GnuCOBOL Sample Programs

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1. FileStat-Msgs

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

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

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

Here's the FileStat-Msgs.cpy copybook:

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

2. COBDUMP

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

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

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

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

- Coding a GnuCOBOL subroutine

- Using "USAGE POINTER" data items

- Using the "ANY LENGTH" data item attribute

- Coding for an "OPTIONAL" subprogram argument

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

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

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

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

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```

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

===

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


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

===

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

```
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```

3. Colors

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

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

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

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

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

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```

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'.

==

====== ===
    99 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 LOWLIGHT VALUE 'X'.
   100 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 LOWLIGHT VALUE 'X'.
   101 05 LINE + 1.
   102 10 COL 2 BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 LOWLIGHT VALUE 'X'.
   103 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 LOWLIGHT VALUE 'X'.
   104 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 LOWLIGHT VALUE 'X'.
   105 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 LOWLIGHT VALUE 'X'.
   106 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 LOWLIGHT VALUE 'X'.
   107 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 LOWLIGHT VALUE 'X'.
   108 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 LOWLIGHT VALUE 'X'.
   109 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 LOWLIGHT VALUE 'X'.
   110 05 LINE + 1.
   111 10 COL 2 BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 LOWLIGHT VALUE 'X'.
   112 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 LOWLIGHT VALUE 'X'.
   113 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 LOWLIGHT VALUE 'X'.
   114 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 LOWLIGHT VALUE 'X'.
   115 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 LOWLIGHT VALUE 'X'.
   116 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 LOWLIGHT VALUE 'X'.
   117 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 LOWLIGHT VALUE 'X'.
   118 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 LOWLIGHT VALUE 'X'.
   119 05 LINE + 1.
   120 10 COL 2 BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 LOWLIGHT VALUE 'X'.
   121 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 LOWLIGHT VALUE 'X'.
   122 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 LOWLIGHT VALUE 'X'.
   123 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 LOWLIGHT VALUE 'X'.
   124 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 LOWLIGHT VALUE 'X'.
   125 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 LOWLIGHT VALUE 'X'.
   126 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 LOWLIGHT VALUE 'X'.
   127 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 LOWLIGHT VALUE 'X'.
   128 *> #2
   129 05 LINE 05.
   130 10 COL 12 BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 VALUE 'X'.
   131 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 VALUE 'X'.
   132 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 VALUE 'X'.
   133 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 VALUE 'X'.
   134 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 VALUE 'X'.
   135 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 VALUE 'X'.
   136 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 VALUE 'X'.
   137 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 VALUE 'X'.
   138 05 LINE + 1.
   139 10 COL 12 BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 VALUE 'X'.
   140 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 VALUE 'X'.
   141 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 VALUE 'X'.
   142 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 VALUE 'X'.
   143 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 VALUE 'X'.
   144 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 VALUE 'X'.
   145 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 VALUE 'X'.
   146 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 VALUE 'X'.
   147 05 LINE + 1.

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

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

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   246 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 HIGHLIGHT VALUE 'X'.
   247 05 LINE + 1.
   248 10 COL 22 BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 HIGHLIGHT VALUE 'X'.
   249 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 HIGHLIGHT VALUE 'X'.
   250 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 HIGHLIGHT VALUE 'X'.
   251 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 HIGHLIGHT VALUE 'X'.
   252 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 HIGHLIGHT VALUE 'X'.
   253 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 HIGHLIGHT VALUE 'X'.
   254 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 HIGHLIGHT VALUE 'X'.
   255 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 HIGHLIGHT VALUE 'X'.
   256 05 LINE + 1.
   257 10 COL 22 BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 HIGHLIGHT VALUE 'X'.
   258 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 HIGHLIGHT VALUE 'X'.
   259 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 HIGHLIGHT VALUE 'X'.
   260 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 HIGHLIGHT VALUE 'X'.
   261 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 HIGHLIGHT VALUE 'X'.
   262 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 HIGHLIGHT VALUE 'X'.
   263 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 HIGHLIGHT VALUE 'X'.
   264 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 HIGHLIGHT VALUE 'X'.
   265 05 LINE + 1.
   266 10 COL 22 BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 HIGHLIGHT VALUE 'X'.
   267 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 HIGHLIGHT VALUE 'X'.
   268 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 HIGHLIGHT VALUE 'X'.
   269 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 HIGHLIGHT VALUE 'X'.
   270 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 HIGHLIGHT VALUE 'X'.
   271 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 HIGHLIGHT VALUE 'X'.
   272 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 HIGHLIGHT VALUE 'X'.
   273 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 HIGHLIGHT VALUE 'X'.
   274 *> #4
   275 05 LINE 05.
   276 10 COL 32 BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   277 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   278 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   279 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   280 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   281 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   282 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   283 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   284 05 LINE + 1.
   285 10 COL 32 BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   286 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   287 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   288 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   289 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   290 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   291 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   292 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   293 05 LINE + 1.
   294 10 COL 32 BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 LOWLIGHT REVERSE-VIDEO VALUE 'X'.

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GNU COBOL 2.1 23NOV2013 Source Listing                                    2014/03/27
                                C:/Users/tda010/Documents/Programs/Samples/colors.cbl
Line   Statement                                                             Page: 7
====== ==============================================================================
   295 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   296 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   297 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   298 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   299 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   300 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   301 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   302 05 LINE + 1.
   303 10 COL 32  BACKGROUND-COLOR 3 FOREGROUND-COLOR O 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 O 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 O 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 O 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 O LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   340 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   341 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   342 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
   343 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 LOWLIGHT REVERSE-VIDEO VALUE 'X'.

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

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

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

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


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====== ==
   540 10 COL 02 BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 LOWLIGHT BLINK VALUE 'X'.
   541 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 LOWLIGHT BLINK VALUE 'X'.
   542 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 LOWLIGHT BLINK VALUE 'X'.
   543 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 LOWLIGHT BLINK VALUE 'X'.
   544 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 LOWLIGHT BLINK VALUE 'X'.
   545 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 LOWLIGHT BLINK VALUE 'X'.
   546 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 LOWLIGHT BLINK VALUE 'X'.
   547 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 LOWLIGHT BLINK VALUE 'X'.
   548 05 LINE + 1.
   549 10 COL 02 BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 LOWLIGHT BLINK VALUE 'X'.
   550 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 LOWLIGHT BLINK VALUE 'X'.
   551 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 LOWLIGHT BLINK VALUE 'X'.
   552 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 LOWLIGHT BLINK VALUE 'X'.
   553 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 LOWLIGHT BLINK VALUE 'X'.
   554 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 LOWLIGHT BLINK VALUE 'X'.
   555 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 LOWLIGHT BLINK VALUE 'X'.
   556 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 LOWLIGHT BLINK VALUE 'X'.
   557 05 LINE + 1.
   558 10 COL 02 BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 LOWLIGHT BLINK VALUE 'X'.
   559 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 LOWLIGHT BLINK VALUE 'X'.
   560 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 LOWLIGHT BLINK VALUE 'X'.
   561 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 LOWLIGHT BLINK VALUE 'X'.
   562 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 LOWLIGHT BLINK VALUE 'X'.
   563 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 LOWLIGHT BLINK VALUE 'X'.
   564 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 LOWLIGHT BLINK VALUE 'X'.
   565 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 LOWLIGHT BLINK VALUE 'X'.
   566 *> #8
   567 05 LINE 17.
   568 10 COL 12 BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 BLINK VALUE 'X'.
   569 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 BLINK VALUE 'X'.
   570 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 BLINK VALUE 'X'.
   571 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 BLINK VALUE 'X'.
   572 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 BLINK VALUE 'X'.
   573 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 BLINK VALUE 'X'.
   574 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 BLINK VALUE 'X'.
   575 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 BLINK VALUE 'X'.
   576 05 LINE + 1.
   577 10 COL 12 BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 BLINK VALUE 'X'.
   578 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 BLINK VALUE 'X'.
   579 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 BLINK VALUE 'X'.
   580 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 BLINK VALUE 'X'.
   581 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 BLINK VALUE 'X'.
   582 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 BLINK VALUE 'X'.
   583 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 BLINK VALUE 'X'.
   584 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 BLINK VALUE 'X'.
   585 05 LINE + 1.
   586 10 COL 12 BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 BLINK VALUE 'X'.
   587 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 BLINK VALUE 'X'.
   588 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 BLINK VALUE 'X'.

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

Line   Statement   Page: 18
====== ==
   834 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 BLINK REVERSE-VIDEO VALUE 'X'.
   835 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 BLINK REVERSE-VIDEO VALUE 'X'.
   836 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 BLINK REVERSE-VIDEO VALUE 'X'.
   837 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 BLINK REVERSE-VIDEO VALUE 'X'.
   838 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 BLINK REVERSE-VIDEO VALUE 'X'.
   839 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 BLINK REVERSE-VIDEO VALUE 'X'.
   840 05 LINE + 1.
   841 10 COL 42 BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 BLINK REVERSE-VIDEO VALUE 'X'.
   842 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 BLINK REVERSE-VIDEO VALUE 'X'.
   843 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 BLINK REVERSE-VIDEO VALUE 'X'.
   844 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 BLINK REVERSE-VIDEO VALUE 'X'.
   845 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 BLINK REVERSE-VIDEO VALUE 'X'.
   846 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 BLINK REVERSE-VIDEO VALUE 'X'.
   847 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 BLINK REVERSE-VIDEO VALUE 'X'.
   848 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 BLINK REVERSE-VIDEO VALUE 'X'.
   849 05 LINE + 1.
   850 10 COL 42 BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 BLINK REVERSE-VIDEO VALUE 'X'.
   851 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 BLINK REVERSE-VIDEO VALUE 'X'.
   852 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 BLINK REVERSE-VIDEO VALUE 'X'.
   853 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 BLINK REVERSE-VIDEO VALUE 'X'.
   854 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 BLINK REVERSE-VIDEO VALUE 'X'.
   855 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 BLINK REVERSE-VIDEO VALUE 'X'.
   856 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 BLINK REVERSE-VIDEO VALUE 'X'.
   857 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 BLINK REVERSE-VIDEO VALUE 'X'.
   858 *> #12
   859 05 LINE 17.
   860 10 COL 52 BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   861 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   862 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   863 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   864 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   865 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   866 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   867 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   868 05 LINE + 1.
   869 10 COL 52 BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   870 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   871 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   872 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   873 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   874 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   875 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   876 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   877 05 LINE + 1.
   878 10 COL 52 BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   879 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   880 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   881 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
   882 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.

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

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

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

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

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

4. DAY-FROM-DATE

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

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

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

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

- Coding a GnuCOBOL user-defined function

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

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

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

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

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

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

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

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

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

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

5. GCic

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

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

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

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

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

- Creating a GnuCOBOL compilation unit that consists of multiple programs
- Using CDF conditional compilation facilities
- Using the `"SCREEN SECTION"` and associated `"ACCEPT"` and `"DISPLAY"` statements
- Using `"DECLARATIVES"` to trap file I/O errors
- Using `"FILE-STATUS"`
- Using the `"REPLACING"` clause on a CDF `"COPY"` statement
- Using the following statements:
    - o `"ACCEPT FROM COMMAND-LINE"` statement
    - o `"ACCEPT FROM DATE/TIME"` statement
    - o `"ACCEPT FROM ENVIRONMENT"` statement
    - o `"EXIT PERFORM"` statement
    - o `"EXIT SECTION"` statement
    - o `"INSPECT"` statement
    - o `"PERFORM FOREVER"` statement
    - o `"SEARCH ALL"` statement
    - o `"SET ENVIRONMENT"` statement
    - o `"SORT"` statement
    - o `"STRING"` statement

o `"UNSTRING"` statement

- Using the following built-in subroutines:

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

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

    o `"CBL_CHANGE_DIR"` built-in system subroutine

    o `"CBL_CHECK_FILE_EXIST"` built-in system subroutine

    o `"CBL_DELETE_FILE"` built-in system subroutine

    o `"SYSTEM"` built-in system subroutine

- Using the following intrinsic functions:

    o `"CONCATENATE"` intrinsic function

    o `"LENGTH"` intrinsic function

    o `"LOWER-CASE"` intrinsic function

    o `"NUMVAL"` intrinsic function

    o `"TRIM"` intrinsic function

    o `"UPPER-CASE"` intrinsic function

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

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

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

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

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                  2017/12/24
                                          /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                          Page: 1
======  =========================================================================
     1         >>SOURCE FORMAT IS FIXED
     2         *> CONFIGURATION SETTINGS: Set these switches before compiling:
     3         *>
     4         *> LINEDRAW Set to:
     5         *>    0   To use spaces (no lines)
     6         *>    1   To use the line-drawing characterset (PC codepage 437)
     7         *>    2   To use conventional ASCII characters (+, -, |)
     8         *>
     9         *>        OSX USERS - To use the linedrawing characterset,
    10         *>                    set your 'terminal' font to 'Lucida Console'
    11         *>
    12         *> OS      Set to one of the following:
    13         *>         'CYGWIN'   For a Windows/Cygwin version
    14         *>         'MINGW'    For a Windows/MinGW version
    15         *>         'OSX'      For a Macintosh OSX version
    16         *>         'UNIX'     For a Unix/Linux version
    17         *>         'WINDOWS'  For a Native Windows version
    18         *>
    19         *> SELCHAR  Set to the desired single character to be used as the red
    20         *>          'feature selected' character on the screen.
    21         *>          SUGGESTIONS: '>', '*', '=', '+'
    22         *>
    23         *> LPP      Set to maximum printable lines per page when the listing
    24         *>          should be generated for LANDSCAPE orientation (can be over-
    25         *>          ridden at execution time using the GCXREF_LINES environment
    26         *>          variable.
    27         *>
    28         *> LPPP     Set to maximum printable lines per page when the listing
    29         *>          should be generated for PORTRAIT orientation (can be over-
    30         *>          ridden at execution time using the GCXREF_LINES_PORT
    31         *>          environment variable.
    32         *>
    33         *>*********************************************************************
    34         *>**  Change the settings in the copy book const-set-1.cpy to reflect
    35         *>    your system set up. This notes are also present there.
    36         *>    This is to reduce the need to amend these every time a update
    37         *>    for GCic occurs.
    38         *>*********************************************************************
    39         *>
    40          copy "const-set-1.cpy".
    41         *>
    42         *> ------------------------------------------------------------
    43         *> END CONFIGURATION SETTINGS
```

```
=============================================================================================
GCic for UNIX/Linux Copyright (C) 2009-2018, Gary L. Cutler, GPL                    Page: 1
```

