GnuCOBOL Sample Programs

For Version 3.2 - Final [2 October 2026 at 14:00 GMT.], 3.3 & 4.0 (partial & tentative only).

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- As an HTML website: here
- As a PDF File: here

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1 Copying

This manual documents GnuCOBOL 3.2 - Final, 2 October 2026 at 14:00 GMT. build.

```
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```

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2 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 current 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 06 MOVE 'LS Multiple records    ' 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 24 MOVE 'KEY BOUNDARY VIOLATION ' 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 71 MOVE 'BAD CHARACTER           ' TO MSG
     WHEN 91 MOVE 'FILE NOT AVAILABLE      ' TO MSG
     WHEN OTHER MOVE 'UNKNOWN ERROR        ' TO MSG
END-EVALUATE.
```

3 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.

```
GNUCOBOL 3.1.2 06MAR202 Source Listing                          2022/03/06
                                                               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)        **
50       *>        optional                                              **
```

```
    51       *> GC0211 Ported to IBM Enterprise COBOL                      **
    52       *> GC0612 Updated for OpenCOBOL 2.0                           **
    53       *> VC0322 Moved lines only with . to end of previous statement **

GNUCOBOL 3.1.2 06MAR202 Source Listing                                2022/03/06
                                                                     COBDUMP.cbl
Line   Statement                                                        Page: 2
====== ================================================================================
    54       *>        Fix for bug #816 by making WS-Buffer-Byte-NUM        **
    55       *>        UNSIGNED                                             **
    56       *>*************************************************************
    57        ENVIRONMENT DIVISION.
    58        CONFIGURATION SECTION.
    59        REPOSITORY.
    60            FUNCTION ALL INTRINSIC.
    61        DATA DIVISION.
    62        WORKING-STORAGE SECTION.
    63        01  WS-Addr-PTR                          USAGE POINTER.
    64        01  WS-Addr-NUM REDEFINES WS-Addr-PTR
    65                                                 USAGE BINARY-LONG.
    66
    67        01  WS-Addr-SUB                          USAGE BINARY-CHAR.
    68
    69        01  WS-Addr-Value-NUM                    USAGE BINARY-LONG.
    70
    71        01  WS-Buffer-Byte-CHR.
    72            05 WS-Buffer-Byte-NUM                USAGE BINARY-CHAR
    73                                                        UNSIGNED.
    74
    75        01  WS-Buffer-Length-NUM                 USAGE BINARY-LONG.
    76
    77        01  WS-Buffer-SUB                        PIC 9(4) COMP-5.
    78
    79        01  WS-Hex-Digit-TXT VALUE '0123456789ABCDEF'.
    80            05 WS-Hex-Digit-CHR                  OCCURS 16 TIMES
    81                                                 PIC X(1).
    82
    83        01  WS-Nibble-SUB                        PIC 9(1) COMP-5.
    84
    85        01  WS-Nibble-Left-SUB                   PIC 9(1) COMP-5.
    86
```

```
    87        01  WS-Nibble-Right-SUB                  PIC 9(1) COMP-5.
    88
    89        01  WS-Output-Detail-TXT.
    90            05 WS-OD-Addr-TXT.
    91               10 WS-OD-Addr-Hex-CHR             OCCURS 8 TIMES PIC X.
    92            05 FILLER                            PIC X(1).
    93            05 WS-OD-Relative-Byte-NUM           PIC Z(3)9.
    94            05 FILLER                            PIC X(1).
    95            05 WS-OD-Hex-TXT                     OCCURS 16 TIMES.
    96               10 WS-OD-Hex-1-CHR                PIC X.
    97               10 WS-OD-Hex-2-CHR                PIC X.
    98               10 FILLER                         PIC X.
    99            05 WS-OD-ASCII-Data-TXT.
   100               10 WS-OD-ASCII-CHR                OCCURS 16 TIMES
   101                                                 PIC X.
   102        01  WS-Output-SUB                        PIC 9(2) COMP-5.
   103
   104        >>SOURCE FORMAT IS FREE
   105        01  WS-Output-Header-1-TXT.
  106         05 VALUE '<-Addr-> Byte <---------------- Hexadecimal ''----------------
> <---

GNUCOBOL 3.1.2 06MAR202 Source Listing                              2022/03/06
                                                                   COBDUMP.cbl
Line   Statement                                                       Page: 3
====== ================================================================================
   107 - Char ---->' PIC X(80).
   108
   109        01  WS-Output-Header-2-TXT.
  110         05 VALUE '======== ==== ================================================
======
   111 ==========' PIC X(80).
   112        >>SOURCE FORMAT IS FIXED
   113
   114        LINKAGE SECTION.
   115        01  L-Buffer-TXT                         PIC X ANY LENGTH.
   116
   117        01  L-Buffer-Length-NUM                  USAGE BINARY-LONG.
   118
   119        PROCEDURE DIVISION USING L-Buffer-TXT,
   120                                 OPTIONAL L-Buffer-Length-NUM.
```

```
   121        000-Main SECTION.
   122            IF NUMBER-OF-CALL-PARAMETERS = 1
   123                MOVE LENGTH(L-Buffer-TXT) TO WS-Buffer-Length-NUM
   124            ELSE
   125                MOVE L-Buffer-Length-NUM  TO WS-Buffer-Length-NUM
   126            END-IF
   127            MOVE SPACES TO WS-Output-Detail-TXT
   128            SET WS-Addr-PTR TO ADDRESS OF L-Buffer-TXT
   129            PERFORM 100-Generate-Address
   130            MOVE 0 TO WS-Output-SUB
   131            DISPLAY WS-Output-Header-1-TXT UPON SYSERR
   132            DISPLAY WS-Output-Header-2-TXT UPON SYSERR
   133            PERFORM VARYING WS-Buffer-SUB FROM 1 BY 1
   134                      UNTIL WS-Buffer-SUB > WS-Buffer-Length-NUM
   135                ADD 1 TO WS-Output-SUB
   136                IF WS-Output-SUB = 1
   137                    MOVE WS-Buffer-SUB TO WS-OD-Relative-Byte-NUM
   138                END-IF
   139                MOVE L-Buffer-TXT (WS-Buffer-SUB : 1)
   140                  TO WS-OD-ASCII-CHR (WS-Output-SUB)
   141                     WS-Buffer-Byte-CHR
   142                DIVIDE WS-Buffer-Byte-NUM BY 16
   143                    GIVING WS-Nibble-Left-SUB
   144                    REMAINDER WS-Nibble-Right-SUB
   145                ADD 1 TO WS-Nibble-Left-SUB
   146                         WS-Nibble-Right-SUB
   147                MOVE WS-Hex-Digit-CHR (WS-Nibble-Left-SUB)
   148                  TO WS-OD-Hex-1-CHR  (WS-Output-SUB)
   149                MOVE WS-Hex-Digit-CHR (WS-Nibble-Right-SUB)
   150                  TO WS-OD-Hex-2-CHR  (WS-Output-SUB)
   151                IF WS-Output-SUB = 16
   152                    CALL "C$PRINTABLE" USING WS-OD-ASCII-Data-TXT
   153                    DISPLAY WS-Output-Detail-TXT UPON SYSERR
   154                    MOVE SPACES TO WS-Output-Detail-TXT
   155                    MOVE 0 TO WS-Output-SUB
   156                    SET WS-Addr-PTR UP BY 16
   157                    PERFORM 100-Generate-Address
   158                END-IF
   159            END-PERFORM

GNUCOBOL 3.1.2 06MAR202 Source Listing                          2022/03/06
```

```
                                                                        COBDUMP.cbl
Line   Statement                                                            Page: 4
====== ================================================================================
   160            IF WS-Output-SUB > 0
   161                CALL "C$PRINTABLE" USING WS-OD-ASCII-Data-TXT
   162                DISPLAY WS-Output-Detail-TXT UPON SYSERR
   163            END-IF
   164            EXIT PROGRAM.
   165
   166        100-Generate-Address SECTION.
   167            MOVE 8 TO WS-Addr-SUB
   168            MOVE WS-Addr-NUM TO WS-Addr-Value-NUM
   169            MOVE ALL '0' TO WS-OD-Addr-TXT
   170            PERFORM WITH TEST BEFORE UNTIL WS-Addr-Value-NUM = 0
   171                DIVIDE WS-Addr-Value-NUM BY 16
   172                    GIVING WS-Addr-Value-NUM
   173                    REMAINDER WS-Nibble-SUB
   174                ADD 1 TO WS-Nibble-SUB
   175                MOVE WS-Hex-Digit-CHR (WS-Nibble-SUB)
   176                  TO WS-OD-Addr-Hex-CHR (WS-Addr-SUB)
   177                SUBTRACT 1 FROM WS-Addr-SUB
   178            END-PERFORM
   179            .

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
```

4 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

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

```
ACS Cobol Xref v2.02.02         Dictionary File for COLORS    07/12/2019  16:57:00:16
Page    1

     1          >>SOURCE FREE
     2   IDENTIFICATION DIVISION.
     3   PROGRAM-ID. colors.
     4   DATA DIVISION.
     5   WORKING-STORAGE SECTION.
     6   SCREEN SECTION.
     7   01 S-COLORTST-SCR BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 BLANK SCREEN.
     8   05 LINE 01.
     9   10 COL 1 VALUE ' LOWLIGHT  -------- HIGHLIGHT  LOWLIGHT  -------- HIGHLIGHT'.
    10   05 LINE + 1.
    11   10 COL 1 VALUE ' --------  --------  --------  --------  --------  --------'.
    12   05 LINE + 1.
    13   10 COL 1 VALUE ' --------  --------  --------   REVERSE   REVERSE   REVERSE'.
    14   05 LINE + 1.
    15   10 COL 1 VALUE ' 01234567  01234567  01234567  01234567  01234567  01234567'.
    16   05 LINE + 1.
    17   10 COL 1 VALUE '0         0         0         0         0         0       '.
    18   05 LINE + 1.
    19   10 COL 1 VALUE '1         1         1         1         1         1       '.
    20   05 LINE + 1.
    21   10 COL 1 VALUE '2         2         2         2         2         2       '.
    22   05 LINE + 1.
```

```
    23   10 COL 1 VALUE '3    1    3    2    3    3    3    4    3    5    3    6   '.
    24   05 LINE + 1.
    25   10 COL 1 VALUE '4         4         4         4         4         4        '.
    26   05 LINE + 1.
    27   10 COL 1 VALUE '5         5         5         5         5         5        '.
    28   05 LINE + 1.
    29   10 COL 1 VALUE '6         6         6         6         6         6        '.
    30   05 LINE + 1.
    31   10 COL 1 VALUE '7         7         7         7         7         7        '.
    32   05 LINE + 1.
    33   10 COL 1 VALUE ' LOWLIGHT  -------- HIGHLIGHT  LOWLIGHT  -------- HIGHLIGHT'.
    34   05 LINE + 1.
    35   10 COL 1 VALUE '    BLINK     BLINK     BLINK     BLINK     BLINK     BLINK'.
    36   05 LINE + 1.
    37   10 COL 1 VALUE ' --------  --------  --------   REVERSE   REVERSE   REVERSE'.
    38   05 LINE + 1.
    39   10 COL 1 VALUE ' 01234567  01234567  01234567  01234567  01234567  01234567'.
    40   05 LINE + 1.
    41   10 COL 1 VALUE '0         0         0         0         0         0        '.
    42   05 LINE + 1.
    43   10 COL 1 VALUE '1         1         1         1         1         1        '.
    44   05 LINE + 1.
    45   10 COL 1 VALUE '2         2         2         2         2         2        '.
    46   05 LINE + 1.
    47   10 COL 1 VALUE '3    7    3    8    3    9    3   10    3   11    3   12   '.
    48   05 LINE + 1.
    49   10 COL 1 VALUE '4         4         4         4         4         4        '.
    50   05 LINE + 1.
    51   10 COL 1 VALUE '5         5         5         5         5         5        '.
    52   05 LINE + 1.
    53   10 COL 1 VALUE '6         6         6         6         6         6        '.
    54   05 LINE + 1.

 ACS Cobol Xref v2.02.02         Dictionary File for COLORS    07/12/2019  16:57:00:16
Page    2

    55   10 COL 1 VALUE '7         7         7         7         7         7        '.
    56   *> #1
    57   05 LINE 05.
    58   10 COL 2   BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 LOWLIGHT VALUE 'X'.
    59   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 LOWLIGHT VALUE 'X'.
```

```
 60   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 LOWLIGHT VALUE 'X'.
 61   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 LOWLIGHT VALUE 'X'.
 62   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 LOWLIGHT VALUE 'X'.
 63   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 LOWLIGHT VALUE 'X'.
 64   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 LOWLIGHT VALUE 'X'.
 65   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 LOWLIGHT VALUE 'X'.
 66   05 LINE + 1.
 67   10 COL 2   BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 LOWLIGHT VALUE 'X'.
 68   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 LOWLIGHT VALUE 'X'.
 69   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 LOWLIGHT VALUE 'X'.
 70   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 LOWLIGHT VALUE 'X'.
 71   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 LOWLIGHT VALUE 'X'.
 72   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 LOWLIGHT VALUE 'X'.
 73   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 LOWLIGHT VALUE 'X'.
 74   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 LOWLIGHT VALUE 'X'.
 75   05 LINE + 1.
 76   10 COL 2   BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 LOWLIGHT VALUE 'X'.
 77   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 LOWLIGHT VALUE 'X'.
 78   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 LOWLIGHT VALUE 'X'.
 79   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 LOWLIGHT VALUE 'X'.
 80   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 LOWLIGHT VALUE 'X'.
 81   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 LOWLIGHT VALUE 'X'.
 82   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 LOWLIGHT VALUE 'X'.
 83   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 LOWLIGHT VALUE 'X'.
 84   05 LINE + 1.
 85   10 COL 2   BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 LOWLIGHT VALUE 'X'.
 86   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 LOWLIGHT VALUE 'X'.
 87   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 LOWLIGHT VALUE 'X'.
 88   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 LOWLIGHT VALUE 'X'.
 89   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 LOWLIGHT VALUE 'X'.
 90   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 LOWLIGHT VALUE 'X'.
 91   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 LOWLIGHT VALUE 'X'.
 92   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 LOWLIGHT VALUE 'X'.
 93   05 LINE + 1.
 94   10 COL 2   BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 LOWLIGHT VALUE 'X'.
 95   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 LOWLIGHT VALUE 'X'.
 96   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 LOWLIGHT VALUE 'X'.
 97   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 LOWLIGHT VALUE 'X'.
 98   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 LOWLIGHT VALUE 'X'.
 99   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 LOWLIGHT VALUE 'X'.
100   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 LOWLIGHT VALUE 'X'.
```

```
   101   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 LOWLIGHT VALUE 'X'.
   102   05 LINE + 1.
   103   10 COL 2   BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 LOWLIGHT VALUE 'X'.
   104   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 LOWLIGHT VALUE 'X'.
   105   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 LOWLIGHT VALUE 'X'.
   106   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 LOWLIGHT VALUE 'X'.
   107   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 LOWLIGHT VALUE 'X'.
   108   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 LOWLIGHT VALUE 'X'.

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   109   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 LOWLIGHT VALUE 'X'.
   110   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 LOWLIGHT VALUE 'X'.
   111   05 LINE + 1.
   112   10 COL 2   BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 LOWLIGHT VALUE 'X'.
   113   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 LOWLIGHT VALUE 'X'.
   114   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 LOWLIGHT VALUE 'X'.
   115   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 LOWLIGHT VALUE 'X'.
   116   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 LOWLIGHT VALUE 'X'.
   117   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 LOWLIGHT VALUE 'X'.
   118   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 LOWLIGHT VALUE 'X'.
   119   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 LOWLIGHT VALUE 'X'.
   120   05 LINE + 1.
   121   10 COL 2   BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 LOWLIGHT VALUE 'X'.
   122   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 LOWLIGHT VALUE 'X'.
   123   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 LOWLIGHT VALUE 'X'.
   124   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 LOWLIGHT VALUE 'X'.
   125   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 LOWLIGHT VALUE 'X'.
   126   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 LOWLIGHT VALUE 'X'.
   127   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 LOWLIGHT VALUE 'X'.
   128   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 LOWLIGHT VALUE 'X'.
   129   *> #2
   130   05 LINE 05.
   131   10 COL 12  BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 VALUE 'X'.
   132   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 VALUE 'X'.
   133   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 VALUE 'X'.
   134   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 VALUE 'X'.
   135   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 VALUE 'X'.
   136   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 VALUE 'X'.
   137   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 VALUE 'X'.
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   138   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 VALUE 'X'.
   139   05 LINE + 1.
   140   10 COL 12  BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 VALUE 'X'.
   141   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 VALUE 'X'.
   142   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 VALUE 'X'.
   143   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 VALUE 'X'.
   144   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 VALUE 'X'.
   145   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 VALUE 'X'.
   146   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 VALUE 'X'.
   147   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 VALUE 'X'.
   148   05 LINE + 1.
   149   10 COL 12  BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 VALUE 'X'.
   150   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 VALUE 'X'.
   151   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 VALUE 'X'.
   152   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 VALUE 'X'.
   153   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 VALUE 'X'.
   154   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 VALUE 'X'.
   155   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 VALUE 'X'.
   156   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 VALUE 'X'.
   157   05 LINE + 1.
   158   10 COL 12  BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 VALUE 'X'.
   159   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 VALUE 'X'.
   160   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 VALUE 'X'.
   161   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 VALUE 'X'.
   162   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 VALUE 'X'.

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   163   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 VALUE 'X'.
   164   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 VALUE 'X'.
   165   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 VALUE 'X'.
   166   05 LINE + 1.
   167   10 COL 12  BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 VALUE 'X'.
   168   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 VALUE 'X'.
   169   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 VALUE 'X'.
   170   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 VALUE 'X'.
   171   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 VALUE 'X'.
   172   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 VALUE 'X'.
   173   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 VALUE 'X'.
   174   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 VALUE 'X'.
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175   05 LINE + 1.
176   10 COL 12  BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 VALUE 'X'.
177   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 VALUE 'X'.
178   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 VALUE 'X'.
179   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 VALUE 'X'.
180   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 VALUE 'X'.
181   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 VALUE 'X'.
182   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 VALUE 'X'.
183   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 VALUE 'X'.
184   05 LINE + 1.
185   10 COL 12  BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 VALUE 'X'.
186   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 VALUE 'X'.
187   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 VALUE 'X'.
188   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 VALUE 'X'.
189   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 VALUE 'X'.
190   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 VALUE 'X'.
191   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 VALUE 'X'.
192   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 VALUE 'X'.
193   05 LINE + 1.
194   10 COL 12  BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 VALUE 'X'.
195   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 VALUE 'X'.
196   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 VALUE 'X'.
197   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 VALUE 'X'.
198   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 VALUE 'X'.
199   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 VALUE 'X'.
200   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 VALUE 'X'.
201   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 VALUE 'X'.
202   *> #3
203   05 LINE 05.
204   10 COL 22  BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 HIGHLIGHT VALUE 'X'.
205   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 HIGHLIGHT VALUE 'X'.
206   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 HIGHLIGHT VALUE 'X'.
207   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 HIGHLIGHT VALUE 'X'.
208   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 HIGHLIGHT VALUE 'X'.
209   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 HIGHLIGHT VALUE 'X'.
210   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 HIGHLIGHT VALUE 'X'.
211   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 HIGHLIGHT VALUE 'X'.
212   05 LINE + 1.
213   10 COL 22  BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 HIGHLIGHT VALUE 'X'.
214   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 HIGHLIGHT VALUE 'X'.
215   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 HIGHLIGHT VALUE 'X'.
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   216   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 HIGHLIGHT VALUE 'X'.

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   217   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 HIGHLIGHT VALUE 'X'.
   218   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 HIGHLIGHT VALUE 'X'.
   219   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 HIGHLIGHT VALUE 'X'.
   220   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 HIGHLIGHT VALUE 'X'.
   221   05 LINE + 1.
   222   10 COL 22  BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 HIGHLIGHT VALUE 'X'.
   223   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 HIGHLIGHT VALUE 'X'.
   224   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 HIGHLIGHT VALUE 'X'.
   225   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 HIGHLIGHT VALUE 'X'.
   226   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 HIGHLIGHT VALUE 'X'.
   227   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 HIGHLIGHT VALUE 'X'.
   228   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 HIGHLIGHT VALUE 'X'.
   229   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 HIGHLIGHT VALUE 'X'.
   230   05 LINE + 1.
   231   10 COL 22  BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 HIGHLIGHT VALUE 'X'.
   232   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 HIGHLIGHT VALUE 'X'.
   233   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 HIGHLIGHT VALUE 'X'.
   234   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 HIGHLIGHT VALUE 'X'.
   235   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 HIGHLIGHT VALUE 'X'.
   236   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 HIGHLIGHT VALUE 'X'.
   237   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 HIGHLIGHT VALUE 'X'.
   238   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 HIGHLIGHT VALUE 'X'.
   239   05 LINE + 1.
   240   10 COL 22  BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 HIGHLIGHT VALUE 'X'.
   241   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 HIGHLIGHT VALUE 'X'.
   242   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 HIGHLIGHT VALUE 'X'.
   243   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 HIGHLIGHT VALUE 'X'.
   244   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 HIGHLIGHT VALUE 'X'.
   245   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 HIGHLIGHT VALUE 'X'.
   246   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 HIGHLIGHT VALUE 'X'.
   247   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 HIGHLIGHT VALUE 'X'.
   248   05 LINE + 1.
   249   10 COL 22  BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 HIGHLIGHT VALUE 'X'.
   250   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 HIGHLIGHT VALUE 'X'.
   251   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 HIGHLIGHT VALUE 'X'.
   252   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 HIGHLIGHT VALUE 'X'.
```

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   253   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 HIGHLIGHT VALUE 'X'.
   254   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 HIGHLIGHT VALUE 'X'.
   255   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 HIGHLIGHT VALUE 'X'.
   256   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 HIGHLIGHT VALUE 'X'.
   257   05 LINE + 1.
   258   10 COL 22  BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 HIGHLIGHT VALUE 'X'.
   259   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 HIGHLIGHT VALUE 'X'.
   260   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 HIGHLIGHT VALUE 'X'.
   261   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 HIGHLIGHT VALUE 'X'.
   262   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 HIGHLIGHT VALUE 'X'.
   263   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 HIGHLIGHT VALUE 'X'.
   264   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 HIGHLIGHT VALUE 'X'.
   265   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 HIGHLIGHT VALUE 'X'.
   266   05 LINE + 1.
   267   10 COL 22  BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 HIGHLIGHT VALUE 'X'.
   268   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 HIGHLIGHT VALUE 'X'.
   269   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 HIGHLIGHT VALUE 'X'.
   270   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 HIGHLIGHT VALUE 'X'.

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   271   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 HIGHLIGHT VALUE 'X'.
   272   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 HIGHLIGHT VALUE 'X'.
   273   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 HIGHLIGHT VALUE 'X'.
   274   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 HIGHLIGHT VALUE 'X'.
   275   *> #4
   276   05 LINE 05.
    277    10 COL 32   BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    278    10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    279    10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    280    10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    281    10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    282    10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    283    10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 LOWLIGHT REVERSE-VIDEO
```

```
VALUE 'X'.
    284    10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
   285   05 LINE + 1.
    286    10 COL 32  BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    287    10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    288    10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    289    10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    290    10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    291    10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    292    10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    293    10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
   294   05 LINE + 1.
    295    10 COL 32  BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    296    10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    297    10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    298    10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    299    10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    300    10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    301    10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    302    10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
   303   05 LINE + 1.
    304    10 COL 32  BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    305    10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 LOWLIGHT REVERSE-VIDEO
```

```
VALUE 'X'.
    306    10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    307    10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    308    10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    309    10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    310    10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    311    10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
   312   05 LINE + 1.
    313    10 COL 32   BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    314    10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    315    10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    316    10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    317    10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    318    10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    319    10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    320    10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
   321   05 LINE + 1.
    322    10 COL 32 BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    323    10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    324    10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.

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```
    325    10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    326    10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    327    10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    328    10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    329    10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
   330   05 LINE + 1.
    331    10 COL 32  BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    332    10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    333    10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    334    10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    335    10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    336    10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    337    10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    338    10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
   339   05 LINE + 1.
    340    10 COL 32  BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    341    10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    342    10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    343    10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    344    10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    345    10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
    346    10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 LOWLIGHT REVERSE-VIDEO
```

```
VALUE 'X'.
    347    10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 LOWLIGHT REVERSE-VIDEO
VALUE 'X'.
   348   *> #5
   349   05 LINE 05.
   350   10 COL 42  BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 REVERSE-VIDEO VALUE 'X'.
   351   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 REVERSE-VIDEO VALUE 'X'.
   352   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 REVERSE-VIDEO VALUE 'X'.
   353   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 REVERSE-VIDEO VALUE 'X'.
   354   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 REVERSE-VIDEO VALUE 'X'.
   355   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 REVERSE-VIDEO VALUE 'X'.
   356   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 REVERSE-VIDEO VALUE 'X'.
   357   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 REVERSE-VIDEO VALUE 'X'.
   358   05 LINE + 1.
   359   10 COL 42  BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 REVERSE-VIDEO VALUE 'X'.
   360   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 REVERSE-VIDEO VALUE 'X'.
   361   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 REVERSE-VIDEO VALUE 'X'.
   362   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 REVERSE-VIDEO VALUE 'X'.
   363   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 REVERSE-VIDEO VALUE 'X'.
   364   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 REVERSE-VIDEO VALUE 'X'.
   365   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 REVERSE-VIDEO VALUE 'X'.
   366   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 REVERSE-VIDEO VALUE 'X'.
   367   05 LINE + 1.
   368   10 COL 42  BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 REVERSE-VIDEO VALUE 'X'.
   369   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 REVERSE-VIDEO VALUE 'X'.
   370   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 REVERSE-VIDEO VALUE 'X'.
   371   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 REVERSE-VIDEO VALUE 'X'.
   372   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 REVERSE-VIDEO VALUE 'X'.
   373   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 REVERSE-VIDEO VALUE 'X'.
   374   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 REVERSE-VIDEO VALUE 'X'.
   375   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 REVERSE-VIDEO VALUE 'X'.
   376   05 LINE + 1.
   377   10 COL 42  BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 REVERSE-VIDEO VALUE 'X'.
   378   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 REVERSE-VIDEO VALUE 'X'.

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   379   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 REVERSE-VIDEO VALUE 'X'.
   380   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 REVERSE-VIDEO VALUE 'X'.
   381   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 REVERSE-VIDEO VALUE 'X'.
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```
382   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 REVERSE-VIDEO VALUE 'X'.
383   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 REVERSE-VIDEO VALUE 'X'.
384   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 REVERSE-VIDEO VALUE 'X'.
385   05 LINE + 1.
386   10 COL 42  BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 REVERSE-VIDEO VALUE 'X'.
387   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 REVERSE-VIDEO VALUE 'X'.
388   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 REVERSE-VIDEO VALUE 'X'.
389   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 REVERSE-VIDEO VALUE 'X'.
390   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 REVERSE-VIDEO VALUE 'X'.
391   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 REVERSE-VIDEO VALUE 'X'.
392   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 REVERSE-VIDEO VALUE 'X'.
393   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 REVERSE-VIDEO VALUE 'X'.
394   05 LINE + 1.
395   10 COL 42  BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 REVERSE-VIDEO VALUE 'X'.
396   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 REVERSE-VIDEO VALUE 'X'.
397   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 REVERSE-VIDEO VALUE 'X'.
398   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 REVERSE-VIDEO VALUE 'X'.
399   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 REVERSE-VIDEO VALUE 'X'.
400   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 REVERSE-VIDEO VALUE 'X'.
401   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 REVERSE-VIDEO VALUE 'X'.
402   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 REVERSE-VIDEO VALUE 'X'.
403   05 LINE + 1.
404   10 COL 42  BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 REVERSE-VIDEO VALUE 'X'.
405   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 REVERSE-VIDEO VALUE 'X'.
406   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 REVERSE-VIDEO VALUE 'X'.
407   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 REVERSE-VIDEO VALUE 'X'.
408   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 REVERSE-VIDEO VALUE 'X'.
409   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 REVERSE-VIDEO VALUE 'X'.
410   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 REVERSE-VIDEO VALUE 'X'.
411   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 REVERSE-VIDEO VALUE 'X'.
412   05 LINE + 1.
413   10 COL 42  BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 REVERSE-VIDEO VALUE 'X'.
414   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 REVERSE-VIDEO VALUE 'X'.
415   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 REVERSE-VIDEO VALUE 'X'.
416   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 REVERSE-VIDEO VALUE 'X'.
417   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 REVERSE-VIDEO VALUE 'X'.
418   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 REVERSE-VIDEO VALUE 'X'.
419   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 REVERSE-VIDEO VALUE 'X'.
420   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 REVERSE-VIDEO VALUE 'X'.
421   *> #6
422   05 LINE 05.
```

```
    423    10 COL 52  BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    424    10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    425    10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    426    10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    427    10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    428    10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    429    10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    430    10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
   431   05 LINE + 1.
    432    10 COL 52  BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.

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    433    10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    434    10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    435    10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    436    10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    437    10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    438    10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    439    10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
   440   05 LINE + 1.
    441    10 COL 52  BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    442    10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 HIGHLIGHT REVERSE-VIDEO
```

```
VALUE 'X'.
    443    10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    444    10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    445    10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    446    10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    447    10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    448    10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
   449   05 LINE + 1.
    450    10 COL 52  BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    451    10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    452    10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    453    10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    454    10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    455    10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    456    10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    457    10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
   458   05 LINE + 1.
    459    10 COL 52  BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    460    10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    461    10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    462    10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    463    10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
```

```
    464    10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    465    10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    466    10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
   467   05 LINE + 1.
    468    10 COL 52  BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    469    10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    470    10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    471    10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    472    10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    473    10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    474    10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    475    10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
   476   05 LINE + 1.
    477    10 COL 52  BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    478    10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    479    10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    480    10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    481    10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    482    10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    483    10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    484    10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
   485   05 LINE + 1.
```

```
    486    10 COL 52  BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.

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    487    10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    488    10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    489    10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    490    10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    491    10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    492    10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
    493    10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 HIGHLIGHT REVERSE-VIDEO
VALUE 'X'.
   494   *> #7
   495   05 LINE 17.
   496   10 COL 02  BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 LOWLIGHT BLINK VALUE 'X'.
   497   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 LOWLIGHT BLINK VALUE 'X'.
   498   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 LOWLIGHT BLINK VALUE 'X'.
   499   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 LOWLIGHT BLINK VALUE 'X'.
   500   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 LOWLIGHT BLINK VALUE 'X'.
   501   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 LOWLIGHT BLINK VALUE 'X'.
   502   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 LOWLIGHT BLINK VALUE 'X'.
   503   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 LOWLIGHT BLINK VALUE 'X'.
   504   05 LINE + 1.
   505   10 COL 02  BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 LOWLIGHT BLINK VALUE 'X'.
   506   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 LOWLIGHT BLINK VALUE 'X'.
   507   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 LOWLIGHT BLINK VALUE 'X'.
   508   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 LOWLIGHT BLINK VALUE 'X'.
   509   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 LOWLIGHT BLINK VALUE 'X'.
   510   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 LOWLIGHT BLINK VALUE 'X'.
   511   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 LOWLIGHT BLINK VALUE 'X'.
   512   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 LOWLIGHT BLINK VALUE 'X'.
   513   05 LINE + 1.
   514   10 COL 02  BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 LOWLIGHT BLINK VALUE 'X'.
```

```
   515   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 LOWLIGHT BLINK VALUE 'X'.
   516   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 LOWLIGHT BLINK VALUE 'X'.
   517   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 LOWLIGHT BLINK VALUE 'X'.
   518   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 LOWLIGHT BLINK VALUE 'X'.
   519   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 LOWLIGHT BLINK VALUE 'X'.
   520   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 LOWLIGHT BLINK VALUE 'X'.
   521   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 LOWLIGHT BLINK VALUE 'X'.
   522   05 LINE + 1.
   523   10 COL 02  BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 LOWLIGHT BLINK VALUE 'X'.
   524   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 LOWLIGHT BLINK VALUE 'X'.
   525   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 LOWLIGHT BLINK VALUE 'X'.
   526   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 LOWLIGHT BLINK VALUE 'X'.
   527   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 LOWLIGHT BLINK VALUE 'X'.
   528   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 LOWLIGHT BLINK VALUE 'X'.
   529   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 LOWLIGHT BLINK VALUE 'X'.
   530   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 LOWLIGHT BLINK VALUE 'X'.
   531   05 LINE + 1.
   532   10 COL 02  BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 LOWLIGHT BLINK VALUE 'X'.
   533   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 LOWLIGHT BLINK VALUE 'X'.
   534   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 LOWLIGHT BLINK VALUE 'X'.
   535   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 LOWLIGHT BLINK VALUE 'X'.
   536   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 LOWLIGHT BLINK VALUE 'X'.
   537   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 LOWLIGHT BLINK VALUE 'X'.
   538   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 LOWLIGHT BLINK VALUE 'X'.
   539   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 LOWLIGHT BLINK VALUE 'X'.
   540   05 LINE + 1.

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   541   10 COL 02  BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 LOWLIGHT BLINK VALUE 'X'.
   542   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 LOWLIGHT BLINK VALUE 'X'.
   543   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 LOWLIGHT BLINK VALUE 'X'.
   544   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 LOWLIGHT BLINK VALUE 'X'.
   545   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 LOWLIGHT BLINK VALUE 'X'.
   546   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 LOWLIGHT BLINK VALUE 'X'.
   547   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 LOWLIGHT BLINK VALUE 'X'.
   548   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 LOWLIGHT BLINK VALUE 'X'.
   549   05 LINE + 1.
   550   10 COL 02  BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 LOWLIGHT BLINK VALUE 'X'.
   551   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 LOWLIGHT BLINK VALUE 'X'.
```

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552   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 LOWLIGHT BLINK VALUE 'X'.
553   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 LOWLIGHT BLINK VALUE 'X'.
554   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 LOWLIGHT BLINK VALUE 'X'.
555   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 LOWLIGHT BLINK VALUE 'X'.
556   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 LOWLIGHT BLINK VALUE 'X'.
557   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 LOWLIGHT BLINK VALUE 'X'.
558   05 LINE + 1.
559   10 COL 02  BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 LOWLIGHT BLINK VALUE 'X'.
560   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 LOWLIGHT BLINK VALUE 'X'.
561   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 LOWLIGHT BLINK VALUE 'X'.
562   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 LOWLIGHT BLINK VALUE 'X'.
563   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 LOWLIGHT BLINK VALUE 'X'.
564   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 LOWLIGHT BLINK VALUE 'X'.
565   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 LOWLIGHT BLINK VALUE 'X'.
566   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 LOWLIGHT BLINK VALUE 'X'.
567   *> #8
568   05 LINE 17.
569   10 COL 12  BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 BLINK VALUE 'X'.
570   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 BLINK VALUE 'X'.
571   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 BLINK VALUE 'X'.
572   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 BLINK VALUE 'X'.
573   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 BLINK VALUE 'X'.
574   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 BLINK VALUE 'X'.
575   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 BLINK VALUE 'X'.
576   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 BLINK VALUE 'X'.
577   05 LINE + 1.
578   10 COL 12  BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 BLINK VALUE 'X'.
579   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 BLINK VALUE 'X'.
580   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 BLINK VALUE 'X'.
581   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 BLINK VALUE 'X'.
582   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 BLINK VALUE 'X'.
583   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 BLINK VALUE 'X'.
584   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 BLINK VALUE 'X'.
585   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 BLINK VALUE 'X'.
586   05 LINE + 1.
587   10 COL 12  BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 BLINK VALUE 'X'.
588   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 BLINK VALUE 'X'.
589   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 BLINK VALUE 'X'.
590   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 BLINK VALUE 'X'.
591   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 BLINK VALUE 'X'.
592   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 BLINK VALUE 'X'.
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   593   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 BLINK VALUE 'X'.
   594   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 BLINK VALUE 'X'.

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   595   05 LINE + 1.
   596   10 COL 12  BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 BLINK VALUE 'X'.
   597   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 BLINK VALUE 'X'.
   598   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 BLINK VALUE 'X'.
   599   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 BLINK VALUE 'X'.
   600   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 BLINK VALUE 'X'.
   601   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 BLINK VALUE 'X'.
   602   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 BLINK VALUE 'X'.
   603   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 BLINK VALUE 'X'.
   604   05 LINE + 1.
   605   10 COL 12  BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 BLINK VALUE 'X'.
   606   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 BLINK VALUE 'X'.
   607   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 BLINK VALUE 'X'.
   608   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 BLINK VALUE 'X'.
   609   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 BLINK VALUE 'X'.
   610   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 BLINK VALUE 'X'.
   611   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 BLINK VALUE 'X'.
   612   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 BLINK VALUE 'X'.
   613   05 LINE + 1.
   614   10 COL 12  BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 BLINK VALUE 'X'.
   615   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 BLINK VALUE 'X'.
   616   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 BLINK VALUE 'X'.
   617   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 BLINK VALUE 'X'.
   618   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 BLINK VALUE 'X'.
   619   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 BLINK VALUE 'X'.
   620   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 BLINK VALUE 'X'.
   621   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 BLINK VALUE 'X'.
   622   05 LINE + 1.
   623   10 COL 12  BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 BLINK VALUE 'X'.
   624   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 BLINK VALUE 'X'.
   625   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 BLINK VALUE 'X'.
   626   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 BLINK VALUE 'X'.
   627   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 BLINK VALUE 'X'.
   628   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 BLINK VALUE 'X'.
   629   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 BLINK VALUE 'X'.
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   630   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 BLINK VALUE 'X'.
   631   05 LINE + 1.
   632   10 COL 12  BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 BLINK VALUE 'X'.
   633   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 BLINK VALUE 'X'.
   634   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 BLINK VALUE 'X'.
   635   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 BLINK VALUE 'X'.
   636   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 BLINK VALUE 'X'.
   637   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 BLINK VALUE 'X'.
   638   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 BLINK VALUE 'X'.
   639   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 BLINK VALUE 'X'.
   640   *> #9
   641   05 LINE 17.
   642   10 COL 22  BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 HIGHLIGHT BLINK VALUE 'X'.
   643   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 HIGHLIGHT BLINK VALUE 'X'.
   644   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 HIGHLIGHT BLINK VALUE 'X'.
   645   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 HIGHLIGHT BLINK VALUE 'X'.
   646   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 HIGHLIGHT BLINK VALUE 'X'.
   647   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 HIGHLIGHT BLINK VALUE 'X'.
   648   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 HIGHLIGHT BLINK VALUE 'X'.

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   649   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 HIGHLIGHT BLINK VALUE 'X'.
   650   05 LINE + 1.
   651   10 COL 22  BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 HIGHLIGHT BLINK VALUE 'X'.
   652   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 HIGHLIGHT BLINK VALUE 'X'.
   653   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 HIGHLIGHT BLINK VALUE 'X'.
   654   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 HIGHLIGHT BLINK VALUE 'X'.
   655   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 HIGHLIGHT BLINK VALUE 'X'.
   656   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 HIGHLIGHT BLINK VALUE 'X'.
   657   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 HIGHLIGHT BLINK VALUE 'X'.
   658   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 HIGHLIGHT BLINK VALUE 'X'.
   659   05 LINE + 1.
   660   10 COL 22  BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 HIGHLIGHT BLINK VALUE 'X'.
   661   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 HIGHLIGHT BLINK VALUE 'X'.
   662   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 HIGHLIGHT BLINK VALUE 'X'.
   663   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 HIGHLIGHT BLINK VALUE 'X'.
   664   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 HIGHLIGHT BLINK VALUE 'X'.
   665   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 HIGHLIGHT BLINK VALUE 'X'.
   666   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 HIGHLIGHT BLINK VALUE 'X'.
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```
   667   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 HIGHLIGHT BLINK VALUE 'X'.
   668   05 LINE + 1.
   669   10 COL 22  BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 HIGHLIGHT BLINK VALUE 'X'.
   670   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 HIGHLIGHT BLINK VALUE 'X'.
   671   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 HIGHLIGHT BLINK VALUE 'X'.
   672   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 HIGHLIGHT BLINK VALUE 'X'.
   673   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 HIGHLIGHT BLINK VALUE 'X'.
   674   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 HIGHLIGHT BLINK VALUE 'X'.
   675   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 HIGHLIGHT BLINK VALUE 'X'.
   676   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 HIGHLIGHT BLINK VALUE 'X'.
   677   05 LINE + 1.
   678   10 COL 22  BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 HIGHLIGHT BLINK VALUE 'X'.
   679   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 HIGHLIGHT BLINK VALUE 'X'.
   680   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 HIGHLIGHT BLINK VALUE 'X'.
   681   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 HIGHLIGHT BLINK VALUE 'X'.
   682   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 HIGHLIGHT BLINK VALUE 'X'.
   683   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 HIGHLIGHT BLINK VALUE 'X'.
   684   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 HIGHLIGHT BLINK VALUE 'X'.
   685   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 HIGHLIGHT BLINK VALUE 'X'.
   686   05 LINE + 1.
   687   10 COL 22  BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 HIGHLIGHT BLINK VALUE 'X'.
   688   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 HIGHLIGHT BLINK VALUE 'X'.
   689   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 HIGHLIGHT BLINK VALUE 'X'.
   690   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 HIGHLIGHT BLINK VALUE 'X'.
   691   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 HIGHLIGHT BLINK VALUE 'X'.
   692   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 HIGHLIGHT BLINK VALUE 'X'.
   693   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 HIGHLIGHT BLINK VALUE 'X'.
   694   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 HIGHLIGHT BLINK VALUE 'X'.
   695   05 LINE + 1.
   696   10 COL 22  BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 HIGHLIGHT BLINK VALUE 'X'.
   697   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 HIGHLIGHT BLINK VALUE 'X'.
   698   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 HIGHLIGHT BLINK VALUE 'X'.
   699   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 HIGHLIGHT BLINK VALUE 'X'.
   700   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 HIGHLIGHT BLINK VALUE 'X'.
   701   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 HIGHLIGHT BLINK VALUE 'X'.
   702   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 HIGHLIGHT BLINK VALUE 'X'.

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   703   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 HIGHLIGHT BLINK VALUE 'X'.
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```
   704   05 LINE + 1.
   705   10 COL 22  BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 HIGHLIGHT BLINK VALUE 'X'.
   706   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 HIGHLIGHT BLINK VALUE 'X'.
   707   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 HIGHLIGHT BLINK VALUE 'X'.
   708   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 HIGHLIGHT BLINK VALUE 'X'.
   709   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 HIGHLIGHT BLINK VALUE 'X'.
   710   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 HIGHLIGHT BLINK VALUE 'X'.
   711   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 HIGHLIGHT BLINK VALUE 'X'.
   712   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 HIGHLIGHT BLINK VALUE 'X'.
   713   *> #10
   714   05 LINE 17.
   715   10 COL 32  BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   716   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   717   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   718   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   719   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   720   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   721   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   722   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   723   05 LINE + 1.
   724   10 COL 32  BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   725   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   726   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   727   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   728   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   729   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   730   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 LOWLIGHT BLINK REVERSE-VIDEO
```

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VALUE 'X'.
   731   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
    732   05 LINE + 1.
   733   10 COL 32  BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   734   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   735   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   736   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   737   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   738   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   739   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   740   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
    741   05 LINE + 1.
   742   10 COL 32  BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   743   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   744   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   745   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   746   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   747   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   748   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   749   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
    750   05 LINE + 1.
   751   10 COL 32  BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   752   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 LOWLIGHT BLINK REVERSE-VIDEO
```

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VALUE 'X'.
   753   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   754   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   755   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   756   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.

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   757   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   758   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
    759   05 LINE + 1.
   760   10 COL 32  BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   761   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   762   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   763   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   764   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   765   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   766   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   767   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
    768   05 LINE + 1.
   769   10 COL 32  BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   770   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   771   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
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   772   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   773   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   774   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   775   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   776   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
    777   05 LINE + 1.
   778   10 COL 32  BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   779   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   780   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   781   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   782   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   783   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   784   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
   785   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 LOWLIGHT BLINK REVERSE-VIDEO
VALUE 'X'.
    786   *> #11
    787   05 LINE 17.
   788   10 COL 42  BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 BLINK REVERSE-VIDEO VALUE 'X'.
   789   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 BLINK REVERSE-VIDEO VALUE 'X'.
   790   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 BLINK REVERSE-VIDEO VALUE 'X'.
   791   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 BLINK REVERSE-VIDEO VALUE 'X'.
   792   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 BLINK REVERSE-VIDEO VALUE 'X'.
   793   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 BLINK REVERSE-VIDEO VALUE 'X'.
   794   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 BLINK REVERSE-VIDEO VALUE 'X'.
   795   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 BLINK REVERSE-VIDEO VALUE 'X'.
    796   05 LINE + 1.
   797   10 COL 42  BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 BLINK REVERSE-VIDEO VALUE 'X'.
   798   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 BLINK REVERSE-VIDEO VALUE 'X'.
   799   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 BLINK REVERSE-VIDEO VALUE 'X'.
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  800   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 BLINK REVERSE-VIDEO VALUE 'X'.
  801   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 BLINK REVERSE-VIDEO VALUE 'X'.
  802   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 BLINK REVERSE-VIDEO VALUE 'X'.
  803   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 BLINK REVERSE-VIDEO VALUE 'X'.
  804   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 BLINK REVERSE-VIDEO VALUE 'X'.
   805   05 LINE + 1.
  806   10 COL 42  BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 BLINK REVERSE-VIDEO VALUE 'X'.
  807   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 BLINK REVERSE-VIDEO VALUE 'X'.
  808   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 BLINK REVERSE-VIDEO VALUE 'X'.
  809   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 BLINK REVERSE-VIDEO VALUE 'X'.
  810   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 BLINK REVERSE-VIDEO VALUE 'X'.

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  811   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 BLINK REVERSE-VIDEO VALUE 'X'.
  812   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 BLINK REVERSE-VIDEO VALUE 'X'.
  813   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 BLINK REVERSE-VIDEO VALUE 'X'.
   814   05 LINE + 1.
  815   10 COL 42  BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 BLINK REVERSE-VIDEO VALUE 'X'.
  816   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 BLINK REVERSE-VIDEO VALUE 'X'.
  817   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 BLINK REVERSE-VIDEO VALUE 'X'.
  818   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 BLINK REVERSE-VIDEO VALUE 'X'.
  819   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 BLINK REVERSE-VIDEO VALUE 'X'.
  820   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 BLINK REVERSE-VIDEO VALUE 'X'.
  821   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 BLINK REVERSE-VIDEO VALUE 'X'.
  822   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 BLINK REVERSE-VIDEO VALUE 'X'.
   823   05 LINE + 1.
  824   10 COL 42  BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 BLINK REVERSE-VIDEO VALUE 'X'.
  825   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 BLINK REVERSE-VIDEO VALUE 'X'.
  826   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 BLINK REVERSE-VIDEO VALUE 'X'.
  827   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 BLINK REVERSE-VIDEO VALUE 'X'.
  828   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 BLINK REVERSE-VIDEO VALUE 'X'.
  829   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 BLINK REVERSE-VIDEO VALUE 'X'.
  830   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 BLINK REVERSE-VIDEO VALUE 'X'.
  831   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 BLINK REVERSE-VIDEO VALUE 'X'.
   832   05 LINE + 1.
  833   10 COL 42  BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 BLINK REVERSE-VIDEO VALUE 'X'.
  834   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 BLINK REVERSE-VIDEO VALUE 'X'.
  835   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 BLINK REVERSE-VIDEO VALUE 'X'.
  836   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 BLINK REVERSE-VIDEO VALUE 'X'.
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  837   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 BLINK REVERSE-VIDEO VALUE 'X'.
  838   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 BLINK REVERSE-VIDEO VALUE 'X'.
  839   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 BLINK REVERSE-VIDEO VALUE 'X'.
  840   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 BLINK REVERSE-VIDEO VALUE 'X'.
   841    05 LINE + 1.
  842   10 COL 42  BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 BLINK REVERSE-VIDEO VALUE 'X'.
  843   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 BLINK REVERSE-VIDEO VALUE 'X'.
  844   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 BLINK REVERSE-VIDEO VALUE 'X'.
  845   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 BLINK REVERSE-VIDEO VALUE 'X'.
  846   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 BLINK REVERSE-VIDEO VALUE 'X'.
  847   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 BLINK REVERSE-VIDEO VALUE 'X'.
  848   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 BLINK REVERSE-VIDEO VALUE 'X'.
  849   10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 BLINK REVERSE-VIDEO VALUE 'X'.
   850    05 LINE + 1.
  851   10 COL 42  BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 BLINK REVERSE-VIDEO VALUE 'X'.
  852   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 BLINK REVERSE-VIDEO VALUE 'X'.
  853   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 BLINK REVERSE-VIDEO VALUE 'X'.
  854   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 BLINK REVERSE-VIDEO VALUE 'X'.
  855   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 BLINK REVERSE-VIDEO VALUE 'X'.
  856   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 BLINK REVERSE-VIDEO VALUE 'X'.
  857   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 BLINK REVERSE-VIDEO VALUE 'X'.
  858   10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 BLINK REVERSE-VIDEO VALUE 'X'.
   859    *> #12
   860    05 LINE 17.
   861    10 COL 52  BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   862    10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   863    10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   864    10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.

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   865    10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   866    10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   867    10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 HIGHLIGHT BLINK REVERSE-
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VIDEO VALUE 'X'.
   868   10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   869   05 LINE + 1.
   870   10 COL 52  BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   871   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   872   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   873   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   874   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   875   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   876   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   877   10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   878   05 LINE + 1.
   879   10 COL 52  BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   880   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   881   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   882   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   883   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   884   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   885   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   886   10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   887   05 LINE + 1.
   888   10 COL 52  BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   889   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 HIGHLIGHT BLINK REVERSE-
```

