STREAMIO.cbl
Line   Statement                                                                 Page: 9
====== =================================================================================
         88 L-SCB-Func-WRITE-Delim-BOOL VALUE 'WD' 'wd'
         'wD' 'Wd'.
         05 L-SCB-Delimiter-Mode-CD PIC X(1).
         88 L-SCB-DELIM-Unix-BOOL VALUE 'U' 'u'.
         88 L-SCB-DELIM-Windows-BOOL VALUE 'W' 'w'.
         05 L-SCB-Offset-NUM PIC X(8) COMP-X.
         05 L-SCB-Error-Routine-PTR USAGE PROGRAM-POINTER.
         05 L-SCB-Error-Routine-NUM REDEFINES L-SCB-Error-Routine-PTR
         USAGE BINARY-LONG.
         05 L-SCB-Return-CD USAGE BINARY-LONG.
         05 L-SCB-Filename-TXT PIC X(256).
   380       01  L-Arg2-TXT                          PIC X ANY LENGTH.
   381       PROCEDURE DIVISION USING L-StreamIO-Control-Block-TXT,
   382                           L-Arg2-TXT.
   383       000-Main SECTION.
   384          MOVE 00 TO L-SCB-Return-CD
   385          EVALUATE TRUE
   386              WHEN L-SCB-Func-CLOSE-BOOL
   387                  PERFORM 030-Validate-Handle-NonZero
   388                  PERFORM 200-CLOSE
   389              WHEN L-SCB-Func-DELETE-BOOL
   390                  CALL "CBL_DELETE_FILE" USING L-SCB-Filename-TXT
   391              WHEN L-SCB-Func-OPEN-BOOL
   392                  PERFORM 020-Validate-Handle-Zero
   393                  PERFORM 100-OPEN
   394              WHEN L-SCB-Func-READ-BOOL
   395                  PERFORM 030-Validate-Handle-NonZero
   396                  PERFORM 400-READ
   397              WHEN L-SCB-Func-READ-Delim-BOOL
   398                  PERFORM 030-Validate-Handle-NonZero
   399                  PERFORM 500-READ-Delim
   400              WHEN L-SCB-Func-WRITE-BOOL
   401                  PERFORM 030-Validate-Handle-NonZero
   402                  PERFORM 300-WRITE
   403              WHEN L-SCB-Func-WRITE-Delim-BOOL
   404                  EVALUATE TRUE
   405                      WHEN L-SCB-Delim-Unix-BOOL
   406                          PERFORM 030-Validate-Handle-NonZero
   407                          PERFORM 300-WRITE
   408                          MOVE 1 TO WS-Arg-Length-NUM
   409                          MOVE X"0A" TO WS-Delim-Buffer-TXT
   410                      WHEN L-SCB-Delim-Windows-BOOL
   411                          PERFORM 030-Validate-Handle-NonZero
   412                          PERFORM 300-WRITE
   413                          MOVE 2 TO WS-Arg-Length-NUM
   414                          MOVE X"0D0A" TO WS-Delim-Buffer-TXT
   415                      WHEN OTHER
   416                          MOVE -4 TO L-SCB-Return-CD
   417                          PERFORM 099-ERROR-Return

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```

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

==================================================================================================

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

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

========================================================================================

Line    Statement                                                                      Page: 13
====== ========================================================================================
   565          CALL "CBL_WRITE_FILE" USING L-SCB-Handle-NUM
   566                                      L-SCB-Offset-NUM
   567                                      WS-Arg-Length-NUM
   568                                      0
   569                                      L-Arg2-TXT
   570          PERFORM 040-Check-WRITE-SCB-Return-CD
   571          ADD WS-Arg-Length-NUM TO L-SCB-Offset-NUM
   572          .
   573      400-READ SECTION.
   574          CALL "C$PARAMSIZE" USING 2
   575          MOVE RETURN-CODE TO WS-Arg-Length-NUM
   576          MOVE SPACES TO L-Arg2-TXT(1:WS-Arg-Length-NUM)
   577          CALL "CBL_READ_FILE" USING L-SCB-Handle-NUM
   578                                      L-SCB-Offset-NUM
   579                                      WS-Arg-Length-NUM
   580                                      0
   581                                      L-Arg2-TXT
   582          PERFORM 050-Check-READ-SCB-Return-CD
   583          ADD WS-Arg-Length-NUM TO L-SCB-Offset-NUM
   584          .
   585      500-READ-Delim SECTION.
   586          CALL "C$PARAMSIZE" USING 2
   587          MOVE RETURN-CODE TO WS-Arg-Length-NUM
   588          MOVE SPACES TO L-Arg2-TXT(1:WS-Arg-Length-NUM)
   589          CALL "CBL_READ_FILE" USING L-SCB-Handle-NUM
   590                                      L-SCB-Offset-NUM
   591                                      WS-Arg-Length-NUM
   592                                      0
   593                                      L-Arg2-TXT
   594          PERFORM 050-Check-READ-SCB-Return-CD
   595          MOVE 0 TO WS-Tally-NUM
   596          INSPECT L-Arg2-TXT(1:WS-Arg-Length-NUM)
   597              TALLYING WS-Tally-NUM FOR ALL X"0A"
   598          IF WS-Tally-NUM = 0 *> No LF found - return truncated data and position past n
     ext LF (if any)
   599              IF L-Arg2-TXT(WS-Arg-Length-NUM:1) = X"0D"
   600                  MOVE SPACE TO L-Arg2-TXT(WS-Arg-Length-NUM:1)
   601              END-IF
   602              ADD WS-Arg-Length-NUM TO L-SCB-Offset-NUM
   603              MOVE 02 TO L-SCB-Return-CD
   604              MOVE 256 TO WS-Arg-Length-NUM
   605              PERFORM UNTIL 0 = 1
   606                  MOVE SPACES TO WS-Buffer-TXT
   607                  CALL "CBL_READ_FILE" USING L-SCB-Handle-NUM
   608                                      L-SCB-Offset-NUM
   609                                      WS-Arg-Length-NUM
   610                                      0
   611                                      WS-Buffer-TXT
   612              IF RETURN-CODE < 0

====================================================================================================

```
   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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