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                  2017/12/24
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                         Page: 2
====== =========================================================================
    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      **
```

==
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```
GNUCOBOL 3.0 24DEC2017  Source Listing                                    2017/12/24
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                              Page: 3
======  ===============================================================================
   97        *>      -ftraceall switch when building cobc command.      **
   98        *> GC0909 Convert to work on Cygwin/Linux as well as MinGW  **
   99        *> GC0310 Virtualized the key codes for S-F1 thru S-F7 as they **
  100        *>  GLC   differ depending upon whether PDCurses or NCurses is **
  101        *>      being used.                                         **
  102        *> GC0410 Introduced the cross-reference and source listing **
  103        *>  GLC   features.  Also fixed a bug in EXTRA switch proces- **
  104        *>      sing where garbage will result if more than the     **
  105        *>      EXTRA switch is specified.                          **
  106        *> GC1010 Corrected several problems reported by Vince Coen: **
  107        *>  GLC   1) Listing/Xref wouldn't work if '-I' additional   **
  108        *>         cobc switch specified.                           **
  109        *>      2) Programs coded with lowercase reserved words did **
  110        *>         not get parsed properly when generating listing  **
  111        *>         and/or xref reports.                             **
  112        *>      3) Reliance on a TEMP environment variable caused   **
  113        *>         non-recoverable errors when generating listing   **
  114        *>         and/or xref reports in a session that lacks a    **
  115        *>         TEMP variable.                                   **
  116        *>      As a result of this change, GCic no longer runs a   **
  117        *>      second 'cobc' when generating listing and/or xref   **
  118        *>      reports.  A '-save-temps' (without '=dir') specified **
  119        *>      in the EXTRA options field will be ignored.  A      **
  120        *>      '-save-temps=dir' specified in the EXTRA options     **
  121        *>      field will negate both the XREF and SOURCE opts,    **
  122        *>      if specified.                                       **
  123        *> GC0711 Tailored for 29APR2011 version of GNU COBOL 2.0   **
  124        *> GC0712 Replaced all switches with configuration settings; **
  125        *>  GLC   Tailored for 11FEB2012 version of GNU COBOL 2.0;  **
  126        *>      Reformatted screen layout to fit a 24x80 screen     **
  127        *>      rather than a 25x81 screen and to accommodate shell **
  128        *>      environments having only F1-F12 (like 'terminal' in **
  129        *>      OSX); Fully tested under OSX (required a few altera- **
  130        *>      tions); Expanded both extra-options and runtime-    **
  131        *>      arguments areas to TWO lines (152 chars total) each; **
  132        *>      Added support for MF/IBM/BS2000 listing-control     **
  133        *>      directives EJECT,SKIP1,SKIP2,SKIP3 (any of these in **
  134        *>      copybooks will be ignored)                          **
  135        *> GC0313 Expand the source code record from 80 chars to 256 **
  136        *>  GLC   to facilitate looking for "LINKAGE SECTION" in a  **
  137        *>      free-format file.                                   **
  138        *> GC1113 Edited to support the change of "OpenCOBOL" to "GNU **
  139        *>  GLC   COBOL"                                            **
  140        *> GC1213 Updated for 23NOV2013 version of GNU COBOL 2.1    **
  141        *> GC0114 Introduce a "Press ENTER to Close" action after run- **
  142        *>  GLC   ning the compiled program in the compiler window (F4)**
  143        *> VC0617 Remove the Blinking in meny screen as uncomfortable **
  144        *>  VBC   Update version printed to 2.2 30JUN2017.          **
  145        *>      Move the system constant settings to a copy file    **
  146        *>      const-set-1.cpy  in case GCic is updated.           **
  147        *>      Added  SET ENVIRONMENT "COB_EXIT_WAIT" TO "0" to     **
  148        *>      100-Initialization section.                         **
  149        *> VC0717 Replaced compile param instrinsic=all with        **

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

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                2017/12/24
                                     /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                        Page: 4
====== =========================================================================
   150         *>  VBC   intrinstics=ALL. Changed mod detail inits for Gary   **
   151         *>        from GCL to GLC.                                      **
   152         *>        Update version printed to 2.2 20JUL2017.             **
   153         *>        Should really get this from the compiler if avail?   **
   154         *> VC1217 Update compiler version to v3.0 24DEC2017.           **
   155         *>        and copyright to 2018 (in 3 places).                 **
   156         *>*************************************************************
   157         *>
   158          ENVIRONMENT DIVISION.
   159          CONFIGURATION SECTION.
   160          REPOSITORY.
   161              FUNCTION ALL INTRINSIC.
   162          INPUT-OUTPUT SECTION.
   163          FILE-CONTROL.
   164 GC1010     SELECT F-Cobc-Output-FILE   ASSIGN TO WS-Listing-Filename-TXT
   165                                         ORGANIZATION IS LINE SEQUENTIAL.
   166
   167            SELECT F-Source-Code-FILE   ASSIGN TO WS-File-Name-TXT
   168                                         ORGANIZATION IS LINE SEQUENTIAL
   169                                         FILE STATUS IS WS-FSM-Status-CD.
```

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

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

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

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

==

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                    2017/12/24
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                             Page: 7
====== ==============================================================================
        78 COB-SCR-FATAL VALUE 9000.
        78 COB-SCR-MAX-FIELD VALUE 9001.
    182        >>source fixed
    183 GC0712 01  WS-Compilation-Switches-TXT.
    184 GC0712     05 WS-CS-Args-TXT VALUE SPACES.
    185 GC0712        10 WS-CS-Arg-H1-TXT              PIC X(76).
    186 GC0712        10 WS-CS-Arg-H2-TXT              PIC X(76).
    187 GC0712     05 WS-CS-Filenames-TXT.
    188 GC0712        10 VALUE 'BS2000'               PIC X(9).
    189 GC0712        10 VALUE 'COBOL85'              PIC X(9).
    190 GC0712        10 VALUE 'COBOL2002'            PIC X(9).
    191 GC0712        10 VALUE 'DEFAULT'              PIC X(9).
    192 GC0712        10 VALUE 'IBM'                  PIC X(9).
    193 GC0712        10 VALUE 'MF'                   PIC X(9).
    194 GC0712        10 VALUE 'MVS'                  PIC X(9).
    195 GC0712     05 WS-CS-Filenames-Table-TXT REDEFINES WS-CS-Filenames-TXT.
    196 GC0712        10 WS-CS-Filename-TXT            OCCURS 7 TIMES
    197 GC0712                                        PIC X(9).
    198 GC0712 >>IF F12 < 1
    199 GC0712     05 WS-CS-Config-NUM     VALUE 4     PIC 9(1).
    200 GC0712 >>ELIF F12 > 7
    201 GC0712     05 WS-CS-Config-NUM     VALUE 4     PIC 9(1).
    202 GC0712 >>ELSE
    203 GC0712     05 WS-CS-Config-NUM     VALUE F12   PIC 9(1).
    204 GC0712 >>END-IF
    205 GC0712     05 WS-CS-Extra-TXT VALUE SPACES.
    206 GC0712        10 WS-CS-Extra-H1-TXT            PIC X(76).
    207 GC0712        10 WS-CS-Extra-H2-TXT            PIC X(76).
    208 GC0712     05 WS-CS-Switch-Defaults-TXT.
    209 GC0712        10 VALUE F1                      PIC 9(1). *> WS-CS-DEBUG-CHR
    210 GC0712        10 VALUE F4                      PIC 9(1). *> WS-CS-EXECUTE-CHR
    211 GC0712        10 VALUE F8                      PIC 9(1). *> WS-CS-FREE-CHR
    212 GC0712        10 VALUE F3                      PIC 9(1). *> WS-CS-LIBRARY-CHR
    213 GC0712        10 VALUE F5                      PIC 9(1). *> WS-CS-LISTING-CHR
    214 GC0712        10 VALUE F6                      PIC 9(1). *> WS-CS-NOFUNC-CHR
    215 GC0712        10 VALUE F9                      PIC 9(1). *> WS-CS-NOTRUNC-CHR
    216 GC0712        10 VALUE F2                      PIC 9(1). *> WS-CS-TRACEALL-CHR
    217 GC0712        10 VALUE F7                      PIC 9(1). *> WS-CS-WARNALL-CHR
    218 GC0712     05 WS-CS-All-Switches-TXT REDEFINES
    219 GC0712                         WS-CS-Switch-Defaults-TXT.
    220 GC0712        10 WS-CS-DEBUG-CHR               PIC X(1).
    221 GC0712        10 WS-CS-EXECUTE-CHR             PIC X(1).
    222 GC0712        10 WS-CS-FREE-CHR                PIC X(1).
    223 GC0712        10 WS-CS-LIBRARY-CHR             PIC X(1).
    224 GC0712        10 WS-CS-LISTING-CHR             PIC X(1).
    225 GC0712        10 WS-CS-NOFUNC-CHR              PIC X(1).
    226 GC0712        10 WS-CS-NOTRUNC-CHR             PIC X(1).
    227 GC0712        10 WS-CS-TRACEALL-CHR            PIC X(1).
    228 GC0712        10 WS-CS-WARNALL-CHR             PIC X(1).
    229
    230 GC0909 01  WS-Cmd-TXT                          PIC X(512).
    231
    232 GC0712 01  WS-Cmd-Args-TXT                     PIC X(256).


==================================================================================
GCic for UNIX/Linux Copyright (C) 2009-2018, Gary L. Cutler, GPL               Page: 7
```

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


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

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```

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                                2017/12/24
                                                  /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                                        Page: 10
====== ===========================================================================================
   339 GC0809          88 WS-RS-1st-Prog-Complete-BOOL    VALUE 'Y'.
   340 GC0809          88 WS-RS-More-To-1st-Prog-BOOL     VALUE 'N'.
   341            05 WS-RS-No-Switch-Chgs-CHR         PIC X(1).
   342                88 WS-RS-No-Switch-Changes-BOOL     VALUE 'Y'.
   343                88 WS-RS-Switch-Changes-BOOL        VALUE 'N'.
   344 GC0709      05 WS-RS-Output-File-Busy-CHR      PIC X(1).
   345 GC0709          88 WS-RS-Output-File-Busy-BOOL      VALUE 'Y'.
   346 GC0709          88 WS-RS-Output-File-Avail-BOOL     VALUE 'N'.
   347 GC0809      05 WS-RS-Source-Record-Type-CHR    PIC X(1).
   348 GC0809          88 WS-RS-Source-Rec-Linkage-BOOL    VALUE 'L'.
   349 GC0809          88 WS-RS-Source-Rec-Ident-BOOL      VALUE 'I'.
   350 GC0712          88 WS-RS-Source-Rec-Ignored-BOOL    VALUE ' '.
   351            05 WS-RS-Switch-Error-CHR           PIC X(1).
   352                88 WS-RS-Switch-Is-Bad-BOOL         VALUE 'Y'.
   353                88 WS-RS-Switch-Is-Good-BOOL        VALUE 'N'.
   354
   355        01  WS-Tally-QTY                        USAGE BINARY-LONG.
```

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

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

   357         SCREEN SECTION.
   358         *>
   359         *> Here is the layout of the GCic screen.
   360         *>
   361         *> The sample screen below shows how the screen would look if the LINEDRAW
   362         *> configuration setting is set to a value of 2
   363         *>
   364         *> The following sample screen layout shows how the screen looks with line-drawing
   365         *> characters disabled.
   366         *>
   367         *>          1         2         3         4         5         6         7         8
   368         *>12345678901234567890123456789012345678901234567890123456789012345678901234567890
   369         *>================================================================================
   370     01 *> GCic (2017/12/24 08:52) - GNU COBOL V3.0 24DEC2017 Interactive Compilation
   371     02 *>+--------------------------------------------------------------------------------+
   372     03 *>| Folder:   E:\GNU COBOL\Samples                                                 |
   373     04 *>| Filename: GCic.cbl                                                             |
   374     05 *>+--------------------------------------------------------------------------------+
   375     06 *> Set/Clr Switches Via F1-F9; Set Config Via F12; ENTER Key Compiles; ESC Quits
   376     07 *>+----------------------------------------------------------------+------------+
   377     08 *>| F1  Assume WITH DEBUGGING MODE  F6  "FUNCTION" Is Optional      | Current    |
   378     09 *>| F2  Procedure+Statement Trace   F7  Enable All Warnings         | Config:    |
   379     10 *>| F3  Make A Library (DLL)        F8  Source Is Free-Format       | XXXXXXXXXX |
   380     11 *>| F4  Execute If Compilation OK   F9  No COMP/BINARY Truncation   |            |
   381     12 *>| F5 >Produce Listing (Landscape)                                |            |
   382     13 *>+----------------------------------------------------------------+------------+
   383     14 *> Extra "cobc" Switches, If Any ("-save-temps=xxx" Prevents Listings):
   384     15 *>+--------------------------------------------------------------------------------+
   385     16 *>| _____ |
   386     17 *>| _____ |
   387     18 *>+--------------------------------------------------------------------------------+
   388     19 *> Program Execution Arguments, If Any:
   389     20 *>+--------------------------------------------------------------------------------+
   390     21 *>| _____ |
   391     22 *>| _____ |
   392     23 *>+--------------------------------------------------------------------------------+
   393     24 *> GCic Copyright (C) 2009-2018, Gary L. Cutler, GPL
   394        *>================================================================================
   395        *>12345678901234567890123456789012345678901234567890123456789012345678901234567890
   396        *>          1         2         3         4         5         6         7         8
   397        *>
   398        *> If this program is run on Windows, it must run with codepage 437 activated to
   399        *> display the line-drawing characters.  With a native Windows build or a
   400        *> Windows/MinGW build, one could use the command 'chcp 437' to set that codepage
   401        *> for display within a Windows console window (that should be the default though).
   402        *> With a Windows/Cygwin build, set the environment variable CYGWIN to a value of
   403        *> 'codepage:oem' (this cannot be done from within the program though - you will
   404        *> have to use the 'Computer/Advanced System Settings/Environment Variables' (Vista
   405        *> or Windows 7) function to define the variable.  XP Users: use 'My Computer/
   406        *> Properties/Advanced/Environment Variables'.
   407        *>
   408        *> OSX users may use line drawing characters in this and any GNU COBOL program
```

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

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

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

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

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

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

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```

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

==================================================================================
GCic for UNIX/Linux Copyright (C) 2009-2018, Gary L. Cutler, GPL          Page: 15
```

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

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

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

===

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

```
=========================================================================================
GCic for UNIX/Linux Copyright (C) 2009-2018, Gary L. Cutler, GPL              Page: 18
```

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

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

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

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

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

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```
GNUCOBOL 3.0 24DEC2017  Source Listing                                    2017/12/24
                                           /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                                 Page: 23
====== =====================================================================================
   864 GC0712                              MOVE SELCHAR TO WS-CS-NOFUNC-CHR
   865 GC0712                          ELSE
   866 GC0712                              MOVE ' ' TO WS-CS-NOFUNC-CHR
   867 GC0712                          END-IF
   868 GC0712                      WHEN COB-SCR-F7
   869 GC0712                          IF WS-CS-WARNALL-CHR = SPACE
   870 GC0712                              MOVE SELCHAR TO WS-CS-WARNALL-CHR
   871 GC0712                          ELSE
   872 GC0712                              MOVE ' ' TO WS-CS-WARNALL-CHR
   873 GC0712                          END-IF
   874 GC0712                      WHEN COB-SCR-F8
   875 GC0712                          IF WS-CS-FREE-CHR = SPACE
   876 GC0712                              MOVE SELCHAR TO WS-CS-FREE-CHR
   877 GC0712                          ELSE
   878 GC0712                              MOVE ' ' TO WS-CS-FREE-CHR
   879 GC0712                          END-IF
   880 GC0712                      WHEN COB-SCR-F9
   881 GC0712                          IF  WS-CS-NOTRUNC-CHR = SPACE
   882 GC0712                              MOVE SELCHAR TO WS-CS-NOTRUNC-CHR
   883 GC0712                          ELSE
   884 GC0712                              MOVE ' ' TO WS-CS-NOTRUNC-CHR
   885 GC0712                          END-IF
   886                              WHEN COB-SCR-ESC
   887                                  PERFORM 900-Terminate
   888      * ------------------ Control will NOT return
   889 GC0712                      WHEN COB-SCR-F12
   890 GC0712                          ADD 1 TO WS-CS-Config-NUM
   891 GC0712                          IF WS-CS-Config-NUM > 7
   892 GC0712                              MOVE 1 TO WS-CS-Config-NUM
   893 GC0712                          END-IF
   894                              WHEN OTHER
   895                                  MOVE 'An unsupported key was pressed'
   896                                    TO WS-Output-Msg-TXT
   897                          END-EVALUATE
   898                      ELSE
   899                          SET WS-RS-No-Switch-Changes-BOOL TO TRUE
   900                      END-IF
   901              END-PERFORM
   902                  .
```

```
==========================================================================================
GCic for UNIX/Linux Copyright (C) 2009-2018, Gary L. Cutler, GPL                  Page: 23
```

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

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

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


==================================================================================================
GCic for UNIX/Linux Copyright (C) 2009-2018, Gary L. Cutler, GPL                   Page: 25
```

