GnuCOBOL Sample Programs

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

Table of Contents

1. FileStat-Msgs

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

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

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

Here's the FileStat-Msgs.cpy copybook:

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

2. COBDUMP

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

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

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

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

- Coding a GnuCOBOL subroutine
- Using `"USAGE POINTER"` data items
- Using the `"ANY LENGTH"` data item attribute
- Coding for an `"OPTIONAL"` subprogram argument
- Using the `"NUMBER-OF-CALL-PARAMETERS"` special register
- Using the `"C$PRINTABLE"` built-in system subroutine

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

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

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

==

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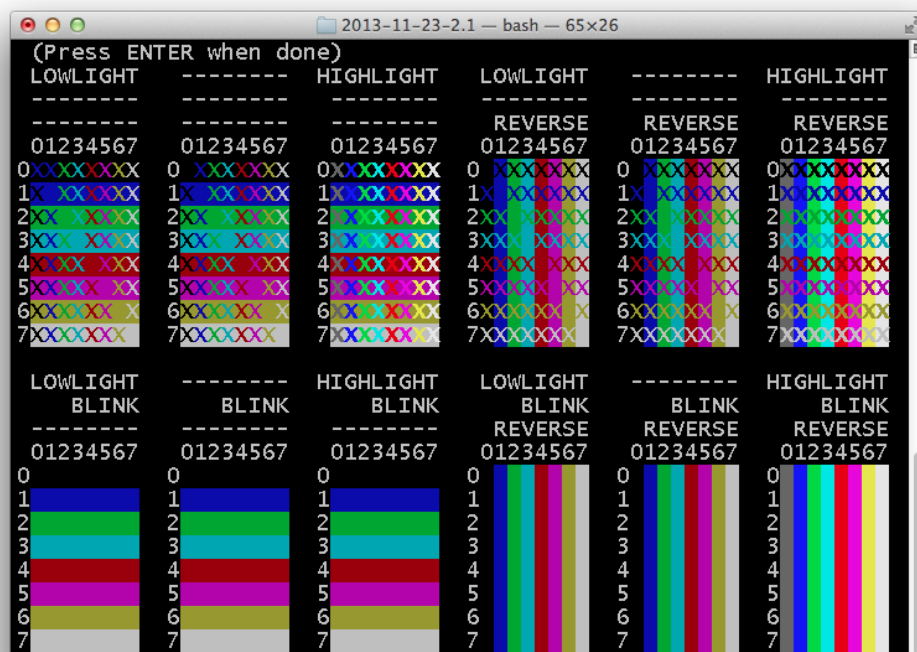
The program source and cross-reference listing, produced using the GnuCOBOL Interactive Compiler front-end (GCic.cbl, one of the sample programs included here), begins on the next page.

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

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

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

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                                    C:/Users/tda010/Documents/Programs/Samples/colors.cbl
Line    Statement                                                         Page: 11
======  ================================================================================
   491 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   492 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
   493 *> #7
   494 05 LINE 17.
   495 10 COL 02  BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 LOWLIGHT BLINK VALUE 'X'.
   496 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 LOWLIGHT BLINK VALUE 'X'.
   497 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 LOWLIGHT BLINK VALUE 'X'.
   498 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 LOWLIGHT BLINK VALUE 'X'.
   499 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 LOWLIGHT BLINK VALUE 'X'.
   500 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 LOWLIGHT BLINK VALUE 'X'.
   501 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 LOWLIGHT BLINK VALUE 'X'.
   502 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 LOWLIGHT BLINK VALUE 'X'.
   503 05 LINE + 1.
   504 10 COL 02  BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 LOWLIGHT BLINK VALUE 'X'.
   505 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 LOWLIGHT BLINK VALUE 'X'.
   506 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 LOWLIGHT BLINK VALUE 'X'.
   507 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 LOWLIGHT BLINK VALUE 'X'.
   508 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 LOWLIGHT BLINK VALUE 'X'.
   509 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 LOWLIGHT BLINK VALUE 'X'.
   510 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 LOWLIGHT BLINK VALUE 'X'.
   511 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 LOWLIGHT BLINK VALUE 'X'.
   512 05 LINE + 1.
   513 10 COL 02  BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 LOWLIGHT BLINK VALUE 'X'.
   514 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 LOWLIGHT BLINK VALUE 'X'.
   515 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 LOWLIGHT BLINK VALUE 'X'.
   516 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 LOWLIGHT BLINK VALUE 'X'.
   517 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 LOWLIGHT BLINK VALUE 'X'.
   518 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 LOWLIGHT BLINK VALUE 'X'.
   519 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 LOWLIGHT BLINK VALUE 'X'.
   520 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 LOWLIGHT BLINK VALUE 'X'.
   521 05 LINE + 1.
   522 10 COL 02  BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 LOWLIGHT BLINK VALUE 'X'.
   523 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 LOWLIGHT BLINK VALUE 'X'.
   524 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 LOWLIGHT BLINK VALUE 'X'.
   525 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 LOWLIGHT BLINK VALUE 'X'.
   526 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 LOWLIGHT BLINK VALUE 'X'.
   527 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 LOWLIGHT BLINK VALUE 'X'.
   528 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 LOWLIGHT BLINK VALUE 'X'.
   529 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 LOWLIGHT BLINK VALUE 'X'.
   530 05 LINE + 1.
   531 10 COL 02  BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 LOWLIGHT BLINK VALUE 'X'.
   532 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 LOWLIGHT BLINK VALUE 'X'.
   533 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 LOWLIGHT BLINK VALUE 'X'.
   534 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 LOWLIGHT BLINK VALUE 'X'.
   535 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 LOWLIGHT BLINK VALUE 'X'.
   536 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 LOWLIGHT BLINK VALUE 'X'.
   537 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 LOWLIGHT BLINK VALUE 'X'.
   538 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 LOWLIGHT BLINK VALUE 'X'.
   539 05 LINE + 1.

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

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

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

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

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```

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

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GNU COBOL 2.1 23NOV2013 Source Listing   2014/03/27
                                      C:/Users/tda010/Documents/Programs/Samples/colors.cbl
Line   Statement   Page: 19
====== ===
   883 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   884 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   885 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   886 05 LINE + 1.
   887 10 COL 52 BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   888 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   889 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   890 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   891 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   892 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   893 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   894 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   895 05 LINE + 1.
   896 10 COL 52 BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   897 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   898 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   899 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   900 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   901 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   902 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   903 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   904 05 LINE + 1.
   905 10 COL 52 BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   906 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   907 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   908 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   909 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   910 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   911 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   912 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   913 05 LINE + 1.
   914 10 COL 52 BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   915 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   916 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   917 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   918 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   919 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   920 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   921 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   922 05 LINE + 1.
   923 10 COL 52 BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   924 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   925 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   926 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   927 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   928 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   929 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   930 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   931 PROCEDURE DIVISION.

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

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

```
GNU COBOL 2.1 23NOV2013 Cross-Reference Listing                        2014/03/27
                                    C:/Users/tda010/Documents/Programs/Samples/colors.cbl
PROGRAM-ID        Identifier/Register/Function    Defn   Where Defined   References      Page: 21
===============  ==============================  ======  ==============  ========================
colors           000-Main                          932  PROCEDURE
colors           S-COLORTST-SCR                      6  SCREEN          933
```

4. DAY-FROM-DATE

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

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

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

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

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

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

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

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

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

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

5. GCic

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

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

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

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

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

- Creating a GnuCOBOL compilation unit that consists of multiple programs

- Using CDF conditional compilation facilities

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

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

- Using "FILE-STATUS"

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

- Using the following statements:

    o "ACCEPT FROM COMMAND-LINE" statement

    o "ACCEPT FROM DATE/TIME" statement

    o "ACCEPT FROM ENVIRONMENT" statement

    o "EXIT PERFORM" statement

    o "EXIT SECTION" statement

    o "INSPECT" statement

    o "PERFORM FOREVER" statement

    o "SEARCH ALL" statement

    o "SET ENVIRONMENT" statement

    o "SORT" statement

    o "STRING" statement

  o `"UNSTRING"` statement

- Using the following built-in subroutines:

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

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

  o `"CBL_CHANGE_DIR"` built-in system subroutine

  o `"CBL_CHECK_FILE_EXIST"` built-in system subroutine

  o `"CBL_DELETE_FILE"` built-in system subroutine

  o `"SYSTEM"` built-in system subroutine

- Using the following intrinsic functions:

  o `"CONCATENATE"` intrinsic function

  o `"LENGTH"` intrinsic function

  o `"LOWER-CASE"` intrinsic function

  o `"NUMVAL"` intrinsic function

  o `"TRIM"` intrinsic function

  o `"UPPER-CASE"` intrinsic function

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

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

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

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

```
GNUCOBOL 2.2 20JUL2017  Source Listing                                    2017/07/22
                                         /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                              Page: 1
======  =================================================================================
    1        >>SOURCE FORMAT IS FIXED
    2        *> CONFIGURATION SETTINGS: Set these switches before compiling:
    3        *>
    4        *> LINEDRAW Set to:
    5        *>    0   To use spaces (no lines)
    6        *>    1   To use the line-drawing characterset (PC codepage 437)
    7        *>    2   To use conventional ASCII characters (+, -, |)
    8        *>
    9        *>          OSX USERS - To use the linedrawing characterset,
   10        *>                       set your 'terminal' font to 'Lucida Console'
   11        *>
   12        *> OS      Set to one of the following:
   13        *>          'CYGWIN'   For a Windows/Cygwin version
   14        *>          'MINGW'    For a Windows/MinGW version
   15        *>          'OSX'      For a Macintosh OSX version
   16        *>          'UNIX'     For a Unix/Linux version
   17        *>          'WINDOWS'  For a Native Windows version
   18        *>
   19        *> SELCHAR  Set to the desired single character to be used as the red
   20        *>          'feature selected' character on the screen.
   21        *>          SUGGESTIONS: '>', '*', '=', '+'
   22        *>
   23        *> LPP      Set to maximum printable lines per page when the listing
   24        *>          should be generated for LANDSCAPE orientation (can be over-
   25        *>          ridden at execution time using the GCXREF_LINES environment
   26        *>          variable.
   27        *>
   28        *> LPPP     Set to maximum printable lines per page when the listing
   29        *>          should be generated for PORTRAIT orientation (can be over-
   30        *>          ridden at execution time using the GCXREF_LINES_PORT
   31        *>          environment variable.
   32        *>
   33        *>*****************************************************************
   34        *>**  Change the settings in the copy book const-set-1.cpy to reflect
   35        *>    your system set up. This notes are also present there.
   36        *>    This is to reduce the need to amend these every time a update
   37        *>    for GCic occurs.
   38        *>*****************************************************************
   39        *>
   40         copy "const-set-1.cpy".
   41        *>
   42        *> ----------------------------------------------------------------
   43        *> END CONFIGURATION SETTINGS
```

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

```
    45        IDENTIFICATION DIVISION.
    46        PROGRAM-ID. GCic.
    47        *>************************************************************
    48        *>    >NOTE<   >NOTE<   >NOTE<   >NOTE<   >NOTE<   >NOTE<    **
    49        *>                                                          **
    50        *> If this program is compiled with '-fdebugging-line', you  **
    51        *> will need to pipe SYSERR to a text file when executing GCic **
    52        *> (by adding the text '2> filename' to the end of the GCic  **
    53        *> command).  You may also need to press the ENTER key when  **
    54        *> GCic is finished.                                         **
    55        *>************************************************************
    56        *> This program provides a Textual User Interface (TUI) to the **
    57        *> process of compiling and (optionally) executing a GNU COBOL **
    58        *> program.                                                   **
    59        *>                                                          **
    60        *> This programs execution syntax is as follows:             **
    61        *>                                                          **
    62        *> GCic <program-path-and-filename> [ <switch>... ]          **
    63        *>                                                          **
    64        *> Once executed, a display screen will be presented showing  **
    65        *> the compilation options that will be used.  The user will  **
    66        *> have the opportunity to change options, specify new ones   **
    67        *> and specify any program execution arguments to be used if   **
    68        *> you select the 'Execute' option.  When you press the Enter **
    69        *> key the program will be compiled.                          **
    70        *>                                                          **
    71        *> The SCREEN SECTION contains an image of the screen.        **
    72        *>                                                          **
    73        *> The '010-Parse-Args' section in the PROCEDURE DIVISION has  **
    74        *> documentation on switches and their function.              **
    75        *>************************************************************
    76        *>                                                          **
    77        *> AUTHOR:      GARY L. CUTLER                                **
    78        *>              Copyright (C) 2009-2017, Gary L. Cutler, GPL  **
    79        *>                                                          **
    80        *> DATE-WRITTEN: June 14, 2009                                **
    81        *>                                                          **
    82        *>************************************************************
    83        *>  DATE  CHANGE DESCRIPTION                                  **
    84        *> ====== =================================================== **
    85        *> GC0609 Don't display compiler messages file if compilation  **
    86        *>  GLC   Is successful.  Also don't display messages if the   **
    87        *>        output file is busy (just put a message on the       **
    88        *>        screen, leave the OC screen up & let the user fix    **
    89        *>        the problem & resubmit.                              **
    90        *> GC0709 When 'EXECUTE' is selected, a 'FILE BUSY' error will **
    91        *>  CLC   still cause the (old) executable to be launched.     **
    92        *>        Also, the 'EXTRA SWITCHES' field is being ignored.   **
    93        *>        Changed the title bar to lowlighted reverse video &  **
    94        *>        the message area to highlighted reverse-video.       **
    95        *> GC0809 Add a SPACE in front of command-line args when       **
    96        *>  GLC   executing users program.  Add a SPACE after the      **
```

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

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

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

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

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

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


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```

```
GNUCOBOL 2.2 20JUL2017  Source Listing                                    2017/07/22
                                          /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                              Page: 8
====== ==================================================================================
   244
   245        01  WS-File-Status-Message-TXT.
   246            05 VALUE 'Status Code: '          PIC X(13).
   247            05 WS-FSM-Status-CD               PIC 9(2).
   248            05 VALUE ', Meaning: '            PIC X(11).
   249            05 WS-FSM-Msg-TXT                 PIC X(25).
   250
   251 GC0909 01  WS-Horizontal-Line-TXT           PIC X(80).
   252 GC0909
   253        01  WS-I-SUB                         USAGE BINARY-LONG.
   254
   255        01  WS-J-SUB                         USAGE BINARY-LONG.
   256
   257 GC1213 01  WS-Listing-CD VALUE F5           PIC 9(1).
   258
   259 GC0712 01  WS-Listing-Filename-TXT          PIC X(256).
   260
   261 GC1213 01  WS-Listing-TXT VALUE SPACES      PIC X(27).
   262
   263        01  WS-OC-Compile-DT                 PIC XXXX/XX/XXBXX/XX.
   264
   265 GC0712 >>IF OS = 'CYGWIN'
   266 GC0712 01  WS-OS-Dir-CHR         VALUE '/'     PIC X(1).
   267 GC0712 78  WS-OS-Exe-Ext-CONST   VALUE '.exe'.
   268 GC0712 78  WS-OS-Lib-Ext-CONST   VALUE '.dll'.
   269 GC0712 78  WS-OS-Lib-Type-CONST  VALUE 'DLL)'.
   270 GC0712 01  WS-OS-Type-CD         VALUE 2       PIC 9(1).
   271 GC0712 >>ELIF OS = 'MINGW'
   272 GC0712 01  WS-OS-Dir-CHR         VALUE '\'     PIC X(1).
   273 GC0712 78  WS-OS-Exe-Ext-CONST   VALUE '.exe'.
   274 GC0712 78  WS-OS-Lib-Ext-CONST   VALUE '.dll'.
   275 GC0712 78  WS-OS-Lib-Type-CONST  VALUE 'DLL)'.
   276 GC0712 01  WS-OS-Type-CD         VALUE 5       PIC 9(1).
   277 GC0712 >>ELIF OS = 'OSX'
   278 GC0712 01  WS-OS-Dir-CHR         VALUE '/'     PIC X(1).
   279 GC0712 78  WS-OS-Exe-Ext-CONST   VALUE ' '.
   280 GC0712 78  WS-OS-Lib-Ext-CONST   VALUE '.dylib'.
   281 GC0712 78  WS-OS-Lib-Type-CONST  VALUE 'DYLIB)'.
   282 GC0712 01  WS-OS-Type-CD         VALUE 4       PIC 9(1).
   283 GC0712 >>ELIF OS = 'UNIX'
   284 GC0712 01  WS-OS-Dir-CHR         VALUE '/'     PIC X(1).
   285 GC0712 78  WS-OS-Exe-Ext-CONST   VALUE ' '.
   286 GC0712 78  WS-OS-Lib-Ext-CONST   VALUE '.so'.
   287 GC0712 78  WS-OS-Lib-Type-CONST  VALUE 'SO)'.
   288 GC0712 01  WS-OS-Type-CD         VALUE 3       PIC 9(1).
   289 GC0712 >>ELIF OS = 'WINDOWS'
   290 GC0712 01  WS-OS-Dir-CHR         VALUE '\'     PIC X(1).
   291 GC0712 78  WS-OS-Exe-Ext-CONST   VALUE '.exe'.
   292 GC0712 78  WS-OS-Lib-Ext-CONST   VALUE '.dll'.
   293 GC0712 78  WS-OS-Lib-Type-CONST  VALUE 'DLL)'.
   294 GC0712 01  WS-OS-Type-CD         VALUE 1       PIC 9(1).
   295 GC0712 >>END-IF
   296 GC0909     88 WS-OS-Windows-BOOL VALUE 1, 5.

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```

```
GNUCOBOL 2.2 20JUL2017  Source Listing                              2017/07/22
                                     /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                      Page: 9
====== ===========================================================================
  297 GC0909     88 WS-OS-Cygwin-BOOL   VALUE 2.
  298 GC0712     88 WS-OS-UNIX-BOOL     VALUE 3, 4.
  299 GC0712     88 WS-OS-OSX-BOOL      VALUE 4.
  300
  301        01  WS-OS-Type-FILLER-TXT.
  302            05 VALUE 'Windows'               PIC X(14).
  303            05 VALUE 'Windows/Cygwin'        PIC X(14).
  304            05 VALUE 'UNIX/Linux'            PIC X(14).
  305            05 VALUE 'OSX'                   PIC X(14).
  306            05 VALUE 'Windows/MinGW'         PIC X(14).
  307        01  WS-OS-Types-TXT REDEFINES WS-OS-Type-FILLER-TXT.
  308            05 WS-OS-Type-TXT               OCCURS 5 TIMES
  309                                            PIC X(14).
  310
  311        01  WS-Output-Msg-TXT               PIC X(80).
  312
  313        01  WS-Path-Delimiter-CHR           PIC X(1).
  314
  315        01  WS-Prog-Extension-TXT           PIC X(256).
  316
  317        01  WS-Prog-Folder-TXT              PIC X(256).
  318
  319 GC0712 01  WS-Prog-File-Name-TXT.
  320 GC0712     05 WS-PFN-CHR                   OCCURS 256 TIMES
  321 GC0712                                     PIC X(1).
  322
  323 GC0712 01  WS-Pgm-Nm-TXT                   PIC X(31).
  324
  325        01  WS-Runtime-Switches-TXT.
  326            05 WS-RS-Compile-OK-CHR         PIC X(1).
  327               88 WS-RS-Compile-OK-BOOL         VALUE 'Y'.
  328 GC0909        88 WS-RS-Compile-OK-Warn-BOOL    VALUE 'W'.
  329               88 WS-RS-Compile-Failed-BOOL     VALUE 'N'.
  330 GC0609     05 WS-RS-Complete-CHR           PIC X(1).
  331 GC0609        88 WS-RS-Complete-BOOL           VALUE 'Y'.
  332 GC0609        88 WS-RS-Not-Complete-BOOL       VALUE 'N'.
  333 GC0712     05 WS-RS-Quote-CHR              PIC X(1).
  334 GC0712        88 WS-RS-Double-Quote-Used-BOOL  VALUE 'Y' FALSE 'N'.
  335 GC0809     05 WS-RS-IDENT-DIV-CHR          PIC X(1).
  336 GC0809        88 WS-RS-1st-Prog-Complete-BOOL  VALUE 'Y'.
  337 GC0809        88 WS-RS-More-To-1st-Prog-BOOL   VALUE 'N'.
  338            05 WS-RS-No-Switch-Chgs-CHR     PIC X(1).
  339               88 WS-RS-No-Switch-Changes-BOOL  VALUE 'Y'.
  340               88 WS-RS-Switch-Changes-BOOL     VALUE 'N'.
  341 GC0709     05 WS-RS-Output-File-Busy-CHR   PIC X(1).
  342 GC0709        88 WS-RS-Output-File-Busy-BOOL   VALUE 'Y'.
  343 GC0709        88 WS-RS-Output-File-Avail-BOOL  VALUE 'N'.
  344 GC0809     05 WS-RS-Source-Record-Type-CHR PIC X(1).
  345 GC0809        88 WS-RS-Source-Rec-Linkage-BOOL VALUE 'L'.
  346 GC0809        88 WS-RS-Source-Rec-Ident-BOOL   VALUE 'I'.
  347 GC0712        88 WS-RS-Source-Rec-Ignored-BOOL VALUE ' '.
  348            05 WS-RS-Switch-Error-CHR       PIC X(1).
  349               88 WS-RS-Switch-Is-Bad-BOOL      VALUE 'Y'.

