GnuCOBOL Sample Programs

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Table of Contents

1. FileStat-Msgs

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

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

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

Here's the FileStat-Msgs.cpy copybook:

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

2. COBDUMP

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

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

For now though, I'll keep using my good ol' "COBDUMP" routine. It's been my travelling companion from COBOL job to COBOL job since 1971. Here it is, all tuned up for GnuCOBOL, with new tires and a fresh coat of paint.

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

- Coding a GnuCOBOL subroutine

- Using "USAGE POINTER" data items

- Using the "ANY LENGTH" data item attribute

- Coding for an "OPTIONAL" subprogram argument

- Using the "NUMBER-OF-CALL-PARAMETERS" special register

- Using the "C$PRINTABLE" built-in system subroutine

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

```
GNU COBOL 2.1 23NOV2013 Source Listing                                   2014/03/27
                              C:/Users/tda010/Documents/Programs/Samples/COBDUMP.cbl
Line   Statement                                                          Page: 1
====== =============================================================================
    1         >>SOURCE FORMAT IS FIXED
    2          IDENTIFICATION DIVISION.
    3          PROGRAM-ID.   COBDUMP.
    4         *>****************************************************************
    5         *> This is an OpenCOBOL subroutine that will generate a       **
    6         *> formatted Hex/Char dump of a storage area.  To use this    **
    7         *> subroutine, simply CALL it as follows:                     **
    8         *>                                                            **
    9         *> CALL "COBDUMP" USING <data-item>                           **
   10         *>                    [ <length> ]                            **
   11         *>                                                            **
   12         *> If specified, the <length> argument specifies how many     **
   13         *> bytes of <data-item> are to be dumped.  If absent, all of  **
   14         *> <data-item> will be dumped (i.e. LENGTH(<data-item>) will  **
   15         *> be assumed for <length>).                                  **
   16         *>                                                            **
   17         *> >>> Note that the subroutine name MUST be specified in  <<< **
   18         *> >>> UPPERCASE                                           <<< **
   19         *>                                                            **
   20         *> The dump is generated to STDERR, so you may pipe it to a   **
   21         *> file when you execute your program using "2> file".        **
   22         *>                                                            **
   23         *> AUTHOR:      GARY L. CUTLER                                **
   24         *>                                                            **
   25         *> NOTE:        The author has a sentimental attachment to    **
   26         *>              this subroutine - it's been around since 1971 **
   27         *>              and it's been converted to and run on 10 dif- **
   28         *>              ferent operating system/compiler environments **
   29         *>                                                            **
   30         *> DATE-WRITTEN: October 14, 1971                             **
   31         *>                                                            **
   32         *>****************************************************************
   33         *>  DATE   CHANGE DESCRIPTION                                 **
   34         *> ====== ================================================== **
   35         *> GC1071 Initial coding - Univac Dept. of Defense COBOL '68  **
   36         *> GC0577 Converted to Univac ASCII COBOL (ACOB) - COBOL '74  **
   37         *> GC1182 Converted to Univac UTS4000 COBOL - COBOL '74 w/    **
   38         *>        SCREEN SECTION enhancements                        **
   39         *> GC0883 Converted to Honeywell/Bull COBOL - COBOL '74       **
   40         *> GC0983 Converted to IBM VS COBOL - COBOL '74               **
   41         *> GC0887 Converted to IBM VS COBOL II - COBOL '85            **
   42         *> GC1294 Converted to Micro Focus COBOL V3.0 - COBOL '85 w/  **
   43         *>        extensions                                         **
   44         *> GC0703 Converted to Unisys Universal Compiling System (UCS) **
   45         *>        COBOL (UCOB) - COBOL '85                            **
   46         *> GC1204 Converted to Unisys Object COBOL (OCOB) - COBOL 2002 **
   47         *> GC0609 Converted to OpenCOBOL 1.1 - COBOL '85 w/ some COBOL **
   48         *>        2002 features                                      **
   49         *> GC0410 Enhanced to make 2nd argument (buffer length)       **

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```

Line   Statement   Page: 2
====== ===
```
   50       *>        optional                                 **
   51       *> GC0211 Ported to IBM Enterprise COBOL           **
   52       *> GC0612 Updated for OpenCOBOL 2.0                **
   53       *>**************************************************************
   54        ENVIRONMENT DIVISION.
   55        CONFIGURATION SECTION.
   56        REPOSITORY.
   57            FUNCTION ALL INTRINSIC.
   58        DATA DIVISION.
   59        WORKING-STORAGE SECTION.
   60        01  WS-Addr-PTR                      USAGE POINTER.
   61        01  WS-Addr-NUM REDEFINES WS-Addr-PTR
   62                                             USAGE BINARY-LONG.
   63
   64        01  WS-Addr-SUB                      USAGE BINARY-CHAR.
   65
   66        01  WS-Addr-Value-NUM               USAGE BINARY-LONG.
   67
   68        01  WS-Buffer-Byte-CHR.
   69            05 WS-Buffer-Byte-NUM            USAGE BINARY-CHAR.
   70
   71        01  WS-Buffer-Length-NUM            USAGE BINARY-LONG.
   72
   73        01  WS-Buffer-SUB                   PIC 9(4) COMP-5.
   74
   75        01  WS-Hex-Digit-TXT VALUE '0123456789ABCDEF'.
   76            05 WS-Hex-Digit-CHR             OCCURS 16 TIMES
   77                                            PIC X(1).
   78
   79        01  WS-Nibble-SUB                   PIC 9(1) COMP-5.
   80
   81        01  WS-Nibble-Left-SUB             PIC 9(1) COMP-5.
   82
   83        01  WS-Nibble-Right-SUB            PIC 9(1) COMP-5.
   84
   85        01  WS-Output-Detail-TXT.
   86            05 WS-OD-Addr-TXT.
   87               10 WS-OD-Addr-Hex-CHR        OCCURS 8 TIMES PIC X.
   88            05 FILLER                       PIC X(1).
   89            05 WS-OD-Relative-Byte-NUM      PIC Z(3)9.
   90            05 FILLER                       PIC X(1).
   91            05 WS-OD-Hex-TXT                OCCURS 16 TIMES.
   92               10 WS-OD-Hex-1-CHR           PIC X.
   93               10 WS-OD-Hex-2-CHR           PIC X.
   94               10 FILLER                    PIC X.
   95            05 WS-OD-ASCII-Data-TXT.
   96               10 WS-OD-ASCII-CHR           OCCURS 16 TIMES
   97                                            PIC X.
   98
```
==

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


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```

Line   Statement   Page: 4
====== ===
    146   IF WS-Output-SUB = 16
    147   CALL "C$PRINTABLE" USING WS-OD-ASCII-Data-TXT
    148   DISPLAY WS-Output-Detail-TXT UPON SYSERR
    149   MOVE SPACES TO WS-Output-Detail-TXT
    150   MOVE 0 TO WS-Output-SUB
    151   SET WS-Addr-PTR UP BY 16
    152   PERFORM 100-Generate-Address
    153   END-IF
    154   END-PERFORM
    155   IF WS-Output-SUB > 0
    156   CALL "C$PRINTABLE" USING WS-OD-ASCII-Data-TXT
    157   DISPLAY WS-Output-Detail-TXT UPON SYSERR
    158   END-IF
    159   EXIT PROGRAM
    160   .
    161   100-Generate-Address SECTION.
    162   MOVE 8 TO WS-Addr-SUB
    163   MOVE WS-Addr-NUM TO WS-Addr-Value-NUM
    164   MOVE ALL '0' TO WS-OD-Addr-TXT
    165   PERFORM WITH TEST BEFORE UNTIL WS-Addr-Value-NUM = 0
    166   DIVIDE WS-Addr-Value-NUM BY 16
    167   GIVING WS-Addr-Value-NUM
    168   REMAINDER WS-Nibble-SUB
    169   ADD 1 TO WS-Nibble-SUB
    170   MOVE WS-Hex-Digit-CHR (WS-Nibble-SUB)
    171   TO WS-OD-Addr-Hex-CHR (WS-Addr-SUB)
    172   SUBTRACT 1 FROM WS-Addr-SUB
    173   END-PERFORM
    174   .

==

```
GNU COBOL 2.1 23NOV2013 Cross-Reference Listing                        2014/03/27
                             C:/Users/tda010/Documents/Programs/Samples/COBDUMP.cbl
PROGRAM-ID      Identifier/Register/Function   Defn   Where Defined   References        Page: 5
==============  ==============================  ======  ==============  ========================
COBDUMP         000-Main                         116  PROCEDURE
COBDUMP         100-Generate-Address             161  PROCEDURE        124     152
COBDUMP         L-Buffer-Length-NUM              112  LINKAGE          115     120
COBDUMP         L-Buffer-TXT                     110  LINKAGE          114     118     123
                                                                       134
COBDUMP         NUMBER-OF-CALL-PARAMETERS             PROCEDURE        117
COBDUMP         WS-Addr-NUM                       61  WORKING-STORAGE  163
COBDUMP         WS-Addr-PTR                       60  WORKING-STORAGE   61     123*    151*
COBDUMP         WS-Addr-SUB                       64  WORKING-STORAGE  162*    171     172
COBDUMP         WS-Addr-Value-NUM                 66  WORKING-STORAGE  163*    165     166
                                                                       167*
COBDUMP         WS-Buffer-Byte-CHR                68  WORKING-STORAGE  136
COBDUMP         WS-Buffer-Byte-NUM                69  WORKING-STORAGE  137
COBDUMP         WS-Buffer-Length-NUM              71  WORKING-STORAGE  118*    120*    129
COBDUMP         WS-Buffer-SUB                     73  WORKING-STORAGE  128*    129     132
                                                                       134
COBDUMP         WS-Hex-Digit-CHR                  76  WORKING-STORAGE  142     144     170
COBDUMP         WS-Hex-Digit-TXT                  75  WORKING-STORAGE
COBDUMP         WS-Nibble-Left-SUB                81  WORKING-STORAGE  138*    140*    142
COBDUMP         WS-Nibble-Right-SUB               83  WORKING-STORAGE  139*    141*    144
COBDUMP         WS-Nibble-SUB                     79  WORKING-STORAGE  168*    169*    170
COBDUMP         WS-OD-Addr-Hex-CHR                87  WORKING-STORAGE  171*
COBDUMP         WS-OD-Addr-TXT                    86  WORKING-STORAGE  164*
COBDUMP         WS-OD-ASCII-CHR                   96  WORKING-STORAGE  135*
COBDUMP         WS-OD-ASCII-Data-TXT              95  WORKING-STORAGE  147C    156C
COBDUMP         WS-OD-Hex-1-CHR                   92  WORKING-STORAGE  143*
COBDUMP         WS-OD-Hex-2-CHR                   93  WORKING-STORAGE  145*
COBDUMP         WS-OD-Hex-TXT                     91  WORKING-STORAGE
COBDUMP         WS-OD-Relative-Byte-NUM           89  WORKING-STORAGE  132*
COBDUMP         WS-Output-Detail-TXT              85  WORKING-STORAGE  122*    148     149*
                                                                       157
COBDUMP         WS-Output-Header-1-TXT           102  WORKING-STORAGE  126
COBDUMP         WS-Output-Header-2-TXT           105  WORKING-STORAGE  127
COBDUMP         WS-Output-SUB                     99  WORKING-STORAGE  125*    130*    131
                                                                       135     143     145
                                                                       146     150*    155