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VIDEO VALUE 'X'.
   890   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   891   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   892   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   893   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   894   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   895   10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   896   05 LINE + 1.
   897   10 COL 52  BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   898   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   899   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   900   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   901   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   902   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   903   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   904   10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   905   05 LINE + 1.
   906   10 COL 52  BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   907   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   908   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   909   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   910   10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
```

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   911    10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   912    10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   913    10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   914   05 LINE + 1.
   915    10 COL 52  BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   916    10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   917    10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   918    10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.

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   919    10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   920    10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   921    10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   922    10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   923   05 LINE + 1.
   924    10 COL 52  BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   925    10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   926    10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   927    10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   928    10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   929    10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   930    10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 HIGHLIGHT BLINK REVERSE-
```

```
VIDEO VALUE 'X'.
   931    10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 HIGHLIGHT BLINK REVERSE-
VIDEO VALUE 'X'.
   932   PROCEDURE DIVISION.
   933   000-Main SECTION.
   934    DISPLAY S-COLORTST-SCR.
   935    STOP RUN.
   936        *>>>Info: Total Copy Depth Used = 01

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Symbols of Module: COLORS (COLORS)
---------------------------------

Data Section (SCREEN)           Defn     Locations
-------------------------------
+-----------------------------------------------------------------

S-COLORTST-SCR                  000007S  000934

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Symbols of Module: COLORS (COLORS)
---------------------------------
Procedure                       Defn     Locations
-------------------------------
+-----------------------------------------------------------------

None

 ACS Cobol Xref v2.02.02         Dictionary File for COLORS    07/12/2019  16:57:00:22
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Symbols of Module: COLORS (COLORS)
---------------------------------
Unreferenced Working Storage Symbols

None

 ACS Cobol Xref v2.02.02         Dictionary File for COLORS    07/12/2019  16:57:00:22
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Symbols of Module: COLORS (COLORS)
```

```
---------------------------------
Unreferenced Procedures

None
```

5 DAY-FROM-DATE

DAY-FROM-DATE is a user-defined function that accepts a single numeric `USAGE DISPLAY` argument –□ 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       *>                                                             **
```

```
      *> Calendar-Date    A PIC 9 data item or numeric literal which  **
      *>                  will be treated as a calendar date as fol-  **
      *>                  lows:                                       **
      *>                                                              **
      *>                  7-digit value: Interpreted as a Julian date **
      *>                                 in the form yyyyddd          **
      *>                  8-digit value: Interpreted as a Gregorian   **
      *>                                 date in the form yyyymmdd    **
      *>                                                              **
      *> The result returned will be one of the following:           **
      *>                                                              **
      *> 0:  The supplied date is invalid                            **
      *> 1:  The supplied date is a Sunday                           **
      *> 2:  The supplied date is a Monday                           **
      *> .                                                           **
      *> .                                                           **
      *> .                                                           **
      *> 7:  The supplied date is a Saturday                         **
      *>**************************************************************
       ENVIRONMENT DIVISION.
       CONFIGURATION SECTION.
       REPOSITORY.
           FUNCTION ALL INTRINSIC.
       DATA DIVISION.
       WORKING-STORAGE SECTION.
       01  WS-Input-Date-DT.
           05 WS-ID-YYYY-NUM                    PIC 9(4).
           05 WS-ID-MM-NUM                      PIC 9(2).
           05 WS-ID-DD-NUM                      PIC 9(2).
       01  WS-Y-NUM                             BINARY-LONG.
       01  WS-M-NUM                             BINARY-LONG.
       01  WS-Temp-NUM                          BINARY-LONG.
       LINKAGE SECTION.
       01  L-Input-Date-DT                      PIC 9 ANY LENGTH.
       01  L-Output-Day-NUM                     USAGE BINARY-LONG
                                                SIGNED.
       PROCEDURE DIVISION USING L-Input-Date-DT
                     RETURNING L-Output-Day-NUM.
       000-Main SECTION.
           CALL "C$PARAMSIZE" USING 1
```

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

GNU COBOL 2.1 23NOV2013 Source Listing                                        2014/03/27
                                    C:/Users/tda010/Documents/Programs/Samples/DAY-
FROM-DATE.cbl
Line   Statement                                                              Page: 2
====== ========================================================================================
    50            EVALUATE RETURN-CODE
    51            WHEN 7
    52                IF TEST-DAY-YYYYDDD(L-Input-Date-DT) > 0
    53                    MOVE 0 TO L-Output-Day-NUM
    54                    GOBACK
    55                END-IF
    56                MOVE DATE-OF-INTEGER(INTEGER-OF-DAY(L-Input-Date-DT))
    57                  TO WS-Input-Date-DT
    58            WHEN 8
    59                IF TEST-DATE-YYYYMMDD(L-Input-Date-DT) > 0
    60                    MOVE 0 TO L-Output-Day-NUM
    61                    GOBACK
    62                END-IF
    63                MOVE L-Input-Date-DT TO WS-Input-Date-DT
    64            WHEN OTHER
    65                MOVE 0 TO L-Output-Day-NUM
    66                GOBACK
    67            END-EVALUATE
    68       *> IF january OR february
    69       *>     y = year - 1
    70       *>     m = month + 10
    71       *> ELSE
    72       *>     y = year
    73       *>     m = month - 2
    74       *> END-IF
    75       *> For Gregorian calendar:
    76       *>     result = (day + y + y/4 - y/100 + y/400 + (31*m)/12) mod 7
    77       *> (All divisions are integer divisions, discarding any remainder)
    78            IF WS-ID-MM-NUM = 1 OR 2
    79                SUBTRACT 1 FROM WS-ID-YYYY-NUM GIVING WS-Y-NUM
    80                ADD WS-ID-MM-NUM, 10 GIVING WS-M-NUM
    81            ELSE
    82                MOVE WS-ID-YYYY-NUM TO WS-Y-NUM
```

```
    83                SUBTRACT 2 FROM WS-ID-MM-NUM GIVING WS-M-NUM
    84            END-IF
    85            COMPUTE L-Output-Day-NUM =
    86                WS-ID-DD-NUM
    87              + WS-Y-NUM
    88              + INTEGER(WS-Y-NUM/4)
    89              - INTEGER(WS-Y-NUM/100)
    90              + INTEGER(WS-Y-NUM/400)
    91              + INTEGER((31*WS-M-NUM)/12)
    92            DIVIDE L-Output-Day-NUM BY 7
    93                GIVING WS-Temp-NUM
    94                REMAINDER L-Output-Day-NUM
    95            ADD 1 TO L-Output-Day-NUM
    96            GOBACK
    97            .
    98

================================================================================================
GCic for OSX Copyright (C) 2009-2014, Gary L. Cutler, GPL                      Page: 2

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
```

6 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

The program source and cross-reference listing, generated by cobxref, begins on the next page.

```
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     1        >>SOURCE FORMAT IS FIXED
```

```
      *> CONFIGURATION SETTINGS: adjust const-set-1.cpy before
      *> compiling GCic to adjust the way it works.
      *copy "const-set-1.cpy".
      *> CONFIGURATION SETTINGS: Set these switches before compiling:
      *>
      *> Set these 2 for the compiler version.
      *>
       >>DEFINE CONSTANT COMP-VERS  AS 'GNUCOBOL 3.1.2 06MAR2022'
       >>DEFINE CONSTANT COMP-YEAR  AS '2022'
      *>
      *> LINEDRAW Set to:
      *>    0   To use spaces (no lines)
      *>    1   To use the line-drawing characterset (PC codepage 437)
      *>    2   To use conventional ASCII characters (+, -, |)
      *>
      *>          OSX USERS - To use the linedrawing characterset,
      *>                      set your 'terminal' font to 'Lucida Console'
      *>
      *> OS       Set to one of the following:
      *>          'CYGWIN'   For a Windows/Cygwin version
      *>          'MINGW'    For a Windows/MinGW version
      *>          'OSX'      For a Macintosh OSX version
      *>          'UNIX'     For a Unix/Linux version
      *>          'WINDOWS'  For a Native Windows version
      *>
      *> SELCHAR  Set to the desired single character to be used as the red
      *>          'feature selected' character on the screen.
      *>          SUGGESTIONS: '>', '*', '=', '+'
      *>
      *> LPP      Set to maximum printable lines per page when the listing
      *>         should be generated for LANDSCAPE orientation (can be over-
      *>         ridden at execution time using the GCXREF_LINES environment
      *>          variable.
      *>
      *> LPPP     Set to maximum printable lines per page when the listing
      *>          should be generated for PORTRAIT orientation (can be over-
      *>          ridden at execution time using the GCXREF_LINES_PORT
      *>          environment variable.
      *>
GC0712 >>DEFINE CONSTANT LINEDRAW   AS 2
GC0712 >>DEFINE CONSTANT OS         AS 'UNIX'
```

```
    43  GC0712 >>DEFINE CONSTANT SELCHAR    AS '>'
    44  GC1213 >>DEFINE CONSTANT LPP        AS 50   *> LANDSCAPE (GCXREF_LINES)
    45  GC1213 >>DEFINE CONSTANT LPPP       AS 60   *> PORTRAIT  (GCXREF_LINES_PORT)
    46        *> ---------------------------------------------------------------
    47        *> Now set these switches to establish initial (default) settings
    48        *> for the various on-screen options.  Set them to a value of
    49        *> 0 if they are to be 'OFF' and 1 if they are to be 'ON'
    50  GC1213*> (for F5, 1=ON (Landscape), 2=ON (Portrait))
    51        *>
    52  GC0712 >>DEFINE CONSTANT F1  AS 0 *> Assume WITH DEBUGGING MODE
    53  GC0712 >>DEFINE CONSTANT F2  AS 0 *> Procedure+Statement Trace
    54  GC0712 >>DEFINE CONSTANT F3  AS 0 *> Make A Library (DLL)

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    55  GC0712 >>DEFINE CONSTANT F4  AS 0 *> Execute If Compilation OK
    56  GC1213 >>DEFINE CONSTANT F5  AS 0 *> Listings
    57  GC0712 >>DEFINE CONSTANT F6  AS 1 *> "FUNCTION" Is Optional
    58  GC0712 >>DEFINE CONSTANT F7  AS 1 *> Enable All Warnings
    59  GC0712 >>DEFINE CONSTANT F8  AS 1 *> Source Is Free-Format
    60  GC0712 >>DEFINE CONSTANT F9  AS 1 *> No COMP/BINARY Truncation
    61  GC0712 >>DEFINE CONSTANT F12 AS 4 *> Default config file (1-7):
    62        *>                             1 = BS2000
    63        *>                             2 = COBOL85
    64        *>                             3 = COBOL2002
    65        *>                             4 = DEFAULT
    66        *>                             5 = IBM
    67        *>                             6 = MF (i.e. Microfocus)
    68        *>                             7 = MVS
    69        /
    70         IDENTIFICATION DIVISION.
    71         PROGRAM-ID. GCic.
    72        *>*************************************************************
    73        *>     >NOTE<   >NOTE<   >NOTE<   >NOTE<   >NOTE<   >NOTE<     **
    74        *>                                                             **
    75        *> If this program is compiled with '-fdebugging-line', you    **
    76        *> will need to pipe SYSERR to a text file when executing GCic **
    77        *> (by adding the text '2> filename' to the end of the GCic    **
    78        *> command).  You may also need to press the ENTER key when    **
    79        *> GCic is finished.                                           **
```

```
    80        *>*************************************************************
    81        *> This program provides a Textual User Interface (TUI) to the **
    82        *> process of compiling and (optionally) executing a GNU COBOL **
    83        *> program.                                                     **
    84        *>                                                             **
    85        *> This programs execution syntax is as follows:               **
    86        *>                                                             **
    87        *> GCic <program-path-and-filename> [ <switch>... ]            **
    88        *>                                                             **
    89        *> Once executed, a display screen will be presented showing   **
    90        *> the compilation options that will be used.  The user will   **
    91        *> have the opportunity to change options, specify new ones    **
    92        *> and specify any program execution arguments to be used if   **
    93        *> you select the 'Execute' option.  When you press the Enter  **
    94        *> key the program will be compiled.                           **
    95        *>                                                             **
    96        *> The SCREEN SECTION contains an image of the screen.         **
    97        *>                                                             **
    98        *> The '010-Parse-Args' section in the PROCEDURE DIVISION has  **
    99        *> documentation on switches and their function.               **
   100        *>*************************************************************
   101        *>                                                             **
   102        *> AUTHOR:       GARY L. CUTLER                                **
   103        *>               Copyright (C) 2009-2018, Gary L. Cutler, GPL  **
   104        *>  Updated by   Vincent B Coen, 2018-2020+.                   **
   105        *>                                                             **
   106        *> DATE-WRITTEN: June 14, 2009                                 **
   107        *>                                                             **
   108        *>*************************************************************

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   109        *>  DATE  CHANGE DESCRIPTION                                  **
   110        *> ====== ================================================== **
   111        *> GC0609 Don't display compiler messages file if compilation  **
   112        *>  GLC   Is successful.  Also don't display messages if the   **
   113        *>        output file is busy (just put a message on the       **
   114        *>        screen, leave the OC screen up & let the user fix    **
   115        *>        the problem & resubmit.                              **
   116        *> GC0709 When 'EXECUTE' is selected, a 'FILE BUSY' error will **
```

```
117        *>  CLC   still cause the (old) executable to be launched.     **
118        *>        Also, the 'EXTRA SWITCHES' field is being ignored.   **
119        *>        Changed the title bar to lowlighted reverse video &  **
120        *>        the message area to highlighted reverse-video.       **
121        *> GC0809 Add a SPACE in front of command-line args when       **
122        *>  GLC   executing users program.  Add a SPACE after the      **
123        *>        -ftraceall switch when building cobc command.        **
124        *> GC0909 Convert to work on Cygwin/Linux as well as MinGW     **
125        *> GC0310 Virtualized the key codes for S-F1 thru S-F7 as they **
126        *>  GLC   differ depending upon whether PDCurses or NCurses is **
127        *>        being used.                                          **
128        *> GC0410 Introduced the cross-reference and source listing    **
129        *>  GLC   features.  Also fixed a bug in EXTRA switch proces-  **
130        *>        sing where garbage will result if more than the      **
131        *>        EXTRA switch is specified.                           **
132        *> GC1010 Corrected several problems reported by Vince Coen:   **
133        *>  GLC   1) Listing/Xref wouldn't work if '-I' additional     **
134        *>           cobc switch specified.                            **
135        *>        2) Programs coded with lowercase reserved words did  **
136        *>           not get parsed properly when generating listing   **
137        *>           and/or xref reports.                              **
138        *>        3) Reliance on a TEMP environment variable caused    **
139        *>           non-recoverable errors when generating listing    **
140        *>           and/or xref reports in a session that lacks a     **
141        *>           TEMP variable.                                    **
142        *>        As a result of this change, GCic no longer runs a    **
143        *>        second 'cobc' when generating listing and/or xref    **
144        *>        reports.  A '-save-temps' (without '=dir') specified **
145        *>        in the EXTRA options field will be ignored.  A       **
146        *>        '-save-temps=dir' specified in the EXTRA options     **
147        *>        field will negate both the XREF and SOURCE opts,     **
148        *>        if specified.                                        **
149        *> GC0711 Tailored for 29APR2011 version of GNU COBOL 2.0      **
150        *> GC0712 Replaced all switches with configuration settings;   **
151        *>  GLC   Tailored for 11FEB2012 version of GNU COBOL 2.0;     **
152        *>        Reformatted screen layout to fit a 24x80 screen      **
153        *>        rather than a 25x81 screen and to accommodate shell  **
154        *>        environments having only F1-F12 (like 'terminal' in  **
155        *>        OSX); Fully tested under OSX (required a few altera- **
156        *>        tions); Expanded both extra-options and runtime-     **
157        *>        arguments areas to TWO lines (152 chars total) each; **
```

```
   158        *>        Added support for MF/IBM/BS2000 listing-control      **
   159        *>        directives EJECT,SKIP1,SKIP2,SKIP3 (any of these in  **
   160        *>        copybooks will be ignored)                           **
   161        *> GC0313 Expand the source code record from 80 chars to 256   **
   162        *>  GLC   to facilitate looking for "LINKAGE SECTION" in a     **

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   163        *>        free-format file.                                    **
   164        *> GC1113 Edited to support the change of "OpenCOBOL" to "GNU  **
   165        *>  GLC   COBOL"                                               **
   166        *> GC1213 Updated for 23NOV2013 version of GNU COBOL 2.1       **
   167        *> GC0114 Introduce a "Press ENTER to Close" action after run- **
   168        *>  GLC   ning the compiled program in the compiler window (F4)**
   169        *> VC0617 Remove the Blinking in meny screen as uncomfortable  **
   170        *>  VBC   Update version printed to 2.2 30JUN2017.             **
   171        *>        Move the system constant settings to a copy file     **
   172        *>        const-set-1.cpy  in case GCic is updated.            **
   173        *>        Added  SET ENVIRONMENT "COB_EXIT_WAIT" TO "0" to     **
   174        *>        100-Initialization section.                          **
   175        *> VC0717 Replaced compile param instrinsic=all with           **
   176        *>  VBC   intrinstics=ALL. Changed mod detail inits for Gary   **
   177        *>        from GCL to GLC.                                     **
   178        *>        Update version printed to 2.2 20JUL2017.             **
   179        *>        Should really get this from the compiler if avail?   **
   180        *> VC1217 Update compiler version to v3.0 24DEC2017.           **
   181        *>        and copyright to 2018 (in 3 places).                 **
   182        *> VC0811 Updated compiler to 3.1 July2020 and the copyright.  **
   183        *> VC0322 Update compiler version to v3.1.2 06MAR2022.         **
   184        *>*************************************************************
   185        *>
   186         ENVIRONMENT DIVISION.
   187         CONFIGURATION SECTION.
   188         REPOSITORY.
   189             FUNCTION ALL INTRINSIC.
   190         INPUT-OUTPUT SECTION.
   191         FILE-CONTROL.
   192  GC1010     SELECT F-Cobc-Output-FILE   ASSIGN TO WS-Listing-Filename-TXT
   193                                        ORGANIZATION IS LINE SEQUENTIAL.
   194
```

```
   195             SELECT F-Source-Code-FILE   ASSIGN TO WS-File-Name-TXT
   196                                         ORGANIZATION IS LINE SEQUENTIAL
   197                                         FILE STATUS IS WS-FSM-Status-CD.
   198        /
   199         DATA DIVISION.
   200         FILE SECTION.
   201         FD  F-Cobc-Output-FILE.
   202         01  F-Cobc-Output-REC                    PIC X(256).
   203
   204         FD  F-Source-Code-FILE.
   205  GC0313 01  F-Source-Code-REC                    PIC X(256).
   206
   207         WORKING-STORAGE SECTION.
   208         >>source free
   209  *>C        COPY screenio.
   210  *>  Copyright (C) 2008-2012, 2015-2016  Free Software Foundation, Inc.
   211  *>  Written by Roger While
   212  *>
   213  *>  This file is part of GnuCOBOL.
   214  *>
   215  *>  The GnuCOBOL compiler is free software: you can redistribute
   216  *>  it and/or modify it under the terms of the GNU General Public

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   217  *>  License as published by the Free Software Foundation, either
   218  *>  version 3 of the License, or (at your option) any later
   219  *>  version.
   220  *>
   221  *>  GnuCOBOL is distributed in the hope that it will be useful,
   222  *>  but WITHOUT ANY WARRANTY; without even the implied warranty of
   223  *>  MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.  See the
   224  *>  GNU General Public License for more details.
   225  *>
   226  *>  You should have received a copy of the GNU General Public
   227  *>  License along with GnuCOBOL.
   228  *>  If not, see <http://www.gnu.org/licenses/>.
   229  *>
   230  *>   Colors
   231  *>
```

```
  232   78  cob-color-black     value 0.
  233   78  COB-COLOR-BLUE      VALUE 1.
  234   78  COB-COLOR-GREEN     VALUE 2.
  235   78  COB-COLOR-CYAN      VALUE 3.
  236   78  COB-COLOR-RED       VALUE 4.
  237   78  COB-COLOR-MAGENTA   VALUE 5.
  238   78  COB-COLOR-YELLOW    VALUE 6.
  239   78  COB-COLOR-WHITE     VALUE 7.
  240  *>
  241  *> Values that may be returned in CRT STATUS (or COB-CRT-STATUS)
  242  *> Normal return - Value 0000
  243   78  COB-SCR-OK          VALUE 0.
  244  *>  Function keys - Values 1xxx
  245   78  COB-SCR-F1          VALUE 1001.
  246   78  COB-SCR-F2          VALUE 1002.
  247   78  COB-SCR-F3          VALUE 1003.
  248   78  COB-SCR-F4          VALUE 1004.
  249   78  COB-SCR-F5          VALUE 1005.
  250   78  COB-SCR-F6          VALUE 1006.
  251   78  COB-SCR-F7          VALUE 1007.
  252   78  COB-SCR-F8          VALUE 1008.
  253   78  COB-SCR-F9          VALUE 1009.
  254   78  COB-SCR-F10         VALUE 1010.
  255   78  COB-SCR-F11         VALUE 1011.
  256   78  COB-SCR-F12         VALUE 1012.
  257   78  COB-SCR-F13         VALUE 1013.
  258   78  COB-SCR-F14         VALUE 1014.
  259   78  COB-SCR-F15         VALUE 1015.
  260   78  COB-SCR-F16         VALUE 1016.
  261   78  COB-SCR-F17         VALUE 1017.
  262   78  COB-SCR-F18         VALUE 1018.
  263   78  COB-SCR-F19         VALUE 1019.
  264   78  COB-SCR-F20         VALUE 1020.
  265   78  COB-SCR-F21         VALUE 1021.
  266   78  COB-SCR-F22         VALUE 1022.
  267   78  COB-SCR-F23         VALUE 1023.
  268   78  COB-SCR-F24         VALUE 1024.
  269   78  COB-SCR-F25         VALUE 1025.
  270   78  COB-SCR-F26         VALUE 1026.

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```

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   271   78  COB-SCR-F27         VALUE 1027.
   272   78  COB-SCR-F28         VALUE 1028.
   273   78  COB-SCR-F29         VALUE 1029.
   274   78  COB-SCR-F30         VALUE 1030.
   275   78  COB-SCR-F31         VALUE 1031.
   276   78  COB-SCR-F32         VALUE 1032.
   277   78  COB-SCR-F33         VALUE 1033.
   278   78  COB-SCR-F34         VALUE 1034.
   279   78  COB-SCR-F35         VALUE 1035.
   280   78  COB-SCR-F36         VALUE 1036.
   281   78  COB-SCR-F37         VALUE 1037.
   282   78  COB-SCR-F38         VALUE 1038.
   283   78  COB-SCR-F39         VALUE 1039.
   284   78  COB-SCR-F40         VALUE 1040.
   285   78  COB-SCR-F41         VALUE 1041.
   286   78  COB-SCR-F42         VALUE 1042.
   287   78  COB-SCR-F43         VALUE 1043.
   288   78  COB-SCR-F44         VALUE 1044.
   289   78  COB-SCR-F45         VALUE 1045.
   290   78  COB-SCR-F46         VALUE 1046.
   291   78  COB-SCR-F47         VALUE 1047.
   292   78  COB-SCR-F48         VALUE 1048.
   293   78  COB-SCR-F49         VALUE 1049.
   294   78  COB-SCR-F50         VALUE 1050.
   295   78  COB-SCR-F51         VALUE 1051.
   296   78  COB-SCR-F52         VALUE 1052.
   297   78  COB-SCR-F53         VALUE 1053.
   298   78  COB-SCR-F54         VALUE 1054.
   299   78  COB-SCR-F55         VALUE 1055.
   300   78  COB-SCR-F56         VALUE 1056.
   301   78  COB-SCR-F57         VALUE 1057.
   302   78  COB-SCR-F58         VALUE 1058.
   303   78  COB-SCR-F59         VALUE 1059.
   304   78  COB-SCR-F60         VALUE 1060.
   305   78  COB-SCR-F61         VALUE 1061.
   306   78  COB-SCR-F62         VALUE 1062.
   307   78  COB-SCR-F63         VALUE 1063.
   308   78  COB-SCR-F64         VALUE 1064.
   309  *>  Exception keys - Values 2xxx
```

```
   310   78  COB-SCR-PAGE-UP     VALUE 2001.
   311   78  Cob-Scr-Page_Up     value 2001.
   312   78  COB-SCR-PAGE-DOWN   VALUE 2002.
   313   78  Cob-Scr-Page_Down   value 2002.
   314   78  COB-SCR-KEY-UP      VALUE 2003.
   315   78  COB-SCR-KEY_UP      VALUE 2003.
   316   78  COB-SCR-KEY-DOWN    VALUE 2004.
   317   78  COB-SCR-KEY_DOWN    VALUE 2004.
   318   78  COB-SCR-ESC         VALUE 2005.
   319   78  COB-SCR-PRINT       VALUE 2006.
   320   78  COB-SCR-TAB         VALUE 2007.
   321   78  COB-SCR-BACK-TAB    VALUE 2008.
   322   78  COB-SCR-KEY-LEFT    VALUE 2009.
   323   78  COB-SCR-KEY-RIGHT   VALUE 2010.
   324  *>  The following exception keys are currently *only* returned

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   325  *>  on ACCEPT OMITTED
   326   78  COB-SCR-INSERT      VALUE 2011.
   327   78  COB-SCR-DELETE      VALUE 2012.
   328   78  COB-SCR-BACKSPACE   VALUE 2013.
   329   78  COB-SCR-KEY-HOME    VALUE 2014.
   330   78  COB-SCR-KEY-END     VALUE 2015.
   331  *>  Input validation - Values 8xxx
   332   78  COB-SCR-NO-FIELD    VALUE 8000.
   333   78  COB-SCR-TIME-OUT    VALUE 8001.
   334  *>  Other errors - Values 9xxx
   335   78  COB-SCR-FATAL       VALUE 9000.
   336   78  COB-SCR-MAX-FIELD   VALUE 9001.
   337         >>source fixed
   338  GC0712 01  WS-Compilation-Switches-TXT.
   339  GC0712     05 WS-CS-Args-TXT VALUE SPACES.
   340  GC0712        10 WS-CS-Arg-H1-TXT               PIC X(76).
   341  GC0712        10 WS-CS-Arg-H2-TXT               PIC X(76).
   342  GC0712     05 WS-CS-Filenames-TXT.
   343  GC0712        10 VALUE 'BS2000'                 PIC X(9).
   344  GC0712        10 VALUE 'COBOL85'                PIC X(9).
   345  GC0712        10 VALUE 'COBOL2002'              PIC X(9).
   346  GC0712        10 VALUE 'DEFAULT'                PIC X(9).
```

```
   347  GC0712        10 VALUE 'IBM'                     PIC X(9).
   348  GC0712        10 VALUE 'MF'                      PIC X(9).
   349  GC0712        10 VALUE 'MVS'                     PIC X(9).
   350  GC0712     05 WS-CS-Filenames-Table-TXT REDEFINES WS-CS-Filenames-TXT.
   351  GC0712        10 WS-CS-Filename-TXT              OCCURS 7 TIMES
   352  GC0712                                          PIC X(9).
   353  GC0712 >>IF F12 < 1
   354  GC0712     05 WS-CS-Config-NUM     VALUE 4       PIC 9(1).
   355  GC0712 >>ELIF F12 > 7
   356  GC0712     05 WS-CS-Config-NUM     VALUE 4       PIC 9(1).
   357  GC0712 >>ELSE
   358  GC0712     05 WS-CS-Config-NUM     VALUE F12     PIC 9(1).
   359  GC0712 >>END-IF
   360  GC0712     05 WS-CS-Extra-TXT VALUE SPACES.
   361  GC0712        10 WS-CS-Extra-H1-TXT              PIC X(76).
   362  GC0712        10 WS-CS-Extra-H2-TXT              PIC X(76).
   363  GC0712     05 WS-CS-Switch-Defaults-TXT.
   364  GC0712        10 VALUE F1                       PIC 9(1). *> WS-CS-DEBUG-CHR
   365  GC0712       10 VALUE F4                      PIC 9(1). *> WS-CS-EXECUTE-CHR
   366  GC0712        10 VALUE F8                       PIC 9(1). *> WS-CS-FREE-CHR
   367  GC0712       10 VALUE F3                      PIC 9(1). *> WS-CS-LIBRARY-CHR
   368  GC0712       10 VALUE F5                      PIC 9(1). *> WS-CS-LISTING-CHR
   369  GC0712        10 VALUE F6                      PIC 9(1). *> WS-CS-NOFUNC-CHR
   370  GC0712       10 VALUE F9                      PIC 9(1). *> WS-CS-NOTRUNC-CHR
   371  GC0712       10 VALUE F2                     PIC 9(1). *> WS-CS-TRACEALL-CHR
   372  GC0712       10 VALUE F7                      PIC 9(1). *> WS-CS-WARNALL-CHR
   373  GC0712     05 WS-CS-All-Switches-TXT REDEFINES
   374  GC0712                                WS-CS-Switch-Defaults-TXT.
   375  GC0712        10 WS-CS-DEBUG-CHR                PIC X(1).
   376  GC0712        10 WS-CS-EXECUTE-CHR              PIC X(1).
   377  GC0712        10 WS-CS-FREE-CHR                 PIC X(1).
   378  GC0712        10 WS-CS-LIBRARY-CHR              PIC X(1).

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   379  GC0712        10 WS-CS-LISTING-CHR              PIC X(1).
   380  GC0712        10 WS-CS-NOFUNC-CHR               PIC X(1).
   381  GC0712        10 WS-CS-NOTRUNC-CHR              PIC X(1).
   382  GC0712        10 WS-CS-TRACEALL-CHR             PIC X(1).
   383  GC0712        10 WS-CS-WARNALL-CHR              PIC X(1).
```

```
384
385  GC0909 01  WS-Cmd-TXT                            PIC X(512).
386
387  GC0712 01  WS-Cmd-Args-TXT                       PIC X(256).
388
389  GC0712 01  WS-Cmd-End-Quote-CHR                  PIC X(1).
390
391  GC0712 01  WS-Cmd-SUB                            USAGE BINARY-LONG.
392
393         01  WS-Cobc-Cmd-TXT                       PIC X(256).
394
395         01  WS-Config-Fn-TXT                      PIC X(12).
396
397  GC1113 01  WS-Delete-Fn-TXT                      PIC X(256).
398
399         01  WS-File-Name-TXT.
400             05 WS-FN-CHR                          OCCURS 256 TIMES
401                                                  PIC X(1).
402
403         01  WS-File-Status-Message-TXT.
404             05 VALUE 'Status Code: '              PIC X(13).
405             05 WS-FSM-Status-CD                   PIC 9(2).
406             05 VALUE ', Meaning: '                PIC X(11).
407             05 WS-FSM-Msg-TXT                     PIC X(25).
408
409  GC0909 01  WS-Horizontal-Line-TXT                PIC X(80).
410  GC0909
411         01  WS-I-SUB                              USAGE BINARY-LONG.
412
413         01  WS-J-SUB                              USAGE BINARY-LONG.
414
415  GC1213 01  WS-Listing-CD VALUE F5                PIC 9(1).
416
417  GC0712 01  WS-Listing-Filename-TXT                PIC X(256).
418
419  GC1213 01  WS-Listing-TXT VALUE SPACES           PIC X(27).
420
421         01  WS-OC-Compile-DT                      PIC XXXX/XX/XXBXX/XX.
422
423  GC0712 >>IF OS = 'CYGWIN'
424  GC0712 01  WS-OS-Dir-CHR         VALUE '/'       PIC X(1).
```

```
   425  GC0712 78  WS-OS-Exe-Ext-CONST   VALUE '.exe'.
   426  GC0712 78  WS-OS-Lib-Ext-CONST   VALUE '.dll'.
   427  GC0712 78  WS-OS-Lib-Type-CONST  VALUE 'DLL)'.
   428  GC0712 01  WS-OS-Type-CD         VALUE 2         PIC 9(1).
   429  GC0712 >>ELIF OS = 'MINGW'
   430  GC0712 01  WS-OS-Dir-CHR         VALUE '\'       PIC X(1).
   431  GC0712 78  WS-OS-Exe-Ext-CONST   VALUE '.exe'.
   432  GC0712 78  WS-OS-Lib-Ext-CONST   VALUE '.dll'.

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   433  GC0712 78  WS-OS-Lib-Type-CONST  VALUE 'DLL)'.
   434  GC0712 01  WS-OS-Type-CD         VALUE 5         PIC 9(1).
   435  GC0712 >>ELIF OS = 'OSX'
   436  GC0712 01  WS-OS-Dir-CHR         VALUE '/'       PIC X(1).
   437  GC0712 78  WS-OS-Exe-Ext-CONST   VALUE ' '.
   438  GC0712 78  WS-OS-Lib-Ext-CONST   VALUE '.dylib'.
   439  GC0712 78  WS-OS-Lib-Type-CONST  VALUE 'DYLIB)'.
   440  GC0712 01  WS-OS-Type-CD         VALUE 4         PIC 9(1).
   441  GC0712 >>ELIF OS = 'UNIX'
   442  GC0712 01  WS-OS-Dir-CHR         VALUE '/'       PIC X(1).
   443  GC0712 78  WS-OS-Exe-Ext-CONST   VALUE ' '.
   444  GC0712 78  WS-OS-Lib-Ext-CONST   VALUE '.so'.
   445  GC0712 78  WS-OS-Lib-Type-CONST  VALUE 'SO)'.
   446  GC0712 01  WS-OS-Type-CD         VALUE 3         PIC 9(1).
   447  GC0712 >>ELIF OS = 'WINDOWS'
   448  GC0712 01  WS-OS-Dir-CHR         VALUE '\'       PIC X(1).
   449  GC0712 78  WS-OS-Exe-Ext-CONST   VALUE '.exe'.
   450  GC0712 78  WS-OS-Lib-Ext-CONST   VALUE '.dll'.
   451  GC0712 78  WS-OS-Lib-Type-CONST  VALUE 'DLL)'.
   452  GC0712 01  WS-OS-Type-CD         VALUE 1         PIC 9(1).
   453  GC0712 >>END-IF
   454  GC0909     88 WS-OS-Windows-BOOL VALUE 1, 5.
   455  GC0909     88 WS-OS-Cygwin-BOOL  VALUE 2.
   456  GC0712     88 WS-OS-UNIX-BOOL    VALUE 3, 4.
   457  GC0712     88 WS-OS-OSX-BOOL     VALUE 4.
   458
   459         01  WS-OS-Type-FILLER-TXT.
   460             05 VALUE 'Windows'                  PIC X(14).
   461             05 VALUE 'Windows/Cygwin'           PIC X(14).
```

```
   462             05 VALUE 'UNIX/Linux'                PIC X(14).
   463             05 VALUE 'OSX'                        PIC X(14).
   464             05 VALUE 'Windows/MinGW'              PIC X(14).
   465         01  WS-OS-Types-TXT REDEFINES WS-OS-Type-FILLER-TXT.
   466             05 WS-OS-Type-TXT                     OCCURS 5 TIMES
   467                                                  PIC X(14).
   468
   469         01  WS-Output-Msg-TXT                    PIC X(80).
   470
   471         01  WS-Path-Delimiter-CHR                PIC X(1).
   472
   473         01  WS-Prog-Extension-TXT                PIC X(256).
   474
   475         01  WS-Prog-Folder-TXT                   PIC X(256).
   476
   477  GC0712 01  WS-Prog-File-Name-TXT.
   478  GC0712     05 WS-PFN-CHR                        OCCURS 256 TIMES
   479  GC0712                                          PIC X(1).
   480
   481  GC0712 01  WS-Pgm-Nm-TXT                        PIC X(31).
   482
   483         01  WS-Runtime-Switches-TXT.
   484             05 WS-RS-Compile-OK-CHR               PIC X(1).
   485                88 WS-RS-Compile-OK-BOOL          VALUE 'Y'.
   486  GC0909        88 WS-RS-Compile-OK-Warn-BOOL     VALUE 'W'.

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   487                88 WS-RS-Compile-Failed-BOOL      VALUE 'N'.
   488  GC0609     05 WS-RS-Complete-CHR                PIC X(1).
   489  GC0609        88 WS-RS-Complete-BOOL            VALUE 'Y'.
   490  GC0609        88 WS-RS-Not-Complete-BOOL        VALUE 'N'.
   491  GC0712     05 WS-RS-Quote-CHR                   PIC X(1).
   492  GC0712        88 WS-RS-Double-Quote-Used-BOOL   VALUE 'Y' FALSE 'N'.
   493  GC0809     05 WS-RS-IDENT-DIV-CHR               PIC X(1).
   494  GC0809        88 WS-RS-1st-Prog-Complete-BOOL   VALUE 'Y'.
   495  GC0809        88 WS-RS-More-To-1st-Prog-BOOL    VALUE 'N'.
   496             05 WS-RS-No-Switch-Chgs-CHR          PIC X(1).
   497                88 WS-RS-No-Switch-Changes-BOOL   VALUE 'Y'.
   498                88 WS-RS-Switch-Changes-BOOL      VALUE 'N'.
```

```
   499  GC0709     05 WS-RS-Output-File-Busy-CHR         PIC X(1).
   500  GC0709        88 WS-RS-Output-File-Busy-BOOL     VALUE 'Y'.
   501  GC0709        88 WS-RS-Output-File-Avail-BOOL    VALUE 'N'.
   502  GC0809     05 WS-RS-Source-Record-Type-CHR       PIC X(1).
   503  GC0809        88 WS-RS-Source-Rec-Linkage-BOOL   VALUE 'L'.
   504  GC0809        88 WS-RS-Source-Rec-Ident-BOOL     VALUE 'I'.
   505  GC0712        88 WS-RS-Source-Rec-Ignored-BOOL   VALUE ' '.
   506             05 WS-RS-Switch-Error-CHR             PIC X(1).
   507                88 WS-RS-Switch-Is-Bad-BOOL        VALUE 'Y'.
   508                88 WS-RS-Switch-Is-Good-BOOL       VALUE 'N'.
   509
   510         01  WS-Tally-QTY                          USAGE BINARY-LONG.
   511        /
   512         SCREEN SECTION.
   513        *>
   514        *> Here is the layout of the GCic screen.
   515        *>
   516       *> The sample screen below shows how the screen would look if the LINEDRAW
   517        *> configuration setting is set to a value of 2
   518        *>
   519         *> The following sample screen layout shows how the screen looks with
line-drawing
   520        *> characters disabled.
   521        *>
    522         *>          1          2          3          4          5          6
7         8
                                                                                 523
*>12345678901234567890123456789012345678901234567890123456789012345678901234567890
                                                                                 524
*>================================================================================
    525   VC 01 *> GCic (2020/08/11 23:00) - GNU COBOL V3.1 01July2020 Interactive
Compilation
                              526                                                 02
*>+-----------------------------------------------------------------------------+
   527    03 *>| Folder:   E:\GNU COBOL\Samples                                    |
   528    04 *>| Filename: GCic.cbl                                                |
                              529                                                 05
*>+-----------------------------------------------------------------------------+
   530     06 *> Set/Clr Switches Via F1-F9; Set Config Via F12; ENTER Key Compiles;
ESC Quits
    531      07 *>+-------------------------------------------------------------------
```

```
+------------+
   532     08 *>| F1  Assume WITH DEBUGGING MODE  F6  "FUNCTION" Is Optional      |
Current    |
   533     09 *>| F2  Procedure+Statement Trace   F7  Enable All Warnings         |
Config:    |
   534     10 *>| F3  Make A Library (DLL)        F8  Source Is Free-Format       |
XXXXXXXXXX |
    535      11 *>| F4  Execute If Compilation OK    F9  No COMP/BINARY Truncation
|            |
  536    12 *>| F5 >Produce Listing (Landscape)                          |         |
   537      13 *>+-------------------------------------------------------------------
+------------+
   538     14 *> Extra "cobc" Switches, If Any ("-save-temps=xxx" Prevents Listings):
                            539                                                  15
*>+-------------------------------------------------------------------------------+
                         540                                          16        *>|
_____________________________________________________________________________ |

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                         541                                          17        *>|
_____________________________________________________________________________ |
                            542                                                  18
*>+-------------------------------------------------------------------------------+
   543     19 *> Program Execution Arguments, If Any:
                            544                                                  20
*>+-------------------------------------------------------------------------------+
                         545                                          21        *>|
_____________________________________________________________________________ |
                         546                                          22        *>|
_____________________________________________________________________________ |
                            547                                                  23
*>+-------------------------------------------------------------------------------+
   548  VC 24 *> GCic Copyright (C) 2009-2022, Gary L. Cutler, GPL
                                                                                 549
*>===============================================================================
                                                                                 550
*>12345678901234567890123456789012345678901234567890123456789012345678901234567890
    551         *>          1          2          3          4          5          6
7         8
```

```
   552        *>
   553         *> If this program is run on Windows, it must run with codepage 437
activated to
   554         *> display the line-drawing characters.  With a native Windows build
or a
   555         *> Windows/MinGW build, one could use the command 'chcp 437' to set
that codepage
   556          *> for display within a Windows console window (that should be the
default though).
   557        *> With a Windows/Cygwin build, set the environment variable CYGWIN to
a value of
   558         *> 'codepage:oem' (this cannot be done from within the program though
- you will
    559          *> have to use the 'Computer/Advanced System Settings/Environment
Variables' (Vista
    560          *> or Windows 7) function to define the variable.  XP Users: use
'My Computer/
   561        *> Properties/Advanced/Environment Variables'.
   562        *>
    563          *> OSX users may use line drawing characters in this and any GNU
COBOL program
  564      *> simply by setting their 'terminal' application's font to "Lucida Console".
   565        *>
   566         >>IF LINEDRAW IS EQUAL TO 0
   567         78 LD-UL-Corner                VALUE ' '.
   568         78 LD-LL-Corner                VALUE ' '.
   569         78 LD-UR-Corner                VALUE ' '.
   570         78 LD-LR-Corner                VALUE ' '.
   571         78 LD-Upper-T                  VALUE ' '.
   572         78 LD-Lower-T                  VALUE ' '.
   573         78 LD-Horiz-Line               VALUE ' '.
   574         78 LD-Vert-Line                VALUE ' '.
   575         >>ELIF LINEDRAW IS EQUAL TO 1
   576         78 LD-UL-Corner                VALUE X'DA'.
   577         78 LD-LL-Corner                VALUE X'C0'.
   578         78 LD-UR-Corner                VALUE X'BF'.
   579         78 LD-LR-Corner                VALUE X'D9'.
   580         78 LD-Upper-T                  VALUE X'C2'.
   581         78 LD-Lower-T                  VALUE X'C1'.
   582         78 LD-Horiz-Line               VALUE X'C4'.
   583         78 LD-Vert-Line                VALUE X'B3'.
```

```
   584         >>ELSE
   585         78 LD-UL-Corner                VALUE '+'.
   586         78 LD-LL-Corner                VALUE '+'.
   587         78 LD-UR-Corner                VALUE '+'.
   588         78 LD-LR-Corner                VALUE '+'.
   589         78 LD-Upper-T                  VALUE '+'.
   590         78 LD-Lower-T                  VALUE '+'.
   591         78 LD-Horiz-Line               VALUE '-'.
   592         78 LD-Vert-Line                VALUE '|'.
   593         >>END-IF
   594

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   595         01 S-Blank-SCR LINE 1 COLUMN 1 BLANK SCREEN.
   596
   597         01 S-Switches-SCR BACKGROUND-COLOR COB-COLOR-BLACK
   598                           FOREGROUND-COLOR COB-COLOR-WHITE AUTO.
   599        *>
   600        *> GENERAL SCREEN FRAMEWORK
   601        *>
   602             03 BACKGROUND-COLOR COB-COLOR-BLACK
   603                FOREGROUND-COLOR COB-COLOR-GREEN HIGHLIGHT.
   604  GC0712       05 LINE 02 COL 01           VALUE LD-UL-Corner.
   605  GC0712       05         COL 02 PIC X(78) FROM  WS-Horizontal-Line-TXT.
   606               05         COL 80           VALUE LD-UR-Corner.
   607
   608  GC0712       05 LINE 03 COL 01           VALUE LD-Vert-Line.
   609               05         COL 80           VALUE LD-Vert-Line.
   610
   611  GC0712       05 LINE 04 COL 01           VALUE LD-Vert-Line.
   612               05         COL 80           VALUE LD-Vert-Line.
   613
   614  GC0712       05 LINE 05 COL 01           VALUE LD-LL-Corner.
   615  GC0712       05         COL 02 PIC X(78) FROM  WS-Horizontal-Line-TXT.
   616               05         COL 80           VALUE LD-LR-Corner.
   617
   618  GC0712       05 LINE 07 COL 01           VALUE LD-UL-Corner.
   619  GC0712       05         COL 02 PIC X(65) FROM  WS-Horizontal-Line-TXT.
   620  GC0712       05         COL 67           VALUE LD-Upper-T.
```

```
   621  GC0712       05         COL 68 PIC X(12) FROM  WS-Horizontal-Line-TXT.
   622               05         COL 80           VALUE LD-UR-Corner.
   623
   624  GC0712       05 LINE 08 COL 01           VALUE LD-Vert-Line.
   625  GC0712       05         COL 67           VALUE LD-Vert-Line.
   626               05         COL 80           VALUE LD-Vert-Line.
   627
   628  GC0712       05 LINE 09 COL 01           VALUE LD-Vert-Line.
   629  GC0712       05         COL 67           VALUE LD-Vert-Line.
   630               05         COL 80           VALUE LD-Vert-Line.
   631
   632  GC0712       05 LINE 10 COL 01           VALUE LD-Vert-Line.
   633  GC0712       05         COL 67           VALUE LD-Vert-Line.
   634               05         COL 80           VALUE LD-Vert-Line.
   635
   636  GC0712       05 LINE 11 COL 01           VALUE LD-Vert-Line.
   637  GC0712       05         COL 67           VALUE LD-Vert-Line.
   638               05         COL 80           VALUE LD-Vert-Line.
   639
   640  GC0712       05 LINE 12 COL 01           VALUE LD-Vert-Line.
   641  GC0712       05         COL 67           VALUE LD-Vert-Line.
   642               05         COL 80           VALUE LD-Vert-Line.
   643
   644  GC0712       05 LINE 13 COL 01           VALUE LD-LL-Corner.
   645  GC0712       05         COL 02 PIC X(65) FROM  WS-Horizontal-Line-TXT.
   646  GC0712       05         COL 67           VALUE LD-Lower-T.
   647  GC0712       05         COL 68 PIC X(12) FROM  WS-Horizontal-Line-TXT.
   648               05         COL 80           VALUE LD-LR-Corner.

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   649
   650  GC0712       05 LINE 15 COL 01           VALUE LD-UL-Corner.
   651  GC0712       05         COL 02 PIC X(78) FROM  WS-Horizontal-Line-TXT.
   652               05         COL 80           VALUE LD-UR-Corner.
   653
   654  GC0712       05 LINE 16 COL 01           VALUE LD-Vert-Line.
   655               05         COL 80           VALUE LD-Vert-Line.
   656
   657  GC0712       05 LINE 17 COL 01           VALUE LD-Vert-Line.
```

```
658                05         COL 80           VALUE LD-Vert-Line.
659
660  GC0712        05 LINE 18 COL 01           VALUE LD-LL-Corner.
661  GC0712        05         COL 02 PIC X(78) FROM  WS-Horizontal-Line-TXT.
662                05         COL 80           VALUE LD-LR-Corner.
663
664  GC0712        05 LINE 20 COL 01           VALUE LD-UL-Corner.
665  GC0712        05         COL 02 PIC X(78) FROM  WS-Horizontal-Line-TXT.
666                05         COL 80           VALUE LD-UR-Corner.
667
668  GC0712        05 LINE 21 COL 01           VALUE LD-Vert-Line.
669                05         COL 80           VALUE LD-Vert-Line.
670
671  GC0712        05 LINE 22 COL 01           VALUE LD-Vert-Line.
672                05         COL 80           VALUE LD-Vert-Line.
673
674  GC0712        05 LINE 23 COL 01           VALUE LD-LL-Corner.
675  GC0712        05         COL 02 PIC X(78) FROM  WS-Horizontal-Line-TXT.
676                05         COL 80           VALUE LD-LR-Corner.
677         *>
678         *> TOP AND BOTTOM LINES
679         *>
680  GC0712     03 BACKGROUND-COLOR COB-COLOR-BLUE
681                FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
682  GC0410        05 LINE 01 COL 01 VALUE ' GCic ('.
683  GC0410        05         COL 08 PIC X(16) FROM WS-OC-Compile-DT.
684  GC1213        05         COL 24 VALUE ') GNUCOBOL 3.1.2 06MAR2022 ' &
685  GC0410                              'Interactive Compilation        '.
686  VC0617     03 BACKGROUND-COLOR COB-COLOR-RED
687  GC0712        FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
688  GC0712        05 LINE 24 COL 01 PIC X(80) FROM WS-Output-Msg-TXT.
689         *>
690         *> LABELS
691         *>
692             03 BACKGROUND-COLOR COB-COLOR-BLACK
693                FOREGROUND-COLOR COB-COLOR-CYAN  HIGHLIGHT.
694  GC0712        05 LINE 06 COL 02 VALUE 'Set/Clr Switches Via F1-F9; ' &
695  GC0712                              'Set Config Via F12; Enter Key ' &
696  GC0712                              'Compiles; Esc Quits'.
697  GC0712        05 LINE 14 COL 02 VALUE 'Extra "cobc" Switches, If Any ' &
698  GC0712                              '("-save-temps=xxx" Prevents ' &
```

```
   699  GC0712                                'Listings):'.
   700  GC0712       05 LINE 19 COL 02 VALUE 'Program Execution Arguments, ' &
   701  GC0712                                'If Any:'.
   702  GC0712    03 BACKGROUND-COLOR COB-COLOR-BLACK

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   703  GC0712       FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
   704  GC0712       05 LINE 06 COL 23 VALUE 'F1'.
   705  GC0712       05         COL 26 VALUE 'F9'.
   706  GC0712       05         COL 45 VALUE 'F12'.
   707  GC0712       05         COL 50 VALUE 'ENTER'.
   708  GC0712       05         COL 70 VALUE 'ESC'.
   709       *>
   710       *> TOP SECTION BACKGROUND
   711       *>
   712           03 BACKGROUND-COLOR COB-COLOR-BLACK
   713              FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
   714  GC0712       05 LINE 03 COL 62 VALUE 'Enter'.
   715  GC0712       05 LINE 04 COL 62 VALUE 'Esc'.
   716
   717           03 BACKGROUND-COLOR COB-COLOR-BLACK
   718              FOREGROUND-COLOR COB-COLOR-GREEN HIGHLIGHT.
   719  GC0712       05 LINE 04 COL 03 VALUE 'Folder:   '.
   720  GC0712       05 LINE 03 COL 03 VALUE 'Filename: '.
   721
   722  GC0712       05 LINE 03 COL 67 VALUE ': Compile   '.
   723  GC0712       05 LINE 04 COL 65 VALUE ':   Quit      '.
   724       *>
   725       *> TOP SECTION PROGRAM INFO
   726       *>
   727           03 BACKGROUND-COLOR COB-COLOR-BLACK
   728              FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
   729  GC0712       05 LINE 03 COL 13 PIC X(66) FROM WS-Prog-File-Name-TXT.
   730  GC0712       05 LINE 04 COL 13 PIC X(66) FROM WS-Prog-Folder-TXT.
   731       *>
   732       *> MIDDLE LEFT SECTION F-KEYS
   733       *>
   734           03 BACKGROUND-COLOR COB-COLOR-BLACK
   735              FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
```

```
   736  GC0712       05 LINE 08 COL 03 VALUE 'F1'.
   737  GC0712       05 LINE 09 COL 03 VALUE 'F2'.
   738  GC0712       05 LINE 10 COL 03 VALUE 'F3'.
   739  GC0712       05 LINE 11 COL 03 VALUE 'F4'.
   740  GC0712       05 LINE 12 COL 03 VALUE 'F5'.
   741
   742  GC0712       05 LINE 08 COL 35 VALUE 'F6'.
   743  GC0712       05 LINE 09 COL 35 VALUE 'F7'.
   744  GC0712       05 LINE 10 COL 35 VALUE 'F8'.
   745  GC0712       05 LINE 11 COL 35 VALUE 'F9'.
   746        *>
   747        *> MIDDLE LEFT SECTION SWITCHES
   748        *>
   749            03 BACKGROUND-COLOR COB-COLOR-BLACK
   750               FOREGROUND-COLOR COB-COLOR-RED   HIGHLIGHT.
   751  GC0712       05 LINE 08 COL 06 PIC X(1) FROM WS-CS-DEBUG-CHR.
   752  GC0712       05 LINE 09 COL 06 PIC X(1) FROM WS-CS-TRACEALL-CHR.
   753  GC0712       05 LINE 10 COL 06 PIC X(1) FROM WS-CS-LIBRARY-CHR.
   754  GC0712       05 LINE 11 COL 06 PIC X(1) FROM WS-CS-EXECUTE-CHR.
   755  GC0712       05 LINE 12 COL 06 PIC X(1) FROM WS-CS-LISTING-CHR.
   756

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   757  GC0712       05 LINE 08 COL 38 PIC X(1) FROM WS-CS-NOFUNC-CHR.
   758  GC0712       05 LINE 09 COL 38 PIC X(1) FROM WS-CS-WARNALL-CHR.
   759  GC0712       05 LINE 10 COL 38 PIC X(1) FROM WS-CS-FREE-CHR.
   760  GC0712       05 LINE 11 COL 38 PIC X(1) FROM WS-CS-NOTRUNC-CHR.
   761        *>
   762        *> MIDDLE LEFT SECTION BACKGROUND
   763        *>
   764            03 BACKGROUND-COLOR COB-COLOR-BLACK
   765               FOREGROUND-COLOR COB-COLOR-GREEN HIGHLIGHT.
   766  GC0712       05 LINE 08 COL 07 VALUE 'Assume WITH DEBUGGING MODE'.
   767  GC0712       05 LINE 09 COL 07 VALUE 'Procedure+Statement Trace '.
   768  GC0712       05 LINE 10 COL 07 VALUE 'Make a Library ('.
   769  GC0712       05         COL 23 VALUE WS-OS-Lib-Type-CONST.
   770  GC0712       05 LINE 11 COL 07 VALUE 'Execute If Compilation OK '.
   771  GC1213       05 LINE 12 COL 07 FROM  WS-Listing-TXT.
   772
```

```
   773  GC0712       05 LINE 08 COL 39 VALUE '"FUNCTION" Is Optional    '.
   774  GC0712       05 LINE 09 COL 39 VALUE 'Enable All Warnings       '.
   775  GC0712       05 LINE 10 COL 39 VALUE 'Source Is Free-Format     '.
   776  GC0712       05 LINE 11 COL 39 VALUE 'No COMP/BINARY Truncation '.
   777        *>
   778        *> MIDDLE RIGHT SECTION Text
   779        *>
   780            03 BACKGROUND-COLOR COB-COLOR-BLACK
   781               FOREGROUND-COLOR COB-COLOR-GREEN HIGHLIGHT.
   782  GC0712       05 LINE 08 COL 69 VALUE 'Current'.
   783  GC0712       05 LINE 09 COL 69 VALUE 'Config:'.
   784        *>
   785        *> MIDDLE RIGHT SECTION CONFIG FILE
   786        *>
   787            03 BACKGROUND-COLOR COB-COLOR-BLACK
   788               FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
   789  GC0712       05 LINE 10 COL 69 PIC X(10)
   790  GC0712          FROM WS-CS-Filename-TXT (WS-CS-Config-NUM).
   791        *>
   792        *> FREE-FORM OPTIONS FIELDS
   793        *>
   794            03 BACKGROUND-COLOR COB-COLOR-BLACK
   795               FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
   796  GC0712       05 LINE 16 COL 03 PIC X(76) USING WS-CS-Extra-H1-TXT.
   797  GC0712       05 LINE 17 COL 03 PIC X(76) USING WS-CS-Extra-H2-TXT.
   798  GC0712       05 LINE 21 COL 03 PIC X(76) USING WS-CS-Arg-H1-TXT.
   799  GC0712       05 LINE 22 COL 03 PIC X(76) USING WS-CS-Arg-H2-TXT.
   800        /
   801         PROCEDURE DIVISION.
   802        *>*************************************************************
   803        *> Legend to procedure names:                                 **
   804        *>                                                           **
   805        *> 00x-xxx   All MAIN driver procedures                      **
   806        *> 0xx-xxx   All GLOBAL UTILITY procedures                   **
   807        *> 1xx-xxx   All INITIALIZATION procedures                   **
   808        *> 2xx-xxx   All CORE PROCESSING procedures                  **
   809        *> 9xx-xxx   All TERMINATION procedures                      **
   810        *>*************************************************************

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```