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

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

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

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

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

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

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

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

====== ===

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

===

```
  1272      IDENTIFICATION DIVISION.
  1273      PROGRAM-ID.  CHECKSRC.
  1274      *>************************************************************
  1275      *> This subprogram will scan a line of source code it is given **
  1276      *> looking for 'LINKAGE SECTION' or 'IDENTIFICATION DIVISION'. **
  1277      *>                                                           **
  1278      *>  ****NOTE****   ****NOTE****    ****NOTE****   ****NOTE*** **
  1279      *>                                                           **
  1280      *> These two strings must be found IN THEIR ENTIRETY within   **
  1281      *> the 1st 80 columns of program source records, and cannot   **
  1282      *> follow either a '*>' sequence OR a '*' in col 7.           **
  1283      *>************************************************************
  1284      *>  DATE   CHANGE DESCRIPTION                                 **
  1285      *> ====== ================================================= **
  1286      *> GCO809 Initial coding.                                     **
  1287      *>************************************************************
  1288      ENVIRONMENT DIVISION.
  1289      CONFIGURATION SECTION.
  1290      REPOSITORY.
  1291          FUNCTION ALL INTRINSIC.
  1292      DATA DIVISION.
  1293      WORKING-STORAGE SECTION.
  1294      01  WS-Compressed-Src-TXT.
  1295          05 WS-CS-CHR                         OCCURS 80 TIMES
  1296                                               PIC X(1).
  1297
  1298      01  WS-Runtime-Switches-TXT.
  1299          05 WS-RS-Found-SPACE-CHR             PIC X(1).
  1300             88 WS-RS-Skipping-SPACE-BOOL      VALUE 'Y'.
  1301             88 WS-RS-Not-Skipping-SPACE-BOOL VALUE 'N'.
  1302
  1303      01  WS-I-SUB                             USAGE BINARY-CHAR.
  1304
  1305      01  WS-J-SUB                             USAGE BINARY-CHAR.
  1306      LINKAGE SECTION.
  1307      01  L-Argument-1-TXT.
  1308          02 L-A1-CHR                          OCCURS 80 TIMES
  1309                                               PIC X(1).
  1310
  1311      01  L-Argument-2-CHR                     PIC X(1).
  1312             88 L-A2-LINKAGE-SECTION-BOOL VALUE 'L'.
  1313             88 L-A2-IDENT-DIVISION-BOOL  VALUE 'I'.
  1314             88 L-A2-Nothing-Special-BOOL VALUE ' '.
```

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

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                2017/12/24
                                     /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                     Page: 35
====== ==========================================================================
  1368           END-PERFORM
  1369        *>
  1370        *> If we get to here, we never found anything!
  1371        *>
  1372 +          GOBACK
  1373            .
  1374         END PROGRAM CHECKSRC.
  1375
  1376         IDENTIFICATION DIVISION.
  1377         PROGRAM-ID.  LISTING.
  1378        *>************************************************************
  1379        *> This subprogram generates a cross-reference listing of an  **
  1380        *> GNU COBOL program.                                         **
  1381        *>************************************************************
  1382        *>                                                           **
  1383        *> AUTHOR:      GARY L. CUTLER                               **
  1384        *>              Copyright (C) 2010, Gary L. Cutler, GPL       **
  1385        *>                                                           **
  1386        *> DATE-WRITTEN: April 1, 2010                               **
  1387        *>                                                           **
  1388        *>************************************************************
  1389        *>  DATE   CHANGE DESCRIPTION                                **
  1390        *> ====== =================================================== **
  1391        *> GC0410 Initial coding                                     **
  1392        *> GC0711 Updates to accommodate the 12MAR2010 version of OC **
  1393        *> GC0710 Handle duplicate data names (i.e. 'CORRESPONDING' or **
  1394        *>        qualified items) better; ignore 'END PROGRAM' recs **
  1395        *>        so program name doesn't appear in listing.         **
  1396        *> GC0313 Fix problem where the first procedure name defined **
  1397        *>        in the PROCEDURE DIVISION lacks a "Defined" line   **
  1398        *>        number.                                            **
  1399        *> GC1213 Updated for 23NOV2013 version of GNU COBOL 2.1; Stop **
  1400        *>        showing functions as if they were identifiers in the **
  1401        *>        xref listing; Flag all CALL argument references with **
  1402        *>        a "C" rather than "*" because they aren't necessari- **
  1403        *>        ly altered; Fixed assorted formatting bugs; DOWN-   **
  1404        *>        WARD COMPATIBLE WITH GNU COBOL 2.0 SYNTAX           **
  1405        *> GC0314 Fix problem where 1st char of 1st token on a line is **
  1406        *>        lost if >>SOURCE MODE IS FREE is in effect and the  **
  1407        *>        1st character is non-blank.                        **
  1408        *> VC1217 Updated compiler version & date to v3.0 & 24DEC2017. **
  1409        *>************************************************************
  1410         ENVIRONMENT DIVISION.
  1411         CONFIGURATION SECTION.
  1412         REPOSITORY.
  1413             FUNCTION ALL INTRINSIC.
  1414         INPUT-OUTPUT SECTION.
  1415         FILE-CONTROL.
  1416             SELECT F-Expanded-Src-FILE  ASSIGN TO WS-Expanded-Src-Fn-TXT
  1417                                         ORGANIZATION IS LINE SEQUENTIAL.
  1418 GC0712     SELECT F-Listing-FILE       ASSIGN TO L-Listing-Fn-TXT
  1419                                         ORGANIZATION IS LINE SEQUENTIAL.
  1420             SELECT F-Original-Src-FILE  ASSIGN TO L-Src-Fn-TXT
====== ==========================================================================
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```