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```

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

```
GNUCOBOL 2.2 20JUL2017  Source Listing                              2017/07/22
                                   /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                    Page: 11
====== ========================================================================
   354          SCREEN SECTION.
   355        *>
   356        *> Here is the layout of the GCic screen.
   357        *>
   358        *> The sample screen below shows how the screen would look if the LINEDRAW
   359        *> configuration setting is set to a value of 2
   360        *>
   361        *> The following sample screen layout shows how the screen looks with line-drawing
   362        *> characters disabled.
   363        *>
   364        *>          1         2         3         4         5         6         7         8
   365        *>12345678901234567890123456789012345678901234567890123456789012345678901234567890
   366        *>================================================================================
   367     01 *> GCic (2011/07/11 08:52) - GNU COBOL V2.1 23NOV2013 Interactive Compilation
   368     02 *>+----------------------------------------------------------------------------+
   369     03 *>| Folder:   E:\GNU COBOL\Samples                                              |
   370     04 *>| Filename: GCic.cbl                                                          |
   371     05 *>+----------------------------------------------------------------------------+
   372     06 *> Set/Clr Switches Via F1-F9; Set Config Via F12; ENTER Key Compiles; ESC Quits
   373     07 *>+-------------------------------------------------------------+------------+
   374     08 *>| F1  Assume WITH DEBUGGING MODE  F6  "FUNCTION" Is Optional   | Current    |
   375     09 *>| F2  Procedure+Statement Trace   F7  Enable All Warnings      | Config:    |
   376     10 *>| F3  Make A Library (DLL)        F8  Source Is Free-Format     | XXXXXXXXXX |
   377     11 *>| F4  Execute If Compilation OK   F9  No COMP/BINARY Truncation |           |
   378     12 *>| F5 >Produce Listing (Landscape)                              |           |
   379     13 *>+-------------------------------------------------------------+------------+
   380     14 *> Extra "cobc" Switches, If Any ("-save-temps=xxx" Prevents Listings):
   381     15 *>+----------------------------------------------------------------------------+
   382     16 *>| _____ |
   383     17 *>| _____ |
   384     18 *>+----------------------------------------------------------------------------+
   385     19 *> Program Execution Arguments, If Any:
   386     20 *>+----------------------------------------------------------------------------+
   387     21 *>| _____ |
   388     22 *>| _____ |
   389     23 *>+----------------------------------------------------------------------------+
   390     24 *> GCic Copyright (C) 2009-2017, Gary L. Cutler, GPL
   391        *>================================================================================
   392        *>12345678901234567890123456789012345678901234567890123456789012345678901234567890
   393        *>          1         2         3         4         5         6         7         8
   394        *>
   395        *> If this program is run on Windows, it must run with codepage 437 activated to
   396        *> display the line-drawing characters.  With a native Windows build or a
   397        *> Windows/MinGW build, one could use the command 'chcp 437' to set that codepage
   398        *> for display within a Windows console window (that should be the default though).
   399        *> With a Windows/Cygwin build, set the environment variable CYGWIN to a value of
   400        *> 'codepage:oem' (this cannot be done from within the program though - you will
   401        *> have to use the 'Computer/Advanced System Settings/Environment Variables' (Vista
   402        *> or Windows 7) function to define the variable.  XP Users: use 'My Computer/
   403        *> Properties/Advanced/Environment Variables'.
   404        *>
   405        *> OSX users may use line drawing characters in this and any GNU COBOL program
```

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====== ===
```
   406        *> simply by setting their 'terminal' application's font to "Lucida Console".
   407        *>
   408        >>IF LINEDRAW IS EQUAL TO 0
   409        78 LD-UL-Corner                   VALUE ' '.
   410        78 LD-LL-Corner                   VALUE ' '.
   411        78 LD-UR-Corner                   VALUE ' '.
   412        78 LD-LR-Corner                   VALUE ' '.
   413        78 LD-Upper-T                     VALUE ' '.
   414        78 LD-Lower-T                     VALUE ' '.
   415        78 LD-Horiz-Line                  VALUE ' '.
   416        78 LD-Vert-Line                   VALUE ' '.
   417        >>ELIF LINEDRAW IS EQUAL TO 1
   418        78 LD-UL-Corner                   VALUE X'DA'.
   419        78 LD-LL-Corner                   VALUE X'C0'.
   420        78 LD-UR-Corner                   VALUE X'BF'.
   421        78 LD-LR-Corner                   VALUE X'D9'.
   422        78 LD-Upper-T                     VALUE X'C2'.
   423        78 LD-Lower-T                     VALUE X'C1'.
   424        78 LD-Horiz-Line                  VALUE X'C4'.
   425        78 LD-Vert-Line                   VALUE X'B3'.
   426        >>ELSE
   427        78 LD-UL-Corner                   VALUE '+'.
   428        78 LD-LL-Corner                   VALUE '+'.
   429        78 LD-UR-Corner                   VALUE '+'.
   430        78 LD-LR-Corner                   VALUE '+'.
   431        78 LD-Upper-T                     VALUE '+'.
   432        78 LD-Lower-T                     VALUE '+'.
   433        78 LD-Horiz-Line                  VALUE '-'.
   434        78 LD-Vert-Line                   VALUE '|'.
   435        >>END-IF
   436
   437        01 S-Blank-SCR LINE 1 COLUMN 1 BLANK SCREEN.
   438
   439        01 S-Switches-SCR BACKGROUND-COLOR COB-COLOR-BLACK
   440                          FOREGROUND-COLOR COB-COLOR-WHITE AUTO.
   441        *>
   442        *> GENERAL SCREEN FRAMEWORK
   443        *>
   444           03 BACKGROUND-COLOR COB-COLOR-BLACK
   445              FOREGROUND-COLOR COB-COLOR-GREEN HIGHLIGHT.
   446 GC0712     05 LINE 02 COL 01            VALUE LD-UL-Corner.
   447 GC0712     05         COL 02 PIC X(78) FROM  WS-Horizontal-Line-TXT.
   448           05         COL 80            VALUE LD-UR-Corner.
   449
   450 GC0712     05 LINE 03 COL 01            VALUE LD-Vert-Line.
   451           05         COL 80            VALUE LD-Vert-Line.
   452
   453 GC0712     05 LINE 04 COL 01            VALUE LD-Vert-Line.
   454           05         COL 80            VALUE LD-Vert-Line.
   455
   456 GC0712     05 LINE 05 COL 01            VALUE LD-LL-Corner.
   457 GC0712     05         COL 02 PIC X(78) FROM  WS-Horizontal-Line-TXT.
   458           05         COL 80            VALUE LD-LR-Corner.
```
===

```
GNUCOBOL 2.2 20JUL2017  Source Listing                                    2017/07/22
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                           Page: 13
====== ==============================================================================
   459
   460 GC0712     05 LINE 07 COL 01           VALUE LD-UL-Corner.
   461 GC0712     05         COL 02 PIC X(65) FROM  WS-Horizontal-Line-TXT.
   462 GC0712     05         COL 67           VALUE LD-Upper-T.
   463 GC0712     05         COL 68 PIC X(12) FROM  WS-Horizontal-Line-TXT.
   464        05         COL 80           VALUE LD-UR-Corner.
   465
   466 GC0712     05 LINE 08 COL 01           VALUE LD-Vert-Line.
   467 GC0712     05         COL 67           VALUE LD-Vert-Line.
   468        05         COL 80           VALUE LD-Vert-Line.
   469
   470 GC0712     05 LINE 09 COL 01           VALUE LD-Vert-Line.
   471 GC0712     05         COL 67           VALUE LD-Vert-Line.
   472        05         COL 80           VALUE LD-Vert-Line.
   473
   474 GC0712     05 LINE 10 COL 01           VALUE LD-Vert-Line.
   475 GC0712     05         COL 67           VALUE LD-Vert-Line.
   476        05         COL 80           VALUE LD-Vert-Line.
   477
   478 GC0712     05 LINE 11 COL 01           VALUE LD-Vert-Line.
   479 GC0712     05         COL 67           VALUE LD-Vert-Line.
   480        05         COL 80           VALUE LD-Vert-Line.
   481
   482 GC0712     05 LINE 12 COL 01           VALUE LD-Vert-Line.
   483 GC0712     05         COL 67           VALUE LD-Vert-Line.
   484        05         COL 80           VALUE LD-Vert-Line.
   485
   486 GC0712     05 LINE 13 COL 01           VALUE LD-LL-Corner.
   487 GC0712     05         COL 02 PIC X(65) FROM  WS-Horizontal-Line-TXT.
   488 GC0712     05         COL 67           VALUE LD-Lower-T.
   489 GC0712     05         COL 68 PIC X(12) FROM  WS-Horizontal-Line-TXT.
   490        05         COL 80           VALUE LD-LR-Corner.
   491
   492 GC0712     05 LINE 15 COL 01           VALUE LD-UL-Corner.
   493 GC0712     05         COL 02 PIC X(78) FROM  WS-Horizontal-Line-TXT.
   494        05         COL 80           VALUE LD-UR-Corner.
   495
   496 GC0712     05 LINE 16 COL 01           VALUE LD-Vert-Line.
   497        05         COL 80           VALUE LD-Vert-Line.
   498
   499 GC0712     05 LINE 17 COL 01           VALUE LD-Vert-Line.
   500        05         COL 80           VALUE LD-Vert-Line.
   501
   502 GC0712     05 LINE 18 COL 01           VALUE LD-LL-Corner.
   503 GC0712     05         COL 02 PIC X(78) FROM  WS-Horizontal-Line-TXT.
   504        05         COL 80           VALUE LD-LR-Corner.
   505
   506 GC0712     05 LINE 20 COL 01           VALUE LD-UL-Corner.
   507 GC0712     05         COL 02 PIC X(78) FROM  WS-Horizontal-Line-TXT.
   508        05         COL 80           VALUE LD-UR-Corner.
   509
   510 GC0712     05 LINE 21 COL 01           VALUE LD-Vert-Line.
   511        05         COL 80           VALUE LD-Vert-Line.

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```

```
GNUCOBOL 2.2 20JUL2017  Source Listing                                      2017/07/22
                                             /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                               Page: 14
====== ================================================================================
   512
   513 GC0712       05 LINE 22 COL 01            VALUE LD-Vert-Line.
   514              05         COL 80            VALUE LD-Vert-Line.
   515
   516 GC0712       05 LINE 23 COL 01            VALUE LD-LL-Corner.
   517 GC0712       05         COL 02 PIC X(78) FROM  WS-Horizontal-Line-TXT.
   518              05         COL 80            VALUE LD-LR-Corner.
   519       *>
   520       *> TOP AND BOTTOM LINES
   521       *>
   522 GC0712    03 BACKGROUND-COLOR COB-COLOR-BLUE
   523             FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
   524 GC0410       05 LINE 01 COL 01 VALUE ' GCic ('.
   525 GC0410       05         COL 08 PIC X(16) FROM WS-OC-Compile-DT.
   526 GC1213       05         COL 24 VALUE ') GNUCOBOL 2.2 20JUL2017 ' &
   527 GC0410                          'Interactive Compilation        '.
   528 VC0617    03 BACKGROUND-COLOR COB-COLOR-RED
   529 GC0712       FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
   530 GC0712       05 LINE 24 COL 01 PIC X(80) FROM WS-Output-Msg-TXT.
   531       *>
   532       *> LABELS
   533       *>
   534          03 BACKGROUND-COLOR COB-COLOR-BLACK
   535             FOREGROUND-COLOR COB-COLOR-CYAN  HIGHLIGHT.
   536 GC0712       05 LINE 06 COL 02 VALUE 'Set/Clr Switches Via F1-F9; ' &
   537 GC0712                          'Set Config Via F12; Enter Key ' &
   538 GC0712                          'Compiles; Esc Quits'.
   539 GC0712       05 LINE 14 COL 02 VALUE 'Extra "cobc" Switches, If Any ' &
   540 GC0712                          '("-save-temps=xxx" Prevents ' &
   541 GC0712                          'Listings):'.
   542 GC0712       05 LINE 19 COL 02 VALUE 'Program Execution Arguments, ' &
   543 GC0712                          'If Any:'.
   544 GC0712    03 BACKGROUND-COLOR COB-COLOR-BLACK
   545 GC0712       FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
   546 GC0712       05 LINE 06 COL 23 VALUE 'F1'.
   547 GC0712       05         COL 26 VALUE 'F9'.
   548 GC0712       05         COL 45 VALUE 'F12'.
   549 GC0712       05         COL 50 VALUE 'ENTER'.
   550 GC0712       05         COL 70 VALUE 'ESC'.
   551       *>
   552       *> TOP SECTION BACKGROUND
   553       *>
   554          03 BACKGROUND-COLOR COB-COLOR-BLACK
   555             FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
   556 GC0712       05 LINE 03 COL 62 VALUE 'Enter'.
   557 GC0712       05 LINE 04 COL 62 VALUE 'Esc'.
   558
   559          03 BACKGROUND-COLOR COB-COLOR-BLACK
   560             FOREGROUND-COLOR COB-COLOR-GREEN HIGHLIGHT.
   561 GC0712       05 LINE 04 COL 03 VALUE 'Folder:  '.
   562 GC0712       05 LINE 03 COL 03 VALUE 'Filename: '.
   563
   564 GC0712       05 LINE 03 COL 67 VALUE ': Compile  '.
```

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

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```

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

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

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

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

```
   696         *>**************************************************************
   697         *> Perform all program-wide initialization operations        **
   698         *>**************************************************************
   699          100-Initialization SECTION.
   700         *>**************************************************************
   701         *> Make sure full screen-handling is in effect               **
   702         *>**************************************************************
   703             SET ENVIRONMENT 'COB_SCREEN_EXCEPTIONS' TO 'Y'
   704             SET ENVIRONMENT 'COB_SCREEN_ESC'        TO 'Y'
   705 VC0617     SET ENVIRONMENT "COB_EXIT_WAIT"          TO "0".
   706         *>**************************************************************
   707         *> Get GCic Compilation Date/Time                            **
   708         *>**************************************************************
   709             MOVE WHEN-COMPILED (1:12) TO WS-OC-Compile-DT
   710             INSPECT WS-OC-Compile-DT
   711                 REPLACING ALL '/' BY ':'
   712                 AFTER INITIAL SPACE
   713         *>**************************************************************
   714         *> Convert WS-CS-All-Switches-TXT to Needed Alphanumeric Values**
   715         *>**************************************************************
   716             INSPECT WS-CS-All-Switches-TXT
   717                 REPLACING ALL '0' BY SPACE
   718                           ALL '1' BY SELCHAR
   719 GC1213                   ALL '2' BY SELCHAR
   720         *>**************************************************************
   721         *> Process filename (the only command-line argument)         **
   722         *>**************************************************************
   723 GC0712     ACCEPT WS-Cmd-Args-TXT FROM COMMAND-LINE
   724 GC0712     MOVE 1 TO WS-Cmd-SUB
   725 GC0712     IF WS-Cmd-Args-TXT(WS-Cmd-SUB:1) = '"' OR "'"
   726 GC0712        MOVE WS-Cmd-Args-TXT(WS-Cmd-SUB:1)
   727 GC0712          TO WS-Cmd-End-Quote-CHR
   728 GC0712        ADD 1 TO WS-Cmd-SUB
   729 GC0712        UNSTRING WS-Cmd-Args-TXT
   730 GC0712           DELIMITED BY WS-Cmd-End-Quote-CHR
   731 GC0712           INTO WS-File-Name-TXT
   732 GC0712           WITH POINTER WS-Cmd-SUB
   733 GC0712     ELSE
   734 GC0712        UNSTRING WS-Cmd-Args-TXT
   735 GC0712           DELIMITED BY ALL SPACES
   736 GC0712           INTO WS-File-Name-TXT
   737 GC0712           WITH POINTER WS-Cmd-SUB
   738 GC0712     END-IF
   739            IF WS-File-Name-TXT = SPACES
   740 GC0712        DISPLAY 'No program filename was specified'
   741            PERFORM 900-Terminate
   742       * ------ Control will NOT return
   743            END-IF
   744         *>**************************************************************
   745         *> Determine if 'Make A Library' feature should be forced 'ON' **
   746         *>**************************************************************
   747            PERFORM 240-Find-LINKAGE-SECTION
```

Line   Statement   Page: 20
====== ==
    748   *>**
    749   *> Split 'WS-File-Name-TXT' into 'WS-Prog-Folder-TXT' and   **
    750   *> 'WS-Prog-File-Name-TXT'   **
    751   *>**
    752 GC0909   IF WS-OS-Cygwin-BOOL AND WS-File-Name-TXT (2:1) = ':'
    753 GC0712   MOVE '\' TO WS-OS-Dir-CHR
    754 GC0909   END-IF
    755 GC0712   MOVE LENGTH(WS-File-Name-TXT) TO WS-I-SUB
    756 GC0712   PERFORM UNTIL WS-I-SUB = 0
    757 GC0712   OR WS-FN-CHR (WS-I-SUB) = WS-OS-Dir-CHR
    758   SUBTRACT 1 FROM WS-I-SUB
    759   END-PERFORM
    760   IF WS-I-SUB = 0
    761   MOVE SPACES   TO WS-Prog-Folder-TXT
    762   MOVE WS-File-Name-TXT TO WS-Prog-File-Name-TXT
    763   ELSE
    764   MOVE '*' TO WS-FN-CHR (WS-I-SUB)
    765   UNSTRING WS-File-Name-TXT DELIMITED BY '*'
    766   INTO WS-Prog-Folder-TXT
    767   WS-Prog-File-Name-TXT
    768 GC0712   MOVE WS-OS-Dir-CHR TO WS-FN-CHR (WS-I-SUB)
    769   END-IF
    770   IF WS-Prog-Folder-TXT = SPACES
    771   ACCEPT WS-Prog-Folder-TXT FROM ENVIRONMENT 'CD'
    772 GC0909   ELSE
    773 GC0909   CALL 'CBL_CHANGE_DIR'
    774 GC0909   USING TRIM(WS-Prog-Folder-TXT,TRAILING)
    775   END-IF
    776 GC0909   IF WS-OS-Cygwin-BOOL AND WS-File-Name-TXT (2:1) = ':'
    777 GC0712   MOVE '/' TO WS-OS-Dir-CHR
    778 GC0909   END-IF
    779   *>**
    780   *> Split 'WS-Prog-File-Name-TXT' into 'WS-Pgm-Nm-TXT' &   **
    781   *> 'WS-Prog-Extension-TXT'   **
    782   *>**
    783 GC0712   MOVE LENGTH(WS-Prog-File-Name-TXT) TO WS-I-SUB
    784 GC0712   PERFORM UNTIL WS-I-SUB = 0
    785 GC0712   OR WS-PFN-CHR (WS-I-SUB) = '.'
    786 GC0712   SUBTRACT 1 FROM WS-I-SUB
    787 GC0712   END-PERFORM
    788 GC0712   IF WS-I-SUB = 0
    789 GC0712   MOVE WS-Prog-File-Name-TXT TO WS-Pgm-Nm-TXT
    790 GC0712   MOVE SPACES   TO WS-Prog-Extension-TXT
    791 GC0712   ELSE
    792 GC0712   MOVE '*' TO WS-PFN-CHR (WS-I-SUB)
    793 GC0712   UNSTRING WS-Prog-File-Name-TXT DELIMITED BY '*'
    794 GC0712   INTO WS-Pgm-Nm-TXT
    795 GC0712   WS-Prog-Extension-TXT
    796 GC0712   MOVE '.' TO WS-PFN-CHR (WS-I-SUB)
    797 GC0712   END-IF
    798   *>**
    799   *> Build initial Line 24 Message   **
    800   *>**

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

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

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

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

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

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

```
GNUCOBOL 2.2 20JUL2017  Source Listing                                    2017/07/22
                                       /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                            Page: 25
====== ================================================================================
    953 GC0712           WITH POINTER WS-I-SUB
    954 GC0712     END-IF
    955 GC0712     IF WS-CS-FREE-CHR NOT = ' '
    956 GC0712        STRING '-free '
    957 GC0712            DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
    958 GC0712            WITH POINTER WS-I-SUB
    959 GC0712     ELSE
    960 GC0712        STRING '-fixed '
    961 GC0712            DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
    962 GC0712            WITH POINTER WS-I-SUB
    963 GC0712     END-IF
    964
    965 GC0712     MOVE 0 TO WS-Tally-QTY
    966 GC0712     INSPECT WS-CS-Extra-TXT
    967 GC0712        TALLYING WS-Tally-QTY FOR ALL '-save-temps'
    968 GC0712     IF WS-CS-LISTING-CHR > SPACE
    969 GC0712     AND WS-Tally-QTY > 0
    970 GC0712        MOVE SPACE TO WS-CS-LISTING-CHR *> Can't generate listing if -save-temps u
        sed
    971 GC0712     END-IF
    972 GC0712     IF WS-CS-LISTING-CHR > SPACE
    973 GC1010        STRING '-save-temps '
    974 GC1010            DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
    975 GC1010            WITH POINTER WS-I-SUB
    976 GC1010     END-IF
    977
    978 GC0709     IF WS-CS-Extra-TXT > SPACES
    979 GC0709        STRING ' '
    980 GC0709               TRIM(WS-CS-Extra-TXT,TRAILING)
    981 GC0709               ' '
    982 GC0709               DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
    983 GC0709               WITH POINTER WS-I-SUB
    984 GC0709     END-IF
    985 GC0909     STRING TRIM(WS-Prog-File-Name-TXT,TRAILING)
    986 GC0909        DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
    987 GC0909        WITH POINTER WS-I-SUB
    988       *>************************************************************
    989       *> Prepare the compilation listing file                   **
    990       *>************************************************************
    991 GC1113     MOVE CONCATENATE(TRIM(WS-Pgm-Nm-TXT,Trailing),'.gclst')
    992 GC0712       TO WS-Listing-Filename-TXT
    993 GC0712     CALL 'CBL_DELETE_FILE' USING WS-Listing-Filename-TXT
    994       *>************************************************************
    995       *> Now execute the 'cobc' command                         **
    996       *>************************************************************
    997 GC0410     MOVE ' Compiling...' TO WS-Output-Msg-TXT
    998 GC0410     DISPLAY S-Switches-SCR
    999 GC0609     SET WS-RS-Output-File-Avail-BOOL TO TRUE
   1000           MOVE SPACES TO WS-Cmd-TXT
   1001           STRING TRIM(WS-Cobc-Cmd-TXT,TRAILING)
   1002 GC0712          ' >' WS-Listing-Filename-TXT
   1003 GC0712          ' 2>&1'
   1004               DELIMITED SIZE