```
811         DECLARATIVES.
812         000-File-Error SECTION.
813             USE AFTER STANDARD ERROR PROCEDURE ON F-Source-Code-FILE.
814       *     COPY FileStat-Msgs
815       *         REPLACING STATUS BY WS-FSM-Status-CD
816       *                   MSG    BY WS-FSM-Msg-TXT.
817       *> ****************************************************************
818       *> ** Author: Gary L. Cutler                                     **
819       *> **         CutlerGL@gmail.com                                 **
820       *> **                                                            **
821       *> ** This copybook defines an EVALUATE statement capable of    **
822       *> ** translating two-digit FILE-STATUS codes to a message.     **
823       *> **                                                            **
824       *> ** Use the REPLACING option to COPY to change the names of   **
825       *> ** the MSG and STATUS identifiers to the names your program  **
826       *> ** needs.                                                     **
827       *> ****************************************************************
828             EVALUATE WS-FSM-Status-CD
829             WHEN 00 MOVE 'SUCCESS                  ' TO WS-FSM-Msg-TXT
830             WHEN 02 MOVE 'SUCCESS DUPLICATE        ' TO WS-FSM-Msg-TXT
831             WHEN 04 MOVE 'SUCCESS INCOMPLETE       ' TO WS-FSM-Msg-TXT
832             WHEN 05 MOVE 'SUCCESS OPTIONAL         ' TO WS-FSM-Msg-TXT
833             WHEN 07 MOVE 'SUCCESS NO UNIT          ' TO WS-FSM-Msg-TXT
834             WHEN 10 MOVE 'END OF FILE              ' TO WS-FSM-Msg-TXT
835             WHEN 14 MOVE 'OUT OF KEY RANGE         ' TO WS-FSM-Msg-TXT
836             WHEN 21 MOVE 'KEY INVALID              ' TO WS-FSM-Msg-TXT
837             WHEN 22 MOVE 'KEY EXISTS               ' TO WS-FSM-Msg-TXT
838             WHEN 23 MOVE 'KEY NOT EXISTS           ' TO WS-FSM-Msg-TXT
839             WHEN 30 MOVE 'PERMANENT ERROR          ' TO WS-FSM-Msg-TXT
840             WHEN 31 MOVE 'INCONSISTENT FILENAME    ' TO WS-FSM-Msg-TXT
841             WHEN 34 MOVE 'BOUNDARY VIOLATION       ' TO WS-FSM-Msg-TXT
842             WHEN 35 MOVE 'FILE NOT FOUND           ' TO WS-FSM-Msg-TXT
843             WHEN 37 MOVE 'PERMISSION DENIED        ' TO WS-FSM-Msg-TXT
844             WHEN 38 MOVE 'CLOSED WITH LOCK         ' TO WS-FSM-Msg-TXT
845             WHEN 39 MOVE 'CONFLICT ATTRIBUTE       ' TO WS-FSM-Msg-TXT
846             WHEN 41 MOVE 'ALREADY OPEN             ' TO WS-FSM-Msg-TXT
847             WHEN 42 MOVE 'NOT OPEN                 ' TO WS-FSM-Msg-TXT
848             WHEN 43 MOVE 'READ NOT DONE            ' TO WS-FSM-Msg-TXT
849             WHEN 44 MOVE 'RECORD OVERFLOW          ' TO WS-FSM-Msg-TXT
850             WHEN 46 MOVE 'READ ERROR               ' TO WS-FSM-Msg-TXT
```

```
   851             WHEN 47 MOVE 'INPUT DENIED             ' TO WS-FSM-Msg-TXT
   852             WHEN 48 MOVE 'OUTPUT DENIED            ' TO WS-FSM-Msg-TXT
   853             WHEN 49 MOVE 'I/O DENIED               ' TO WS-FSM-Msg-TXT
   854             WHEN 51 MOVE 'RECORD LOCKED            ' TO WS-FSM-Msg-TXT
   855             WHEN 52 MOVE 'END-OF-PAGE              ' TO WS-FSM-Msg-TXT
   856             WHEN 57 MOVE 'I/O LINAGE               ' TO WS-FSM-Msg-TXT
   857             WHEN 61 MOVE 'FILE SHARING FAILURE     ' TO WS-FSM-Msg-TXT
   858             WHEN 91 MOVE 'FILE NOT AVAILABLE       ' TO WS-FSM-Msg-TXT
   859             END-EVALUATE.
   860  *>>W Msg29 Caution: One or more replacing sources not found
   861             MOVE SPACES TO WS-Output-Msg-TXT
   862             IF WS-FSM-Status-CD = 35
   863                 DISPLAY
   864                     'File not found: "'

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   865                     TRIM(WS-File-Name-TXT,TRAILING)
   866                     '"'
   867             ELSE
   868                 DISPLAY
   869                     'Error accessing file: "'
   870                     TRIM(WS-File-Name-TXT,TRAILING)
   871                     '"'
   872             END-IF
   873             GOBACK
   874             .
   875         END DECLARATIVES.
   876
   877         000-Main SECTION.
   878             PERFORM 100-Initialization
   879  GC0609     SET WS-RS-Not-Complete-BOOL TO TRUE
   880  GC0609     PERFORM UNTIL WS-RS-Complete-BOOL
   881  GC0609         PERFORM 200-Let-User-Set-Switches
   882  GC0609         PERFORM 210-Run-Compiler
   883  GC0410         IF (WS-RS-Compile-OK-BOOL OR WS-RS-Compile-OK-Warn-BOOL)
   884  GC0712         AND (WS-CS-LISTING-CHR > SPACE)
   885  GC0712             DISPLAY S-Blank-SCR
   886  GC0410             PERFORM 220-Make-Listing
   887  GC0410         END-IF
```

```
   888  GC0709         IF  (WS-CS-EXECUTE-CHR NOT = SPACES)
   889  GC0709         AND (WS-RS-Output-File-Avail-BOOL)
   890  GC0609             PERFORM 230-Run-Program
   891  GC0609         END-IF
   892  GC0712         PERFORM 250-Autoload-Listing
   893  GC0609     END-PERFORM
   894             PERFORM 900-Terminate
   895        * -- Control will NOT return
   896             .
   897        /
   898        *>***************************************************************
   899        *> Perform all program-wide initialization operations          **
   900        *>***************************************************************
   901         100-Initialization SECTION.
   902        *>***************************************************************
   903        *> Make sure full screen-handling is in effect                 **
   904        *>***************************************************************
   905             SET ENVIRONMENT 'COB_SCREEN_EXCEPTIONS' TO 'Y'
   906             SET ENVIRONMENT 'COB_SCREEN_ESC'        TO 'Y'
   907  VC0617     SET ENVIRONMENT "COB_EXIT_WAIT"         TO "0".
   908        *>***************************************************************
   909        *> Get GCic Compilation Date/Time                              **
   910        *>***************************************************************
   911             MOVE WHEN-COMPILED (1:12) TO WS-OC-Compile-DT
   912             INSPECT WS-OC-Compile-DT
   913                 REPLACING ALL '/' BY ':'
   914                 AFTER INITIAL SPACE
   915        *>***************************************************************
   916        *> Convert WS-CS-All-Switches-TXT to Needed Alphanumeric Values**
   917        *>***************************************************************
   918             INSPECT WS-CS-All-Switches-TXT

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   919                 REPLACING ALL '0' BY SPACE
   920                           ALL '1' BY SELCHAR
   921  GC1213                   ALL '2' BY SELCHAR
   922        *>***************************************************************
   923        *> Process filename (the only command-line argument)           **
   924        *>***************************************************************
```

```
925  GC0712     ACCEPT WS-Cmd-Args-TXT FROM COMMAND-LINE
926  GC0712     MOVE 1 TO WS-Cmd-SUB
927  GC0712     IF WS-Cmd-Args-TXT(WS-Cmd-SUB:1) = '"' OR "'"
928  GC0712         MOVE WS-Cmd-Args-TXT(WS-Cmd-SUB:1)
929  GC0712           TO WS-Cmd-End-Quote-CHR
930  GC0712         ADD 1 TO WS-Cmd-SUB
931  GC0712         UNSTRING WS-Cmd-Args-TXT
932  GC0712             DELIMITED BY WS-Cmd-End-Quote-CHR
933  GC0712             INTO WS-File-Name-TXT
934  GC0712             WITH POINTER WS-Cmd-SUB
935  GC0712     ELSE
936  GC0712         UNSTRING WS-Cmd-Args-TXT
937  GC0712             DELIMITED BY ALL SPACES
938  GC0712             INTO WS-File-Name-TXT
939  GC0712             WITH POINTER WS-Cmd-SUB
940  GC0712     END-IF
941             IF WS-File-Name-TXT = SPACES
942  GC0712         DISPLAY 'No program filename was specified'
943                PERFORM 900-Terminate
944        * ------ Control will NOT return
945             END-IF
946        *>*************************************************************
947        *> Determine if 'Make A Library' feature should be forced 'ON' **
948        *>*************************************************************
949             PERFORM 240-Find-LINKAGE-SECTION
950        *>*************************************************************
951        *> Split 'WS-File-Name-TXT' into 'WS-Prog-Folder-TXT' and      **
952        *> 'WS-Prog-File-Name-TXT'                                     **
953        *>*************************************************************
954  GC0909     IF WS-OS-Cygwin-BOOL AND WS-File-Name-TXT (2:1) = ':'
955  GC0712         MOVE '\' TO WS-OS-Dir-CHR
956  GC0909     END-IF
957  GC0712     MOVE LENGTH(WS-File-Name-TXT) TO WS-I-SUB
958  GC0712     PERFORM UNTIL WS-I-SUB = 0
959  GC0712     OR WS-FN-CHR (WS-I-SUB) = WS-OS-Dir-CHR
960                SUBTRACT 1 FROM WS-I-SUB
961             END-PERFORM
962             IF WS-I-SUB = 0
963                MOVE SPACES    TO WS-Prog-Folder-TXT
964                MOVE WS-File-Name-TXT TO WS-Prog-File-Name-TXT
965             ELSE
```

```
   966                 MOVE '*' TO WS-FN-CHR (WS-I-SUB)
   967                 UNSTRING WS-File-Name-TXT DELIMITED BY '*'
   968                     INTO WS-Prog-Folder-TXT
   969                          WS-Prog-File-Name-TXT
   970  GC0712         MOVE WS-OS-Dir-CHR TO WS-FN-CHR (WS-I-SUB)
   971             END-IF
   972             IF WS-Prog-Folder-TXT = SPACES

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   973                 ACCEPT WS-Prog-Folder-TXT FROM ENVIRONMENT 'CD'
   974  GC0909     ELSE
   975  GC0909         CALL 'CBL_CHANGE_DIR'
   976  GC0909             USING TRIM(WS-Prog-Folder-TXT,TRAILING)
   977             END-IF
   978  GC0909     IF WS-OS-Cygwin-BOOL AND WS-File-Name-TXT (2:1) = ':'
   979  GC0712         MOVE '/' TO WS-OS-Dir-CHR
   980  GC0909     END-IF
   981        *>*************************************************************
   982        *> Split 'WS-Prog-File-Name-TXT' into 'WS-Pgm-Nm-TXT' &        **
   983        *> 'WS-Prog-Extension-TXT'                                     **
   984        *>*************************************************************
   985  GC0712     MOVE LENGTH(WS-Prog-File-Name-TXT) TO WS-I-SUB
   986  GC0712     PERFORM UNTIL WS-I-SUB = 0
   987  GC0712     OR WS-PFN-CHR (WS-I-SUB) = '.'
   988  GC0712         SUBTRACT 1 FROM WS-I-SUB
   989  GC0712     END-PERFORM
   990  GC0712     IF WS-I-SUB = 0
   991  GC0712         MOVE WS-Prog-File-Name-TXT TO WS-Pgm-Nm-TXT
   992  GC0712         MOVE SPACES         TO WS-Prog-Extension-TXT
   993  GC0712     ELSE
   994  GC0712         MOVE '*' TO WS-PFN-CHR (WS-I-SUB)
   995  GC0712         UNSTRING WS-Prog-File-Name-TXT DELIMITED BY '*'
   996  GC0712             INTO WS-Pgm-Nm-TXT
   997  GC0712                  WS-Prog-Extension-TXT
   998  GC0712         MOVE '.' TO WS-PFN-CHR (WS-I-SUB)
   999  GC0712     END-IF
  1000        *>*************************************************************
  1001        *> Build initial Line 24 Message                               **
  1002        *>*************************************************************
```

```
  1003  GC0909     MOVE ALL LD-Horiz-Line TO WS-Horizontal-Line-TXT.
  1004  GC0410     MOVE CONCATENATE(' GCic for '
  1005  GC0410                      TRIM(WS-OS-Type-TXT(WS-OS-Type-CD),Trailing)
  1006  VC0811                      ' Copyright (C) 2009-2022, Gary L. '
  1007  GC0410                      'Cutler, GPL')
  1008  GC0410       TO WS-Output-Msg-TXT.
  1009  GC0909
  1010        /
  1011        *>*************************************************************
  1012        *> Show the user the current switch settings and allow them to **
  1013        *> be changed.                                                  **
  1014        *>*************************************************************
  1015         200-Let-User-Set-Switches SECTION.
  1016             SET WS-RS-Switch-Changes-BOOL TO TRUE
  1017             PERFORM UNTIL WS-RS-No-Switch-Changes-BOOL
  1018  GC1213         EVALUATE WS-Listing-CD
  1019  GC1213         WHEN 0
  1020  GC1213             MOVE 'Listing Off'            TO WS-Listing-TXT
  1021  GC1213             MOVE SPACE                    TO WS-CS-LISTING-CHR
  1022  GC1213         WHEN 1
  1023  GC1213             MOVE 'Listing On (Landscape)' TO WS-Listing-TXT
  1024  GC1213             MOVE SELCHAR                  TO WS-CS-LISTING-CHR
  1025  GC1213         WHEN 2
  1026  GC1213             MOVE 'Listing On (Portrait)' TO WS-Listing-TXT

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  1027  GC1213             MOVE SELCHAR                  TO WS-CS-LISTING-CHR
  1028  GC1213         END-EVALUATE
  1029                 ACCEPT S-Switches-SCR
  1030                 IF COB-CRT-STATUS > 0
  1031                     EVALUATE COB-CRT-STATUS
  1032                         WHEN COB-SCR-F1
  1033                             IF WS-CS-DEBUG-CHR = SPACE
  1034  GC0712                         MOVE SELCHAR TO WS-CS-DEBUG-CHR
  1035                             ELSE
  1036                                 MOVE ' ' TO WS-CS-DEBUG-CHR
  1037                             END-IF
  1038  GC0712                 WHEN COB-SCR-F2
  1039  GC0712                     IF  WS-CS-TRACEALL-CHR = SPACE
```

```
1040  GC0712                        MOVE SELCHAR TO WS-CS-TRACEALL-CHR
1041  GC0712                    ELSE
1042  GC0712                        MOVE ' ' TO WS-CS-TRACEALL-CHR
1043  GC0712                    END-IF
1044                          WHEN COB-SCR-F3
1045  GC0712                    IF WS-CS-LIBRARY-CHR = SPACE
1046  GC0712                        MOVE SELCHAR TO WS-CS-LIBRARY-CHR
1047                            ELSE
1048  GC0712                        MOVE ' ' TO WS-CS-LIBRARY-CHR
1049                            END-IF
1050                          WHEN COB-SCR-F4
1051                              IF  WS-CS-EXECUTE-CHR = SPACE
1052  GC0712                        MOVE SELCHAR TO WS-CS-EXECUTE-CHR
1053                            ELSE
1054                                MOVE ' ' TO WS-CS-EXECUTE-CHR
1055                            END-IF
1056  GC0712                  WHEN COB-SCR-F5
1057  GC1213                      ADD 1 TO WS-Listing-CD
1058  GC1213                      IF WS-Listing-CD > 2
1059  GC1213                          MOVE 0 TO WS-Listing-CD
1060  GC1213                      END-IF
1061  GC0712                  WHEN COB-SCR-F6
1062  GC0712                      IF WS-CS-NOFUNC-CHR = SPACE
1063  GC0712                          MOVE SELCHAR TO WS-CS-NOFUNC-CHR
1064  GC0712                      ELSE
1065  GC0712                          MOVE ' ' TO WS-CS-NOFUNC-CHR
1066  GC0712                      END-IF
1067  GC0712                  WHEN COB-SCR-F7
1068  GC0712                      IF WS-CS-WARNALL-CHR = SPACE
1069  GC0712                          MOVE SELCHAR TO WS-CS-WARNALL-CHR
1070  GC0712                      ELSE
1071  GC0712                          MOVE ' ' TO WS-CS-WARNALL-CHR
1072  GC0712                      END-IF
1073  GC0712                  WHEN COB-SCR-F8
1074  GC0712                      IF WS-CS-FREE-CHR = SPACE
1075  GC0712                          MOVE SELCHAR TO WS-CS-FREE-CHR
1076  GC0712                      ELSE
1077  GC0712                          MOVE ' ' TO WS-CS-FREE-CHR
1078  GC0712                      END-IF
1079  GC0712                  WHEN COB-SCR-F9
1080  GC0712                      IF  WS-CS-NOTRUNC-CHR = SPACE
```

```
 1081  GC0712                        MOVE SELCHAR TO WS-CS-NOTRUNC-CHR
 1082  GC0712                    ELSE
 1083  GC0712                        MOVE ' ' TO WS-CS-NOTRUNC-CHR
 1084  GC0712                    END-IF
 1085                          WHEN COB-SCR-ESC
 1086                              PERFORM 900-Terminate
 1087        * ------------------ Control will NOT return
 1088  GC0712                  WHEN COB-SCR-F12
 1089  GC0712                      ADD 1 TO WS-CS-Config-NUM
 1090  GC0712                      IF WS-CS-Config-NUM > 7
 1091  GC0712                          MOVE 1 TO WS-CS-Config-NUM
 1092  GC0712                      END-IF
 1093                          WHEN OTHER
 1094                              MOVE 'An unsupported key was pressed'
 1095                                TO WS-Output-Msg-TXT
 1096                      END-EVALUATE
 1097                  ELSE
 1098                      SET WS-RS-No-Switch-Changes-BOOL TO TRUE
 1099                  END-IF
 1100              END-PERFORM
 1101              .
 1102        /
 1103        *>***************************************************************
 1104        *> Run the compiler using the switch settings we've prepared.  **
 1105        *>***************************************************************
 1106         210-Run-Compiler SECTION.
 1107              MOVE SPACES TO WS-Cmd-TXT
 1108                             WS-Cobc-Cmd-TXT
 1109                             WS-Output-Msg-TXT
 1110              DISPLAY S-Switches-SCR
 1111              MOVE 1 TO WS-I-SUB
 1112  GC0712      MOVE LOWER-CASE(WS-CS-Filename-TXT (WS-CS-Config-NUM))
 1113  GC0712        TO WS-Config-Fn-TXT
 1114        *>***************************************************************
 1115        *> Build the 'cobc' command                                     **
 1116        *>***************************************************************
 1117  GC0909      MOVE SPACES TO WS-Cobc-Cmd-TXT
```

```
  1118  GC0909     STRING 'cobc -v -std='
  1119  GC0909         TRIM(WS-Config-Fn-TXT,TRAILING)
  1120  GC0909         ' '
  1121  GC0909         INTO WS-Cobc-Cmd-TXT
  1122  GC0909         WITH POINTER WS-I-SUB
  1123             IF WS-CS-LIBRARY-CHR NOT = ' '
  1124                 STRING '-m '
  1125                     DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
  1126                     WITH POINTER WS-I-SUB
  1127             ELSE
  1128                 STRING '-x '
  1129                     DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
  1130                     WITH POINTER WS-I-SUB
  1131             END-IF
  1132             IF WS-CS-DEBUG-CHR NOT = ' '
  1133                 STRING '-fdebugging-line '
  1134                     DELIMITED SIZE INTO WS-Cobc-Cmd-TXT

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  1135                     WITH POINTER WS-I-SUB
  1136             END-IF
  1137             IF WS-CS-NOTRUNC-CHR NOT = ' '
  1138                 STRING '-fnotrunc '
  1139                     DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
  1140                     WITH POINTER WS-I-SUB
  1141             END-IF
  1142             IF WS-CS-TRACEALL-CHR NOT = ' '
  1143  GC0809         STRING '-ftraceall '
  1144                     DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
  1145                     WITH POINTER WS-I-SUB
  1146             END-IF
  1147  GC0712     IF WS-CS-NOFUNC-CHR NOT = ' '
  1148  VC0717         STRING '-fintrinsics=ALL '
  1149  GC0712             DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
  1150  GC0712             WITH POINTER WS-I-SUB
  1151  GC0712     END-IF
  1152  GC0712     IF WS-CS-WARNALL-CHR NOT = ' '
  1153  GC0712         STRING '-Wall '
  1154  GC0712             DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
```

```
  1155  GC0712             WITH POINTER WS-I-SUB
  1156  GC0712     END-IF
  1157  GC0712     IF WS-CS-FREE-CHR NOT = ' '
  1158  GC0712         STRING '-free '
  1159  GC0712             DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
  1160  GC0712             WITH POINTER WS-I-SUB
  1161  GC0712     ELSE
  1162  GC0712         STRING '-fixed '
  1163  GC0712             DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
  1164  GC0712             WITH POINTER WS-I-SUB
  1165  GC0712     END-IF
  1166
  1167  GC0712     MOVE 0 TO WS-Tally-QTY
  1168  GC0712     INSPECT WS-CS-Extra-TXT
  1169  GC0712         TALLYING WS-Tally-QTY FOR ALL '-save-temps'
  1170  GC0712     IF WS-CS-LISTING-CHR > SPACE
  1171  GC0712     AND WS-Tally-QTY > 0
  1172  GC0712          MOVE SPACE TO WS-CS-LISTING-CHR *> Can't generate listing if
-save-temps used
  1173  GC0712     END-IF
  1174  GC0712     IF WS-CS-LISTING-CHR > SPACE
  1175  GC1010         STRING '-save-temps '
  1176  GC1010             DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
  1177  GC1010             WITH POINTER WS-I-SUB
  1178  GC1010     END-IF
  1179
  1180  GC0709     IF WS-CS-Extra-TXT > SPACES
  1181  GC0709         STRING ' '
  1182  GC0709                TRIM(WS-CS-Extra-TXT,TRAILING)
  1183  GC0709                ' '
  1184  GC0709                DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
  1185  GC0709                WITH POINTER WS-I-SUB
  1186  GC0709     END-IF
  1187  GC0909     STRING TRIM(WS-Prog-File-Name-TXT,TRAILING)
  1188  GC0909         DELIMITED SIZE INTO WS-Cobc-Cmd-TXT

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  1189  GC0909         WITH POINTER WS-I-SUB
  1190        *>************************************************************
```

```
1191        *> Prepare the compilation listing file                        **
1192        *>*************************************************************
1193  GC1113     MOVE CONCATENATE(TRIM(WS-Pgm-Nm-TXT,Trailing),'.gclst')
1194  GC0712       TO WS-Listing-Filename-TXT
1195  GC0712     CALL 'CBL_DELETE_FILE' USING WS-Listing-Filename-TXT
1196        *>*************************************************************
1197        *> Now execute the 'cobc' command                               **
1198        *>*************************************************************
1199  GC0410     MOVE ' Compiling...' TO WS-Output-Msg-TXT
1200  GC0410     DISPLAY S-Switches-SCR
1201  GC0609     SET WS-RS-Output-File-Avail-BOOL TO TRUE
1202             MOVE SPACES TO WS-Cmd-TXT
1203             STRING TRIM(WS-Cobc-Cmd-TXT,TRAILING)
1204  GC0712            ' >' WS-Listing-Filename-TXT
1205  GC0712            ' 2>&1'
1206                   DELIMITED SIZE
1207                   INTO WS-Cmd-TXT
1208  DEBUG D    DISPLAY WS-Cmd-TXT UPON SYSERR
1209             CALL 'SYSTEM' USING TRIM(WS-Cmd-TXT,TRAILING)
1210  GC0712     OPEN EXTEND F-Cobc-Output-FILE
1211  GC0712     WRITE F-Cobc-Output-REC FROM SPACES
1212  GC0712     IF RETURN-CODE = 0
1213  GC0712         SET WS-RS-Compile-OK-BOOL TO TRUE
1214  GC0712         MOVE ' Compilation Was Successful' TO WS-Output-Msg-TXT
1215  GC0712         MOVE CONCATENATE('GNU COBOL',WS-Output-Msg-TXT)
1216  GC0712           TO F-Cobc-Output-REC
1217  GC0712         WRITE F-Cobc-Output-REC
1218  GC0712         SET WS-RS-Complete-BOOL TO TRUE
1219  GC0712     ELSE
1220  GC0712         SET WS-RS-Compile-Failed-BOOL TO TRUE
1221  GC0712         MOVE CONCATENATE(' Compilation Failed - See ',
1222  GC0712                     TRIM(WS-Listing-Filename-TXT,Trailing))
1223  GC0712           TO WS-Output-Msg-TXT
1224  GC0712         MOVE 'GNU COBOL Compilation HAS FAILED - See Above'
1225  GC0712           TO F-Cobc-Output-REC
1226  GC0712         WRITE F-Cobc-Output-REC
1227  GC0712     END-IF
1228  GC0712     CLOSE F-Cobc-Output-FILE
1229  GC0712     DISPLAY S-Switches-SCR
1230  GC0712     CALL 'C$SLEEP' USING 2
1231  GC0712     MOVE SPACES TO WS-Output-Msg-TXT
```

```
  1232             IF WS-RS-Compile-Failed-BOOL
  1233  GC0712         PERFORM 250-Autoload-Listing
  1234                 PERFORM 900-Terminate
  1235        *> ----- Control will not return
  1236             END-IF
  1237             .
  1238        /
  1239        *>*****************************************************************
  1240        *> Generate a source + xref listing using 'LISTING' subroutine **
  1241        *>*****************************************************************
  1242  GC0410 220-Make-Listing SECTION.

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  1243  GC0410     MOVE ' Generating listing...' TO WS-Output-Msg-TXT
  1244  GC0410     DISPLAY S-Switches-SCR
  1245  GC0410     MOVE 0 TO RETURN-CODE
  1246        *>*****************************************************************
  1247        *> Create the listing                                           **
  1248        *>*****************************************************************
  1249  GC0410     MOVE SPACES TO WS-Output-Msg-TXT
  1250  GC0410     CALL 'LISTING' USING WS-Listing-Filename-TXT
  1251  GC0712                          WS-File-Name-TXT
  1252  GC0712                          WS-OS-Type-CD
  1253  GC1213                          LPP
  1254  GC1213                          LPPP
  1255  GC1213                          WS-Listing-CD
  1256  GC0410     ON EXCEPTION
  1257  GC0410         MOVE ' LISTING module is not available'
  1258  GC0410           TO WS-Output-Msg-TXT
  1259  GC0410         MOVE 1 TO RETURN-CODE
  1260  GC0410     END-CALL
  1261  GC0410     IF RETURN-CODE = 0
  1262  GC0712         MOVE ' Source+Xref listing generated '
  1263  GC0712           TO WS-Output-Msg-TXT
  1264  GC0410     END-IF
  1265  GC0712     DISPLAY S-Switches-SCR
  1266  GC0712     CALL 'C$SLEEP' USING 2
  1267  GC0712     PERFORM 250-Autoload-Listing
  1268  GC0410     .
```

```
  1269        /
  1270        *>***************************************************************
  1271        *> Run the compiled program                                     **
  1272        *>***************************************************************
  1273         230-Run-Program SECTION.
  1274  GC0114     MOVE ' Preparing to run program ... press ENTER to close '
  1275  GC0114       TO WS-Output-Msg-TXT
  1276  GC0114     DISPLAY S-Switches-SCR
  1277  GC0114     CALL 'C$SLEEP' USING 3
  1278  GC0909     MOVE SPACES TO WS-Cmd-TXT
  1279  GC0909     MOVE 1 TO WS-I-SUB
  1280        *>***************************************************************
  1281        *> If necessary, start with 'cobcrun' command                   **
  1282        *>***************************************************************
  1283  GC0712     IF WS-CS-LIBRARY-CHR NOT = ' '
  1284                 STRING 'cobcrun ' DELIMITED SIZE
  1285                        INTO WS-Cmd-TXT
  1286                        WITH POINTER WS-I-SUB
  1287             END-IF
  1288        *>***************************************************************
  1289        *> Add any necessary path prefix                                **
  1290        *>***************************************************************
  1291  GC0712     SET WS-RS-Double-Quote-Used-BOOL TO FALSE
  1292             IF WS-Prog-Folder-TXT NOT = SPACES
  1293  GC0909         IF WS-OS-Cygwin-BOOL AND WS-Prog-Folder-TXT (2:1) = ':'
  1294  GC0909             STRING '/cygdrive/'
  1295  GC0909                 INTO WS-Cmd-TXT
  1296  GC0909                 WITH POINTER WS-I-SUB

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  1297  GC0909             STRING LOWER-CASE(WS-Prog-Folder-TXT (1:1))
  1298  GC0909                 INTO WS-Cmd-TXT
  1299  GC0909                 WITH POINTER WS-I-SUB
  1300  GC0909             PERFORM
  1301  GC0909                 VARYING WS-J-SUB FROM 3 BY 1
  1302  GC0909                 UNTIL WS-J-SUB > LENGTH(TRIM(WS-Prog-Folder-TXT))
  1303  GC0909                 IF WS-Prog-Folder-TXT (WS-J-SUB:1) = '\'
  1304  GC0909                     STRING '/'
  1305  GC0909                         INTO WS-Cmd-TXT
```

```
1306  GC0909                        WITH POINTER WS-I-SUB
1307  GC0909                ELSE
1308  GC0909                    STRING WS-Prog-Folder-TXT (WS-J-SUB:1)
1309  GC0909                        INTO WS-Cmd-TXT
1310  GC0909                        WITH POINTER WS-I-SUB
1311  GC0909                END-IF
1312  GC0909            END-PERFORM
1313  GC0909        ELSE
1314  GC0410            STRING '"' TRIM(WS-Prog-Folder-TXT,TRAILING)
1315  GC0909                INTO WS-Cmd-TXT
1316  GC0909                WITH POINTER WS-I-SUB
1317  GC0712            SET WS-RS-Double-Quote-Used-BOOL TO TRUE
1318  GC0909        END-IF
1319  GC0712        STRING WS-OS-Dir-CHR
1320  GC0909            INTO WS-Cmd-TXT
1321  GC0909            WITH POINTER WS-I-SUB
1322  GC0909    ELSE
1323  GC0909        IF WS-OS-Cygwin-BOOL OR WS-OS-UNIX-BOOL
1324  GC0909            STRING './'
1325  GC0909                INTO WS-Cmd-TXT
1326  GC0909                WITH POINTER WS-I-SUB
1327  GC0909        END-IF
1328            END-IF
1329       *>*****************************************************************
1330       *> Insert program filename                                       **
1331       *>*****************************************************************
1332  GC0909    STRING TRIM(WS-Pgm-Nm-TXT,TRAILING)
1333  GC0909        INTO WS-Cmd-TXT
1334  GC0909        WITH POINTER WS-I-SUB
1335       *>*****************************************************************
1336       *> Insert proper extension                                       **
1337       *>*****************************************************************
1338  GC0712    IF WS-CS-LIBRARY-CHR = ' '
1339  GC0712        IF WS-OS-Exe-Ext-CONST > ' '
1340  GC0712            STRING WS-OS-Exe-Ext-CONST DELIMITED SPACE
1341  GC0712                INTO WS-Cmd-TXT
1342  GC0712                WITH POINTER WS-I-SUB
1343  GC0712        END-IF
1344  GC0712    ELSE
1345  GC0712        IF WS-OS-Lib-Ext-CONST > ' '
1346  GC0712            STRING WS-OS-Lib-Ext-CONST DELIMITED SPACE
```

```
  1347  GC0712                 INTO WS-Cmd-TXT
  1348  GC0712                 WITH POINTER WS-I-SUB
  1349  GC0712             END-IF
  1350  GC0712         END-IF

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  1351  GC0712         IF WS-RS-Double-Quote-Used-BOOL
  1352  GC0712             STRING '"' DELIMITED SIZE
  1353  GC0712                 INTO WS-Cmd-TXT
  1354  GC0712                 WITH POINTER WS-I-SUB
  1355  GC0712         END-IF
  1356                 IF WS-CS-Args-TXT NOT = SPACES
  1357  GC0809             STRING ' ' TRIM(WS-CS-Args-TXT,TRAILING)
  1358                       INTO WS-Cmd-TXT
  1359                       WITH POINTER WS-I-SUB
  1360                 END-IF
  1361            *>**************************************************************
  1362            *> Run the program                                             **
  1363            *>**************************************************************
  1364  GC0114         CALL X'E4'
  1365                 CALL 'SYSTEM' USING TRIM(WS-Cmd-TXT,TRAILING)
  1366  GC0712         MOVE SPACES TO WS-Output-Msg-TXT
  1367  GC0114         ACCEPT WS-Output-Msg-TXT(1:1) AT 0101
  1368                 PERFORM 900-Terminate
  1369            * -- Control will NOT return
  1370                 .
  1371            /
  1372            *>**************************************************************
  1373            *> Determine if the program being compiled is a MAIN program   **
  1374            *>**************************************************************
  1375             240-Find-LINKAGE-SECTION SECTION.
  1376                 OPEN INPUT F-Source-Code-FILE
  1377  GC0712         MOVE ' ' TO WS-CS-LIBRARY-CHR
  1378                 SET WS-RS-More-To-1st-Prog-BOOL   TO TRUE
  1379                 PERFORM UNTIL WS-RS-1st-Prog-Complete-BOOL
  1380                     READ F-Source-Code-FILE AT END
  1381                         CLOSE F-Source-Code-FILE
  1382                         EXIT SECTION
  1383                     END-READ
```