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

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

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                                      /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                        Page: 38
======  ========================================================================
  1527            05 VALUE 'Windows'                  PIC X(14).
  1528            05 VALUE 'Windows/Cygwin'           PIC X(14).
  1529            05 VALUE 'UNIX/Linux'               PIC X(14).
  1530            05 VALUE 'OSX'                      PIC X(14).
  1531            05 VALUE 'Windows/MinGW'            PIC X(14).
  1532        01  WS-OS-Types-TXT REDEFINES WS-OS-Type-FILLER-TXT.
  1533            05 WS-OS-Type-TXT                   PIC X(14)
  1534                                        OCCURS 5 TIMES .
  1535
  1536 GC0712 01  WS-Page-NUM                         USAGE BINARY-LONG.
  1537
  1538 GC0712 01  WS-Page-No-TXT.
  1539 GC0712     05 WS-PN-Literal-TXT                PIC X(6).
  1540 GC0712     05 WS-PN-Page-NUM                   PIC Z(3)9.
  1541
  1542 GC1213 01  WS-Program-Path-TXT                 PIC X(135).
  1543
  1544        01  WS-Reserved-Words-TXT.
  1545            05 VALUE '                         ' PIC X(33).
  1546 GC1213     05 VALUE 'FABS                     ' PIC X(33).
  1547            05 VALUE 'VACCEPT                  ' PIC X(33).
  1548            05 VALUE ' ACCESS                  ' PIC X(33).
  1549 GC1213     05 VALUE 'FACOS                    ' PIC X(33).
  1550            05 VALUE ' ACTIVE-CLASS            ' PIC X(33).    UNIMPLEMENTED
  1551            05 VALUE 'VADD                     ' PIC X(33).
  1552            05 VALUE ' ADDRESS                 ' PIC X(33).
  1553            05 VALUE ' ADVANCING               ' PIC X(33).
  1554            05 VALUE 'KAFTER                   ' PIC X(33).
  1555            05 VALUE ' ALIGNED                 ' PIC X(33).    UNIMPLEMENTED
  1556            05 VALUE ' ALL                     ' PIC X(33).
  1557            05 VALUE 'VALLOCATE                ' PIC X(33).
  1558            05 VALUE ' ALPHABET                ' PIC X(33).
  1559            05 VALUE ' ALPHABETIC              ' PIC X(33).
  1560            05 VALUE ' ALPHABETIC-LOWER        ' PIC X(33).
  1561            05 VALUE ' ALPHABETIC-UPPER        ' PIC X(33).
  1562            05 VALUE ' ALPHANUMERIC            ' PIC X(33).
  1563            05 VALUE ' ALPHANUMERIC-EDITED     ' PIC X(33).
  1564            05 VALUE ' ALSO                    ' PIC X(33).
  1565            05 VALUE 'VALTER                   ' PIC X(33).
  1566            05 VALUE ' ALTERNATE               ' PIC X(33).
  1567            05 VALUE ' AND                     ' PIC X(33).
  1568 GC1213     05 VALUE 'FANNUITY                 ' PIC X(33).
  1569            05 VALUE ' ANY                     ' PIC X(33).
  1570            05 VALUE ' ANYCASE                 ' PIC X(33).    UNIMPLEMENTED
  1571            05 VALUE ' ARE                     ' PIC X(33).
  1572            05 VALUE ' AREA                    ' PIC X(33).
  1573            05 VALUE ' AREAS                   ' PIC X(33).
  1574            05 VALUE ' ARGUMENT-NUMBER         ' PIC X(33).
  1575            05 VALUE ' ARGUMENT-VALUE          ' PIC X(33).
  1576            05 VALUE ' ARITHMETIC              ' PIC X(33).    UNIMPLEMENTED
  1577            05 VALUE ' AS                      ' PIC X(33).
  1578            05 VALUE ' ASCENDING               ' PIC X(33).
  1579            05 VALUE ' ASCII                   ' PIC X(33).
```

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GNUCOBOL 3.0 24DEC2017  Source Listing                                        2017/12/24
                                              /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                             Page: 39
======  ==================================================================================
  1580 GC1213      05 VALUE 'FASIN                        ' PIC X(33).
  1581              05 VALUE ' ASSIGN                      ' PIC X(33).
  1582              05 VALUE ' AT                          ' PIC X(33).
  1583 GC1213      05 VALUE 'FATAN                        ' PIC X(33).
  1584 GC0711      05 VALUE ' ATTRIBUTE                   ' PIC X(33).
  1585              05 VALUE ' AUTHOR                      ' PIC X(33).     OBSOLETE
  1586              05 VALUE ' AUTO                        ' PIC X(33).
  1587              05 VALUE ' AUTO-SKIP                   ' PIC X(33).
  1588              05 VALUE ' AUTOMATIC                   ' PIC X(33).
  1589              05 VALUE ' AUTOTERMINATE               ' PIC X(33).
  1590              05 VALUE ' AWAY-FROM-ZERO              ' PIC X(33).
  1591              05 VALUE ' B-AND                       ' PIC X(33).     UNIMPLEMENTED
  1592              05 VALUE ' B-NOT                       ' PIC X(33).     UNIMPLEMENTED
  1593              05 VALUE ' B-OR                        ' PIC X(33).     UNIMPLEMENTED
  1594              05 VALUE ' B-XOR                       ' PIC X(33).     UNIMPLEMENTED
  1595              05 VALUE ' BACKGROUND-COLOR            ' PIC X(33).
  1596              05 VALUE ' BACKGROUND-COLOUR           ' PIC X(33).
  1597              05 VALUE ' BASED                       ' PIC X(33).
  1598              05 VALUE ' BEEP                        ' PIC X(33).
  1599              05 VALUE ' BEFORE                      ' PIC X(33).
  1600              05 VALUE ' BELL                        ' PIC X(33).
  1601              05 VALUE ' BINARY                      ' PIC X(33).
  1602              05 VALUE ' BINARY-C-LONG               ' PIC X(33).
  1603              05 VALUE ' BINARY-CHAR                 ' PIC X(33).
  1604              05 VALUE ' BINARY-DOUBLE               ' PIC X(33).
  1605              05 VALUE ' BINARY-INT                  ' PIC X(33).
  1606              05 VALUE ' BINARY-LONG                 ' PIC X(33).
  1607              05 VALUE ' BINARY-LONG-LONG            ' PIC X(33).
  1608              05 VALUE ' BINARY-SHORT                ' PIC X(33).
  1609              05 VALUE ' BIT                         ' PIC X(33).     UNIMPLEMENTED
  1610              05 VALUE ' BLANK                       ' PIC X(33).
  1611              05 VALUE ' BLINK                       ' PIC X(33).
  1612              05 VALUE ' BLOCK                       ' PIC X(33).
  1613              05 VALUE ' BOOLEAN                     ' PIC X(33).     UNIMPLEMENTED
  1614 GC1213      05 VALUE 'FBOOLEAN-OF-INTEGER           ' PIC X(33).     UNIMPLEMENTED
  1615              05 VALUE ' BOTTOM                      ' PIC X(33).
  1616              05 VALUE 'YBY                          ' PIC X(33).
  1617 GC1213      05 VALUE 'FBYTE-LENGTH                 ' PIC X(33).
  1618              05 VALUE 'MC01                         ' PIC X(33).
  1619              05 VALUE 'MC02                         ' PIC X(33).
  1620              05 VALUE 'MC03                         ' PIC X(33).
  1621              05 VALUE 'MC04                         ' PIC X(33).
  1622              05 VALUE 'MC05                         ' PIC X(33).
  1623              05 VALUE 'MC06                         ' PIC X(33).
  1624              05 VALUE 'MC07                         ' PIC X(33).
  1625              05 VALUE 'MC08                         ' PIC X(33).
  1626              05 VALUE 'MC09                         ' PIC X(33).
  1627              05 VALUE 'MC10                         ' PIC X(33).
  1628              05 VALUE 'MC11                         ' PIC X(33).
  1629              05 VALUE 'MC12                         ' PIC X(33).
  1630              05 VALUE 'VCALL                        ' PIC X(33).
  1631              05 VALUE 'MCALL-CONVENTION             ' PIC X(33).
  1632              05 VALUE 'VCANCEL                      ' PIC X(33).

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                                             /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                               Page: 40
======  ======================================================================================
  1633            05 VALUE ' CAPACITY                        ' PIC X(33).    UNIMPLEMENTED
  1634            05 VALUE ' CD                               ' PIC X(33).    OBSOLETE
  1635            05 VALUE ' CENTER                           ' PIC X(33).    UNIMPLEMENTED
  1636            05 VALUE ' CF                               ' PIC X(33).
  1637            05 VALUE ' CH                               ' PIC X(33).
  1638            05 VALUE ' CHAIN                            ' PIC X(33).    UNIMPLEMENTED
  1639            05 VALUE ' CHAINING                         ' PIC X(33).
  1640 GC1213     05 VALUE 'FCHAR                             ' PIC X(33).
  1641 GC1213     05 VALUE 'FCHAR-NATIONAL                    ' PIC X(33).    UNIMPLEMENTED
  1642            05 VALUE ' CHARACTER                        ' PIC X(33).
  1643            05 VALUE ' CHARACTERS                       ' PIC X(33).
  1644            05 VALUE ' CLASS                            ' PIC X(33).
  1645            05 VALUE ' CLASS-ID                         ' PIC X(33).    UNIMPLEMENTED
  1646 GC0711     05 VALUE ' CLASSIFICATION                   ' PIC X(33).
  1647            05 VALUE 'VCLOSE                            ' PIC X(33).
  1648 GC1213     05 VALUE 'FCOB-CRT-STATUS                   ' PIC X(33).
  1649            05 VALUE ' CODE                             ' PIC X(33).
  1650            05 VALUE ' CODE-SET                         ' PIC X(33).
  1651            05 VALUE ' COL                              ' PIC X(33).
  1652            05 VALUE ' COLLATING                        ' PIC X(33).
  1653            05 VALUE ' COLS                             ' PIC X(33).
  1654            05 VALUE ' COLUMN                           ' PIC X(33).
  1655            05 VALUE ' COLUMNS                          ' PIC X(33).
  1656 GC1213     05 VALUE 'FCOMBINED-DATETIME                ' PIC X(33).
  1657            05 VALUE ' COMMA                            ' PIC X(33).
  1658            05 VALUE ' COMMAND-LINE                     ' PIC X(33).
  1659            05 VALUE 'VCOMMIT                           ' PIC X(33).
  1660            05 VALUE ' COMMON                           ' PIC X(33).
  1661            05 VALUE ' COMMUNICATION                    ' PIC X(33).    OBSOLETE
  1662            05 VALUE ' COMP                             ' PIC X(33).
  1663            05 VALUE ' COMP-1                           ' PIC X(33).
  1664            05 VALUE ' COMP-2                           ' PIC X(33).
  1665            05 VALUE ' COMP-3                           ' PIC X(33).
  1666            05 VALUE ' COMP-4                           ' PIC X(33).
  1667            05 VALUE ' COMP-5                           ' PIC X(33).
  1668            05 VALUE ' COMP-6                           ' PIC X(33).
  1669            05 VALUE ' COMP-X                           ' PIC X(33).
  1670            05 VALUE ' COMPUTATIONAL                    ' PIC X(33).
  1671            05 VALUE ' COMPUTATIONAL-1                  ' PIC X(33).
  1672            05 VALUE ' COMPUTATIONAL-2                  ' PIC X(33).
  1673            05 VALUE ' COMPUTATIONAL-3                  ' PIC X(33).
  1674            05 VALUE ' COMPUTATIONAL-4                  ' PIC X(33).
  1675            05 VALUE ' COMPUTATIONAL-5                  ' PIC X(33).
  1676            05 VALUE ' COMPUTATIONAL-X                  ' PIC X(33).
  1677            05 VALUE 'VCOMPUTE                          ' PIC X(33).
  1678 GC1213     05 VALUE 'FCONCATENATE                      ' PIC X(33).
  1679 GC0712     05 VALUE ' CONDITION                        ' PIC X(33).
  1680            05 VALUE 'KCONFIGURATION                    ' PIC X(33).
  1681            05 VALUE 'MCONSOLE                          ' PIC X(33).
  1682            05 VALUE ' CONSTANT                         ' PIC X(33).
  1683            05 VALUE ' CONTAINS                         ' PIC X(33).
  1684 GC0712     05 VALUE 'ACONTENT                          ' PIC X(33).
  1685            05 VALUE 'VCONTINUE                         ' PIC X(33).

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                                             /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                                Page: 41
====== =====================================================================================
 1686           05 VALUE ' CONTROL                      ' PIC X(33).
 1687           05 VALUE ' CONTROLS                     ' PIC X(33).
 1688 GC0711    05 VALUE ' CONVERSION                   ' PIC X(33).
 1689           05 VALUE 'KCONVERTING                   ' PIC X(33).
 1690           05 VALUE ' COPY                         ' PIC X(33).
 1691           05 VALUE ' CORR                         ' PIC X(33).
 1692           05 VALUE ' CORRESPONDING                ' PIC X(33).
 1693 GC1213    05 VALUE 'FCOS                          ' PIC X(33).
 1694           05 VALUE 'KCOUNT                        ' PIC X(33).
 1695           05 VALUE ' CRT                          ' PIC X(33).
 1696           05 VALUE ' CRT-UNDER                    ' PIC X(33).
 1697           05 VALUE 'MCSP                          ' PIC X(33).
 1698           05 VALUE ' CURRENCY                     ' PIC X(33).
 1699 GC1213    05 VALUE 'FCURRENCY-SYMBOL              ' PIC X(33).
 1700 GC1213    05 VALUE 'FCURRENT-DATE                 ' PIC X(33).
 1701           05 VALUE ' CURSOR                       ' PIC X(33).
 1702           05 VALUE ' CYCLE                        ' PIC X(33).
 1703           05 VALUE 'KDATA                         ' PIC X(33).
 1704           05 VALUE ' DATA-POINTER                 ' PIC X(33).      UNIMPLEMENTED
 1705           05 VALUE ' DATE                         ' PIC X(33).
 1706           05 VALUE ' DATE-COMPILED                ' PIC X(33).      OBSOLETE
 1707           05 VALUE ' DATE-MODIFIED                ' PIC X(33).      OBSOLETE
 1708 GC1213    05 VALUE 'FDATE-OF-INTEGER              ' PIC X(33).
 1709 GC1213    05 VALUE 'FDATE-TO-YYYYMMDD             ' PIC X(33).
 1710           05 VALUE ' DATE-WRITTEN                 ' PIC X(33).      OBSOLETE
 1711           05 VALUE ' DAY                          ' PIC X(33).
 1712 GC1213    05 VALUE 'FDAY-OF-INTEGER               ' PIC X(33).
 1713           05 VALUE ' DAY-OF-WEEK                  ' PIC X(33).
 1714 GC1213    05 VALUE 'IDAY-TO-YYYYDDD               ' PIC X(33).
 1715           05 VALUE ' DE                           ' PIC X(33).
 1716 GC0712    05 VALUE 'IDEBUG-CONTENTS               ' PIC X(33).
 1717 GC0712    05 VALUE 'IDEBUG-ITEM                   ' PIC X(33).
 1718 GC0712    05 VALUE 'IDEBUG-LINE                   ' PIC X(33).
 1719 GC0712    05 VALUE 'IDEBUG-NAME                   ' PIC X(33).
 1720 GC0712    05 VALUE 'IDEBUG-SUB-1                  ' PIC X(33).
 1721 GC0712    05 VALUE 'IDEBUG-SUB-2                  ' PIC X(33).
 1722 GC0712    05 VALUE 'IDEBUG-SUB-3                  ' PIC X(33).
 1723           05 VALUE ' DEBUGGING                    ' PIC X(33).
 1724           05 VALUE ' DECIMAL-POINT                ' PIC X(33).
 1725           05 VALUE ' DECLARATIVES                 ' PIC X(33).
 1726           05 VALUE ' DEFAULT                      ' PIC X(33).
 1727           05 VALUE 'VDELETE                       ' PIC X(33).
 1728           05 VALUE ' DELIMITED                    ' PIC X(33).
 1729           05 VALUE 'KDELIMITER                    ' PIC X(33).
 1730           05 VALUE ' DEPENDING                    ' PIC X(33).
 1731           05 VALUE ' DESCENDING                   ' PIC X(33).
 1732           05 VALUE ' DESTINATION                  ' PIC X(33).      UNIMPLEMENTED
 1733           05 VALUE ' DETAIL                       ' PIC X(33).
 1734 GC0711    05 VALUE ' DISC                         ' PIC X(33).
 1735           05 VALUE ' DISK                         ' PIC X(33).
 1736           05 VALUE 'VDISPLAY                      ' PIC X(33).
 1737 GC1213    05 VALUE 'FDISPLAY-OF                   ' PIC X(33).      UNIMPLEMENTED
 1738           05 VALUE 'VDIVIDE                       ' PIC X(33).

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                                              /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                                 Page: 42
======  ==================================================================================
 1739           05 VALUE 'KDIVISION                       ' PIC X(33).
 1740           05 VALUE 'KDOWN                           ' PIC X(33).
 1741           05 VALUE ' DUPLICATES                     ' PIC X(33).
 1742           05 VALUE ' DYNAMIC                        ' PIC X(33).
 1743 GC1213    05 VALUE 'FE                              ' PIC X(33).
 1744           05 VALUE ' EBCDIC                         ' PIC X(33).
 1745 GC0712    05 VALUE ' EC                             ' PIC X(33).
 1746           05 VALUE ' EGI                            ' PIC X(33).      OBSOLETE
 1747           05 VALUE 'VELSE                           ' PIC X(33).
 1748           05 VALUE ' EMI                            ' PIC X(33).      OBSOLETE
 1749           05 VALUE ' EMPTY-CHECK                    ' PIC X(33).
 1750           05 VALUE 'VENABLE                         ' PIC X(33).      OBSOLETE
 1751 GC0710    05 VALUE 'KEND                            ' PIC X(33).
 1752           05 VALUE ' END-ACCEPT                     ' PIC X(33).
 1753           05 VALUE ' END-ADD                        ' PIC X(33).
 1754           05 VALUE ' END-CALL                       ' PIC X(33).
 1755           05 VALUE ' END-CHAIN                      ' PIC X(33).      UNIMPLEMENTED
 1756           05 VALUE ' END-COMPUTE                    ' PIC X(33).
 1757           05 VALUE ' END-DELETE                     ' PIC X(33).
 1758           05 VALUE ' END-DISPLAY                    ' PIC X(33).
 1759           05 VALUE ' END-DIVIDE                     ' PIC X(33).
 1760           05 VALUE ' END-EVALUATE                   ' PIC X(33).
 1761           05 VALUE ' END-IF                         ' PIC X(33).
 1762           05 VALUE ' END-MULTIPLY                   ' PIC X(33).
 1763           05 VALUE ' END-OF-PAGE                    ' PIC X(33).