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```

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

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

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

```
==============================================================================================
GCic for UNIX/Linux Copyright (C) 2009-2017, Gary L. Cutler, GPL                    Page: 27
```

```
  1068         *>*************************************************************
  1069         *> Run the compiled program                                  **
  1070         *>*************************************************************
  1071          230-Run-Program SECTION.
  1072 GC0114     MOVE ' Preparing to run program ... press ENTER to close '
  1073 GC0114       TO WS-Output-Msg-TXT
  1074 GC0114     DISPLAY S-Switches-SCR
  1075 GC0114     CALL 'C$SLEEP' USING 3
  1076 GC0909     MOVE SPACES TO WS-Cmd-TXT
  1077 GC0909     MOVE 1 TO WS-I-SUB
  1078         *>*************************************************************
  1079         *> If necessary, start with 'cobcrun' command                **
  1080         *>*************************************************************
  1081 GC0712     IF WS-CS-LIBRARY-CHR NOT = ' '
  1082                STRING 'cobcrun ' DELIMITED SIZE
  1083                    INTO WS-Cmd-TXT
  1084                    WITH POINTER WS-I-SUB
  1085            END-IF
  1086         *>*************************************************************
  1087         *> Add any necessary path prefix                             **
  1088         *>*************************************************************
  1089 GC0712     SET WS-RS-Double-Quote-Used-BOOL TO FALSE
  1090            IF WS-Prog-Folder-TXT NOT = SPACES
  1091 GC0909       IF WS-OS-Cygwin-BOOL AND WS-Prog-Folder-TXT (2:1) = ':'
  1092 GC0909          STRING '/cygdrive/'
  1093 GC0909              INTO WS-Cmd-TXT
  1094 GC0909              WITH POINTER WS-I-SUB
  1095 GC0909          STRING LOWER-CASE(WS-Prog-Folder-TXT (1:1))
  1096 GC0909              INTO WS-Cmd-TXT
  1097 GC0909              WITH POINTER WS-I-SUB
  1098 GC0909          PERFORM
  1099 GC0909             VARYING WS-J-SUB FROM 3 BY 1
  1100 GC0909             UNTIL WS-J-SUB > LENGTH(TRIM(WS-Prog-Folder-TXT))
  1101 GC0909             IF WS-Prog-Folder-TXT (WS-J-SUB:1) = '\'
  1102 GC0909                STRING '/'
  1103 GC0909                    INTO WS-Cmd-TXT
  1104 GC0909                    WITH POINTER WS-I-SUB
  1105 GC0909             ELSE
  1106 GC0909                STRING WS-Prog-Folder-TXT (WS-J-SUB:1)
  1107 GC0909                    INTO WS-Cmd-TXT
  1108 GC0909                    WITH POINTER WS-I-SUB
  1109 GC0909             END-IF
  1110 GC0909          END-PERFORM
  1111 GC0909       ELSE
  1112 GC0410          STRING '"' TRIM(WS-Prog-Folder-TXT,TRAILING)
  1113 GC0909              INTO WS-Cmd-TXT
  1114 GC0909              WITH POINTER WS-I-SUB
  1115 GC0712          SET WS-RS-Double-Quote-Used-BOOL TO TRUE
  1116 GC0909       END-IF
  1117 GC0712       STRING WS-OS-Dir-CHR
  1118 GC0909          INTO WS-Cmd-TXT
  1119 GC0909          WITH POINTER WS-I-SUB
```

===

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

```
================================================================================================
GCic for UNIX/Linux Copyright (C) 2009-2017, Gary L. Cutler, GPL                    Page: 29
```

======= ==

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

==
GCic for UNIX/Linux Copyright (C) 2009-2017, Gary L. Cutler, GPL   Page: 30

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

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

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

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

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

```
1313 GC0712 PROCEDURE DIVISION USING BY VALUE     L-Argument-1-TXT
1314 GC0712                            BY REFERENCE L-Argument-2-CHR.
1315        000-Main SECTION.
1316            SET L-A2-Nothing-Special-BOOL TO TRUE
1317            IF L-A1-CHR (7) = '*'
1318                GOBACK
1319            END-IF
1320                .
1321        *>
1322        *> Compress multiple consecutive spaces
1323        *>
1324            SET WS-RS-Not-Skipping-SPACE-BOOL TO TRUE
1325            MOVE 0 TO WS-J-SUB
1326            MOVE SPACES TO WS-Compressed-Src-TXT
1327            PERFORM VARYING WS-I-SUB FROM 1 BY 1
1328                    UNTIL WS-I-SUB > 80
1329                IF L-A1-CHR (WS-I-SUB) = SPACE
1330                    IF WS-RS-Not-Skipping-SPACE-BOOL
1331                        ADD 1 TO WS-J-SUB
1332                        MOVE UPPER-CASE(L-A1-CHR (WS-I-SUB))
1333                          TO WS-CS-CHR (WS-J-SUB)
1334                        SET WS-RS-Skipping-SPACE-BOOL TO TRUE
1335                    END-IF
1336                ELSE
1337                    SET WS-RS-Not-Skipping-SPACE-BOOL TO TRUE
1338                    ADD 1 TO WS-J-SUB
1339                    MOVE L-A1-CHR (WS-I-SUB) TO WS-CS-CHR (WS-J-SUB)
1340                END-IF
1341            END-PERFORM
1342        *>
1343        *> Scan the compressed source line
1344        *>
1345            PERFORM VARYING WS-I-SUB FROM 1 BY 1
1346                    UNTIL WS-I-SUB > 66
1347                EVALUATE TRUE
1348                    WHEN WS-CS-CHR (WS-I-SUB) = '*'
1349                        IF WS-Compressed-Src-TXT (WS-I-SUB : 2) = '*>'
1350                            GOBACK
1351                        END-IF
1352                    WHEN (WS-CS-CHR (WS-I-SUB) = 'L') AND (WS-I-SUB < 66)
1353                        IF WS-Compressed-Src-TXT (WS-I-SUB : 15)
1354                          = 'LINKAGE SECTION'
1355                            SET L-A2-LINKAGE-SECTION-BOOL TO TRUE
1356                            GOBACK
1357                        END-IF
1358                    WHEN (WS-CS-CHR (WS-I-SUB) = 'I') AND (WS-I-SUB < 58)
1359                        IF WS-Compressed-Src-TXT (WS-I-SUB : 23)
1360                          = 'IDENTIFICATION DIVISION'
1361                            SET L-A2-IDENT-DIVISION-BOOL TO TRUE
1362                            GOBACK
1363                        END-IF
1364                END-EVALUATE
```

====== ===
  1365   END-PERFORM
  1366   *>
  1367   *> If we get to here, we never found anything!
  1368   *>
  1369 +   GOBACK
  1370   .
  1371   END PROGRAM CHECKSRC.
  1372
  1373   IDENTIFICATION DIVISION.
  1374   PROGRAM-ID. LISTING.
  1375   *>***
  1376   *> This subprogram generates a cross-reference listing of an **
  1377   *> GNU COBOL program.   **
  1378   *>***
  1379   *>   **
  1380   *> AUTHOR: GARY L. CUTLER   **
  1381   *>   Copyright (C) 2010, Gary L. Cutler, GPL   **
  1382   *>   **
  1383   *> DATE-WRITTEN: April 1, 2010   **
  1384   *>   **
  1385   *>***
  1386   *> DATE   CHANGE DESCRIPTION   **
  1387   *> ====== === **
  1388   *> GC0410 Initial coding   **
  1389   *> GC0711 Updates to accommodate the 12MAR2010 version of OC **
  1390   *> GC0710 Handle duplicate data names (i.e. 'CORRESPONDING' or **
  1391   *>   qualified items) better; ignore 'END PROGRAM' recs **
  1392   *>   so program name doesn't appear in listing.   **
  1393   *> GC0313 Fix problem where the first procedure name defined **
  1394   *>   in the PROCEDURE DIVISION lacks a "Defined" line   **
  1395   *>   number.   **
  1396   *> GC1213 Updated for 23NOV2013 version of GNU COBOL 2.1; Stop **
  1397   *>   showing functions as if they were identifiers in the **
  1398   *>   xref listing; Flag all CALL argument references with **
  1399   *>   a "C" rather than "*" because they aren't necessari- **
  1400   *>   ly altered; Fixed assorted formatting bugs; DOWN-   **
  1401   *>   WARD COMPATIBLE WITH GNU COBOL 2.0 SYNTAX   **
  1402   *> GC0314 Fix problem where 1st char of 1st token on a line is **
  1403   *>   lost if >>SOURCE MODE IS FREE is in effect and the   **
  1404   *>   1st character is non-blank.   **
  1405   *>***
  1406   ENVIRONMENT DIVISION.
  1407   CONFIGURATION SECTION.
  1408   REPOSITORY.
  1409   FUNCTION ALL INTRINSIC.
  1410   INPUT-OUTPUT SECTION.
  1411   FILE-CONTROL.
  1412   SELECT F-Expanded-Src-FILE ASSIGN TO WS-Expanded-Src-Fn-TXT
  1413   ORGANIZATION IS LINE SEQUENTIAL.
  1414 GC0712   SELECT F-Listing-FILE   ASSIGN TO L-Listing-Fn-TXT
  1415   ORGANIZATION IS LINE SEQUENTIAL.
  1416   SELECT F-Original-Src-FILE ASSIGN TO L-Src-Fn-TXT
  1417   ORGANIZATION IS LINE SEQUENTIAL.

===

```
====== ====================================================================================
 1418            SELECT F-Sort-Work-FILE    ASSIGN TO DISK.
 1419        DATA DIVISION.
 1420        FILE SECTION.
 1421        FD  F-Expanded-Src-FILE.
 1422        01  F-Expanded-Src-REC.
 1423            05 F-ES-1-CHR                  PIC X.
 1424            05 F-ES-2-256-TXT-256          PIC X(256).
 1425 GC0712 01  F-Expanded-Src2-REC.
 1426 GC0712     05 F-ES-1-7-TXT               PIC X(7).
 1427 GC0712     05 F-ES-8-256-TXT            PIC X(249).
 1428
 1429 GC0712 FD  F-Listing-FILE.
 1430 GC1213 01  F-Listing-96-REC              PIC X(96).
 1431 GC1213 01  F-Listing-135-REC             PIC X(135).
 1432        01  F-Listing-REC                 PIC X(135).
 1433
 1434        FD  F-Original-Src-FILE.
 1435        01  F-Original-Src-REC.
 1436 GC0410     05 F-OS-1-128-TXT.
 1437 GC0410        10 FILLER                   PIC X(6).
 1438 GC0410        10 F-OS-7-CHR               PIC X(1).
 1439 GC0712        10 F-OS-8-72-TXT            PIC X(65).
 1440 GC0712        10 FILLER                   PIC X(56).
 1441            05 F-OS-129-256-TXT            PIC X(128).
 1442
 1443        SD  F-Sort-Work-FILE.
 1444        01  F-Sort-Work-REC.
 1445            05 F-SW-Prog-ID-TXT            PIC X(15).
 1446            05 F-SW-Token-Uc-TXT           PIC X(32).
 1447            05 F-SW-Token-TXT              PIC X(32).
 1448            05 F-SW-Section-TXT            PIC X(15).
 1449            05 F-SW-Def-Line-NUM           PIC 9(6).
 1450            05 F-SW-Reference-TXT.
 1451               10 F-SW-Ref-Line-NUM        PIC 9(6).
 1452               10 F-SW-Ref-Flag-CHR        PIC X(1).
 1453
 1454        WORKING-STORAGE SECTION.
 1455 GC1213 01  WS-Copyright-TXT              PIC X(86).
 1456
 1457        01  WS-Curr-CHR                   PIC X(1).
 1458            88 WS-Curr-Char-Is-Punct-BOOL     VALUE '=', '(', ')',
 1459                                              '*', '/', '&',
 1460                                              ';', ',', '<',
 1461                                              '>', ':'.
 1462            88 WS-Curr-Char-Is-Quote-BOOL     VALUE "'", '"'.
 1463            88 WS-Curr-Char-Is-X-BOOL         VALUE 'x', 'X'.
 1464            88 WS-Curr-Char-Is-Z-BOOL         VALUE 'z', 'Z'.
 1465
 1466        01  WS-Curr-Division-TXT          PIC X(1).
 1467 GC1010     88 WS-CD-In-IDENT-DIV-BOOL         VALUE 'i', 'I', '?'.
 1468 GC1010     88 WS-CD-In-ENV-DIV-BOOL           VALUE 'e', 'E'.
 1469 GC1010     88 WS-CD-In-DATA-DIV-BOOL          VALUE 'd', 'D'.
 1470 GC1010     88 WS-CD-In-PROC-DIV-BOOL          VALUE 'p', 'P'.
```