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```
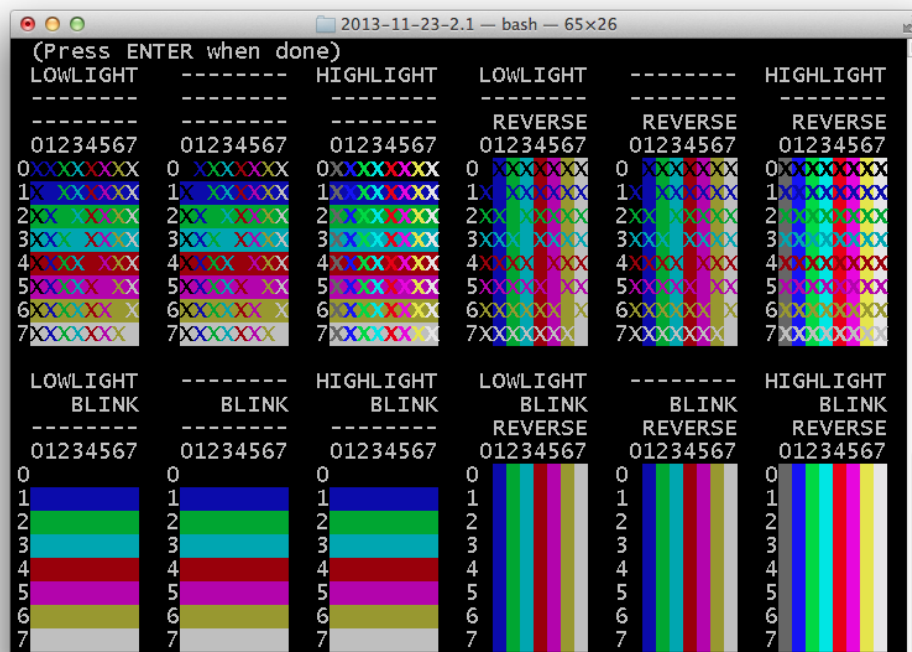
3. Colors

Colors is a handy little GnuCOBOL utility program that will produce a screen showing all possible combinations of:

- FOREGROUND-COLOR
- BACKGROUND-COLOR
- BLINKING (or absence of BLINKING)
- HIGHLIGHT, LOWLIGHT or absence of either (i.e. "Normal")
- REVERSE-VIDEO