```
  1384  GC0712         CALL 'CHECKSRC'
  1385  GC0712             USING BY CONTENT   F-Source-Code-REC
  1386  GC0712                   BY REFERENCE WS-RS-Source-Record-Type-CHR
  1387                 IF WS-RS-Source-Rec-Ident-BOOL
  1388                     SET WS-RS-1st-Prog-Complete-BOOL TO TRUE
  1389                 END-IF
  1390             END-PERFORM
  1391  GC0712     SET WS-RS-Source-Rec-Ignored-BOOL TO TRUE
  1392             PERFORM UNTIL WS-RS-Source-Rec-Linkage-BOOL
  1393                        OR WS-RS-Source-Rec-Ident-BOOL
  1394                 READ F-Source-Code-FILE AT END
  1395                     CLOSE F-Source-Code-FILE
  1396                     EXIT SECTION
  1397                 END-READ
  1398  GC0712         CALL 'CHECKSRC'
  1399  GC0712             USING BY CONTENT   F-Source-Code-REC
  1400  GC0712                   BY REFERENCE WS-RS-Source-Record-Type-CHR
  1401             END-PERFORM
  1402             CLOSE F-Source-Code-FILE
  1403             IF WS-RS-Source-Rec-Linkage-BOOL
  1404  GC0712         MOVE SELCHAR TO WS-CS-LIBRARY-CHR

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  1405             END-IF
  1406             .
  1407        /
  1408  GC0712*>*************************************************************
  1409  GC0712*> Attempt to open the listing file as a command.  This will - **
  1410  GC1113*> if the user has associated filetype/extension 'gclst' with  **
  1411  GC0712*> an application - invoke the appropriate application to      **
  1412  GC0712*> allow the user to view the listing.                         **
  1413  GC0712*>*************************************************************'
  1414  GC0712 250-Autoload-Listing SECTION.
  1415  GC0712     EVALUATE TRUE
  1416  GC0712         WHEN WS-OS-Windows-BOOL OR WS-OS-Cygwin-BOOL
  1417  GC0712             MOVE SPACES TO WS-Cmd-TXT
  1418  GC0712             STRING
  1419  GC0712                 'cmd /c '
  1420  GC0712                 TRIM(WS-Listing-Filename-TXT,TRAILING)
```

```
  1421  GC0712                 DELIMITED SIZE INTO WS-Cmd-TXT
  1422  GC0712             CALL 'SYSTEM' USING TRIM(WS-Cmd-TXT,TRAILING)
  1423  GC0712         WHEN WS-OS-OSX-BOOL
  1424  GC0712             MOVE SPACES TO WS-Cmd-TXT
  1425  GC0712             STRING
  1426  GC0712                 'open -t '
  1427  GC0712                 TRIM(WS-Listing-Filename-TXT,TRAILING)
  1428  GC0712                 DELIMITED SIZE INTO WS-Cmd-TXT
  1429  GC0712             CALL 'SYSTEM' USING TRIM(WS-Cmd-TXT,TRAILING)
  1430  GC0712     END-EVALUATE
  1431  GC0712*>   ************************************************************
  1432  GC0712*>   ** Since we had to do our own '-save-temps' when we       **
  1433  GC0712*>   ** compiled (in order to generate the cross-reference     **
  1434  GC0712*>   ** listing) we now need to clean up after ourselves.      **
  1435  GC0712*>   ************************************************************
  1436  GC1112     DISPLAY S-Blank-SCR
  1437  GC0712     IF WS-OS-Windows-BOOL
  1438  GC0712         MOVE CONCATENATE('del ',TRIM(WS-Pgm-Nm-TXT,TRAILING))
  1439  GC0712           TO WS-Cmd-TXT
  1440  GC0712     ELSE
  1441  GC0712         MOVE CONCATENATE('rm ',TRIM(WS-Pgm-Nm-TXT,TRAILING))
  1442  GC0712           TO WS-Cmd-TXT
  1443  GC0712     END-IF
  1444  GC0712     CALL 'SYSTEM'
  1445  GC0712         USING CONCATENATE(TRIM(WS-Cmd-TXT,TRAILING),'.c')
  1446  GC0712     CALL 'SYSTEM'
  1447  GC0712         USING CONCATENATE(TRIM(WS-Cmd-TXT,TRAILING),'.c.h')
  1448  GC0712     CALL 'SYSTEM'
  1449  GC0712         USING CONCATENATE(TRIM(WS-Cmd-TXT,TRAILING),'.c.l*.h')
  1450  GC0712     CALL 'SYSTEM'
  1451  GC0712         USING CONCATENATE(TRIM(WS-Cmd-TXT,TRAILING),'.i')
  1452  GC0712     CALL 'SYSTEM'
  1453  GC0712         USING CONCATENATE(TRIM(WS-Cmd-TXT,TRAILING),'.o')
  1454
  1455  GC0712     .
  1456        /
  1457        *>************************************************************
  1458        *> Display a message and halt the program                    **

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```

```
  1459        *>*****************************************************************
  1460         900-Terminate SECTION.
  1461  GC0909     IF WS-Output-Msg-TXT > SPACES
  1462  GC0909         DISPLAY S-Switches-SCR
  1463  GC0909         CALL 'C$SLEEP' USING 2
  1464  GC0909     END-IF
  1465             DISPLAY S-Blank-SCR
  1466             STOP RUN
  1467             .
  1468
  1469         END PROGRAM GCic.
  1470        /

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Symbols of Module: GCIC (GCIC)
------------------------------

Data Section (FILE)             Defn     Locations
-------------------------------
+-------------------------------------------------------------

F-COBC-OUTPUT-FILE              000192F  000201 001210 001228
F-COBC-OUTPUT-REC               000202F  001211 001216 001217 001225 001226
F-SOURCE-CODE-FILE               000195F  000204 000813 001376 001380 001381 001394
001395 001402
F-SOURCE-CODE-REC               000205F  001385 001399
WS-FILE-NAME-TXT                 000195F  000399 000865 000870 000933 000938 000941
000954 000957
                                         000964 000967 000978 001251
WS-FSM-STATUS-CD                000197F  000405 000828 000862
WS-LISTING-FILENAME-TXT          000192F  000417 001194 001195 001204 001222 001250
001420 001427

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Symbols of Module: GCIC (GCIC)
------------------------------

Data Section (WORKING-STORAGE)  Defn     Locations
```

```
------------------------------
+-------------------------------------------------------------

COB-COLOR-BLACK                  000232W  000597 000602 000692 000702 000712 000717
000727 000734
                                         000749 000764 000780 000787 000794
COB-COLOR-BLUE                  000233W  000680
COB-COLOR-CYAN                  000235W  000693
COB-COLOR-GREEN                 000234W  000603 000718 000765 000781
COB-COLOR-MAGENTA               000237W
COB-COLOR-RED                   000236W  000686 000750
COB-COLOR-WHITE                  000239W  000598 000681 000687 000703 000713 000728
000735 000788
                                         000795
COB-COLOR-YELLOW                000238W
COB-SCR-BACK-TAB                000321W
COB-SCR-BACKSPACE               000328W
COB-SCR-DELETE                  000327W
COB-SCR-ESC                     000318W  001085
COB-SCR-F1                      000245W  001032
COB-SCR-F10                     000254W
COB-SCR-F11                     000255W
COB-SCR-F12                     000256W  001088
COB-SCR-F13                     000257W
COB-SCR-F14                     000258W
COB-SCR-F15                     000259W
COB-SCR-F16                     000260W
COB-SCR-F17                     000261W
COB-SCR-F18                     000262W
COB-SCR-F19                     000263W
COB-SCR-F2                      000246W  001038
COB-SCR-F20                     000264W
COB-SCR-F21                     000265W
COB-SCR-F22                     000266W
COB-SCR-F23                     000267W
COB-SCR-F24                     000268W
COB-SCR-F25                     000269W
COB-SCR-F26                     000270W
COB-SCR-F27                     000271W
COB-SCR-F28                     000272W
COB-SCR-F29                     000273W
```

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COB-SCR-F3                      000247W  001044
COB-SCR-F30                     000274W
COB-SCR-F31                     000275W
COB-SCR-F32                     000276W
COB-SCR-F33                     000277W
COB-SCR-F34                     000278W
COB-SCR-F35                     000279W
COB-SCR-F36                     000280W
COB-SCR-F37                     000281W
COB-SCR-F38                     000282W
COB-SCR-F39                     000283W
COB-SCR-F4                      000248W  001050
COB-SCR-F40                     000284W

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Data Section (WORKING-STORAGE)  Defn     Locations
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+-----------------------------------------------------------------

COB-SCR-F41                     000285W
COB-SCR-F42                     000286W
COB-SCR-F43                     000287W
COB-SCR-F44                     000288W
COB-SCR-F45                     000289W
COB-SCR-F46                     000290W
COB-SCR-F47                     000291W
COB-SCR-F48                     000292W
COB-SCR-F49                     000293W
COB-SCR-F5                      000249W  001056
COB-SCR-F50                     000294W
COB-SCR-F51                     000295W
COB-SCR-F52                     000296W
COB-SCR-F53                     000297W
COB-SCR-F54                     000298W
COB-SCR-F55                     000299W
COB-SCR-F56                     000300W
COB-SCR-F57                     000301W
```

```
COB-SCR-F58                     000302W
COB-SCR-F59                     000303W
COB-SCR-F6                      000250W  001061
COB-SCR-F60                     000304W
COB-SCR-F61                     000305W
COB-SCR-F62                     000306W
COB-SCR-F63                     000307W
COB-SCR-F64                     000308W
COB-SCR-F7                      000251W  001067
COB-SCR-F8                      000252W  001073
COB-SCR-F9                      000253W  001079
COB-SCR-FATAL                   000335W
COB-SCR-INSERT                  000326W
COB-SCR-KEY-DOWN                000316W
COB-SCR-KEY-END                 000330W
COB-SCR-KEY-HOME                000329W
COB-SCR-KEY-LEFT                000322W
COB-SCR-KEY-RIGHT               000323W
COB-SCR-KEY-UP                  000314W
COB-SCR-KEY_DOWN                000317W
COB-SCR-KEY_UP                  000315W
COB-SCR-MAX-FIELD               000336W
COB-SCR-NO-FIELD                000332W
COB-SCR-OK                      000243W
COB-SCR-PAGE-DOWN               000312W
COB-SCR-PAGE-UP                 000310W
COB-SCR-PAGE_DOWN               000313W
COB-SCR-PAGE_UP                 000311W
COB-SCR-PRINT                   000319W
COB-SCR-TAB                     000320W
COB-SCR-TIME-OUT                000333W

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Data Section (WORKING-STORAGE)  Defn     Locations
-------------------------------
+-----------------------------------------------------------------
```

```
F1                              000364W
F12                             000358W
F2                              000371W
F3                              000367W
F4                              000365W
F5                              000368W  000415
F6                              000369W
F7                              000372W
F8                              000366W
F9                              000370W
WS-CMD-ARGS-TXT                 000387W  000925 000927 000928 000931 000936
WS-CMD-END-QUOTE-CHR            000389W  000929 000932
WS-CMD-SUB                      000391W  000926 000930 000934 000939
WS-CMD-TXT                       000385W  001107 001202 001207 001208 001209 001278
001285 001295
                                          001298 001305 001309 001315 001320 001325
001333 001341
                                          001347 001353 001358 001365 001417 001421
001422 001424
                                          001428 001429 001439 001442 001445 001447
001449 001451
                                         001453
WS-COBC-CMD-TXT                  000393W  001108 001117 001121 001125 001129 001134
001139 001144
                                          001149 001154 001159 001163 001176 001184
001188 001203
WS-COMPILATION-SWITCHES-TXT     000338W
WS-CONFIG-FN-TXT                000395W  001113 001119
WS-CS-ALL-SWITCHES-TXT          000373W  000918
WS-CS-ARG-H1-TXT                000340W  000798
WS-CS-ARG-H2-TXT                000341W  000799
WS-CS-ARGS-TXT                  000339W  001356 001357
WS-CS-CONFIG-NUM                000354W  000356 000358 001089 001090 001091 001112
WS-CS-DEBUG-CHR                 000375W  000751 001033 001034 001036 001132
WS-CS-EXECUTE-CHR               000376W  000754 000888 001051 001052 001054
WS-CS-EXTRA-H1-TXT              000361W  000796
WS-CS-EXTRA-H2-TXT              000362W  000797
WS-CS-EXTRA-TXT                 000360W  001168 001180 001182
WS-CS-FILENAME-TXT              000351W  000790 001112
WS-CS-FILENAMES-TABLE-TXT       000350W
WS-CS-FILENAMES-TXT             000342W  000350
```

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WS-CS-FREE-CHR                  000377W  000759 001074 001075 001077 001157
WS-CS-LIBRARY-CHR                000378W  000753 001045 001046 001048 001123 001283
001338 001377
                                         001404
WS-CS-LISTING-CHR                000379W  000755 000884 001021 001024 001027 001170
001172 001174
WS-CS-NOFUNC-CHR                000380W  000757 001062 001063 001065 001147
WS-CS-NOTRUNC-CHR               000381W  000760 001080 001081 001083 001137
WS-CS-SWITCH-DEFAULTS-TXT       000363W  000374
WS-CS-TRACEALL-CHR              000382W  000752 001039 001040 001042 001142
WS-CS-WARNALL-CHR               000383W  000758 001068 001069 001071 001152
WS-DELETE-FN-TXT                000397W
WS-FILE-NAME-TXT                 000399W  000865 000870 000933 000938 000941 000954
000957 000964
                                         000967 000978 001251
WS-FILE-STATUS-MESSAGE-TXT      000403W
WS-FN-CHR                       000400W  000959 000966 000970

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Data Section (WORKING-STORAGE)  Defn     Locations
--------------------------------
+-----------------------------------------------------------------

WS-FSM-MSG-TXT                   000407W  000829 000830 000831 000832 000833 000834
000835 000836
                                           000837 000838 000839 000840 000841 000842
000843 000844
                                           000845 000846 000847 000848 000849 000850
000851 000852
                                         000853 000854 000855 000856 000857 000858
WS-FSM-STATUS-CD                000405W  000828 000862
WS-HORIZONTAL-LINE-TXT           000409W  000605 000615 000619 000621 000645 000647
000651 000661
                                         000665 000675 001003
WS-I-SUB                         000411W  000957 000958 000959 000960 000962 000966
000970 000985
                                           000986 000987 000988 000990 000994 000998
```

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001111 001122
                                          001126 001130 001135 001140 001145 001150
001155 001160
                                          001164 001177 001185 001189 001279 001286
001296 001299
                                          001306 001310 001316 001321 001326 001334
001342 001348
                                        001354 001359
WS-J-SUB                        000413W  001301 001302
WS-LISTING-CD                   000415W  001018 001057 001058 001059 001255
WS-LISTING-FILENAME-TXT      000417W  001194 001195 001204 001222 001250 001420 001427
WS-LISTING-TXT                  000419W  000771 001020 001023 001026
WS-OC-COMPILE-DT                000421W  000683 000911 000912
WS-OS-CYGWIN-BOOL               000455W  000954 000978 001293 001323 001416
WS-OS-DIR-CHR                    000424W  000430 000436 000442 000448 000955 000959
000970 000979
                                        001319
WS-OS-EXE-EXT-CONST             000425W  000431 000437 000443 000449 001339 001340
WS-OS-LIB-EXT-CONST             000426W  000432 000438 000444 000450 001345 001346
WS-OS-LIB-TYPE-CONST            000427W  000433 000439 000445 000451 000769
WS-OS-OSX-BOOL                  000457W  001423
WS-OS-TYPE-CD                   000428W  000434 000440 000446 000452 001005 001252
WS-OS-TYPE-FILLER-TXT           000459W  000465
WS-OS-TYPE-TXT                  000466W  001005
WS-OS-TYPES-TXT                 000465W
WS-OS-UNIX-BOOL                 000456W  001323
WS-OS-WINDOWS-BOOL              000454W  001416 001437
WS-OUTPUT-MSG-TXT                000469W  000688 000861 001008 001095 001109 001199
001214 001215
                                          001223 001231 001243 001249 001258 001263
001275 001366
                                        001367 001461
WS-PATH-DELIMITER-CHR           000471W
WS-PFN-CHR                      000478W  000987 000994 000998
WS-PGM-NM-TXT                   000481W  000991 000996 001193 001332 001438 001441
WS-PROG-EXTENSION-TXT           000473W  000992 000997
WS-PROG-FILE-NAME-TXT        000477W  000729 000964 000969 000985 000991 000995 001187
WS-PROG-FOLDER-TXT               000475W  000730 000963 000968 000972 000973 000976
001292 001293
                                        001297 001302 001303 001308 001314
WS-RS-1ST-PROG-COMPLETE-BOOL    000494W  001379 001388
```

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WS-RS-COMPILE-FAILED-BOOL       000487W  001220 001232
WS-RS-COMPILE-OK-BOOL           000485W  000883 001213
WS-RS-COMPILE-OK-CHR            000484W
WS-RS-COMPILE-OK-WARN-BOOL      000486W  000883
WS-RS-COMPLETE-BOOL             000489W  000880 001218
WS-RS-COMPLETE-CHR              000488W
WS-RS-DOUBLE-QUOTE-USED-BOOL    000492W  001291 001317 001351

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Data Section (WORKING-STORAGE)  Defn     Locations
------------------------------
+-------------------------------------------------------------

WS-RS-IDENT-DIV-CHR             000493W
WS-RS-MORE-TO-1ST-PROG-BOOL     000495W  001378
WS-RS-NO-SWITCH-CHANGES-BOOL    000497W  001017 001098
WS-RS-NO-SWITCH-CHGS-CHR        000496W
WS-RS-NOT-COMPLETE-BOOL         000490W  000879
WS-RS-OUTPUT-FILE-AVAIL-BOOL    000501W  000889 001201
WS-RS-OUTPUT-FILE-BUSY-BOOL     000500W
WS-RS-OUTPUT-FILE-BUSY-CHR      000499W
WS-RS-QUOTE-CHR                 000491W
WS-RS-SOURCE-REC-IDENT-BOOL     000504W  001387 001393
WS-RS-SOURCE-REC-IGNORED-BOOL   000505W  001391
WS-RS-SOURCE-REC-LINKAGE-BOOL   000503W  001392 001403
WS-RS-SOURCE-RECORD-TYPE-CHR    000502W  001386 001400
WS-RS-SWITCH-CHANGES-BOOL       000498W  001016
WS-RS-SWITCH-ERROR-CHR          000506W
WS-RS-SWITCH-IS-BAD-BOOL        000507W
WS-RS-SWITCH-IS-GOOD-BOOL       000508W
WS-RUNTIME-SWITCHES-TXT         000483W
WS-TALLY-QTY                    000510W  001167 001169 001171

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------------------------------
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```
Data Section (SCREEN)          Defn     Locations
------------------------------
+-------------------------------------------------------------

COB-COLOR-BLACK                 000597S  000602 000692 000702 000712 000717 000727
000734 000749
                                         000764 000780 000787 000794
COB-COLOR-BLUE                  000680S
COB-COLOR-CYAN                  000693S
COB-COLOR-GREEN                 000603S  000718 000765 000781
COB-COLOR-RED                   000686S  000750
COB-COLOR-WHITE                 000598S  000681 000687 000703 000713 000728 000735
000788 000795
LD-HORIZ-LINE                   000573S  000582 000591 001003
LD-LL-CORNER                    000568S  000577 000586 000614 000644 000660 000674
LD-LOWER-T                      000572S  000581 000590 000646
LD-LR-CORNER                    000570S  000579 000588 000616 000648 000662 000676
LD-UL-CORNER                    000567S  000576 000585 000604 000618 000650 000664
LD-UPPER-T                      000571S  000580 000589 000620
LD-UR-CORNER                    000569S  000578 000587 000606 000622 000652 000666
LD-VERT-LINE                    000574S  000583 000592 000608 000609 000611 000612
000624 000625
                                         000626 000628 000629 000630 000632 000633
000634 000636
                                         000637 000638 000640 000641 000642 000654
000655 000657
                                         000658 000668 000669 000671 000672
S-BLANK-SCR                     000595S  000885 001436 001465
S-SWITCHES-SCR                  000597S  001029 001110 001200 001229 001244 001265
001276 001462
WS-CS-ARG-H1-TXT                000798S
WS-CS-ARG-H2-TXT                000799S
WS-CS-DEBUG-CHR                 000751S  001033 001034 001036 001132
WS-CS-EXECUTE-CHR               000754S  000888 001051 001052 001054
WS-CS-EXTRA-H1-TXT              000796S
WS-CS-EXTRA-H2-TXT              000797S
WS-CS-FILENAME-TXT              000790S  001112
WS-CS-FREE-CHR                  000759S  001074 001075 001077 001157
WS-CS-LIBRARY-CHR               000753S  001045 001046 001048 001123 001283 001338
001377 001404
```

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WS-CS-LISTING-CHR            000755S  000884 001021 001024 001027 001170 001172 001174
WS-CS-NOFUNC-CHR                 000757S  001062 001063 001065 001147
WS-CS-NOTRUNC-CHR                000760S  001080 001081 001083 001137
WS-CS-TRACEALL-CHR               000752S  001039 001040 001042 001142
WS-CS-WARNALL-CHR                000758S  001068 001069 001071 001152
WS-HORIZONTAL-LINE-TXT            000605S  000615 000619 000621 000645 000647 000651
000661 000665
                                         000675 001003
WS-LISTING-TXT                   000771S  001020 001023 001026
WS-OC-COMPILE-DT                 000683S  000911 000912
WS-OS-LIB-TYPE-CONST             000769S
WS-OUTPUT-MSG-TXT                 000688S  000861 001008 001095 001109 001199 001214
001215 001223
                                           001231 001243 001249 001258 001263 001275
001366 001367
                                         001461
WS-PROG-FILE-NAME-TXT            000729S  000964 000969 000985 000991 000995 001187
WS-PROG-FOLDER-TXT                000730S  000963 000968 000972 000973 000976 001292
001293 001297
                                         001302 001303 001308 001314

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------------------------------
Variable Tested [S]            Symbol (88-Conditions)
---------------------------------------------------------------

WS-OS-TYPE-CD                   WS-OS-WINDOWS-BOOL
WS-OS-TYPE-CD                   WS-OS-CYGWIN-BOOL
WS-OS-TYPE-CD                   WS-OS-UNIX-BOOL
WS-OS-TYPE-CD                   WS-OS-OSX-BOOL
WS-RS-COMPILE-OK-CHR            WS-RS-COMPILE-OK-BOOL
WS-RS-COMPILE-OK-CHR            WS-RS-COMPILE-OK-WARN-BOOL
WS-RS-COMPILE-OK-CHR            WS-RS-COMPILE-FAILED-BOOL
WS-RS-COMPLETE-CHR              WS-RS-COMPLETE-BOOL
WS-RS-COMPLETE-CHR              WS-RS-NOT-COMPLETE-BOOL
WS-RS-IDENT-DIV-CHR             WS-RS-1ST-PROG-COMPLETE-BOOL
WS-RS-IDENT-DIV-CHR             WS-RS-MORE-TO-1ST-PROG-BOOL
WS-RS-NO-SWITCH-CHGS-CHR        WS-RS-NO-SWITCH-CHANGES-BOOL
WS-RS-NO-SWITCH-CHGS-CHR        WS-RS-SWITCH-CHANGES-BOOL
```

```
WS-RS-OUTPUT-FILE-BUSY-CHR      WS-RS-OUTPUT-FILE-BUSY-BOOL
WS-RS-OUTPUT-FILE-BUSY-CHR      WS-RS-OUTPUT-FILE-AVAIL-BOOL
WS-RS-QUOTE-CHR                 WS-RS-DOUBLE-QUOTE-USED-BOOL
WS-RS-SOURCE-RECORD-TYPE-CHR    WS-RS-SOURCE-REC-LINKAGE-BOOL
WS-RS-SOURCE-RECORD-TYPE-CHR    WS-RS-SOURCE-REC-IDENT-BOOL
WS-RS-SOURCE-RECORD-TYPE-CHR    WS-RS-SOURCE-REC-IGNORED-BOOL
WS-RS-SWITCH-ERROR-CHR          WS-RS-SWITCH-IS-BAD-BOOL
WS-RS-SWITCH-ERROR-CHR          WS-RS-SWITCH-IS-GOOD-BOOL

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-----------------------------
Variable Tested                Symbol (88-Conditions) [S]
-----------------------------------------------------------------

WS-OS-TYPE-CD                   WS-OS-CYGWIN-BOOL
WS-OS-TYPE-CD                   WS-OS-OSX-BOOL
WS-OS-TYPE-CD                   WS-OS-UNIX-BOOL
WS-OS-TYPE-CD                   WS-OS-WINDOWS-BOOL
WS-RS-IDENT-DIV-CHR             WS-RS-1ST-PROG-COMPLETE-BOOL
WS-RS-COMPILE-OK-CHR            WS-RS-COMPILE-FAILED-BOOL
WS-RS-COMPILE-OK-CHR            WS-RS-COMPILE-OK-BOOL
WS-RS-COMPILE-OK-CHR            WS-RS-COMPILE-OK-WARN-BOOL
WS-RS-COMPLETE-CHR              WS-RS-COMPLETE-BOOL
WS-RS-QUOTE-CHR                 WS-RS-DOUBLE-QUOTE-USED-BOOL
WS-RS-IDENT-DIV-CHR             WS-RS-MORE-TO-1ST-PROG-BOOL
WS-RS-NO-SWITCH-CHGS-CHR        WS-RS-NO-SWITCH-CHANGES-BOOL
WS-RS-COMPLETE-CHR              WS-RS-NOT-COMPLETE-BOOL
WS-RS-OUTPUT-FILE-BUSY-CHR      WS-RS-OUTPUT-FILE-AVAIL-BOOL
WS-RS-OUTPUT-FILE-BUSY-CHR      WS-RS-OUTPUT-FILE-BUSY-BOOL
WS-RS-SOURCE-RECORD-TYPE-CHR    WS-RS-SOURCE-REC-IDENT-BOOL
WS-RS-SOURCE-RECORD-TYPE-CHR    WS-RS-SOURCE-REC-IGNORED-BOOL
WS-RS-SOURCE-RECORD-TYPE-CHR    WS-RS-SOURCE-REC-LINKAGE-BOOL
WS-RS-NO-SWITCH-CHGS-CHR        WS-RS-SWITCH-CHANGES-BOOL
WS-RS-SWITCH-ERROR-CHR          WS-RS-SWITCH-IS-BAD-BOOL
WS-RS-SWITCH-ERROR-CHR          WS-RS-SWITCH-IS-GOOD-BOOL

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```

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Functions                      Defn     Locations
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+-------------------------------------------------------------

CONCATENATE                     001004I  001193 001215 001221 001438 001441 001445
001447 001449
                                         001451 001453
LOWER-CASE                     001112I  001297
TRIM                            000865I  000870 000976 001005 001119 001182 001187
001193 001203
                                           001209 001222 001302 001314 001332 001357
001365 001420
                                           001422 001427 001429 001438 001441 001445
001447 001449
                                         001451 001453

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------------------------------
Called Procedures              Type   Locations
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+-----------------------------------------------------------

C$SLEEP                        SYSTEM 001230 001266 001277 001463
CBL_CHANGE_DIR                 SYSTEM 000975
CBL_DELETE_FILE                SYSTEM 001195
CHECKSRC                       USER   001384 001398
E4                             SYSTEM 001364
LISTING                        USER   001250
SYSTEM                            SYSTEM 001209 001365 001422 001429 001444 001446
001448 001450
                                      001452

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------------------------------
Procedure                      Defn     Locations
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+-------------------------------------------------------------

CAUTION:                        000860P
FOUND                           000860P
G29                             000860P
LPP                             001253P
LPPP                            001254P
MORE                            000860P
ONE                             000860P
SELCHAR                          000920P  000921 001024 001027 001034 001040 001046
001052 001063
                                        001069 001075 001081 001404
SYSERR                          001208P

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Unreferenced Working Storage Symbols

CBL_CHANGE_DIR                  000975C
CBL_DELETE_FILE                 001195C
COB-COLOR-MAGENTA               000237W
COB-COLOR-YELLOW                000238W
COB-SCR-BACK-TAB                000321W
COB-SCR-BACKSPACE               000328W
COB-SCR-DELETE                  000327W
COB-SCR-F10                     000254W
COB-SCR-F11                     000255W
COB-SCR-F13                     000257W
COB-SCR-F14                     000258W
COB-SCR-F15                     000259W
COB-SCR-F16                     000260W
COB-SCR-F17                     000261W
COB-SCR-F18                     000262W
COB-SCR-F19                     000263W
COB-SCR-F20                     000264W
COB-SCR-F21                     000265W
COB-SCR-F22                     000266W
COB-SCR-F23                     000267W
COB-SCR-F24                     000268W
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COB-SCR-F25                     000269W
COB-SCR-F26                     000270W
COB-SCR-F27                     000271W
COB-SCR-F28                     000272W
COB-SCR-F29                     000273W
COB-SCR-F30                     000274W
COB-SCR-F31                     000275W
COB-SCR-F32                     000276W
COB-SCR-F33                     000277W
COB-SCR-F34                     000278W
COB-SCR-F35                     000279W
COB-SCR-F36                     000280W
COB-SCR-F37                     000281W
COB-SCR-F38                     000282W
COB-SCR-F39                     000283W
COB-SCR-F40                     000284W
COB-SCR-F41                     000285W
COB-SCR-F42                     000286W
COB-SCR-F43                     000287W
COB-SCR-F44                     000288W
COB-SCR-F45                     000289W
COB-SCR-F46                     000290W
COB-SCR-F47                     000291W
COB-SCR-F48                     000292W
COB-SCR-F49                     000293W
COB-SCR-F50                     000294W
COB-SCR-F51                     000295W
COB-SCR-F52                     000296W
COB-SCR-F53                     000297W
COB-SCR-F54                     000298W

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Unreferenced Working Storage Symbols

COB-SCR-F55                     000299W
COB-SCR-F56                     000300W
COB-SCR-F57                     000301W
COB-SCR-F58                     000302W
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COB-SCR-F59                     000303W
COB-SCR-F60                     000304W
COB-SCR-F61                     000305W
COB-SCR-F62                     000306W
COB-SCR-F63                     000307W
COB-SCR-F64                     000308W
COB-SCR-FATAL                   000335W
COB-SCR-INSERT                  000326W
COB-SCR-KEY-DOWN                000316W
COB-SCR-KEY-END                 000330W
COB-SCR-KEY-HOME                000329W
COB-SCR-KEY-LEFT                000322W
COB-SCR-KEY-RIGHT               000323W
COB-SCR-KEY-UP                  000314W
COB-SCR-KEY_DOWN                000317W
COB-SCR-KEY_UP                  000315W
COB-SCR-MAX-FIELD               000336W
COB-SCR-NO-FIELD                000332W
COB-SCR-OK                      000243W
COB-SCR-PAGE-DOWN               000312W
COB-SCR-PAGE-UP                 000310W
COB-SCR-PAGE_DOWN               000313W
COB-SCR-PAGE_UP                 000311W
COB-SCR-PRINT                   000319W
COB-SCR-TAB                     000320W
COB-SCR-TIME-OUT                000333W
E4                              001364C
F1                              000364W
F12                             000358W
F2                              000371W
F3                              000367W
F4                              000365W
F6                              000369W
F7                              000372W
F8                              000366W
F9                              000370W
LISTING                         001250C
WS-COMPILATION-SWITCHES-TXT     000338W
WS-CS-FILENAMES-TABLE-TXT       000350W
WS-DELETE-FN-TXT                000397W
WS-FILE-STATUS-MESSAGE-TXT      000403W
```

```
WS-OS-TYPES-TXT                 000465W
WS-PATH-DELIMITER-CHR           000471W
WS-RS-COMPILE-OK-CHR            000484W
WS-RS-COMPLETE-CHR              000488W
WS-RS-IDENT-DIV-CHR             000493W
WS-RS-NO-SWITCH-CHGS-CHR        000496W

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Symbols of Module: GCIC (GCIC)
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Unreferenced Working Storage Symbols

WS-RS-OUTPUT-FILE-BUSY-BOOL     000500W
WS-RS-OUTPUT-FILE-BUSY-CHR      000499W
WS-RS-QUOTE-CHR                 000491W
WS-RS-SWITCH-ERROR-CHR          000506W
WS-RS-SWITCH-IS-BAD-BOOL        000507W
WS-RS-SWITCH-IS-GOOD-BOOL       000508W
WS-RUNTIME-SWITCHES-TXT         000483W

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Symbols of Module: GCIC (GCIC)
------------------------------
Unreferenced Procedures

CAUTION:                        000860P
FOUND                           000860P
G29                             000860P
LPP                             001253P
LPPP                            001254P
MORE                            000860P
ONE                             000860P
SYSERR                          001208P

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  1471         IDENTIFICATION DIVISION.
  1472         PROGRAM-ID.  CHECKSRC.
```

```
1473        *>*************************************************************
1474        *> This subprogram will scan a line of source code it is given **
1475        *> looking for 'LINKAGE SECTION' or 'IDENTIFICATION DIVISION'. **
1476        *>                                                             **
1477        *>  ****NOTE****   ****NOTE****    ****NOTE****   ****NOTE***  **
1478        *>                                                             **
1479        *> These two strings must be found IN THEIR ENTIRETY within    **
1480        *> the 1st 80 columns of program source records, and cannot    **
1481        *> follow either a '*>' sequence OR a '*' in col 7.            **
1482        *>*************************************************************
1483        *>  DATE  CHANGE DESCRIPTION                                   **
1484        *> ====== ================================================== **
1485        *> GC0809 Initial coding.                                      **
1486        *>*************************************************************
1487         ENVIRONMENT DIVISION.
1488         CONFIGURATION SECTION.
1489         REPOSITORY.
1490             FUNCTION ALL INTRINSIC.
1491         DATA DIVISION.
1492         WORKING-STORAGE SECTION.
1493         01  WS-Compressed-Src-TXT.
1494             05 WS-CS-CHR                          OCCURS 80 TIMES
1495                                                   PIC X(1).
1496
1497         01  WS-Runtime-Switches-TXT.
1498             05 WS-RS-Found-SPACE-CHR              PIC X(1).
1499                88 WS-RS-Skipping-SPACE-BOOL     VALUE 'Y'.
1500                88 WS-RS-Not-Skipping-SPACE-BOOL VALUE 'N'.
1501
1502         01  WS-I-SUB                             USAGE BINARY-CHAR.
1503
1504         01  WS-J-SUB                             USAGE BINARY-CHAR.
1505         LINKAGE SECTION.
1506         01  L-Argument-1-TXT.
1507             02 L-A1-CHR                          OCCURS 80 TIMES
1508                                                   PIC X(1).
1509
1510         01  L-Argument-2-CHR                     PIC X(1).
1511             88 L-A2-LINKAGE-SECTION-BOOL VALUE 'L'.
1512             88 L-A2-IDENT-DIVISION-BOOL  VALUE 'I'.
1513             88 L-A2-Nothing-Special-BOOL VALUE ' '.
```

```
  1514        /
  1515  GC0712 PROCEDURE DIVISION USING BY VALUE     L-Argument-1-TXT
  1516  GC0712                         BY REFERENCE L-Argument-2-CHR.
  1517         000-Main SECTION.
  1518             SET L-A2-Nothing-Special-BOOL TO TRUE
  1519             IF L-A1-CHR (7) = '*'
  1520                 GOBACK
  1521             END-IF
  1522             .
  1523        *>
  1524        *> Compress multiple consecutive spaces

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  1525        *>
  1526             SET WS-RS-Not-Skipping-SPACE-BOOL TO TRUE
  1527             MOVE 0 TO WS-J-SUB
  1528             MOVE SPACES TO WS-Compressed-Src-TXT
  1529             PERFORM VARYING WS-I-SUB FROM 1 BY 1
  1530                       UNTIL WS-I-SUB > 80
  1531                 IF L-A1-CHR (WS-I-SUB) = SPACE
  1532                     IF WS-RS-Not-Skipping-SPACE-BOOL
  1533                         ADD 1 TO WS-J-SUB
  1534                         MOVE UPPER-CASE(L-A1-CHR (WS-I-SUB))
  1535                           TO WS-CS-CHR (WS-J-SUB)
  1536                         SET WS-RS-Skipping-SPACE-BOOL TO TRUE
  1537                     END-IF
  1538                 ELSE
  1539                     SET WS-RS-Not-Skipping-SPACE-BOOL TO TRUE
  1540                     ADD 1 TO WS-J-SUB
  1541                     MOVE L-A1-CHR (WS-I-SUB) TO WS-CS-CHR (WS-J-SUB)
  1542                 END-IF
  1543             END-PERFORM
  1544        *>
  1545        *> Scan the compressed source line
  1546        *>
  1547             PERFORM VARYING WS-I-SUB FROM 1 BY 1
  1548                       UNTIL WS-I-SUB > 66
  1549                 EVALUATE TRUE
  1550                     WHEN WS-CS-CHR (WS-I-SUB) = '*'
```

```
  1551                          IF WS-Compressed-Src-TXT (WS-I-SUB : 2) = '*>'
  1552                              GOBACK
  1553                          END-IF
  1554                       WHEN (WS-CS-CHR (WS-I-SUB) = 'L') AND (WS-I-SUB < 66)
  1555                          IF WS-Compressed-Src-TXT (WS-I-SUB : 15)
  1556                             = 'LINKAGE SECTION'
  1557                              SET L-A2-LINKAGE-SECTION-BOOL TO TRUE
  1558                              GOBACK
  1559                          END-IF
  1560                       WHEN (WS-CS-CHR (WS-I-SUB) = 'I') AND (WS-I-SUB < 58)
  1561                          IF WS-Compressed-Src-TXT (WS-I-SUB : 23)
  1562                             = 'IDENTIFICATION DIVISION'
  1563                              SET L-A2-IDENT-DIVISION-BOOL TO TRUE
  1564                              GOBACK
  1565                          END-IF
  1566                   END-EVALUATE
  1567                END-PERFORM
  1568           *>
  1569           *> If we get to here, we never found anything!
  1570           *>
  1571  +             GOBACK
  1572                .
  1573            END PROGRAM CHECKSRC.
  1574

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Symbols of Module: GCIC (CHECKSRC)
----------------------------------

Data Section (WORKING-STORAGE)  Defn     Locations
------------------------------
+-------------------------------------------------------------

WS-COMPRESSED-SRC-TXT           001493W  001528 001551 001555 001561
WS-CS-CHR                       001494W  001535 001541 001550 001554 001560
WS-I-SUB                          001502W  001529 001530 001531 001534 001541 001547
001548 001550
                                         001551 001554 001555 001560 001561
WS-J-SUB                        001504W  001527 001533 001535 001540 001541
WS-RS-FOUND-SPACE-CHR           001498W
```

```
WS-RS-NOT-SKIPPING-SPACE-BOOL   001500W  001526 001532 001539
WS-RS-SKIPPING-SPACE-BOOL       001499W  001536
WS-RUNTIME-SWITCHES-TXT         001497W

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Symbols of Module: GCIC (CHECKSRC)
---------------------------------

Data Section (LINKAGE)          Defn     Locations
-------------------------------
+-------------------------------------------------------------

L-A1-CHR                        001507K  001519 001531 001534 001541
L-A2-IDENT-DIVISION-BOOL        001512K  001563
L-A2-LINKAGE-SECTION-BOOL       001511K  001557
L-A2-NOTHING-SPECIAL-BOOL       001513K  001518
L-ARGUMENT-1-TXT                001506K  001515
L-ARGUMENT-2-CHR                001510K  001516

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Symbols of Module: GCIC (CHECKSRC)
---------------------------------
Variable Tested [S]            Symbol (88-Conditions)
-----------------------------------------------------------------

L-ARGUMENT-2-CHR                L-A2-LINKAGE-SECTION-BOOL
L-ARGUMENT-2-CHR                L-A2-IDENT-DIVISION-BOOL
L-ARGUMENT-2-CHR                L-A2-NOTHING-SPECIAL-BOOL
WS-RS-FOUND-SPACE-CHR           WS-RS-SKIPPING-SPACE-BOOL
WS-RS-FOUND-SPACE-CHR           WS-RS-NOT-SKIPPING-SPACE-BOOL

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Symbols of Module: GCIC (CHECKSRC)
---------------------------------
Variable Tested                Symbol (88-Conditions) [S]
-----------------------------------------------------------------

L-ARGUMENT-2-CHR                L-A2-IDENT-DIVISION-BOOL
```

```
L-ARGUMENT-2-CHR               L-A2-LINKAGE-SECTION-BOOL
L-ARGUMENT-2-CHR               L-A2-NOTHING-SPECIAL-BOOL
WS-RS-FOUND-SPACE-CHR          WS-RS-NOT-SKIPPING-SPACE-BOOL
WS-RS-FOUND-SPACE-CHR          WS-RS-SKIPPING-SPACE-BOOL

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Symbols of Module: GCIC (CHECKSRC)
---------------------------------
Functions                      Defn     Locations
-------------------------------
+-----------------------------------------------------------------

UPPER-CASE                     001534I

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Symbols of Module: GCIC (CHECKSRC)
---------------------------------
Procedure                      Defn     Locations
-------------------------------
+-----------------------------------------------------------------

None

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Symbols of Module: GCIC (CHECKSRC)
---------------------------------
Unreferenced Working Storage Symbols

WS-RS-FOUND-SPACE-CHR          001498W
WS-RUNTIME-SWITCHES-TXT        001497W
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Symbols of Module: GCIC (CHECKSRC)
---------------------------------
Unreferenced Procedures

None
```

```
 1575         IDENTIFICATION DIVISION.
 1576         PROGRAM-ID.  LISTING.
 1577        *>*****************************************************************
 1578        *> This subprogram generates a cross-reference listing of an   **
 1579        *> GNU COBOL program.                                           **
 1580        *>*****************************************************************
 1581        *>                                                              **
 1582        *> AUTHOR:       GARY L. CUTLER                                 **
 1583        *>               Copyright (C) 2010, Gary L. Cutler, GPL        **
 1584        *>                                                              **
 1585        *> DATE-WRITTEN: April 1, 2010                                  **
 1586        *>                                                              **
 1587        *>*****************************************************************
 1588        *>  DATE  CHANGE DESCRIPTION                                    **
 1589        *> ====== ================================================== **
 1590        *> GC0410 Initial coding                                        **
 1591        *> GC0711 Updates to accommodate the 12MAR2010 version of OC   **
 1592        *> GC0710 Handle duplicate data names (i.e. 'CORRESPONDING' or **
 1593        *>        qualified items) better; ignore 'END PROGRAM' recs    **
 1594        *>        so program name doesn't appear in listing.            **
 1595        *> GC0313 Fix problem where the first procedure name defined   **
 1596        *>        in the PROCEDURE DIVISION lacks a "Defined" line      **
 1597        *>        number.                                               **
 1598        *> GC1213 Updated for 23NOV2013 version of GNU COBOL 2.1; Stop **
 1599        *>        showing functions as if they were identifiers in the **
 1600        *>        xref listing; Flag all CALL argument references with **
 1601        *>        a "C" rather than "*" because they aren't necessari- **
 1602        *>        ly altered; Fixed assorted formatting bugs; DOWN-     **
 1603        *>        WARD COMPATIBLE WITH GNU COBOL 2.0 SYNTAX             **
 1604        *> GC0314 Fix problem where 1st char of 1st token on a line is **
 1605        *>        lost if >>SOURCE MODE IS FREE is in effect and the    **
 1606        *>        1st character is non-blank.                           **
 1607        *> VC1217 Updated compiler version & date to v3.0 & 24DEC2017. **
 1608        *> VC0720 Updated compiler to 3.1 July2020 and the copyright.  **
 1609        *> VC0322 Updated compiler to 3.1.2 March2022 & the copyright. **
 1610        *>*****************************************************************
 1611         ENVIRONMENT DIVISION.
 1612         CONFIGURATION SECTION.
```

```
  1613         REPOSITORY.
  1614             FUNCTION ALL INTRINSIC.
  1615         INPUT-OUTPUT SECTION.
  1616         FILE-CONTROL.
  1617             SELECT F-Expanded-Src-FILE  ASSIGN TO WS-Expanded-Src-Fn-TXT
  1618                                         ORGANIZATION IS LINE SEQUENTIAL.
  1619  GC0712     SELECT F-Listing-FILE       ASSIGN TO L-Listing-Fn-TXT
  1620                                         ORGANIZATION IS LINE SEQUENTIAL.
  1621             SELECT F-Original-Src-FILE  ASSIGN TO L-Src-Fn-TXT
  1622                                         ORGANIZATION IS LINE SEQUENTIAL.
  1623             SELECT F-Sort-Work-FILE     ASSIGN TO DISK.
  1624         DATA DIVISION.
  1625         FILE SECTION.
  1626         FD  F-Expanded-Src-FILE.
  1627         01  F-Expanded-Src-REC.
  1628             05 F-ES-1-CHR                          PIC X.

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  1629             05 F-ES-2-256-TXT-256                PIC X(256).
  1630  GC0712 01  F-Expanded-Src2-REC.
  1631  GC0712     05 F-ES-1-7-TXT                       PIC X(7).
  1632  GC0712     05 F-ES-8-256-TXT                     PIC X(249).
  1633
  1634  GC0712 FD  F-Listing-FILE.
  1635  GC1213 01  F-Listing-96-REC                      PIC X(96).
  1636  GC1213 01  F-Listing-135-REC                     PIC X(135).
  1637         01  F-Listing-REC                         PIC X(135).
  1638
  1639         FD  F-Original-Src-FILE.
  1640         01  F-Original-Src-REC.
  1641  GC0410     05 F-OS-1-128-TXT.
  1642  GC0410        10 FILLER                          PIC X(6).
  1643  GC0410        10 F-OS-7-CHR                      PIC X(1).
  1644  GC0712        10 F-OS-8-72-TXT                   PIC X(65).
  1645  GC0712        10 FILLER                          PIC X(56).
  1646             05 F-OS-129-256-TXT                   PIC X(128).
  1647
  1648         SD  F-Sort-Work-FILE.
  1649         01  F-Sort-Work-REC.
```

```
  1650             05 F-SW-Prog-ID-TXT                  PIC X(15).
  1651             05 F-SW-Token-Uc-TXT                 PIC X(32).
  1652             05 F-SW-Token-TXT                    PIC X(32).
  1653             05 F-SW-Section-TXT                  PIC X(15).
  1654             05 F-SW-Def-Line-NUM                 PIC 9(6).
  1655             05 F-SW-Reference-TXT.
  1656                10 F-SW-Ref-Line-NUM              PIC 9(6).
  1657                10 F-SW-Ref-Flag-CHR              PIC X(1).
  1658
  1659         WORKING-STORAGE SECTION.
  1660  GC1213 01  WS-Copyright-TXT                     PIC X(86).
  1661
  1662         01  WS-Curr-CHR                         PIC X(1).
  1663             88 WS-Curr-Char-Is-Punct-BOOL        VALUE '=', '(', ')',
  1664                                                        '*', '/', '&',
  1665                                                        ';', ',', '<',
  1666                                                        '>', ':'.
  1667             88 WS-Curr-Char-Is-Quote-BOOL        VALUE "'", '"'.
  1668             88 WS-Curr-Char-Is-X-BOOL            VALUE 'x', 'X'.
  1669             88 WS-Curr-Char-Is-Z-BOOL            VALUE 'z', 'Z'.
  1670
  1671         01  WS-Curr-Division-TXT                 PIC X(1).
  1672  GC1010     88 WS-CD-In-IDENT-DIV-BOOL           VALUE 'i', 'I', '?'.
  1673  GC1010     88 WS-CD-In-ENV-DIV-BOOL             VALUE 'e', 'E'.
  1674  GC1010     88 WS-CD-In-DATA-DIV-BOOL            VALUE 'd', 'D'.
  1675  GC1010     88 WS-CD-In-PROC-DIV-BOOL            VALUE 'p', 'P'.
  1676
  1677         01  WS-Curr-Line-NUM                    PIC 9(6).
  1678
  1679         01  WS-Curr-Prog-ID-TXT.
  1680             05 FILLER                            PIC X(12).
  1681             05 WS-CPI-13-15-TXT                  PIC X(3).
  1682  GC0712     05 WS-CPI-16-CHR                     PIC X(1).