 1764           05 VALUE ' END-PERFORM                    ' PIC X(33).
 1765           05 VALUE ' END-READ                       ' PIC X(33).
 1766           05 VALUE ' END-RECEIVE                    ' PIC X(33).      OBSOLETE
 1767           05 VALUE ' END-RETURN                     ' PIC X(33).
 1768           05 VALUE ' END-REWRITE                    ' PIC X(33).
 1769           05 VALUE ' END-SEARCH                     ' PIC X(33).
 1770           05 VALUE ' END-START                      ' PIC X(33).
 1771           05 VALUE ' END-STRING                     ' PIC X(33).
 1772           05 VALUE ' END-SUBTRACT                   ' PIC X(33).
 1773           05 VALUE ' END-UNSTRING                   ' PIC X(33).
 1774           05 VALUE ' END-WRITE                      ' PIC X(33).
 1775           05 VALUE 'VENTRY                          ' PIC X(33).
 1776           05 VALUE ' ENTRY-CONVENTION               ' PIC X(33).      UNIMPLEMENTED
 1777           05 VALUE 'KENVIRONMENT                    ' PIC X(33).
 1778           05 VALUE ' ENVIRONMENT-NAME               ' PIC X(33).
 1779           05 VALUE ' ENVIRONMENT-VALUE              ' PIC X(33).
 1780           05 VALUE ' EO                             ' PIC X(33).      UNIMPLEMENTED
 1781           05 VALUE ' EOL                            ' PIC X(33).
 1782           05 VALUE ' EOP                            ' PIC X(33).
 1783           05 VALUE ' EOS                            ' PIC X(33).
 1784           05 VALUE ' EQUAL                          ' PIC X(33).
 1785           05 VALUE 'KEQUALS                         ' PIC X(33).
 1786           05 VALUE ' ERASE                          ' PIC X(33).
 1787           05 VALUE ' ERROR                          ' PIC X(33).
 1788           05 VALUE ' ESCAPE                         ' PIC X(33).
 1789           05 VALUE ' ESI                            ' PIC X(33).      OBSOLETE
 1790           05 VALUE 'VEVALUATE                       ' PIC X(33).
 1791           05 VALUE ' EXCEPTION                      ' PIC X(33).
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GNUCOBOL 3.0 24DEC2017  Source Listing                                2017/12/24
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                      Page: 43
====== ========================================================================
  1792 GC1213     05 VALUE 'FEXCEPTION-FILE            ' PIC X(33).
  1793 GC1213     05 VALUE 'FEXCEPTION-FILE-N          ' PIC X(33).     UNIMPLEMENTED
  1794 GC1213     05 VALUE 'FEXCEPTION-LOCATION        ' PIC X(33).
  1795 GC1213     05 VALUE 'FEXCEPTION-LOCATION-N      ' PIC X(33).     UNIMPLEMENTED
  1796            05 VALUE ' EXCEPTION-OBJECT          ' PIC X(33).     UNIMPLEMENTED
  1797 GC1213     05 VALUE 'FEXCEPTION-STATEMENT       ' PIC X(33).
  1798 GC1213     05 VALUE 'FEXCEPTION-STATUS          ' PIC X(33).
  1799            05 VALUE ' EXCLUSIVE                 ' PIC X(33).
  1800            05 VALUE 'VEXIT                      ' PIC X(33).
  1801 GC1213     05 VALUE 'FEXP                       ' PIC X(33).
  1802 GC1213     05 VALUE 'FEXP10                     ' PIC X(33).
  1803            05 VALUE ' EXPANDS                   ' PIC X(33).     UNIMPLEMENTED
  1804            05 VALUE ' EXTEND                    ' PIC X(33).
  1805            05 VALUE ' EXTERNAL                  ' PIC X(33).
  1806 GC1213     05 VALUE 'FFACTORIAL                 ' PIC X(33).
  1807            05 VALUE ' FACTORY                   ' PIC X(33).     UNIMPLEMENTED
  1808            05 VALUE ' FALSE                     ' PIC X(33).
  1809            05 VALUE 'KFD                        ' PIC X(33).
  1810            05 VALUE 'KFILE                      ' PIC X(33).
  1811            05 VALUE ' FILE-CONTROL              ' PIC X(33).
  1812            05 VALUE ' FILE-ID                   ' PIC X(33).
  1813 GC1113     05 VALUE ' FILLER                    ' PIC X(33).
  1814            05 VALUE ' FINAL                     ' PIC X(33).
  1815            05 VALUE ' FIRST                     ' PIC X(33).
  1816 GC0712     05 VALUE ' FLOAT-BINARY-128          ' PIC X(33).     UNIMPLEMENTED
  1817 GC0712     05 VALUE ' FLOAT-BINARY-32           ' PIC X(33).     UNIMPLEMENTED
  1818 GC0712     05 VALUE ' FLOAT-BINARY-64           ' PIC X(33).     UNIMPLEMENTED
  1819            05 VALUE ' FLOAT-DECIMAL-16          ' PIC X(33).
  1820            05 VALUE ' FLOAT-DECIMAL-34          ' PIC X(33).
  1821            05 VALUE ' FLOAT-EXTENDED            ' PIC X(33).     UNIMPLEMENTED
  1822 GC0712     05 VALUE ' FLOAT-INFINITY            ' PIC X(33).     UNIMPLEMENTED
  1823            05 VALUE ' FLOAT-LONG                ' PIC X(33).
  1824 GC0712     05 VALUE ' FLOAT-NOT-A-NUMBER        ' PIC X(33).     UNIMPLEMENTED
  1825            05 VALUE ' FLOAT-SHORT               ' PIC X(33).
  1826            05 VALUE ' FOOTING                   ' PIC X(33).
  1827            05 VALUE ' FOR                       ' PIC X(33).
  1828            05 VALUE ' FOREGROUND-COLOR          ' PIC X(33).
  1829            05 VALUE ' FOREGROUND-COLOUR         ' PIC X(33).
  1830 GC0711     05 VALUE ' FOREVER                   ' PIC X(33).
  1831            05 VALUE ' FORMAT                    ' PIC X(33).     UNIMPLEMENTED
  1832 GC1213     05 VALUE 'FFORMATTED-CURRENT-DATE    ' PIC X(33).     UNIMPLEMENTED
  1833 GC1213     05 VALUE 'FFORMATTED-DATE            ' PIC X(33).     UNIMPLEMENTED
  1834 GC1213     05 VALUE 'FFORMATTED-DATETIME        ' PIC X(33).     UNIMPLEMENTED
  1835 GC1213     05 VALUE 'FFORMATTED-TIME            ' PIC X(33).     UNIMPLEMENTED
  1836            05 VALUE 'MFORMFEED                  ' PIC X(33).
  1837 GC1213     05 VALUE 'FFRACTION-PART             ' PIC X(33).
  1838            05 VALUE 'VFREE                      ' PIC X(33).
  1839            05 VALUE ' FROM                      ' PIC X(33).
  1840            05 VALUE ' FULL                      ' PIC X(33).
  1841            05 VALUE ' FUNCTION                  ' PIC X(33).
  1842 GC0712     05 VALUE 'KFUNCTION-ID               ' PIC X(33).
  1843            05 VALUE ' FUNCTION-POINTER          ' PIC X(33).     UNIMPLEMENTED
  1844            05 VALUE 'VGENERATE                  ' PIC X(33).

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  1845            05 VALUE ' GET               ' PIC X(33).     UNIMPLEMENTED
  1846            05 VALUE 'KGIVING             ' PIC X(33).
  1847            05 VALUE ' GLOBAL             ' PIC X(33).
  1848            05 VALUE 'VGO                 ' PIC X(33).
  1849            05 VALUE 'VGOBACK             ' PIC X(33).
  1850            05 VALUE ' GREATER            ' PIC X(33).
  1851            05 VALUE ' GROUP              ' PIC X(33).
  1852            05 VALUE ' GROUP-USAGE        ' PIC X(33).     UNIMPLEMENTED
  1853            05 VALUE ' HEADING            ' PIC X(33).
  1854            05 VALUE ' HIGH-VALUE         ' PIC X(33).
  1855            05 VALUE ' HIGH-VALUES        ' PIC X(33).
  1856 GC1213     05 VALUE 'FHIGHEST-ALGEBRAIC  ' PIC X(33).
  1857            05 VALUE ' HIGHLIGHT          ' PIC X(33).
  1858            05 VALUE ' I-O                ' PIC X(33).
  1859            05 VALUE ' I-O-CONTROL        ' PIC X(33).
  1860            05 VALUE 'KID                 ' PIC X(33).
  1861            05 VALUE 'KIDENTIFICATION     ' PIC X(33).
  1862            05 VALUE 'VIF                 ' PIC X(33).
  1863            05 VALUE ' IGNORE             ' PIC X(33).
  1864            05 VALUE ' IGNORING           ' PIC X(33).
  1865            05 VALUE ' IMPLEMENTS         ' PIC X(33).     UNIMPLEMENTED
  1866            05 VALUE ' IN                 ' PIC X(33).
  1867            05 VALUE ' INDEX              ' PIC X(33).
  1868            05 VALUE 'KINDEXED            ' PIC X(33).
  1869            05 VALUE ' INDICATE           ' PIC X(33).
  1870            05 VALUE ' INDIRECT           ' PIC X(33).     UNIMPLEMENTED
  1871            05 VALUE ' INHERITS           ' PIC X(33).     UNIMPLEMENTED
  1872            05 VALUE ' INITIAL            ' PIC X(33).
  1873            05 VALUE 'VINITIALISE         ' PIC X(33).
  1874            05 VALUE ' INITIALISED        ' PIC X(33).
  1875            05 VALUE 'VINITIALIZE         ' PIC X(33).
  1876            05 VALUE ' INITIALIZED        ' PIC X(33).
  1877            05 VALUE 'VINITIATE           ' PIC X(33).
  1878            05 VALUE ' INPUT              ' PIC X(33).
  1879            05 VALUE 'KINPUT-OUTPUT       ' PIC X(33).
  1880            05 VALUE 'VINSPECT            ' PIC X(33).
  1881            05 VALUE ' INSTALLATION       ' PIC X(33).     OBSOLETE
  1882 GC1213     05 VALUE 'FINTEGER            ' PIC X(33).
  1883 GC1213     05 VALUE 'FINTEGER-OF-BOOLEAN ' PIC X(33).     UNIMPLEMENTED
  1884 GC1213     05 VALUE 'FINTEGER-OF-DATE    ' PIC X(33).
  1885 GC1213     05 VALUE 'FINTEGER-OF-DAY     ' PIC X(33).
  1886 GC1213     05 VALUE 'FINTEGER-OF-FORMATTED-DATE ' PIC X(33).  UNIMPLEMENTED
  1887 GC1213     05 VALUE 'FINTEGER-PART       ' PIC X(33).
  1888            05 VALUE ' INTERFACE          ' PIC X(33).     UNIMPLEMENTED
  1889            05 VALUE ' INTERFACE-ID       ' PIC X(33).     UNIMPLEMENTED
  1890            05 VALUE ' INTERMEDIATE       ' PIC X(33).     UNIMPLEMENTED
  1891            05 VALUE 'KINTO               ' PIC X(33).
  1892            05 VALUE ' INTRINSIC          ' PIC X(33).
  1893            05 VALUE ' INVALID            ' PIC X(33).
  1894            05 VALUE ' INVOKE             ' PIC X(33).     UNIMPLEMENTED
  1895            05 VALUE ' IS                 ' PIC X(33).
  1896            05 VALUE ' JUST               ' PIC X(33).
  1897            05 VALUE ' JUSTIFIED          ' PIC X(33).
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  1898            05 VALUE ' KEPT                           ' PIC X(33).
  1899            05 VALUE ' KEY                            ' PIC X(33).
  1900            05 VALUE ' KEYBOARD                       ' PIC X(33).
  1901            05 VALUE ' LABEL                          ' PIC X(33).
  1902            05 VALUE ' LAST                           ' PIC X(33).
  1903            05 VALUE ' LC_ALL                         ' PIC X(33).      UNIMPLEMENTED
  1904            05 VALUE ' LC_COLLATE                     ' PIC X(33).      UNIMPLEMENTED
  1905            05 VALUE ' LC_CTYPE                       ' PIC X(33).      UNIMPLEMENTED
  1906            05 VALUE ' LC_MESSAGES                    ' PIC X(33).      UNIMPLEMENTED
  1907            05 VALUE ' LC_MONETARY                    ' PIC X(33).      UNIMPLEMENTED
  1908            05 VALUE ' LC_NUMERIC                     ' PIC X(33).      UNIMPLEMENTED
  1909            05 VALUE ' LC_TIME                        ' PIC X(33).      UNIMPLEMENTED
  1910            05 VALUE ' LEADING                        ' PIC X(33).
  1911            05 VALUE ' LEFT                           ' PIC X(33).
  1912            05 VALUE ' LEFT-JUSTIFY                   ' PIC X(33).      UNIMPLEMENTED
  1913            05 VALUE ' LEFTLINE                       ' PIC X(33).
  1914 GC1213     05 VALUE 'FLENGTH                         ' PIC X(33).
  1915 GC1213     05 VALUE 'FLENGTH-AN                      ' PIC X(33).
  1916            05 VALUE ' LENGTH-CHECK                   ' PIC X(33).
  1917            05 VALUE ' LESS                           ' PIC X(33).
  1918            05 VALUE ' LIMIT                          ' PIC X(33).
  1919            05 VALUE ' LIMITS                         ' PIC X(33).
  1920            05 VALUE ' LINAGE                         ' PIC X(33).
  1921            05 VALUE 'ILINAGE-COUNTER                 ' PIC X(33).
  1922            05 VALUE ' LINE                           ' PIC X(33).
  1923 GC1213     05 VALUE 'ILINE-COUNTER                   ' PIC X(33).
  1924            05 VALUE ' LINES                          ' PIC X(33).
  1925            05 VALUE 'KLINKAGE                        ' PIC X(33).
  1926            05 VALUE 'KLOCAL-STORAGE                  ' PIC X(33).
  1927            05 VALUE ' LOCALE                         ' PIC X(33).
  1928 GC1213     05 VALUE 'FLOCALE-COMPARE                 ' PIC X(33).
  1929 GC1213     05 VALUE 'FLOCALE-DATE                    ' PIC X(33).
  1930 GC1213     05 VALUE 'FLOCALE-TIME                    ' PIC X(33).
  1931 GC1213     05 VALUE 'FLOCALE-TIME-FROM-SECONDS       ' PIC X(33).
  1932            05 VALUE ' LOCK                           ' PIC X(33).
  1933 GC1213     05 VALUE 'FLOG                            ' PIC X(33).
  1934 GC1213     05 VALUE 'FLOG10                          ' PIC X(33).
  1935            05 VALUE ' LOW-VALUE                      ' PIC X(33).
  1936            05 VALUE ' LOW-VALUES                     ' PIC X(33).
  1937            05 VALUE ' LOWER                          ' PIC X(33).
  1938 GC1213     05 VALUE 'FLOWER-CASE                     ' PIC X(33).
  1939 GC1213     05 VALUE 'FLOWEST-ALGEBRAIC               ' PIC X(33).
  1940            05 VALUE ' LOWLIGHT                       ' PIC X(33).
  1941            05 VALUE ' MANUAL                         ' PIC X(33).
  1942 GC1213     05 VALUE 'FMAX                            ' PIC X(33).
  1943 GC1213     05 VALUE 'FMEAN                           ' PIC X(33).
  1944 GC1213     05 VALUE 'FMEDIAN                         ' PIC X(33).
  1945            05 VALUE ' MEMORY                         ' PIC X(33).
  1946            05 VALUE 'VMERGE                          ' PIC X(33).
  1947            05 VALUE ' MESSAGE                        ' PIC X(33).      OBSOLETE
  1948            05 VALUE ' METHOD                         ' PIC X(33).      UNIMPLEMENTED
  1949            05 VALUE ' METHOD-ID                      ' PIC X(33).      UNIMPLEMENTED
  1950 GC1213     05 VALUE 'FMIDRANGE                       ' PIC X(33).

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 1951 GC1213      05 VALUE 'FMIN                            ' PIC X(33).
 1952              05 VALUE ' MINUS                          ' PIC X(33).
 1953 GC1213      05 VALUE 'FMOD                            ' PIC X(33).
 1954              05 VALUE ' MODE                           ' PIC X(33).
 1955 GC1213      05 VALUE 'FMODULE-CALLER-ID               ' PIC X(33).
 1956 GC1213      05 VALUE 'FMODULE-DATE                    ' PIC X(33).
 1957 GC1213      05 VALUE 'FMODULE-FORMATTED-DATE          ' PIC X(33).
 1958 GC1213      05 VALUE 'FMODULE-ID                      ' PIC X(33).
 1959 GC1213      05 VALUE 'FMODULE-PATH                    ' PIC X(33).
 1960 GC1213      05 VALUE 'FMODULE-SOURCE                  ' PIC X(33).
 1961 GC1213      05 VALUE 'FMODULE-TIME                    ' PIC X(33).
 1962 GC1213      05 VALUE 'FMONETARY-DECIMAL-POINT         ' PIC X(33).
 1963 GC1213      05 VALUE 'FMONETARY-THOUSANDS-SEPARATOR   ' PIC X(33).
 1964              05 VALUE 'VMOVE                           ' PIC X(33).
 1965              05 VALUE ' MULTIPLE                       ' PIC X(33).
 1966              05 VALUE 'VMULTIPLY                       ' PIC X(33).
 1967 GC0711      05 VALUE ' NAME                           ' PIC X(33).
 1968              05 VALUE ' NATIONAL                       ' PIC X(33).
 1969              05 VALUE ' NATIONAL-EDITED                ' PIC X(33).
 1970 GC1213      05 VALUE 'FNATIONAL-OF                    ' PIC X(33).      UNIMPLEMENTED
 1971              05 VALUE ' NATIVE                         ' PIC X(33).
 1972              05 VALUE ' NEAREST-AWAY-FROM-ZERO         ' PIC X(33).
 1973              05 VALUE ' NEAREST-EVEN                   ' PIC X(33).
 1974              05 VALUE ' NEAREST-TOWARD-ZERO            ' PIC X(33).
 1975              05 VALUE ' NEGATIVE                       ' PIC X(33).
 1976              05 VALUE ' NESTED                         ' PIC X(33).      UNIMPLEMENTED
 1977              05 VALUE 'VNEXT                           ' PIC X(33).
 1978              05 VALUE ' NO                             ' PIC X(33).
 1979              05 VALUE ' NO-ECHO                        ' PIC X(33).
 1980              05 VALUE ' NONE                           ' PIC X(33).      UNIMPLEMENTED
 1981              05 VALUE ' NORMAL                         ' PIC X(33).
 1982              05 VALUE ' NOT                            ' PIC X(33).
 1983              05 VALUE ' NULL                           ' PIC X(33).
 1984              05 VALUE ' NULLS                          ' PIC X(33).
 1985              05 VALUE ' NUMBER                         ' PIC X(33).
 1986              05 VALUE 'INUMBER-OF-CALL-PARAMETERS      ' PIC X(33).
 1987              05 VALUE ' NUMBERS                        ' PIC X(33).
 1988              05 VALUE ' NUMERIC                        ' PIC X(33).
 1989 GC1213      05 VALUE 'FNUMERIC-DECIMAL-POINT          ' PIC X(33).
 1990              05 VALUE ' NUMERIC-EDITED                 ' PIC X(33).
 1991 GC1213      05 VALUE 'FNUMERIC-THOUSANDS-SEPARATOR    ' PIC X(33).
 1992 GC1213      05 VALUE 'FNUMVAL                         ' PIC X(33).
 1993 GC1213      05 VALUE 'FNUMVAL-C                       ' PIC X(33).
 1994 GC1213      05 VALUE 'FNUMVAL-F                       ' PIC X(33).
 1995              05 VALUE ' OBJECT                         ' PIC X(33).      UNIMPLEMENTED
 1996              05 VALUE ' OBJECT-COMPUTER                ' PIC X(33).
 1997              05 VALUE ' OBJECT-REFERENCE               ' PIC X(33).      UNIMPLEMENTED
 1998              05 VALUE ' OCCURS                         ' PIC X(33).
 1999              05 VALUE ' OF                             ' PIC X(33).
 2000              05 VALUE ' OFF                            ' PIC X(33).
 2001              05 VALUE ' OMITTED                        ' PIC X(33).
 2002              05 VALUE ' ON                             ' PIC X(33).
 2003              05 VALUE ' ONLY                           ' PIC X(33).

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 2004   05 VALUE 'VOPEN   ' PIC X(33).
 2005   05 VALUE ' OPTIONAL   ' PIC X(33).
 2006   05 VALUE ' OPTIONS   ' PIC X(33).   UNIMPLEMENTED
 2007   05 VALUE ' OR   ' PIC X(33).
 2008 GC1213   05 VALUE 'FORD   ' PIC X(33).
 2009 GC1213   05 VALUE 'FORD-MAX   ' PIC X(33).
 2010 GC1213   05 VALUE 'FORD-MIN   ' PIC X(33).
 2011   05 VALUE ' ORDER   ' PIC X(33).
 2012   05 VALUE ' ORGANISATION   ' PIC X(33).
 2013   05 VALUE ' ORGANIZATION   ' PIC X(33).
 2014   05 VALUE ' OTHER   ' PIC X(33).