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

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

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

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```

```
GNU COBOL 2.1 23NOV2013 Source Listing                                       2014/03/27
                                C:/Users/tda010/Documents/Programs/Samples/colors.cbl
Line    Statement                                                               Page: 2
======  ================================================================================
    50 10 COL 1 VALUE '5        5          5          5          5          5          '.
    51 05 LINE + 1.
    52 10 COL 1 VALUE '6        6          6          6          6          6          '.
    53 05 LINE + 1.
    54 10 COL 1 VALUE '7        7          7          7          7          7          '.
    55 *> #1
    56 05 LINE 05.
    57 10 COL 2   BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 LOWLIGHT VALUE 'X'.
    58 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 LOWLIGHT VALUE 'X'.
    59 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 LOWLIGHT VALUE 'X'.
    60 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 LOWLIGHT VALUE 'X'.
    61 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 LOWLIGHT VALUE 'X'.
    62 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 LOWLIGHT VALUE 'X'.
    63 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 LOWLIGHT VALUE 'X'.
    64 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 LOWLIGHT VALUE 'X'.
    65 05 LINE + 1.
    66 10 COL 2   BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 LOWLIGHT VALUE 'X'.
    67 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 LOWLIGHT VALUE 'X'.
    68 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 LOWLIGHT VALUE 'X'.
    69 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 LOWLIGHT VALUE 'X'.
    70 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 LOWLIGHT VALUE 'X'.
    71 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 LOWLIGHT VALUE 'X'.
    72 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 LOWLIGHT VALUE 'X'.
    73 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 LOWLIGHT VALUE 'X'.
    74 05 LINE + 1.
    75 10 COL 2   BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 LOWLIGHT VALUE 'X'.
    76 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 LOWLIGHT VALUE 'X'.
    77 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 LOWLIGHT VALUE 'X'.
    78 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 LOWLIGHT VALUE 'X'.
    79 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 LOWLIGHT VALUE 'X'.
    80 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 LOWLIGHT VALUE 'X'.
    81 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 LOWLIGHT VALUE 'X'.
    82 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 LOWLIGHT VALUE 'X'.
    83 05 LINE + 1.
    84 10 COL 2   BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 LOWLIGHT VALUE 'X'.
    85 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 LOWLIGHT VALUE 'X'.
    86 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 LOWLIGHT VALUE 'X'.
    87 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 LOWLIGHT VALUE 'X'.
    88 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 LOWLIGHT VALUE 'X'.
    89 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 LOWLIGHT VALUE 'X'.
    90 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 LOWLIGHT VALUE 'X'.
    91 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 LOWLIGHT VALUE 'X'.
    92 05 LINE + 1.
    93 10 COL 2   BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 LOWLIGHT VALUE 'X'.
    94 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 LOWLIGHT VALUE 'X'.
    95 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 LOWLIGHT VALUE 'X'.
    96 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 LOWLIGHT VALUE 'X'.
    97 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 LOWLIGHT VALUE 'X'.
    98 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 LOWLIGHT VALUE 'X'.

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```
GNU COBOL 2.1 23NOV2013 Source Listing                                    2014/03/27
                                  C:/Users/tda010/Documents/Programs/Samples/colors.cbl
Line    Statement                                                            Page: 3
====== =============================================================================
   99 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 LOWLIGHT VALUE 'X'.
  100 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 LOWLIGHT VALUE 'X'.
  101 05 LINE + 1.
  102 10 COL 2  BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 LOWLIGHT VALUE 'X'.
  103 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 LOWLIGHT VALUE 'X'.
  104 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 LOWLIGHT VALUE 'X'.
  105 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 LOWLIGHT VALUE 'X'.
  106 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 LOWLIGHT VALUE 'X'.
  107 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 LOWLIGHT VALUE 'X'.
  108 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 LOWLIGHT VALUE 'X'.
  109 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 LOWLIGHT VALUE 'X'.
  110 05 LINE + 1.
  111 10 COL 2  BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 LOWLIGHT VALUE 'X'.
  112 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 LOWLIGHT VALUE 'X'.
  113 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 LOWLIGHT VALUE 'X'.
  114 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 LOWLIGHT VALUE 'X'.
  115 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 LOWLIGHT VALUE 'X'.
  116 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 LOWLIGHT VALUE 'X'.
  117 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 LOWLIGHT VALUE 'X'.
  118 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 LOWLIGHT VALUE 'X'.
  119 05 LINE + 1.
  120 10 COL 2  BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 LOWLIGHT VALUE 'X'.
  121 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 LOWLIGHT VALUE 'X'.
  122 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 LOWLIGHT VALUE 'X'.
  123 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 LOWLIGHT VALUE 'X'.
  124 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 LOWLIGHT VALUE 'X'.
  125 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 LOWLIGHT VALUE 'X'.
  126 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 LOWLIGHT VALUE 'X'.
  127 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 LOWLIGHT VALUE 'X'.
  128 *> #2
  129 05 LINE 05.
  130 10 COL 12  BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 VALUE 'X'.
  131 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 VALUE 'X'.
  132 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 VALUE 'X'.
  133 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 VALUE 'X'.
  134 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 VALUE 'X'.
  135 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 VALUE 'X'.
  136 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 VALUE 'X'.
  137 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 VALUE 'X'.
  138 05 LINE + 1.
  139 10 COL 12  BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 VALUE 'X'.
  140 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 VALUE 'X'.
  141 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 VALUE 'X'.
  142 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 VALUE 'X'.
  143 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 VALUE 'X'.
  144 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 VALUE 'X'.
  145 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 VALUE 'X'.
  146 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 VALUE 'X'.
  147 05 LINE + 1.

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GNU COBOL 2.1 23NOV2013 Source Listing                                    2014/03/27
                                    C:/Users/tda010/Documents/Programs/Samples/colors.cbl
Line    Statement                                                              Page: 4
======  ================================================================================
   148 10 COL 12  BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 VALUE 'X'.
   149 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 VALUE 'X'.
   150 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 VALUE 'X'.
   151 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 VALUE 'X'.
   152 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 VALUE 'X'.
   153 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 VALUE 'X'.
   154 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 VALUE 'X'.
   155 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 VALUE 'X'.
   156 05 LINE + 1.
   157 10 COL 12  BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 VALUE 'X'.
   158 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 VALUE 'X'.
   159 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 VALUE 'X'.
   160 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 VALUE 'X'.
   161 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 VALUE 'X'.
   162 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 VALUE 'X'.
   163 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 VALUE 'X'.
   164 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 VALUE 'X'.
   165 05 LINE + 1.
   166 10 COL 12  BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 VALUE 'X'.
   167 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 VALUE 'X'.
   168 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 VALUE 'X'.
   169 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 VALUE 'X'.
   170 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 VALUE 'X'.
   171 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 VALUE 'X'.
   172 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 VALUE 'X'.
   173 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 VALUE 'X'.
   174 05 LINE + 1.
   175 10 COL 12  BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 VALUE 'X'.
   176 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 VALUE 'X'.
   177 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 VALUE 'X'.
   178 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 VALUE 'X'.
   179 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 VALUE 'X'.
   180 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 VALUE 'X'.
   181 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 VALUE 'X'.
   182 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 VALUE 'X'.
   183 05 LINE + 1.
   184 10 COL 12  BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 VALUE 'X'.
   185 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 VALUE 'X'.
   186 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 VALUE 'X'.
   187 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 VALUE 'X'.
   188 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 VALUE 'X'.
   189 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 VALUE 'X'.
   190 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 VALUE 'X'.
   191 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 VALUE 'X'.
   192 05 LINE + 1.
   193 10 COL 12  BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 VALUE 'X'.
   194 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 VALUE 'X'.
   195 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 VALUE 'X'.
   196 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 VALUE 'X'.

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GNU COBOL 2.1 23NOV2013 Source Listing                                   2014/03/27
                                 C:/Users/tda010/Documents/Programs/Samples/colors.cbl
Line   Statement                                                              Page: 5
====== =================================================================================
  197 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 VALUE 'X'.
  198 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 VALUE 'X'.
  199 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 VALUE 'X'.
  200 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 VALUE 'X'.
  201 *> #3
  202 05 LINE 05.
  203 10 COL 22  BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 HIGHLIGHT VALUE 'X'.
  204 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 HIGHLIGHT VALUE 'X'.
  205 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 HIGHLIGHT VALUE 'X'.
  206 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 HIGHLIGHT VALUE 'X'.
  207 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 HIGHLIGHT VALUE 'X'.
  208 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 HIGHLIGHT VALUE 'X'.
  209 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 HIGHLIGHT VALUE 'X'.
  210 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 HIGHLIGHT VALUE 'X'.
  211 05 LINE + 1.
  212 10 COL 22  BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 HIGHLIGHT VALUE 'X'.
  213 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 HIGHLIGHT VALUE 'X'.
  214 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 HIGHLIGHT VALUE 'X'.
  215 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 HIGHLIGHT VALUE 'X'.
  216 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 HIGHLIGHT VALUE 'X'.
  217 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 HIGHLIGHT VALUE 'X'.
  218 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 HIGHLIGHT VALUE 'X'.
  219 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 HIGHLIGHT VALUE 'X'.
  220 05 LINE + 1.
  221 10 COL 22  BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 HIGHLIGHT VALUE 'X'.
  222 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 HIGHLIGHT VALUE 'X'.
  223 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 HIGHLIGHT VALUE 'X'.
  224 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 HIGHLIGHT VALUE 'X'.
  225 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 HIGHLIGHT VALUE 'X'.
  226 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 HIGHLIGHT VALUE 'X'.
  227 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 HIGHLIGHT VALUE 'X'.
  228 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 HIGHLIGHT VALUE 'X'.
  229 05 LINE + 1.
  230 10 COL 22  BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 HIGHLIGHT VALUE 'X'.
  231 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 HIGHLIGHT VALUE 'X'.
  232 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 HIGHLIGHT VALUE 'X'.
  233 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 HIGHLIGHT VALUE 'X'.
  234 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 HIGHLIGHT VALUE 'X'.
  235 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 HIGHLIGHT VALUE 'X'.
  236 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 HIGHLIGHT VALUE 'X'.
  237 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 HIGHLIGHT VALUE 'X'.
  238 05 LINE + 1.
  239 10 COL 22  BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 HIGHLIGHT VALUE 'X'.
  240 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 HIGHLIGHT VALUE 'X'.
  241 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 HIGHLIGHT VALUE 'X'.
  242 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 HIGHLIGHT VALUE 'X'.
  243 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 HIGHLIGHT VALUE 'X'.
  244 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 HIGHLIGHT VALUE 'X'.
  245 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 HIGHLIGHT VALUE 'X'.

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GNU COBOL 2.1 23NOV2013 Source Listing                                    2014/03/27
                               C:/Users/tda010/Documents/Programs/Samples/colors.cbl
Line    Statement                                                             Page: 6
====== ==============================================================================
   246 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 HIGHLIGHT VALUE 'X'.
   247 05 LINE + 1.
   248 10 COL 22  BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 HIGHLIGHT VALUE 'X'.
   249 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 HIGHLIGHT VALUE 'X'.
   250 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 HIGHLIGHT VALUE 'X'.
   251 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 HIGHLIGHT VALUE 'X'.
   252 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 HIGHLIGHT VALUE 'X'.
   253 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 HIGHLIGHT VALUE 'X'.
   254 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 HIGHLIGHT VALUE 'X'.
   255 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 HIGHLIGHT VALUE 'X'.
   256 05 LINE + 1.
   257 10 COL 22  BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 HIGHLIGHT VALUE 'X'.
   258 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 HIGHLIGHT VALUE 'X'.
   259 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 HIGHLIGHT VALUE 'X'.
   260 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 HIGHLIGHT VALUE 'X'.
   261 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 HIGHLIGHT VALUE 'X'.
   262 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 HIGHLIGHT VALUE 'X'.
   263 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 HIGHLIGHT VALUE 'X'.
   264 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 HIGHLIGHT VALUE 'X'.
   265 05 LINE + 1.
   266 10 COL 22  BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 HIGHLIGHT VALUE 'X'.
   267 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 HIGHLIGHT VALUE 'X'.
   268 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 HIGHLIGHT VALUE 'X'.
   269 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 HIGHLIGHT VALUE 'X'.
   270 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 HIGHLIGHT VALUE 'X'.
   271 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 HIGHLIGHT VALUE 'X'.
   272 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 HIGHLIGHT VALUE 'X'.
   273 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 HIGHLIGHT VALUE 'X'.
   274 *> #4
   275 05 LINE 05.
   276 10 COL 32  BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   277 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   278 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   279 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   280 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   281 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   282 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   283 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   284 05 LINE + 1.
   285 10 COL 32  BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   286 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   287 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   288 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   289 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   290 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   291 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   292 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   293 05 LINE + 1.
   294 10 COL 32  BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 LOWLIGHT REVERSE-VIDEO VALUE 'X'.

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GNU COBOL 2.1 23NOV2013 Source Listing                                  2014/03/27
                                    C:/Users/tda010/Documents/Programs/Samples/colors.cbl
Line    Statement                                                           Page: 7
======  ==================================================================================
   295 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   296 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   297 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   298 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   299 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   300 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   301 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   302 05 LINE + 1.
   303 10 COL 32  BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   304 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   305 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   306 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   307 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   308 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   309 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   310 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   311 05 LINE + 1.
   312 10 COL 32  BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   313 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   314 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   315 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   316 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   317 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   318 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   319 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   320 05 LINE + 1.
   321 10 COL 32 BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   322 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   323 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   324 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   325 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   326 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   327 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   328 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   329 05 LINE + 1.
   330 10 COL 32  BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   331 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   332 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   333 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   334 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   335 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   336 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   337 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   338 05 LINE + 1.
   339 10 COL 32  BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   340 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   341 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   342 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   343 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 LOWLIGHT REVERSE-VIDEO VALUE 'X'.

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GNU COBOL 2.1 23NOV2013 Source Listing                                    2014/03/27
                                    C:/Users/tda010/Documents/Programs/Samples/colors.cbl
Line    Statement                                                            Page: 8
====== =============================================================================
   344 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   345 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   346 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   347 *> #5
   348 05 LINE 05.
   349 10 COL 42  BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 REVERSE-VIDEO VALUE 'X'.
   350 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 REVERSE-VIDEO VALUE 'X'.
   351 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 REVERSE-VIDEO VALUE 'X'.
   352 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 REVERSE-VIDEO VALUE 'X'.
   353 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 REVERSE-VIDEO VALUE 'X'.
   354 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 REVERSE-VIDEO VALUE 'X'.
   355 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 REVERSE-VIDEO VALUE 'X'.
   356 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 REVERSE-VIDEO VALUE 'X'.
   357 05 LINE + 1.
   358 10 COL 42  BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 REVERSE-VIDEO VALUE 'X'.
   359 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 REVERSE-VIDEO VALUE 'X'.
   360 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 REVERSE-VIDEO VALUE 'X'.
   361 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 REVERSE-VIDEO VALUE 'X'.
   362 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 REVERSE-VIDEO VALUE 'X'.
   363 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 REVERSE-VIDEO VALUE 'X'.
   364 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 REVERSE-VIDEO VALUE 'X'.
   365 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 REVERSE-VIDEO VALUE 'X'.
   366 05 LINE + 1.
   367 10 COL 42  BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 REVERSE-VIDEO VALUE 'X'.
   368 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 REVERSE-VIDEO VALUE 'X'.
   369 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 REVERSE-VIDEO VALUE 'X'.
   370 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 REVERSE-VIDEO VALUE 'X'.
   371 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 REVERSE-VIDEO VALUE 'X'.
   372 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 REVERSE-VIDEO VALUE 'X'.
   373 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 REVERSE-VIDEO VALUE 'X'.
   374 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 REVERSE-VIDEO VALUE 'X'.
   375 05 LINE + 1.
   376 10 COL 42  BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 REVERSE-VIDEO VALUE 'X'.
   377 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 REVERSE-VIDEO VALUE 'X'.
   378 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 REVERSE-VIDEO VALUE 'X'.
   379 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 REVERSE-VIDEO VALUE 'X'.
   380 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 REVERSE-VIDEO VALUE 'X'.
   381 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 REVERSE-VIDEO VALUE 'X'.
   382 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 REVERSE-VIDEO VALUE 'X'.
   383 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 REVERSE-VIDEO VALUE 'X'.
   384 05 LINE + 1.
   385 10 COL 42  BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 REVERSE-VIDEO VALUE 'X'.
   386 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 REVERSE-VIDEO VALUE 'X'.
   387 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 REVERSE-VIDEO VALUE 'X'.
   388 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 REVERSE-VIDEO VALUE 'X'.
   389 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 REVERSE-VIDEO VALUE 'X'.
   390 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 REVERSE-VIDEO VALUE 'X'.
   391 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 REVERSE-VIDEO VALUE 'X'.
   392 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 REVERSE-VIDEO VALUE 'X'.

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GNU COBOL 2.1 23NOV2013 Source Listing                                            2014/03/27
                                     C:/Users/tda010/Documents/Programs/Samples/colors.cbl
Line    Statement                                                                   Page: 9
====== ===================================================================================
   393 05 LINE + 1.
   394 10 COL 42  BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 REVERSE-VIDEO VALUE 'X'.
   395 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 REVERSE-VIDEO VALUE 'X'.
   396 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 REVERSE-VIDEO VALUE 'X'.
   397 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 REVERSE-VIDEO VALUE 'X'.
   398 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 REVERSE-VIDEO VALUE 'X'.
   399 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 REVERSE-VIDEO VALUE 'X'.
   400 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 REVERSE-VIDEO VALUE 'X'.
   401 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 REVERSE-VIDEO VALUE 'X'.
   402 05 LINE + 1.
   403 10 COL 42  BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 REVERSE-VIDEO VALUE 'X'.
   404 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 REVERSE-VIDEO VALUE 'X'.
   405 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 REVERSE-VIDEO VALUE 'X'.
   406 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 REVERSE-VIDEO VALUE 'X'.
   407 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 REVERSE-VIDEO VALUE 'X'.
   408 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 REVERSE-VIDEO VALUE 'X'.
   409 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 REVERSE-VIDEO VALUE 'X'.
   410 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 REVERSE-VIDEO VALUE 'X'.
   411 05 LINE + 1.
   412 10 COL 42  BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 REVERSE-VIDEO VALUE 'X'.
   413 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 REVERSE-VIDEO VALUE 'X'.
   414 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 REVERSE-VIDEO VALUE 'X'.
   415 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 REVERSE-VIDEO VALUE 'X'.
   416 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 REVERSE-VIDEO VALUE 'X'.
   417 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 REVERSE-VIDEO VALUE 'X'.
   418 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 REVERSE-VIDEO VALUE 'X'.
   419 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 REVERSE-VIDEO VALUE 'X'.
   420 *> #6
   421 05 LINE 05.
   422 10 COL 52  BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   423 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   424 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   425 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   426 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   427 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   428 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   429 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   430 05 LINE + 1.
   431 10 COL 52  BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   432 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   433 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   434 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   435 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   436 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   437 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   438 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   439 05 LINE + 1.
   440 10 COL 52  BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   441 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.

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====== ===
   442 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   443 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   444 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   445 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   446 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   447 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   448 05 LINE + 1.
   449 10 COL 52 BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   450 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   451 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   452 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   453 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   454 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   455 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   456 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   457 05 LINE + 1.
   458 10 COL 52 BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   459 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   460 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   461 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   462 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   463 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   464 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   465 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   466 05 LINE + 1.