==

```
GNUCOBOL 2.2 20JUL2017  Source Listing                                      2017/07/22
                                            /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                            Page: 37
====== ===================================================================================
  1471
  1472        01  WS-Curr-Line-NUM                    PIC 9(6).
  1473
  1474        01  WS-Curr-Prog-ID-TXT.
  1475            05 FILLER                           PIC X(12).
  1476            05 WS-CPI-13-15-TXT                 PIC X(3).
  1477 GC0712     05 WS-CPI-16-CHR                    PIC X(1).
  1478
  1479        01  WS-Curr-Section-TXT.
  1480            05 WS-CS-1-CHR                      PIC X(1).
  1481            05 WS-CS-2-14-TXT.
  1482                10 FILLER                       PIC X(10).
  1483                10 WS-CS-11-14-TXT              PIC X(3).
  1484            05 WS-CS-15-CHR                     PIC X(1).
  1485
  1486        01  WS-Curr-Verb-TXT                    PIC X(12).
  1487
  1488        01  WS-Delim-TXT                        PIC X(2).
  1489
  1490        01  WS-Dummy-TXT                        PIC X(1).
  1491
  1492        01  WS-Expanded-Src-Fn-TXT              PIC X(256).
  1493
  1494        01  WS-Filename-TXT                     PIC X(256).
  1495
  1496 GC1213 01  WS-Flags-TXT.
  1497 GC1213     05 WS-Suppress-FF-CHR               PIC X(1).
  1498
  1499 GC1213 01  WS-Formatted-DT                     PIC 9999/99/99.
  1500
  1501        01  WS-Group-Indicators-TXT.
  1502            05 WS-GI-Prog-ID-TXT                PIC X(15).
  1503            05 WS-GI-Token-TXT                  PIC X(32).
  1504
  1505        01  WS-Held-Reference-TXT               PIC X(100).
  1506
  1507        01  WS-I-SUB                            USAGE BINARY-LONG.
  1508
  1509        01  WS-J-SUB                            USAGE BINARY-LONG.
  1510
  1511        01  WS-Lines-Left-NUM                   USAGE BINARY-LONG.
  1512
  1513        01  WS-Lines-Per-Page-NUM               USAGE BINARY-LONG.
  1514
  1515        01  WS-Lines-Per-Page-Env-TXT           PIC X(256).
  1516
  1517 GC1010 01  WS-Main-Module-Name-TXT             PIC X(256).
  1518
  1519        01  WS-Next-CHR                         PIC X(1).
  1520            88 WS-Next-Char-Is-Quote-BOOL       VALUE '"', "'".
  1521
  1522        01  WS-OS-Type-FILLER-TXT.
  1523            05 VALUE 'Windows'                  PIC X(14).

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                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                          Page: 38
====== =======================================================================================
  1524            05 VALUE 'Windows/Cygwin'          PIC X(14).
  1525            05 VALUE 'UNIX/Linux'              PIC X(14).
  1526            05 VALUE 'OSX'                     PIC X(14).
  1527            05 VALUE 'Windows/MinGW'           PIC X(14).
  1528        01  WS-OS-Types-TXT REDEFINES WS-OS-Type-FILLER-TXT.
  1529            05 WS-OS-Type-TXT                  PIC X(14)
  1530                                        OCCURS 5 TIMES .
  1531
  1532 GC0712 01  WS-Page-NUM                        USAGE BINARY-LONG.
  1533
  1534 GC0712 01  WS-Page-No-TXT.
  1535 GC0712     05 WS-PN-Literal-TXT               PIC X(6).
  1536 GC0712     05 WS-PN-Page-NUM                  PIC Z(3)9.
  1537
  1538 GC1213 01  WS-Program-Path-TXT               PIC X(135).
  1539
  1540        01  WS-Reserved-Words-TXT.
  1541            05 VALUE '                         ' PIC X(33).
  1542 GC1213     05 VALUE 'FABS                     ' PIC X(33).
  1543            05 VALUE 'VACCEPT                  ' PIC X(33).
  1544            05 VALUE ' ACCESS                  ' PIC X(33).
  1545 GC1213     05 VALUE 'FACOS                    ' PIC X(33).
  1546            05 VALUE ' ACTIVE-CLASS            ' PIC X(33).      UNIMPLEMENTED
  1547            05 VALUE 'VADD                     ' PIC X(33).
  1548            05 VALUE ' ADDRESS                 ' PIC X(33).
  1549            05 VALUE ' ADVANCING               ' PIC X(33).
  1550            05 VALUE 'KAFTER                   ' PIC X(33).
  1551            05 VALUE ' ALIGNED                 ' PIC X(33).      UNIMPLEMENTED
  1552            05 VALUE ' ALL                     ' PIC X(33).
  1553            05 VALUE 'VALLOCATE                ' PIC X(33).
  1554            05 VALUE ' ALPHABET                ' PIC X(33).
  1555            05 VALUE ' ALPHABETIC              ' PIC X(33).
  1556            05 VALUE ' ALPHABETIC-LOWER        ' PIC X(33).
  1557            05 VALUE ' ALPHABETIC-UPPER        ' PIC X(33).
  1558            05 VALUE ' ALPHANUMERIC            ' PIC X(33).
  1559            05 VALUE ' ALPHANUMERIC-EDITED     ' PIC X(33).
  1560            05 VALUE ' ALSO                    ' PIC X(33).
  1561            05 VALUE 'VALTER                   ' PIC X(33).
  1562            05 VALUE ' ALTERNATE               ' PIC X(33).
  1563            05 VALUE ' AND                     ' PIC X(33).
  1564 GC1213     05 VALUE 'FANNUITY                 ' PIC X(33).
  1565            05 VALUE ' ANY                     ' PIC X(33).
  1566            05 VALUE ' ANYCASE                 ' PIC X(33).      UNIMPLEMENTED
  1567            05 VALUE ' ARE                     ' PIC X(33).
  1568            05 VALUE ' AREA                    ' PIC X(33).
  1569            05 VALUE ' AREAS                   ' PIC X(33).
  1570            05 VALUE ' ARGUMENT-NUMBER         ' PIC X(33).
  1571            05 VALUE ' ARGUMENT-VALUE          ' PIC X(33).
  1572            05 VALUE ' ARITHMETIC              ' PIC X(33).      UNIMPLEMENTED
  1573            05 VALUE ' AS                      ' PIC X(33).
  1574            05 VALUE ' ASCENDING               ' PIC X(33).
  1575            05 VALUE ' ASCII                   ' PIC X(33).
  1576 GC1213     05 VALUE 'FASIN                    ' PIC X(33).
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====== ========================================================================================
 1577           05 VALUE ' ASSIGN                        ' PIC X(33).
 1578           05 VALUE ' AT                            ' PIC X(33).
 1579 GC1213    05 VALUE 'FATAN                          ' PIC X(33).
 1580 GC0711    05 VALUE ' ATTRIBUTE                     ' PIC X(33).
 1581           05 VALUE ' AUTHOR                        ' PIC X(33).        OBSOLETE
 1582           05 VALUE ' AUTO                          ' PIC X(33).
 1583           05 VALUE ' AUTO-SKIP                     ' PIC X(33).
 1584           05 VALUE ' AUTOMATIC                     ' PIC X(33).
 1585           05 VALUE ' AUTOTERMINATE                 ' PIC X(33).
 1586           05 VALUE ' AWAY-FROM-ZERO                ' PIC X(33).
 1587           05 VALUE ' B-AND                         ' PIC X(33).        UNIMPLEMENTED
 1588           05 VALUE ' B-NOT                         ' PIC X(33).        UNIMPLEMENTED
 1589           05 VALUE ' B-OR                          ' PIC X(33).        UNIMPLEMENTED
 1590           05 VALUE ' B-XOR                         ' PIC X(33).        UNIMPLEMENTED
 1591           05 VALUE ' BACKGROUND-COLOR              ' PIC X(33).
 1592           05 VALUE ' BACKGROUND-COLOUR             ' PIC X(33).
 1593           05 VALUE ' BASED                         ' PIC X(33).
 1594           05 VALUE ' BEEP                          ' PIC X(33).
 1595           05 VALUE ' BEFORE                        ' PIC X(33).
 1596           05 VALUE ' BELL                          ' PIC X(33).
 1597           05 VALUE ' BINARY                        ' PIC X(33).
 1598           05 VALUE ' BINARY-C-LONG                 ' PIC X(33).
 1599           05 VALUE ' BINARY-CHAR                   ' PIC X(33).
 1600           05 VALUE ' BINARY-DOUBLE                 ' PIC X(33).
 1601           05 VALUE ' BINARY-INT                    ' PIC X(33).
 1602           05 VALUE ' BINARY-LONG                   ' PIC X(33).
 1603           05 VALUE ' BINARY-LONG-LONG              ' PIC X(33).
 1604           05 VALUE ' BINARY-SHORT                  ' PIC X(33).
 1605           05 VALUE ' BIT                           ' PIC X(33).        UNIMPLEMENTED
 1606           05 VALUE ' BLANK                         ' PIC X(33).
 1607           05 VALUE ' BLINK                         ' PIC X(33).
 1608           05 VALUE ' BLOCK                         ' PIC X(33).
 1609           05 VALUE ' BOOLEAN                       ' PIC X(33).        UNIMPLEMENTED
 1610 GC1213    05 VALUE 'FBOOLEAN-OF-INTEGER            ' PIC X(33).        UNIMPLEMENTED
 1611           05 VALUE ' BOTTOM                        ' PIC X(33).
 1612           05 VALUE 'YBY                            ' PIC X(33).
 1613 GC1213    05 VALUE 'FBYTE-LENGTH                   ' PIC X(33).
 1614           05 VALUE 'MC01                           ' PIC X(33).
 1615           05 VALUE 'MC02                           ' PIC X(33).
 1616           05 VALUE 'MC03                           ' PIC X(33).
 1617           05 VALUE 'MC04                           ' PIC X(33).
 1618           05 VALUE 'MC05                           ' PIC X(33).
 1619           05 VALUE 'MC06                           ' PIC X(33).
 1620           05 VALUE 'MC07                           ' PIC X(33).
 1621           05 VALUE 'MC08                           ' PIC X(33).
 1622           05 VALUE 'MC09                           ' PIC X(33).
 1623           05 VALUE 'MC10                           ' PIC X(33).
 1624           05 VALUE 'MC11                           ' PIC X(33).
 1625           05 VALUE 'MC12                           ' PIC X(33).
 1626           05 VALUE 'VCALL                          ' PIC X(33).
 1627           05 VALUE 'MCALL-CONVENTION               ' PIC X(33).
 1628           05 VALUE 'VCANCEL                        ' PIC X(33).
 1629           05 VALUE ' CAPACITY                      ' PIC X(33).        UNIMPLEMENTED
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                                    /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
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======  ===============================================================================
 1630           05 VALUE ' CD                      ' PIC X(33).      OBSOLETE
 1631           05 VALUE ' CENTER                  ' PIC X(33).      UNIMPLEMENTED
 1632           05 VALUE ' CF                      ' PIC X(33).
 1633           05 VALUE ' CH                      ' PIC X(33).
 1634           05 VALUE ' CHAIN                   ' PIC X(33).      UNIMPLEMENTED
 1635           05 VALUE ' CHAINING                ' PIC X(33).
 1636 GC1213    05 VALUE 'FCHAR                    ' PIC X(33).
 1637 GC1213    05 VALUE 'FCHAR-NATIONAL           ' PIC X(33).      UNIMPLEMENTED
 1638           05 VALUE ' CHARACTER               ' PIC X(33).
 1639           05 VALUE ' CHARACTERS              ' PIC X(33).
 1640           05 VALUE ' CLASS                   ' PIC X(33).
 1641           05 VALUE ' CLASS-ID                ' PIC X(33).      UNIMPLEMENTED
 1642 GC0711    05 VALUE ' CLASSIFICATION          ' PIC X(33).
 1643           05 VALUE 'VCLOSE                   ' PIC X(33).
 1644 GC1213    05 VALUE 'FCOB-CRT-STATUS          ' PIC X(33).
 1645           05 VALUE ' CODE                    ' PIC X(33).
 1646           05 VALUE ' CODE-SET                ' PIC X(33).
 1647           05 VALUE ' COL                     ' PIC X(33).
 1648           05 VALUE ' COLLATING               ' PIC X(33).
 1649           05 VALUE ' COLS                    ' PIC X(33).
 1650           05 VALUE ' COLUMN                  ' PIC X(33).
 1651           05 VALUE ' COLUMNS                 ' PIC X(33).
 1652 GC1213    05 VALUE 'FCOMBINED-DATETIME       ' PIC X(33).
 1653           05 VALUE ' COMMA                   ' PIC X(33).
 1654           05 VALUE ' COMMAND-LINE            ' PIC X(33).
 1655           05 VALUE 'VCOMMIT                  ' PIC X(33).
 1656           05 VALUE ' COMMON                  ' PIC X(33).
 1657           05 VALUE ' COMMUNICATION           ' PIC X(33).      OBSOLETE
 1658           05 VALUE ' COMP                    ' PIC X(33).
 1659           05 VALUE ' COMP-1                  ' PIC X(33).
 1660           05 VALUE ' COMP-2                  ' PIC X(33).
 1661           05 VALUE ' COMP-3                  ' PIC X(33).
 1662           05 VALUE ' COMP-4                  ' PIC X(33).
 1663           05 VALUE ' COMP-5                  ' PIC X(33).
 1664           05 VALUE ' COMP-6                  ' PIC X(33).
 1665           05 VALUE ' COMP-X                  ' PIC X(33).
 1666           05 VALUE ' COMPUTATIONAL           ' PIC X(33).
 1667           05 VALUE ' COMPUTATIONAL-1         ' PIC X(33).
 1668           05 VALUE ' COMPUTATIONAL-2         ' PIC X(33).
 1669           05 VALUE ' COMPUTATIONAL-3         ' PIC X(33).
 1670           05 VALUE ' COMPUTATIONAL-4         ' PIC X(33).
 1671           05 VALUE ' COMPUTATIONAL-5         ' PIC X(33).
 1672           05 VALUE ' COMPUTATIONAL-X         ' PIC X(33).
 1673           05 VALUE 'VCOMPUTE                 ' PIC X(33).
 1674 GC1213    05 VALUE 'FCONCATENATE             ' PIC X(33).
 1675 GC0712    05 VALUE ' CONDITION               ' PIC X(33).
 1676           05 VALUE 'KCONFIGURATION           ' PIC X(33).
 1677           05 VALUE 'MCONSOLE                 ' PIC X(33).
 1678           05 VALUE ' CONSTANT                ' PIC X(33).
 1679           05 VALUE ' CONTAINS                ' PIC X(33).
 1680 GC0712    05 VALUE 'ACONTENT                 ' PIC X(33).
 1681           05 VALUE 'VCONTINUE                ' PIC X(33).
 1682           05 VALUE ' CONTROL                 ' PIC X(33).
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 1683           05 VALUE ' CONTROLS                      ' PIC X(33).
 1684 GC0711    05 VALUE ' CONVERSION                    ' PIC X(33).
 1685           05 VALUE 'KCONVERTING                    ' PIC X(33).
 1686           05 VALUE ' COPY                          ' PIC X(33).
 1687           05 VALUE ' CORR                          ' PIC X(33).
 1688           05 VALUE ' CORRESPONDING                 ' PIC X(33).
 1689 GC1213    05 VALUE 'FCOS                           ' PIC X(33).
 1690           05 VALUE 'KCOUNT                         ' PIC X(33).
 1691           05 VALUE ' CRT                           ' PIC X(33).
 1692           05 VALUE ' CRT-UNDER                     ' PIC X(33).
 1693           05 VALUE 'MCSP                           ' PIC X(33).
 1694           05 VALUE ' CURRENCY                      ' PIC X(33).
 1695 GC1213    05 VALUE 'FCURRENCY-SYMBOL               ' PIC X(33).
 1696 GC1213    05 VALUE 'FCURRENT-DATE                  ' PIC X(33).
 1697           05 VALUE ' CURSOR                        ' PIC X(33).
 1698           05 VALUE ' CYCLE                         ' PIC X(33).
 1699           05 VALUE 'KDATA                          ' PIC X(33).
 1700           05 VALUE ' DATA-POINTER                  ' PIC X(33).    UNIMPLEMENTED
 1701           05 VALUE ' DATE                          ' PIC X(33).
 1702           05 VALUE ' DATE-COMPILED                 ' PIC X(33).    OBSOLETE
 1703           05 VALUE ' DATE-MODIFIED                 ' PIC X(33).    OBSOLETE
 1704 GC1213    05 VALUE 'FDATE-OF-INTEGER               ' PIC X(33).
 1705 GC1213    05 VALUE 'FDATE-TO-YYYYMMDD              ' PIC X(33).
 1706           05 VALUE ' DATE-WRITTEN                  ' PIC X(33).    OBSOLETE
 1707           05 VALUE ' DAY                           ' PIC X(33).
 1708 GC1213    05 VALUE 'FDAY-OF-INTEGER                ' PIC X(33).
 1709           05 VALUE ' DAY-OF-WEEK                   ' PIC X(33).
 1710 GC1213    05 VALUE 'IDAY-TO-YYYYDDD                ' PIC X(33).
 1711           05 VALUE ' DE                            ' PIC X(33).
 1712 GC0712    05 VALUE 'IDEBUG-CONTENTS                ' PIC X(33).
 1713 GC0712    05 VALUE 'IDEBUG-ITEM                    ' PIC X(33).
 1714 GC0712    05 VALUE 'IDEBUG-LINE                    ' PIC X(33).
 1715 GC0712    05 VALUE 'IDEBUG-NAME                    ' PIC X(33).
 1716 GC0712    05 VALUE 'IDEBUG-SUB-1                   ' PIC X(33).
 1717 GC0712    05 VALUE 'IDEBUG-SUB-2                   ' PIC X(33).
 1718 GC0712    05 VALUE 'IDEBUG-SUB-3                   ' PIC X(33).
 1719           05 VALUE ' DEBUGGING                     ' PIC X(33).
 1720           05 VALUE ' DECIMAL-POINT                 ' PIC X(33).
 1721           05 VALUE ' DECLARATIVES                  ' PIC X(33).
 1722           05 VALUE ' DEFAULT                       ' PIC X(33).
 1723           05 VALUE 'VDELETE                        ' PIC X(33).
 1724           05 VALUE ' DELIMITED                     ' PIC X(33).
 1725           05 VALUE 'KDELIMITER                     ' PIC X(33).
 1726           05 VALUE ' DEPENDING                     ' PIC X(33).
 1727           05 VALUE ' DESCENDING                    ' PIC X(33).
 1728           05 VALUE ' DESTINATION                   ' PIC X(33).    UNIMPLEMENTED
 1729           05 VALUE ' DETAIL                        ' PIC X(33).
 1730 GC0711    05 VALUE ' DISC                          ' PIC X(33).
 1731           05 VALUE ' DISK                          ' PIC X(33).
 1732           05 VALUE 'VDISPLAY                       ' PIC X(33).
 1733 GC1213    05 VALUE 'FDISPLAY-OF                    ' PIC X(33).    UNIMPLEMENTED
 1734           05 VALUE 'VDIVIDE                        ' PIC X(33).
 1735           05 VALUE 'KDIVISION                      ' PIC X(33).
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  1736   05 VALUE 'KDOWN   ' PIC X(33).
  1737   05 VALUE ' DUPLICATES   ' PIC X(33).
  1738   05 VALUE ' DYNAMIC   ' PIC X(33).
  1739 GC1213   05 VALUE 'FE   ' PIC X(33).
  1740   05 VALUE ' EBCDIC   ' PIC X(33).
  1741 GC0712   05 VALUE ' EC   ' PIC X(33).
  1742   05 VALUE ' EGI   ' PIC X(33).   OBSOLETE
  1743   05 VALUE 'VELSE   ' PIC X(33).
  1744   05 VALUE ' EMI   ' PIC X(33).   OBSOLETE
  1745   05 VALUE ' EMPTY-CHECK   ' PIC X(33).
  1746   05 VALUE 'VENABLE   ' PIC X(33).   OBSOLETE
  1747 GC0710   05 VALUE 'KEND   ' PIC X(33).
  1748   05 VALUE ' END-ACCEPT   ' PIC X(33).
  1749   05 VALUE ' END-ADD   ' PIC X(33).
  1750   05 VALUE ' END-CALL   ' PIC X(33).
  1751   05 VALUE ' END-CHAIN   ' PIC X(33).   UNIMPLEMENTED
  1752   05 VALUE ' END-COMPUTE   ' PIC X(33).
  1753   05 VALUE ' END-DELETE   ' PIC X(33).
  1754   05 VALUE ' END-DISPLAY   ' PIC X(33).
  1755   05 VALUE ' END-DIVIDE   ' PIC X(33).
  1756   05 VALUE ' END-EVALUATE   ' PIC X(33).
  1757   05 VALUE ' END-IF   ' PIC X(33).
  1758   05 VALUE ' END-MULTIPLY   ' PIC X(33).
  1759   05 VALUE ' END-OF-PAGE   ' PIC X(33).
  1760   05 VALUE ' END-PERFORM   ' PIC X(33).
  1761   05 VALUE ' END-READ   ' PIC X(33).
  1762   05 VALUE ' END-RECEIVE   ' PIC X(33).   OBSOLETE
  1763   05 VALUE ' END-RETURN   ' PIC X(33).
  1764   05 VALUE ' END-REWRITE   ' PIC X(33).
  1765   05 VALUE ' END-SEARCH   ' PIC X(33).
  1766   05 VALUE ' END-START   ' PIC X(33).
  1767   05 VALUE ' END-STRING   ' PIC X(33).
  1768   05 VALUE ' END-SUBTRACT   ' PIC X(33).
  1769   05 VALUE ' END-UNSTRING   ' PIC X(33).
  1770   05 VALUE ' END-WRITE   ' PIC X(33).
  1771   05 VALUE 'VENTRY   ' PIC X(33).
  1772   05 VALUE ' ENTRY-CONVENTION   ' PIC X(33).   UNIMPLEMENTED
  1773   05 VALUE 'KENVIRONMENT   ' PIC X(33).
  1774   05 VALUE ' ENVIRONMENT-NAME   ' PIC X(33).
  1775   05 VALUE ' ENVIRONMENT-VALUE   ' PIC X(33).
  1776   05 VALUE ' EO   ' PIC X(33).   UNIMPLEMENTED
  1777   05 VALUE ' EOL   ' PIC X(33).
  1778   05 VALUE ' EOP   ' PIC X(33).
  1779   05 VALUE ' EOS   ' PIC X(33).
  1780   05 VALUE ' EQUAL   ' PIC X(33).
  1781   05 VALUE 'KEQUALS   ' PIC X(33).
  1782   05 VALUE ' ERASE   ' PIC X(33).
  1783   05 VALUE ' ERROR   ' PIC X(33).
  1784   05 VALUE ' ESCAPE   ' PIC X(33).
  1785   05 VALUE ' ESI   ' PIC X(33).   OBSOLETE
  1786   05 VALUE 'VEVALUATE   ' PIC X(33).
  1787   05 VALUE ' EXCEPTION   ' PIC X(33).
  1788 GC1213   05 VALUE 'FEXCEPTION-FILE   ' PIC X(33).

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                                         /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                            Page: 43
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  1789 GC1213       05 VALUE 'FEXCEPTION-FILE-N                ' PIC X(33).   UNIMPLEMENTED
  1790 GC1213       05 VALUE 'FEXCEPTION-LOCATION              ' PIC X(33).
  1791 GC1213       05 VALUE 'FEXCEPTION-LOCATION-N            ' PIC X(33).   UNIMPLEMENTED
  1792              05 VALUE ' EXCEPTION-OBJECT                ' PIC X(33).   UNIMPLEMENTED
  1793 GC1213       05 VALUE 'FEXCEPTION-STATEMENT             ' PIC X(33).
  1794 GC1213       05 VALUE 'FEXCEPTION-STATUS                ' PIC X(33).
  1795              05 VALUE ' EXCLUSIVE                       ' PIC X(33).
  1796              05 VALUE 'VEXIT                            ' PIC X(33).
  1797 GC1213       05 VALUE 'FEXP                             ' PIC X(33).
  1798 GC1213       05 VALUE 'FEXP10                           ' PIC X(33).
  1799              05 VALUE ' EXPANDS                         ' PIC X(33).   UNIMPLEMENTED
  1800              05 VALUE ' EXTEND                          ' PIC X(33).
  1801              05 VALUE ' EXTERNAL                        ' PIC X(33).
  1802 GC1213       05 VALUE 'FFACTORIAL                       ' PIC X(33).
  1803              05 VALUE ' FACTORY                         ' PIC X(33).   UNIMPLEMENTED
  1804              05 VALUE ' FALSE                           ' PIC X(33).
  1805              05 VALUE 'KFD                              ' PIC X(33).
  1806              05 VALUE 'KFILE                            ' PIC X(33).
  1807              05 VALUE ' FILE-CONTROL                    ' PIC X(33).
  1808              05 VALUE ' FILE-ID                         ' PIC X(33).
  1809 GC1113       05 VALUE ' FILLER                          ' PIC X(33).
  1810              05 VALUE ' FINAL                           ' PIC X(33).
  1811              05 VALUE ' FIRST                           ' PIC X(33).
  1812 GC0712       05 VALUE ' FLOAT-BINARY-128                ' PIC X(33).   UNIMPLEMENTED
  1813 GC0712       05 VALUE ' FLOAT-BINARY-32                 ' PIC X(33).   UNIMPLEMENTED
  1814 GC0712       05 VALUE ' FLOAT-BINARY-64                 ' PIC X(33).   UNIMPLEMENTED
  1815              05 VALUE ' FLOAT-DECIMAL-16                ' PIC X(33).
  1816              05 VALUE ' FLOAT-DECIMAL-34                ' PIC X(33).
  1817              05 VALUE ' FLOAT-EXTENDED                  ' PIC X(33).   UNIMPLEMENTED
  1818 GC0712       05 VALUE ' FLOAT-INFINITY                  ' PIC X(33).   UNIMPLEMENTED
  1819              05 VALUE ' FLOAT-LONG                      ' PIC X(33).
  1820 GC0712       05 VALUE ' FLOAT-NOT-A-NUMBER              ' PIC X(33).   UNIMPLEMENTED
  1821              05 VALUE ' FLOAT-SHORT                     ' PIC X(33).
  1822              05 VALUE ' FOOTING                         ' PIC X(33).
  1823              05 VALUE ' FOR                             ' PIC X(33).
  1824              05 VALUE ' FOREGROUND-COLOR                ' PIC X(33).
  1825              05 VALUE ' FOREGROUND-COLOUR               ' PIC X(33).
  1826 GC0711       05 VALUE ' FOREVER                         ' PIC X(33).
  1827              05 VALUE ' FORMAT                          ' PIC X(33).   UNIMPLEMENTED
  1828 GC1213       05 VALUE 'FFORMATTED-CURRENT-DATE          ' PIC X(33).   UNIMPLEMENTED
  1829 GC1213       05 VALUE 'FFORMATTED-DATE                  ' PIC X(33).   UNIMPLEMENTED
  1830 GC1213       05 VALUE 'FFORMATTED-DATETIME              ' PIC X(33).   UNIMPLEMENTED
  1831 GC1213       05 VALUE 'FFORMATTED-TIME                  ' PIC X(33).   UNIMPLEMENTED
  1832              05 VALUE 'MFORMFEED                        ' PIC X(33).
  1833 GC1213       05 VALUE 'FFRACTION-PART                   ' PIC X(33).
  1834              05 VALUE 'VFREE                            ' PIC X(33).
  1835              05 VALUE ' FROM                            ' PIC X(33).
  1836              05 VALUE ' FULL                            ' PIC X(33).
  1837              05 VALUE ' FUNCTION                        ' PIC X(33).
  1838 GC0712       05 VALUE 'KFUNCTION-ID                     ' PIC X(33).
  1839              05 VALUE ' FUNCTION-POINTER                ' PIC X(33).   UNIMPLEMENTED
  1840              05 VALUE 'VGENERATE                        ' PIC X(33).
  1841              05 VALUE ' GET                             ' PIC X(33).   UNIMPLEMENTED

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                                              /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
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====== =======================================================================================
  1842          05 VALUE 'KGIVING                      ' PIC X(33).
  1843          05 VALUE ' GLOBAL                       ' PIC X(33).
  1844          05 VALUE 'VGO                           ' PIC X(33).
  1845          05 VALUE 'VGOBACK                       ' PIC X(33).
  1846          05 VALUE ' GREATER                      ' PIC X(33).
  1847          05 VALUE ' GROUP                        ' PIC X(33).
  1848          05 VALUE ' GROUP-USAGE                  ' PIC X(33).      UNIMPLEMENTED
  1849          05 VALUE ' HEADING                      ' PIC X(33).
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  1851          05 VALUE ' HIGH-VALUES                  ' PIC X(33).
  1852 GC1213   05 VALUE 'FHIGHEST-ALGEBRAIC            ' PIC X(33).
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  1867          05 VALUE ' INHERITS                     ' PIC X(33).      UNIMPLEMENTED
  1868          05 VALUE ' INITIAL                      ' PIC X(33).
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 2003           05 VALUE ' OR                           ' PIC X(33).
 2004 GC1213    05 VALUE 'FORD                          ' PIC X(33).
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 2021           05 VALUE ' PF                           ' PIC X(33).
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 2023 GC1213    05 VALUE 'FPI                           ' PIC X(33).
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 2047           05 VALUE ' PURGE                        ' PIC X(33).      OBSOLETE
 2048           05 VALUE ' QUEUE                        ' PIC X(33).      OBSOLETE
 2049           05 VALUE ' QUOTE                        ' PIC X(33).
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 2051           05 VALUE ' RAISE                        ' PIC X(33).      UNIMPLEMENTED
 2052           05 VALUE ' RAISING                      ' PIC X(33).      UNIMPLEMENTED
 2053 GC1213    05 VALUE 'FRANDOM                       ' PIC X(33).

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  2056              05 VALUE 'VREAD                        ' PIC X(33).
  2057              05 VALUE 'VREADY                       ' PIC X(33).
  2058              05 VALUE 'VRECEIVE                     ' PIC X(33).      OBSOLETE
  2059              05 VALUE ' RECORD                      ' PIC X(33).
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  2067              05 VALUE ' RELATION                    ' PIC X(33).      UNIMPLEMENTED
  2068              05 VALUE ' RELATIVE                    ' PIC X(33).
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 2161          05 VALUE ' STRONG                 ' PIC X(33).      UNIMPLEMENTED
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 2164          05 VALUE ' SUB-QUEUE-3            ' PIC X(33).      OBSOLETE
 2165 GC1213   05 VALUE 'FSUBSTITUTE             ' PIC X(33).
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 2200          05 VALUE 'MSWITCH-7               ' PIC X(33).
 2201          05 VALUE 'MSWITCH-8               ' PIC X(33).
 2202          05 VALUE 'MSWITCH-9               ' PIC X(33).
 2203          05 VALUE ' SYMBOL                 ' PIC X(33).      UNIMPLEMENTED
 2204          05 VALUE ' SYMBOLIC               ' PIC X(33).
 2205          05 VALUE ' SYNC                   ' PIC X(33).
 2206          05 VALUE ' SYNCHRONISED           ' PIC X(33).
 2207          05 VALUE ' SYNCHRONIZED           ' PIC X(33).
 2208          05 VALUE 'MSYSERR                 ' PIC X(33).
 2209          05 VALUE 'MSYSIN                  ' PIC X(33).
 2210          05 VALUE 'MSYSIPT                 ' PIC X(33).
 2211          05 VALUE 'MSYSLIST                ' PIC X(33).
 2212          05 VALUE 'MSYSLST                 ' PIC X(33).
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  2213   05 VALUE 'MSYSOUT   ' PIC X(33).
  2214   05 VALUE ' SYSTEM-DEFAULT   ' PIC X(33).
  2215   05 VALUE ' TABLE   ' PIC X(33).   UNIMPLEMENTED
  2216   05 VALUE 'KTALLYING   ' PIC X(33).
  2217 GC1213   05 VALUE 'FTAN   ' PIC X(33).
  2218   05 VALUE ' TAPE   ' PIC X(33).
  2219   05 VALUE ' TERMINAL   ' PIC X(33).   OBSOLETE
  2220   05 VALUE 'VTERMINATE   ' PIC X(33).
  2221   05 VALUE ' TEST   ' PIC X(33).
  2222 GC1213   05 VALUE 'FTEST-DATE-YYYYMMDD   ' PIC X(33).
  2223 GC1213   05 VALUE 'FTEST-DAY-YYYYDDD   ' PIC X(33).
  2224 GC1213   05 VALUE 'FTEST-FORMATTED-DATETIME   ' PIC X(33).   UNIMPLEMENTED
  2225 GC1213   05 VALUE 'FTEST-NUMVAL   ' PIC X(33).
  2226 GC1213   05 VALUE 'FTEST-NUMVAL-C   ' PIC X(33).
  2227 GC1213   05 VALUE 'FTEST-NUMVAL-F   ' PIC X(33).
  2228   05 VALUE ' TEXT   ' PIC X(33).   OBSOLETE
  2229   05 VALUE ' THAN   ' PIC X(33).
  2230   05 VALUE ' THEN   ' PIC X(33).
  2231   05 VALUE ' THROUGH   ' PIC X(33).
  2232   05 VALUE ' THRU   ' PIC X(33).
  2233   05 VALUE ' TIME   ' PIC X(33).
  2234 GC0711   05 VALUE ' TIME-OUT   ' PIC X(33).
  2235 GC0711   05 VALUE ' TIMEOUT   ' PIC X(33).
  2236   05 VALUE ' TIMES   ' PIC X(33).
  2237   05 VALUE 'KTO   ' PIC X(33).
  2238   05 VALUE ' TOP   ' PIC X(33).
  2239   05 VALUE ' TOWARD-GREATER   ' PIC X(33).
  2240   05 VALUE ' TOWARD-LESSER   ' PIC X(33).
  2241   05 VALUE ' TRAILING   ' PIC X(33).
  2242   05 VALUE ' TRAILING-SIGN   ' PIC X(33).   UNIMPLEMENTED
  2243   05 VALUE 'VTRANSFORM   ' PIC X(33).
  2244 GC1213   05 VALUE 'FTRIM   ' PIC X(33).
  2245   05 VALUE ' TRUE   ' PIC X(33).
  2246   05 VALUE ' TRUNCATION   ' PIC X(33).
  2247   05 VALUE ' TYPE   ' PIC X(33).
  2248   05 VALUE ' TYPEDEF   ' PIC X(33).   UNIMPLEMENTED
  2249   05 VALUE ' UCS-4   ' PIC X(33).   UNIMPLEMENTED
  2250   05 VALUE ' UNDERLINE   ' PIC X(33).
  2251   05 VALUE ' UNIT   ' PIC X(33).
  2252   05 VALUE ' UNIVERSAL   ' PIC X(33).   UNIMPLEMENTED
  2253   05 VALUE 'VUNLOCK   ' PIC X(33).
  2254   05 VALUE ' UNSIGNED   ' PIC X(33).
  2255   05 VALUE ' UNSIGNED-INT   ' PIC X(33).
  2256   05 VALUE ' UNSIGNED-LONG   ' PIC X(33).
  2257   05 VALUE ' UNSIGNED-SHORT   ' PIC X(33).
  2258   05 VALUE 'VUNSTRING   ' PIC X(33).
  2259   05 VALUE ' UNTIL   ' PIC X(33).
  2260   05 VALUE 'KUP   ' PIC X(33).
  2261   05 VALUE ' UPDATE   ' PIC X(33).
  2262   05 VALUE ' UPON   ' PIC X(33).
  2263   05 VALUE ' UPPER   ' PIC X(33).
  2264 GC1213   05 VALUE 'FUPPER-CASE   ' PIC X(33).
  2265   05 VALUE ' USAGE   ' PIC X(33).

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  2266           05 VALUE 'VUSE                         ' PIC X(33).
  2267 GC0711    05 VALUE ' USER                        ' PIC X(33).
  2268           05 VALUE ' USER-DEFAULT                ' PIC X(33).
  2269           05 VALUE 'KUSING                       ' PIC X(33).
  2270           05 VALUE ' UTF-16                      ' PIC X(33).        UNIMPLEMENTED
  2271           05 VALUE ' UTF-8                       ' PIC X(33).        UNIMPLEMENTED
  2272           05 VALUE ' VAL-STATUS                  ' PIC X(33).        UNIMPLEMENTED
  2273           05 VALUE ' VALID                       ' PIC X(33).        UNIMPLEMENTED
  2274           05 VALUE ' VALIDATE                    ' PIC X(33).        UNIMPLEMENTED
  2275           05 VALUE ' VALIDATE-STATUS             ' PIC X(33).        UNIMPLEMENTED
  2276 GC0712    05 VALUE 'AVALUE                       ' PIC X(33).
  2277           05 VALUE ' VALUES                      ' PIC X(33).
  2278 GC1213    05 VALUE 'FVARIANCE                    ' PIC X(33).
  2279           05 VALUE 'KVARYING                     ' PIC X(33).
  2280           05 VALUE ' VDISABLE                    ' PIC X(33).        UNIMPLEMENTED
  2281           05 VALUE ' WAIT                        ' PIC X(33).
  2282           05 VALUE 'VWHEN                        ' PIC X(33).
  2283 GC1213    05 VALUE 'FWHEN-COMPILED               ' PIC X(33).
  2284           05 VALUE ' WITH                        ' PIC X(33).
  2285           05 VALUE ' WORDS                       ' PIC X(33).
  2286           05 VALUE 'KWORKING-STORAGE             ' PIC X(33).
  2287           05 VALUE 'VWRITE                       ' PIC X(33).
  2288 GC1213    05 VALUE 'FYEAR-TO-YYYY                ' PIC X(33).
  2289           05 VALUE ' YYYYDDD                     ' PIC X(33).
  2290           05 VALUE ' YYYYMMDD                    ' PIC X(33).
  2291           05 VALUE ' ZERO                        ' PIC X(33).
  2292           05 VALUE ' ZERO-FILL                   ' PIC X(33).        UNIMPLEMENTED
  2293           05 VALUE ' ZEROES                      ' PIC X(33).
  2294           05 VALUE ' ZEROS                       ' PIC X(33).
  2295      01  WS-Reserved-Word-Table-TXT REDEFINES WS-Reserved-Words-TXT.
  2296 GC1113    05 WS-Reserved-Word-TXT       OCCURS 754 TIMES
  2297                                          ASCENDING KEY
  2298                                            WS-RW-Word-TXT
  2299                                          INDEXED WS-RW-IDX.
  2300             10 WS-RW-Type-CD            PIC X(1).
  2301             10 WS-RW-Word-TXT           PIC X(32).
  2302
  2303      01  WS-Runtime-Switches.
  2304 GC0710    05 WS-RS-Duplicate-CHR          PIC X(1).
  2305           05 WS-RS-In-Which-Pgm-CHR       PIC X(1).
  2306              88 WS-RS-In-Main-Module-BOOL    VALUE 'M'.
  2307              88 WS-RS-In-Copybook-BOOL       VALUE 'C'.
  2308           05 WS-RS-Last-Token-Ended-Sent-CHR PIC X(1).
  2309           05 WS-RS-Processing-PICTURE-CHR PIC X(1).
  2310           05 WS-RS-Token-Ended-Sentence-CHR PIC X(1).
  2311 GC0710    05 WS-RS-Verb-Has-Been-Found-CHR  PIC X(1).
  2312
  2313      01  WS-Saved-Section-TXT           PIC X(15).
  2314
  2315 GC1213 01  WS-Src-Dashes-TXT.
  2316 GC0712    05 VALUE '======'               PIC X(7).
  2317 GC0712    05 VALUE ALL '='                PIC X(128).
  2318
```
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```
GNUCOBOL 2.2 20JUL2017  Source Listing                                          2017/07/22
                                              /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                                Page: 53
====== =====================================================================================
 2319        01  WS-Src-Detail-Line-TXT.
 2320            05 WS-SDL-Line-NUM                     PIC ZZZZZ9.
 2321            05 FILLER                              PIC X(1).
 2322            05 WS-SDL-Statement-TXT                PIC X(256).
 2323
 2324 GC1213 01  WS-Src-Hold-TXT                        PIC X(256).
 2325
 2326        01  WS-Src-Line-NUM                        PIC 9(6).
 2327
 2328 GC1213 01  WS-Src-Lines-NUM                       USAGE BINARY-LONG.
 2329
 2330        01  WS-Src-SUB                             USAGE BINARY-LONG.
 2331
 2332        01  WS-Tally-QTY                           USAGE BINARY-LONG.
 2333
 2334        01  WS-Temp-10-Chars-TXT                   PIC X(10).
 2335
 2336        01  WS-Temp-32-Chars-1-TXT                 PIC X(32).
 2337
 2338 GC0711 01  WS-Temp-32-Chars-2-TXT                 PIC X(32).
 2339
 2340 GC0711 01  WS-Temp-32-Chars-3-TXT                 PIC X(32).
 2341
 2342 GC0712 01  WS-Temp-65-Chars-TXT                   PIC X(65).
 2343
 2344        01  WS-Temp-256-Chars-TXT                  PIC X(256).
 2345
 2346        01  WS-Today-DT                            PIC 9(8).
 2347
 2348        01  WS-Token-Curr-TXT                      PIC X(32).
 2349
 2350        01  WS-Token-Curr-Uc-TXT                   PIC X(32).
 2351
 2352        01  WS-Token-Prev-TXT                      PIC X(32).
 2353
 2354        01  WS-Token-Search-TXT                    PIC X(32).
 2355
 2356        01  WS-Token-Type-CD                       PIC X(1).
 2357 GC0712     88 WS-TT-Token-Is-Argtype-BOOL         VALUE 'A'.
 2358            88 WS-TT-Token-Is-EOF-BOOL             VALUE HIGH-VALUES.
 2359 GC1213     88 WS-TT-Token-Is-Function-BOOL        VALUE 'F'.
 2360            88 WS-TT-Token-Is-Identifier-BOOL      VALUE 'I'.
 2361 GC0712     88 WS-TT-Token-Is-Keyword-BOOL         VALUE 'K', 'V', 'A'.
 2362            88 WS-TT-Token-Is-Lit-Alpha-BOOL       VALUE 'L'.
 2363            88 WS-TT-Token-Is-Lit-Number-BOOL      VALUE 'N'.
 2364            88 WS-TT-Token-Is-Verb-BOOL            VALUE 'V'.
 2365 GC1213     88 WS-TT-Token-Is-Reserved-Wd-BOOL     VALUE ' ', 'F'.
 2366
 2367        01  WS-Usernames-QTY                       USAGE BINARY-LONG.
 2368
 2369        01  WS-Version-TXT                         PIC X(23).
 2370
 2371        01  WS-Xref-Detail-Line-TXT.