 2015   05 VALUE ' OUTPUT   ' PIC X(33).
 2016   05 VALUE ' OVERFLOW   ' PIC X(33).
 2017   05 VALUE ' OVERLINE   ' PIC X(33).
 2018   05 VALUE ' OVERRIDE   ' PIC X(33).
 2019   05 VALUE ' PACKED-DECIMAL   ' PIC X(33).
 2020   05 VALUE ' PADDING   ' PIC X(33).
 2021   05 VALUE ' PAGE   ' PIC X(33).
 2022 GC1213   05 VALUE 'IPAGE-COUNTER   ' PIC X(33).
 2023   05 VALUE ' PARAGRAPH   ' PIC X(33).
 2024   05 VALUE 'VPERFORM   ' PIC X(33).
 2025   05 VALUE ' PF   ' PIC X(33).
 2026   05 VALUE ' PH   ' PIC X(33).
 2027 GC1213   05 VALUE 'FPI   ' PIC X(33).
 2028   05 VALUE 'KPIC   ' PIC X(33).
 2029   05 VALUE 'KPICTURE   ' PIC X(33).
 2030   05 VALUE ' PLUS   ' PIC X(33).
 2031   05 VALUE 'KPOINTER   ' PIC X(33).
 2032   05 VALUE ' POSITION   ' PIC X(33).
 2033   05 VALUE ' POSITIVE   ' PIC X(33).
 2034   05 VALUE ' PREFIXED   ' PIC X(33).   UNIMPLEMENTED
 2035   05 VALUE ' PRESENT   ' PIC X(33).
 2036 GC1213   05 VALUE 'FPRESENT-VALUE   ' PIC X(33).
 2037   05 VALUE ' PREVIOUS   ' PIC X(33).
 2038   05 VALUE 'MPRINTER   ' PIC X(33).
 2039   05 VALUE ' PRINTING   ' PIC X(33).
 2040   05 VALUE 'KPROCEDURE   ' PIC X(33).
 2041   05 VALUE ' PROCEDURE-POINTER   ' PIC X(33).
 2042   05 VALUE ' PROCEDURES   ' PIC X(33).
 2043   05 VALUE ' PROCEED   ' PIC X(33).
 2044   05 VALUE ' PROGRAM   ' PIC X(33).
 2045   05 VALUE 'KPROGRAM-ID   ' PIC X(33).
 2046   05 VALUE ' PROGRAM-POINTER   ' PIC X(33).
 2047   05 VALUE ' PROHIBITED   ' PIC X(33).
 2048   05 VALUE ' PROMPT   ' PIC X(33).
 2049   05 VALUE ' PROPERTY   ' PIC X(33).   UNIMPLEMENTED
 2050   05 VALUE ' PROTOTYPE   ' PIC X(33).   UNIMPLEMENTED
 2051   05 VALUE ' PURGE   ' PIC X(33).   OBSOLETE
 2052   05 VALUE ' QUEUE   ' PIC X(33).   OBSOLETE
 2053   05 VALUE ' QUOTE   ' PIC X(33).
 2054   05 VALUE ' QUOTES   ' PIC X(33).
 2055   05 VALUE ' RAISE   ' PIC X(33).   UNIMPLEMENTED
 2056   05 VALUE ' RAISING   ' PIC X(33).   UNIMPLEMENTED

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  2057 GC1213      05 VALUE 'FRANDOM                         ' PIC X(33).
  2058 GC1213      05 VALUE 'FRANGE                          ' PIC X(33).
  2059 GC1213      05 VALUE 'KRD                             ' PIC X(33).
  2060            05 VALUE 'VREAD                           ' PIC X(33).
  2061            05 VALUE 'VREADY                          ' PIC X(33).
  2062            05 VALUE 'VRECEIVE                        ' PIC X(33).       OBSOLETE
  2063            05 VALUE ' RECORD                         ' PIC X(33).
  2064            05 VALUE ' RECORDING                      ' PIC X(33).
  2065            05 VALUE ' RECORDS                        ' PIC X(33).
  2066            05 VALUE ' RECURSIVE                      ' PIC X(33).
  2067            05 VALUE 'KREDEFINES                      ' PIC X(33).
  2068            05 VALUE ' REEL                           ' PIC X(33).
  2069 GC0712      05 VALUE 'AREFERENCE                      ' PIC X(33).
  2070            05 VALUE ' REFERENCES                     ' PIC X(33).
  2071            05 VALUE ' RELATION                       ' PIC X(33).       UNIMPLEMENTED
  2072            05 VALUE ' RELATIVE                       ' PIC X(33).
  2073            05 VALUE 'VRELEASE                        ' PIC X(33).
  2074 GC1213      05 VALUE 'FREM                            ' PIC X(33).
  2075            05 VALUE ' REMAINDER                      ' PIC X(33).
  2076            05 VALUE ' REMARKS                        ' PIC X(33).       OBSOLETE
  2077            05 VALUE ' REMOVAL                        ' PIC X(33).
  2078            05 VALUE 'KRENAMES                        ' PIC X(33).
  2079            05 VALUE ' REPLACE                        ' PIC X(33).
  2080            05 VALUE 'KREPLACING                      ' PIC X(33).
  2081            05 VALUE 'KREPORT                         ' PIC X(33).
  2082            05 VALUE ' REPORTING                      ' PIC X(33).
  2083            05 VALUE ' REPORTS                        ' PIC X(33).
  2084            05 VALUE ' REPOSITORY                     ' PIC X(33).
  2085            05 VALUE ' REQUIRED                       ' PIC X(33).
  2086            05 VALUE ' RESERVE                        ' PIC X(33).
  2087            05 VALUE 'VRESET                          ' PIC X(33).
  2088            05 VALUE ' RESUME                         ' PIC X(33).       UNIMPLEMENTED
  2089            05 VALUE ' RETRY                          ' PIC X(33).       UNIMPLEMENTED
  2090            05 VALUE 'VRETURN                         ' PIC X(33).
  2091            05 VALUE 'IRETURN-CODE                    ' PIC X(33).
  2092            05 VALUE 'KRETURNING                      ' PIC X(33).
  2093 GC1213      05 VALUE 'FREVERSE                        ' PIC X(33).
  2094            05 VALUE ' REVERSE-VIDEO                  ' PIC X(33).
  2095            05 VALUE ' REVERSED                       ' PIC X(33).
  2096            05 VALUE ' REWIND                         ' PIC X(33).
  2097            05 VALUE 'VREWRITE                        ' PIC X(33).
  2098            05 VALUE ' RF                             ' PIC X(33).
  2099            05 VALUE ' RH                             ' PIC X(33).
  2100            05 VALUE ' RIGHT                          ' PIC X(33).
  2101            05 VALUE ' RIGHT-JUSTIFY                  ' PIC X(33).       UNIMPLEMENTED
  2102            05 VALUE 'VROLLBACK                       ' PIC X(33).
  2103            05 VALUE ' ROUNDED                        ' PIC X(33).
  2104            05 VALUE ' ROUNDING                       ' PIC X(33).       UNIMPLEMENTED
  2105            05 VALUE ' RUN                            ' PIC X(33).
  2106            05 VALUE ' SAME                           ' PIC X(33).
  2107            05 VALUE 'KSCREEN                         ' PIC X(33).
  2108            05 VALUE ' SCROLL                         ' PIC X(33).
  2109            05 VALUE 'KSD                             ' PIC X(33).

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 2111            05 VALUE ' SECONDS                     ' PIC X(33).        UNIMPLEMENTED
 2112 GC1213     05 VALUE 'FSECONDS-FROM-FORMATTED-TIME ' PIC X(33).
 2113 GC1213     05 VALUE 'FSECONDS-PAST-MIDNIGHT       ' PIC X(33).
 2114            05 VALUE 'KSECTION                     ' PIC X(33).
 2115            05 VALUE ' SECURE                      ' PIC X(33).
 2116            05 VALUE ' SECURITY                    ' PIC X(33).        OBSOLETE
 2117            05 VALUE ' SEGMENT                     ' PIC X(33).        OBSOLETE
 2118            05 VALUE ' SEGMENT-LIMIT               ' PIC X(33).
 2119            05 VALUE ' SELECT                      ' PIC X(33).
 2120            05 VALUE ' SELF                        ' PIC X(33).        UNIMPLEMENTED
 2121            05 VALUE 'VSEND                        ' PIC X(33).        OBSOLETE
 2122            05 VALUE ' SENTENCE                    ' PIC X(33).
 2123            05 VALUE ' SEPARATE                    ' PIC X(33).
 2124            05 VALUE ' SEQUENCE                    ' PIC X(33).
 2125            05 VALUE ' SEQUENTIAL                  ' PIC X(33).
 2126            05 VALUE 'VSET                         ' PIC X(33).
 2127            05 VALUE ' SHARING                     ' PIC X(33).
 2128 GC1213     05 VALUE 'FSIGN                        ' PIC X(33).
 2129            05 VALUE ' SIGNED                      ' PIC X(33).
 2130            05 VALUE ' SIGNED-INT                  ' PIC X(33).
 2131            05 VALUE ' SIGNED-LONG                 ' PIC X(33).
 2132            05 VALUE ' SIGNED-SHORT                ' PIC X(33).
 2133 GC1213     05 VALUE 'FSIN                         ' PIC X(33).
 2134            05 VALUE ' SIZE                        ' PIC X(33).
 2135            05 VALUE 'VSORT                        ' PIC X(33).
 2136            05 VALUE ' SORT-MERGE                  ' PIC X(33).
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 2138            05 VALUE ' SOURCE                      ' PIC X(33).
 2139            05 VALUE ' SOURCE-COMPUTER             ' PIC X(33).
 2140            05 VALUE ' SOURCES                     ' PIC X(33).        UNIMPLEMENTED
 2141            05 VALUE ' SPACE                       ' PIC X(33).
 2142            05 VALUE ' SPACE-FILL                  ' PIC X(33).        UNIMPLEMENTED
 2143            05 VALUE ' SPACES                      ' PIC X(33).
 2144            05 VALUE ' SPECIAL-NAMES               ' PIC X(33).
 2145 GC1213     05 VALUE 'FSQRT                        ' PIC X(33).
 2146            05 VALUE ' STANDARD                    ' PIC X(33).
 2147            05 VALUE ' STANDARD-1                  ' PIC X(33).
 2148            05 VALUE ' STANDARD-2                  ' PIC X(33).
 2149            05 VALUE ' STANDARD-BINARY             ' PIC X(33).        UNIMPLEMENTED
 2150 GC1213     05 VALUE 'FSTANDARD-COMPARE            ' PIC X(33).        UNIMPLEMENTED
 2151            05 VALUE ' STANDARD-DECIMAL            ' PIC X(33).        UNIMPLEMENTED
 2152 GC1213     05 VALUE 'FSTANDARD-DEVIATION          ' PIC X(33).
 2153            05 VALUE 'VSTART                       ' PIC X(33).
 2154            05 VALUE ' STATEMENT                   ' PIC X(33).        UNIMPLEMENTED
 2155            05 VALUE ' STATIC                      ' PIC X(33).
 2156            05 VALUE ' STATUS                      ' PIC X(33).
 2157            05 VALUE ' STDCALL                     ' PIC X(33).
 2158            05 VALUE 'MSTDERR                      ' PIC X(33).
 2159            05 VALUE 'MSTDIN                       ' PIC X(33).
 2160            05 VALUE 'MSTDOUT                      ' PIC X(33).
 2161            05 VALUE ' STEP                        ' PIC X(33).
 2162            05 VALUE 'VSTOP                        ' PIC X(33).
====== =========================================================================================
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GNUCOBOL 3.0 24DEC2017  Source Listing                                    2017/12/24
                                             /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                            Page: 50
======= =====================================================================================
 2163 GC1213    05 VALUE 'FSTORED-CHAR-LENGTH           ' PIC X(33).
 2164           05 VALUE 'VSTRING                       ' PIC X(33).
 2165           05 VALUE ' STRONG                       ' PIC X(33).      UNIMPLEMENTED
 2166           05 VALUE ' SUB-QUEUE-1                  ' PIC X(33).      OBSOLETE
 2167           05 VALUE ' SUB-QUEUE-2                  ' PIC X(33).      OBSOLETE
 2168           05 VALUE ' SUB-QUEUE-3                  ' PIC X(33).      OBSOLETE
 2169 GC1213    05 VALUE 'FSUBSTITUTE                   ' PIC X(33).
 2170 GC1213    05 VALUE 'FSUBSTITUTE-CASE              ' PIC X(33).
 2171           05 VALUE 'VSUBTRACT                     ' PIC X(33).
 2172 GC1213    05 VALUE 'FSUM                          ' PIC X(33).
 2173           05 VALUE ' SUPER                        ' PIC X(33).      UNIMPLEMENTED
 2174           05 VALUE 'VSUPPRESS                     ' PIC X(33).
 2175           05 VALUE 'MSW0                          ' PIC X(33).
 2176           05 VALUE 'MSW1                          ' PIC X(33).
 2177           05 VALUE 'MSW10                         ' PIC X(33).
 2178           05 VALUE 'MSW11                         ' PIC X(33).
 2179           05 VALUE 'MSW12                         ' PIC X(33).
 2180           05 VALUE 'MSW13                         ' PIC X(33).
 2181           05 VALUE 'MSW14                         ' PIC X(33).
 2182           05 VALUE 'MSW15                         ' PIC X(33).
 2183           05 VALUE 'MSW2                          ' PIC X(33).
 2184           05 VALUE 'MSW3                          ' PIC X(33).
 2185           05 VALUE 'MSW4                          ' PIC X(33).
 2186           05 VALUE 'MSW5                          ' PIC X(33).
 2187           05 VALUE 'MSW6                          ' PIC X(33).
 2188           05 VALUE 'MSW7                          ' PIC X(33).
 2189           05 VALUE 'MSW8                          ' PIC X(33).
 2190           05 VALUE 'MSW9                          ' PIC X(33).
 2191           05 VALUE 'MSWITCH-0                     ' PIC X(33).
 2192           05 VALUE 'MSWITCH-1                     ' PIC X(33).
 2193           05 VALUE 'MSWITCH-10                    ' PIC X(33).
 2194           05 VALUE 'MSWITCH-11                    ' PIC X(33).
 2195           05 VALUE 'MSWITCH-12                    ' PIC X(33).
 2196           05 VALUE 'MSWITCH-13                    ' PIC X(33).
 2197           05 VALUE 'MSWITCH-14                    ' PIC X(33).
 2198           05 VALUE 'MSWITCH-15                    ' PIC X(33).
 2199           05 VALUE 'MSWITCH-2                     ' PIC X(33).
 2200           05 VALUE 'MSWITCH-3                     ' PIC X(33).
 2201           05 VALUE 'MSWITCH-4                     ' PIC X(33).
 2202           05 VALUE 'MSWITCH-5                     ' PIC X(33).
 2203           05 VALUE 'MSWITCH-6                     ' PIC X(33).
 2204           05 VALUE 'MSWITCH-7                     ' PIC X(33).
 2205           05 VALUE 'MSWITCH-8                     ' PIC X(33).
 2206           05 VALUE 'MSWITCH-9                     ' PIC X(33).
 2207           05 VALUE ' SYMBOL                       ' PIC X(33).      UNIMPLEMENTED
 2208           05 VALUE ' SYMBOLIC                     ' PIC X(33).
 2209           05 VALUE ' SYNC                         ' PIC X(33).
 2210           05 VALUE ' SYNCHRONISED                 ' PIC X(33).
 2211           05 VALUE ' SYNCHRONIZED                 ' PIC X(33).
 2212           05 VALUE 'MSYSERR                       ' PIC X(33).
 2213           05 VALUE 'MSYSIN                        ' PIC X(33).
 2214           05 VALUE 'MSYSIPT                       ' PIC X(33).
 2215           05 VALUE 'MSYSLIST                      ' PIC X(33).

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

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

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GNUCOBOL 3.0 24DEC2017  Source Listing                                    2017/12/24
                                      /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                          Page: 53
====== =============================================================================
  2322
  2323        01  WS-Src-Detail-Line-TXT.
  2324            05 WS-SDL-Line-NUM                   PIC ZZZZZ9.
  2325            05 FILLER                            PIC X(1).
  2326            05 WS-SDL-Statement-TXT              PIC X(256).
  2327
  2328 GC1213 01  WS-Src-Hold-TXT                      PIC X(256).
  2329
  2330        01  WS-Src-Line-NUM                      PIC 9(6).
  2331
  2332 GC1213 01  WS-Src-Lines-NUM                     USAGE BINARY-LONG.
  2333
  2334        01  WS-Src-SUB                           USAGE BINARY-LONG.
  2335
  2336        01  WS-Tally-QTY                         USAGE BINARY-LONG.
  2337
  2338        01  WS-Temp-10-Chars-TXT                 PIC X(10).
  2339
  2340        01  WS-Temp-32-Chars-1-TXT               PIC X(32).
  2341
  2342 GC0711 01  WS-Temp-32-Chars-2-TXT               PIC X(32).
  2343
  2344 GC0711 01  WS-Temp-32-Chars-3-TXT               PIC X(32).
  2345
  2346 GC0712 01  WS-Temp-65-Chars-TXT                 PIC X(65).
  2347
  2348        01  WS-Temp-256-Chars-TXT                PIC X(256).
  2349
  2350        01  WS-Today-DT                          PIC 9(8).
  2351
  2352        01  WS-Token-Curr-TXT                    PIC X(32).
  2353
  2354        01  WS-Token-Curr-Uc-TXT                 PIC X(32).
  2355
  2356        01  WS-Token-Prev-TXT                    PIC X(32).
  2357
  2358        01  WS-Token-Search-TXT                  PIC X(32).
  2359
  2360        01  WS-Token-Type-CD                     PIC X(1).
  2361 GC0712     88 WS-TT-Token-Is-Argtype-BOOL       VALUE 'A'.
  2362            88 WS-TT-Token-Is-EOF-BOOL           VALUE HIGH-VALUES.
  2363 GC1213     88 WS-TT-Token-Is-Function-BOOL      VALUE 'F'.
  2364            88 WS-TT-Token-Is-Identifier-BOOL    VALUE 'I'.
  2365 GC0712     88 WS-TT-Token-Is-Keyword-BOOL       VALUE 'K', 'V', 'A'.
  2366            88 WS-TT-Token-Is-Lit-Alpha-BOOL     VALUE 'L'.
  2367            88 WS-TT-Token-Is-Lit-Number-BOOL    VALUE 'N'.
  2368            88 WS-TT-Token-Is-Verb-BOOL          VALUE 'V'.
  2369 GC1213     88 WS-TT-Token-Is-Reserved-Wd-BOOL  VALUE ' ', 'F'.
  2370
  2371        01  WS-Usernames-QTY                     USAGE BINARY-LONG.
  2372
  2373        01  WS-Version-TXT                       PIC X(23).
  2374
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```
GNUCOBOL 3.0 24DEC2017  Source Listing                                       2017/12/24
                                              /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                            Page: 54
====== ======================================================================================
  2375       01  WS-Xref-Detail-Line-TXT.
  2376           05 WS-XDL-Prog-ID-TXT              PIC X(15).
  2377           05 FILLER                          PIC X(1).
  2378           05 WS-XDL-Token-TXT                PIC X(32).
  2379           05 FILLER                          PIC X(1).
  2380           05 WS-XDL-Def-Line-NUM             PIC ZZZZZ9.
  2381           05 FILLER                          PIC X(1).
  2382           05 WS-XDL-Section-TXT              PIC X(15).
  2383           05 FILLER                          PIC X(1).
  2384           05 WS-XDL-Reference-TXT            OCCURS 8 TIMES.
  2385               10 WS-XDL-Ref-Line-NUM         PIC ZZZZZ9.
  2386               10 WS-XDL-Ref-Flag-CHR         PIC X(1).
  2387               10 FILLER                      PIC X(1).
  2388
  2389 GC1213 01  WS-Xref-Lines-Per-Rec-NUM         PIC 9(1).
  2390
  2391           LINKAGE SECTION.
  2392 GC0712 01  L-Listing-Fn-TXT                  PIC X(256).
  2393
  2394       01  L-Src-Fn-TXT                       PIC X(256).
  2395
  2396 GC0712 01  L-OS-Type-CD                       PIC 9(1).
  2397
  2398 GC1213 01  L-LPP-NUM                          USAGE BINARY-LONG.
  2399
  2400 GC1213 01  L-LPP-Port-NUM                     USAGE BINARY-LONG.
  2401
  2402 GC1213 01  L-Listing-CD                       PIC 9(1).
```