   467 10 COL 52 BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   468 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   469 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   470 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   471 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   472 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   473 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   474 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   475 05 LINE + 1.
   476 10 COL 52 BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   477 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   478 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   479 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   480 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   481 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   482 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   483 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   484 05 LINE + 1.
   485 10 COL 52 BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   486 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   487 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   488 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   489 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   490 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.

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  491 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
  492 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
  493 *> #7
  494 05 LINE 17.
  495 10 COL 02  BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 LOWLIGHT BLINK VALUE 'X'.
  496 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 LOWLIGHT BLINK VALUE 'X'.
  497 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 LOWLIGHT BLINK VALUE 'X'.
  498 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 LOWLIGHT BLINK VALUE 'X'.
  499 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 LOWLIGHT BLINK VALUE 'X'.
  500 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 LOWLIGHT BLINK VALUE 'X'.
  501 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 LOWLIGHT BLINK VALUE 'X'.
  502 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 LOWLIGHT BLINK VALUE 'X'.
  503 05 LINE + 1.
  504 10 COL 02  BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 LOWLIGHT BLINK VALUE 'X'.
  505 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 LOWLIGHT BLINK VALUE 'X'.
  506 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 LOWLIGHT BLINK VALUE 'X'.
  507 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 LOWLIGHT BLINK VALUE 'X'.
  508 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 LOWLIGHT BLINK VALUE 'X'.
  509 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 LOWLIGHT BLINK VALUE 'X'.
  510 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 LOWLIGHT BLINK VALUE 'X'.
  511 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 LOWLIGHT BLINK VALUE 'X'.
  512 05 LINE + 1.
  513 10 COL 02  BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 LOWLIGHT BLINK VALUE 'X'.
  514 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 LOWLIGHT BLINK VALUE 'X'.
  515 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 LOWLIGHT BLINK VALUE 'X'.
  516 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 LOWLIGHT BLINK VALUE 'X'.
  517 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 LOWLIGHT BLINK VALUE 'X'.
  518 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 LOWLIGHT BLINK VALUE 'X'.
  519 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 LOWLIGHT BLINK VALUE 'X'.
  520 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 LOWLIGHT BLINK VALUE 'X'.
  521 05 LINE + 1.
  522 10 COL 02  BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 LOWLIGHT BLINK VALUE 'X'.
  523 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 LOWLIGHT BLINK VALUE 'X'.
  524 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 LOWLIGHT BLINK VALUE 'X'.
  525 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 LOWLIGHT BLINK VALUE 'X'.
  526 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 LOWLIGHT BLINK VALUE 'X'.
  527 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 LOWLIGHT BLINK VALUE 'X'.
  528 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 LOWLIGHT BLINK VALUE 'X'.
  529 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 LOWLIGHT BLINK VALUE 'X'.
  530 05 LINE + 1.
  531 10 COL 02  BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 LOWLIGHT BLINK VALUE 'X'.
  532 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 LOWLIGHT BLINK VALUE 'X'.
  533 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 LOWLIGHT BLINK VALUE 'X'.
  534 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 LOWLIGHT BLINK VALUE 'X'.
  535 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 LOWLIGHT BLINK VALUE 'X'.
  536 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 LOWLIGHT BLINK VALUE 'X'.
  537 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 LOWLIGHT BLINK VALUE 'X'.
  538 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 LOWLIGHT BLINK VALUE 'X'.
  539 05 LINE + 1.
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  540 10 COL 02 BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 LOWLIGHT BLINK VALUE 'X'.
  541 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 LOWLIGHT BLINK VALUE 'X'.
  542 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 LOWLIGHT BLINK VALUE 'X'.
  543 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 LOWLIGHT BLINK VALUE 'X'.
  544 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 LOWLIGHT BLINK VALUE 'X'.
  545 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 LOWLIGHT BLINK VALUE 'X'.
  546 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 LOWLIGHT BLINK VALUE 'X'.
  547 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 LOWLIGHT BLINK VALUE 'X'.
  548 05 LINE + 1.
  549 10 COL 02 BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 LOWLIGHT BLINK VALUE 'X'.
  550 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 LOWLIGHT BLINK VALUE 'X'.
  551 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 LOWLIGHT BLINK VALUE 'X'.
  552 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 LOWLIGHT BLINK VALUE 'X'.
  553 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 LOWLIGHT BLINK VALUE 'X'.
  554 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 LOWLIGHT BLINK VALUE 'X'.
  555 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 LOWLIGHT BLINK VALUE 'X'.
  556 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 LOWLIGHT BLINK VALUE 'X'.
  557 05 LINE + 1.
  558 10 COL 02 BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 LOWLIGHT BLINK VALUE 'X'.
  559 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 LOWLIGHT BLINK VALUE 'X'.
  560 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 LOWLIGHT BLINK VALUE 'X'.
  561 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 LOWLIGHT BLINK VALUE 'X'.
  562 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 LOWLIGHT BLINK VALUE 'X'.
  563 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 LOWLIGHT BLINK VALUE 'X'.
  564 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 LOWLIGHT BLINK VALUE 'X'.
  565 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 LOWLIGHT BLINK VALUE 'X'.
  566 *> #8
  567 05 LINE 17.
  568 10 COL 12 BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 BLINK VALUE 'X'.
  569 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 BLINK VALUE 'X'.
  570 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 BLINK VALUE 'X'.
  571 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 BLINK VALUE 'X'.
  572 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 BLINK VALUE 'X'.
  573 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 BLINK VALUE 'X'.
  574 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 BLINK VALUE 'X'.
  575 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 BLINK VALUE 'X'.
  576 05 LINE + 1.
  577 10 COL 12 BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 BLINK VALUE 'X'.
  578 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 BLINK VALUE 'X'.
  579 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 BLINK VALUE 'X'.
  580 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 BLINK VALUE 'X'.
  581 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 BLINK VALUE 'X'.
  582 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 BLINK VALUE 'X'.
  583 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 BLINK VALUE 'X'.
  584 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 BLINK VALUE 'X'.
  585 05 LINE + 1.
  586 10 COL 12 BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 BLINK VALUE 'X'.
  587 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 BLINK VALUE 'X'.
  588 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 BLINK VALUE 'X'.

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

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GNU COBOL 2.1 23NOV2013 Source Listing                                    2014/03/27
                                  C:/Users/tda010/Documents/Programs/Samples/colors.cbl
Line    Statement                                                                Page: 14
====== =========================================================================================
   638 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 BLINK VALUE 'X'.
   639 *> #9
   640 05 LINE 17.
   641 10 COL 22  BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 HIGHLIGHT BLINK VALUE 'X'.
   642 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 HIGHLIGHT BLINK VALUE 'X'.
   643 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 HIGHLIGHT BLINK VALUE 'X'.
   644 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 HIGHLIGHT BLINK VALUE 'X'.
   645 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 HIGHLIGHT BLINK VALUE 'X'.
   646 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 HIGHLIGHT BLINK VALUE 'X'.
   647 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 HIGHLIGHT BLINK VALUE 'X'.
   648 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 HIGHLIGHT BLINK VALUE 'X'.
   649 05 LINE + 1.
   650 10 COL 22  BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 HIGHLIGHT BLINK VALUE 'X'.
   651 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 HIGHLIGHT BLINK VALUE 'X'.
   652 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 HIGHLIGHT BLINK VALUE 'X'.
   653 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 HIGHLIGHT BLINK VALUE 'X'.
   654 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 HIGHLIGHT BLINK VALUE 'X'.
   655 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 HIGHLIGHT BLINK VALUE 'X'.
   656 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 HIGHLIGHT BLINK VALUE 'X'.
   657 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 HIGHLIGHT BLINK VALUE 'X'.
   658 05 LINE + 1.
   659 10 COL 22  BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 HIGHLIGHT BLINK VALUE 'X'.
   660 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 HIGHLIGHT BLINK VALUE 'X'.
   661 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 HIGHLIGHT BLINK VALUE 'X'.
   662 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 HIGHLIGHT BLINK VALUE 'X'.
   663 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 HIGHLIGHT BLINK VALUE 'X'.
   664 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 HIGHLIGHT BLINK VALUE 'X'.
   665 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 HIGHLIGHT BLINK VALUE 'X'.
   666 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 HIGHLIGHT BLINK VALUE 'X'.
   667 05 LINE + 1.
   668 10 COL 22  BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 HIGHLIGHT BLINK VALUE 'X'.
   669 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 HIGHLIGHT BLINK VALUE 'X'.
   670 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 HIGHLIGHT BLINK VALUE 'X'.
   671 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 HIGHLIGHT BLINK VALUE 'X'.
   672 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 HIGHLIGHT BLINK VALUE 'X'.
   673 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 HIGHLIGHT BLINK VALUE 'X'.
   674 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 HIGHLIGHT BLINK VALUE 'X'.
   675 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 HIGHLIGHT BLINK VALUE 'X'.
   676 05 LINE + 1.
   677 10 COL 22  BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 HIGHLIGHT BLINK VALUE 'X'.
   678 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 HIGHLIGHT BLINK VALUE 'X'.
   679 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 HIGHLIGHT BLINK VALUE 'X'.
   680 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 HIGHLIGHT BLINK VALUE 'X'.
   681 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 HIGHLIGHT BLINK VALUE 'X'.
   682 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 HIGHLIGHT BLINK VALUE 'X'.
   683 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 HIGHLIGHT BLINK VALUE 'X'.
   684 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 HIGHLIGHT BLINK VALUE 'X'.
   685 05 LINE + 1.
   686 10 COL 22  BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 HIGHLIGHT BLINK VALUE 'X'.

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GNU COBOL 2.1 23NOV2013 Source Listing                                      2014/03/27
                                  C:/Users/tda010/Documents/Programs/Samples/colors.cbl
Line    Statement                                                              Page: 15
====== =================================================================================
   687 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 HIGHLIGHT BLINK VALUE 'X'.
   688 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 HIGHLIGHT BLINK VALUE 'X'.
   689 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 HIGHLIGHT BLINK VALUE 'X'.
   690 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 HIGHLIGHT BLINK VALUE 'X'.
   691 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 HIGHLIGHT BLINK VALUE 'X'.
   692 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 HIGHLIGHT BLINK VALUE 'X'.
   693 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 HIGHLIGHT BLINK VALUE 'X'.
   694 05 LINE + 1.
   695 10 COL 22  BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 HIGHLIGHT BLINK VALUE 'X'.
   696 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 HIGHLIGHT BLINK VALUE 'X'.
   697 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 HIGHLIGHT BLINK VALUE 'X'.
   698 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 HIGHLIGHT BLINK VALUE 'X'.
   699 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 HIGHLIGHT BLINK VALUE 'X'.
   700 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 HIGHLIGHT BLINK VALUE 'X'.
   701 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 HIGHLIGHT BLINK VALUE 'X'.
   702 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 HIGHLIGHT BLINK VALUE 'X'.
   703 05 LINE + 1.
   704 10 COL 22  BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 HIGHLIGHT BLINK VALUE 'X'.
   705 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 HIGHLIGHT BLINK VALUE 'X'.
   706 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 HIGHLIGHT BLINK VALUE 'X'.
   707 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 HIGHLIGHT BLINK VALUE 'X'.
   708 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 HIGHLIGHT BLINK VALUE 'X'.
   709 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 HIGHLIGHT BLINK VALUE 'X'.
   710 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 HIGHLIGHT BLINK VALUE 'X'.
   711 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 HIGHLIGHT BLINK VALUE 'X'.
   712 *> #10
   713 05 LINE 17.
   714 10 COL 32  BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   715 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   716 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   717 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   718 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   719 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   720 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   721 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   722 05 LINE + 1.
   723 10 COL 32  BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   724 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   725 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   726 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   727 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   728 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   729 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   730 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   731 05 LINE + 1.
   732 10 COL 32  BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   733 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   734 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   735 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.

====================================================================================================
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GNU COBOL 2.1 23NOV2013 Source Listing                                2014/03/27
                           C:/Users/tda010/Documents/Programs/Samples/colors.cbl
Line    Statement                                                      Page: 16
======  ========================================================================
   736 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   737 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   738 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   739 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   740 05 LINE + 1.
   741 10 COL 32  BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   742 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   743 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   744 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   745 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   746 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   747 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   748 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   749 05 LINE + 1.
   750 10 COL 32  BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   751 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   752 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   753 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   754 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   755 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   756 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   757 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   758 05 LINE + 1.
   759 10 COL 32  BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   760 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   761 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   762 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   763 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   764 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   765 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   766 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   767 05 LINE + 1.
   768 10 COL 32  BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   769 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   770 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   771 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   772 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   773 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   774 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   775 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   776 05 LINE + 1.
   777 10 COL 32  BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   778 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   779 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   780 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   781 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   782 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   783 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   784 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.

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GNU COBOL 2.1 23NOV2013 Source Listing                                    2014/03/27
                                 C:/Users/tda010/Documents/Programs/Samples/colors.cbl
Line    Statement                                                          Page: 17
====== =================================================================================
  785 *> #11
  786 05 LINE 17.
  787 10 COL 42  BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 BLINK REVERSE-VIDEO VALUE 'X'.
  788 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 BLINK REVERSE-VIDEO VALUE 'X'.
  789 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 BLINK REVERSE-VIDEO VALUE 'X'.
  790 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 BLINK REVERSE-VIDEO VALUE 'X'.
  791 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 BLINK REVERSE-VIDEO VALUE 'X'.
  792 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 BLINK REVERSE-VIDEO VALUE 'X'.
  793 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 BLINK REVERSE-VIDEO VALUE 'X'.
  794 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 BLINK REVERSE-VIDEO VALUE 'X'.
  795 05 LINE + 1.
  796 10 COL 42  BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 BLINK REVERSE-VIDEO VALUE 'X'.
  797 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 BLINK REVERSE-VIDEO VALUE 'X'.
  798 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 BLINK REVERSE-VIDEO VALUE 'X'.
  799 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 BLINK REVERSE-VIDEO VALUE 'X'.
  800 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 BLINK REVERSE-VIDEO VALUE 'X'.
  801 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 BLINK REVERSE-VIDEO VALUE 'X'.
  802 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 BLINK REVERSE-VIDEO VALUE 'X'.
  803 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 BLINK REVERSE-VIDEO VALUE 'X'.
  804 05 LINE + 1.
  805 10 COL 42  BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 BLINK REVERSE-VIDEO VALUE 'X'.
  806 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 BLINK REVERSE-VIDEO VALUE 'X'.
  807 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 BLINK REVERSE-VIDEO VALUE 'X'.
  808 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 BLINK REVERSE-VIDEO VALUE 'X'.
  809 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 BLINK REVERSE-VIDEO VALUE 'X'.
  810 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 BLINK REVERSE-VIDEO VALUE 'X'.
  811 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 BLINK REVERSE-VIDEO VALUE 'X'.
  812 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 BLINK REVERSE-VIDEO VALUE 'X'.
  813 05 LINE + 1.
  814 10 COL 42  BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 BLINK REVERSE-VIDEO VALUE 'X'.
  815 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 BLINK REVERSE-VIDEO VALUE 'X'.
  816 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 BLINK REVERSE-VIDEO VALUE 'X'.
  817 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 BLINK REVERSE-VIDEO VALUE 'X'.
  818 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 BLINK REVERSE-VIDEO VALUE 'X'.
  819 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 BLINK REVERSE-VIDEO VALUE 'X'.
  820 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 BLINK REVERSE-VIDEO VALUE 'X'.
  821 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 BLINK REVERSE-VIDEO VALUE 'X'.
  822 05 LINE + 1.
  823 10 COL 42  BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 BLINK REVERSE-VIDEO VALUE 'X'.
  824 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 BLINK REVERSE-VIDEO VALUE 'X'.
  825 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 BLINK REVERSE-VIDEO VALUE 'X'.
  826 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 BLINK REVERSE-VIDEO VALUE 'X'.
  827 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 BLINK REVERSE-VIDEO VALUE 'X'.
  828 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 BLINK REVERSE-VIDEO VALUE 'X'.
  829 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 BLINK REVERSE-VIDEO VALUE 'X'.
  830 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 BLINK REVERSE-VIDEO VALUE 'X'.
  831 05 LINE + 1.
  832 10 COL 42  BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 BLINK REVERSE-VIDEO VALUE 'X'.
  833 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 BLINK REVERSE-VIDEO VALUE 'X'.

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GNU COBOL 2.1 23NOV2013 Source Listing                                  2014/03/27
                                C:/Users/tda010/Documents/Programs/Samples/colors.cbl
Line    Statement                                                         Page: 18
======  ==========================================================================
   834 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 BLINK REVERSE-VIDEO VALUE 'X'.
   835 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 BLINK REVERSE-VIDEO VALUE 'X'.
   836 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 BLINK REVERSE-VIDEO VALUE 'X'.
   837 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 BLINK REVERSE-VIDEO VALUE 'X'.
   838 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 BLINK REVERSE-VIDEO VALUE 'X'.
   839 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 BLINK REVERSE-VIDEO VALUE 'X'.
   840 05 LINE + 1.
   841 10 COL 42  BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 BLINK REVERSE-VIDEO VALUE 'X'.
   842 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 BLINK REVERSE-VIDEO VALUE 'X'.
   843 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 BLINK REVERSE-VIDEO VALUE 'X'.
   844 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 BLINK REVERSE-VIDEO VALUE 'X'.
   845 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 BLINK REVERSE-VIDEO VALUE 'X'.
   846 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 BLINK REVERSE-VIDEO VALUE 'X'.
   847 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 BLINK REVERSE-VIDEO VALUE 'X'.
   848 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 BLINK REVERSE-VIDEO VALUE 'X'.
   849 05 LINE + 1.
   850 10 COL 42  BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 BLINK REVERSE-VIDEO VALUE 'X'.
   851 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 BLINK REVERSE-VIDEO VALUE 'X'.
   852 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 BLINK REVERSE-VIDEO VALUE 'X'.
   853 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 BLINK REVERSE-VIDEO VALUE 'X'.
   854 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 BLINK REVERSE-VIDEO VALUE 'X'.
   855 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 BLINK REVERSE-VIDEO VALUE 'X'.
   856 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 BLINK REVERSE-VIDEO VALUE 'X'.
   857 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 BLINK REVERSE-VIDEO VALUE 'X'.
   858 *> #12
   859 05 LINE 17.
   860 10 COL 52  BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   861 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   862 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   863 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   864 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   865 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   866 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   867 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   868 05 LINE + 1.
   869 10 COL 52  BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   870 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   871 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   872 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   873 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   874 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   875 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   876 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   877 05 LINE + 1.
   878 10 COL 52  BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   879 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   880 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   881 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   882 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
==================================================================================
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GNU COBOL 2.1 23NOV2013 Source Listing                                          2014/03/27
                                     C:/Users/tda010/Documents/Programs/Samples/colors.cbl
Line    Statement                                                               Page: 19
====== ====================================================================================
   883 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   884 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   885 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   886 05 LINE + 1.
   887 10 COL 52  BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   888 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   889 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   890 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   891 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   892 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   893 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   894 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   895 05 LINE + 1.
   896 10 COL 52  BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   897 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   898 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   899 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   900 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   901 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   902 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   903 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   904 05 LINE + 1.
   905 10 COL 52  BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   906 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   907 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   908 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   909 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   910 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   911 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   912 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   913 05 LINE + 1.
   914 10 COL 52  BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   915 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   916 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   917 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   918 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   919 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   920 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   921 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   922 05 LINE + 1.
   923 10 COL 52  BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   924 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   925 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   926 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   927 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   928 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   929 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   930 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   931 PROCEDURE DIVISION.

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