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```

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

```
 2400 GCO712 PROCEDURE DIVISION USING L-Listing-Fn-TXT
 2401 GCO712                          L-Src-Fn-TXT
 2402 GCO712                          L-OS-Type-CD
 2403 GC1213                          L-LPP-NUM
 2404 GC1213                          L-LPP-Port-NUM
 2405 GC1213                          L-Listing-CD.
 2406        000-Main SECTION.
 2407            PERFORM 100-Initialization
 2408 GCO712    OPEN OUTPUT F-Listing-FILE
 2409 GCO712    PERFORM 500-Produce-Source-Listing
 2410 GCO712    SORT F-Sort-Work-FILE
 2411 GCO712        ASCENDING KEY    F-SW-Prog-ID-TXT
 2412 GCO712                         F-SW-Token-Uc-TXT
 2413 GCO712                         F-SW-Ref-Line-NUM
 2414 GCO712        INPUT PROCEDURE  300-Tokenize-Source
 2415 GCO712        OUTPUT PROCEDURE 400-Produce-Xref-Listing
 2416 GCO712    CLOSE F-Listing-FILE
 2417            GOBACK
 2418            .
```

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

  2420          *>*************************************************************
  2421          *> Perform all program-wide initialization operations         **
  2422          *>*************************************************************
  2423           100-Initialization SECTION.
  2424 GC1213      MOVE 0 TO WS-Page-NUM
  2425 GC1213      MOVE 'N' TO WS-Suppress-FF-CHR
  2426 GC1213      MOVE SPACES TO WS-Copyright-TXT
  2427 GC1213      STRING 'GCic for '                 DELIMITED SIZE
  2428 GC1213             WS-OS-Type-TXT(L-OS-Type-CD) DELIMITED SPACE
  2429 GC1213             ' Copyright (C) 2009-2017, Gary L. Cutler, GPL'
  2430 GC1213                                          DELIMITED SIZE
  2431 GC1213             INTO WS-Copyright-TXT
  2432 GC1213      MOVE 'GNUCOBOL 2.2 20JUL2017' TO WS-Version-TXT
  2433             MOVE TRIM(L-Src-Fn-TXT,Leading) TO L-Src-Fn-TXT
  2434 GC1010      PERFORM VARYING WS-I-SUB FROM LENGTH(L-Src-Fn-TXT) BY -1 *> Locate last direct
       ory delimiter character so that the filename can be extracted
  2435 GC1010              UNTIL L-Src-Fn-TXT(WS-I-SUB:1) = '/' OR '\'
  2436 GC1010                    OR WS-I-SUB = 0
  2437 GC1010      END-PERFORM
  2438 GC1010      IF WS-I-SUB = 0
  2439 GC1010          MOVE UPPER-CASE(L-Src-Fn-TXT) TO WS-Main-Module-Name-TXT *> No directory d
       elimiter, whole thing is filename
  2440 GC1010      ELSE
  2441 GC1010          ADD 1 TO WS-I-SUB
  2442 GC1010          MOVE UPPER-CASE(L-Src-Fn-TXT(WS-I-SUB:))
  2443 GC1010            TO WS-Main-Module-Name-TXT *> Extract filename
  2444 GC1010      END-IF
  2445 GC1213      IF L-Listing-CD = 1 *> LANDSCAPE
  2446 GC1213          MOVE 8 TO WS-Xref-Lines-Per-Rec-NUM
  2447 GC1213          ACCEPT WS-Lines-Per-Page-Env-TXT
  2448 GC1213             FROM ENVIRONMENT 'GCXREF_LINES'
  2449 GC1213      ELSE *> PORTRAIT
  2450 GC1213          MOVE 3 TO WS-Xref-Lines-Per-Rec-NUM
  2451 GC1213          ACCEPT WS-Lines-Per-Page-Env-TXT
  2452 GC1213             FROM ENVIRONMENT 'GCXREF_LINES_PORT'
  2453 GC1213      END-IF
  2454             INSPECT L-Src-Fn-TXT REPLACING ALL '\' BY '/'
  2455             MOVE L-Src-Fn-TXT TO WS-Program-Path-TXT
  2456             CALL 'C$JUSTIFY' USING WS-Program-Path-TXT, 'Right'
  2457             MOVE LENGTH(TRIM(L-Src-Fn-TXT,Trailing)) TO WS-I-SUB
  2458             MOVE 0 TO WS-J-SUB
  2459             PERFORM UNTIL L-Src-Fn-TXT(WS-I-SUB:1) = '/'
  2460                     OR WS-I-SUB = 0
  2461               SUBTRACT 1 FROM WS-I-SUB
  2462               ADD     1 TO   WS-J-SUB
  2463             END-PERFORM
  2464             UNSTRING L-Src-Fn-TXT((WS-I-SUB + 1):WS-J-SUB)
  2465               DELIMITED BY '.'
  2466               INTO WS-Filename-TXT
  2467                    WS-Dummy-TXT
  2468 GC1010      STRING
  2469 GC1010             TRIM(WS-Filename-TXT,Trailing)

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```

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

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

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```
 2547         310-Get-Token SECTION.
 2548       *>-- Position to 1st non-blank character
 2549           MOVE WS-RS-Token-Ended-Sentence-CHR
 2550             TO WS-RS-Last-Token-Ended-Sent-CHR
 2551           MOVE 'N' TO WS-RS-Token-Ended-Sentence-CHR
 2552           PERFORM UNTIL F-Expanded-Src-REC(WS-Src-SUB : 1) NOT = SPACE
 2553              IF WS-Src-SUB > 255
 2554                 READ F-Expanded-Src-FILE AT END
 2555                    IF WS-Held-Reference-TXT NOT = SPACES
 2556                       MOVE WS-Held-Reference-TXT TO F-Sort-Work-REC
 2557                       MOVE SPACES        TO WS-Held-Reference-TXT
 2558                       RELEASE F-Sort-Work-REC
 2559                    END-IF
 2560                    SET WS-TT-Token-Is-EOF-BOOL TO TRUE
 2561                    MOVE 0 TO WS-Curr-Line-NUM
 2562                    EXIT SECTION
 2563                 END-READ
 2564 GC0712          IF F-ES-1-7-TXT NOT = '#DEFLIT'
 2565 GC0712             IF F-ES-1-CHR = '#'
 2566 GC0712                PERFORM 311-Control-Record
 2567 GC0712             ELSE
 2568 GC0712                PERFORM 312-Expanded-Src-Record
 2569 GC0712             END-IF
 2570 GC0712          END-IF
 2571              ELSE
 2572                 ADD 1 TO WS-Src-SUB
 2573              END-IF
 2574           END-PERFORM
 2575       *>-- Extract token string
 2576           MOVE F-Expanded-Src-REC(WS-Src-SUB : 1)
 2577             TO WS-Curr-CHR
 2578           MOVE F-Expanded-Src-REC(WS-Src-SUB + 1: 1)
 2579             TO WS-Next-CHR
 2580           IF WS-Curr-CHR = '.'
 2581              ADD 1 TO WS-Src-SUB
 2582              MOVE WS-Curr-CHR TO WS-Token-Curr-TXT
 2583              MOVE SPACE TO WS-Token-Type-CD
 2584              MOVE 'Y' TO WS-RS-Token-Ended-Sentence-CHR
 2585              EXIT SECTION
 2586           END-IF
 2587           IF WS-Curr-Char-Is-Punct-BOOL
 2588           AND WS-Curr-CHR = '='
 2589           AND WS-Curr-Division-TXT = 'P'
 2590              ADD 1 TO WS-Src-SUB
 2591              MOVE 'EQUALS' TO WS-Token-Curr-TXT
 2592              MOVE 'K'      TO WS-Token-Type-CD
 2593              EXIT SECTION
 2594           END-IF
 2595           IF WS-Curr-Char-Is-Punct-BOOL *> So subscripts don't get flagged w/ '*'
 2596           AND WS-Curr-CHR = '('
 2597           AND WS-Curr-Division-TXT = 'P'
 2598              MOVE SPACES TO WS-Token-Prev-TXT
```

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```
====== ========================================================================================
  2599          END-IF
  2600          IF WS-Curr-Char-Is-Punct-BOOL
  2601              ADD 1 TO WS-Src-SUB
  2602              MOVE WS-Curr-CHR TO WS-Token-Curr-TXT
  2603              MOVE SPACE TO WS-Token-Type-CD
  2604              EXIT SECTION
  2605          END-IF
  2606          IF WS-Curr-Char-Is-Quote-BOOL
  2607              ADD 1 TO WS-Src-SUB
  2608              UNSTRING F-Expanded-Src-REC
  2609                  DELIMITED BY WS-Curr-CHR
  2610                  INTO WS-Token-Curr-TXT
  2611                  WITH POINTER WS-Src-SUB
  2612              IF F-Expanded-Src-REC(WS-Src-SUB : 1) = '.'
  2613                  MOVE 'Y' TO WS-RS-Token-Ended-Sentence-CHR
  2614                  ADD 1 TO WS-Src-SUB
  2615              END-IF
  2616              SET WS-TT-Token-Is-Lit-Alpha-BOOL TO TRUE
  2617              EXIT SECTION
  2618          END-IF
  2619          IF WS-Curr-Char-Is-X-BOOL AND WS-Next-Char-Is-Quote-BOOL
  2620              ADD 2 TO WS-Src-SUB
  2621              UNSTRING F-Expanded-Src-REC
  2622                  DELIMITED BY WS-Next-CHR
  2623                  INTO WS-Token-Curr-TXT
  2624                  WITH POINTER WS-Src-SUB
  2625              IF F-Expanded-Src-REC(WS-Src-SUB : 1) = '.'
  2626                  MOVE 'Y' TO WS-RS-Token-Ended-Sentence-CHR
  2627                  ADD 1 TO WS-Src-SUB
  2628              END-IF
  2629              SET WS-TT-Token-Is-Lit-Number-BOOL TO TRUE
  2630              EXIT SECTION
  2631          END-IF
  2632          IF WS-Curr-Char-Is-Z-BOOL AND WS-Next-Char-Is-Quote-BOOL
  2633              ADD 2 TO WS-Src-SUB
  2634              UNSTRING F-Expanded-Src-REC
  2635                  DELIMITED BY WS-Next-CHR
  2636                  INTO WS-Token-Curr-TXT
  2637                  WITH POINTER WS-Src-SUB
  2638              IF F-Expanded-Src-REC(WS-Src-SUB : 1) = '.'
  2639                  MOVE 'Y' TO WS-RS-Token-Ended-Sentence-CHR
  2640                  ADD 1 TO WS-Src-SUB
  2641              END-IF
  2642              SET WS-TT-Token-Is-Lit-Alpha-BOOL TO TRUE
  2643              EXIT SECTION
  2644          END-IF
  2645          IF WS-RS-Processing-PICTURE-CHR = 'Y'
  2646              UNSTRING F-Expanded-Src-REC
  2647                  DELIMITED BY '. ' OR ' '
  2648                  INTO WS-Token-Curr-TXT
  2649                  DELIMITER IN WS-Delim-TXT
  2650                  WITH POINTER WS-Src-SUB
  2651              IF WS-Delim-TXT = '. '
```