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

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

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

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

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

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```

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

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

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                    2017/12/24
                                           /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                            Page: 60
======  ==========================================================================================
  2603          END-IF
  2604          IF WS-Curr-Char-Is-Punct-BOOL
  2605              ADD 1 TO WS-Src-SUB
  2606              MOVE WS-Curr-CHR TO WS-Token-Curr-TXT
  2607              MOVE SPACE TO WS-Token-Type-CD
  2608              EXIT SECTION
  2609          END-IF
  2610          IF WS-Curr-Char-Is-Quote-BOOL
  2611              ADD 1 TO WS-Src-SUB
  2612              UNSTRING F-Expanded-Src-REC
  2613                  DELIMITED BY WS-Curr-CHR
  2614                  INTO WS-Token-Curr-TXT
  2615                  WITH POINTER WS-Src-SUB
  2616              IF F-Expanded-Src-REC(WS-Src-SUB : 1) = '.'
  2617                  MOVE 'Y' TO WS-RS-Token-Ended-Sentence-CHR
  2618                  ADD 1 TO WS-Src-SUB
  2619              END-IF
  2620              SET WS-TT-Token-Is-Lit-Alpha-BOOL TO TRUE
  2621              EXIT SECTION
  2622          END-IF
  2623          IF WS-Curr-Char-Is-X-BOOL AND WS-Next-Char-Is-Quote-BOOL
  2624              ADD 2 TO WS-Src-SUB
  2625              UNSTRING F-Expanded-Src-REC
  2626                  DELIMITED BY WS-Next-CHR
  2627                  INTO WS-Token-Curr-TXT
  2628                  WITH POINTER WS-Src-SUB
  2629              IF F-Expanded-Src-REC(WS-Src-SUB : 1) = '.'
  2630                  MOVE 'Y' TO WS-RS-Token-Ended-Sentence-CHR
  2631                  ADD 1 TO WS-Src-SUB
  2632              END-IF
  2633              SET WS-TT-Token-Is-Lit-Number-BOOL TO TRUE
  2634              EXIT SECTION
  2635          END-IF
  2636          IF WS-Curr-Char-Is-Z-BOOL AND WS-Next-Char-Is-Quote-BOOL
  2637              ADD 2 TO WS-Src-SUB
  2638              UNSTRING F-Expanded-Src-REC
  2639                  DELIMITED BY WS-Next-CHR
  2640                  INTO WS-Token-Curr-TXT
  2641                  WITH POINTER WS-Src-SUB
  2642              IF F-Expanded-Src-REC(WS-Src-SUB : 1) = '.'
  2643                  MOVE 'Y' TO WS-RS-Token-Ended-Sentence-CHR
  2644                  ADD 1 TO WS-Src-SUB
  2645              END-IF
  2646              SET WS-TT-Token-Is-Lit-Alpha-BOOL TO TRUE
  2647              EXIT SECTION
  2648          END-IF
  2649          IF WS-RS-Processing-PICTURE-CHR = 'Y'
  2650              UNSTRING F-Expanded-Src-REC
  2651                  DELIMITED BY '. ' OR ' '
  2652                  INTO WS-Token-Curr-TXT
  2653                  DELIMITER IN WS-Delim-TXT
  2654                  WITH POINTER WS-Src-SUB
  2655              IF WS-Delim-TXT = '. '
```

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```
  2656                   MOVE 'Y' TO WS-RS-Token-Ended-Sentence-CHR
  2657                   ADD 1 TO WS-Src-SUB
  2658               END-IF
  2659               IF UPPER-CASE(WS-Token-Curr-TXT) = 'IS'
  2660                   MOVE SPACE TO WS-Token-Type-CD
  2661                   EXIT SECTION
  2662               ELSE
  2663                   MOVE 'N' TO WS-RS-Processing-PICTURE-CHR
  2664                   MOVE SPACE TO WS-Token-Type-CD
  2665                   EXIT SECTION
  2666               END-IF
  2667           END-IF
  2668           UNSTRING F-Expanded-Src-REC
  2669               DELIMITED BY '. ' OR ' ' OR '=' OR '(' OR ')' OR '*'
  2670                                   OR '/' OR '&' OR ';' OR ',' OR '<'
  2671                                   OR '>' OR ':'
  2672               INTO WS-Token-Curr-TXT
  2673               DELIMITER IN WS-Delim-TXT
  2674               WITH POINTER WS-Src-SUB
  2675           IF WS-Delim-TXT = '. '
  2676               MOVE 'Y' TO WS-RS-Token-Ended-Sentence-CHR
  2677           END-IF
  2678           IF WS-Delim-TXT NOT = '. ' AND ' '
  2679               SUBTRACT 1 FROM WS-Src-SUB
  2680           END-IF
  2681       *>-- Classify Token
  2682           MOVE UPPER-CASE(WS-Token-Curr-TXT) TO WS-Token-Search-TXT
  2683           IF WS-Token-Search-TXT = 'EQUAL' OR 'EQUALS'
  2684               MOVE 'EQUALS' TO WS-Token-Curr-TXT
  2685               MOVE 'K'      TO WS-Token-Type-CD
  2686               EXIT SECTION
  2687           END-IF
  2688           SEARCH ALL WS-Reserved-Word-TXT
  2689               WHEN WS-RW-Word-TXT (WS-RW-IDX) = WS-Token-Search-TXT
  2690                   MOVE WS-RW-Type-CD (WS-RW-IDX) TO WS-Token-Type-CD
  2691 GC0710            IF WS-TT-Token-Is-Verb-BOOL
  2692 GC0710                MOVE 'Y' TO WS-RS-Verb-Has-Been-Found-CHR
  2693 GC0710            END-IF
  2694                   EXIT SECTION
  2695           END-SEARCH
  2696       *>-- Not a reserved word, must be a user name
  2697           SET WS-TT-Token-Is-Identifier-BOOL TO TRUE
  2698           PERFORM 313-Check-For-Numeric-Token
  2699           IF WS-TT-Token-Is-Lit-Number-BOOL
  2700               IF  (WS-RS-Last-Token-Ended-Sent-CHR = 'Y')
  2701               AND (WS-Curr-Division-TXT = 'D')
  2702                   MOVE 'LEVEL #' TO WS-Token-Curr-TXT
  2703                   MOVE 'K'      TO WS-Token-Type-CD
  2704                   EXIT SECTION
  2705               ELSE
  2706                   EXIT SECTION
  2707               END-IF
  2708           END-IF
```
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GNUCOBOL 3.0 24DEC2017  Source Listing                                    2017/12/24
                                           /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                          Page: 62
====== =====================================================================================
  2709            .
```

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

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

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

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

====== ==

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

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

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

====== ===
  2908   EXIT SECTION
  2909   END-IF
  2910   .

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

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

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

====== ==

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

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

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```

```
GNUCOBOL 3.0 24DEC2017  Source Listing                                    2017/12/24
                                              /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                            Page: 74
======  ===================================================================================
  3088                  MOVE WS-Held-Reference-TXT TO F-Sort-Work-REC
  3089                  MOVE SPACES          TO WS-Held-Reference-TXT
  3090                  MOVE '*'             TO F-SW-Ref-Flag-CHR
  3091                  RELEASE F-Sort-Work-REC
  3092              END-IF
  3093              MOVE SPACES TO WS-Token-Prev-TXT
  3094          WHEN 'CONVERTING'
  3095              IF WS-Held-Reference-TXT NOT = SPACES
  3096                  MOVE WS-Held-Reference-TXT TO F-Sort-Work-REC
  3097                  MOVE SPACES          TO WS-Held-Reference-TXT
  3098                  MOVE '*'             TO F-SW-Ref-Flag-CHR
  3099                  RELEASE F-Sort-Work-REC
  3100              END-IF
  3101              MOVE SPACES TO WS-Token-Prev-TXT
  3102          WHEN OTHER
  3103              PERFORM 361-Release-Ref
  3104          END-EVALUATE
  3105          .
  3106
  3107      351-MOVE SECTION.
  3108          EVALUATE WS-Token-Prev-TXT
  3109          WHEN 'TO'
  3110              PERFORM 362-Release-Upd
  3111          WHEN OTHER
  3112              PERFORM 361-Release-Ref
  3113          END-EVALUATE
  3114          .
  3115
  3116      351-MULTIPLY SECTION.
  3117          EVALUATE WS-Token-Prev-TXT
  3118          WHEN 'BY'
  3119              PERFORM 363-Set-Upd
  3120              MOVE F-Sort-Work-REC TO WS-Held-Reference-TXT
  3121          WHEN 'GIVING'
  3122              MOVE WS-Held-Reference-TXT TO F-Sort-Work-REC
  3123              MOVE SPACES          TO WS-Held-Reference-TXT
  3124                                      F-SW-Ref-Flag-CHR
  3125              RELEASE F-Sort-Work-REC
  3126              PERFORM 362-Release-Upd
  3127          WHEN OTHER
  3128              PERFORM 361-Release-Ref
  3129          END-EVALUATE
  3130          .
  3131
  3132      351-PERFORM SECTION.
  3133          EVALUATE WS-Token-Prev-TXT
  3134          WHEN 'VARYING'
  3135              PERFORM 362-Release-Upd
  3136              MOVE SPACES TO WS-Token-Prev-TXT
  3137          WHEN 'AFTER'
  3138              PERFORM 362-Release-Upd
  3139              MOVE SPACES TO WS-Token-Prev-TXT
  3140          WHEN OTHER
```

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====== ===
```
 3141                    PERFORM 361-Release-Ref
 3142                END-EVALUATE
 3143                    .
 3144
 3145        351-SET SECTION.
 3146            EVALUATE WS-Token-Prev-TXT
 3147            WHEN 'SET'
 3148                PERFORM 362-Release-Upd
 3149            WHEN OTHER
 3150                PERFORM 361-Release-Ref
 3151            END-EVALUATE
 3152                .
 3153
 3154        351-STRING SECTION.
 3155            EVALUATE WS-Token-Prev-TXT
 3156            WHEN 'INTO'
 3157                PERFORM 362-Release-Upd
 3158            WHEN 'POINTER'
 3159                PERFORM 362-Release-Upd
 3160            WHEN OTHER
 3161                PERFORM 361-Release-Ref
 3162            END-EVALUATE
 3163                .
 3164
 3165        351-SUBTRACT SECTION.
 3166            EVALUATE WS-Token-Prev-TXT
 3167            WHEN 'GIVING'
 3168                PERFORM 362-Release-Upd
 3169            WHEN 'FROM'
 3170                PERFORM 362-Release-Upd
 3171            WHEN OTHER
 3172                PERFORM 361-Release-Ref
 3173            END-EVALUATE
 3174                .
 3175
 3176 GC1213 351-TERMINATE SECTION.
 3177 GC1213     PERFORM 362-Release-Upd
 3178 GC1213         .
 3179
 3180        351-TRANSFORM SECTION.
 3181            EVALUATE WS-Token-Prev-TXT
 3182            WHEN 'TRANSFORM'
 3183                PERFORM 362-Release-Upd
 3184                MOVE SPACES TO WS-Token-Prev-TXT
 3185            WHEN OTHER
 3186                PERFORM 361-Release-Ref
 3187            END-EVALUATE
 3188                .
 3189
 3190        351-UNSTRING SECTION.
 3191            EVALUATE WS-Token-Prev-TXT
 3192            WHEN 'INTO'
 3193                PERFORM 362-Release-Upd
```
==

====== ===
```
 3194              WHEN 'DELIMITER'
 3195                  PERFORM 362-Release-Upd
 3196              WHEN 'COUNT'
 3197                  PERFORM 362-Release-Upd
 3198              WHEN 'POINTER'
 3199                  PERFORM 362-Release-Upd
 3200              WHEN 'TALLYING'
 3201                  PERFORM 362-Release-Upd
 3202              WHEN OTHER
 3203                  PERFORM 361-Release-Ref
 3204              END-EVALUATE
 3205              .
 3206
 3207       360-Release-Def SECTION.
 3208              MOVE SPACES                TO F-Sort-Work-REC
 3209              MOVE WS-Curr-Prog-ID-TXT    TO F-SW-Prog-ID-TXT
 3210              MOVE WS-Token-Curr-Uc-TXT   TO F-SW-Token-Uc-TXT
 3211              MOVE WS-Token-Curr-TXT      TO F-SW-Token-TXT
 3212              MOVE WS-Curr-Section-TXT    TO F-SW-Section-TXT
 3213              MOVE WS-Curr-Line-NUM       TO F-SW-Def-Line-NUM
 3214              MOVE 0                      TO F-SW-Ref-Line-NUM
 3215              RELEASE F-Sort-Work-REC
 3216              .
 3217
 3218       361-Release-Ref SECTION.
 3219              PERFORM 364-Set-Ref
 3220              RELEASE F-Sort-Work-REC
 3221              .
 3222
 3223       362-Release-Upd SECTION.
 3224              PERFORM 363-Set-Upd
 3225              RELEASE F-Sort-Work-REC
 3226              .
 3227
 3228       363-Set-Upd SECTION.
 3229              MOVE SPACES                TO F-Sort-Work-REC
 3230              MOVE WS-Curr-Prog-ID-TXT    TO F-SW-Prog-ID-TXT
 3231              MOVE WS-Token-Curr-Uc-TXT   TO F-SW-Token-Uc-TXT
 3232              MOVE WS-Token-Curr-TXT      TO F-SW-Token-TXT
 3233              MOVE WS-Curr-Section-TXT    TO F-SW-Section-TXT
 3234              MOVE WS-Curr-Line-NUM       TO F-SW-Ref-Line-NUM
 3235              MOVE '*'                    TO F-SW-Ref-Flag-CHR
 3236              .
 3237
 3238       364-Set-Ref SECTION.
 3239              MOVE SPACES                TO F-Sort-Work-REC
 3240              MOVE WS-Curr-Prog-ID-TXT    TO F-SW-Prog-ID-TXT
 3241              MOVE WS-Token-Curr-Uc-TXT   TO F-SW-Token-Uc-TXT
 3242              MOVE WS-Token-Curr-TXT      TO F-SW-Token-TXT
 3243              MOVE WS-Curr-Section-TXT    TO F-SW-Section-TXT
 3244              MOVE WS-Curr-Line-NUM       TO F-SW-Ref-Line-NUM
 3245              .
 3246
```
===

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

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

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

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

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

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

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

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


====================================================================================================
GCic for UNIX/Linux Copyright (C) 2009-2018, Gary L. Cutler, GPL              Page: 81
```