```
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
```

4. DAY-FROM-DATE

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

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

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

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

- Coding a GnuCOBOL user-defined function

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

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

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

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

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

Line   Statement   Page: 1
====== ==

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

==

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

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

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

==

```
GNUCOBOL 3.0 24DEC2017  Source Listing                              2017/12/24
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                      Page: 5
======  ========================================================================

   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.
```

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                        2017/12/24
                                              /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                                  Page: 6
====== ========================================================================================
        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).
```

```
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).
```

```
GNUCOBOL 3.0 24DEC2017  Source Listing                              2017/12/24
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                      Page: 10
====== =========================================================================
   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.
```

==
`GCic for UNIX/Linux Copyright (C) 2009-2018, Gary L. Cutler, GPL                    Page: 10`

```
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      *>12345678901234567890123456789012345678901234567890123456789012345678901234567890
   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      *>12345678901234567890123456789012345678901234567890123456789012345678901234567890
   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
```

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

```
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     '.
```

```
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
```

```
GNUCOBOL 3.0 24DEC2017  Source Listing                              2017/12/24
                                       /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line   Statement                                                       Page: 17
====== ========================================================================

   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              .
```

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                    2017/12/24
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line   Statement                                                            Page: 19
======  =========================================================================

   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
```

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                    2017/12/24
                                      /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line   Statement                                                             Page: 20
====== =============================================================================
  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
```

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                    2017/12/24
                                          /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                           Page: 22
====== ==================================================================================

   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
```

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

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                          2017/12/24
                                                  /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                                     Page: 23
====== ===========================================================================================
   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              .
```

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

   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
```

```
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            .
```

```
======================================================================================================
GCic for UNIX/Linux Copyright (C) 2009-2018, Gary L. Cutler, GPL                            Page: 26
```

```
GNUCOBOL 3.0 24DEC2017  Source Listing                              2017/12/24
                                       /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line   Statement                                                      Page: 27
====== =========================================================================

  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            .
```

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                2017/12/24
                                      /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line   Statement                                                         Page: 30
====== =========================================================================

  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             .
```

```
=============================================================================================
GCic for UNIX/Linux Copyright (C) 2009-2018, Gary L. Cutler, GPL                    Page: 30
```

```
GNUCOBOL 3.0 24DEC2017  Source Listing                              2017/12/24
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                      Page: 31
====== =========================================================================

  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.
```

```
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 ' '.
```

```
GNUCOBOL 3.0 24DEC2017  Source Listing                               2017/12/24
                                       /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line   Statement                                                        Page: 34
====== =========================================================================

 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
```

===
```
GCic for UNIX/Linux Copyright (C) 2009-2018, Gary L. Cutler, GPL                 Page: 34
```

```
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       *> GC0410 Initial coding                                       **
 1392       *> GC0711 Updates to accommodate the 12MAR2010 version of OC   **
 1393       *> GC0710 Handle duplicate data names (i.e. 'CORRESPONDING' or **
 1394       *>        qualified items) better; ignore 'END PROGRAM' recs   **
 1395       *>        so program name doesn't appear in listing.           **
 1396       *> GC0313 Fix problem where the first procedure name defined   **
 1397       *>        in the PROCEDURE DIVISION lacks a "Defined" line     **
 1398       *>        number.                                              **
 1399       *> GC1213 Updated for 23NOV2013 version of GNU COBOL 2.1; Stop **
 1400       *>        showing functions as if they were identifiers in the **
 1401       *>        xref listing; Flag all CALL argument references with **
 1402       *>        a "C" rather than "*" because they aren't necessari- **
 1403       *>        ly altered; Fixed assorted formatting bugs; DOWN-    **
 1404       *>        WARD COMPATIBLE WITH GNU COBOL 2.0 SYNTAX            **
 1405       *> GC0314 Fix problem where 1st char of 1st token on a line is **
 1406       *>        lost if >>SOURCE MODE IS FREE is in effect and the   **
 1407       *>        1st character is non-blank.                          **
 1408       *> VC1217 Updated compiler version & date to v3.0 & 24DEC2017. **
 1409       *>****************************************************************
 1410       ENVIRONMENT DIVISION.
 1411       CONFIGURATION SECTION.
 1412       REPOSITORY.
 1413           FUNCTION ALL INTRINSIC.
 1414       INPUT-OUTPUT SECTION.
 1415       FILE-CONTROL.
 1416           SELECT F-Expanded-Src-FILE  ASSIGN TO WS-Expanded-Src-Fn-TXT
 1417                                       ORGANIZATION IS LINE SEQUENTIAL.
 1418 GC0712    SELECT F-Listing-FILE       ASSIGN TO L-Listing-Fn-TXT
 1419                                       ORGANIZATION IS LINE SEQUENTIAL.
 1420           SELECT F-Original-Src-FILE  ASSIGN TO L-Src-Fn-TXT
```

```
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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GNUCOBOL 3.0 24DEC2017  Source Listing                                   2017/12/24
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                          Page: 38
====== ================================================================================
 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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GNUCOBOL 3.0 24DEC2017  Source Listing                              2017/12/24
                                       /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                    Page: 39
====== =========================================================================
 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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GNUCOBOL 3.0 24DEC2017  Source Listing                                    2017/12/24
                                          /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                              Page: 40
====== ==============================================================================
 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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GNUCOBOL 3.0 24DEC2017  Source Listing                                2017/12/24
                                      /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                       Page: 41
====== ========================================================================
 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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GNUCOBOL 3.0 24DEC2017  Source Listing                              2017/12/24
                                    /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                     Page: 42
====== =========================================================================
 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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GNUCOBOL 3.0 24DEC2017  Source Listing                                    2017/12/24
                                         /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                             Page: 43
====== ==============================================================================
 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
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 1811          05 VALUE ' FILE-CONTROL               ' PIC X(33).
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 1833 GC1213    05 VALUE 'FFORMATTED-DATE             ' PIC X(33).    UNIMPLEMENTED
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 2153           05 VALUE 'VSTART                    ' PIC X(33).
 2154           05 VALUE ' STATEMENT                ' PIC X(33).    UNIMPLEMENTED
 2155           05 VALUE ' STATIC                   ' PIC X(33).
 2156           05 VALUE ' STATUS                   ' PIC X(33).
 2157           05 VALUE ' STDCALL                  ' PIC X(33).
 2158           05 VALUE 'MSTDERR                   ' PIC X(33).
 2159           05 VALUE 'MSTDIN                    ' PIC X(33).
 2160           05 VALUE 'MSTDOUT                   ' PIC X(33).
 2161           05 VALUE ' STEP                     ' PIC X(33).
 2162           05 VALUE 'VSTOP                     ' PIC X(33).
```