====== ==
  2652   MOVE 'Y' TO WS-RS-Token-Ended-Sentence-CHR
  2653   ADD 1 TO WS-Src-SUB
  2654   END-IF
  2655   IF UPPER-CASE(WS-Token-Curr-TXT) = 'IS'
  2656   MOVE SPACE TO WS-Token-Type-CD
  2657   EXIT SECTION
  2658   ELSE
  2659   MOVE 'N' TO WS-RS-Processing-PICTURE-CHR
  2660   MOVE SPACE TO WS-Token-Type-CD
  2661   EXIT SECTION
  2662   END-IF
  2663   END-IF
  2664   UNSTRING F-Expanded-Src-REC
  2665   DELIMITED BY '. ' OR ' ' OR '=' OR '(' OR ')' OR '*'
  2666   OR '/' OR '&' OR ';' OR ',' OR '<'
  2667   OR '>' OR ':'
  2668   INTO WS-Token-Curr-TXT
  2669   DELIMITER IN WS-Delim-TXT
  2670   WITH POINTER WS-Src-SUB
  2671   IF WS-Delim-TXT = '. '
  2672   MOVE 'Y' TO WS-RS-Token-Ended-Sentence-CHR
  2673   END-IF
  2674   IF WS-Delim-TXT NOT = '. ' AND ' '
  2675   SUBTRACT 1 FROM WS-Src-SUB
  2676   END-IF
  2677   *>-- Classify Token
  2678   MOVE UPPER-CASE(WS-Token-Curr-TXT) TO WS-Token-Search-TXT
  2679   IF WS-Token-Search-TXT = 'EQUAL' OR 'EQUALS'
  2680   MOVE 'EQUALS' TO WS-Token-Curr-TXT
  2681   MOVE 'K'   TO WS-Token-Type-CD
  2682   EXIT SECTION
  2683   END-IF
  2684   SEARCH ALL WS-Reserved-Word-TXT
  2685   WHEN WS-RW-Word-TXT (WS-RW-IDX) = WS-Token-Search-TXT
  2686   MOVE WS-RW-Type-CD (WS-RW-IDX) TO WS-Token-Type-CD
  2687 GC0710   IF WS-TT-Token-Is-Verb-BOOL
  2688 GC0710   MOVE 'Y' TO WS-RS-Verb-Has-Been-Found-CHR
  2689 GC0710   END-IF
  2690   EXIT SECTION
  2691   END-SEARCH
  2692   *>-- Not a reserved word, must be a user name
  2693   SET WS-TT-Token-Is-Identifier-BOOL TO TRUE
  2694   PERFORM 313-Check-For-Numeric-Token
  2695   IF WS-TT-Token-Is-Lit-Number-BOOL
  2696   IF (WS-RS-Last-Token-Ended-Sent-CHR = 'Y')
  2697   AND (WS-Curr-Division-TXT = 'D')
  2698   MOVE 'LEVEL #' TO WS-Token-Curr-TXT
  2699   MOVE 'K'   TO WS-Token-Type-CD
  2700   EXIT SECTION
  2701   ELSE
  2702   EXIT SECTION
  2703   END-IF
  2704   END-IF

==

====== ===
  2705   .

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

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

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

====== ===

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

==

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

```
 2852        340-DATA-DIVISION SECTION.
 2853 GC0712     IF WS-TT-Token-Is-Argtype-BOOL
 2854 GC0712         SET WS-TT-Token-Is-Reserved-Wd-BOOL TO TRUE
 2855 GC0712     END-IF
 2856            IF WS-TT-Token-Is-Keyword-BOOL
 2857            AND WS-Token-Curr-TXT = 'DIVISION'
 2858                MOVE WS-Token-Prev-TXT TO WS-Curr-Division-TXT
 2859                EXIT SECTION
 2860            END-IF
 2861            IF WS-TT-Token-Is-Keyword-BOOL
 2862            AND WS-Token-Curr-TXT = 'SECTION'
 2863                MOVE WS-Token-Prev-TXT TO WS-Curr-Section-TXT
 2864                EXIT SECTION
 2865            END-IF
 2866            IF  (WS-Token-Curr-TXT = 'PIC' OR 'PICTURE')
 2867            AND (WS-TT-Token-Is-Keyword-BOOL)
 2868                MOVE 'Y' TO WS-RS-Processing-PICTURE-CHR
 2869                EXIT SECTION
 2870            END-IF
 2871 GC0710     IF WS-TT-Token-Is-Reserved-Wd-BOOL
 2872 GC0710     AND WS-Token-Prev-TXT = 'LEVEL #'
 2873 GC0710         MOVE SPACES TO WS-Token-Prev-TXT
 2874 GC0710         EXIT SECTION
 2875 GC0710     END-IF
 2876            IF WS-TT-Token-Is-Identifier-BOOL
 2877                EVALUATE WS-Token-Prev-TXT
 2878                WHEN 'FD'
 2879                    PERFORM 360-Release-Def
 2880                    MOVE SPACES TO WS-Token-Prev-TXT
 2881 GC1213         WHEN 'RD'
 2882 GC1213             PERFORM 360-Release-Def
 2883 GC1213             MOVE SPACES TO WS-Token-Prev-TXT
 2884                WHEN 'SD'
 2885                    PERFORM 360-Release-Def
 2886                    MOVE SPACES TO WS-Token-Prev-TXT
 2887                WHEN 'LEVEL #'
 2888                    PERFORM 360-Release-Def
 2889                    MOVE SPACES TO WS-Token-Prev-TXT
 2890                WHEN 'INDEXED'
 2891                    PERFORM 360-Release-Def
 2892                    MOVE SPACES TO WS-Token-Prev-TXT
 2893                WHEN 'USING'
 2894                    PERFORM 362-Release-Upd
 2895                    MOVE SPACES TO WS-Token-Prev-TXT
 2896                WHEN 'INTO'
 2897                    PERFORM 362-Release-Upd
 2898                    MOVE SPACES TO WS-Token-Prev-TXT
 2899                WHEN OTHER
 2900 GC1213             IF WS-Token-Curr-TXT NOT = 'SUM'
 2901 GC1213                 PERFORM 361-Release-Ref
 2902 GC1213             END-IF
 2903                END-EVALUATE
```

====== ===
```
  2904               EXIT SECTION
  2905            END-IF
  2906            .
```

====== ===

```
  2908        350-PROCEDURE-DIVISION SECTION.
  2909            IF WS-Curr-Section-TXT NOT = 'PROCEDURE'
  2910                MOVE 'PROCEDURE' TO WS-Curr-Section-TXT
  2911            END-IF
  2912 GC0710    IF WS-Token-Curr-Uc-TXT = 'PROGRAM'
  2913 GC0710    AND WS-Token-Prev-TXT = 'END'
  2914 GC0710        MOVE '?' TO WS-Curr-Division-TXT
  2915 GC0710        EXIT SECTION
  2916 GC0710    END-IF
  2917            IF WS-TT-Token-Is-Keyword-BOOL
  2918            AND WS-Token-Curr-TXT = 'DIVISION'
  2919                MOVE WS-Token-Prev-TXT TO WS-Curr-Division-TXT
  2920                EXIT SECTION
  2921            END-IF
  2922 GC0313    IF WS-TT-Token-Is-Identifier-BOOL
  2923 GC0313    AND WS-Token-Prev-TXT = SPACES
  2924 GC0313    AND WS-Curr-Verb-TXT = SPACES
  2925 GC0313*> ----- Definition of a Paragraph or Section
  2926 GC0313        PERFORM 360-Release-Def
  2927 GC0313        MOVE SPACES TO WS-Token-Prev-TXT
  2928 GC0313        EXIT SECTION
  2929 GC0313    END-IF
  2930            IF NOT WS-TT-Token-Is-Identifier-BOOL
  2931                EXIT SECTION
  2932            END-IF
  2933            EVALUATE WS-Curr-Verb-TXT
  2934            WHEN 'ACCEPT'
  2935                PERFORM 351-ACCEPT
  2936            WHEN 'ADD'
  2937                PERFORM 351-ADD
  2938            WHEN 'ALLOCATE'
  2939                PERFORM 351-ALLOCATE
  2940            WHEN 'CALL'
  2941                PERFORM 351-CALL
  2942            WHEN 'COMPUTE'
  2943                PERFORM 351-COMPUTE
  2944            WHEN 'DIVIDE'
  2945                PERFORM 351-DIVIDE
  2946            WHEN 'FREE'
  2947                PERFORM 351-FREE
  2948 GC1213    WHEN 'GENERATE'
  2949 GC1213        PERFORM 351-GENERATE
  2950            WHEN 'INITIALIZE'
  2951                PERFORM 351-INITIALIZE
  2952 GC1213    WHEN 'INITIATE'
  2953 GC1213        PERFORM 351-GENERATE
  2954            WHEN 'INSPECT'
  2955                PERFORM 351-INSPECT
  2956            WHEN 'MOVE'
  2957                PERFORM 351-MOVE
  2958            WHEN 'MULTIPLY'
  2959                PERFORM 351-MULTIPLY
```

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

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

```
 2979        351-ACCEPT SECTION.
 2980            EVALUATE WS-Token-Prev-TXT
 2981            WHEN 'ACCEPT'
 2982                PERFORM 362-Release-Upd
 2983                MOVE SPACES TO WS-Token-Prev-TXT
 2984            WHEN OTHER
 2985                PERFORM 361-Release-Ref
 2986            END-EVALUATE
 2987                .
 2988
 2989        351-ADD SECTION.
 2990            EVALUATE WS-Token-Prev-TXT
 2991            WHEN 'GIVING'
 2992                PERFORM 362-Release-Upd
 2993            WHEN 'TO'
 2994                PERFORM 362-Release-Upd
 2995            WHEN OTHER
 2996                PERFORM 361-Release-Ref
 2997            END-EVALUATE
 2998                .
 2999
 3000        351-ALLOCATE SECTION.
 3001            EVALUATE WS-Token-Prev-TXT
 3002            WHEN 'ALLOCATE'
 3003                PERFORM 362-Release-Upd
 3004                MOVE SPACES TO WS-Token-Prev-TXT
 3005            WHEN 'RETURNING'
 3006                PERFORM 362-Release-Upd
 3007            WHEN OTHER
 3008                PERFORM 361-Release-Ref
 3009            END-EVALUATE
 3010                .
 3011
 3012        351-CALL SECTION.
 3013            EVALUATE WS-Token-Prev-TXT
 3014            WHEN 'RETURNING'
 3015                PERFORM 362-Release-Upd
 3016            WHEN 'GIVING'
 3017                PERFORM 362-Release-Upd
 3018            WHEN OTHER
 3019 GC1213         PERFORM 365-Release-Arg
 3020            END-EVALUATE
 3021                .
 3022
 3023        351-COMPUTE SECTION.
 3024            EVALUATE WS-Token-Prev-TXT
 3025            WHEN 'COMPUTE'
 3026                PERFORM 362-Release-Upd
 3027            WHEN OTHER
 3028                PERFORM 361-Release-Ref
 3029            END-EVALUATE
 3030                .
```

```
====== ========================================================================================
 3031
 3032        351-DIVIDE SECTION.
 3033            EVALUATE WS-Token-Prev-TXT
 3034            WHEN 'INTO'
 3035                PERFORM 363-Set-Upd
 3036                MOVE F-Sort-Work-REC TO WS-Held-Reference-TXT
 3037            WHEN 'GIVING'
 3038                IF WS-Held-Reference-TXT NOT = SPACES
 3039                    MOVE WS-Held-Reference-TXT To F-Sort-Work-REC
 3040                    MOVE SPACES         To WS-Held-Reference-TXT
 3041                                           F-SW-Ref-Flag-CHR
 3042                    RELEASE F-Sort-Work-REC
 3043                END-IF
 3044                PERFORM 362-Release-Upd
 3045            WHEN 'REMAINDER'
 3046                PERFORM 362-Release-Upd
 3047            WHEN OTHER
 3048                PERFORM 361-Release-Ref
 3049            END-EVALUATE
 3050            .
 3051
 3052        351-FREE SECTION.
 3053            PERFORM 362-Release-Upd
 3054            .
 3055
 3056 GC1213 351-GENERATE SECTION.
 3057 GC1213     PERFORM 362-Release-Upd
 3058 GC1213     .
 3059
 3060        351-INITIALIZE SECTION.
 3061            EVALUATE WS-Token-Prev-TXT
 3062            WHEN 'INITIALIZE'
 3063                PERFORM 362-Release-Upd
 3064            WHEN 'REPLACING'
 3065                PERFORM 361-Release-Ref
 3066            END-EVALUATE
 3067            .
 3068
 3069 GC1213 351-INITIATE SECTION.
 3070 GC1213     PERFORM 362-Release-Upd
 3071 GC1213     .
 3072
 3073        351-INSPECT SECTION.
 3074            EVALUATE WS-Token-Prev-TXT
 3075            WHEN 'INSPECT'
 3076                PERFORM 364-Set-Ref
 3077                MOVE SPACES TO WS-Held-Reference-TXT
 3078                MOVE SPACES TO WS-Token-Prev-TXT
 3079            WHEN 'TALLYING'
 3080                PERFORM 362-Release-Upd
 3081                MOVE SPACES TO WS-Token-Prev-TXT
 3082            WHEN 'REPLACING'
 3083                IF WS-Held-Reference-TXT NOT = SPACES

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

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```
 3084                     MOVE WS-Held-Reference-TXT TO F-Sort-Work-REC
 3085                     MOVE SPACES           TO WS-Held-Reference-TXT
 3086                     MOVE '*'              TO F-SW-Ref-Flag-CHR
 3087                     RELEASE F-Sort-Work-REC
 3088                 END-IF
 3089                 MOVE SPACES TO WS-Token-Prev-TXT
 3090             WHEN 'CONVERTING'
 3091                 IF WS-Held-Reference-TXT NOT = SPACES
 3092                     MOVE WS-Held-Reference-TXT TO F-Sort-Work-REC
 3093                     MOVE SPACES           TO WS-Held-Reference-TXT
 3094                     MOVE '*'              TO F-SW-Ref-Flag-CHR
 3095                     RELEASE F-Sort-Work-REC
 3096                 END-IF
 3097                 MOVE SPACES TO WS-Token-Prev-TXT
 3098             WHEN OTHER
 3099                 PERFORM 361-Release-Ref
 3100             END-EVALUATE
 3101             .
 3102
 3103         351-MOVE SECTION.
 3104             EVALUATE WS-Token-Prev-TXT
 3105             WHEN 'TO'
 3106                 PERFORM 362-Release-Upd
 3107             WHEN OTHER
 3108                 PERFORM 361-Release-Ref
 3109             END-EVALUATE
 3110             .
 3111
 3112         351-MULTIPLY SECTION.
 3113             EVALUATE WS-Token-Prev-TXT
 3114             WHEN 'BY'
 3115                 PERFORM 363-Set-Upd
 3116                 MOVE F-Sort-Work-REC TO WS-Held-Reference-TXT
 3117             WHEN 'GIVING'
 3118                 MOVE WS-Held-Reference-TXT TO F-Sort-Work-REC
 3119                 MOVE SPACES          TO WS-Held-Reference-TXT
 3120                                         F-SW-Ref-Flag-CHR
 3121                 RELEASE F-Sort-Work-REC
 3122                 PERFORM 362-Release-Upd
 3123             WHEN OTHER
 3124                 PERFORM 361-Release-Ref
 3125             END-EVALUATE
 3126             .
 3127
 3128         351-PERFORM SECTION.
 3129             EVALUATE WS-Token-Prev-TXT
 3130             WHEN 'VARYING'
 3131                 PERFORM 362-Release-Upd
 3132                 MOVE SPACES TO WS-Token-Prev-TXT
 3133             WHEN 'AFTER'
 3134                 PERFORM 362-Release-Upd
 3135                 MOVE SPACES TO WS-Token-Prev-TXT
 3136             WHEN OTHER
```

===

```
GNUCOBOL 2.2 20JUL2017  Source Listing                                        2017/07/22
                                              /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                              Page: 75
======  ================================================================================
 3137                    PERFORM 361-Release-Ref
 3138              END-EVALUATE
 3139              .
 3140
 3141       351-SET SECTION.
 3142           EVALUATE WS-Token-Prev-TXT
 3143           WHEN 'SET'
 3144               PERFORM 362-Release-Upd
 3145           WHEN OTHER
 3146               PERFORM 361-Release-Ref
 3147           END-EVALUATE
 3148           .
 3149
 3150       351-STRING SECTION.
 3151           EVALUATE WS-Token-Prev-TXT
 3152           WHEN 'INTO'
 3153               PERFORM 362-Release-Upd
 3154           WHEN 'POINTER'
 3155               PERFORM 362-Release-Upd
 3156           WHEN OTHER
 3157               PERFORM 361-Release-Ref
 3158           END-EVALUATE
 3159           .
 3160
 3161       351-SUBTRACT SECTION.
 3162           EVALUATE WS-Token-Prev-TXT
 3163           WHEN 'GIVING'
 3164               PERFORM 362-Release-Upd
 3165           WHEN 'FROM'
 3166               PERFORM 362-Release-Upd
 3167           WHEN OTHER
 3168               PERFORM 361-Release-Ref
 3169           END-EVALUATE
 3170           .
 3171
 3172 GC1213 351-TERMINATE SECTION.
 3173 GC1213     PERFORM 362-Release-Upd
 3174 GC1213     .
 3175
 3176       351-TRANSFORM SECTION.
 3177           EVALUATE WS-Token-Prev-TXT
 3178           WHEN 'TRANSFORM'
 3179               PERFORM 362-Release-Upd
 3180               MOVE SPACES TO WS-Token-Prev-TXT
 3181           WHEN OTHER
 3182               PERFORM 361-Release-Ref
 3183           END-EVALUATE
 3184           .
 3185
 3186       351-UNSTRING SECTION.
 3187           EVALUATE WS-Token-Prev-TXT
 3188           WHEN 'INTO'
 3189               PERFORM 362-Release-Upd

================================================================================================
GCic for UNIX/Linux Copyright (C) 2009-2017, Gary L. Cutler, GPL                Page: 75
```

```
====== =========================================================================================
  3190          WHEN 'DELIMITER'
  3191              PERFORM 362-Release-Upd
  3192          WHEN 'COUNT'
  3193              PERFORM 362-Release-Upd
  3194          WHEN 'POINTER'
  3195              PERFORM 362-Release-Upd
  3196          WHEN 'TALLYING'
  3197              PERFORM 362-Release-Upd
  3198          WHEN OTHER
  3199              PERFORM 361-Release-Ref
  3200          END-EVALUATE
  3201          .
  3202
  3203      360-Release-Def SECTION.
  3204          MOVE SPACES              TO F-Sort-Work-REC
  3205          MOVE WS-Curr-Prog-ID-TXT    TO F-SW-Prog-ID-TXT
  3206          MOVE WS-Token-Curr-Uc-TXT   TO F-SW-Token-Uc-TXT
  3207          MOVE WS-Token-Curr-TXT      TO F-SW-Token-TXT
  3208          MOVE WS-Curr-Section-TXT    TO F-SW-Section-TXT
  3209          MOVE WS-Curr-Line-NUM       TO F-SW-Def-Line-NUM
  3210          MOVE 0                      TO F-SW-Ref-Line-NUM
  3211          RELEASE F-Sort-Work-REC
  3212          .
  3213
  3214      361-Release-Ref SECTION.
  3215          PERFORM 364-Set-Ref
  3216          RELEASE F-Sort-Work-REC
  3217          .
  3218
  3219      362-Release-Upd SECTION.
  3220          PERFORM 363-Set-Upd
  3221          RELEASE F-Sort-Work-REC
  3222          .
  3223
  3224      363-Set-Upd SECTION.
  3225          MOVE SPACES              TO F-Sort-Work-REC
  3226          MOVE WS-Curr-Prog-ID-TXT    TO F-SW-Prog-ID-TXT
  3227          MOVE WS-Token-Curr-Uc-TXT   TO F-SW-Token-Uc-TXT
  3228          MOVE WS-Token-Curr-TXT      TO F-SW-Token-TXT
  3229          MOVE WS-Curr-Section-TXT    TO F-SW-Section-TXT
  3230          MOVE WS-Curr-Line-NUM       TO F-SW-Ref-Line-NUM
  3231          MOVE '*'                    TO F-SW-Ref-Flag-CHR
  3232          .
  3233
  3234      364-Set-Ref SECTION.
  3235          MOVE SPACES              TO F-Sort-Work-REC
  3236          MOVE WS-Curr-Prog-ID-TXT    TO F-SW-Prog-ID-TXT
  3237          MOVE WS-Token-Curr-Uc-TXT   TO F-SW-Token-Uc-TXT
  3238          MOVE WS-Token-Curr-TXT      TO F-SW-Token-TXT
  3239          MOVE WS-Curr-Section-TXT    TO F-SW-Section-TXT
  3240          MOVE WS-Curr-Line-NUM       TO F-SW-Ref-Line-NUM
  3241          .
  3242
====================================================================================================
```