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  1683
  1684         01  WS-Curr-Section-TXT.
  1685             05 WS-CS-1-CHR                       PIC X(1).
  1686             05 WS-CS-2-14-TXT.
```

```
1687                10 FILLER                           PIC X(10).
1688                10 WS-CS-11-14-TXT                  PIC X(3).
1689             05 WS-CS-15-CHR                         PIC X(1).
1690
1691         01  WS-Curr-Verb-TXT                       PIC X(12).
1692
1693         01  WS-Delim-TXT                           PIC X(2).
1694
1695         01  WS-Dummy-TXT                           PIC X(1).
1696
1697         01  WS-Expanded-Src-Fn-TXT                 PIC X(256).
1698
1699         01  WS-Filename-TXT                        PIC X(256).
1700
1701  GC1213 01  WS-Flags-TXT.
1702  GC1213     05 WS-Suppress-FF-CHR                   PIC X(1).
1703
1704  GC1213 01  WS-Formatted-DT                        PIC 9999/99/99.
1705
1706         01  WS-Group-Indicators-TXT.
1707             05 WS-GI-Prog-ID-TXT                   PIC X(15).
1708             05 WS-GI-Token-TXT                     PIC X(32).
1709
1710         01  WS-Held-Reference-TXT                  PIC X(100).
1711
1712         01  WS-I-SUB                               USAGE BINARY-LONG.
1713
1714         01  WS-J-SUB                               USAGE BINARY-LONG.
1715
1716         01  WS-Lines-Left-NUM                      USAGE BINARY-LONG.
1717
1718         01  WS-Lines-Per-Page-NUM                  USAGE BINARY-LONG.
1719
1720         01  WS-Lines-Per-Page-Env-TXT              PIC X(256).
1721
1722  GC1010 01  WS-Main-Module-Name-TXT                PIC X(256).
1723
1724         01  WS-Next-CHR                            PIC X(1).
1725             88 WS-Next-Char-Is-Quote-BOOL          VALUE '"', "'".
1726
1727         01  WS-OS-Type-FILLER-TXT.
```

```
  1728             05 VALUE 'Windows'                    PIC X(14).
  1729             05 VALUE 'Windows/Cygwin'             PIC X(14).
  1730             05 VALUE 'UNIX/Linux'                 PIC X(14).
  1731             05 VALUE 'OSX'                        PIC X(14).
  1732             05 VALUE 'Windows/MinGW'              PIC X(14).
  1733         01  WS-OS-Types-TXT REDEFINES WS-OS-Type-FILLER-TXT.
  1734             05 WS-OS-Type-TXT                     PIC X(14)
  1735                                          OCCURS 5 TIMES .
  1736

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  1737  GC0712 01  WS-Page-NUM                           USAGE BINARY-LONG.
  1738
  1739  GC0712 01  WS-Page-No-TXT.
  1740  GC0712     05 WS-PN-Literal-TXT                  PIC X(6).
  1741  GC0712     05 WS-PN-Page-NUM                     PIC Z(3)9.
  1742
  1743  GC1213 01  WS-Program-Path-TXT                   PIC X(135).
  1744
  1745         01  WS-Reserved-Words-TXT.
  1746             05 VALUE '                                 ' PIC X(33).
  1747  GC1213     05 VALUE 'FABS                             ' PIC X(33).
  1748             05 VALUE 'VACCEPT                          ' PIC X(33).
  1749             05 VALUE ' ACCESS                          ' PIC X(33).
  1750  GC1213     05 VALUE 'FACOS                            ' PIC X(33).
  1751          05 VALUE ' ACTIVE-CLASS                ' PIC X(33).     UNIMPLEMENTED
  1752             05 VALUE 'VADD                             ' PIC X(33).
  1753             05 VALUE ' ADDRESS                         ' PIC X(33).
  1754             05 VALUE ' ADVANCING                       ' PIC X(33).
  1755             05 VALUE 'KAFTER                           ' PIC X(33).
  1756          05 VALUE ' ALIGNED                     ' PIC X(33).     UNIMPLEMENTED
  1757             05 VALUE ' ALL                             ' PIC X(33).
  1758             05 VALUE 'VALLOCATE                        ' PIC X(33).
  1759             05 VALUE ' ALPHABET                        ' PIC X(33).
  1760             05 VALUE ' ALPHABETIC                      ' PIC X(33).
  1761             05 VALUE ' ALPHABETIC-LOWER                ' PIC X(33).
  1762             05 VALUE ' ALPHABETIC-UPPER                ' PIC X(33).
  1763             05 VALUE ' ALPHANUMERIC                    ' PIC X(33).
  1764             05 VALUE ' ALPHANUMERIC-EDITED             ' PIC X(33).
```

```
  1765              05 VALUE ' ALSO                            ' PIC X(33).
  1766              05 VALUE 'VALTER                           ' PIC X(33).
  1767              05 VALUE ' ALTERNATE                       ' PIC X(33).
  1768              05 VALUE ' AND                             ' PIC X(33).
  1769  GC1213      05 VALUE 'FANNUITY                         ' PIC X(33).
  1770              05 VALUE ' ANY                             ' PIC X(33).
  1771           05 VALUE ' ANYCASE                       ' PIC X(33).     UNIMPLEMENTED
  1772              05 VALUE ' ARE                             ' PIC X(33).
  1773              05 VALUE ' AREA                            ' PIC X(33).
  1774              05 VALUE ' AREAS                           ' PIC X(33).
  1775              05 VALUE ' ARGUMENT-NUMBER                 ' PIC X(33).
  1776              05 VALUE ' ARGUMENT-VALUE                  ' PIC X(33).
  1777           05 VALUE ' ARITHMETIC                    ' PIC X(33).     UNIMPLEMENTED
  1778              05 VALUE ' AS                              ' PIC X(33).
  1779              05 VALUE ' ASCENDING                       ' PIC X(33).
  1780              05 VALUE ' ASCII                           ' PIC X(33).
  1781  GC1213      05 VALUE 'FASIN                            ' PIC X(33).
  1782              05 VALUE ' ASSIGN                          ' PIC X(33).
  1783              05 VALUE ' AT                              ' PIC X(33).
  1784  GC1213      05 VALUE 'FATAN                            ' PIC X(33).
  1785  GC0711      05 VALUE ' ATTRIBUTE                       ' PIC X(33).
  1786             05 VALUE ' AUTHOR                        ' PIC X(33).     OBSOLETE
  1787              05 VALUE ' AUTO                            ' PIC X(33).
  1788              05 VALUE ' AUTO-SKIP                       ' PIC X(33).
  1789              05 VALUE ' AUTOMATIC                       ' PIC X(33).
  1790              05 VALUE ' AUTOTERMINATE                   ' PIC X(33).

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  1791              05 VALUE ' AWAY-FROM-ZERO                  ' PIC X(33).
  1792           05 VALUE ' B-AND                         ' PIC X(33).     UNIMPLEMENTED
  1793           05 VALUE ' B-NOT                         ' PIC X(33).     UNIMPLEMENTED
  1794           05 VALUE ' B-OR                          ' PIC X(33).     UNIMPLEMENTED
  1795           05 VALUE ' B-XOR                         ' PIC X(33).     UNIMPLEMENTED
  1796              05 VALUE ' BACKGROUND-COLOR                ' PIC X(33).
  1797              05 VALUE ' BACKGROUND-COLOUR               ' PIC X(33).
  1798              05 VALUE ' BASED                           ' PIC X(33).
  1799              05 VALUE ' BEEP                            ' PIC X(33).
  1800              05 VALUE ' BEFORE                          ' PIC X(33).
  1801              05 VALUE ' BELL                            ' PIC X(33).
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 1802             05 VALUE ' BINARY                          ' PIC X(33).
 1803             05 VALUE ' BINARY-C-LONG                   ' PIC X(33).
 1804             05 VALUE ' BINARY-CHAR                     ' PIC X(33).
 1805             05 VALUE ' BINARY-DOUBLE                   ' PIC X(33).
 1806             05 VALUE ' BINARY-INT                      ' PIC X(33).
 1807             05 VALUE ' BINARY-LONG                     ' PIC X(33).
 1808             05 VALUE ' BINARY-LONG-LONG                ' PIC X(33).
 1809             05 VALUE ' BINARY-SHORT                    ' PIC X(33).
 1810           05 VALUE ' BIT                           ' PIC X(33).     UNIMPLEMENTED
 1811             05 VALUE ' BLANK                           ' PIC X(33).
 1812             05 VALUE ' BLINK                           ' PIC X(33).
 1813             05 VALUE ' BLOCK                           ' PIC X(33).
 1814           05 VALUE ' BOOLEAN                       ' PIC X(33).     UNIMPLEMENTED
 1815  GC1213    05 VALUE 'FBOOLEAN-OF-INTEGER           ' PIC X(33).     UNIMPLEMENTED
 1816             05 VALUE ' BOTTOM                          ' PIC X(33).
 1817             05 VALUE 'YBY                              ' PIC X(33).
 1818  GC1213     05 VALUE 'FBYTE-LENGTH                     ' PIC X(33).
 1819             05 VALUE 'MC01                             ' PIC X(33).
 1820             05 VALUE 'MC02                             ' PIC X(33).
 1821             05 VALUE 'MC03                             ' PIC X(33).
 1822             05 VALUE 'MC04                             ' PIC X(33).
 1823             05 VALUE 'MC05                             ' PIC X(33).
 1824             05 VALUE 'MC06                             ' PIC X(33).
 1825             05 VALUE 'MC07                             ' PIC X(33).
 1826             05 VALUE 'MC08                             ' PIC X(33).
 1827             05 VALUE 'MC09                             ' PIC X(33).
 1828             05 VALUE 'MC10                             ' PIC X(33).
 1829             05 VALUE 'MC11                             ' PIC X(33).
 1830             05 VALUE 'MC12                             ' PIC X(33).
 1831             05 VALUE 'VCALL                            ' PIC X(33).
 1832             05 VALUE 'MCALL-CONVENTION                 ' PIC X(33).
 1833             05 VALUE 'VCANCEL                          ' PIC X(33).
 1834           05 VALUE ' CAPACITY                      ' PIC X(33).     UNIMPLEMENTED
 1835            05 VALUE ' CD                              ' PIC X(33).      OBSOLETE
 1836           05 VALUE ' CENTER                        ' PIC X(33).     UNIMPLEMENTED
 1837             05 VALUE ' CF                              ' PIC X(33).
 1838             05 VALUE ' CH                              ' PIC X(33).
 1839           05 VALUE ' CHAIN                         ' PIC X(33).     UNIMPLEMENTED
 1840             05 VALUE ' CHAINING                        ' PIC X(33).
 1841  GC1213     05 VALUE 'FCHAR                            ' PIC X(33).
 1842  GC1213    05 VALUE 'FCHAR-NATIONAL                ' PIC X(33).     UNIMPLEMENTED
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  1843             05 VALUE ' CHARACTER                        ' PIC X(33).
  1844             05 VALUE ' CHARACTERS                       ' PIC X(33).

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  1845             05 VALUE ' CLASS                            ' PIC X(33).
  1846           05 VALUE ' CLASS-ID                     ' PIC X(33).     UNIMPLEMENTED
  1847  GC0711     05 VALUE ' CLASSIFICATION                   ' PIC X(33).
  1848             05 VALUE 'VCLOSE                            ' PIC X(33).
  1849  GC1213     05 VALUE 'FCOB-CRT-STATUS                   ' PIC X(33).
  1850             05 VALUE ' CODE                             ' PIC X(33).
  1851             05 VALUE ' CODE-SET                         ' PIC X(33).
  1852             05 VALUE ' COL                              ' PIC X(33).
  1853             05 VALUE ' COLLATING                        ' PIC X(33).
  1854             05 VALUE ' COLS                             ' PIC X(33).
  1855             05 VALUE ' COLUMN                           ' PIC X(33).
  1856             05 VALUE ' COLUMNS                          ' PIC X(33).
  1857  GC1213     05 VALUE 'FCOMBINED-DATETIME                ' PIC X(33).
  1858             05 VALUE ' COMMA                            ' PIC X(33).
  1859             05 VALUE ' COMMAND-LINE                     ' PIC X(33).
  1860             05 VALUE 'VCOMMIT                           ' PIC X(33).
  1861             05 VALUE ' COMMON                           ' PIC X(33).
  1862            05 VALUE ' COMMUNICATION                  ' PIC X(33).     OBSOLETE
  1863             05 VALUE ' COMP                             ' PIC X(33).
  1864             05 VALUE ' COMP-1                           ' PIC X(33).
  1865             05 VALUE ' COMP-2                           ' PIC X(33).
  1866             05 VALUE ' COMP-3                           ' PIC X(33).
  1867             05 VALUE ' COMP-4                           ' PIC X(33).
  1868             05 VALUE ' COMP-5                           ' PIC X(33).
  1869             05 VALUE ' COMP-6                           ' PIC X(33).
  1870             05 VALUE ' COMP-X                           ' PIC X(33).
  1871             05 VALUE ' COMPUTATIONAL                    ' PIC X(33).
  1872             05 VALUE ' COMPUTATIONAL-1                  ' PIC X(33).
  1873             05 VALUE ' COMPUTATIONAL-2                  ' PIC X(33).
  1874             05 VALUE ' COMPUTATIONAL-3                  ' PIC X(33).
  1875             05 VALUE ' COMPUTATIONAL-4                  ' PIC X(33).
  1876             05 VALUE ' COMPUTATIONAL-5                  ' PIC X(33).
  1877             05 VALUE ' COMPUTATIONAL-X                  ' PIC X(33).
  1878             05 VALUE 'VCOMPUTE                          ' PIC X(33).
  1879  GC1213     05 VALUE 'FCONCATENATE                      ' PIC X(33).
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  1880  GC0712     05 VALUE ' CONDITION                       ' PIC X(33).
  1881             05 VALUE 'KCONFIGURATION                   ' PIC X(33).
  1882             05 VALUE 'MCONSOLE                         ' PIC X(33).
  1883             05 VALUE ' CONSTANT                        ' PIC X(33).
  1884             05 VALUE ' CONTAINS                        ' PIC X(33).
  1885  GC0712     05 VALUE 'ACONTENT                         ' PIC X(33).
  1886             05 VALUE 'VCONTINUE                        ' PIC X(33).
  1887             05 VALUE ' CONTROL                         ' PIC X(33).
  1888             05 VALUE ' CONTROLS                        ' PIC X(33).
  1889  GC0711     05 VALUE ' CONVERSION                      ' PIC X(33).
  1890             05 VALUE 'KCONVERTING                      ' PIC X(33).
  1891        *    05 VALUE ' COPY                            ' PIC X(33).
  1892             05 VALUE ' CORR                            ' PIC X(33).
  1893             05 VALUE ' CORRESPONDING                   ' PIC X(33).
  1894  GC1213     05 VALUE 'FCOS                             ' PIC X(33).
  1895             05 VALUE 'KCOUNT                           ' PIC X(33).
  1896             05 VALUE ' CRT                             ' PIC X(33).
  1897             05 VALUE ' CRT-UNDER                       ' PIC X(33).
  1898             05 VALUE 'MCSP                             ' PIC X(33).

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  1899             05 VALUE ' CURRENCY                        ' PIC X(33).
  1900  GC1213     05 VALUE 'FCURRENCY-SYMBOL                 ' PIC X(33).
  1901  GC1213     05 VALUE 'FCURRENT-DATE                    ' PIC X(33).
  1902             05 VALUE ' CURSOR                          ' PIC X(33).
  1903             05 VALUE ' CYCLE                           ' PIC X(33).
  1904             05 VALUE 'KDATA                            ' PIC X(33).
  1905          05 VALUE ' DATA-POINTER                 ' PIC X(33).     UNIMPLEMENTED
  1906             05 VALUE ' DATE                            ' PIC X(33).
  1907           05 VALUE ' DATE-COMPILED                  ' PIC X(33).     OBSOLETE
  1908           05 VALUE ' DATE-MODIFIED                  ' PIC X(33).     OBSOLETE
  1909  GC1213     05 VALUE 'FDATE-OF-INTEGER                 ' PIC X(33).
  1910  GC1213     05 VALUE 'FDATE-TO-YYYYMMDD                ' PIC X(33).
  1911           05 VALUE ' DATE-WRITTEN                   ' PIC X(33).     OBSOLETE
  1912             05 VALUE ' DAY                             ' PIC X(33).
  1913  GC1213     05 VALUE 'FDAY-OF-INTEGER                  ' PIC X(33).
  1914             05 VALUE ' DAY-OF-WEEK                     ' PIC X(33).
  1915  GC1213     05 VALUE 'IDAY-TO-YYYYDDD                  ' PIC X(33).
  1916             05 VALUE ' DE                              ' PIC X(33).
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  1917  GC0712     05 VALUE 'IDEBUG-CONTENTS                  ' PIC X(33).
  1918  GC0712     05 VALUE 'IDEBUG-ITEM                      ' PIC X(33).
  1919  GC0712     05 VALUE 'IDEBUG-LINE                      ' PIC X(33).
  1920  GC0712     05 VALUE 'IDEBUG-NAME                      ' PIC X(33).
  1921  GC0712     05 VALUE 'IDEBUG-SUB-1                     ' PIC X(33).
  1922  GC0712     05 VALUE 'IDEBUG-SUB-2                     ' PIC X(33).
  1923  GC0712     05 VALUE 'IDEBUG-SUB-3                     ' PIC X(33).
  1924             05 VALUE ' DEBUGGING                       ' PIC X(33).
  1925             05 VALUE ' DECIMAL-POINT                   ' PIC X(33).
  1926             05 VALUE ' DECLARATIVES                    ' PIC X(33).
  1927             05 VALUE ' DEFAULT                         ' PIC X(33).
  1928             05 VALUE 'VDELETE                          ' PIC X(33).
  1929             05 VALUE ' DELIMITED                       ' PIC X(33).
  1930             05 VALUE 'KDELIMITER                       ' PIC X(33).
  1931             05 VALUE ' DEPENDING                       ' PIC X(33).
  1932             05 VALUE ' DESCENDING                      ' PIC X(33).
  1933          05 VALUE ' DESTINATION                  ' PIC X(33).     UNIMPLEMENTED
  1934             05 VALUE ' DETAIL                          ' PIC X(33).
  1935  GC0711     05 VALUE ' DISC                            ' PIC X(33).
  1936             05 VALUE ' DISK                            ' PIC X(33).
  1937             05 VALUE 'VDISPLAY                         ' PIC X(33).
  1938  GC1213    05 VALUE 'FDISPLAY-OF                  ' PIC X(33).     UNIMPLEMENTED
  1939             05 VALUE 'VDIVIDE                          ' PIC X(33).
  1940             05 VALUE 'KDIVISION                        ' PIC X(33).
  1941             05 VALUE 'KDOWN                            ' PIC X(33).
  1942             05 VALUE ' DUPLICATES                      ' PIC X(33).
  1943             05 VALUE ' DYNAMIC                         ' PIC X(33).
  1944  GC1213     05 VALUE 'FE                               ' PIC X(33).
  1945             05 VALUE ' EBCDIC                          ' PIC X(33).
  1946  GC0712     05 VALUE ' EC                              ' PIC X(33).
  1947            05 VALUE ' EGI                           ' PIC X(33).      OBSOLETE
  1948             05 VALUE 'VELSE                            ' PIC X(33).
  1949            05 VALUE ' EMI                           ' PIC X(33).      OBSOLETE
  1950             05 VALUE ' EMPTY-CHECK                     ' PIC X(33).
  1951            05 VALUE 'VENABLE                        ' PIC X(33).      OBSOLETE
  1952  GC0710     05 VALUE 'KEND                             ' PIC X(33).

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  1953             05 VALUE ' END-ACCEPT                      ' PIC X(33).
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 1954             05 VALUE ' END-ADD                          ' PIC X(33).
 1955             05 VALUE ' END-CALL                         ' PIC X(33).
 1956           05 VALUE ' END-CHAIN                       ' PIC X(33).     UNIMPLEMENTED
 1957             05 VALUE ' END-COMPUTE                      ' PIC X(33).
 1958             05 VALUE ' END-DELETE                       ' PIC X(33).
 1959             05 VALUE ' END-DISPLAY                      ' PIC X(33).
 1960             05 VALUE ' END-DIVIDE                       ' PIC X(33).
 1961             05 VALUE ' END-EVALUATE                     ' PIC X(33).
 1962             05 VALUE ' END-IF                           ' PIC X(33).
 1963             05 VALUE ' END-MULTIPLY                     ' PIC X(33).
 1964             05 VALUE ' END-OF-PAGE                      ' PIC X(33).
 1965             05 VALUE ' END-PERFORM                      ' PIC X(33).
 1966             05 VALUE ' END-READ                         ' PIC X(33).
 1967            05 VALUE ' END-RECEIVE                     ' PIC X(33).      OBSOLETE
 1968             05 VALUE ' END-RETURN                       ' PIC X(33).
 1969             05 VALUE ' END-REWRITE                      ' PIC X(33).
 1970             05 VALUE ' END-SEARCH                       ' PIC X(33).
 1971             05 VALUE ' END-START                        ' PIC X(33).
 1972             05 VALUE ' END-STRING                       ' PIC X(33).
 1973             05 VALUE ' END-SUBTRACT                     ' PIC X(33).
 1974             05 VALUE ' END-UNSTRING                     ' PIC X(33).
 1975             05 VALUE ' END-WRITE                        ' PIC X(33).
 1976             05 VALUE 'VENTRY                            ' PIC X(33).
 1977           05 VALUE ' ENTRY-CONVENTION              ' PIC X(33).     UNIMPLEMENTED
 1978             05 VALUE 'KENVIRONMENT                      ' PIC X(33).
 1979             05 VALUE ' ENVIRONMENT-NAME                 ' PIC X(33).
 1980             05 VALUE ' ENVIRONMENT-VALUE                ' PIC X(33).
 1981            05 VALUE ' EO                             ' PIC X(33).     UNIMPLEMENTED
 1982             05 VALUE ' EOL                              ' PIC X(33).
 1983             05 VALUE ' EOP                              ' PIC X(33).
 1984             05 VALUE ' EOS                              ' PIC X(33).
 1985             05 VALUE ' EQUAL                            ' PIC X(33).
 1986             05 VALUE 'KEQUALS                           ' PIC X(33).
 1987             05 VALUE ' ERASE                            ' PIC X(33).
 1988             05 VALUE ' ERROR                            ' PIC X(33).
 1989             05 VALUE ' ESCAPE                           ' PIC X(33).
 1990            05 VALUE ' ESI                             ' PIC X(33).      OBSOLETE
 1991             05 VALUE 'VEVALUATE                         ' PIC X(33).
 1992             05 VALUE ' EXCEPTION                        ' PIC X(33).
 1993  GC1213     05 VALUE 'FEXCEPTION-FILE                   ' PIC X(33).
 1994  GC1213    05 VALUE 'FEXCEPTION-FILE-N               ' PIC X(33).     UNIMPLEMENTED
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 1995  GC1213     05 VALUE 'FEXCEPTION-LOCATION              ' PIC X(33).
 1996  GC1213    05 VALUE 'FEXCEPTION-LOCATION-N         ' PIC X(33).     UNIMPLEMENTED
 1997           05 VALUE ' EXCEPTION-OBJECT             ' PIC X(33).     UNIMPLEMENTED
 1998  GC1213     05 VALUE 'FEXCEPTION-STATEMENT              ' PIC X(33).
 1999  GC1213     05 VALUE 'FEXCEPTION-STATUS                 ' PIC X(33).
 2000             05 VALUE ' EXCLUSIVE                        ' PIC X(33).
 2001             05 VALUE 'VEXIT                             ' PIC X(33).
 2002  GC1213     05 VALUE 'FEXP                              ' PIC X(33).
 2003  GC1213     05 VALUE 'FEXP10                            ' PIC X(33).
 2004           05 VALUE ' EXPANDS                       ' PIC X(33).     UNIMPLEMENTED
 2005             05 VALUE ' EXTEND                           ' PIC X(33).
 2006             05 VALUE ' EXTERNAL                         ' PIC X(33).

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 2007  GC1213     05 VALUE 'FFACTORIAL                       ' PIC X(33).
 2008           05 VALUE ' FACTORY                       ' PIC X(33).     UNIMPLEMENTED
 2009             05 VALUE ' FALSE                            ' PIC X(33).
 2010             05 VALUE 'KFD                               ' PIC X(33).
 2011             05 VALUE 'KFILE                             ' PIC X(33).
 2012             05 VALUE ' FILE-CONTROL                     ' PIC X(33).
 2013             05 VALUE ' FILE-ID                          ' PIC X(33).
 2014  GC1113     05 VALUE ' FILLER                           ' PIC X(33).
 2015             05 VALUE ' FINAL                            ' PIC X(33).
 2016             05 VALUE ' FIRST                            ' PIC X(33).
 2017  GC0712    05 VALUE ' FLOAT-BINARY-128             ' PIC X(33).     UNIMPLEMENTED
 2018  GC0712    05 VALUE ' FLOAT-BINARY-32              ' PIC X(33).     UNIMPLEMENTED
 2019  GC0712    05 VALUE ' FLOAT-BINARY-64              ' PIC X(33).     UNIMPLEMENTED
 2020             05 VALUE ' FLOAT-DECIMAL-16                 ' PIC X(33).
 2021             05 VALUE ' FLOAT-DECIMAL-34                 ' PIC X(33).
 2022           05 VALUE ' FLOAT-EXTENDED                ' PIC X(33).     UNIMPLEMENTED
 2023  GC0712    05 VALUE ' FLOAT-INFINITY               ' PIC X(33).     UNIMPLEMENTED
 2024             05 VALUE ' FLOAT-LONG                       ' PIC X(33).
 2025  GC0712    05 VALUE ' FLOAT-NOT-A-NUMBER            ' PIC X(33).     UNIMPLEMENTED
 2026             05 VALUE ' FLOAT-SHORT                      ' PIC X(33).
 2027             05 VALUE ' FOOTING                          ' PIC X(33).
 2028             05 VALUE ' FOR                              ' PIC X(33).
 2029             05 VALUE ' FOREGROUND-COLOR                 ' PIC X(33).
 2030             05 VALUE ' FOREGROUND-COLOUR                ' PIC X(33).
 2031  GC0711     05 VALUE ' FOREVER                          ' PIC X(33).
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  2032           05 VALUE ' FORMAT                        ' PIC X(33).     UNIMPLEMENTED
  2033  GC1213   05 VALUE 'FFORMATTED-CURRENT-DATE        ' PIC X(33).     UNIMPLEMENTED
  2034  GC1213    05 VALUE 'FFORMATTED-DATE               ' PIC X(33).     UNIMPLEMENTED
  2035  GC1213    05 VALUE 'FFORMATTED-DATETIME           ' PIC X(33).     UNIMPLEMENTED
  2036  GC1213    05 VALUE 'FFORMATTED-TIME               ' PIC X(33).     UNIMPLEMENTED
   2037             05 VALUE 'MFORMFEED                          ' PIC X(33).
   2038  GC1213     05 VALUE 'FFRACTION-PART                     ' PIC X(33).
   2039             05 VALUE 'VFREE                              ' PIC X(33).
   2040             05 VALUE ' FROM                              ' PIC X(33).
   2041             05 VALUE ' FULL                              ' PIC X(33).
   2042             05 VALUE ' FUNCTION                          ' PIC X(33).
   2043  GC0712     05 VALUE 'KFUNCTION-ID                       ' PIC X(33).
  2044           05 VALUE ' FUNCTION-POINTER              ' PIC X(33).     UNIMPLEMENTED
   2045             05 VALUE 'VGENERATE                          ' PIC X(33).
  2046            05 VALUE ' GET                           ' PIC X(33).     UNIMPLEMENTED
   2047             05 VALUE 'KGIVING                            ' PIC X(33).
   2048             05 VALUE ' GLOBAL                            ' PIC X(33).
   2049             05 VALUE 'VGO                                ' PIC X(33).
   2050             05 VALUE 'VGOBACK                            ' PIC X(33).
   2051             05 VALUE ' GREATER                           ' PIC X(33).
   2052             05 VALUE ' GROUP                             ' PIC X(33).
  2053           05 VALUE ' GROUP-USAGE                   ' PIC X(33).     UNIMPLEMENTED
   2054             05 VALUE ' HEADING                           ' PIC X(33).
   2055             05 VALUE ' HIGH-VALUE                        ' PIC X(33).
   2056             05 VALUE ' HIGH-VALUES                       ' PIC X(33).
   2057  GC1213     05 VALUE 'FHIGHEST-ALGEBRAIC                 ' PIC X(33).
   2058             05 VALUE ' HIGHLIGHT                         ' PIC X(33).
   2059             05 VALUE ' I-O                               ' PIC X(33).
   2060             05 VALUE ' I-O-CONTROL                       ' PIC X(33).

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   2061             05 VALUE 'KID                                ' PIC X(33).
   2062             05 VALUE 'KIDENTIFICATION                    ' PIC X(33).
   2063             05 VALUE 'VIF                                ' PIC X(33).
   2064             05 VALUE ' IGNORE                            ' PIC X(33).
   2065             05 VALUE ' IGNORING                          ' PIC X(33).
   2066           05 VALUE ' IMPLEMENTS                    ' PIC X(33).     UNIMPLEMENTED
   2067             05 VALUE ' IN                                ' PIC X(33).
   2068             05 VALUE ' INDEX                             ' PIC X(33).
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  2069             05 VALUE 'KINDEXED                          ' PIC X(33).
  2070             05 VALUE ' INDICATE                         ' PIC X(33).
  2071           05 VALUE ' INDIRECT                       ' PIC X(33).     UNIMPLEMENTED
  2072           05 VALUE ' INHERITS                       ' PIC X(33).     UNIMPLEMENTED
  2073             05 VALUE ' INITIAL                          ' PIC X(33).
  2074             05 VALUE 'VINITIALISE                       ' PIC X(33).
  2075             05 VALUE ' INITIALISED                      ' PIC X(33).
  2076             05 VALUE 'VINITIALIZE                       ' PIC X(33).
  2077             05 VALUE ' INITIALIZED                      ' PIC X(33).
  2078             05 VALUE 'VINITIATE                         ' PIC X(33).
  2079             05 VALUE ' INPUT                            ' PIC X(33).
  2080             05 VALUE 'KINPUT-OUTPUT                     ' PIC X(33).
  2081             05 VALUE 'VINSPECT                          ' PIC X(33).
  2082            05 VALUE ' INSTALLATION                    ' PIC X(33).      OBSOLETE
  2083  GC1213     05 VALUE 'FINTEGER                          ' PIC X(33).
  2084  GC1213    05 VALUE 'FINTEGER-OF-BOOLEAN           ' PIC X(33).    UNIMPLEMENTED
  2085  GC1213     05 VALUE 'FINTEGER-OF-DATE                  ' PIC X(33).
  2086  GC1213     05 VALUE 'FINTEGER-OF-DAY                   ' PIC X(33).
   2087   GC1213        05  VALUE  'FINTEGER-OF-FORMATTED-DATE           '  PIC  X(33).
UNIMPLEMENTED
  2088  GC1213     05 VALUE 'FINTEGER-PART                     ' PIC X(33).
  2089           05 VALUE ' INTERFACE                      ' PIC X(33).     UNIMPLEMENTED
  2090           05 VALUE ' INTERFACE-ID                   ' PIC X(33).     UNIMPLEMENTED
  2091           05 VALUE ' INTERMEDIATE                   ' PIC X(33).     UNIMPLEMENTED
  2092             05 VALUE 'KINTO                             ' PIC X(33).
  2093             05 VALUE ' INTRINSIC                        ' PIC X(33).
  2094             05 VALUE ' INVALID                          ' PIC X(33).
  2095           05 VALUE ' INVOKE                         ' PIC X(33).     UNIMPLEMENTED
  2096             05 VALUE ' IS                               ' PIC X(33).
  2097             05 VALUE ' JUST                             ' PIC X(33).
  2098             05 VALUE ' JUSTIFIED                        ' PIC X(33).
  2099             05 VALUE ' KEPT                             ' PIC X(33).
  2100             05 VALUE ' KEY                              ' PIC X(33).
  2101             05 VALUE ' KEYBOARD                         ' PIC X(33).
  2102             05 VALUE ' LABEL                            ' PIC X(33).
  2103             05 VALUE ' LAST                             ' PIC X(33).
  2104           05 VALUE ' LC_ALL                         ' PIC X(33).     UNIMPLEMENTED
  2105           05 VALUE ' LC_COLLATE                     ' PIC X(33).     UNIMPLEMENTED
  2106           05 VALUE ' LC_CTYPE                       ' PIC X(33).     UNIMPLEMENTED
  2107           05 VALUE ' LC_MESSAGES                    ' PIC X(33).     UNIMPLEMENTED
  2108           05 VALUE ' LC_MONETARY                    ' PIC X(33).     UNIMPLEMENTED
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  2109           05 VALUE ' LC_NUMERIC                  ' PIC X(33).     UNIMPLEMENTED
  2110           05 VALUE ' LC_TIME                     ' PIC X(33).     UNIMPLEMENTED
  2111              05 VALUE ' LEADING                          ' PIC X(33).
  2112              05 VALUE ' LEFT                             ' PIC X(33).
  2113           05 VALUE ' LEFT-JUSTIFY                 ' PIC X(33).     UNIMPLEMENTED
  2114              05 VALUE ' LEFTLINE                         ' PIC X(33).

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  2115  GC1213     05 VALUE 'FLENGTH                          ' PIC X(33).
  2116  GC1213     05 VALUE 'FLENGTH-AN                       ' PIC X(33).
  2117             05 VALUE ' LENGTH-CHECK                    ' PIC X(33).
  2118             05 VALUE ' LESS                            ' PIC X(33).
  2119             05 VALUE ' LIMIT                           ' PIC X(33).
  2120             05 VALUE ' LIMITS                          ' PIC X(33).
  2121             05 VALUE ' LINAGE                          ' PIC X(33).
  2122             05 VALUE 'ILINAGE-COUNTER                  ' PIC X(33).
  2123             05 VALUE ' LINE                            ' PIC X(33).
  2124  GC1213     05 VALUE 'ILINE-COUNTER                    ' PIC X(33).
  2125             05 VALUE ' LINES                           ' PIC X(33).
  2126             05 VALUE 'KLINKAGE                         ' PIC X(33).
  2127             05 VALUE 'KLOCAL-STORAGE                   ' PIC X(33).
  2128             05 VALUE ' LOCALE                          ' PIC X(33).
  2129  GC1213     05 VALUE 'FLOCALE-COMPARE                  ' PIC X(33).
  2130  GC1213     05 VALUE 'FLOCALE-DATE                     ' PIC X(33).
  2131  GC1213     05 VALUE 'FLOCALE-TIME                     ' PIC X(33).
  2132  GC1213     05 VALUE 'FLOCALE-TIME-FROM-SECONDS        ' PIC X(33).
  2133             05 VALUE ' LOCK                            ' PIC X(33).
  2134  GC1213     05 VALUE 'FLOG                             ' PIC X(33).
  2135  GC1213     05 VALUE 'FLOG10                           ' PIC X(33).
  2136             05 VALUE ' LOW-VALUE                       ' PIC X(33).
  2137             05 VALUE ' LOW-VALUES                      ' PIC X(33).
  2138             05 VALUE ' LOWER                           ' PIC X(33).
  2139  GC1213     05 VALUE 'FLOWER-CASE                      ' PIC X(33).
  2140  GC1213     05 VALUE 'FLOWEST-ALGEBRAIC                ' PIC X(33).
  2141             05 VALUE ' LOWLIGHT                        ' PIC X(33).
  2142             05 VALUE ' MANUAL                          ' PIC X(33).
  2143  GC1213     05 VALUE 'FMAX                             ' PIC X(33).
  2144  GC1213     05 VALUE 'FMEAN                            ' PIC X(33).
  2145  GC1213     05 VALUE 'FMEDIAN                          ' PIC X(33).
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 2146              05 VALUE ' MEMORY                          ' PIC X(33).
 2147              05 VALUE 'VMERGE                           ' PIC X(33).
 2148            05 VALUE ' MESSAGE                        ' PIC X(33).      OBSOLETE
 2149           05 VALUE ' METHOD                       ' PIC X(33).     UNIMPLEMENTED
 2150           05 VALUE ' METHOD-ID                    ' PIC X(33).     UNIMPLEMENTED
 2151  GC1213     05 VALUE 'FMIDRANGE                        ' PIC X(33).
 2152  GC1213     05 VALUE 'FMIN                             ' PIC X(33).
 2153              05 VALUE ' MINUS                           ' PIC X(33).
 2154  GC1213     05 VALUE 'FMOD                             ' PIC X(33).
 2155              05 VALUE ' MODE                            ' PIC X(33).
 2156  GC1213     05 VALUE 'FMODULE-CALLER-ID                ' PIC X(33).
 2157  GC1213     05 VALUE 'FMODULE-DATE                     ' PIC X(33).
 2158  GC1213     05 VALUE 'FMODULE-FORMATTED-DATE           ' PIC X(33).
 2159  GC1213     05 VALUE 'FMODULE-ID                       ' PIC X(33).
 2160  GC1213     05 VALUE 'FMODULE-PATH                     ' PIC X(33).
 2161  GC1213     05 VALUE 'FMODULE-SOURCE                   ' PIC X(33).
 2162  GC1213     05 VALUE 'FMODULE-TIME                     ' PIC X(33).
 2163  GC1213     05 VALUE 'FMONETARY-DECIMAL-POINT          ' PIC X(33).
 2164  GC1213     05 VALUE 'FMONETARY-THOUSANDS-SEPARATOR    ' PIC X(33).
 2165              05 VALUE 'VMOVE                            ' PIC X(33).
 2166              05 VALUE ' MULTIPLE                        ' PIC X(33).
 2167              05 VALUE 'VMULTIPLY                        ' PIC X(33).
 2168  GC0711     05 VALUE ' NAME                            ' PIC X(33).

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 2169              05 VALUE ' NATIONAL                        ' PIC X(33).
 2170              05 VALUE ' NATIONAL-EDITED                 ' PIC X(33).
 2171  GC1213    05 VALUE 'FNATIONAL-OF                  ' PIC X(33).     UNIMPLEMENTED
 2172              05 VALUE ' NATIVE                          ' PIC X(33).
 2173              05 VALUE ' NEAREST-AWAY-FROM-ZERO          ' PIC X(33).
 2174              05 VALUE ' NEAREST-EVEN                    ' PIC X(33).
 2175              05 VALUE ' NEAREST-TOWARD-ZERO             ' PIC X(33).
 2176              05 VALUE ' NEGATIVE                        ' PIC X(33).
 2177           05 VALUE ' NESTED                       ' PIC X(33).     UNIMPLEMENTED
 2178              05 VALUE 'VNEXT                            ' PIC X(33).
 2179              05 VALUE ' NO                              ' PIC X(33).
 2180              05 VALUE ' NO-ECHO                         ' PIC X(33).
 2181           05 VALUE ' NONE                         ' PIC X(33).     UNIMPLEMENTED
 2182              05 VALUE ' NORMAL                          ' PIC X(33).
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2183             05 VALUE ' NOT                              ' PIC X(33).
2184             05 VALUE ' NULL                             ' PIC X(33).
2185             05 VALUE ' NULLS                            ' PIC X(33).
2186             05 VALUE ' NUMBER                           ' PIC X(33).
2187             05 VALUE 'INUMBER-OF-CALL-PARAMETERS        ' PIC X(33).
2188             05 VALUE ' NUMBERS                          ' PIC X(33).
2189             05 VALUE ' NUMERIC                          ' PIC X(33).
2190  GC1213     05 VALUE 'FNUMERIC-DECIMAL-POINT            ' PIC X(33).
2191             05 VALUE ' NUMERIC-EDITED                   ' PIC X(33).
2192  GC1213     05 VALUE 'FNUMERIC-THOUSANDS-SEPARATOR      ' PIC X(33).
2193  GC1213     05 VALUE 'FNUMVAL                           ' PIC X(33).
2194  GC1213     05 VALUE 'FNUMVAL-C                         ' PIC X(33).
2195  GC1213     05 VALUE 'FNUMVAL-F                         ' PIC X(33).
2196           05 VALUE ' OBJECT                       ' PIC X(33).     UNIMPLEMENTED
2197             05 VALUE ' OBJECT-COMPUTER                  ' PIC X(33).
2198          05 VALUE ' OBJECT-REFERENCE             ' PIC X(33).     UNIMPLEMENTED
2199             05 VALUE ' OCCURS                           ' PIC X(33).
2200             05 VALUE ' OF                               ' PIC X(33).
2201             05 VALUE ' OFF                              ' PIC X(33).
2202             05 VALUE ' OMITTED                          ' PIC X(33).
2203             05 VALUE ' ON                               ' PIC X(33).
2204             05 VALUE ' ONLY                             ' PIC X(33).
2205             05 VALUE 'VOPEN                             ' PIC X(33).
2206             05 VALUE ' OPTIONAL                         ' PIC X(33).
2207           05 VALUE ' OPTIONS                      ' PIC X(33).     UNIMPLEMENTED
2208             05 VALUE ' OR                               ' PIC X(33).
2209  GC1213     05 VALUE 'FORD                              ' PIC X(33).
2210  GC1213     05 VALUE 'FORD-MAX                          ' PIC X(33).
2211  GC1213     05 VALUE 'FORD-MIN                          ' PIC X(33).
2212             05 VALUE ' ORDER                            ' PIC X(33).
2213             05 VALUE ' ORGANISATION                     ' PIC X(33).
2214             05 VALUE ' ORGANIZATION                     ' PIC X(33).
2215             05 VALUE ' OTHER                            ' PIC X(33).
2216             05 VALUE ' OUTPUT                           ' PIC X(33).
2217             05 VALUE ' OVERFLOW                         ' PIC X(33).
2218             05 VALUE ' OVERLINE                         ' PIC X(33).
2219             05 VALUE ' OVERRIDE                         ' PIC X(33).
2220             05 VALUE ' PACKED-DECIMAL                   ' PIC X(33).
2221             05 VALUE ' PADDING                          ' PIC X(33).
2222             05 VALUE ' PAGE                             ' PIC X(33).
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 2223  GC1213     05 VALUE 'IPAGE-COUNTER                  ' PIC X(33).
 2224             05 VALUE ' PARAGRAPH                      ' PIC X(33).
 2225             05 VALUE 'VPERFORM                        ' PIC X(33).
 2226             05 VALUE ' PF                             ' PIC X(33).
 2227             05 VALUE ' PH                             ' PIC X(33).
 2228  GC1213     05 VALUE 'FPI                             ' PIC X(33).
 2229             05 VALUE 'KPIC                            ' PIC X(33).
 2230             05 VALUE 'KPICTURE                        ' PIC X(33).
 2231             05 VALUE ' PLUS                           ' PIC X(33).
 2232             05 VALUE 'KPOINTER                        ' PIC X(33).
 2233             05 VALUE ' POSITION                       ' PIC X(33).
 2234             05 VALUE ' POSITIVE                       ' PIC X(33).
 2235          05 VALUE ' PREFIXED                     ' PIC X(33).     UNIMPLEMENTED
 2236             05 VALUE ' PRESENT                        ' PIC X(33).
 2237  GC1213     05 VALUE 'FPRESENT-VALUE                  ' PIC X(33).
 2238             05 VALUE ' PREVIOUS                       ' PIC X(33).
 2239             05 VALUE 'MPRINTER                        ' PIC X(33).
 2240             05 VALUE ' PRINTING                       ' PIC X(33).
 2241             05 VALUE 'KPROCEDURE                      ' PIC X(33).
 2242             05 VALUE ' PROCEDURE-POINTER              ' PIC X(33).
 2243             05 VALUE ' PROCEDURES                     ' PIC X(33).
 2244             05 VALUE ' PROCEED                        ' PIC X(33).
 2245             05 VALUE ' PROGRAM                        ' PIC X(33).
 2246             05 VALUE 'KPROGRAM-ID                     ' PIC X(33).
 2247             05 VALUE ' PROGRAM-POINTER                ' PIC X(33).
 2248             05 VALUE ' PROHIBITED                     ' PIC X(33).
 2249             05 VALUE ' PROMPT                         ' PIC X(33).
 2250          05 VALUE ' PROPERTY                     ' PIC X(33).     UNIMPLEMENTED
 2251          05 VALUE ' PROTOTYPE                    ' PIC X(33).     UNIMPLEMENTED
 2252            05 VALUE ' PURGE                        ' PIC X(33).      OBSOLETE
 2253            05 VALUE ' QUEUE                        ' PIC X(33).      OBSOLETE
 2254             05 VALUE ' QUOTE                          ' PIC X(33).
 2255             05 VALUE ' QUOTES                         ' PIC X(33).
 2256          05 VALUE ' RAISE                        ' PIC X(33).     UNIMPLEMENTED
 2257          05 VALUE ' RAISING                      ' PIC X(33).     UNIMPLEMENTED
 2258  GC1213     05 VALUE 'FRANDOM                         ' PIC X(33).
 2259  GC1213     05 VALUE 'FRANGE                          ' PIC X(33).
 2260  GC1213     05 VALUE 'KRD                             ' PIC X(33).
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  2261             05 VALUE 'VREAD                          ' PIC X(33).
  2262             05 VALUE 'VREADY                         ' PIC X(33).
  2263           05 VALUE 'VRECEIVE                       ' PIC X(33).     OBSOLETE
  2264             05 VALUE ' RECORD                        ' PIC X(33).
  2265             05 VALUE ' RECORDING                     ' PIC X(33).
  2266             05 VALUE ' RECORDS                       ' PIC X(33).
  2267             05 VALUE ' RECURSIVE                     ' PIC X(33).
  2268             05 VALUE 'KREDEFINES                     ' PIC X(33).
  2269             05 VALUE ' REEL                          ' PIC X(33).
  2270  GC0712     05 VALUE 'AREFERENCE                     ' PIC X(33).
  2271             05 VALUE ' REFERENCES                    ' PIC X(33).
  2272          05 VALUE ' RELATION                      ' PIC X(33).     UNIMPLEMENTED
  2273             05 VALUE ' RELATIVE                      ' PIC X(33).
  2274             05 VALUE 'VRELEASE                       ' PIC X(33).
  2275  GC1213     05 VALUE 'FREM                           ' PIC X(33).
  2276             05 VALUE ' REMAINDER                     ' PIC X(33).