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GNUCOBOL 3.0 24DEC2017  Source Listing                                 2017/12/24
                                       /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                         Page: 50
====== =========================================================================
 2163 GC1213    05 VALUE 'FSTORED-CHAR-LENGTH         ' PIC X(33).
 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).
 2179           05 VALUE 'MSW12                       ' PIC X(33).
 2180           05 VALUE 'MSW13                       ' PIC X(33).
 2181           05 VALUE 'MSW14                       ' PIC X(33).
 2182           05 VALUE 'MSW15                       ' PIC X(33).
 2183           05 VALUE 'MSW2                        ' PIC X(33).
 2184           05 VALUE 'MSW3                        ' PIC X(33).
 2185           05 VALUE 'MSW4                        ' PIC X(33).
 2186           05 VALUE 'MSW5                        ' PIC X(33).
 2187           05 VALUE 'MSW6                        ' PIC X(33).
 2188           05 VALUE 'MSW7                        ' PIC X(33).
 2189           05 VALUE 'MSW8                        ' PIC X(33).
 2190           05 VALUE 'MSW9                        ' PIC X(33).
 2191           05 VALUE 'MSWITCH-0                   ' PIC X(33).
 2192           05 VALUE 'MSWITCH-1                   ' PIC X(33).
 2193           05 VALUE 'MSWITCH-10                  ' PIC X(33).
 2194           05 VALUE 'MSWITCH-11                  ' PIC X(33).
 2195           05 VALUE 'MSWITCH-12                  ' PIC X(33).
 2196           05 VALUE 'MSWITCH-13                  ' PIC X(33).
 2197           05 VALUE 'MSWITCH-14                  ' PIC X(33).
 2198           05 VALUE 'MSWITCH-15                  ' PIC X(33).
 2199           05 VALUE 'MSWITCH-2                   ' PIC X(33).
 2200           05 VALUE 'MSWITCH-3                   ' PIC X(33).
 2201           05 VALUE 'MSWITCH-4                   ' PIC X(33).
 2202           05 VALUE 'MSWITCH-5                   ' PIC X(33).
 2203           05 VALUE 'MSWITCH-6                   ' PIC X(33).
 2204           05 VALUE 'MSWITCH-7                   ' PIC X(33).
 2205           05 VALUE 'MSWITCH-8                   ' PIC X(33).
 2206           05 VALUE 'MSWITCH-9                   ' PIC X(33).
 2207           05 VALUE ' SYMBOL                     ' PIC X(33).    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).
```

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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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GNUCOBOL 3.0 24DEC2017  Source Listing                          2017/12/24
                                      /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line   Statement                                                    Page: 56
====== ======================================================================

  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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GNUCOBOL 3.0 24DEC2017  Source Listing                                   2017/12/24
                                             /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                             Page: 58
======  =======================================================================================

 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             .
```

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                    2017/12/24
                                         /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                             Page: 59
======  ===========================================================================

  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
```

```
===============================================================================================
GCic for UNIX/Linux Copyright (C) 2009-2018, Gary L. Cutler, GPL                    Page: 59
```

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                    2017/12/24
                                            /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                               Page: 60
====== =====================================================================================
  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
```

Line   Statement   Page: 62
====== ===
  2709   .

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                      2017/12/24
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                             Page: 63
======  ================================================================================

 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           .
```

```
================================================================================================
GCic for UNIX/Linux Copyright (C) 2009-2018, Gary L. Cutler, GPL                    Page: 63
```

```
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             .
```

```
GNUCOBOL 3.0 24DEC2017  Source Listing                              2017/12/24
                                     /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                     Page: 65
======  ========================================================================

 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             .
```

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

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                   2017/12/24
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                          Page: 66
======  ================================================================================

 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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GNUCOBOL 3.0 24DEC2017  Source Listing                                 2017/12/24
                                         /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                       Page: 67
====== =========================================================================

 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
```

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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             .
```

```
GNUCOBOL 3.0 24DEC2017  Source Listing                              2017/12/24
                                       /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                       Page: 70
======  ========================================================================

  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          .
```

```
GNUCOBOL 3.0 24DEC2017  Source Listing                              2017/12/24
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line   Statement                                                      Page: 72
====== =========================================================================

 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                .
```

```
GNUCOBOL 3.0 24DEC2017  Source Listing                              2017/12/24
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                    Page: 73
====== ========================================================================
 3035
 3036       351-DIVIDE SECTION.
 3037           EVALUATE WS-Token-Prev-TXT
 3038           WHEN 'INTO'
 3039               PERFORM 363-Set-Upd
 3040               MOVE F-Sort-Work-REC TO WS-Held-Reference-TXT
 3041           WHEN 'GIVING'
 3042               IF WS-Held-Reference-TXT NOT = SPACES
 3043                   MOVE WS-Held-Reference-TXT To F-Sort-Work-REC
 3044                   MOVE SPACES         To WS-Held-Reference-TXT
 3045                                          F-SW-Ref-Flag-CHR
 3046                   RELEASE F-Sort-Work-REC
 3047               END-IF
 3048               PERFORM 362-Release-Upd
 3049           WHEN 'REMAINDER'
 3050               PERFORM 362-Release-Upd
 3051           WHEN OTHER
 3052               PERFORM 361-Release-Ref
 3053           END-EVALUATE
 3054           .
 3055
 3056       351-FREE SECTION.
 3057           PERFORM 362-Release-Upd
 3058           .
 3059
 3060 GC1213 351-GENERATE SECTION.
 3061 GC1213     PERFORM 362-Release-Upd
 3062 GC1213     .
 3063
 3064       351-INITIALIZE SECTION.
 3065           EVALUATE WS-Token-Prev-TXT
 3066           WHEN 'INITIALIZE'
 3067               PERFORM 362-Release-Upd
 3068           WHEN 'REPLACING'
 3069               PERFORM 361-Release-Ref
 3070           END-EVALUATE
 3071           .
 3072
 3073 GC1213 351-INITIATE SECTION.
 3074 GC1213     PERFORM 362-Release-Upd
 3075 GC1213     .
 3076
 3077       351-INSPECT SECTION.
 3078           EVALUATE WS-Token-Prev-TXT
 3079           WHEN 'INSPECT'
 3080               PERFORM 364-Set-Ref
 3081               MOVE SPACES TO WS-Held-Reference-TXT
 3082               MOVE SPACES TO WS-Token-Prev-TXT
 3083           WHEN 'TALLYING'
 3084               PERFORM 362-Release-Upd
 3085               MOVE SPACES TO WS-Token-Prev-TXT
 3086           WHEN 'REPLACING'
 3087               IF WS-Held-Reference-TXT NOT = SPACES
```

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GNUCOBOL 3.0 24DEC2017  Source Listing                                  2017/12/24
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                          Page: 74
====== ============================================================================
 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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GNUCOBOL 3.0 24DEC2017  Source Listing                                  2017/12/24
                                          /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                         Page: 75
====== =========================================================================
 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
```

```
 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               .
```

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

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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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================================================================================================
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```
GNUCOBOL 3.0 24DEC2017  Source Listing                                      2017/12/24
                                          /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line   Statement                                                              Page: 82
====== ===============================================================================

  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            .
```

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                 2017/12/24
                                      /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line   Statement                                                         Page: 83
====== =========================================================================

  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            .
```

```
===============================================================================================
GCic for UNIX/Linux Copyright (C) 2009-2018, Gary L. Cutler, GPL                     Page: 83
```

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GNUCOBOL 3.0 24DEC2017  Source Listing                              2017/12/24
                                      /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                        Page: 84
======  ========================================================================

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

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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
```

```
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
```

```
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.
```

```
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
```

```
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
```

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

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

```
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
```

```
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:

  - `"ACCEPT FROM ENVIRONMENT"` statement

  - `"INSPECT"` statement

  - `"STRING"` statement

- Using the following built-in subroutines:

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

  - `"CBL_CLOSE_FILE"` built-in system subroutine

  - `"CBL_DELETE_FILE"` built-in system subroutine

  - `"CBL_EXIT_PROC"` built-in system subroutine

  - `"CBL_OPEN_FILE"` built-in system subroutine

  - `"CBL_READ_FILE"` built-in system subroutine

  - `"CBL_WRITE_FILE"` built-in system subroutine

- Using the following intrinsic functions:

  - `"RANDOM"` intrinsic function

  - `"TRIM"` intrinsic function

First, here is the STREAMIOcb.cpy copybook:

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

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

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

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

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

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

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

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

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

```
GNU COBOL 2.1 23NOV2013 Source Listing                                     2014/03/27
                            C:/Users/tda010/Documents/Programs/Samples/STREAMIO.cbl
Line   Statement                                                             Page: 5
====== ==============================================================================
  197      *>      ferences:                                          **
  198      *>                                                         **
  199      *>      1. When data is read from the file, only that data read **
  200      *>         up to BUT NOT INCLUDING an end-of-line delimiter    **
  201      *>         sequence (either a LF or CRLF) will be retained in   **
  202      *>         the buffer - the remainder of the buffer from the    **
  203      *>         end-of-line sequence onward will be reset to SPACES. **
  204      *>         The file-offset value (SCB-Offset-NUM) will be in-   **
  205      *>         cremented ONLY by the amount of data transferred up  **
  206      *>         to AND INCLUDING the end-of-line sequence.       **
  207      *>                                                         **
  208      *>      2. When data is read from the file and an end-of-line   **
  209      *>         delimiter sequence (either a LF or a CRLF) cannot be **
  210      *>         found within the buffer, the assumption is made that **
  211      *>         the record is too long to fit within the buffer.  In **
  212      *>         these instances, an SCB-Return-CD value of 02 will   **
  213      *>         be returned and the SCB-Offset-NUM value will be     **
  214      *>         incremented past the next end-of-line sequence in    **
  215      *>         the file (this will involve at least one additional  **
  216      *>         call to CBL_READ_FILE to locate that eol sequence,   **
  217      *>         but any additional such reads will be done internal- **
  218      *>         ly to STREAMIO and will be entirely transparent to   **
  219      *>         the caller of STREAMIO.                         **
  220      *>                                                         **
  221      *>      DO NOT USE the Streamio-READ-Delim function if the     **
  222      *>      possibility exists that linefeed (X"0A") or carriage-   **
  223      *>      return (X"0D") characters could exist as actual data    **
  224      *>      characters in the file.                            **
  225      *>                                                         **
  226      *> SCB-Func-WRITE-Delim-BOOL                                 **
  227      *>                                                         **
  228      *>      SCB-Func-WRITE-Delim-BOOL acts like the Streamio-    **
  229      *>      FUNC-WRITE function, with the following difference:   **
  230      *>                                                         **
  231      *>      After the specified data is written to the file, an    **
  232      *>      end-of-line sequence will also be written to the file.  **
  233      *>      The file-offset value (SCB-Value) will be incremented   **
  234      *>      by the byte-count size of the data PLUS the size of the **
  235      *>      end-of-line sequence.  One of two possible end-of-line  **
  236      *>      sequences must be specified using the value of SCB-     **
  237      *>      Delimter-Mode.                                     **
  238      *>                                                         **
  239      *>----------------------------------------------------------**
  240      *> SCB-Delimiter-Mode-CD                                    **
  241      *>----------------------------------------------------------**
  242      *>                                                         **
  243      *> This data item is needed only when issuing the Streamio-    **
  244      *> FUNC-WRITE-Delim function.  In those circumstances, this    **
  245      *> item defines what end-of-line delimiter sequence is to be   **

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```

====== ===
```
    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"**
```
==