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

```
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GCic for UNIX/Linux Copyright (C) 2009-2017, Gary L. Cutler, GPL                    Page: 77
```

====== ===

```
 3259        400-Produce-Xref-Listing SECTION.
 3260            MOVE SPACES       TO WS-Xref-Detail-Line-TXT
 3261                                 WS-Group-Indicators-TXT
 3262            MOVE 0            TO WS-I-SUB
 3263                                 WS-Lines-Left-NUM
 3264 GC0710     MOVE 'N'          TO WS-RS-Duplicate-CHR
 3265            PERFORM FOREVER
 3266                RETURN F-Sort-Work-FILE AT END
 3267 GC1213         IF WS-Xref-Detail-Line-TXT NOT = SPACES
 3268 GC1213            PERFORM 410-Generate-Report-Line
 3269 GC1213         END-IF
 3270 GC1213         MOVE SPACES TO WS-Xref-Detail-Line-TXT
 3271 GC1213         PERFORM 410-Generate-Report-Line
 3272 GC1213            UNTIL WS-Lines-Left-NUM = 0
 3273 GC1213         MOVE 'Y' TO WS-Suppress-FF-CHR
 3274 GC1213         PERFORM 420-Generate-Xref-Footer
 3275                EXIT PERFORM
 3276            END-RETURN
 3277            IF F-SW-Prog-ID-TXT  NOT = WS-GI-Prog-ID-TXT
 3278            OR F-SW-Token-Uc-TXT NOT = WS-GI-Token-TXT
 3279 GC0710       MOVE 'N' TO WS-RS-Duplicate-CHR
 3280              IF WS-Xref-Detail-Line-TXT NOT = SPACES
 3281                  PERFORM 410-Generate-Report-Line
 3282              END-IF
 3283              IF F-SW-Prog-ID-TXT NOT = WS-GI-Prog-ID-TXT
 3284 GC1213           MOVE SPACES TO WS-Xref-Detail-Line-TXT
 3285 GC1213           PERFORM 410-Generate-Report-Line
 3286 GC1213              UNTIL WS-Lines-Left-NUM = 0
 3287              END-IF
 3288              MOVE F-SW-Prog-ID-TXT  TO WS-GI-Prog-ID-TXT
 3289              MOVE F-SW-Token-Uc-TXT TO WS-GI-Token-TXT
 3290            END-IF
 3291 GC0710     IF F-SW-Token-Uc-TXT = WS-GI-Token-TXT
 3292 GC0710     AND F-SW-Def-Line-NUM NOT = SPACES
 3293 GC0710     AND WS-Xref-Detail-Line-TXT NOT = SPACES
 3294 GC0710        MOVE 'Y' TO WS-RS-Duplicate-CHR
 3295 GC0710        PERFORM 410-Generate-Report-Line
 3296 GC0710        MOVE 0 TO WS-I-SUB
 3297 GC0710        MOVE F-SW-Prog-ID-TXT TO WS-XDL-Prog-ID-TXT
 3298 GC0710        MOVE '  (Duplicate Definition)' TO WS-XDL-Token-TXT
 3299 GC0710        MOVE F-SW-Section-TXT TO WS-XDL-Section-TXT
 3300 GC0710        MOVE F-SW-Def-Line-NUM TO WS-XDL-Def-Line-NUM
 3301 GC0710        EXIT PERFORM CYCLE
 3302 GC0710     END-IF
 3303 GC0710     IF F-SW-Token-Uc-TXT = WS-GI-Token-TXT
 3304 GC0710     AND F-SW-Def-Line-NUM = SPACES
 3305 GC0710     AND WS-RS-Duplicate-CHR = 'Y'
 3306 GC0710        MOVE 'N' TO WS-RS-Duplicate-CHR
 3307 GC0710        PERFORM 410-Generate-Report-Line
 3308 GC0710        MOVE 0 TO WS-I-SUB
 3309 GC0710        MOVE F-SW-Prog-ID-TXT TO WS-XDL-Prog-ID-TXT
 3310 GC0710        MOVE '  (Duplicate References)' TO WS-XDL-Token-TXT
```

===

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

```
  3337          410-Generate-Report-Line SECTION.
  3338              IF WS-Lines-Left-NUM < 1
  3339 GC1213          PERFORM 420-Generate-Xref-Footer
  3340 GC1213          ADD  1         TO WS-Page-NUM
  3341 GC1213          MOVE 'Page:'    TO WS-PN-Literal-TXT
  3342 GC1213          MOVE WS-Page-NUM TO WS-PN-Page-NUM
  3343 GC1213          CALL 'C$JUSTIFY' USING WS-PN-Page-NUM, 'Left'
  3344 GC1213          CALL 'C$JUSTIFY' USING WS-Page-No-TXT, 'Right'
  3345 GC1213          IF L-Listing-CD = 1 *> LANDSCAPE
  3346 GC1213              MOVE WS-Version-TXT
  3347 GC1213                TO F-Listing-135-REC
  3348 GC1213              MOVE 'Cross-Reference Listing'
  3349 GC1213                TO F-Listing-135-REC(25:23)
  3350 GC1213              MOVE WS-Formatted-DT
  3351 GC1213                TO F-Listing-135-REC(126:10)
  3352 GC1213              WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #1
  3353 GC1213              MOVE WS-Program-Path-TXT
  3354 GC1213                TO F-Listing-135-REC
  3355 GC1213              WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #2
  3356 GC1213              MOVE 'PROGRAM-ID     Identifier/Register/Function' &
  3357 GC1213                   '    Defn   Where Defined   References'
  3358 GC1213                TO F-Listing-135-REC
  3359 GC1213              MOVE WS-Page-No-TXT
  3360 GC1213                TO F-Listing-135-REC(126:10)
  3361 GC1213              WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #3
  3362 GC1213              MOVE ALL '=' TO F-Listing-135-REC
  3363 GC1213              MOVE SPACE TO F-Listing-135-REC(16:1)
  3364 GC1213                            F-Listing-135-REC(49:1)
  3365 GC1213                            F-Listing-135-REC(56:1)
  3366 GC1213                            F-Listing-135-REC(72:1)
  3367 GC1213              WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #4
  3368 GC1213          ELSE                 *> PORTRAIT
  3369 GC1213              MOVE WS-Version-TXT
  3370 GC1213                TO F-Listing-96-REC
  3371 GC1213              MOVE 'Cross-Reference Listing'
  3372 GC1213                TO F-Listing-96-REC(25:23)
  3373 GC1213              MOVE WS-Formatted-DT
  3374 GC1213                TO F-Listing-96-REC(87:10)
  3375 GC1213              WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #1
  3376 GC1213              MOVE WS-Program-Path-TXT(40:96)
  3377 GC1213                TO F-Listing-96-REC
  3378 GC1213              WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #2
  3379 GC1213              MOVE 'PROGRAM-ID     Identifier/Register/Function' &
  3380 GC1213                   '    Defn   Where Defined   References'
  3381 GC1213                TO F-Listing-96-REC
  3382 GC1213              MOVE WS-Page-No-TXT
  3383 GC1213                TO F-Listing-96-REC(87:10)
  3384 GC1213              WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #3
  3385 GC1213              MOVE ALL '=' TO F-Listing-96-REC
  3386 GC1213              MOVE SPACE TO F-Listing-96-REC(16:1)
  3387 GC1213                            F-Listing-96-REC(49:1)
  3388 GC1213                            F-Listing-96-REC(56:1)
```

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


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```

====== ==

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

==

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

```
GNUCOBOL 2.2 20JUL2017  Source Listing                                    2017/07/22
                                         /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                           Page: 84
====== ================================================================================

  3479        520-Expanded-Src-Record SECTION.
  3480             IF WS-RS-In-Main-Module-BOOL
  3481                 ADD 1 To WS-Curr-Line-NUM
  3482 GC0712         READ F-Original-Src-FILE AT END CONTINUE END-READ
  3483                 ADD 1 TO WS-Src-Line-NUM
  3484                 MOVE SPACES TO WS-Src-Detail-Line-TXT
  3485                 MOVE WS-Src-Line-NUM TO WS-SDL-Line-NUM
  3486 GC1213         MOVE F-Original-Src-REC TO WS-SDL-Statement-TXT
  3487 GC0712         MOVE LOWER-CASE(TRIM(F-OS-8-72-TXT,LEADING))
  3488 GC0712            TO WS-Temp-65-Chars-TXT
  3489 GC0712         INSPECT WS-Temp-65-Chars-TXT REPLACING ALL '.' BY SPACE
  3490 GC0712         EVALUATE TRUE
  3491 GC0712             WHEN F-OS-7-CHR = '/'
  3492 GC1213                 MOVE SPACES TO WS-Src-Detail-Line-TXT
  3493 GC1213                 PERFORM 530-Generate-Source-Line
  3494 GC1213                     UNTIL WS-Lines-Left-NUM = 0
  3495 GC0712             WHEN WS-Temp-65-Chars-TXT = "eject"
  3496 GC1213                 MOVE SPACES TO WS-Src-Detail-Line-TXT
  3497 GC1213                 PERFORM 530-Generate-Source-Line
  3498 GC1213                     UNTIL WS-Lines-Left-NUM = 0
  3499 GC0712                 EXIT SECTION
  3500 GC0712             WHEN WS-Temp-65-Chars-TXT = "skip1"
  3501 GC0712                 MOVE SPACES TO WS-Src-Detail-Line-TXT
  3502 GC0712                 PERFORM 530-Generate-Source-Line
  3503 GC0712                 EXIT SECTION
  3504 GC0712             WHEN WS-Temp-65-Chars-TXT = "skip2"
  3505 GC0712                 MOVE SPACES TO WS-Src-Detail-Line-TXT
  3506 GC0712                 PERFORM 530-Generate-Source-Line 2 TIMES
  3507 GC0712                 EXIT SECTION
  3508 GC0712             WHEN WS-Temp-65-Chars-TXT = "skip3"
  3509 GC0712                 MOVE SPACES TO WS-Src-Detail-Line-TXT
  3510 GC0712                 PERFORM 530-Generate-Source-Line 3 TIMES
  3511 GC0712                 EXIT SECTION
  3512 GC0712         END-EVALUATE
  3513                 PERFORM 530-Generate-Source-Line
  3514             ELSE
  3515                 IF F-Expanded-Src-REC NOT = SPACES
  3516                     MOVE SPACES TO WS-Src-Detail-Line-TXT
  3517 GC1213             MOVE F-Expanded-Src-REC
  3518                        TO WS-SDL-Statement-TXT
  3519 GC0712             MOVE LOWER-CASE(TRIM(F-OS-8-72-TXT,LEADING))
  3520 GC0712                TO WS-Temp-65-Chars-TXT
  3521 GC0712             INSPECT WS-Temp-65-Chars-TXT
  3522 GC0712                 REPLACING ALL '.' BY SPACE
  3523 GC0712             EVALUATE TRUE
  3524 GC0712                 WHEN WS-Temp-65-Chars-TXT = "eject"
  3525 GC0712                     MOVE 0 TO WS-Lines-Left-NUM
  3526 GC0712                     EXIT SECTION
  3527 GC0712                 WHEN WS-Temp-65-Chars-TXT = "skip1"
  3528 GC0712                     MOVE SPACES TO WS-Src-Detail-Line-TXT
  3529 GC0712                     PERFORM 530-Generate-Source-Line
  3530 GC0712                     EXIT SECTION

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```

====== ==
  3531 GC0712   WHEN WS-Temp-65-Chars-TXT = "skip2"
  3532 GC0712   MOVE SPACES TO WS-Src-Detail-Line-TXT
  3533 GC0712   PERFORM 530-Generate-Source-Line 2 TIMES
  3534 GC0712   EXIT SECTION
  3535 GC0712   WHEN WS-Temp-65-Chars-TXT = "skip3"
  3536 GC0712   MOVE SPACES TO WS-Src-Detail-Line-TXT
  3537 GC0712   PERFORM 530-Generate-Source-Line 3 TIMES
  3538 GC0712   EXIT SECTION
  3539 GC0712   END-EVALUATE
  3540   PERFORM 530-Generate-Source-Line
  3541   END-IF
  3542   END-IF
  3543   .

==

Line   Statement   Page: 86
====== ===

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

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```
GNUCOBOL 2.2 20JUL2017  Source Listing                                      2017/07/22
                                             /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                              Page: 87
====== ================================================================================
  3595 GC1213          END-IF
  3596 GC1213        END-IF
  3597 GC1213        ADD  1          TO WS-Page-NUM
  3598 GC1213        MOVE 'Page:'    TO WS-PN-Literal-TXT
  3599 GC1213        MOVE WS-Page-NUM TO WS-PN-Page-NUM
  3600 GC1213        CALL 'C$JUSTIFY' USING WS-PN-Page-NUM, 'Left'
  3601 GC1213        CALL 'C$JUSTIFY' USING WS-Page-No-TXT, 'Right'
  3602 GC1213        IF L-Listing-CD = 1 *> LANDSCAPE
  3603 GC1213           MOVE WS-Version-TXT
  3604 GC1213             TO F-Listing-135-REC
  3605 GC1213           MOVE 'Source Listing'
  3606 GC1213             TO F-Listing-135-REC(25:14)
  3607 GC1213           MOVE WS-Formatted-DT
  3608 GC1213             TO F-Listing-135-REC(126:10)
  3609 GC1213           WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #1
  3610 GC1213           MOVE WS-Program-Path-TXT
  3611 GC1213             TO F-Listing-135-REC
  3612 GC1213           WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #2
  3613 GC1213           MOVE 'Line   Statement'
  3614 GC1213             TO F-Listing-135-REC
  3615 GC1213           MOVE WS-Page-No-TXT
  3616 GC1213             TO F-Listing-135-REC(126:10)
  3617 GC1213           WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #3
  3618 GC1213           MOVE WS-Src-Dashes-TXT
  3619 GC1213             TO F-Listing-135-REC
  3620 GC1213           WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #4
  3621 GC1213        ELSE              *> PORTRAIT
  3622 GC1213           MOVE WS-Version-TXT
  3623 GC1213             TO F-Listing-96-REC
  3624 GC1213           MOVE 'Source Listing'
  3625 GC1213             TO F-Listing-96-REC(25:14)
  3626 GC1213           MOVE WS-Formatted-DT
  3627 GC1213             TO F-Listing-96-REC(87:10)
  3628 GC1213           WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #1
  3629 GC1213           MOVE WS-Program-Path-TXT(40:96)
  3630 GC1213             TO F-Listing-96-REC
  3631 GC1213           WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #2
  3632 GC1213           MOVE 'Line   Statement'
  3633 GC1213             TO F-Listing-96-REC
  3634 GC1213           MOVE WS-Page-No-TXT
  3635 GC1213             TO F-Listing-96-REC(87:10)
  3636 GC1213           WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #3
  3637 GC1213           MOVE WS-Src-Dashes-TXT
  3638 GC1213             TO F-Listing-96-REC
  3639 GC1213           WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #4
  3640 GC1213        END-IF
  3641 GC1213        COMPUTE WS-Lines-Left-NUM = WS-Lines-Per-Page-NUM - 4
  3642 GC1213      END-IF
  3643 GC1213      IF L-Listing-CD = 1 *> LANDSCAPE
  3644 GC1213         EVALUATE WS-Src-Lines-NUM
  3645 GC1213         WHEN 1
  3646 GC1213            MOVE WS-Src-Detail-Line-TXT TO F-Listing-135-REC
  3647 GC1213            WRITE F-Listing-96-REC BEFORE 1

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

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

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

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GNUCOBOL 2.2 20JUL2017  Cross-Reference Listing                        2017/07/22
                                      /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
PROGRAM-ID      Identifier/Register/Function   Defn  Where Defined   References      Page: 90
==============  ==============================  ====  ==============  ========================
GCic            000-File-Error                  654 PROCEDURE
GCic            000-Main                        675 PROCEDURE
GCic            100-Initialization              699 PROCEDURE          676
GCic            200-Let-User-Set-Switches       813 PROCEDURE          679
GCic            210-Run-Compiler                904 PROCEDURE          680
GCic            220-Make-Listing               1040 PROCEDURE          684
GCic            230-Run-Program                1071 PROCEDURE          688
GCic            240-Find-LINKAGE-SECTION       1173 PROCEDURE          747
GCic            250-Autoload-Listing           1212 PROCEDURE          690    1031    1065
GCic            900-Terminate                  1258 PROCEDURE          692     741     884
                                                                     1032    1166
GCic            COB-COLOR-BLACK                 178 [screenio    ]     439     444     534
                                                                      544     554     559
                                                                      569     576     591
                                                                      606     622     629
                                                                      636
GCic            COB-COLOR-BLUE                  178 [screenio    ]     522
GCic            COB-COLOR-CYAN                  178 [screenio    ]     535
GCic            COB-COLOR-GREEN                 178 [screenio    ]     445     560     607
                                                                      623
GCic            COB-COLOR-MAGENTA               178 [screenio    ]
GCic            COB-COLOR-RED                   178 [screenio    ]     528     592
GCic            COB-COLOR-WHITE                 178 [screenio    ]     440     523     529
                                                                      545     555     570
                                                                      577     630     637
GCic            COB-COLOR-YELLOW                178 [screenio    ]
GCic            COB-SCR-ESC                     178 [screenio    ]     883
GCic            COB-SCR-F1                      178 [screenio    ]     830
GCic            COB-SCR-F10                     178 [screenio    ]
GCic            COB-SCR-F11                     178 [screenio    ]
GCic            COB-SCR-F12                     178 [screenio    ]     886
GCic            COB-SCR-F13                     178 [screenio    ]
GCic            COB-SCR-F14                     178 [screenio    ]
GCic            COB-SCR-F15                     178 [screenio    ]
GCic            COB-SCR-F16                     178 [screenio    ]
GCic            COB-SCR-F17                     178 [screenio    ]
GCic            COB-SCR-F18                     178 [screenio    ]
GCic            COB-SCR-F19                     178 [screenio    ]
GCic            COB-SCR-F2                      178 [screenio    ]     836
GCic            COB-SCR-F20                     178 [screenio    ]
GCic            COB-SCR-F21                     178 [screenio    ]
GCic            COB-SCR-F22                     178 [screenio    ]
GCic            COB-SCR-F23                     178 [screenio    ]
GCic            COB-SCR-F24                     178 [screenio    ]
GCic            COB-SCR-F25                     178 [screenio    ]
GCic            COB-SCR-F26                     178 [screenio    ]
GCic            COB-SCR-F27                     178 [screenio    ]
GCic            COB-SCR-F28                     178 [screenio    ]
GCic            COB-SCR-F29                     178 [screenio    ]
GCic            COB-SCR-F3                      178 [screenio    ]     842
GCic            COB-SCR-F30                     178 [screenio    ]
GCic            COB-SCR-F31                     178 [screenio    ]
GCic            COB-SCR-F32                     178 [screenio    ]

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GNUCOBOL 2.2 20JUL2017  Cross-Reference Listing                        2017/07/22
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
PROGRAM-ID      Identifier/Register/Function   Defn   Where Defined    References      Page: 91
==============  =============================== ====== =============== ========================
GCic            COB-SCR-F33                      178 [screenio    ]
GCic            COB-SCR-F34                      178 [screenio    ]
GCic            COB-SCR-F35                      178 [screenio    ]
GCic            COB-SCR-F36                      178 [screenio    ]
GCic            COB-SCR-F37                      178 [screenio    ]
GCic            COB-SCR-F38                      178 [screenio    ]
GCic            COB-SCR-F39                      178 [screenio    ]
GCic            COB-SCR-F4                       178 [screenio    ]     848
GCic            COB-SCR-F40                      178 [screenio    ]
GCic            COB-SCR-F41                      178 [screenio    ]
GCic            COB-SCR-F42                      178 [screenio    ]
GCic            COB-SCR-F43                      178 [screenio    ]
GCic            COB-SCR-F44                      178 [screenio    ]
GCic            COB-SCR-F45                      178 [screenio    ]
GCic            COB-SCR-F46                      178 [screenio    ]
GCic            COB-SCR-F47                      178 [screenio    ]
GCic            COB-SCR-F48                      178 [screenio    ]
GCic            COB-SCR-F49                      178 [screenio    ]
GCic            COB-SCR-F5                       178 [screenio    ]     854
GCic            COB-SCR-F50                      178 [screenio    ]
GCic            COB-SCR-F51                      178 [screenio    ]
GCic            COB-SCR-F52                      178 [screenio    ]
GCic            COB-SCR-F53                      178 [screenio    ]
GCic            COB-SCR-F54                      178 [screenio    ]
GCic            COB-SCR-F55                      178 [screenio    ]
GCic            COB-SCR-F56                      178 [screenio    ]
GCic            COB-SCR-F57                      178 [screenio    ]
GCic            COB-SCR-F58                      178 [screenio    ]
GCic            COB-SCR-F59                      178 [screenio    ]
GCic            COB-SCR-F6                       178 [screenio    ]     859
GCic            COB-SCR-F60                      178 [screenio    ]
GCic            COB-SCR-F61                      178 [screenio    ]
GCic            COB-SCR-F62                      178 [screenio    ]
GCic            COB-SCR-F63                      178 [screenio    ]
GCic            COB-SCR-F64                      178 [screenio    ]
GCic            COB-SCR-F7                       178 [screenio    ]     865
GCic            COB-SCR-F8                       178 [screenio    ]     871
GCic            COB-SCR-F9                       178 [screenio    ]     877
GCic            COB-SCR-FATAL                    178 [screenio    ]
GCic            COB-SCR-KEY-DOWN                 178 [screenio    ]
GCic            COB-SCR-KEY-UP                   178 [screenio    ]
GCic            COB-SCR-MAX-FIELD                178 [screenio    ]
GCic            COB-SCR-NO-FIELD                 178 [screenio    ]
GCic            COB-SCR-OK                       178 [screenio    ]
GCic            COB-SCR-PAGE_DOWN                178 [screenio    ]
GCic            COB-SCR-PAGE_UP                  178 [screenio    ]
GCic            COB-SCR-PRINT                    178 [screenio    ]
GCic            COB-SCR-TIME-OUT                 178 [screenio    ]
GCic            F-Cobc-Output-FILE               171 FILE                162    1008    1026
GCic            F-Cobc-Output-REC                172 FILE               1009   1014*    1015
                                                                       1023*   1024
GCic            F-Source-Code-FILE               174 FILE                165     655    1174
                                                                       1178    1179    1192


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GNUCOBOL 2.2 20JUL2017  Cross-Reference Listing                        2017/07/22
                                          /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
PROGRAM-ID      Identifier/Register/Function    Defn  Where Defined   References      Page: 92
==============  =============================== ====== =============== ========================
                                                                      1193   1200
GCic            F-Source-Code-REC                175 FILE             1183C  1197C
GCic            F1                                   WORKING-STORAGE  206
GCic            F12                                  WORKING-STORAGE  200
GCic            F2                                   WORKING-STORAGE  213
GCic            F3                                   WORKING-STORAGE  209
GCic            F4                                   WORKING-STORAGE  207
GCic            F5                                   WORKING-STORAGE  210    257
GCic            F6                                   WORKING-STORAGE  211
GCic            F7                                   WORKING-STORAGE  214
GCic            F8                                   WORKING-STORAGE  208
GCic            F9                                   WORKING-STORAGE  212
GCic            LD-Horiz-Line                    433 SCREEN           801
GCic            LD-LL-Corner                     428 SCREEN           456    486    502
                                                                      516
GCic            LD-Lower-T                       432 SCREEN           488
GCic            LD-LR-Corner                     430 SCREEN           458    490    504
                                                                      518
GCic            LD-UL-Corner                     427 SCREEN           446    460    492
                                                                      506
GCic            LD-Upper-T                       431 SCREEN           462
GCic            LD-UR-Corner                     429 SCREEN           448    464    494
                                                                      508
GCic            LD-Vert-Line                     434 SCREEN           450    451    453
                                                                      454    466    467
                                                                      468    470    471
                                                                      472    474    475
                                                                      476    478    479
                                                                      480    482    483
                                                                      484    496    497
                                                                      499    500    510
                                                                      511    513    514
GCic            LPP                                  PROCEDURE        1051C
GCic            LPPP                                 PROCEDURE        1052C
GCic            RETURN-CODE                          PROCEDURE        1010   1043*  1057*
                                                                      1059
GCic            S-Blank-SCR                      437 SCREEN           683    1234   1263
GCic            S-Switches-SCR                   439 SCREEN           827*   908    998
                                                                      1027   1042   1063
                                                                      1074   1260
GCic            SELCHAR                              PROCEDURE        719    822    825
                                                                      832    838    844
                                                                      850    861    867
                                                                      873    879    1202
GCic            WS-Cmd-Args-TXT                  229 WORKING-STORAGE  723*   725    726
                                                                      729    734
GCic            WS-Cmd-End-Quote-CHR             231 WORKING-STORAGE  727*   730
GCic            WS-Cmd-SUB                       233 WORKING-STORAGE  724*   725    726
                                                                      728*   732*   737*
GCic            WS-Cmd-TXT                       227 WORKING-STORAGE  905*   1000*  1005*
                                                                      1007C  1076*  1083*
                                                                      1093*  1096*  1103*
                                                                      1107*  1113*  1118*

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GNUCOBOL 2.2 20JUL2017  Cross-Reference Listing                            2017/07/22
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
PROGRAM-ID      Identifier/Register/Function   Defn  Where Defined   References      Page: 93
==============  ==============================  ====  ==============  ========================
                                                                     1123*   1131*   1139*
                                                                     1145*   1151*   1156*
                                                                     1163C   1215*   1219*
                                                                     1220C   1222*   1226*
                                                                     1227C   1237*   1240*
                                                                     1243C   1245C   1247C
                                                                     1249C   1251C
GCic            WS-Cobc-Cmd-TXT                  235  WORKING-STORAGE  906*    915*    919*
                                                                      923*    927*    932*
                                                                      937*    942*    947*
                                                                      952*    957*    961*
                                                                      974*    982*    986*
                                                                     1001
GCic            WS-Compilation-Switches-TXT      180  WORKING-STORAGE
GCic            WS-Config-Fn-TXT                 237  WORKING-STORAGE  911*    917
GCic            WS-CS-All-Switches-TXT           215  WORKING-STORAGE
GCic            WS-CS-Arg-H1-TXT                 182  WORKING-STORAGE  640*
GCic            WS-CS-Arg-H2-TXT                 183  WORKING-STORAGE  641*
GCic            WS-CS-Args-TXT                   181  WORKING-STORAGE 1154    1155
GCic            WS-CS-Config-NUM                 200  WORKING-STORAGE  632     887*    888
                                                                      889*    910
GCic            WS-CS-DEBUG-CHR                  217  WORKING-STORAGE  593     831     832*
                                                                      834*    930
GCic            WS-CS-EXECUTE-CHR                218  WORKING-STORAGE  596     686     849
                                                                      850*    852*
GCic            WS-CS-Extra-H1-TXT               203  WORKING-STORAGE  638*
GCic            WS-CS-Extra-H2-TXT               204  WORKING-STORAGE  639*
GCic            WS-CS-Extra-TXT                  202  WORKING-STORAGE  978     980
GCic            WS-CS-Filename-TXT               193  WORKING-STORAGE  632     910
GCic            WS-CS-Filenames-Table-TXT        192  WORKING-STORAGE
GCic            WS-CS-Filenames-TXT              184  WORKING-STORAGE  192
GCic            WS-CS-FREE-CHR                   219  WORKING-STORAGE  601     872     873*
                                                                      875*    955
GCic            WS-CS-LIBRARY-CHR                220  WORKING-STORAGE  595     843     844*
                                                                      846*    921    1081
                                                                     1136    1175*   1202*
GCic            WS-CS-LISTING-CHR                221  WORKING-STORAGE  597     682     819*
                                                                      822*    825*    968
                                                                      970*    972
GCic            WS-CS-NOFUNC-CHR                 222  WORKING-STORAGE  599     860     861*
                                                                      863*    945
GCic            WS-CS-NOTRUNC-CHR                223  WORKING-STORAGE  602     878     879*
                                                                      881*    935
GCic            WS-CS-Switch-Defaults-TXT        205  WORKING-STORAGE  216
GCic            WS-CS-TRACEALL-CHR               224  WORKING-STORAGE  594     837     838*
                                                                      840*    940
GCic            WS-CS-WARNALL-CHR                225  WORKING-STORAGE  600     866     867*
                                                                      869*    950
GCic            WS-Delete-Fn-TXT                 239  WORKING-STORAGE
GCic            WS-File-Name-TXT                 241  WORKING-STORAGE  165     663     668
                                                                      731*    736*    739
                                                                      752     755     762
                                                                      765     776    1049C

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                                                                     3305    3306*
LISTING         WS-RS-In-Copybook-BOOL          2307 WORKING-STORAGE  2726*   3475*
LISTING         WS-RS-In-Main-Module-BOOL       2306 WORKING-STORAGE  2721*   2759    3470*
                                                                     3480
LISTING         WS-RS-In-Which-Pgm-CHR          2305 WORKING-STORAGE
LISTING         WS-RS-Last-Token-Ended-Sent-CHR 2308 WORKING-STORAGE  2550*   2696
LISTING         WS-RS-Processing-PICTURE-CHR    2309 WORKING-STORAGE  2645    2659*   2868*
LISTING         WS-RS-Token-Ended-Sentence-CHR  2310 WORKING-STORAGE  2537    2549    2551*
                                                                     2584*   2613*   2626*
                                                                     2639*   2652*   2672*
LISTING         WS-RS-Verb-Has-Been-Found-CHR   2311 WORKING-STORAGE  2503*   2688*   2810*
LISTING         WS-Runtime-Switches             2303 WORKING-STORAGE
LISTING         WS-RW-IDX                       2299 WORKING-STORAGE  2685    2686
LISTING         WS-RW-Type-CD                   2300 WORKING-STORAGE  2686
LISTING         WS-RW-Word-TXT                  2301 WORKING-STORAGE  2298    2685
LISTING         WS-Saved-Section-TXT            2313 WORKING-STORAGE  2722    2723    2727
                                                                     2728*
LISTING         WS-SDL-Line-NUM                 2320 WORKING-STORAGE  3485*
LISTING         WS-SDL-Statement-TXT            2322 WORKING-STORAGE  3486*   3518*   3548
                                                                     3552    3554    3650
                                                                     3654*   3666    3670*
                                                                     3675    3679*   3683*
LISTING         WS-Src-Dashes-TXT               2315 WORKING-STORAGE  3618    3637
LISTING         WS-Src-Detail-Line-TXT          2319 WORKING-STORAGE  3445*   3484*   3492*
                                                                     3496*   3501*   3505*
                                                                     3509*   3516*   3528*
                                                                     3532*   3536*   3646
                                                                     3651    3653*   3655
                                                                     3662    3667    3669*
                                                                     3671    3676    3678*
                                                                     3680    3682*   3684
                                                                     3689*
LISTING         WS-Src-Hold-TXT                 2324 WORKING-STORAGE  3650*   3654    3666*
                                                                     3670    3675*   3679
                                                                     3683
LISTING         WS-Src-Line-NUM                 2326 WORKING-STORAGE  3442*   3471    3483*
                                                                     3485
LISTING         WS-Src-Lines-NUM                2328 WORKING-STORAGE  3546*   3549*   3553*
                                                                     3555*   3559    3562
                                                                     3576    3644    3660
LISTING         WS-Src-SUB                      2330 WORKING-STORAGE  2499*   2552    2553
                                                                     2572*   2576    2578
                                                                     2581*   2590*   2601*
                                                                     2607*   2611    2612
                                                                     2614*   2620*   2624*
                                                                     2625    2627*   2633*
                                                                     2637*   2638    2640*
                                                                     2650*   2653*   2670*
                                                                     2675    2750*   2755*
                                                                     2757*
LISTING         WS-Suppress-FF-CHR              1497 WORKING-STORAGE  2425*   3273*   3415
                                                                     3430
LISTING         WS-Tally-QTY                    2332 WORKING-STORAGE  2789*   2791*   2792

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