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  2277           05 VALUE ' REMARKS                       ' PIC X(33).     OBSOLETE
  2278             05 VALUE ' REMOVAL                       ' PIC X(33).
  2279             05 VALUE 'KRENAMES                       ' PIC X(33).
  2280             05 VALUE ' REPLACE                       ' PIC X(33).
  2281             05 VALUE 'KREPLACING                     ' PIC X(33).
  2282             05 VALUE 'KREPORT                        ' PIC X(33).
  2283             05 VALUE ' REPORTING                     ' PIC X(33).
  2284             05 VALUE ' REPORTS                       ' PIC X(33).
  2285             05 VALUE ' REPOSITORY                    ' PIC X(33).
  2286             05 VALUE ' REQUIRED                      ' PIC X(33).
  2287             05 VALUE ' RESERVE                       ' PIC X(33).
  2288             05 VALUE 'VRESET                         ' PIC X(33).
  2289          05 VALUE ' RESUME                        ' PIC X(33).     UNIMPLEMENTED
  2290          05 VALUE ' RETRY                         ' PIC X(33).     UNIMPLEMENTED
  2291             05 VALUE 'VRETURN                        ' PIC X(33).
  2292             05 VALUE 'IRETURN-CODE                   ' PIC X(33).
  2293             05 VALUE 'KRETURNING                     ' PIC X(33).
  2294  GC1213     05 VALUE 'FREVERSE                       ' PIC X(33).
  2295             05 VALUE ' REVERSE-VIDEO                 ' PIC X(33).
  2296             05 VALUE ' REVERSED                      ' PIC X(33).
  2297             05 VALUE ' REWIND                        ' PIC X(33).
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 2298             05 VALUE 'VREWRITE                          ' PIC X(33).
 2299             05 VALUE ' RF                               ' PIC X(33).
 2300             05 VALUE ' RH                               ' PIC X(33).
 2301             05 VALUE ' RIGHT                            ' PIC X(33).
 2302          05 VALUE ' RIGHT-JUSTIFY                 ' PIC X(33).     UNIMPLEMENTED
 2303             05 VALUE 'VROLLBACK                         ' PIC X(33).
 2304             05 VALUE ' ROUNDED                          ' PIC X(33).
 2305          05 VALUE ' ROUNDING                      ' PIC X(33).     UNIMPLEMENTED
 2306             05 VALUE ' RUN                              ' PIC X(33).
 2307             05 VALUE ' SAME                             ' PIC X(33).
 2308             05 VALUE 'KSCREEN                           ' PIC X(33).
 2309             05 VALUE ' SCROLL                           ' PIC X(33).
 2310             05 VALUE 'KSD                               ' PIC X(33).
 2311             05 VALUE 'VSEARCH                           ' PIC X(33).
 2312          05 VALUE ' SECONDS                       ' PIC X(33).     UNIMPLEMENTED
 2313  GC1213     05 VALUE 'FSECONDS-FROM-FORMATTED-TIME      ' PIC X(33).
 2314  GC1213     05 VALUE 'FSECONDS-PAST-MIDNIGHT            ' PIC X(33).
 2315             05 VALUE 'KSECTION                          ' PIC X(33).
 2316             05 VALUE ' SECURE                           ' PIC X(33).
 2317           05 VALUE ' SECURITY                       ' PIC X(33).      OBSOLETE
 2318           05 VALUE ' SEGMENT                        ' PIC X(33).      OBSOLETE
 2319             05 VALUE ' SEGMENT-LIMIT                    ' PIC X(33).
 2320             05 VALUE ' SELECT                           ' PIC X(33).
 2321          05 VALUE ' SELF                          ' PIC X(33).     UNIMPLEMENTED
 2322           05 VALUE 'VSEND                             ' PIC X(33).      OBSOLETE
 2323             05 VALUE ' SENTENCE                         ' PIC X(33).
 2324             05 VALUE ' SEPARATE                         ' PIC X(33).
 2325             05 VALUE ' SEQUENCE                         ' PIC X(33).
 2326             05 VALUE ' SEQUENTIAL                       ' PIC X(33).
 2327             05 VALUE 'VSET                              ' PIC X(33).
 2328             05 VALUE ' SHARING                          ' PIC X(33).
 2329  GC1213     05 VALUE 'FSIGN                             ' PIC X(33).
 2330             05 VALUE ' SIGNED                           ' PIC X(33).

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 2331             05 VALUE ' SIGNED-INT                       ' PIC X(33).
 2332             05 VALUE ' SIGNED-LONG                      ' PIC X(33).
 2333             05 VALUE ' SIGNED-SHORT                     ' PIC X(33).
 2334  GC1213     05 VALUE 'FSIN                              ' PIC X(33).
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2335             05 VALUE ' SIZE                          ' PIC X(33).
2336             05 VALUE 'VSORT                          ' PIC X(33).
2337             05 VALUE ' SORT-MERGE                    ' PIC X(33).
2338             05 VALUE 'ISORT-RETURN                   ' PIC X(33).
2339             05 VALUE ' SOURCE                        ' PIC X(33).
2340             05 VALUE ' SOURCE-COMPUTER               ' PIC X(33).
2341           05 VALUE ' SOURCES                       ' PIC X(33).     UNIMPLEMENTED
2342             05 VALUE ' SPACE                         ' PIC X(33).
2343           05 VALUE ' SPACE-FILL                    ' PIC X(33).     UNIMPLEMENTED
2344             05 VALUE ' SPACES                        ' PIC X(33).
2345             05 VALUE ' SPECIAL-NAMES                 ' PIC X(33).
2346  GC1213     05 VALUE 'FSQRT                          ' PIC X(33).
2347             05 VALUE ' STANDARD                      ' PIC X(33).
2348             05 VALUE ' STANDARD-1                    ' PIC X(33).
2349             05 VALUE ' STANDARD-2                    ' PIC X(33).
2350          05 VALUE ' STANDARD-BINARY               ' PIC X(33).     UNIMPLEMENTED
2351 GC1213    05 VALUE 'FSTANDARD-COMPARE              ' PIC X(33).     UNIMPLEMENTED
2352          05 VALUE ' STANDARD-DECIMAL              ' PIC X(33).     UNIMPLEMENTED
2353  GC1213     05 VALUE 'FSTANDARD-DEVIATION            ' PIC X(33).
2354             05 VALUE 'VSTART                         ' PIC X(33).
2355           05 VALUE ' STATEMENT                     ' PIC X(33).     UNIMPLEMENTED
2356             05 VALUE ' STATIC                        ' PIC X(33).
2357             05 VALUE ' STATUS                        ' PIC X(33).
2358             05 VALUE ' STDCALL                       ' PIC X(33).
2359             05 VALUE 'MSTDERR                        ' PIC X(33).
2360             05 VALUE 'MSTDIN                         ' PIC X(33).
2361             05 VALUE 'MSTDOUT                        ' PIC X(33).
2362             05 VALUE ' STEP                          ' PIC X(33).
2363             05 VALUE 'VSTOP                          ' PIC X(33).
2364  GC1213     05 VALUE 'FSTORED-CHAR-LENGTH            ' PIC X(33).
2365             05 VALUE 'VSTRING                        ' PIC X(33).
2366           05 VALUE ' STRONG                        ' PIC X(33).     UNIMPLEMENTED
2367            05 VALUE ' SUB-QUEUE-1                    ' PIC X(33).      OBSOLETE
2368            05 VALUE ' SUB-QUEUE-2                    ' PIC X(33).      OBSOLETE
2369            05 VALUE ' SUB-QUEUE-3                    ' PIC X(33).      OBSOLETE
2370  GC1213     05 VALUE 'FSUBSTITUTE                    ' PIC X(33).
2371  GC1213     05 VALUE 'FSUBSTITUTE-CASE               ' PIC X(33).
2372             05 VALUE 'VSUBTRACT                      ' PIC X(33).
2373  GC1213     05 VALUE 'FSUM                           ' PIC X(33).
2374           05 VALUE ' SUPER                         ' PIC X(33).     UNIMPLEMENTED
2375             05 VALUE 'VSUPPRESS                      ' PIC X(33).
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  2376             05 VALUE 'MSW0                              ' PIC X(33).
  2377             05 VALUE 'MSW1                              ' PIC X(33).
  2378             05 VALUE 'MSW10                             ' PIC X(33).
  2379             05 VALUE 'MSW11                             ' PIC X(33).
  2380             05 VALUE 'MSW12                             ' PIC X(33).
  2381             05 VALUE 'MSW13                             ' PIC X(33).
  2382             05 VALUE 'MSW14                             ' PIC X(33).
  2383             05 VALUE 'MSW15                             ' PIC X(33).
  2384             05 VALUE 'MSW2                              ' PIC X(33).

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  2385             05 VALUE 'MSW3                              ' PIC X(33).
  2386             05 VALUE 'MSW4                              ' PIC X(33).
  2387             05 VALUE 'MSW5                              ' PIC X(33).
  2388             05 VALUE 'MSW6                              ' PIC X(33).
  2389             05 VALUE 'MSW7                              ' PIC X(33).
  2390             05 VALUE 'MSW8                              ' PIC X(33).
  2391             05 VALUE 'MSW9                              ' PIC X(33).
  2392             05 VALUE 'MSWITCH-0                         ' PIC X(33).
  2393             05 VALUE 'MSWITCH-1                         ' PIC X(33).
  2394             05 VALUE 'MSWITCH-10                        ' PIC X(33).
  2395             05 VALUE 'MSWITCH-11                        ' PIC X(33).
  2396             05 VALUE 'MSWITCH-12                        ' PIC X(33).
  2397             05 VALUE 'MSWITCH-13                        ' PIC X(33).
  2398             05 VALUE 'MSWITCH-14                        ' PIC X(33).
  2399             05 VALUE 'MSWITCH-15                        ' PIC X(33).
  2400             05 VALUE 'MSWITCH-2                         ' PIC X(33).
  2401             05 VALUE 'MSWITCH-3                         ' PIC X(33).
  2402             05 VALUE 'MSWITCH-4                         ' PIC X(33).
  2403             05 VALUE 'MSWITCH-5                         ' PIC X(33).
  2404             05 VALUE 'MSWITCH-6                         ' PIC X(33).
  2405             05 VALUE 'MSWITCH-7                         ' PIC X(33).
  2406             05 VALUE 'MSWITCH-8                         ' PIC X(33).
  2407             05 VALUE 'MSWITCH-9                         ' PIC X(33).
  2408           05 VALUE ' SYMBOL                       ' PIC X(33).     UNIMPLEMENTED
  2409             05 VALUE ' SYMBOLIC                         ' PIC X(33).
  2410             05 VALUE ' SYNC                             ' PIC X(33).
  2411             05 VALUE ' SYNCHRONISED                     ' PIC X(33).
  2412             05 VALUE ' SYNCHRONIZED                     ' PIC X(33).
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 2413              05 VALUE 'MSYSERR                          ' PIC X(33).
 2414              05 VALUE 'MSYSIN                           ' PIC X(33).
 2415              05 VALUE 'MSYSIPT                          ' PIC X(33).
 2416              05 VALUE 'MSYSLIST                         ' PIC X(33).
 2417              05 VALUE 'MSYSLST                          ' PIC X(33).
 2418              05 VALUE 'MSYSOUT                          ' PIC X(33).
 2419              05 VALUE ' SYSTEM-DEFAULT                  ' PIC X(33).
 2420            05 VALUE ' TABLE                         ' PIC X(33).     UNIMPLEMENTED
 2421              05 VALUE 'KTALLYING                        ' PIC X(33).
 2422  GC1213      05 VALUE 'FTAN                             ' PIC X(33).
 2423              05 VALUE ' TAPE                            ' PIC X(33).
 2424             05 VALUE ' TERMINAL                       ' PIC X(33).      OBSOLETE
 2425              05 VALUE 'VTERMINATE                       ' PIC X(33).
 2426              05 VALUE ' TEST                            ' PIC X(33).
 2427  GC1213      05 VALUE 'FTEST-DATE-YYYYMMDD              ' PIC X(33).
 2428  GC1213      05 VALUE 'FTEST-DAY-YYYYDDD                ' PIC X(33).
 2429  GC1213    05 VALUE 'FTEST-FORMATTED-DATETIME       ' PIC X(33).    UNIMPLEMENTED
 2430  GC1213      05 VALUE 'FTEST-NUMVAL                     ' PIC X(33).
 2431  GC1213      05 VALUE 'FTEST-NUMVAL-C                   ' PIC X(33).
 2432  GC1213      05 VALUE 'FTEST-NUMVAL-F                   ' PIC X(33).
 2433             05 VALUE ' TEXT                           ' PIC X(33).      OBSOLETE
 2434              05 VALUE ' THAN                            ' PIC X(33).
 2435              05 VALUE ' THEN                            ' PIC X(33).
 2436              05 VALUE ' THROUGH                         ' PIC X(33).
 2437              05 VALUE ' THRU                            ' PIC X(33).
 2438              05 VALUE ' TIME                            ' PIC X(33).

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 2439  GC0711      05 VALUE ' TIME-OUT                        ' PIC X(33).
 2440  GC0711      05 VALUE ' TIMEOUT                         ' PIC X(33).
 2441              05 VALUE ' TIMES                           ' PIC X(33).
 2442              05 VALUE 'KTO                              ' PIC X(33).
 2443              05 VALUE ' TOP                             ' PIC X(33).
 2444              05 VALUE ' TOWARD-GREATER                  ' PIC X(33).
 2445              05 VALUE ' TOWARD-LESSER                   ' PIC X(33).
 2446              05 VALUE ' TRAILING                        ' PIC X(33).
 2447            05 VALUE ' TRAILING-SIGN                 ' PIC X(33).     UNIMPLEMENTED
 2448              05 VALUE 'VTRANSFORM                       ' PIC X(33).
 2449  GC1213      05 VALUE 'FTRIM                            ' PIC X(33).
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2450            05 VALUE ' TRUE                          ' PIC X(33).
2451            05 VALUE ' TRUNCATION                    ' PIC X(33).
2452            05 VALUE ' TYPE                          ' PIC X(33).
2453          05 VALUE ' TYPEDEF                       ' PIC X(33).     UNIMPLEMENTED
2454          05 VALUE ' UCS-4                         ' PIC X(33).     UNIMPLEMENTED
2455            05 VALUE ' UNDERLINE                     ' PIC X(33).
2456            05 VALUE ' UNIT                          ' PIC X(33).
2457          05 VALUE ' UNIVERSAL                     ' PIC X(33).     UNIMPLEMENTED
2458            05 VALUE 'VUNLOCK                        ' PIC X(33).
2459            05 VALUE ' UNSIGNED                      ' PIC X(33).
2460            05 VALUE ' UNSIGNED-INT                  ' PIC X(33).
2461            05 VALUE ' UNSIGNED-LONG                 ' PIC X(33).
2462            05 VALUE ' UNSIGNED-SHORT                ' PIC X(33).
2463            05 VALUE 'VUNSTRING                      ' PIC X(33).
2464            05 VALUE ' UNTIL                         ' PIC X(33).
2465            05 VALUE 'KUP                            ' PIC X(33).
2466            05 VALUE ' UPDATE                        ' PIC X(33).
2467            05 VALUE ' UPON                          ' PIC X(33).
2468            05 VALUE ' UPPER                         ' PIC X(33).
2469  GC1213    05 VALUE 'FUPPER-CASE                    ' PIC X(33).
2470            05 VALUE ' USAGE                         ' PIC X(33).
2471            05 VALUE 'VUSE                           ' PIC X(33).
2472  GC0711    05 VALUE ' USER                          ' PIC X(33).
2473            05 VALUE ' USER-DEFAULT                  ' PIC X(33).
2474            05 VALUE 'KUSING                         ' PIC X(33).
2475          05 VALUE ' UTF-16                        ' PIC X(33).     UNIMPLEMENTED
2476          05 VALUE ' UTF-8                         ' PIC X(33).     UNIMPLEMENTED
2477          05 VALUE ' VAL-STATUS                    ' PIC X(33).     UNIMPLEMENTED
2478          05 VALUE ' VALID                         ' PIC X(33).     UNIMPLEMENTED
2479          05 VALUE ' VALIDATE                      ' PIC X(33).     UNIMPLEMENTED
2480         05 VALUE ' VALIDATE-STATUS               ' PIC X(33).     UNIMPLEMENTED
2481  GC0712    05 VALUE 'AVALUE                         ' PIC X(33).
2482            05 VALUE ' VALUES                        ' PIC X(33).
2483  GC1213    05 VALUE 'FVARIANCE                      ' PIC X(33).
2484            05 VALUE 'KVARYING                       ' PIC X(33).
2485          05 VALUE ' VDISABLE                      ' PIC X(33).     UNIMPLEMENTED
2486            05 VALUE ' WAIT                          ' PIC X(33).
2487            05 VALUE 'VWHEN                          ' PIC X(33).
2488  GC1213    05 VALUE 'FWHEN-COMPILED                 ' PIC X(33).
2489            05 VALUE ' WITH                          ' PIC X(33).
2490            05 VALUE ' WORDS                         ' PIC X(33).
```

```
  2491             05 VALUE 'KWORKING-STORAGE                ' PIC X(33).
  2492             05 VALUE 'VWRITE                          ' PIC X(33).

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  2493  GC1213     05 VALUE 'FYEAR-TO-YYYY                   ' PIC X(33).
  2494             05 VALUE ' YYYYDDD                        ' PIC X(33).
  2495             05 VALUE ' YYYYMMDD                       ' PIC X(33).
  2496             05 VALUE ' ZERO                           ' PIC X(33).
 2497           05 VALUE ' ZERO-FILL                   ' PIC X(33).     UNIMPLEMENTED
  2498             05 VALUE ' ZEROES                         ' PIC X(33).
  2499             05 VALUE ' ZEROS                          ' PIC X(33).
  2500         01  WS-Reserved-Word-Table-TXT REDEFINES WS-Reserved-Words-TXT.
  2501  GC1113     05 WS-Reserved-Word-TXT        OCCURS 754 TIMES
  2502                                              ASCENDING KEY
  2503                                                  WS-RW-Word-TXT
  2504                                              INDEXED WS-RW-IDX.
  2505                10 WS-RW-Type-CD                PIC X(1).
  2506                10 WS-RW-Word-TXT                PIC X(32).
  2507
  2508         01  WS-Runtime-Switches.
  2509  GC0710     05 WS-RS-Duplicate-CHR              PIC X(1).
  2510             05 WS-RS-In-Which-Pgm-CHR           PIC X(1).
  2511                88 WS-RS-In-Main-Module-BOOL     VALUE 'M'.
  2512                88 WS-RS-In-Copybook-BOOL        VALUE 'C'.
  2513             05 WS-RS-Last-Token-Ended-Sent-CHR  PIC X(1).
  2514             05 WS-RS-Processing-PICTURE-CHR     PIC X(1).
  2515             05 WS-RS-Token-Ended-Sentence-CHR   PIC X(1).
  2516  GC0710     05 WS-RS-Verb-Has-Been-Found-CHR    PIC X(1).
  2517
  2518         01  WS-Saved-Section-TXT               PIC X(15).
  2519
  2520  GC1213 01  WS-Src-Dashes-TXT.
  2521  GC0712     05 VALUE '======'                   PIC X(7).
  2522  GC0712     05 VALUE ALL '='                    PIC X(128).
  2523
  2524         01  WS-Src-Detail-Line-TXT.
  2525             05 WS-SDL-Line-NUM                  PIC ZZZZZ9.
  2526             05 FILLER                           PIC X(1).
  2527             05 WS-SDL-Statement-TXT             PIC X(256).
```

```
  2528
  2529  GC1213 01  WS-Src-Hold-TXT                       PIC X(256).
  2530
  2531         01  WS-Src-Line-NUM                      PIC 9(6).
  2532
  2533  GC1213 01  WS-Src-Lines-NUM                     USAGE BINARY-LONG.
  2534
  2535         01  WS-Src-SUB                           USAGE BINARY-LONG.
  2536
  2537         01  WS-Tally-QTY                         USAGE BINARY-LONG.
  2538
  2539         01  WS-Temp-10-Chars-TXT                 PIC X(10).
  2540
  2541         01  WS-Temp-32-Chars-1-TXT               PIC X(32).
  2542
  2543  GC0711 01  WS-Temp-32-Chars-2-TXT               PIC X(32).
  2544
  2545  GC0711 01  WS-Temp-32-Chars-3-TXT               PIC X(32).
  2546

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  2547  GC0712 01  WS-Temp-65-Chars-TXT                PIC X(65).
  2548
  2549         01  WS-Temp-256-Chars-TXT               PIC X(256).
  2550
  2551         01  WS-Today-DT                         PIC 9(8).
  2552
  2553         01  WS-Token-Curr-TXT                   PIC X(32).
  2554
  2555         01  WS-Token-Curr-Uc-TXT                PIC X(32).
  2556
  2557         01  WS-Token-Prev-TXT                   PIC X(32).
  2558
  2559         01  WS-Token-Search-TXT                 PIC X(32).
  2560
  2561         01  WS-Token-Type-CD                    PIC X(1).
  2562  GC0712     88 WS-TT-Token-Is-Argtype-BOOL       VALUE 'A'.
  2563            88 WS-TT-Token-Is-EOF-BOOL           VALUE HIGH-VALUES.
  2564  GC1213     88 WS-TT-Token-Is-Function-BOOL      VALUE 'F'.
```

```
  2565             88 WS-TT-Token-Is-Identifier-BOOL     VALUE 'I'.
  2566  GC0712     88 WS-TT-Token-Is-Keyword-BOOL        VALUE 'K', 'V', 'A'.
  2567             88 WS-TT-Token-Is-Lit-Alpha-BOOL      VALUE 'L'.
  2568             88 WS-TT-Token-Is-Lit-Number-BOOL     VALUE 'N'.
  2569             88 WS-TT-Token-Is-Verb-BOOL           VALUE 'V'.
  2570  GC1213     88 WS-TT-Token-Is-Reserved-Wd-BOOL    VALUE ' ', 'F'.
  2571
  2572         01  WS-Usernames-QTY                      USAGE BINARY-LONG.
  2573
  2574         01  WS-Version-TXT                        PIC X(23).
  2575
  2576         01  WS-Xref-Detail-Line-TXT.
  2577             05 WS-XDL-Prog-ID-TXT                 PIC X(15).
  2578             05 FILLER                             PIC X(1).
  2579             05 WS-XDL-Token-TXT                   PIC X(32).
  2580             05 FILLER                             PIC X(1).
  2581             05 WS-XDL-Def-Line-NUM                PIC ZZZZZ9.
  2582             05 FILLER                             PIC X(1).
  2583             05 WS-XDL-Section-TXT                 PIC X(15).
  2584             05 FILLER                             PIC X(1).
  2585             05 WS-XDL-Reference-TXT               OCCURS 8 TIMES.
  2586                10 WS-XDL-Ref-Line-NUM             PIC ZZZZZ9.
  2587                10 WS-XDL-Ref-Flag-CHR             PIC X(1).
  2588                10 FILLER                          PIC X(1).
  2589
  2590  GC1213 01  WS-Xref-Lines-Per-Rec-NUM             PIC 9(1).
  2591
  2592         LINKAGE SECTION.
  2593  GC0712 01  L-Listing-Fn-TXT                      PIC X(256).
  2594
  2595         01  L-Src-Fn-TXT                          PIC X(256).
  2596
  2597  GC0712 01  L-OS-Type-CD                         PIC 9(1).
  2598
  2599  GC1213 01  L-LPP-NUM                            USAGE BINARY-LONG.
  2600

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  2601  GC1213 01  L-LPP-Port-NUM                       USAGE BINARY-LONG.
```

```
2602
2603  GC1213 01  L-Listing-CD                          PIC 9(1).
2604        /
2605  GC0712 PROCEDURE DIVISION USING L-Listing-Fn-TXT
2606  GC0712                          L-Src-Fn-TXT
2607  GC0712                          L-OS-Type-CD
2608  GC1213                          L-LPP-NUM
2609  GC1213                          L-LPP-Port-NUM
2610  GC1213                          L-Listing-CD.
2611         000-Main SECTION.
2612             PERFORM 100-Initialization
2613  GC0712     OPEN OUTPUT F-Listing-FILE
2614  GC0712     PERFORM 500-Produce-Source-Listing
2615  GC0712     SORT F-Sort-Work-FILE
2616  GC0712         ASCENDING KEY    F-SW-Prog-ID-TXT
2617  GC0712                          F-SW-Token-Uc-TXT
2618  GC0712                          F-SW-Ref-Line-NUM
2619  GC0712         INPUT PROCEDURE  300-Tokenize-Source
2620  GC0712         OUTPUT PROCEDURE 400-Produce-Xref-Listing
2621  GC0712     CLOSE F-Listing-FILE
2622             GOBACK
2623             .
2624        /
2625        *>*************************************************************
2626        *> Perform all program-wide initialization operations          **
2627        *>*************************************************************
2628         100-Initialization SECTION.
2629  GC1213     MOVE 0 TO WS-Page-NUM
2630  GC1213     MOVE 'N' TO WS-Suppress-FF-CHR
2631  GC1213     MOVE SPACES TO WS-Copyright-TXT
2632  GC1213     STRING 'GCic for '                  DELIMITED SIZE
2633  GC1213            WS-OS-Type-TXT(L-OS-Type-CD) DELIMITED SPACE
2634  VC0820            ' Copyright (C) 2009-'       DELIMITED SIZE
2635  VC0322            COMP-YEAR                    DELIMITED SIZE
2636  VC0322            ', Gary L. Cutler, GPL'      DELIMITED SIZE
2637  GC1213            INTO WS-Copyright-TXT
2638  VC0811*>  See const-set-1.cpy for constants used
2639  VC0811*>     MOVE 'GNUCOBOL 3.1.2 06MAR2022' TO WS-Version-TXT
2640        *>
2641  VC0811     move     Comp-Vers to    WS-Version-TXT.
2642             MOVE TRIM(L-Src-Fn-TXT,Leading) TO L-Src-Fn-TXT
```

```
  2643  GC1010     PERFORM VARYING WS-I-SUB FROM LENGTH(L-Src-Fn-TXT) BY -1
  2644         *> Locate last directory delimiter character so that the filename can
be extracted
  2645  GC1010               UNTIL L-Src-Fn-TXT(WS-I-SUB:1) = '/' OR '\'
  2646  GC1010                     OR WS-I-SUB = 0
  2647  VC0322               continue
  2648  GC1010     END-PERFORM
  2649  GC1010     IF WS-I-SUB = 0
  2650  GC1010         MOVE UPPER-CASE(L-Src-Fn-TXT) TO WS-Main-Module-Name-TXT
  2651        *> No directory delimiter, whole thing is filename
  2652  GC1010     ELSE
  2653  GC1010         ADD 1 TO WS-I-SUB
  2654  GC1010         MOVE UPPER-CASE(L-Src-Fn-TXT(WS-I-SUB:))

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  2655  GC1010           TO WS-Main-Module-Name-TXT *> Extract filename
  2656  GC1010     END-IF
  2657  GC1213     IF L-Listing-CD = 1 *> LANDSCAPE
  2658  GC1213         MOVE 8 TO WS-Xref-Lines-Per-Rec-NUM
  2659  GC1213         ACCEPT WS-Lines-Per-Page-Env-TXT
  2660  GC1213             FROM ENVIRONMENT 'GCXREF_LINES'
  2661  GC1213     ELSE *> PORTRAIT
  2662  GC1213         MOVE 3 TO WS-Xref-Lines-Per-Rec-NUM
  2663  GC1213         ACCEPT WS-Lines-Per-Page-Env-TXT
  2664  GC1213             FROM ENVIRONMENT 'GCXREF_LINES_PORT'
  2665  GC1213     END-IF
  2666             INSPECT L-Src-Fn-TXT REPLACING ALL '\' BY '/'
  2667             MOVE L-Src-Fn-TXT TO WS-Program-Path-TXT
  2668             CALL 'C$JUSTIFY' USING WS-Program-Path-TXT, 'Right'
  2669             MOVE LENGTH(TRIM(L-Src-Fn-TXT,Trailing)) TO WS-I-SUB
  2670             MOVE 0 TO WS-J-SUB
  2671             PERFORM UNTIL L-Src-Fn-TXT(WS-I-SUB:1) = '/'
  2672                       OR WS-I-SUB = 0
  2673                 SUBTRACT 1 FROM WS-I-SUB
  2674                 ADD      1 TO   WS-J-SUB
  2675             END-PERFORM
  2676             UNSTRING L-Src-Fn-TXT((WS-I-SUB + 1):WS-J-SUB)
  2677                 DELIMITED BY '.'
  2678                 INTO WS-Filename-TXT
```

```
  2679                       WS-Dummy-TXT
  2680  GC1010     STRING
  2681  GC1010            TRIM(WS-Filename-TXT,Trailing)
  2682  GC1010            '.i'
  2683  GC1010            DELIMITED SIZE
  2684  GC1010            INTO WS-Expanded-Src-Fn-TXT
  2685  GC1010     CALL 'CBL_CHECK_FILE_EXIST' USING WS-Expanded-Src-Fn-TXT
  2686  GC1010                                       WS-Temp-256-Chars-TXT
  2687  GC1010     IF RETURN-CODE NOT = 0
  2688  GC1010         GOBACK
  2689  GC1010     END-IF
  2690             IF WS-Lines-Per-Page-Env-TXT NOT = SPACES
  2691                 MOVE NUMVAL(WS-Lines-Per-Page-Env-TXT)
  2692                   TO WS-Lines-Per-Page-NUM
  2693             ELSE
  2694  GC1213         IF L-LISTING-CD = 1 *> LANDSCAPE
  2695  GC1213             MOVE L-LPP-NUM TO WS-Lines-Per-Page-NUM
  2696  GC1213         ELSE                *> PORTRAIT
  2697  GC1213             MOVE L-LPP-Port-NUM TO WS-Lines-Per-Page-NUM
  2698  GC1213         END-IF
  2699             END-IF
  2700  GC1213     SUBTRACT 3 FROM WS-Lines-Per-Page-NUM *> FOR PAGE FOOTER
  2701             ACCEPT WS-Today-DT FROM DATE YYYYMMDD
  2702  GC1213     MOVE WS-Today-DT TO WS-Formatted-DT
  2703             MOVE '???????????...' TO WS-Curr-Prog-ID-TXT
  2704             MOVE SPACES           TO WS-Curr-Verb-TXT
  2705                                      WS-Held-Reference-TXT
  2706             .
  2707        /
  2708         300-Tokenize-Source SECTION.

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  2709             OPEN INPUT F-Expanded-Src-FILE
  2710             MOVE SPACES TO F-Expanded-Src-REC
  2711             MOVE 256 TO WS-Src-SUB
  2712             MOVE 0 TO WS-Usernames-QTY
  2713                       WS-Curr-Line-NUM
  2714             MOVE '?' TO WS-Curr-Division-TXT
  2715  GC0710     MOVE 'N' TO WS-RS-Verb-Has-Been-Found-CHR
```

```
2716             PERFORM FOREVER
2717                 PERFORM 310-Get-Token
2718                 IF WS-TT-Token-Is-EOF-BOOL
2719                     EXIT PERFORM
2720                 END-IF
2721                 MOVE UPPER-CASE(WS-Token-Curr-TXT)
2722                   TO WS-Token-Curr-Uc-TXT
2723  GC1010         IF WS-TT-Token-Is-Keyword-BOOL
2724  GC1010         OR WS-TT-Token-Is-Reserved-Wd-BOOL
2725  GC1010             MOVE WS-Token-Curr-Uc-TXT TO WS-Token-Curr-TXT
2726  GC1010         END-IF
2727                 IF WS-TT-Token-Is-Verb-BOOL
2728                     MOVE WS-Token-Curr-Uc-TXT TO WS-Curr-Verb-TXT
2729                                                  WS-Token-Prev-TXT
2730                     IF WS-Held-Reference-TXT NOT = SPACES
2731                         MOVE WS-Held-Reference-TXT TO F-Sort-Work-REC
2732                         MOVE SPACES         TO WS-Held-Reference-TXT
2733                         RELEASE F-Sort-Work-REC
2734                     END-IF
2735                 END-IF
2736                 EVALUATE TRUE
2737                 WHEN WS-CD-In-IDENT-DIV-BOOL
2738                     PERFORM 320-IDENTIFICATION-DIVISION
2739                 WHEN WS-CD-In-ENV-DIV-BOOL
2740                     PERFORM 330-ENVIRONMENT-DIVISION
2741                 WHEN WS-CD-In-DATA-DIV-BOOL
2742                     PERFORM 340-DATA-DIVISION
2743                 WHEN WS-CD-In-PROC-DIV-BOOL
2744                     PERFORM 350-PROCEDURE-DIVISION
2745                 END-EVALUATE
2746                 IF WS-TT-Token-Is-Keyword-BOOL
2747                     MOVE WS-Token-Curr-Uc-TXT TO WS-Token-Prev-TXT
2748                 END-IF
2749                 IF WS-RS-Token-Ended-Sentence-CHR = 'Y'
2750                 AND WS-Curr-Division-TXT NOT = 'I'
2751                     MOVE SPACES TO WS-Token-Prev-TXT
2752                                    WS-Curr-Verb-TXT
2753                 END-IF
2754
2755             END-PERFORM
2756             CLOSE F-Expanded-Src-FILE
```

```
  2757             .
  2758        /
  2759         310-Get-Token SECTION.
  2760        *>-- Position to 1st non-blank character
  2761             MOVE WS-RS-Token-Ended-Sentence-CHR
  2762               TO WS-RS-Last-Token-Ended-Sent-CHR

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  2763             MOVE 'N' TO WS-RS-Token-Ended-Sentence-CHR
  2764             PERFORM UNTIL F-Expanded-Src-REC(WS-Src-SUB : 1) NOT = SPACE
  2765                 IF WS-Src-SUB > 255
  2766                     READ F-Expanded-Src-FILE AT END
  2767                         IF WS-Held-Reference-TXT NOT = SPACES
  2768                             MOVE WS-Held-Reference-TXT TO F-Sort-Work-REC
  2769                             MOVE SPACES         TO WS-Held-Reference-TXT
  2770                             RELEASE F-Sort-Work-REC
  2771                         END-IF
  2772                         SET WS-TT-Token-Is-EOF-BOOL TO TRUE
  2773                         MOVE 0 TO WS-Curr-Line-NUM
  2774                         EXIT SECTION
  2775                     END-READ
  2776  GC0712             IF F-ES-1-7-TXT NOT = '#DEFLIT'
  2777  GC0712                 IF F-ES-1-CHR = '#'
  2778  GC0712                     PERFORM 311-Control-Record
  2779  GC0712                 ELSE
  2780  GC0712                     PERFORM 312-Expanded-Src-Record
  2781  GC0712                 END-IF
  2782  GC0712             END-IF
  2783                 ELSE
  2784                     ADD 1 TO WS-Src-SUB
  2785                 END-IF
  2786             END-PERFORM
  2787        *>-- Extract token string
  2788             MOVE F-Expanded-Src-REC(WS-Src-SUB : 1)
  2789               TO WS-Curr-CHR
  2790             MOVE F-Expanded-Src-REC(WS-Src-SUB + 1: 1)
  2791               TO WS-Next-CHR
  2792             IF WS-Curr-CHR = '.'
  2793                 ADD 1 TO WS-Src-SUB
```

```
  2794                MOVE WS-Curr-CHR TO WS-Token-Curr-TXT
  2795                MOVE SPACE TO WS-Token-Type-CD
  2796                MOVE 'Y' TO WS-RS-Token-Ended-Sentence-CHR
  2797                EXIT SECTION
  2798            END-IF
  2799            IF WS-Curr-Char-Is-Punct-BOOL
  2800            AND WS-Curr-CHR = '='
  2801            AND WS-Curr-Division-TXT = 'P'
  2802                ADD 1 TO WS-Src-SUB
  2803                MOVE 'EQUALS' TO WS-Token-Curr-TXT
  2804                MOVE 'K'      TO WS-Token-Type-CD
  2805                EXIT SECTION
  2806            END-IF
  2807             IF WS-Curr-Char-Is-Punct-BOOL *> So subscripts don't get flagged
w/ '*'
  2808            AND WS-Curr-CHR = '('
  2809            AND WS-Curr-Division-TXT = 'P'
  2810                MOVE SPACES TO WS-Token-Prev-TXT
  2811            END-IF
  2812            IF WS-Curr-Char-Is-Punct-BOOL
  2813                ADD 1 TO WS-Src-SUB
  2814                MOVE WS-Curr-CHR TO WS-Token-Curr-TXT
  2815                MOVE SPACE TO WS-Token-Type-CD
  2816                EXIT SECTION

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  2817            END-IF
  2818            IF WS-Curr-Char-Is-Quote-BOOL
  2819                ADD 1 TO WS-Src-SUB
  2820                UNSTRING F-Expanded-Src-REC
  2821                    DELIMITED BY WS-Curr-CHR
  2822                    INTO WS-Token-Curr-TXT
  2823                    WITH POINTER WS-Src-SUB
  2824                IF F-Expanded-Src-REC(WS-Src-SUB : 1) = '.'
  2825                    MOVE 'Y' TO WS-RS-Token-Ended-Sentence-CHR
  2826                    ADD 1 TO WS-Src-SUB
  2827                END-IF
  2828                SET WS-TT-Token-Is-Lit-Alpha-BOOL TO TRUE
  2829                EXIT SECTION
```

```
2830            END-IF
2831            IF WS-Curr-Char-Is-X-BOOL AND WS-Next-Char-Is-Quote-BOOL
2832                ADD 2 TO WS-Src-SUB
2833                UNSTRING F-Expanded-Src-REC
2834                    DELIMITED BY WS-Next-CHR
2835                    INTO WS-Token-Curr-TXT
2836                    WITH POINTER WS-Src-SUB
2837                IF F-Expanded-Src-REC(WS-Src-SUB : 1) = '.'
2838                    MOVE 'Y' TO WS-RS-Token-Ended-Sentence-CHR
2839                    ADD 1 TO WS-Src-SUB
2840                END-IF
2841                SET WS-TT-Token-Is-Lit-Number-BOOL TO TRUE
2842                EXIT SECTION
2843            END-IF
2844            IF WS-Curr-Char-Is-Z-BOOL AND WS-Next-Char-Is-Quote-BOOL
2845                ADD 2 TO WS-Src-SUB
2846                UNSTRING F-Expanded-Src-REC
2847                    DELIMITED BY WS-Next-CHR
2848                    INTO WS-Token-Curr-TXT
2849                    WITH POINTER WS-Src-SUB
2850                IF F-Expanded-Src-REC(WS-Src-SUB : 1) = '.'
2851                    MOVE 'Y' TO WS-RS-Token-Ended-Sentence-CHR
2852                    ADD 1 TO WS-Src-SUB
2853                END-IF
2854                SET WS-TT-Token-Is-Lit-Alpha-BOOL TO TRUE
2855                EXIT SECTION
2856            END-IF
2857            IF WS-RS-Processing-PICTURE-CHR = 'Y'
2858                UNSTRING F-Expanded-Src-REC
2859                    DELIMITED BY '. ' OR ' '
2860                    INTO WS-Token-Curr-TXT
2861                    DELIMITER IN WS-Delim-TXT
2862                    WITH POINTER WS-Src-SUB
2863                IF WS-Delim-TXT = '. '
2864                    MOVE 'Y' TO WS-RS-Token-Ended-Sentence-CHR
2865                    ADD 1 TO WS-Src-SUB
2866                END-IF
2867                IF UPPER-CASE(WS-Token-Curr-TXT) = 'IS'
2868                    MOVE SPACE TO WS-Token-Type-CD
2869                    EXIT SECTION
2870                ELSE
```

```
 2871                    MOVE 'N' TO WS-RS-Processing-PICTURE-CHR
 2872                    MOVE SPACE TO WS-Token-Type-CD
 2873                    EXIT SECTION
 2874                END-IF
 2875            END-IF
 2876            UNSTRING F-Expanded-Src-REC
 2877                DELIMITED BY '. ' OR ' ' OR '=' OR '(' OR ')' OR '*'
 2878                                 OR '/' OR '&' OR ';' OR ',' OR '<'
 2879                                 OR '>' OR ':'
 2880                INTO WS-Token-Curr-TXT
 2881                DELIMITER IN WS-Delim-TXT
 2882                WITH POINTER WS-Src-SUB
 2883            IF WS-Delim-TXT = '. '
 2884                MOVE 'Y' TO WS-RS-Token-Ended-Sentence-CHR
 2885            END-IF
 2886            IF WS-Delim-TXT NOT = '. ' AND ' '
 2887                SUBTRACT 1 FROM WS-Src-SUB
 2888            END-IF
 2889       *>-- Classify Token
 2890            MOVE UPPER-CASE(WS-Token-Curr-TXT) TO WS-Token-Search-TXT
 2891            IF WS-Token-Search-TXT = 'EQUAL' OR 'EQUALS'
 2892                MOVE 'EQUALS' TO WS-Token-Curr-TXT
 2893                MOVE 'K'      TO WS-Token-Type-CD
 2894                EXIT SECTION
 2895            END-IF
 2896            SEARCH ALL WS-Reserved-Word-TXT
 2897                WHEN WS-RW-Word-TXT (WS-RW-IDX) = WS-Token-Search-TXT
 2898                    MOVE WS-RW-Type-CD (WS-RW-IDX) TO WS-Token-Type-CD
 2899  GC0710            IF WS-TT-Token-Is-Verb-BOOL
 2900  GC0710                MOVE 'Y' TO WS-RS-Verb-Has-Been-Found-CHR
 2901  GC0710            END-IF
 2902                    EXIT SECTION
 2903            END-SEARCH
 2904       *>-- Not a reserved word, must be a user name
 2905            SET WS-TT-Token-Is-Identifier-BOOL TO TRUE
 2906            PERFORM 313-Check-For-Numeric-Token
 2907            IF WS-TT-Token-Is-Lit-Number-BOOL
```

```
  2908                 IF  (WS-RS-Last-Token-Ended-Sent-CHR = 'Y')
  2909                 AND (WS-Curr-Division-TXT = 'D')
  2910                     MOVE 'LEVEL #' TO WS-Token-Curr-TXT
  2911                     MOVE 'K'       TO WS-Token-Type-CD
  2912                     EXIT SECTION
  2913                 ELSE
  2914                     EXIT SECTION
  2915                 END-IF
  2916             END-IF
  2917             .
  2918        /
  2919         311-Control-Record SECTION.
  2920             UNSTRING F-ES-2-256-TXT-256
  2921                 DELIMITED BY '"'
  2922                 INTO WS-Temp-10-Chars-TXT
  2923                      WS-Temp-256-Chars-TXT
  2924                      WS-Dummy-TXT

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  2925             INSPECT WS-Temp-10-Chars-TXT REPLACING ALL '"' BY SPACE
  2926  GC0712     IF WS-Temp-10-Chars-TXT(1:4) = 'line'
  2927  GC0712         MOVE SPACES TO WS-Temp-10-Chars-TXT(1:4)
  2928  GC0712     END-IF
  2929             COMPUTE WS-I-SUB = NUMVAL(WS-Temp-10-Chars-TXT) - 1
  2930  GC1010     IF UPPER-CASE(TRIM(WS-Temp-256-Chars-TXT,Trailing)) =
  2931  GC1010        TRIM(WS-Main-Module-Name-TXT)
  2932                 MOVE WS-I-SUB TO WS-Curr-Line-NUM
  2933                 SET WS-RS-In-Main-Module-BOOL TO TRUE
  2934                 IF WS-Saved-Section-TXT NOT = SPACES
  2935                     MOVE WS-Saved-Section-TXT TO WS-Curr-Section-TXT
  2936                 END-IF
  2937             ELSE
  2938                 SET WS-RS-In-Copybook-BOOL TO TRUE
  2939                 IF WS-Saved-Section-TXT = SPACES
  2940                     MOVE WS-Curr-Section-TXT TO WS-Saved-Section-TXT
  2941                 END-IF
  2942                 MOVE LENGTH(TRIM(WS-Temp-256-Chars-TXT,Trailing))
  2943                   TO WS-I-SUB
  2944                 MOVE 0 TO WS-J-SUB
```

```
  2945                 PERFORM UNTIL WS-Temp-256-Chars-TXT(WS-I-SUB:1) = '/'
  2946                           OR WS-I-SUB = 0
  2947                     SUBTRACT 1 FROM WS-I-SUB
  2948                     ADD      1 TO   WS-J-SUB
  2949                 END-PERFORM
  2950                 UNSTRING WS-Temp-256-Chars-TXT((WS-I-SUB + 1):WS-J-SUB)
  2951                     DELIMITED BY '.'
  2952                     INTO WS-Filename-TXT
  2953                          WS-Dummy-TXT
  2954                 MOVE '['      TO WS-CS-1-CHR
  2955                 MOVE WS-Filename-TXT TO WS-CS-2-14-TXT
  2956                 IF WS-CS-11-14-TXT NOT = SPACES
  2957                     MOVE '...' TO WS-CS-11-14-TXT
  2958                 END-IF
  2959                 MOVE ']'      TO WS-CS-15-CHR
  2960             END-IF
  2961             MOVE SPACES TO F-Expanded-Src-REC *> Force another READ
  2962             MOVE 256    TO WS-Src-SUB
  2963             .
  2964        /
  2965         312-Expanded-Src-Record SECTION.
  2966  GC0314     IF F-Expanded-Src-REC(1:1) = SPACE
  2967  GC0314         MOVE 2 TO WS-Src-SUB
  2968  GC0314     ELSE
  2969  GC0314         MOVE 1 TO WS-Src-SUB
  2970  GC0314     END-IF
  2971             IF WS-RS-In-Main-Module-BOOL
  2972                 ADD 1 To WS-Curr-Line-NUM
  2973             END-IF
  2974             .
  2975        /
  2976         313-Check-For-Numeric-Token SECTION.
  2977             MOVE WS-Token-Curr-TXT TO WS-Temp-32-Chars-1-TXT
  2978             INSPECT WS-Temp-32-Chars-1-TXT