```
GNU COBOL 2.1 23NOV2013 Source Listing                                        2014/03/27
                                 C:/Users/tda010/Documents/Programs/Samples/STREAMIO.cbl
Line    Statement                                                                Page: 7
======  ==================================================================================
   295        *> copybook.                                           **
   296        *>                                                     **
   297        *>-------------------------------------------------------**
   298        *> SCB-Return-CD                                        **
   299        *>-------------------------------------------------------**
   300        *>                                                     **
   301        *> The following are the possible SCB-Return-CD values.  The  **
   302        *> ones marked with a ">" will NOT trigger an error-routine, if **
   303        *> one is currently registered via SCB-Error-Routine-PTR.     **
   304        *>                                                     **
   305        *>   12 I/O error writing to file                      **
   306        *>   11 File does not exist                            **
   307        *>   10 File already OPEN or already CLOSEd             **
   308        *> > 02 READ-Delim was truncated                       **
   309        *> > 01 No more data is available from the current     **
   310        *>      SCB-Offset-NUM                                 **
   311        *> > 00 OK - the operation was successful              **
   312        *>   -1 Invalid SCB-Function-CD                        **
   313        *>   -2 Invalid SCB-Mode-CD                            **
   314        *>   -3 CBL_xxxxx_FILE routine rejected operation      **
   315        *>   -4 Invalid delimiter mode specified (Not U/W)     **
   316        *>                                                     **
   317        *>-------------------------------------------------------**
   318        *> SCB-Filename-TXT                                     **
   319        *>-------------------------------------------------------**
   320        *>                                                     **
   321        *> This is the name of the file you wish to access.    **
   322        *>                                                     **
   323        *> If you are planning on reading the file, the file MUST exist **
   324        *> at the time the SCB-Func-OPEN-BOOL is executed.     **
   325        *>                                                     **
   326        *> If you are planning on writing to the file, the file need **
   327        *> exist when the SCB-Func-OPEN-BOOL is issued.        **
   328        *>                                                     **
   329        *> In general, the contents of SCB-Filename-TXT should re- **
   330        *> flect the complete path to the file as well as the name of **
   331        *> the file itself, unless the file is contained in whatever **
   332        *> directory is current at the time the SCB-Func-OPEN-BOOL is **
   333        *> executed.                                           **
   334        *>                                                     **
   335        *> The following special values may be used for        **
   336        *> SCB-Filename-TXT:                                   **
   337        *>                                                     **
   338        *> SPACES If the filename is SPACES, a filename will be created **
   339        *>        automatically for you in whatever directory is de- **
   340        *>        fined by the TEMP environment variable.  If there IS **
   341        *>        no TEMP variable defined, the "/tmp" folder will be **
   342        *>        assumed.  The filename will be STREAMIO-nnnnnnnn.dat **
   343        *>        where "nnnnnnnn" is a random number.         **

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```

```
GNU COBOL 2.1 23NOV2013 Source Listing                                      2014/03/27
                               C:/Users/tda010/Documents/Programs/Samples/STREAMIO.cbl
Line    Statement                                                             Page: 8
====== =================================================================================
   344     *>                                                          **
   345     *> .      If you specify only a dot (period) as the filename,  **
   346     *>        the behavior will be the same as with a value of    **
   347     *>        SPACES except there will be no ".dat" at the end of  **
   348     *>        the generated filename.                             **
   349     *>                                                          **
   350     *> .ext   If you specify a filename extension prefixed with a  **
   351     *>        dot (period), the behavior will be the same as if a  **
   352     *>        value of SPACES were specified, except that the given **
   353     *>        extension will be used instead of ".dat".  Note that **
   354     *>        if you are using a Unix/Cygwin implementation of     **
   355     *>        OpenCOBOL and you'd like to specify a hidden file in  **
   356     *>        the current directory as the SCB-Filename-TXT, you   **
   357     *>        MUST code the filename as "./.xxxxx" to avoid having  **
   358     *>        it treated as this special name.                    **
   359     *>                                                          **
   360     *>***************************************************************
   361       ENVIRONMENT DIVISION.
   362       CONFIGURATION SECTION.
   363       REPOSITORY.
   364           FUNCTION ALL INTRINSIC.
   365       DATA DIVISION.
   366       WORKING-STORAGE SECTION.
   367       01  WS-Access-Mode-CD                 PIC X(1) COMP-X.
   368       01  WS-Arg-Length-NUM                 PIC X(4) COMP-X.
   369       01  WS-Buffer-TXT                     PIC X(256).
   370       01  WS-Delim-Buffer-TXT               PIC X(2).
   371       01  WS-Env-Temp-TXT                   PIC X(256).
   372       01  WS-Slash-CHR                      PIC X(1).
   373       01  WS-Tally-NUM                      USAGE BINARY-LONG.
   374       01  WS-8-Digit-NUM                    PIC 9(8).
   375       01  WS-256-Byte-TXT                   PIC X(256).
   376       LINKAGE SECTION.
   377       01  L-StreamIO-Control-Block-TXT.
   378           COPY STREAMIOcb
   379               REPLACING LEADING ==SCB-== BY ==L-SCB-==.
        05 L-SCB-Handle-NUM PIC X(4) COMP-X.
        05 L-SCB-Mode-CD PIC X(1).
        88 L-SCB-MODE-Input-BOOL VALUE 'I' 'i'.
        88 L-SCB-MODE-Output-BOOL VALUE 'O' 'o'.
        88 L-SCB-MODE-Both-BOOL VALUE 'B' 'b'.
        05 L-SCB-Function-CD PIC X(2).
        88 L-SCB-Func-CLOSE-BOOL VALUE 'C ' 'c '.
        88 L-SCB-Func-DELETE-BOOL VALUE 'D ' 'd '.
        88 L-SCB-Func-OPEN-BOOL VALUE 'O ' 'o '.
        88 L-SCB-Func-READ-BOOL VALUE 'R ' 'r '.
        88 L-SCB-Func-READ-Delim-BOOL VALUE 'RD' 'rd'
        'rD' 'Rd'.
        88 L-SCB-Func-WRITE-BOOL VALUE 'W ' 'w '.


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```

```
GNU COBOL 2.1 23NOV2013 Source Listing                                    2014/03/27
                                 C:/Users/tda010/Documents/Programs/Samples/STREAMIO.cbl
Line    Statement                                                              Page: 9
====== ===============================================================================
        88 L-SCB-Func-WRITE-Delim-BOOL VALUE 'WD' 'wd'
       'wD' 'Wd'.
        05 L-SCB-Delimiter-Mode-CD PIC X(1).
        88 L-SCB-DELIM-Unix-BOOL VALUE 'U' 'u'.
        88 L-SCB-DELIM-Windows-BOOL VALUE 'W' 'w'.
        05 L-SCB-Offset-NUM PIC X(8) COMP-X.
        05 L-SCB-Error-Routine-PTR USAGE PROGRAM-POINTER.
        05 L-SCB-Error-Routine-NUM REDEFINES L-SCB-Error-Routine-PTR
       USAGE BINARY-LONG.
        05 L-SCB-Return-CD USAGE BINARY-LONG.
        05 L-SCB-Filename-TXT PIC X(256).
   380      01  L-Arg2-TXT                        PIC X ANY LENGTH.
   381      PROCEDURE DIVISION USING L-StreamIO-Control-Block-TXT,
   382                               L-Arg2-TXT.
   383      000-Main SECTION.
   384          MOVE 00 TO L-SCB-Return-CD
   385          EVALUATE TRUE
   386              WHEN L-SCB-Func-CLOSE-BOOL
   387                  PERFORM 030-Validate-Handle-NonZero
   388                  PERFORM 200-CLOSE
   389              WHEN L-SCB-Func-DELETE-BOOL
   390                  CALL "CBL_DELETE_FILE" USING L-SCB-Filename-TXT
   391              WHEN L-SCB-Func-OPEN-BOOL
   392                  PERFORM 020-Validate-Handle-Zero
   393                  PERFORM 100-OPEN
   394              WHEN L-SCB-Func-READ-BOOL
   395                  PERFORM 030-Validate-Handle-NonZero
   396                  PERFORM 400-READ
   397              WHEN L-SCB-Func-READ-Delim-BOOL
   398                  PERFORM 030-Validate-Handle-NonZero
   399                  PERFORM 500-READ-Delim
   400              WHEN L-SCB-Func-WRITE-BOOL
   401                  PERFORM 030-Validate-Handle-NonZero
   402                  PERFORM 300-WRITE
   403              WHEN L-SCB-Func-WRITE-Delim-BOOL
   404                  EVALUATE TRUE
   405                      WHEN L-SCB-Delim-Unix-BOOL
   406                          PERFORM 030-Validate-Handle-NonZero
   407                          PERFORM 300-WRITE
   408                          MOVE 1 TO WS-Arg-Length-NUM
   409                          MOVE X"0A" TO WS-Delim-Buffer-TXT
   410                      WHEN L-SCB-Delim-Windows-BOOL
   411                          PERFORM 030-Validate-Handle-NonZero
   412                          PERFORM 300-WRITE
   413                          MOVE 2 TO WS-Arg-Length-NUM
   414                          MOVE X"0D0A" TO WS-Delim-Buffer-TXT
   415                      WHEN OTHER
   416                          MOVE -4 TO L-SCB-Return-CD
   417                          PERFORM 099-ERROR-Return


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```

```
GNU COBOL 2.1 23NOV2013 Source Listing                                    2014/03/27
                              C:/Users/tda010/Documents/Programs/Samples/STREAMIO.cbl
Line    Statement                                                             Page: 10
====== ================================================================================
   418                    END-EVALUATE
   419                    CALL "CBL_WRITE_FILE" USING L-SCB-Handle-NUM
   420                                            L-SCB-Offset-NUM
   421                                            WS-Arg-Length-NUM
   422                                            0
   423                                            WS-Delim-Buffer-TXT
   424                 PERFORM 040-Check-WRITE-SCB-Return-CD
   425                 ADD WS-Arg-Length-NUM TO L-SCB-Offset-NUM
   426              WHEN OTHER
   427                 MOVE -1 TO L-SCB-Return-CD
   428                 PERFORM 099-ERROR-Return
   429           END-EVALUATE
   430           GOBACK
   431              .
   432       020-Validate-Handle-Zero SECTION.
   433           IF L-SCB-Handle-NUM NOT = ZERO
   434               MOVE 10 TO L-SCB-Return-CD
   435               PERFORM 099-ERROR-Return
   436           END-IF
   437              .
   438       030-Validate-Handle-NonZero SECTION.
   439           IF L-SCB-Handle-NUM = ZERO
   440               MOVE 10 TO L-SCB-Return-CD
   441               PERFORM 099-ERROR-Return
   442           END-IF
   443              .
   444       040-Check-WRITE-SCB-Return-CD SECTION.
   445           IF RETURN-CODE < 0
   446               MOVE -3 TO L-SCB-Return-CD
   447               PERFORM 099-ERROR-Return
   448           END-IF
   449           IF RETURN-CODE = 30
   450               MOVE 12 TO L-SCB-Return-CD
   451               PERFORM 099-ERROR-Return
   452           END-IF
   453           MOVE 00 TO L-SCB-Return-CD
   454              .
   455       050-Check-READ-SCB-Return-CD SECTION.
   456           IF RETURN-CODE < 0
   457               MOVE -3 TO L-SCB-Return-CD
   458               PERFORM 099-ERROR-Return
   459           END-IF
   460           IF RETURN-CODE = 10
   461               MOVE 01 TO L-SCB-Return-CD
   462               GOBACK
   463           END-IF
   464           MOVE 00 TO L-SCB-Return-CD
   465              .
   466       060-Identify-TEMP SECTION.

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