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

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

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

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

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

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

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

```
==============================================================================================
GCic for UNIX/Linux Copyright (C) 2009-2018, Gary L. Cutler, GPL                Page: 85
```

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

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

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GCic for UNIX/Linux Copyright (C) 2009-2018, Gary L. Cutler, GPL                 Page: 86
```

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

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

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

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```

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

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

```
GNUCOBOL 3.0 24DEC2017  Cross-Reference Listing                          2017/12/24
                                           /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
PROGRAM-ID       Identifier/Register/Function   Defn   Where Defined    References      Page: 91
===============  ==============================  ======  ===============  ========================
GCic             COB-SCR-F30                      181 [screenio    ]
GCic             COB-SCR-F31                      181 [screenio    ]
GCic             COB-SCR-F32                      181 [screenio    ]
GCic             COB-SCR-F33                      181 [screenio    ]
GCic             COB-SCR-F34                      181 [screenio    ]
GCic             COB-SCR-F35                      181 [screenio    ]
GCic             COB-SCR-F36                      181 [screenio    ]
GCic             COB-SCR-F37                      181 [screenio    ]
GCic             COB-SCR-F38                      181 [screenio    ]
GCic             COB-SCR-F39                      181 [screenio    ]
GCic             COB-SCR-F4                       181 [screenio    ]    851
GCic             COB-SCR-F40                      181 [screenio    ]
GCic             COB-SCR-F41                      181 [screenio    ]
GCic             COB-SCR-F42                      181 [screenio    ]
GCic             COB-SCR-F43                      181 [screenio    ]
GCic             COB-SCR-F44                      181 [screenio    ]
GCic             COB-SCR-F45                      181 [screenio    ]
GCic             COB-SCR-F46                      181 [screenio    ]
GCic             COB-SCR-F47                      181 [screenio    ]
GCic             COB-SCR-F48                      181 [screenio    ]
GCic             COB-SCR-F49                      181 [screenio    ]
GCic             COB-SCR-F5                       181 [screenio    ]    857
GCic             COB-SCR-F50                      181 [screenio    ]
GCic             COB-SCR-F51                      181 [screenio    ]
GCic             COB-SCR-F52                      181 [screenio    ]
GCic             COB-SCR-F53                      181 [screenio    ]
GCic             COB-SCR-F54                      181 [screenio    ]
GCic             COB-SCR-F55                      181 [screenio    ]
GCic             COB-SCR-F56                      181 [screenio    ]
GCic             COB-SCR-F57                      181 [screenio    ]
GCic             COB-SCR-F58                      181 [screenio    ]
GCic             COB-SCR-F59                      181 [screenio    ]
GCic             COB-SCR-F6                       181 [screenio    ]    862
GCic             COB-SCR-F60                      181 [screenio    ]
GCic             COB-SCR-F61                      181 [screenio    ]
GCic             COB-SCR-F62                      181 [screenio    ]
GCic             COB-SCR-F63                      181 [screenio    ]
GCic             COB-SCR-F64                      181 [screenio    ]
GCic             COB-SCR-F7                       181 [screenio    ]    868
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LISTING         F-SW-Section-TXT                1452 FILE               3212*   3233*   3243*
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LISTING         F-SW-Token-TXT                  1451 FILE               3211*   3232*   3242*
                                                                        3256*   3318
LISTING         F-SW-Token-Uc-TXT               1450 FILE               2416    3210*   3231*
                                                                        3241*   3255*   3282
                                                                        3293    3295    3307
LISTING         L-Listing-CD                    2402 LINKAGE            2409    2449    2486
                                                                        3349    3398    3410
                                                                        3551    3565    3606
                                                                        3647
LISTING         L-Listing-Fn-TXT                2392 LINKAGE            1418    2404
LISTING         L-LPP-NUM                        2398 LINKAGE            2407    2487

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

```
GNUCOBOL 3.0 24DEC2017  Cross-Reference Listing                       2017/12/24
                                    /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
PROGRAM-ID      Identifier/Register/Function   Defn  Where Defined   References      Page: 100
===============  ==============================  ======  ==============  ========================
LISTING         L-LPP-Port-NUM                  2400 LINKAGE          2408    2489
LISTING         L-OS-Type-CD                    2396 LINKAGE          2406    2432
LISTING         L-Src-Fn-TXT                    2394 LINKAGE          1420    2405    2437
                                                                      2437*   2438    2439
                                                                      2443    2446    2459
                                                                      2461    2463    2468
LISTING         RETURN-CODE                          PROCEDURE        2479
LISTING         WS-CD-In-DATA-DIV-BOOL          1473 WORKING-STORAGE  2533
LISTING         WS-CD-In-ENV-DIV-BOOL           1472 WORKING-STORAGE  2531
LISTING         WS-CD-In-IDENT-DIV-BOOL         1471 WORKING-STORAGE  2529
LISTING         WS-CD-In-PROC-DIV-BOOL          1474 WORKING-STORAGE  2535
LISTING         WS-Copyright-TXT                1459 WORKING-STORAGE  2430*   2435*   3415
                                                                      3430    3573    3593
LISTING         WS-CPI-13-15-TXT                1480 WORKING-STORAGE  2824*
LISTING         WS-CPI-16-CHR                   1481 WORKING-STORAGE  2823
LISTING         WS-CS-1-CHR                     1484 WORKING-STORAGE  2746*
LISTING         WS-CS-11-14-TXT                 1487 WORKING-STORAGE  2748    2749*
LISTING         WS-CS-15-CHR                    1488 WORKING-STORAGE  2751*
LISTING         WS-CS-2-14-TXT                  1485 WORKING-STORAGE  2747*
LISTING         WS-Curr-Char-Is-Punct-BOOL      1462 WORKING-STORAGE  2591    2599    2604
LISTING         WS-Curr-Char-Is-Quote-BOOL      1466 WORKING-STORAGE  2610
LISTING         WS-Curr-Char-Is-X-BOOL          1467 WORKING-STORAGE  2623
LISTING         WS-Curr-Char-Is-Z-BOOL          1468 WORKING-STORAGE  2636
LISTING         WS-Curr-CHR                     1461 WORKING-STORAGE  2581*   2584    2586
                                                                      2592    2600    2606
                                                                      2613
LISTING         WS-Curr-Division-TXT            1470 WORKING-STORAGE  2506*   2542    2593
                                                                      2601    2701    2817*
                                                                      2836*   2862*   2918*
                                                                      2923*
LISTING         WS-Curr-Line-NUM                1476 WORKING-STORAGE  2505*   2565*   2724*
                                                                      2764*   3213    3234
                                                                      3244    3258    3485*
LISTING         WS-Curr-Prog-ID-TXT             1478 WORKING-STORAGE  2495*   2822*   3209
                                                                      3230    3240    3254
LISTING         WS-Curr-Section-TXT             1483 WORKING-STORAGE  2727*   2732    2841*
                                                                      2867*   2913    2914*
                                                                      3212    3233    3243
                                                                      3257
LISTING         WS-Curr-Verb-TXT                1490 WORKING-STORAGE  2496*   2520*   2544*
                                                                      2928    2937
LISTING         WS-Delim-TXT                    1492 WORKING-STORAGE  2653*   2655    2673*
                                                                      2675    2678
LISTING         WS-Dummy-TXT                    1494 WORKING-STORAGE  2471*   2716*   2745*
                                                                      2778*   2783*   2784
                                                                      3471*
LISTING         WS-Expanded-Src-Fn-TXT          1496 WORKING-STORAGE  1416    2476*   2477C
LISTING         WS-Filename-TXT                 1498 WORKING-STORAGE  2470*   2473    2744*
                                                                      2747
LISTING         WS-Flags-TXT                    1500 WORKING-STORAGE
LISTING         WS-Formatted-DT                 1503 WORKING-STORAGE  2494*   3354    3377
                                                                      3611    3630
LISTING         WS-GI-Prog-ID-TXT               1506 WORKING-STORAGE  3281    3287    3292*

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```

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

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

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

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```

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

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

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

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

6. STREAMIO

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

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

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

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

- Coding a GnuCOBOL subroutine

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

- Using hexadecimal alphanumeric literals

- Using the following statements:

    o `"ACCEPT FROM ENVIRONMENT"` statement

    o `"INSPECT"` statement

    o `"STRING"` statement

- Using the following built-in subroutines:

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

    o `"CBL_CLOSE_FILE"` built-in system subroutine

    o `"CBL_DELETE_FILE"` built-in system subroutine

    o `"CBL_EXIT_PROC"` built-in system subroutine

    o `"CBL_OPEN_FILE"` built-in system subroutine

    o `"CBL_READ_FILE"` built-in system subroutine

    o `"CBL_WRITE_FILE"` built-in system subroutine

- Using the following intrinsic functions:

    o `"RANDOM"` intrinsic function

    o `"TRIM"` intrinsic function

First, here is the STREAMIOcb.cpy copybook:

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

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

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

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

==

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

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```

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

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

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

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```
GNU COBOL 2.1 23NOV2013 Source Listing                                2014/03/27
                            C:/Users/tda010/Documents/Programs/Samples/STREAMIO.cbl
Line    Statement                                                       Page: 6
======  ========================================================================
   246       *> written:                                       **
   247       *>                                                 **
   248       *> If SCB-Delim-Unix-BOOL is true, a linefeed character will   **
   249       *> be written.                                     **
   250       *>                                                 **
   251       *> If SCB-Delim-Windows-BOOL is true, a carriage-return and    **
   252       *> linefeed sequence will be written.              **
   253       *>                                                 **
   254       *>------------------------------------------------------------**
   255       *> SCB-Offset-NUM                                  **
   256       *>------------------------------------------------------------**
   257       *>                                                 **
   258       *> This data item specifies the next relative byte number with- **
   259       *> in the file where the next read or write will start.   **
   260       *>                                                 **
   261       *> SCB-Offset-NUM is automatically set to 0 (the first byte)    **
   262       *> when the file is opened, and is automatically incremented as **
   263       *> the file is read or written via STREAMIO.       **
   264       *>                                                 **
   265       *> You may also manually set this value as desired before any   **
   266       *> call to STREAMIO.                               **
   267       *>                                                 **
   268       *>------------------------------------------------------------**
   269       *> SCB-Error-Routine-PTR                           **
   270       *>------------------------------------------------------------**
   271       *>                                                 **
   272       *> To specify a general error-handling routine for handling    **
   273       *> STREAMIO failures, Create the routine and define an entry-   **
   274       *> name for it via the ENTRY statement.  Then use the following **
   275       *> to set that routine up as the error handler:    **
   276       *>                                                 **
   277       *>    SET SCB-Error-Routine-PTR TO ENTRY "entry-name"   **
   278       *>                                                 **
   279       *> To "turn off" the error-routine:                **
   280       *>                                                 **
   281       *>    SET SCB-Error-Routine-PTR TO NULL            **
   282       *>                                                 **
   283       *> If a fatal error occurs (any error not marked with a ">" in  **
   284       *> the SCB-Return-CD discussion), the error routine you spe-    **
   285       *> cified (if any) will be set up as an exit routine via the    **
   286       *> CBL_EXIT_PROC subroutine; the STREAMIO routine will then is- **
   287       *> sue a STOP RUN to intentionally trigger your error routine.  **
   288       *> You will not be able to recover your program once your error **
   289       *> routine triggers.  If you wish to be able to recover from    **
   290       *> fatal STREAMIO errors, you should NOT use the SCB-Error-     **
   291       *> Routine feature but instead you should explicitly test the   **
   292       *> SCB-Return-CD value after every call to STREAMIO.   **
   293       *>                                                 **
   294       *> A default error routine is defined by the "STREAMIOError.cpy"**

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```

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

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```

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

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

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

==

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

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

==

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

```
   613                        MOVE -3 TO L-SCB-Return-CD
   614                        PERFORM 099-ERROR-Return
   615                    END-IF
   616                    IF RETURN-CODE = 10
   617                        GOBACK
   618                    END-IF
   619                    MOVE 0 TO WS-Tally-NUM
   620                    INSPECT WS-Buffer-TXT
   621                        TALLYING WS-Tally-NUM FOR ALL X"0A"
   622                    IF WS-Tally-NUM = 0
   623                        ADD 256 TO L-SCB-Offset-NUM
   624                    ELSE
   625                        MOVE 0 TO WS-Tally-NUM
   626                        INSPECT WS-Buffer-TXT
   627                            TALLYING WS-Tally-NUM
   628                            FOR CHARACTERS BEFORE INITIAL X"0A"
   629                        ADD WS-Tally-NUM, 1 TO L-SCB-Offset-NUM
   630                        GOBACK
   631                    END-IF
   632                END-PERFORM
   633          ELSE          *> There is (at least) one LF in the buffer
   634              MOVE 0 TO WS-Tally-NUM
   635              INSPECT L-Arg2-TXT(1:WS-Arg-Length-NUM)
   636                  TALLYING WS-Tally-NUM
   637                  FOR CHARACTERS BEFORE INITIAL X"0A"
   638              ADD WS-Tally-NUM, 1 TO L-SCB-Offset-NUM
   639              IF WS-Tally-NUM > 1
   640                  IF L-Arg2-TXT(WS-Tally-NUM:1) = X"0D"
   641                      COMPUTE WS-Arg-Length-NUM =
   642                                  WS-Arg-Length-NUM
   643                                - WS-Tally-NUM
   644                                + 1
   645                  ELSE
   646                      COMPUTE WS-Arg-Length-NUM =
   647                                  WS-Arg-Length-NUM
   648                                - WS-Tally-NUM
   649                      ADD 1 TO WS-Tally-NUM
   650                  END-IF
   651                  MOVE SPACES
   652                    TO L-Arg2-TXT(WS-Tally-NUM:WS-Arg-Length-NUM)
   653              ELSE
   654                  MOVE SPACES
   655                    TO L-Arg2-TXT(1:WS-Arg-Length-NUM)
   656              END-IF
   657          END-IF
   658          .
```

```
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PROGRAM-ID        Identifier/Register/Function   Defn   Where Defined   References       Page: 16
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