```
GNUCOBOL 2.2 20JUL2017  Cross-Reference Listing                        2017/07/22
                                      /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
PROGRAM-ID       Identifier/Register/Function   Defn   Where Defined   References       Page: 102
===============  =============================== ====== =============== ========================
                                                                       2796*    2797
LISTING          WS-Temp-10-Chars-TXT            2334 WORKING-STORAGE  2710*    2714    2715*
                                                                       2717     3465*
LISTING          WS-Temp-256-Chars-TXT           2344 WORKING-STORAGE  2474C    2711*   2718
                                                                       2730     2733    2738
                                                                       3466*    3468
LISTING          WS-Temp-32-Chars-1-TXT          2336 WORKING-STORAGE  2765*    2768    2775
LISTING          WS-Temp-32-Chars-2-TXT          2338 WORKING-STORAGE  2772*    2777*   2783
                                                                       2784*    2800
LISTING          WS-Temp-32-Chars-3-TXT          2340 WORKING-STORAGE  2773*    2778*   2786
                                                                       2787*    2800
LISTING          WS-Temp-65-Chars-TXT            2342 WORKING-STORAGE  3488*    3495    3500
                                                                       3504     3508    3520*
                                                                       3524     3527    3531
                                                                       3535
LISTING          WS-Today-DT                     2346 WORKING-STORAGE  2489*    2490
LISTING          WS-Token-Curr-TXT               2348 WORKING-STORAGE  2509     2513*   2582*
                                                                       2591*    2602*   2610*
                                                                       2623*    2636*   2648*
                                                                       2655     2668*   2678
                                                                       2680*    2698*   2765
                                                                       2812     2818    2831
                                                                       2836     2857    2862
                                                                       2866     2900    2918
                                                                       3207     3228    3238
                                                                       3252
LISTING          WS-Token-Curr-Uc-TXT            2350 WORKING-STORAGE  2510*    2513    2516
                                                                       2535     2912    3206
                                                                       3227     3237    3251
LISTING          WS-Token-Prev-TXT               2352 WORKING-STORAGE  2517*    2535*   2539*
                                                                       2598*    2813    2816
                                                                       2817*    2832    2837
                                                                       2841     2858    2863
                                                                       2872     2873*   2877
                                                                       2880*    2883*   2886*
                                                                       2889*    2892*   2895*
                                                                       2898*    2913    2919
                                                                       2923     2927*   2980
                                                                       2983*    2990    3001
                                                                       3004*    3013    3024
                                                                       3033     3061    3074
                                                                       3078*    3081*   3089*
                                                                       3097*    3104    3113
                                                                       3129     3132*   3135*
                                                                       3142     3151    3162
                                                                       3177     3180*   3187
LISTING          WS-Token-Search-TXT             2354 WORKING-STORAGE  2678*    2679    2685
LISTING          WS-Token-Type-CD                2356 WORKING-STORAGE  2583*    2592*   2603*
                                                                       2656*    2660*   2681*
                                                                       2686*    2699*
LISTING          WS-TT-Token-Is-Argtype-BOOL     2357 WORKING-STORAGE  2807     2827    2853
LISTING          WS-TT-Token-Is-EOF-BOOL         2358 WORKING-STORAGE  2506     2560*
LISTING          WS-TT-Token-Is-Function-BOOL    2359 WORKING-STORAGE  2847
========================================================================================
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```

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

6. STREAMIO

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

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

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

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

- Coding a GnuCOBOL subroutine

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

- Using hexadecimal alphanumeric literals

- Using the following statements:

    o `"ACCEPT FROM ENVIRONMENT"` statement

    o `"INSPECT"` statement

    o `"STRING"` statement

- Using the following built-in subroutines:

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

    o `"CBL_CLOSE_FILE"` built-in system subroutine

    o `"CBL_DELETE_FILE"` built-in system subroutine

    o `"CBL_EXIT_PROC"` built-in system subroutine

    o `"CBL_OPEN_FILE"` built-in system subroutine

    o `"CBL_READ_FILE"` built-in system subroutine

    o `"CBL_WRITE_FILE"` built-in system subroutine

- Using the following intrinsic functions:

    o `"RANDOM"` intrinsic function

    o `"TRIM"` intrinsic function

First, here is the STREAMIOcb.cpy copybook:

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

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

```
GNU COBOL 2.1 23NOV2013 Source Listing                                    2014/03/27
                                    C:/Users/tda010/Documents/Programs/Samples/STREAMIO.cbl
Line    Statement                                                             Page: 1
====== =====================================================================================
     1         >>SOURCE FORMAT IS FIXED
     2          IDENTIFICATION DIVISION.
     3          PROGRAM-ID. STREAMIO.
     4         *>****************************************************************
     5         *> Author: Gary L. Cutler                                **
     6         *>                                                        **
     7         *> This routine centralizes all bytestream file I/O  functions **
     8         *> into one routine.  The manner in which this routine is **
     9         *> CALLed is as follows:                                  **
    10         *>                                                        **
    11         *>         CALL "STREAMIO" USING control-block [ , arg2 ] **
    12         *>                                                        **
    13         *> where 'control-block' is defined by the "STREAMIOcb.cpy" **
    14         *> copybook and 'arg2' will vary, depending upon the function **
    15         *> specified in the control block.                        **
    16         *>                                                        **
    17         *> The STREAMIO routine has an advantage over the various **
    18         *> "CBL_xxxxxx_FILE" routines in that:                    **
    19         *>                                                        **
    20         *> 1. It automates the establishment and on-going adjustment of **
    21         *>    the file-offset value in such a way as to simplify the **
    22         *>    sequential processing of a bytestream file (you may still **
    23         *>    specify a file-offset manually on each read or write, if **
    24         *>    you wish)                                           **
    25         *>                                                        **
    26         *> 2. It auto-detects the size of the I/O buffer you supply to **
    27         *>    STREAMIO, using that as the byte-count of all read and **
    28         *>    write operations.                                   **
    29         *>                                                        **
    30         *> 3. Not only does it support the raw input and output of data **
    31         *>    that the CBL_READ_FILE and CBL_WRITE_FILE routines do, **
    32         *>    but on input it is also capable of delivering just a **
    33         *>    single newline-delimited or carriage-return/newline de- **
    34         *>    limited record to the caller.                      **
    35         *>                                                        **
    36         *> 4. On output, STREAMIO can optionally append either a new- **
    37         *>    line or carriage-return/newline sequence (your choice) to **
    38         *>    the end of every record it writes.                 **
    39         *>                                                        **
    40         *> 5. STREAMIO can automatically generate filenames for output **
    41         *>    files if you wish, simplifying the process of creating **
    42         *>    scratch or work files.                             **
    43         *>                                                        **
    44         *> 6. The STREAMIO routine also allows you to (optionally) re- **
    45         *>    gister a general error-handling routine to be given con- **
    46         *>    trol should a fatal error be detected with STREAMIO. **
    47         *>                                                        **
    48         *>    This routine can be "turned on" and "turned off" at will. **
    49         *>                                                        **
====================================================================================================
GCic for OSX Copyright (C) 2009-2014, Gary L. Cutler, GPL                      Page: 1
```

```
======  =========================================================================
     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        *>-------------------------------------------------------------**
```

```
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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```

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-   **

==

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   **

===

====== ===
    246   *> written: **
    247   *>   **
    248   *> If SCB-Delim-Unix-BOOL is true, a linefeed character will   **
    249   *> be written.   **
    250   *>   **
    251   *> If SCB-Delim-Windows-BOOL is true, a carriage-return and   **
    252   *> linefeed sequence will be written.   **
    253   *>   **
    254   *>--**
    255   *> SCB-Offset-NUM   **
    256   *>--**
    257   *>   **
    258   *> This data item specifies the next relative byte number with- **
    259   *> in the file where the next read or write will start.   **
    260   *>   **
    261   *> SCB-Offset-NUM is automatically set to 0 (the first byte)   **
    262   *> when the file is opened, and is automatically incremented as **
    263   *> the file is read or written via STREAMIO.   **
    264   *>   **
    265   *> You may also manually set this value as desired before any   **
    266   *> call to STREAMIO.   **
    267   *>   **
    268   *>--**
    269   *> SCB-Error-Routine-PTR   **
    270   *>--**
    271   *>   **
    272   *> To specify a general error-handling routine for handling   **
    273   *> STREAMIO failures, Create the routine and define an entry-   **
    274   *> name for it via the ENTRY statement. Then use the following **
    275   *> to set that routine up as the error handler: **
    276   *>   **
    277   *>   SET SCB-Error-Routine-PTR TO ENTRY "entry-name"   **
    278   *>   **
    279   *> To "turn off" the error-routine: **
    280   *>   **
    281   *>   SET SCB-Error-Routine-PTR TO NULL   **
    282   *>   **
    283   *> If a fatal error occurs (any error not marked with a ">" in   **
    284   *> the SCB-Return-CD discussion), the error routine you spe-   **
    285   *> cified (if any) will be set up as an exit routine via the   **
    286   *> CBL_EXIT_PROC subroutine; the STREAMIO routine will then is- **
    287   *> sue a STOP RUN to intentionally trigger your error routine.   **
    288   *> You will not be able to recover your program once your error **
    289   *> routine triggers. If you wish to be able to recover from   **
    290   *> fatal STREAMIO errors, you should NOT use the SCB-Error-   **
    291   *> Routine feature but instead you should explicitly test the   **
    292   *> SCB-Return-CD value after every call to STREAMIO.   **
    293   *>   **
    294   *> A default error routine is defined by the "STREAMIOError.cpy"**

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

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

```
 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 '.
```

==

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

==

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

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

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


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

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

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```
   613                        MOVE -3 TO L-SCB-Return-CD
   614                        PERFORM 099-ERROR-Return
   615                    END-IF
   616                    IF RETURN-CODE = 10
   617                        GOBACK
   618                    END-IF
   619                    MOVE 0 TO WS-Tally-NUM
   620                    INSPECT WS-Buffer-TXT
   621                        TALLYING WS-Tally-NUM FOR ALL X"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
                                                                     401     406     411
STREAMIO        040-Check-WRITE-SCB-Return-CD    444  PROCEDURE      424     570
STREAMIO        050-Check-READ-SCB-Return-CD     455  PROCEDURE      582     594
STREAMIO        060-Identify-TEMP                466  PROCEDURE      493     508
STREAMIO        099-ERROR-Return                 478  PROCEDURE      417     428     435
                                                                     441     447     451
                                                                     458     489     535
                                                                     544     548     557
                                                                     614
STREAMIO        100-OPEN                         485  PROCEDURE      393
STREAMIO        200-CLOSE                        553  PROCEDURE      388
STREAMIO        300-WRITE                        562  PROCEDURE      402     407     412
STREAMIO        400-READ                         573  PROCEDURE      396
STREAMIO        500-READ-Delim                   585  PROCEDURE      399
STREAMIO        L-Arg2-TXT                       380  LINKAGE        382     569C    576*
                                                                     581C    588*    593C
                                                                     599     600*    640
                                                                     652*    655*
STREAMIO        L-SCB-DELIM-Unix-BOOL            379  [STREAMIOcb  ] 405
STREAMIO        L-SCB-DELIM-Windows-BOOL         379  [STREAMIOcb  ] 410
STREAMIO        L-SCB-Delimiter-Mode-CD          379  [STREAMIOcb  ]
STREAMIO        L-SCB-Error-Routine-NUM          379  [STREAMIOcb  ] 479
STREAMIO        L-SCB-Error-Routine-PTR          379  [STREAMIOcb  ] 379     480C
STREAMIO        L-SCB-Filename-TXT               379  [STREAMIOcb  ] 390C    487     492
                                                                     494*    506*    507
                                                                     509     512     514*
                                                                     524*    537C
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