```
======  =========================================================================================
   467           ACCEPT WS-Env-Temp-TXT FROM ENVIRONMENT "TEMP"
   468           EVALUATE TRUE
   469               WHEN WS-Env-Temp-TXT (1:1) = "/"
   470                   MOVE "/"    TO WS-Slash-CHR
   471               WHEN WS-Env-Temp-TXT (2:1) = ":"
   472                   MOVE "\"    TO WS-Slash-CHR
   473               WHEN OTHER
   474                   MOVE "/tmp" TO WS-Env-Temp-TXT
   475                   MOVE "/"    TO WS-Slash-CHR
   476           END-EVALUATE
   477           .
   478       099-ERROR-Return SECTION.
   479           IF L-SCB-Error-Routine-NUM NOT = 0
   480               CALL "CBL_EXIT_PROC" USING 0, L-SCB-Error-Routine-PTR
   481               STOP RUN
   482           END-IF
   483           GOBACK
   484           .
   485       100-OPEN SECTION.
   486           IF  (L-SCB-Mode-Input-BOOL OR L-SCB-Mode-Both-BOOL)
   487           AND (L-SCB-Filename-TXT = SPACES OR LOW-VALUES)
   488               MOVE 11 TO L-SCB-Return-CD
   489               PERFORM 099-ERROR-Return
   490           END-IF
   491           EVALUATE TRUE
   492               WHEN L-SCB-Filename-TXT = SPACES OR LOW-VALUES
   493                   PERFORM 060-Identify-TEMP
   494                   MOVE SPACES TO L-SCB-Filename-TXT
   495                   COMPUTE
   496                       WS-8-Digit-NUM =
   497                       RANDOM(SECONDS-PAST-MIDNIGHT) * 100000000
   498                   END-COMPUTE
   499                   STRING
   500                       TRIM(WS-Env-Temp-TXT,TRAILING)
   501                       WS-Slash-CHR
   502                       "STREAMIO-"
   503                       WS-8-Digit-NUM
   504                       ".dat"
   505                       DELIMITED BY SIZE
   506                       INTO L-SCB-Filename-TXT
   507               WHEN L-SCB-Filename-TXT(1:1) = "."
   508                   PERFORM 060-Identify-TEMP
   509                   IF L-SCB-Filename-TXT(2:1) = SPACE
   510                       MOVE SPACES TO WS-256-Byte-TXT
   511                   ELSE
   512                       MOVE L-SCB-Filename-TXT TO WS-256-Byte-TXT
   513                   END-IF
   514                   MOVE SPACES TO L-SCB-Filename-TXT
   515                   COMPUTE WS-8-Digit-NUM =
```

```
GNU COBOL 2.1 23NOV2013 Source Listing                                    2014/03/27
                            C:/Users/tda010/Documents/Programs/Samples/STREAMIO.cbl
Line    Statement                                                           Page: 12
====== =============================================================================
   516                     RANDOM(SECONDS-PAST-MIDNIGHT) * 100000000
   517                 STRING
   518                     TRIM(WS-Env-Temp-TXT,TRAILING)
   519                     WS-Slash-CHR
   520                     "STREAMIO-"
   521                     WS-8-Digit-NUM
   522                     TRIM(WS-256-Byte-TXT,TRAILING)
   523                     DELIMITED BY SIZE
   524                     INTO L-SCB-Filename-TXT
   525             END-EVALUATE
   526             EVALUATE TRUE
   527                 WHEN L-SCB-Mode-Input-BOOL
   528                     MOVE 1 TO WS-Access-Mode-CD
   529                 WHEN L-SCB-Mode-Output-BOOL
   530                     MOVE 2 TO WS-Access-Mode-CD
   531                 WHEN L-SCB-Mode-Both-BOOL
   532                     MOVE 3 TO WS-Access-Mode-CD
   533                 WHEN OTHER
   534                     MOVE -2 TO L-SCB-Return-CD
   535                     PERFORM 099-ERROR-Return
   536             END-EVALUATE
   537             CALL "CBL_OPEN_FILE" USING TRIM(L-SCB-Filename-TXT,TRAILING)
   538                                        WS-Access-Mode-CD
   539                                        0
   540                                        0
   541                                        L-SCB-Handle-NUM
   542             IF RETURN-CODE = 35
   543                 MOVE 11 TO L-SCB-Return-CD
   544                 PERFORM 099-ERROR-Return
   545             END-IF
   546             IF RETURN-CODE < 0
   547                 MOVE -2 TO L-SCB-Return-CD
   548                 PERFORM 099-ERROR-Return
   549             END-IF
   550             MOVE 00 TO L-SCB-Return-CD
   551             MOVE 0 TO L-SCB-Offset-NUM
   552             .
   553         200-CLOSE SECTION.
   554             CALL "CBL_CLOSE_FILE" USING L-SCB-Handle-NUM
   555             IF RETURN-CODE < 0
   556                 MOVE -2 TO L-SCB-Return-CD
   557                 PERFORM 099-ERROR-Return
   558             END-IF
   559             MOVE 00 TO L-SCB-Return-CD
   560             MOVE 0 TO L-SCB-Handle-NUM
   561             .
   562         300-WRITE SECTION.
   563             CALL "C$PARAMSIZE" USING 2
   564             MOVE RETURN-CODE TO WS-Arg-Length-NUM


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```

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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        .
```

==

```
GNU COBOL 2.1 23NOV2013 Cross-Reference Listing                           2014/03/27
                            C:/Users/tda010/Documents/Programs/Samples/STREAMIO.cbl
PROGRAM-ID       Identifier/Register/Function   Defn   Where Defined   References        Page: 15
===============  ===============================  ======  ===============  ========================
STREAMIO         000-Main                         383 PROCEDURE
STREAMIO         020-Validate-Handle-Zero         432 PROCEDURE           392
STREAMIO         030-Validate-Handle-NonZero      438 PROCEDURE           387    395     398
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STREAMIO         040-Check-WRITE-SCB-Return-CD     444 PROCEDURE           424    570
STREAMIO         050-Check-READ-SCB-Return-CD      455 PROCEDURE           582    594
STREAMIO         060-Identify-TEMP                466 PROCEDURE           493    508
STREAMIO         099-ERROR-Return                 478 PROCEDURE           417    428     435
                                                                          441    447     451
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STREAMIO         100-OPEN                          485 PROCEDURE           393
STREAMIO         200-CLOSE                         553 PROCEDURE           388
STREAMIO         300-WRITE                         562 PROCEDURE           402    407     412
STREAMIO         400-READ                          573 PROCEDURE           396
STREAMIO         500-READ-Delim                    585 PROCEDURE           399
STREAMIO         L-Arg2-TXT                        380 LINKAGE             382    569C    576*
                                                                          581C   588*    593C
                                                                          599    600*    640
                                                                          652*   655*
STREAMIO         L-SCB-DELIM-Unix-BOOL             379 [STREAMIOcb   ]     405
STREAMIO         L-SCB-DELIM-Windows-BOOL          379 [STREAMIOcb   ]     410
STREAMIO         L-SCB-Delimiter-Mode-CD           379 [STREAMIOcb   ]
STREAMIO         L-SCB-Error-Routine-NUM           379 [STREAMIOcb   ]     479
STREAMIO         L-SCB-Error-Routine-PTR           379 [STREAMIOcb   ]     379    480C
STREAMIO         L-SCB-Filename-TXT                379 [STREAMIOcb   ]     390C   487     492
                                                                          494*   506*    507
                                                                          509    512     514*
                                                                          524*   537C
STREAMIO         L-SCB-Func-CLOSE-BOOL             379 [STREAMIOcb   ]     386
STREAMIO         L-SCB-Func-DELETE-BOOL            379 [STREAMIOcb   ]     389
STREAMIO         L-SCB-Func-OPEN-BOOL              379 [STREAMIOcb   ]     391
STREAMIO         L-SCB-Func-READ-BOOL              379 [STREAMIOcb   ]     394
STREAMIO         L-SCB-Func-READ-Delim-BOOL        379 [STREAMIOcb   ]     397
STREAMIO         L-SCB-Func-WRITE-BOOL             379 [STREAMIOcb   ]     400
STREAMIO         L-SCB-Func-WRITE-Delim-BOOL       379 [STREAMIOcb   ]     403
STREAMIO         L-SCB-Function-CD                 379 [STREAMIOcb   ]
STREAMIO         L-SCB-Handle-NUM                  379 [STREAMIOcb   ]     419C   433     439
                                                                          541C   554C    560*
                                                                          565C   577C    589C
                                                                          607C
STREAMIO         L-SCB-MODE-Both-BOOL              379 [STREAMIOcb   ]     486    531
STREAMIO         L-SCB-Mode-CD                     379 [STREAMIOcb   ]
STREAMIO         L-SCB-MODE-Input-BOOL             379 [STREAMIOcb   ]     486    527
STREAMIO         L-SCB-MODE-Output-BOOL            379 [STREAMIOcb   ]     529
STREAMIO         L-SCB-Offset-NUM                  379 [STREAMIOcb   ]     420C   425*    551*
                                                                          566C   571*    578C
                                                                          583*   590C    602*


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GNU COBOL 2.1 23NOV2013 Cross-Reference Listing                      2014/03/27
                         C:/Users/tda010/Documents/Programs/Samples/STREAMIO.cbl
PROGRAM-ID      Identifier/Register/Function  Defn   Where Defined   References       Page: 16
=============== ============================== ====== =============== ========================
                                                                     608C    623*    629*
                                                                     638*
STREAMIO        L-SCB-Return-CD                 379 [STREAMIOcb    ]  384*    416*    427*
                                                                     434*    440*    446*
                                                                     450*    453*    457*
                                                                     461*    464*    488*
                                                                     534*    543*    547*
                                                                     550*    556*    559*
                                                                     603*    613*
STREAMIO        L-StreamIO-Control-Block-TXT    377 LINKAGE          381
STREAMIO        RETURN-CODE                         PROCEDURE        445     449     456
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STREAMIO        WS-256-Byte-TXT                 375 WORKING-STORAGE  510*    512*    522
STREAMIO        WS-8-Digit-NUM                  374 WORKING-STORAGE  496*    503     515*
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STREAMIO        WS-Access-Mode-CD               367 WORKING-STORAGE  528*    530*    532*
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STREAMIO        WS-Arg-Length-NUM               368 WORKING-STORAGE  408*    413*    421C
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                                                                     579C    583     587*
                                                                     588     591C    596
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                                                                     604*    609C    635
                                                                     641*    642     646*
                                                                     647     652     655
STREAMIO        WS-Buffer-TXT                   369 WORKING-STORAGE  606*    611C
STREAMIO        WS-Delim-Buffer-TXT             370 WORKING-STORAGE  409*    414*    423C
STREAMIO        WS-Env-Temp-TXT                 371 WORKING-STORAGE  467*    469     471
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STREAMIO        WS-Slash-CHR                    372 WORKING-STORAGE  470*    472*    475*
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STREAMIO        WS-Tally-NUM                    373 WORKING-STORAGE  595*    597*    598
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                                                                     648     649*    652
```

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