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  2979  GC0711         CONVERTING '0123456789' TO SPACES
  2980  GC0711     IF WS-Temp-32-Chars-1-TXT = SPACES                      *> Simple
Unsigned Integer
```

```
  2981                 SET WS-TT-Token-Is-Lit-Number-BOOL TO TRUE
  2982                 EXIT SECTION
  2983             END-IF
  2984  GC0711     MOVE SPACES TO WS-Temp-32-Chars-2-TXT
  2985  GC0711                    WS-Temp-32-Chars-3-TXT
  2986  GC0711                    WS-Dummy-TXT
  2987  GC0711     UNSTRING WS-Temp-32-Chars-1-TXT
  2988  GC0711         DELIMITED BY 'e' OR 'E'
  2989  GC0711         INTO WS-Temp-32-Chars-2-TXT
  2990  GC0711              WS-Temp-32-Chars-3-TXT
  2991  GC0711              WS-Dummy-TXT
  2992  GC0711     IF WS-Dummy-TXT NOT = SPACES                    *> More than one
'E' - Not Numeric
  2993  GC0711         EXIT SECTION
  2994  GC0711     END-IF
  2995  GC0711     IF WS-Temp-32-Chars-2-TXT(1:1) = '+' OR '-'
  2996  GC0711         MOVE SPACE TO WS-Temp-32-Chars-2-TXT(1:1)
  2997  GC0711     END-IF
  2998  GC0711     IF WS-Temp-32-Chars-3-TXT(1:1) = '+' OR '-'
  2999  GC0711         MOVE SPACE TO WS-Temp-32-Chars-3-TXT(1:1)
  3000  GC0711     END-IF
  3001             MOVE 0 TO WS-Tally-QTY
  3002  GC0711     INSPECT WS-Temp-32-Chars-2-TXT
  3003                 TALLYING WS-Tally-QTY FOR ALL '.'
  3004             IF WS-Tally-QTY = 1
  3005  GC0711         INSPECT WS-Temp-32-Chars-2-TXT REPLACING ALL '.' BY SPACE
  3006             END-IF
  3007  GC0711     INSPECT WS-Temp-32-Chars-3-TXT
  3008  GC0711         TALLYING WS-Tally-QTY FOR ALL '.'
  3009  GC0711     IF WS-Tally-QTY = 1
  3010  GC0711         INSPECT WS-Temp-32-Chars-3-TXT REPLACING ALL '.' BY SPACE
  3011  GC0711     END-IF
  3012  GC0711       IF WS-Temp-32-Chars-2-TXT = SPACES AND WS-Temp-32-Chars-3-TXT
= SPACES
  3013                 SET WS-TT-Token-Is-Lit-Number-BOOL TO TRUE
  3014                 EXIT SECTION
  3015             END-IF
  3016             .
  3017        /
  3018         320-IDENTIFICATION-DIVISION SECTION.
  3019  GC0712     IF WS-TT-Token-Is-Argtype-BOOL
```

```
  3020  GC0712         SET WS-TT-Token-Is-Reserved-Wd-BOOL TO TRUE
  3021  GC0712     END-IF
  3022  GC0710     MOVE 'N' TO WS-RS-Verb-Has-Been-Found-CHR
  3023             IF WS-TT-Token-Is-Keyword-BOOL
  3024             AND WS-Token-Curr-TXT = 'DIVISION'
  3025                 MOVE WS-Token-Prev-TXT TO WS-Curr-Division-TXT
  3026                 EXIT SECTION
  3027             END-IF
  3028  GC0712     IF WS-Token-Prev-TXT = 'PROGRAM-ID' OR 'FUNCTION-ID'
  3029                 MOVE SPACES TO WS-Token-Prev-TXT
  3030                 MOVE WS-Token-Curr-TXT TO WS-Curr-Prog-ID-TXT
  3031  GC0712         IF WS-CPI-16-CHR NOT = SPACES
  3032                     MOVE '...' TO WS-CPI-13-15-TXT

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  3033                 END-IF
  3034                 EXIT SECTION
  3035             END-IF
  3036             .
  3037        /
  3038         330-ENVIRONMENT-DIVISION SECTION.
  3039  GC0712     IF WS-TT-Token-Is-Argtype-BOOL
  3040  GC0712         SET WS-TT-Token-Is-Reserved-Wd-BOOL TO TRUE
  3041  GC0712     END-IF
  3042             IF WS-TT-Token-Is-Keyword-BOOL
  3043             AND WS-Token-Curr-TXT = 'DIVISION'
  3044                 MOVE WS-Token-Prev-TXT TO WS-Curr-Division-TXT
  3045                 EXIT SECTION
  3046             END-IF
  3047             IF WS-TT-Token-Is-Keyword-BOOL
  3048             AND WS-Token-Curr-TXT = 'SECTION'
  3049                 MOVE WS-Token-Prev-TXT TO WS-Curr-Section-TXT
  3050                 EXIT SECTION
  3051             END-IF
  3052             IF WS-TT-Token-Is-Identifier-BOOL
  3053  GC0712         IF WS-Token-Prev-TXT = 'FUNCTION'
  3054  GC0712             PERFORM 360-Release-Def
  3055  GC0712         ELSE
  3056  GC0712             PERFORM 361-Release-Ref
```

```
  3057  GC0712         END-IF
  3058             END-IF
  3059  GC1213     IF WS-TT-Token-Is-Function-BOOL
  3060  GC1213         PERFORM 361-Release-Ref
  3061  GC1213     END-IF
  3062             .
  3063        /
  3064         340-DATA-DIVISION SECTION.
  3065  GC0712     IF WS-TT-Token-Is-Argtype-BOOL
  3066  GC0712         SET WS-TT-Token-Is-Reserved-Wd-BOOL TO TRUE
  3067  GC0712     END-IF
  3068             IF WS-TT-Token-Is-Keyword-BOOL
  3069             AND WS-Token-Curr-TXT = 'DIVISION'
  3070                 MOVE WS-Token-Prev-TXT TO WS-Curr-Division-TXT
  3071                 EXIT SECTION
  3072             END-IF
  3073             IF WS-TT-Token-Is-Keyword-BOOL
  3074             AND WS-Token-Curr-TXT = 'SECTION'
  3075                 MOVE WS-Token-Prev-TXT TO WS-Curr-Section-TXT
  3076                 EXIT SECTION
  3077             END-IF
  3078             IF  (WS-Token-Curr-TXT = 'PIC' OR 'PICTURE')
  3079             AND (WS-TT-Token-Is-Keyword-BOOL)
  3080                 MOVE 'Y' TO WS-RS-Processing-PICTURE-CHR
  3081                 EXIT SECTION
  3082             END-IF
  3083  GC0710     IF WS-TT-Token-Is-Reserved-Wd-BOOL
  3084  GC0710     AND WS-Token-Prev-TXT = 'LEVEL #'
  3085  GC0710         MOVE SPACES TO WS-Token-Prev-TXT
  3086  GC0710         EXIT SECTION

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  3087  GC0710     END-IF
  3088             IF WS-TT-Token-Is-Identifier-BOOL
  3089                 EVALUATE WS-Token-Prev-TXT
  3090                 WHEN 'FD'
  3091                     PERFORM 360-Release-Def
  3092                     MOVE SPACES TO WS-Token-Prev-TXT
  3093  GC1213         WHEN 'RD'
```

```
3094  GC1213             PERFORM 360-Release-Def
3095  GC1213             MOVE SPACES TO WS-Token-Prev-TXT
3096                 WHEN 'SD'
3097                     PERFORM 360-Release-Def
3098                     MOVE SPACES TO WS-Token-Prev-TXT
3099                 WHEN 'LEVEL #'
3100                     PERFORM 360-Release-Def
3101                     MOVE SPACES TO WS-Token-Prev-TXT
3102                 WHEN 'INDEXED'
3103                     PERFORM 360-Release-Def
3104                     MOVE SPACES TO WS-Token-Prev-TXT
3105                 WHEN 'USING'
3106                     PERFORM 362-Release-Upd
3107                     MOVE SPACES TO WS-Token-Prev-TXT
3108                 WHEN 'INTO'
3109                     PERFORM 362-Release-Upd
3110                     MOVE SPACES TO WS-Token-Prev-TXT
3111                 WHEN OTHER
3112  GC1213             IF WS-Token-Curr-TXT NOT = 'SUM'
3113  GC1213                 PERFORM 361-Release-Ref
3114  GC1213             END-IF
3115                 END-EVALUATE
3116                 EXIT SECTION
3117             END-IF
3118             .
3119        /
3120         350-PROCEDURE-DIVISION SECTION.
3121             IF WS-Curr-Section-TXT NOT = 'PROCEDURE'
3122                 MOVE 'PROCEDURE' TO WS-Curr-Section-TXT
3123             END-IF
3124  GC0710     IF WS-Token-Curr-Uc-TXT = 'PROGRAM'
3125  GC0710     AND WS-Token-Prev-TXT = 'END'
3126  GC0710         MOVE '?' TO WS-Curr-Division-TXT
3127  GC0710         EXIT SECTION
3128  GC0710     END-IF
3129             IF WS-TT-Token-Is-Keyword-BOOL
3130             AND WS-Token-Curr-TXT = 'DIVISION'
3131                 MOVE WS-Token-Prev-TXT TO WS-Curr-Division-TXT
3132                 EXIT SECTION
3133             END-IF
3134  GC0313     IF WS-TT-Token-Is-Identifier-BOOL
```

```
  3135  GC0313     AND WS-Token-Prev-TXT = SPACES
  3136  GC0313     AND WS-Curr-Verb-TXT = SPACES
  3137  GC0313*> ----- Definition of a Paragraph or Section
  3138  GC0313         PERFORM 360-Release-Def
  3139  GC0313         MOVE SPACES TO WS-Token-Prev-TXT
  3140  GC0313         EXIT SECTION

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  3141  GC0313     END-IF
  3142             IF NOT WS-TT-Token-Is-Identifier-BOOL
  3143                 EXIT SECTION
  3144             END-IF
  3145             EVALUATE WS-Curr-Verb-TXT
  3146             WHEN 'ACCEPT'
  3147                 PERFORM 351-ACCEPT
  3148             WHEN 'ADD'
  3149                 PERFORM 351-ADD
  3150             WHEN 'ALLOCATE'
  3151                 PERFORM 351-ALLOCATE
  3152             WHEN 'CALL'
  3153                 PERFORM 351-CALL
  3154             WHEN 'COMPUTE'
  3155                 PERFORM 351-COMPUTE
  3156             WHEN 'DIVIDE'
  3157                 PERFORM 351-DIVIDE
  3158             WHEN 'FREE'
  3159                 PERFORM 351-FREE
  3160  GC1213     WHEN 'GENERATE'
  3161  GC1213         PERFORM 351-GENERATE
  3162             WHEN 'INITIALIZE'
  3163                 PERFORM 351-INITIALIZE
  3164  GC1213     WHEN 'INITIATE'
  3165  GC1213         PERFORM 351-GENERATE
  3166             WHEN 'INSPECT'
  3167                 PERFORM 351-INSPECT
  3168             WHEN 'MOVE'
  3169                 PERFORM 351-MOVE
  3170             WHEN 'MULTIPLY'
  3171                 PERFORM 351-MULTIPLY
```

```
  3172             WHEN 'PERFORM'
  3173                 PERFORM 351-PERFORM
  3174             WHEN 'SET'
  3175                 PERFORM 351-SET
  3176             WHEN 'STRING'
  3177                 PERFORM 351-STRING
  3178             WHEN 'SUBTRACT'
  3179                 PERFORM 351-SUBTRACT
  3180  GC1213     WHEN 'TERMINATE'
  3181  GC1213         PERFORM 351-GENERATE
  3182             WHEN 'TRANSFORM'
  3183                 PERFORM 351-TRANSFORM
  3184             WHEN 'UNSTRING'
  3185                 PERFORM 351-UNSTRING
  3186             WHEN OTHER
  3187                 PERFORM 361-Release-Ref
  3188             END-EVALUATE
  3189             .
  3190        /
  3191         351-ACCEPT SECTION.
  3192             EVALUATE WS-Token-Prev-TXT
  3193             WHEN 'ACCEPT'
  3194                 PERFORM 362-Release-Upd

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  3195                 MOVE SPACES TO WS-Token-Prev-TXT
  3196             WHEN OTHER
  3197                 PERFORM 361-Release-Ref
  3198             END-EVALUATE
  3199             .
  3200
  3201         351-ADD SECTION.
  3202             EVALUATE WS-Token-Prev-TXT
  3203             WHEN 'GIVING'
  3204                 PERFORM 362-Release-Upd
  3205             WHEN 'TO'
  3206                 PERFORM 362-Release-Upd
  3207             WHEN OTHER
  3208                 PERFORM 361-Release-Ref
```

```
3209             END-EVALUATE
3210             .
3211
3212         351-ALLOCATE SECTION.
3213             EVALUATE WS-Token-Prev-TXT
3214             WHEN 'ALLOCATE'
3215                 PERFORM 362-Release-Upd
3216                 MOVE SPACES TO WS-Token-Prev-TXT
3217             WHEN 'RETURNING'
3218                 PERFORM 362-Release-Upd
3219             WHEN OTHER
3220                 PERFORM 361-Release-Ref
3221             END-EVALUATE
3222             .
3223
3224         351-CALL SECTION.
3225             EVALUATE WS-Token-Prev-TXT
3226             WHEN 'RETURNING'
3227                 PERFORM 362-Release-Upd
3228             WHEN 'GIVING'
3229                 PERFORM 362-Release-Upd
3230             WHEN OTHER
3231  GC1213        PERFORM 365-Release-Arg
3232             END-EVALUATE
3233             .
3234
3235         351-COMPUTE SECTION.
3236             EVALUATE WS-Token-Prev-TXT
3237             WHEN 'COMPUTE'
3238                 PERFORM 362-Release-Upd
3239             WHEN OTHER
3240                 PERFORM 361-Release-Ref
3241             END-EVALUATE
3242             .
3243
3244         351-DIVIDE SECTION.
3245             EVALUATE WS-Token-Prev-TXT
3246             WHEN 'INTO'
3247                 PERFORM 363-Set-Upd
3248                 MOVE F-Sort-Work-REC TO WS-Held-Reference-TXT
```

```
 3249             WHEN 'GIVING'
 3250                 IF WS-Held-Reference-TXT NOT = SPACES
 3251                     MOVE WS-Held-Reference-TXT To F-Sort-Work-REC
 3252                     MOVE SPACES         To WS-Held-Reference-TXT
 3253                                            F-SW-Ref-Flag-CHR
 3254                     RELEASE F-Sort-Work-REC
 3255                 END-IF
 3256                 PERFORM 362-Release-Upd
 3257             WHEN 'REMAINDER'
 3258                 PERFORM 362-Release-Upd
 3259             WHEN OTHER
 3260                 PERFORM 361-Release-Ref
 3261             END-EVALUATE
 3262             .
 3263
 3264         351-FREE SECTION.
 3265             PERFORM 362-Release-Upd
 3266             .
 3267
 3268  GC1213 351-GENERATE SECTION.
 3269  GC1213     PERFORM 362-Release-Upd
 3270  GC1213     .
 3271
 3272         351-INITIALIZE SECTION.
 3273             EVALUATE WS-Token-Prev-TXT
 3274             WHEN 'INITIALIZE'
 3275                 PERFORM 362-Release-Upd
 3276             WHEN 'REPLACING'
 3277                 PERFORM 361-Release-Ref
 3278             END-EVALUATE
 3279             .
 3280
 3281  GC1213 351-INITIATE SECTION.
 3282  GC1213     PERFORM 362-Release-Upd
 3283  GC1213     .
 3284
 3285         351-INSPECT SECTION.
 3286             EVALUATE WS-Token-Prev-TXT
```

```
  3287             WHEN 'INSPECT'
  3288                 PERFORM 364-Set-Ref
  3289                 MOVE SPACES TO WS-Held-Reference-TXT
  3290                 MOVE SPACES TO WS-Token-Prev-TXT
  3291             WHEN 'TALLYING'
  3292                 PERFORM 362-Release-Upd
  3293                 MOVE SPACES TO WS-Token-Prev-TXT
  3294             WHEN 'REPLACING'
  3295                 IF WS-Held-Reference-TXT NOT = SPACES
  3296                     MOVE WS-Held-Reference-TXT TO F-Sort-Work-REC
  3297                     MOVE SPACES         TO WS-Held-Reference-TXT
  3298                     MOVE '*'            TO F-SW-Ref-Flag-CHR
  3299                     RELEASE F-Sort-Work-REC
  3300                 END-IF
  3301                 MOVE SPACES TO WS-Token-Prev-TXT
  3302             WHEN 'CONVERTING'

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  3303                 IF WS-Held-Reference-TXT NOT = SPACES
  3304                     MOVE WS-Held-Reference-TXT TO F-Sort-Work-REC
  3305                     MOVE SPACES         TO WS-Held-Reference-TXT
  3306                     MOVE '*'            TO F-SW-Ref-Flag-CHR
  3307                     RELEASE F-Sort-Work-REC
  3308                 END-IF
  3309                 MOVE SPACES TO WS-Token-Prev-TXT
  3310             WHEN OTHER
  3311                 PERFORM 361-Release-Ref
  3312             END-EVALUATE
  3313            .
  3314
  3315         351-MOVE SECTION.
  3316             EVALUATE WS-Token-Prev-TXT
  3317             WHEN 'TO'
  3318                 PERFORM 362-Release-Upd
  3319             WHEN OTHER
  3320                 PERFORM 361-Release-Ref
  3321             END-EVALUATE
  3322             .
  3323
```

```
  3324         351-MULTIPLY SECTION.
  3325             EVALUATE WS-Token-Prev-TXT
  3326             WHEN 'BY'
  3327                 PERFORM 363-Set-Upd
  3328                 MOVE F-Sort-Work-REC TO WS-Held-Reference-TXT
  3329             WHEN 'GIVING'
  3330                 MOVE WS-Held-Reference-TXT TO F-Sort-Work-REC
  3331                 MOVE SPACES         TO WS-Held-Reference-TXT
  3332                                        F-SW-Ref-Flag-CHR
  3333                 RELEASE F-Sort-Work-REC
  3334                 PERFORM 362-Release-Upd
  3335             WHEN OTHER
  3336                 PERFORM 361-Release-Ref
  3337             END-EVALUATE
  3338             .
  3339
  3340         351-PERFORM SECTION.
  3341             EVALUATE WS-Token-Prev-TXT
  3342             WHEN 'VARYING'
  3343                 PERFORM 362-Release-Upd
  3344                 MOVE SPACES TO WS-Token-Prev-TXT
  3345             WHEN 'AFTER'
  3346                 PERFORM 362-Release-Upd
  3347                 MOVE SPACES TO WS-Token-Prev-TXT
  3348             WHEN OTHER
  3349                 PERFORM 361-Release-Ref
  3350             END-EVALUATE
  3351             .
  3352
  3353         351-SET SECTION.
  3354             EVALUATE WS-Token-Prev-TXT
  3355             WHEN 'SET'
  3356                 PERFORM 362-Release-Upd

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  3357             WHEN OTHER
  3358                 PERFORM 361-Release-Ref
  3359             END-EVALUATE
  3360             .
```

```
3361
3362         351-STRING SECTION.
3363             EVALUATE WS-Token-Prev-TXT
3364             WHEN 'INTO'
3365                 PERFORM 362-Release-Upd
3366             WHEN 'POINTER'
3367                 PERFORM 362-Release-Upd
3368             WHEN OTHER
3369                 PERFORM 361-Release-Ref
3370             END-EVALUATE
3371             .
3372
3373         351-SUBTRACT SECTION.
3374             EVALUATE WS-Token-Prev-TXT
3375             WHEN 'GIVING'
3376                 PERFORM 362-Release-Upd
3377             WHEN 'FROM'
3378                 PERFORM 362-Release-Upd
3379             WHEN OTHER
3380                 PERFORM 361-Release-Ref
3381             END-EVALUATE
3382             .
3383
3384  GC1213 351-TERMINATE SECTION.
3385  GC1213     PERFORM 362-Release-Upd
3386  GC1213     .
3387
3388         351-TRANSFORM SECTION.
3389             EVALUATE WS-Token-Prev-TXT
3390             WHEN 'TRANSFORM'
3391                 PERFORM 362-Release-Upd
3392                 MOVE SPACES TO WS-Token-Prev-TXT
3393             WHEN OTHER
3394                 PERFORM 361-Release-Ref
3395             END-EVALUATE
3396             .
3397
3398         351-UNSTRING SECTION.
3399             EVALUATE WS-Token-Prev-TXT
3400             WHEN 'INTO'
3401                 PERFORM 362-Release-Upd
```

```
  3402             WHEN 'DELIMITER'
  3403                 PERFORM 362-Release-Upd
  3404             WHEN 'COUNT'
  3405                 PERFORM 362-Release-Upd
  3406             WHEN 'POINTER'
  3407                 PERFORM 362-Release-Upd
  3408             WHEN 'TALLYING'
  3409                 PERFORM 362-Release-Upd
  3410             WHEN OTHER

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  3411                 PERFORM 361-Release-Ref
  3412             END-EVALUATE
  3413             .
  3414
  3415         360-Release-Def SECTION.
  3416             MOVE SPACES                 TO F-Sort-Work-REC
  3417             MOVE WS-Curr-Prog-ID-TXT    TO F-SW-Prog-ID-TXT
  3418             MOVE WS-Token-Curr-Uc-TXT   TO F-SW-Token-Uc-TXT
  3419             MOVE WS-Token-Curr-TXT      TO F-SW-Token-TXT
  3420             MOVE WS-Curr-Section-TXT    TO F-SW-Section-TXT
  3421             MOVE WS-Curr-Line-NUM       TO F-SW-Def-Line-NUM
  3422             MOVE 0                      TO F-SW-Ref-Line-NUM
  3423             RELEASE F-Sort-Work-REC
  3424             .
  3425
  3426         361-Release-Ref SECTION.
  3427             PERFORM 364-Set-Ref
  3428             RELEASE F-Sort-Work-REC
  3429             .
  3430
  3431         362-Release-Upd SECTION.
  3432             PERFORM 363-Set-Upd
  3433             RELEASE F-Sort-Work-REC
  3434             .
  3435
  3436         363-Set-Upd SECTION.
  3437             MOVE SPACES                 TO F-Sort-Work-REC
  3438             MOVE WS-Curr-Prog-ID-TXT    TO F-SW-Prog-ID-TXT
```

```
  3439             MOVE WS-Token-Curr-Uc-TXT   TO F-SW-Token-Uc-TXT
  3440             MOVE WS-Token-Curr-TXT      TO F-SW-Token-TXT
  3441             MOVE WS-Curr-Section-TXT    TO F-SW-Section-TXT
  3442             MOVE WS-Curr-Line-NUM       TO F-SW-Ref-Line-NUM
  3443             MOVE '*'                    TO F-SW-Ref-Flag-CHR
  3444             .
  3445
  3446         364-Set-Ref SECTION.
  3447             MOVE SPACES                 TO F-Sort-Work-REC
  3448             MOVE WS-Curr-Prog-ID-TXT    TO F-SW-Prog-ID-TXT
  3449             MOVE WS-Token-Curr-Uc-TXT   TO F-SW-Token-Uc-TXT
  3450             MOVE WS-Token-Curr-TXT      TO F-SW-Token-TXT
  3451             MOVE WS-Curr-Section-TXT    TO F-SW-Section-TXT
  3452             MOVE WS-Curr-Line-NUM       TO F-SW-Ref-Line-NUM
  3453             .
  3454
  3455  GC1213 365-Release-Arg SECTION.
  3456  GC1213     PERFORM 366-Set-Arg
  3457  GC1213     RELEASE F-Sort-Work-REC
  3458  GC1213     .
  3459
  3460  GC1213 366-Set-Arg SECTION.
  3461  GC1213     MOVE SPACES                 TO F-Sort-Work-REC
  3462  GC1213     MOVE WS-Curr-Prog-ID-TXT    TO F-SW-Prog-ID-TXT
  3463  GC1213     MOVE WS-Token-Curr-Uc-TXT   TO F-SW-Token-Uc-TXT
  3464  GC1213     MOVE WS-Token-Curr-TXT      TO F-SW-Token-TXT

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  3465  GC1213     MOVE WS-Curr-Section-TXT    TO F-SW-Section-TXT
  3466  GC1213     MOVE WS-Curr-Line-NUM       TO F-SW-Ref-Line-NUM
  3467  GC1213     MOVE 'C'                    TO F-SW-Ref-Flag-CHR
  3468  GC1213     .
  3469
  3470        /
  3471         400-Produce-Xref-Listing SECTION.
  3472             MOVE SPACES       TO WS-Xref-Detail-Line-TXT
  3473                                  WS-Group-Indicators-TXT
  3474             MOVE 0            TO WS-I-SUB
  3475                                  WS-Lines-Left-NUM
```

```
3476  GC0710     MOVE 'N'          TO WS-RS-Duplicate-CHR
3477             PERFORM FOREVER
3478                 RETURN F-Sort-Work-FILE AT END
3479  GC1213             IF WS-Xref-Detail-Line-TXT NOT = SPACES
3480  GC1213                 PERFORM 410-Generate-Report-Line
3481  GC1213             END-IF
3482  GC1213             MOVE SPACES TO WS-Xref-Detail-Line-TXT
3483  GC1213             PERFORM 410-Generate-Report-Line
3484  GC1213                 UNTIL WS-Lines-Left-NUM = 0
3485  GC1213             MOVE 'Y' TO WS-Suppress-FF-CHR
3486  GC1213             PERFORM 420-Generate-Xref-Footer
3487                     EXIT PERFORM
3488                 END-RETURN
3489                 IF F-SW-Prog-ID-TXT  NOT = WS-GI-Prog-ID-TXT
3490                 OR F-SW-Token-Uc-TXT NOT = WS-GI-Token-TXT
3491  GC0710             MOVE 'N' TO WS-RS-Duplicate-CHR
3492                     IF WS-Xref-Detail-Line-TXT NOT = SPACES
3493                         PERFORM 410-Generate-Report-Line
3494                     END-IF
3495                     IF F-SW-Prog-ID-TXT NOT = WS-GI-Prog-ID-TXT
3496  GC1213                 MOVE SPACES TO WS-Xref-Detail-Line-TXT
3497  GC1213                 PERFORM 410-Generate-Report-Line
3498  GC1213                     UNTIL WS-Lines-Left-NUM = 0
3499                     END-IF
3500                     MOVE F-SW-Prog-ID-TXT  TO WS-GI-Prog-ID-TXT
3501                     MOVE F-SW-Token-Uc-TXT TO WS-GI-Token-TXT
3502                 END-IF
3503  GC0710         IF F-SW-Token-Uc-TXT = WS-GI-Token-TXT
3504  GC0710         AND F-SW-Def-Line-NUM NOT = SPACES
3505  GC0710         AND WS-Xref-Detail-Line-TXT NOT = SPACES
3506  GC0710             MOVE 'Y' TO WS-RS-Duplicate-CHR
3507  GC0710             PERFORM 410-Generate-Report-Line
3508  GC0710             MOVE 0 TO WS-I-SUB
3509  GC0710             MOVE F-SW-Prog-ID-TXT TO WS-XDL-Prog-ID-TXT
3510  GC0710             MOVE '  (Duplicate Definition)' TO WS-XDL-Token-TXT
3511  GC0710             MOVE F-SW-Section-TXT TO WS-XDL-Section-TXT
3512  GC0710             MOVE F-SW-Def-Line-NUM TO WS-XDL-Def-Line-NUM
3513  GC0710             EXIT PERFORM CYCLE
3514  GC0710         END-IF
3515  GC0710         IF F-SW-Token-Uc-TXT = WS-GI-Token-TXT
3516  GC0710         AND F-SW-Def-Line-NUM = SPACES
```

```
  3517  GC0710         AND WS-RS-Duplicate-CHR = 'Y'
  3518  GC0710             MOVE 'N' TO WS-RS-Duplicate-CHR

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  3519  GC0710             PERFORM 410-Generate-Report-Line
  3520  GC0710             MOVE 0 TO WS-I-SUB
  3521  GC0710             MOVE F-SW-Prog-ID-TXT TO WS-XDL-Prog-ID-TXT
  3522  GC0710             MOVE '  (Duplicate References)' TO WS-XDL-Token-TXT
  3523  GC0710         END-IF
  3524                 IF WS-Xref-Detail-Line-TXT = SPACES
  3525                     MOVE F-SW-Prog-ID-TXT TO WS-XDL-Prog-ID-TXT
  3526                     MOVE F-SW-Token-TXT TO WS-XDL-Token-TXT
  3527                     MOVE F-SW-Section-TXT TO WS-XDL-Section-TXT
  3528                     IF F-SW-Def-Line-NUM NOT = SPACES
  3529                         MOVE F-SW-Def-Line-NUM TO WS-XDL-Def-Line-NUM
  3530                     END-IF
  3531                 END-IF
  3532                 IF F-SW-Reference-TXT > '000000'
  3533                     ADD 1 TO WS-I-SUB
  3534                     IF WS-I-SUB > WS-Xref-Lines-Per-Rec-NUM
  3535                         PERFORM 410-Generate-Report-Line
  3536                         MOVE 1 TO WS-I-SUB
  3537                     END-IF
  3538                     MOVE F-SW-Ref-Line-NUM
  3539                       TO WS-XDL-Ref-Line-NUM (WS-I-SUB)
  3540                     MOVE F-SW-Ref-Flag-CHR
  3541                       TO WS-XDL-Ref-Flag-CHR (WS-I-SUB)
  3542                 END-IF
  3543             END-PERFORM
  3544             IF WS-Xref-Detail-Line-TXT NOT = SPACES
  3545                 PERFORM 410-Generate-Report-Line
  3546             END-IF
  3547             .
  3548        /
  3549         410-Generate-Report-Line SECTION.
  3550             IF WS-Lines-Left-NUM < 1
  3551  GC1213         PERFORM 420-Generate-Xref-Footer
  3552  GC1213         ADD  1           TO WS-Page-NUM
  3553  GC1213         MOVE 'Page:'     TO WS-PN-Literal-TXT
```

```
  3554  GC1213         MOVE WS-Page-NUM TO WS-PN-Page-NUM
  3555  GC1213         CALL 'C$JUSTIFY' USING WS-PN-Page-NUM, 'Left'
  3556  GC1213         CALL 'C$JUSTIFY' USING WS-Page-No-TXT, 'Right'
  3557  GC1213         IF L-Listing-CD = 1 *> LANDSCAPE
  3558  GC1213             MOVE WS-Version-TXT
  3559  GC1213               TO F-Listing-135-REC
  3560  GC1213             MOVE 'Cross-Reference Listing'
  3561  GC1213               TO F-Listing-135-REC(25:23)
  3562  GC1213             MOVE WS-Formatted-DT
  3563  GC1213               TO F-Listing-135-REC(126:10)
  3564  GC1213             WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #1
  3565  GC1213             MOVE WS-Program-Path-TXT
  3566  GC1213               TO F-Listing-135-REC
  3567  GC1213             WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #2
  3568  GC1213             MOVE 'PROGRAM-ID      Identifier/Register/Function' &
  3569  GC1213                  '     Defn   Where Defined   References'
  3570  GC1213               TO F-Listing-135-REC
  3571  GC1213             MOVE WS-Page-No-TXT
  3572  GC1213               TO F-Listing-135-REC(126:10)

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  3573  GC1213             WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #3
  3574  GC1213             MOVE ALL '=' TO F-Listing-135-REC
  3575  GC1213             MOVE SPACE TO F-Listing-135-REC(16:1)
  3576  GC1213                           F-Listing-135-REC(49:1)
  3577  GC1213                           F-Listing-135-REC(56:1)
  3578  GC1213                           F-Listing-135-REC(72:1)
  3579  GC1213             WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #4
  3580  GC1213         ELSE                *> PORTRAIT
  3581  GC1213             MOVE WS-Version-TXT
  3582  GC1213               TO F-Listing-96-REC
  3583  GC1213             MOVE 'Cross-Reference Listing'
  3584  GC1213               TO F-Listing-96-REC(25:23)
  3585  GC1213             MOVE WS-Formatted-DT
  3586  GC1213               TO F-Listing-96-REC(87:10)
  3587  GC1213             WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #1
  3588  GC1213             MOVE WS-Program-Path-TXT(40:96)
  3589  GC1213               TO F-Listing-96-REC
  3590  GC1213             WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #2
```

```
  3591  GC1213             MOVE 'PROGRAM-ID      Identifier/Register/Function' &
  3592  GC1213                  '     Defn   Where Defined   References'
  3593  GC1213               TO F-Listing-96-REC
  3594  GC1213             MOVE WS-Page-No-TXT
  3595  GC1213               TO F-Listing-96-REC(87:10)
  3596  GC1213             WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #3
  3597  GC1213             MOVE ALL '=' TO F-Listing-96-REC
  3598  GC1213             MOVE SPACE TO F-Listing-96-REC(16:1)
  3599  GC1213                           F-Listing-96-REC(49:1)
  3600  GC1213                           F-Listing-96-REC(56:1)
  3601  GC1213                           F-Listing-96-REC(72:1)
  3602  GC1213             WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #4
  3603  GC1213         END-IF
  3604  GC1213         COMPUTE WS-Lines-Left-NUM = WS-Lines-Per-Page-NUM - 4
  3605             END-IF
  3606  GC1213     IF L-Listing-CD = 1 *> LANDSCAPE
  3607  GC1213         WRITE F-Listing-135-REC FROM WS-Xref-Detail-Line-TXT
  3608  GC1213             BEFORE 1
  3609  GC1213     ELSE                *> PORTRAIT
  3610  GC1213         WRITE F-Listing-96-REC FROM WS-Xref-Detail-Line-TXT
  3611  GC1213             BEFORE 1
  3612  GC1213     END-IF
  3613             MOVE SPACES TO WS-Xref-Detail-Line-TXT
  3614             MOVE 0 TO WS-I-SUB
  3615             SUBTRACT 1 FROM WS-Lines-Left-NUM
  3616             .
  3617  GC1213 420-Generate-Xref-Footer SECTION.
  3618  GC1213     IF L-Listing-CD = 1 *> LANDSCAPE
  3619  GC1213        WRITE F-Listing-135-REC FROM SPACES BEFORE 1 *> Footer Line #1
  3620  GC1213         MOVE ALL '='
  3621  GC1213           TO F-Listing-135-REC
  3622  GC1213         WRITE F-Listing-135-REC BEFORE 1 *> Footer Line #2
  3623  GC1213         MOVE WS-Copyright-TXT
  3624  GC1213           TO F-Listing-135-REC
  3625  GC1213         MOVE WS-Page-No-TXT
  3626  GC1213           TO F-Listing-135-REC(126:10)

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  3627  GC1213         IF WS-Suppress-FF-CHR = 'Y'
```

```
  3628  GC1213             WRITE F-Listing-135-REC BEFORE 1 *> Footer Line #3
  3629  GC1213         ELSE
  3630  GC1213             WRITE F-Listing-135-REC BEFORE PAGE *> Footer Line #3
  3631  GC1213               WRITE F-Listing-135-REC FROM SPACES BEFORE 1 *> Spaces
After FF Character
  3632  GC1213         END-IF
  3633  GC1213     ELSE                *> PORTRAIT
  3634  GC1213         WRITE F-Listing-96-REC FROM SPACES BEFORE 1 *> Footer Line #1
  3635  GC1213         MOVE ALL '='
  3636  GC1213           TO F-Listing-96-REC
  3637  GC1213         WRITE F-Listing-96-REC BEFORE 1 *> Footer Line #2
  3638  GC1213         MOVE WS-Copyright-TXT
  3639  GC1213           TO F-Listing-96-REC
  3640  GC1213         MOVE WS-Page-No-TXT
  3641  GC1213           TO F-Listing-96-REC(87:10)
  3642  GC1213         IF WS-Suppress-FF-CHR = 'Y'
  3643  GC1213             WRITE F-Listing-96-REC BEFORE 1 *> Footer Line #3
  3644  GC1213         ELSE
  3645  GC1213             WRITE F-Listing-96-REC BEFORE PAGE *> Footer Line #3
  3646  GC1213            WRITE F-Listing-96-REC FROM SPACES BEFORE 1 *> Spaces After
FF Character
  3647  GC1213         END-IF
  3648  GC1213     END-IF
  3649  GC1213     .
  3650        /
  3651         500-Produce-Source-Listing SECTION.
  3652             OPEN INPUT F-Original-Src-FILE
  3653                        F-Expanded-Src-FILE
  3654             MOVE 0 TO WS-Src-Line-NUM
  3655             PERFORM FOREVER
  3656                 READ F-Expanded-Src-FILE AT END
  3657  GC1213             MOVE SPACES TO WS-Src-Detail-Line-TXT
  3658  GC1213             PERFORM 530-Generate-Source-Line
  3659  GC1213                 UNTIL WS-Lines-Left-NUM = 0
  3660                     EXIT PERFORM
  3661                 END-READ
  3662  GC0712         IF F-ES-1-7-TXT NOT = '#DEFLIT'
  3663  GC0712             IF F-ES-1-CHR = '#'
  3664  GC0712                 PERFORM 510-Control-Record
  3665  GC0712             ELSE
  3666  GC0712                 PERFORM 520-Expanded-Src-Record
```

```
  3667  GC0712             END-IF
  3668  GC0712         END-IF
  3669             END-PERFORM
  3670             CLOSE F-Original-Src-FILE
  3671                   F-Expanded-Src-FILE
  3672             .
  3673        /
  3674         510-Control-Record SECTION.
  3675             UNSTRING F-ES-2-256-TXT-256
  3676                 DELIMITED BY '"'
  3677                 INTO WS-Temp-10-Chars-TXT
  3678                      WS-Temp-256-Chars-TXT
  3679                      WS-Dummy-TXT
  3680  GC1010     IF UPPER-CASE(TRIM(WS-Temp-256-Chars-TXT,Trailing)) =

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  3681  GC1010        TRIM(WS-Main-Module-Name-TXT) *> Main Pgm
  3682                 SET WS-RS-In-Main-Module-BOOL TO TRUE
  3683                 IF WS-Src-Line-NUM > 0
  3684                     READ F-Expanded-Src-FILE END-READ
  3685                 END-IF
  3686        *    ELSE *> COPY
  3687                 SET WS-RS-In-Copybook-BOOL TO TRUE
  3688             END-IF
  3689             .
  3690        /
  3691         520-Expanded-Src-Record SECTION.
  3692             IF WS-RS-In-Main-Module-BOOL
  3693                 ADD 1 To WS-Curr-Line-NUM
  3694  GC0712         READ F-Original-Src-FILE AT END CONTINUE END-READ
  3695                 ADD 1 TO WS-Src-Line-NUM
  3696                 MOVE SPACES TO WS-Src-Detail-Line-TXT
  3697                 MOVE WS-Src-Line-NUM TO WS-SDL-Line-NUM
  3698  GC1213         MOVE F-Original-Src-REC TO WS-SDL-Statement-TXT
  3699  GC0712         MOVE LOWER-CASE(TRIM(F-OS-8-72-TXT,LEADING))
  3700  GC0712           TO WS-Temp-65-Chars-TXT
  3701  GC0712         INSPECT WS-Temp-65-Chars-TXT REPLACING ALL '.' BY SPACE
  3702  GC0712         EVALUATE TRUE
  3703  GC0712             WHEN F-OS-7-CHR = '/'
```

```
  3704  GC1213                MOVE SPACES TO WS-Src-Detail-Line-TXT
  3705  GC1213                PERFORM 530-Generate-Source-Line
  3706  GC1213                    UNTIL WS-Lines-Left-NUM = 0
  3707  GC0712            WHEN WS-Temp-65-Chars-TXT = "eject"
  3708  GC1213                MOVE SPACES TO WS-Src-Detail-Line-TXT
  3709  GC1213                PERFORM 530-Generate-Source-Line
  3710  GC1213                    UNTIL WS-Lines-Left-NUM = 0
  3711  GC0712                EXIT SECTION
  3712  GC0712            WHEN WS-Temp-65-Chars-TXT = "skip1"
  3713  GC0712                MOVE SPACES TO WS-Src-Detail-Line-TXT
  3714  GC0712                PERFORM 530-Generate-Source-Line
  3715  GC0712                EXIT SECTION
  3716  GC0712            WHEN WS-Temp-65-Chars-TXT = "skip2"
  3717  GC0712                MOVE SPACES TO WS-Src-Detail-Line-TXT
  3718  GC0712                PERFORM 530-Generate-Source-Line 2 TIMES
  3719  GC0712                EXIT SECTION
  3720  GC0712            WHEN WS-Temp-65-Chars-TXT = "skip3"
  3721  GC0712                MOVE SPACES TO WS-Src-Detail-Line-TXT
  3722  GC0712                PERFORM 530-Generate-Source-Line 3 TIMES
  3723  GC0712                EXIT SECTION
  3724  GC0712        END-EVALUATE
  3725                PERFORM 530-Generate-Source-Line
  3726            ELSE
  3727                IF F-Expanded-Src-REC NOT = SPACES
  3728                    MOVE SPACES TO WS-Src-Detail-Line-TXT
  3729  GC1213            MOVE F-Expanded-Src-REC
  3730                      TO WS-SDL-Statement-TXT
  3731  GC0712            MOVE LOWER-CASE(TRIM(F-OS-8-72-TXT,LEADING))
  3732  GC0712              TO WS-Temp-65-Chars-TXT
  3733  GC0712            INSPECT WS-Temp-65-Chars-TXT
  3734  GC0712                REPLACING ALL '.' BY SPACE

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  3735  GC0712            EVALUATE TRUE
  3736  GC0712                WHEN WS-Temp-65-Chars-TXT = "eject"
  3737  GC0712                    MOVE 0 TO WS-Lines-Left-NUM
  3738  GC0712                    EXIT SECTION
  3739  GC0712                WHEN WS-Temp-65-Chars-TXT = "skip1"
  3740  GC0712                    MOVE SPACES TO WS-Src-Detail-Line-TXT
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  3741  GC0712                    PERFORM 530-Generate-Source-Line
  3742  GC0712                    EXIT SECTION
  3743  GC0712                WHEN WS-Temp-65-Chars-TXT = "skip2"
  3744  GC0712                    MOVE SPACES TO WS-Src-Detail-Line-TXT
  3745  GC0712                    PERFORM 530-Generate-Source-Line 2 TIMES
  3746  GC0712                    EXIT SECTION
  3747  GC0712                WHEN WS-Temp-65-Chars-TXT = "skip3"
  3748  GC0712                    MOVE SPACES TO WS-Src-Detail-Line-TXT
  3749  GC0712                    PERFORM 530-Generate-Source-Line 3 TIMES
  3750  GC0712                    EXIT SECTION
  3751  GC0712            END-EVALUATE
  3752                    PERFORM 530-Generate-Source-Line
  3753                END-IF
  3754            END-IF
  3755            .
  3756        /
  3757         530-Generate-Source-Line SECTION.
  3758  GC1213    MOVE 1 TO WS-Src-Lines-NUM
  3759  GC1213    IF L-Listing-CD = 1 *> LANDSCAPE
  3760  GC1213        IF WS-SDL-Statement-TXT(129:128) > SPACES
  3761  GC1213            ADD 1 TO WS-Src-Lines-NUM
  3762  GC1213        END-IF
  3763  GC1213    ELSE                *> PORTRAIT
  3764  GC1213        IF WS-SDL-Statement-TXT(90:167) > SPACES
  3765  GC1213            ADD 1 TO WS-Src-Lines-NUM
  3766  GC1213            IF WS-SDL-Statement-TXT(179:78) > SPACES
  3767  GC1213                ADD 1 TO WS-Src-Lines-NUM
  3768  GC1213            END-IF
  3769  GC1213        END-IF
  3770  GC1213    END-IF
  3771  GC1213    IF WS-Lines-Left-NUM < WS-Src-Lines-NUM
  3772  GC1213        IF WS-Page-Num > 0 *> Don't print footer before page 1
  3773  GC1213            IF L-Listing-CD = 1 *> LANDSCAPE
  3774  GC1213                IF WS-Src-Lines-NUM = 2
  3775  GC1213                      WRITE F-Listing-135-REC FROM SPACES BEFORE 1 *>
Blank Line
  3776  GC1213                END-IF
  3777  GC1213               WRITE F-Listing-135-REC FROM SPACES BEFORE 1 *> Footer
Line #1
  3778  GC1213                MOVE ALL '='
  3779  GC1213                  TO F-Listing-135-REC
```

```
  3780  GC1213                WRITE F-Listing-135-REC BEFORE 1 *> Footer Line #2
  3781  GC1213                MOVE WS-Copyright-TXT
  3782  GC1213                  TO F-Listing-135-REC
  3783  GC1213                MOVE WS-Page-No-TXT
  3784  GC1213                  TO F-Listing-135-REC(126:10)
  3785  GC1213                WRITE F-Listing-135-REC BEFORE PAGE *> Footer Line #3
  3786  GC1213               WRITE F-Listing-135-REC FROM SPACES BEFORE 1 *> Spaces
After FF Character
  3787  GC1213            ELSE                *> PORTRAIT
  3788  GC1213                EVALUATE WS-Src-Lines-NUM

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  3789  GC1213                WHEN 1 *> Need no extra blank lines
  3790  GC1213                    CONTINUE
  3791  GC1213                WHEN 2 *> Need 1 extra blank line
  3792  GC1213                    WRITE F-Listing-96-REC FROM SPACES BEFORE 1
  3793  GC1213                WHEN 3 *> Need 2 extra blank lines
  3794  GC1213                    WRITE F-Listing-96-REC FROM SPACES BEFORE 1
  3795  GC1213                    WRITE F-Listing-96-REC FROM SPACES BEFORE 1
  3796  GC1213                END-EVALUATE
  3797  GC1213                WRITE F-Listing-96-REC FROM SPACES BEFORE 1 *> Footer
Line #1
  3798  GC1213                MOVE ALL '='
  3799  GC1213                  TO F-Listing-96-REC
  3800  GC1213                WRITE F-Listing-96-REC BEFORE 1 *> Footer Line #2
  3801  GC1213                MOVE WS-Copyright-TXT
  3802  GC1213                  TO F-Listing-96-REC
  3803  GC1213                MOVE WS-Page-No-TXT
  3804  GC1213                  TO F-Listing-96-REC(87:10)
  3805  GC1213                WRITE F-Listing-96-REC BEFORE PAGE *> Footer Line #3
  3806  GC1213                WRITE F-Listing-96-REC FROM SPACES BEFORE 1 *> Spaces
After FF Character
  3807  GC1213            END-IF
  3808  GC1213        END-IF
  3809  GC1213        ADD  1           TO WS-Page-NUM
  3810  GC1213        MOVE 'Page:'     TO WS-PN-Literal-TXT
  3811  GC1213        MOVE WS-Page-NUM TO WS-PN-Page-NUM
  3812  GC1213        CALL 'C$JUSTIFY' USING WS-PN-Page-NUM, 'Left'
  3813  GC1213        CALL 'C$JUSTIFY' USING WS-Page-No-TXT, 'Right'
```

```
  3814  GC1213         IF L-Listing-CD = 1 *> LANDSCAPE
  3815  GC1213             MOVE WS-Version-TXT
  3816  GC1213               TO F-Listing-135-REC
  3817  GC1213             MOVE 'Source Listing'
  3818  GC1213               TO F-Listing-135-REC(25:14)
  3819  GC1213             MOVE WS-Formatted-DT
  3820  GC1213               TO F-Listing-135-REC(126:10)
  3821  GC1213             WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #1
  3822  GC1213             MOVE WS-Program-Path-TXT
  3823  GC1213               TO F-Listing-135-REC
  3824  GC1213             WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #2
  3825  GC1213             MOVE 'Line   Statement'
  3826  GC1213               TO F-Listing-135-REC
  3827  GC1213             MOVE WS-Page-No-TXT
  3828  GC1213               TO F-Listing-135-REC(126:10)
  3829  GC1213             WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #3
  3830  GC1213             MOVE WS-Src-Dashes-TXT
  3831  GC1213               TO F-Listing-135-REC
  3832  GC1213             WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #4
  3833  GC1213         ELSE                *> PORTRAIT
  3834  GC1213             MOVE WS-Version-TXT
  3835  GC1213               TO F-Listing-96-REC
  3836  GC1213             MOVE 'Source Listing'
  3837  GC1213               TO F-Listing-96-REC(25:14)
  3838  GC1213             MOVE WS-Formatted-DT
  3839  GC1213               TO F-Listing-96-REC(87:10)
  3840  GC1213             WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #1
  3841  GC1213             MOVE WS-Program-Path-TXT(40:96)
  3842  GC1213               TO F-Listing-96-REC

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  3843  GC1213             WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #2
  3844  GC1213             MOVE 'Line   Statement'
  3845  GC1213               TO F-Listing-96-REC
  3846  GC1213             MOVE WS-Page-No-TXT
  3847  GC1213               TO F-Listing-96-REC(87:10)
  3848  GC1213             WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #3
  3849  GC1213             MOVE WS-Src-Dashes-TXT
  3850  GC1213               TO F-Listing-96-REC
```

```
  3851  GC1213             WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #4
  3852  GC1213         END-IF
  3853  GC1213         COMPUTE WS-Lines-Left-NUM = WS-Lines-Per-Page-NUM - 4
  3854  GC1213     END-IF
  3855  GC1213     IF L-Listing-CD = 1 *> LANDSCAPE
  3856  GC1213         EVALUATE WS-Src-Lines-NUM
  3857  GC1213         WHEN 1
  3858  GC1213             MOVE WS-Src-Detail-Line-TXT TO F-Listing-135-REC
  3859  GC1213             WRITE F-Listing-96-REC BEFORE 1
  3860  GC1213             SUBTRACT 1 FROM WS-Lines-Left-NUM
  3861  GC1213         WHEN 2
  3862  GC1213             MOVE WS-SDL-Statement-TXT TO WS-Src-Hold-TXT
  3863  GC1213             MOVE WS-Src-Detail-Line-TXT TO F-Listing-135-REC
  3864  GC1213               WRITE F-Listing-135-REC BEFORE 1 *> Prints chars 1-128
of stmnt
  3865  GC1213             MOVE SPACES TO WS-Src-Detail-Line-TXT
  3866  GC1213             MOVE WS-Src-Hold-TXT(129:128) TO WS-SDL-Statement-TXT
  3867  GC1213             MOVE WS-Src-Detail-Line-TXT TO F-Listing-135-REC
  3868  GC1213              WRITE F-Listing-135-REC BEFORE 1 *> Prints chars 129-256
of stmnt
  3869  GC1213             SUBTRACT 2 FROM WS-Lines-Left-NUM
  3870  GC1213         END-EVALUATE
  3871  GC1213     ELSE                *> PORTRAIT
  3872  GC1213         EVALUATE WS-Src-Lines-NUM
  3873  GC1213         WHEN 1 *> Print only chars 1-89 of stmnt
  3874  GC1213             WRITE F-Listing-96-REC FROM WS-Src-Detail-Line-TXT
  3875  GC1213                 BEFORE 1
  3876  GC1213             SUBTRACT 1 FROM WS-Lines-Left-NUM
  3877  GC1213         WHEN 2 *> Print only chars 1-89 and 90-178 of text
  3878  GC1213             MOVE WS-SDL-Statement-TXT TO WS-Src-Hold-TXT
  3879  GC1213             WRITE F-Listing-96-REC FROM WS-Src-Detail-Line-TXT
  3880  GC1213                 BEFORE 1
  3881  GC1213             MOVE SPACES TO WS-Src-Detail-Line-TXT
  3882  GC1213             MOVE WS-Src-Hold-TXT(90:89) TO WS-SDL-Statement-TXT
  3883  GC1213             WRITE F-Listing-96-REC FROM WS-Src-Detail-Line-TXT
  3884  GC1213                 BEFORE 1
  3885  GC1213             SUBTRACT 2 FROM WS-Lines-Left-NUM
  3886  GC1213         WHEN 3 *> Print chars 1-89, 90-178 and 179-256 of stmnt
  3887  GC1213             MOVE WS-SDL-Statement-TXT TO WS-Src-Hold-TXT
  3888  GC1213             WRITE F-Listing-96-REC FROM WS-Src-Detail-Line-TXT
  3889  GC1213                 BEFORE 1
```

```
  3890  GC1213             MOVE SPACES TO WS-Src-Detail-Line-TXT
  3891  GC1213             MOVE WS-Src-Hold-TXT(90:89) TO WS-SDL-Statement-TXT
  3892  GC1213             WRITE F-Listing-96-REC FROM WS-Src-Detail-Line-TXT
  3893  GC1213                 BEFORE 1
  3894  GC1213             MOVE SPACES TO WS-Src-Detail-Line-TXT
  3895  GC1213             MOVE WS-Src-Hold-TXT(179:78) TO WS-SDL-Statement-TXT
  3896  GC1213             WRITE F-Listing-96-REC FROM WS-Src-Detail-Line-TXT

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  3897  GC1213                 BEFORE 1
  3898  GC1213             SUBTRACT 3 FROM WS-Lines-Left-NUM
  3899  GC1213         END-EVALUATE
  3900  GC1213     END-IF
  3901             MOVE SPACES TO WS-Src-Detail-Line-TXT
  3902             .
  3903
  3904         END PROGRAM LISTING.
  3905        *>>>Info: Total Copy Depth Used = 02;  Caution messages issued =   1

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Data Section (FILE)             Defn     Locations
-------------------------------
+-----------------------------------------------------------------

F-ES-1-7-TXT                    001631F  002776 003662
F-ES-1-CHR                      001628F  002777 003663
F-ES-2-256-TXT-256              001629F  002920 003675
F-ES-8-256-TXT                  001632F
F-EXPANDED-SRC-FILE              001617F  001626 002709 002756 002766 003653 003656
003671 003684
F-EXPANDED-SRC-REC               001627F  002710 002764 002788 002790 002820 002824
002833 002837
                                          002846 002850 002858 002876 002961 002966
003727 003729
F-EXPANDED-SRC2-REC             001630F
```

```
F-LISTING-135-REC                001636F  003559 003561 003563 003564 003566 003567
003570 003572
                                          003573 003574 003575 003576 003577 003578
003579 003607
                                          003619 003621 003622 003624 003626 003628
003630 003631
                                          003775 003777 003779 003780 003782 003784
003785 003786
                                          003816 003818 003820 003821 003823 003824
003826 003828
                                          003829 003831 003832 003858 003863 003864
003867 003868
F-LISTING-96-REC                 001635F  003582 003584 003586 003587 003589 003590
003593 003595
                                          003596 003597 003598 003599 003600 003601
003602 003610
                                          003634 003636 003637 003639 003641 003643
003645 003646
                                          003792 003794 003795 003797 003799 003800
003802 003804
                                          003805 003806 003835 003837 003839 003840
003842 003843
                                          003845 003847 003848 003850 003851 003859
003874 003879
                                        003883 003888 003892 003896
F-LISTING-FILE                  001619F  001634 002613 002621
F-LISTING-REC                   001637F
F-ORIGINAL-SRC-FILE             001621F  001639 003652 003670 003694
F-ORIGINAL-SRC-REC              001640F  003698
F-OS-1-128-TXT                  001641F
F-OS-129-256-TXT                001646F
F-OS-7-CHR                      001643F  003703
F-OS-8-72-TXT                   001644F  003699 003731
F-SORT-WORK-FILE                001623F  001648 002615 003478
F-SORT-WORK-REC                  001649F  002731 002733 002768 002770 003248 003251
003254 003296
                                          003299 003304 003307 003328 003330 003333
003416 003423
                                        003428 003433 003437 003447 003457 003461
F-SW-DEF-LINE-NUM               001654F  003421 003504 003512 003516 003528 003529
F-SW-PROG-ID-TXT                 001650F  002616 003417 003438 003448 003462 003489
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003495 003500
                                        003509 003521 003525
F-SW-REF-FLAG-CHR           001657F  003253 003298 003306 003332 003443 003467 003540
F-SW-REF-LINE-NUM              001656F  002618 003422 003442 003452 003466 003538
F-SW-REFERENCE-TXT             001655F  003532
F-SW-SECTION-TXT               001653F  003420 003441 003451 003465 003511 003527
F-SW-TOKEN-TXT                 001652F  003419 003440 003450 003464 003526
F-SW-TOKEN-UC-TXT               001651F  002617 003418 003439 003449 003463 003490
003501 003503
                                        003515
L-LISTING-FN-TXT               001619F  002593 002605
L-SRC-FN-TXT                    001621F  002595 002606 002642 002643 002645 002650
002654 002666
                                        002667 002669 002671 002676
WS-EXPANDED-SRC-FN-TXT         001617F  001697 002684 002685

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-------------------------------
+-----------------------------------------------------------------

WS-CD-IN-DATA-DIV-BOOL         001674W  002741
WS-CD-IN-ENV-DIV-BOOL          001673W  002739
WS-CD-IN-IDENT-DIV-BOOL        001672W  002737
WS-CD-IN-PROC-DIV-BOOL         001675W  002743
WS-COPYRIGHT-TXT               001660W  002631 002637 003623 003638 003781 003801
WS-CPI-13-15-TXT               001681W  003032
WS-CPI-16-CHR                  001682W  003031
WS-CS-1-CHR                    001685W  002954
WS-CS-11-14-TXT                001688W  002956 002957
WS-CS-15-CHR                   001689W  002959
WS-CS-2-14-TXT                 001686W  002955
WS-CURR-CHAR-IS-PUNCT-BOOL     001663W  002799 002807 002812
WS-CURR-CHAR-IS-QUOTE-BOOL     001667W  002818
WS-CURR-CHAR-IS-X-BOOL         001668W  002831
WS-CURR-CHAR-IS-Z-BOOL         001669W  002844
WS-CURR-CHR                 001662W  002789 002792 002794 002800 002808 002814 002821
```

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WS-CURR-DIVISION-TXT             001671W  002714 002750 002801 002809 002909 003025
003044 003070
                                          003126 003131
WS-CURR-LINE-NUM                 001677W  002713 002773 002932 002972 003421 003442
003452 003466
                                          003693
WS-CURR-PROG-ID-TXT              001679W  002703 003030 003417 003438 003448 003462
WS-CURR-SECTION-TXT               001684W  002935 002940 003049 003075 003121 003122
003420 003441
                                          003451 003465
WS-CURR-VERB-TXT                 001691W  002704 002728 002752 003136 003145
WS-DELIM-TXT                     001693W  002861 002863 002881 002883 002886
WS-DUMMY-TXT                   001695W  002679 002924 002953 002986 002991 002992 003679
WS-EXPANDED-SRC-FN-TXT           001697W  002684 002685
WS-FILENAME-TXT                  001699W  002678 002681 002952 002955
WS-FLAGS-TXT                     001701W
WS-FORMATTED-DT                  001704W  002702 003562 003585 003819 003838
WS-GI-PROG-ID-TXT                001707W  003489 003495 003500
WS-GI-TOKEN-TXT                  001708W  003490 003501 003503 003515
WS-GROUP-INDICATORS-TXT          001706W  003473
WS-HELD-REFERENCE-TXT             001710W  002705 002730 002731 002732 002767 002768
002769 003248
                                            003250 003251 003252 003289 003295 003296
003297 003303
                                          003304 003305 003328 003330 003331
WS-I-SUB                          001712W  002643 002646 002649 002653 002669 002672
002673 002676
                                            002929 002932 002943 002946 002947 002950
003474 003508
                                       003520 003533 003534 003536 003539 003541 003614
WS-J-SUB                         001714W  002670 002674 002944 002948
WS-LINES-LEFT-NUM                 001716W  003475 003484 003498 003550 003604 003615
003659 003706
                                            003710 003737 003771 003853 003860 003869
003876 003885
                                          003898
WS-LINES-PER-PAGE-ENV-TXT        001720W  002659 002663 002690 002691
WS-LINES-PER-PAGE-NUM            001718W  002692 002695 002697 002700 003604 003853
WS-MAIN-MODULE-NAME-TXT          001722W  002650 002655 002931 003681
WS-NEXT-CHAR-IS-QUOTE-BOOL       001725W  002831 002844
WS-NEXT-CHR                      001724W  002791 002834 002847
```

```
WS-OS-TYPE-FILLER-TXT           001727W  001733

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-------------------------------
+-------------------------------------------------------------

WS-OS-TYPE-TXT                  001734W  002633
WS-OS-TYPES-TXT                 001733W
WS-PAGE-NO-TXT                    001739W  003556 003571 003594 003625 003640 003783
003803 003813
                                         003827 003846
WS-PAGE-NUM                     001737W  002629 003552 003554 003772 003809 003811
WS-PN-LITERAL-TXT               001740W  003553 003810
WS-PN-PAGE-NUM                  001741W  003554 003555 003811 003812
WS-PROGRAM-PATH-TXT             001743W  002667 002668 003565 003588 003822 003841
WS-RESERVED-WORD-TABLE-TXT      002500W
WS-RESERVED-WORD-TXT            002501W  002896
WS-RESERVED-WORDS-TXT           001745W  002500
WS-RS-DUPLICATE-CHR             002509W  003476 003491 003506 003517 003518
WS-RS-IN-COPYBOOK-BOOL          002512W  002938 003687
WS-RS-IN-MAIN-MODULE-BOOL       002511W  002933 002971 003682 003692
WS-RS-IN-WHICH-PGM-CHR          002510W
WS-RS-LAST-TOKEN-ENDED-SENT-CHR 002513W  002762 002908
WS-RS-PROCESSING-PICTURE-CHR    002514W  002857 002871 003080
WS-RS-TOKEN-ENDED-SENTENCE-CHR   002515W   002749 002761 002763 002796 002825 002838
002851 002864
                                         002884
WS-RS-VERB-HAS-BEEN-FOUND-CHR   002516W  002715 002900 003022
WS-RUNTIME-SWITCHES             002508W
WS-RW-IDX                       002504W  002897 002898
WS-RW-TYPE-CD                   002505W  002898
WS-RW-WORD-TXT                  002503W  002506 002897
WS-SAVED-SECTION-TXT            002518W  002934 002935 002939 002940
WS-SDL-LINE-NUM                 002525W  003697
WS-SDL-STATEMENT-TXT              002527W  003698 003730 003760 003764 003766 003862
003866 003878
```

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                                        003882 003887 003891 003895
WS-SRC-DASHES-TXT               002520W  003830 003849
WS-SRC-DETAIL-LINE-TXT           002524W  003657 003696 003704 003708 003713 003717
003721 003728
                                          003740 003744 003748 003858 003863 003865
003867 003874
                                          003879 003881 003883 003888 003890 003892
003894 003896
                                        003901
WS-SRC-HOLD-TXT              002529W  003862 003866 003878 003882 003887 003891 003895
WS-SRC-LINE-NUM                 002531W  003654 003683 003695 003697
WS-SRC-LINES-NUM                 002533W  003758 003761 003765 003767 003771 003774
003788 003856
                                        003872
WS-SRC-SUB                       002535W  002711 002764 002765 002784 002788 002790
002793 002802
                                          002813 002819 002823 002824 002826 002832
002836 002837
                                          002839 002845 002849 002850 002852 002862
002865 002882
                                        002887 002962 002967 002969
WS-SUPPRESS-FF-CHR              001702W  002630 003485 003627 003642
WS-TALLY-QTY                    002537W  003001 003003 003004 003008 003009
WS-TEMP-10-CHARS-TXT            002539W  002922 002925 002926 002927 002929 003677
WS-TEMP-256-CHARS-TXT            002549W  002686 002923 002930 002942 002945 002950
003678 003680
WS-TEMP-32-CHARS-1-TXT          002541W  002977 002978 002980 002987
WS-TEMP-32-CHARS-2-TXT       002543W  002984 002989 002995 002996 003002 003005 003012
WS-TEMP-32-CHARS-3-TXT       002545W  002985 002990 002998 002999 003007 003010 003012
WS-TEMP-65-CHARS-TXT             002547W  003700 003701 003707 003712 003716 003720
003732 003733

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Data Section (WORKING-STORAGE)  Defn     Locations
-------------------------------
+-------------------------------------------------------------------
```

```
                                        003736 003739 003743 003747
WS-TODAY-DT                     002551W  002701 002702
WS-TOKEN-CURR-TXT                002553W  002721 002725 002794 002803 002814 002822
002835 002848
                                          002860 002867 002880 002890 002892 002910
002977 003024
                                          003030 003043 003048 003069 003074 003078
003112 003130
                                        003419 003440 003450 003464
WS-TOKEN-CURR-UC-TXT             002555W  002722 002725 002728 002747 003124 003418
003439 003449
                                        003463
WS-TOKEN-PREV-TXT                002557W  002729 002747 002751 002810 003025 003028
003029 003044
                                          003049 003053 003070 003075 003084 003085
003089 003092
                                          003095 003098 003101 003104 003107 003110
003125 003131
                                          003135 003139 003192 003195 003202 003213
003216 003225
                                          003236 003245 003273 003286 003290 003293
003301 003309
                                          003316 003325 003341 003344 003347 003354
003363 003374
                                        003389 003392 003399
WS-TOKEN-SEARCH-TXT             002559W  002890 002891 002897
WS-TOKEN-TYPE-CD                 002561W  002795 002804 002815 002868 002872 002893
002898 002911
WS-TT-TOKEN-IS-ARGTYPE-BOOL     002562W  003019 003039 003065
WS-TT-TOKEN-IS-EOF-BOOL         002563W  002718 002772
WS-TT-TOKEN-IS-FUNCTION-BOOL    002564W  003059
WS-TT-TOKEN-IS-IDENTIFIER-BOOL  002565W  002905 003052 003088 003134 003142
WS-TT-TOKEN-IS-KEYWORD-BOOL      002566W  002723 002746 003023 003042 003047 003068
003073 003079
                                        003129
WS-TT-TOKEN-IS-LIT-ALPHA-BOOL   002567W  002828 002854
WS-TT-TOKEN-IS-LIT-NUMBER-BOOL  002568W  002841 002907 002981 003013
WS-TT-TOKEN-IS-RESERVED-WD-BOOL 002570W  002724 003020 003040 003066 003083
WS-TT-TOKEN-IS-VERB-BOOL        002569W  002727 002899
WS-USERNAMES-QTY                002572W  002712
WS-VERSION-TXT                  002574W  002641 003558 003581 003815 003834
```

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WS-XDL-DEF-LINE-NUM             002581W  003512 003529
WS-XDL-PROG-ID-TXT              002577W  003509 003521 003525
WS-XDL-REF-FLAG-CHR             002587W  003541
WS-XDL-REF-LINE-NUM             002586W  003539
WS-XDL-REFERENCE-TXT            002585W
WS-XDL-SECTION-TXT              002583W  003511 003527
WS-XDL-TOKEN-TXT                002579W  003510 003522 003526
WS-XREF-DETAIL-LINE-TXT          002576W  003472 003479 003482 003492 003496 003505
003524 003544
                                         003607 003610 003613
WS-XREF-LINES-PER-REC-NUM       002590W  002658 002662 003534

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---------------------------------

Data Section (LINKAGE)          Defn     Locations
-------------------------------
+-----------------------------------------------------------------

L-LISTING-CD                     002603K  002610 002657 002694 003557 003606 003618
003759 003773
                                         003814 003855
L-LISTING-FN-TXT                002593K  002605
L-LPP-NUM                       002599K  002608 002695
L-LPP-PORT-NUM                  002601K  002609 002697
L-OS-TYPE-CD                    002597K  002607 002633
L-SRC-FN-TXT                     002595K  002606 002642 002643 002645 002650 002654
002666 002667
                                         002669 002671 002676
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---------------------------------
Variable Tested [S]            Symbol (88-Conditions)
-----------------------------------------------------------------

WS-CURR-CHR                     WS-CURR-CHAR-IS-PUNCT-BOOL
WS-CURR-CHR                     WS-CURR-CHAR-IS-QUOTE-BOOL
WS-CURR-CHR                     WS-CURR-CHAR-IS-X-BOOL
```

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WS-CURR-CHR                    WS-CURR-CHAR-IS-Z-BOOL
WS-CURR-DIVISION-TXT           WS-CD-IN-IDENT-DIV-BOOL
WS-CURR-DIVISION-TXT           WS-CD-IN-ENV-DIV-BOOL
WS-CURR-DIVISION-TXT           WS-CD-IN-DATA-DIV-BOOL
WS-CURR-DIVISION-TXT           WS-CD-IN-PROC-DIV-BOOL
WS-NEXT-CHR                    WS-NEXT-CHAR-IS-QUOTE-BOOL
WS-RS-IN-WHICH-PGM-CHR         WS-RS-IN-MAIN-MODULE-BOOL
WS-RS-IN-WHICH-PGM-CHR         WS-RS-IN-COPYBOOK-BOOL
WS-TOKEN-TYPE-CD               WS-TT-TOKEN-IS-ARGTYPE-BOOL
WS-TOKEN-TYPE-CD               WS-TT-TOKEN-IS-EOF-BOOL
WS-TOKEN-TYPE-CD               WS-TT-TOKEN-IS-FUNCTION-BOOL
WS-TOKEN-TYPE-CD               WS-TT-TOKEN-IS-IDENTIFIER-BOOL
WS-TOKEN-TYPE-CD               WS-TT-TOKEN-IS-KEYWORD-BOOL
WS-TOKEN-TYPE-CD               WS-TT-TOKEN-IS-LIT-ALPHA-BOOL
WS-TOKEN-TYPE-CD               WS-TT-TOKEN-IS-LIT-NUMBER-BOOL
WS-TOKEN-TYPE-CD               WS-TT-TOKEN-IS-VERB-BOOL
WS-TOKEN-TYPE-CD               WS-TT-TOKEN-IS-RESERVED-WD-BOOL

 ACS Cobol Xref v2.02.04            Dictionary File for GCIC (LISTING) 06/03/2022
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Symbols of Module: GCIC (LISTING)
---------------------------------
Variable Tested                Symbol (88-Conditions) [S]
-------------------------------------------------------------

WS-CURR-DIVISION-TXT           WS-CD-IN-DATA-DIV-BOOL
WS-CURR-DIVISION-TXT           WS-CD-IN-ENV-DIV-BOOL
WS-CURR-DIVISION-TXT           WS-CD-IN-IDENT-DIV-BOOL
WS-CURR-DIVISION-TXT           WS-CD-IN-PROC-DIV-BOOL
WS-CURR-CHR                    WS-CURR-CHAR-IS-PUNCT-BOOL
WS-CURR-CHR                    WS-CURR-CHAR-IS-QUOTE-BOOL
WS-CURR-CHR                    WS-CURR-CHAR-IS-X-BOOL
WS-CURR-CHR                    WS-CURR-CHAR-IS-Z-BOOL
WS-NEXT-CHR                    WS-NEXT-CHAR-IS-QUOTE-BOOL
WS-RS-IN-WHICH-PGM-CHR         WS-RS-IN-COPYBOOK-BOOL
WS-RS-IN-WHICH-PGM-CHR         WS-RS-IN-MAIN-MODULE-BOOL
WS-TOKEN-TYPE-CD               WS-TT-TOKEN-IS-ARGTYPE-BOOL
WS-TOKEN-TYPE-CD               WS-TT-TOKEN-IS-EOF-BOOL
WS-TOKEN-TYPE-CD               WS-TT-TOKEN-IS-FUNCTION-BOOL
WS-TOKEN-TYPE-CD               WS-TT-TOKEN-IS-IDENTIFIER-BOOL
WS-TOKEN-TYPE-CD               WS-TT-TOKEN-IS-KEYWORD-BOOL
```

```
WS-TOKEN-TYPE-CD               WS-TT-TOKEN-IS-LIT-ALPHA-BOOL
WS-TOKEN-TYPE-CD               WS-TT-TOKEN-IS-LIT-NUMBER-BOOL
WS-TOKEN-TYPE-CD               WS-TT-TOKEN-IS-RESERVED-WD-BOOL
WS-TOKEN-TYPE-CD               WS-TT-TOKEN-IS-VERB-BOOL

 ACS Cobol Xref v2.02.04            Dictionary File for GCIC (LISTING) 06/03/2022
23:09:11:07     Page  106
Symbols of Module: GCIC (LISTING)
---------------------------------
Functions                      Defn     Locations
-------------------------------
+-------------------------------------------------------------

LOWER-CASE                     003699I  003731
NUMVAL                         002691I  002929
TRIM                             002642I  002669 002681 002930 002931 002942 003680
003681 003699
                                        003731
UPPER-CASE                     002650I  002654 002721 002867 002890 002930 003680
 ACS Cobol Xref v2.02.04            Dictionary File for GCIC (LISTING) 06/03/2022
23:09:11:07     Page  107
Symbols of Module: GCIC (LISTING)
---------------------------------
Called Procedures              Type   Locations
-------------------------------
+-----------------------------------------------------------

C$JUSTIFY                      SYSTEM 002668 003555 003556 003812 003813
CBL_CHECK_FILE_EXIST           SYSTEM 002685
 ACS Cobol Xref v2.02.04            Dictionary File for GCIC (LISTING) 06/03/2022
23:09:11:07     Page  108
Symbols of Module: GCIC (LISTING)
---------------------------------
Procedure                      Defn     Locations
-------------------------------
+-------------------------------------------------------------

COMP-VERS                      002641P
COMP-YEAR                      002635P

 ACS Cobol Xref v2.02.04            Dictionary File for GCIC (LISTING) 06/03/2022
```

```
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Symbols of Module: GCIC (LISTING)
--------------------------------
Unreferenced Working Storage Symbols

CBL_CHECK_FILE_EXIST            002685C
F-ES-8-256-TXT                  001632F
F-EXPANDED-SRC2-REC             001630F
F-LISTING-REC                   001637F
F-OS-1-128-TXT                  001641F
F-OS-129-256-TXT                001646F
WS-FLAGS-TXT                    001701W
WS-OS-TYPES-TXT                 001733W
WS-RESERVED-WORD-TABLE-TXT      002500W
WS-RS-IN-WHICH-PGM-CHR          002510W
WS-RUNTIME-SWITCHES             002508W
WS-XDL-REFERENCE-TXT            002585W

 ACS Cobol Xref v2.02.04            Dictionary File for GCIC (LISTING) 06/03/2022
23:09:11:07     Page  110
Symbols of Module: GCIC (LISTING)
--------------------------------
Unreferenced Procedures

COMP-VERS                       002641P
COMP-YEAR                       002635P
```

7 STREAMIO

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

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

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

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

- Coding a GnuCOBOL subroutine
- Using the `REPLACING` clause on a CDF `COPY` statement
- Using hexadecimal alphanumeric literals
- Using the following statements:
  - o `ACCEPT FROM ENVIRONMENT` statement
  - o `INSPECT` statement
  - o `STRING` statement
- Using the following built-in subroutines:
  - o `C$PARAMSIZE` built-in system subroutine
  - o `CBL_CLOSE_FILE` built-in system subroutine
  - o `CBL_DELETE_FILE` built-in system subroutine
  - o `CBL_EXIT_PROC` built-in system subroutine
  - o `CBL_OPEN_FILE` built-in system subroutine
  - o `CBL_READ_FILE` built-in system subroutine
  - o `CBL_WRITE_FILE` built-in system subroutine
- Using the following intrinsic functions:
  - o `RANDOM` intrinsic function
  - o `TRIM` intrinsic function

First, here is the STREAMIOcb.cpy copybook:

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

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

```
GNU COBOL 2.1 23NOV2013 Source Listing                                  2014/03/27
                                          C:/Users/tda010/Documents/Programs/
Samples/STREAMIO.cbl
Line   Statement                                                        Page: 1
====== ================================================================================
     1        >>SOURCE FORMAT IS FIXED
     2        IDENTIFICATION DIVISION.
     3        PROGRAM-ID. STREAMIO.
     4       *>*****************************************************************
     5       *> Author: Gary L. Cutler                                       **
     6       *>                                                              **
     7       *> This routine centralizes all bytestream file I/O  functions  **
```

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

```
    49       *>                                                                      **

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GNU COBOL 2.1 23NOV2013 Source Listing                                          2014/03/27
                                                 C:/Users/tda010/Documents/Programs/
Samples/STREAMIO.cbl
Line   Statement                                                                   Page: 2
====== ========================================================================================
    50       *> The control block format is as follows.  This structure must **
    51       *> be defined under an 01-level data item of your creation and  **
    52       *> should be INITIALIZEd before any items within it are used.   **
    53       *>                                                              **
    54       *> 05 SCB-Handle-NUM                   PIC X(4) COMP-X.         **
    55       *> 05 SCB-Mode-CD                      PIC X(1).                **
    56       *>    88 SCB-Mode-Input-BOOL          VALUE 'I', 'i'.          **
    57       *>    88 SCB-Mode-Output-BOOL         VALUE 'O', 'o'.          **
    58       *>    88 SCB-Mode-Both-BOOL           VALUE 'B', 'b'.          **
    59       *> 05 SCB-Function-CD                  PIC X(2).                **
    60       *>    88 SCB-Func-CLOSE-BOOL          VALUE 'C ', 'c '.        **
    61       *>    88 SCB-Func-DELETE-BOOL         VALUE 'D ', 'd '.        **
    62       *>    88 SCB-Func-OPEN-BOOL           VALUE 'O ', 'o '.        **
    63       *>    88 SCB-Func-READ-BOOL           VALUE 'R ', 'r '.        **
    64       *>    88 SCB-Func-READ-Delim-BOOL     VALUE 'RD', 'rd',        **
    65       *>                                          'rD', 'Rd'.        **
    66       *>    88 SCB-Func-WRITE-BOOL          VALUE 'W ', 'w '.        **
    67       *>    88 SCB-Func-WRITE-Delim-BOOL    VALUE 'WD', 'wd',        **
    68       *>                                          'wD', 'Wd'.        **
    69       *> 05 SCB-Delimiter-Mode-CD           PIC X(1).                **
    70       *>    88 SCB-Delim-Unix-BOOL          VALUE 'U', 'u'.          **
    71       *>    88 SCB-Delim-Windows-BOOL       VALUE 'W', 'w'.          **
    72       *> 05 SCB-Offset-NUM                  PIC X(8) COMP-X.         **
    73       *> 05 SCB-Error-Routine-PTR           USAGE PROGRAM-POINTER.   **
    74       *> 05 SCB-Error-Routine-NUM REDEFINES SCB-Error-Routine-PTR    **
    75       *>                                    USAGE BINARY-LONG.       **
    76       *> 05 SCB-Return-CD                   USAGE BINARY-LONG.       **
    77       *> 05 SCB-Filename-TXT                PIC X(256).              **
    78       *>                                                              **
    79       *> Such a structure is defined for your use using the copybook  **
    80       *> "STREAMIOcb.cpy" (you may also define your own, provided it  **
```

```
    81       *> conforms to the above layout).                              **
    82       *>-------------------------------------------------------------**
    83       *> SCB-Handle-NUM                                              **
    84       *>-------------------------------------------------------------**
    85       *>                                                             **
    86       *> Serves as a file handle to the file once it has been opened  **
    87       *> (via the "SCB-Func-OPEN-BOOL" function).                    **
    88       *>                                                             **
    89       *>-------------------------------------------------------------**
    90       *> SCB-Mode-CD                                                 **
    91       *>-------------------------------------------------------------**
    92       *>                                                             **
    93       *> Prior to calling "STREAMIO" for the first time for a file,   **
    94       *> the appropriate subordinate level-88 must be set to TRUE to  **
    95       *> select an I/O mode.  You may also simply move one of the     **
    96       *> string values listed on the level-88 items to "SCB-Mode-CD". **
    97       *>                                                             **
    98       *>-------------------------------------------------------------**

================================================================================================
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GNU COBOL 2.1 23NOV2013 Source Listing                                  2014/03/27
                                              C:/Users/tda010/Documents/Programs/
Samples/STREAMIO.cbl
Line   Statement                                                               Page: 3
====== ========================================================================================
    99       *> SCB-Function-CD                                             **
   100       *>-------------------------------------------------------------**
   101       *>                                                             **
   102       *> The appropriate subordinate level-88 must be set to TRUE to  **
   103       *> select a function you'd like to execute against a file.  You **
   104       *> may also simply move one of the string values listed on the  **
   105       *> level-88 items to "SCB-Function-CD".                         **
   106       *>                                                             **
   107       *> Available functions are as follows:                          **
   108       *>                                                             **
   109       *> SCB-Func-OPEN-BOOL                                          **
   110       *>                                                             **
   111       *>      This must be the function specified the first time you  **
   112       *>      call STREAMIO for any given file.  It opens the file &  **
```

```
   113       *>      makes it available for use according to the            **
   114       *>      "SCB-Mode-CD" specification.                           **
   115       *>                                                             **
   116       *>      The filename being opened must be specified in the     **
   117       *>      "SCB-Filename-TXT" field.                              **
   118       *>                                                             **
   119       *>      The SCB-Offset-NUM field will be initialized to ZERO.  **
   120       *>                                                             **
   121       *>      If "arg2" is specified in conjunction with this funct- **
   122       *>      ion, it will be ignored.                               **
   123       *>                                                             **
   124       *> SCB-Func-CLOSE-BOOL                                         **
   125       *>                                                             **
   126       *>      This function should be the one specified the LAST time **
   127       *>      you call STREAMIO against a specific file.  After this **
   128       *>      function has been executed, you'll have to re-open the **
   129       *>      file if you wish to use it with STREAMIO again.        **
   130       *>                                                             **
   131       *>      The SCB-Handle-NUM item will be reset to ZERO.         **
   132       *>                                                             **
   133       *>      If "arg2" is specified in conjunction with this funct- **
   134       *>      ion, it will be ignored.                               **
   135       *>                                                             **
   136       *> SCB-Func-DELETE-BOOL                                        **
   137       *>                                                             **
   138       *>      This function will delete the file specified in the    **
   139       *>      control block (see SCB-Filename-TXT).                  **
   140       *>                                                             **
   141       *>      This function should not be performed against a file   **
   142       *>      that is open.                                          **
   143       *>                                                             **
   144       *>      If "arg2" is specified in conjunction with this funct- **
   145       *>      ion, it will be ignored.                               **
   146       *>                                                             **
   147       *> SCB-Func-READ-BOOL                                          **

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

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

```
   186       *>      will have been set to SPACES.                            **
   187       *>                                                               **
   188       *>      At the conclusion of a successful SCB-Func-WRITE-BOOL    **
   189       *>      operation, the value of SCB-Offset-NUM will have been    **
   190       *>      automatically incremented by the byte-count size of      **
   191       *>      "arg2".                                                  **
   192       *>                                                               **
   193       *> SCB-Func-READ-Delim-BOOL                                      **
   194       *>                                                               **
   195       *>      SCB-Func-READ-Delim-BOOL bahaves like the SCB-FUNC-      **
   196       *>      READ function, with the following behavioral dif-        **

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GNU COBOL 2.1 23NOV2013 Source Listing                                  2014/03/27
                                                C:/Users/tda010/Documents/Programs/
Samples/STREAMIO.cbl
Line   Statement                                                               Page: 5
====== ========================================================================================
   197       *>      ferences:                                                **
   198       *>                                                               **
   199       *>      1. When data is read from the file, only that data read  **
   200       *>         up to BUT NOT INCLUDING an end-of-line delimiter      **
   201       *>         sequence (either a LF or CRLF) will be retained in    **
   202       *>         the buffer - the remainder of the buffer from the     **
   203       *>         end-of-line sequence onward will be reset to SPACES.  **
   204       *>         The file-offset value (SCB-Offset-NUM) will be in-    **
   205       *>         cremented ONLY by the amount of data transferred up   **
   206       *>         to AND INCLUDING the end-of-line sequence.            **
   207       *>                                                               **
   208       *>      2. When data is read from the file and an end-of-line    **
   209       *>         delimiter sequence (either a LF or a CRLF) cannot be  **
   210       *>         found within the buffer, the assumption is made that  **
   211       *>         the record is too long to fit within the buffer.  In  **
   212       *>         these instances, an SCB-Return-CD value of 02 will    **
   213       *>         be returned and the SCB-Offset-NUM value will be      **
   214       *>         incremented past the next end-of-line sequence in     **
   215       *>         the file (this will involve at least one additional   **
   216       *>         call to CBL_READ_FILE to locate that eol sequence,    **
   217       *>         but any additional such reads will be done internal-  **
```

```
   218       *>         ly to STREAMIO and will be entirely transparent to   **
   219       *>         the caller of STREAMIO.                              **
   220       *>                                                              **
   221       *>      DO NOT USE the Streamio-READ-Delim function if the      **
   222       *>      possibility exists that linefeed (X"0A") or carriage-   **
   223       *>      return (X"0D") characters could exist as actual data    **
   224       *>      characters in the file.                                 **
   225       *>                                                              **
   226       *> SCB-Func-WRITE-Delim-BOOL                                    **
   227       *>                                                              **
   228       *>      SCB-Func-WRITE-Delim-BOOL acts like the Streamio-       **
   229       *>      FUNC-WRITE function, with the following difference:     **
   230       *>                                                              **
   231       *>      After the specified data is written to the file, an     **
   232       *>      end-of-line sequence will also be written to the file.  **
   233       *>      The file-offset value (SCB-Value) will be incremented   **
   234       *>      by the byte-count size of the data PLUS the size of the **
   235       *>      end-of-line sequence.  One of two possible end-of-line  **
   236       *>      sequences must be specified using the value of SCB-     **
   237       *>      Delimter-Mode.                                          **
   238       *>                                                              **
   239       *>--------------------------------------------------------------**
   240       *> SCB-Delimiter-Mode-CD                                        **
   241       *>--------------------------------------------------------------**
   242       *>                                                              **
   243       *> This data item is needed only when issuing the Streamio-     **
   244       *> FUNC-WRITE-Delim function.  In those circumstances, this     **
   245       *> item defines what end-of-line delimiter sequence is to be    **

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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.                                                 **
```

```
*>                                                                **
*> If SCB-Delim-Windows-BOOL is true, a carriage-return and     **
*> linefeed sequence will be written.                           **
*>                                                                **
*>----------------------------------------------------------------**
*> SCB-Offset-NUM                                                **
*>----------------------------------------------------------------**
*>                                                                **
*> This data item specifies the next relative byte number with- **
*> in the file where the next read or write will start.          **
*>                                                                **
*> SCB-Offset-NUM is automatically set to 0 (the first byte)     **
*> when the file is opened, and is automatically incremented as **
*> the file is read or written via STREAMIO.                     **
*>                                                                **
*> You may also manually set this value as desired before any    **
*> call to STREAMIO.                                            **
*>                                                                **
*>----------------------------------------------------------------**
*> SCB-Error-Routine-PTR                                         **
*>----------------------------------------------------------------**
*>                                                                **
*> To specify a general error-handling routine for handling      **
*> STREAMIO failures, Create the routine and define an entry-    **
*> name for it via the ENTRY statement.  Then use the following **
*> to set that routine up as the error handler:                  **
*>                                                                **
*>    SET SCB-Error-Routine-PTR TO ENTRY "entry-name"            **
*>                                                                **
*> To "turn off" the error-routine:                              **
*>                                                                **
*>    SET SCB-Error-Routine-PTR TO NULL                          **
*>                                                                **
*> If a fatal error occurs (any error not marked with a ">" in   **
*> the SCB-Return-CD discussion), the error routine you spe-     **
*> cified (if any) will be set up as an exit routine via the     **
*> CBL_EXIT_PROC subroutine; the STREAMIO routine will then is- **
*> sue a STOP RUN to intentionally trigger your error routine.   **
*> You will not be able to recover your program once your error **
*> routine triggers.  If you wish to be able to recover from     **
*> 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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                                                 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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                                                C:/Users/tda010/Documents/Programs/
Samples/STREAMIO.cbl
Line   Statement                                                        Page: 8
====== ========================================================================================
   344       *>                                                              **
   345       *> .      If you specify only a dot (period) as the filename,   **
   346       *>        the behavior will be the same as with a value of      **
   347       *>        SPACES except there will be no ".dat" at the end of   **
   348       *>        the generated filename.                               **
   349       *>                                                              **
   350       *> .ext   If you specify a filename extension prefixed with a   **
   351       *>        dot (period), the behavior will be the same as if a   **
   352       *>        value of SPACES were specified, except that the given **
   353       *>        extension will be used instead of ".dat".  Note that  **
   354       *>        if you are using a Unix/Cygwin implementation of      **
```

```
   355       *>        OpenCOBOL and you'd like to specify a hidden file in  **
   356       *>        the current directory as the SCB-Filename-TXT, you    **
   357       *>        MUST code the filename as "./.xxxxx" to avoid having  **
   358       *>        it treated as this special name.                      **
   359       *>                                                              **
   360       *>****************************************************************
   361        ENVIRONMENT DIVISION.
   362        CONFIGURATION SECTION.
   363        REPOSITORY.
   364            FUNCTION ALL INTRINSIC.
   365        DATA DIVISION.
   366        WORKING-STORAGE SECTION.
   367        01  WS-Access-Mode-CD                   PIC X(1) COMP-X.
   368        01  WS-Arg-Length-NUM                   PIC X(4) COMP-X.
   369        01  WS-Buffer-TXT                       PIC X(256).
   370        01  WS-Delim-Buffer-TXT                 PIC X(2).
   371        01  WS-Env-Temp-TXT                     PIC X(256).
   372        01  WS-Slash-CHR                        PIC X(1).
   373        01  WS-Tally-NUM                        USAGE BINARY-LONG.
   374        01  WS-8-Digit-NUM                      PIC 9(8).
   375        01  WS-256-Byte-TXT                     PIC X(256).
   376        LINKAGE SECTION.
   377        01  L-StreamIO-Control-Block-TXT.
   378            COPY STREAMIOcb
   379                REPLACING LEADING ==SCB-== BY ==L-SCB-==.
        05 L-SCB-Handle-NUM PIC X(4) COMP-X.
        05 L-SCB-Mode-CD PIC X(1).
        88 L-SCB-MODE-Input-BOOL VALUE 'I' 'i'.
        88 L-SCB-MODE-Output-BOOL VALUE 'O' 'o'.
        88 L-SCB-MODE-Both-BOOL VALUE 'B' 'b'.
        05 L-SCB-Function-CD PIC X(2).
        88 L-SCB-Func-CLOSE-BOOL VALUE 'C ' 'c '.
        88 L-SCB-Func-DELETE-BOOL VALUE 'D ' 'd '.
        88 L-SCB-Func-OPEN-BOOL VALUE 'O ' 'o '.
        88 L-SCB-Func-READ-BOOL VALUE 'R ' 'r '.
        88 L-SCB-Func-READ-Delim-BOOL VALUE 'RD' 'rd'
        'rD' 'Rd'.
        88 L-SCB-Func-WRITE-BOOL VALUE 'W ' 'w '.

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```

```
        88 L-SCB-Func-WRITE-Delim-BOOL VALUE 'WD' 'wd'
        'wD' 'Wd'.
        05 L-SCB-Delimiter-Mode-CD PIC X(1).
        88 L-SCB-DELIM-Unix-BOOL VALUE 'U' 'u'.
        88 L-SCB-DELIM-Windows-BOOL VALUE 'W' 'w'.
        05 L-SCB-Offset-NUM PIC X(8) COMP-X.
        05 L-SCB-Error-Routine-PTR USAGE PROGRAM-POINTER.
        05 L-SCB-Error-Routine-NUM REDEFINES L-SCB-Error-Routine-PTR
        USAGE BINARY-LONG.
        05 L-SCB-Return-CD USAGE BINARY-LONG.
        05 L-SCB-Filename-TXT PIC X(256).
   380        01  L-Arg2-TXT                          PIC X ANY LENGTH.
   381        PROCEDURE DIVISION USING L-StreamIO-Control-Block-TXT,
   382                                 L-Arg2-TXT.
   383        000-Main SECTION.
   384            MOVE 00 TO L-SCB-Return-CD
   385            EVALUATE TRUE
   386                WHEN L-SCB-Func-CLOSE-BOOL
   387                    PERFORM 030-Validate-Handle-NonZero
   388                    PERFORM 200-CLOSE
   389                WHEN L-SCB-Func-DELETE-BOOL
   390                    CALL "CBL_DELETE_FILE" USING L-SCB-Filename-TXT
   391                WHEN L-SCB-Func-OPEN-BOOL
   392                    PERFORM 020-Validate-Handle-Zero
   393                    PERFORM 100-OPEN
   394                WHEN L-SCB-Func-READ-BOOL
   395                    PERFORM 030-Validate-Handle-NonZero
   396                    PERFORM 400-READ
   397                WHEN L-SCB-Func-READ-Delim-BOOL
   398                    PERFORM 030-Validate-Handle-NonZero
   399                    PERFORM 500-READ-Delim
   400                WHEN L-SCB-Func-WRITE-BOOL
   401                    PERFORM 030-Validate-Handle-NonZero
   402                    PERFORM 300-WRITE
   403                WHEN L-SCB-Func-WRITE-Delim-BOOL
```

```
   404                     EVALUATE TRUE
   405                         WHEN L-SCB-Delim-Unix-BOOL
   406                             PERFORM 030-Validate-Handle-NonZero
   407                             PERFORM 300-WRITE
   408                             MOVE 1 TO WS-Arg-Length-NUM
   409                             MOVE X"0A" TO WS-Delim-Buffer-TXT
   410                         WHEN L-SCB-Delim-Windows-BOOL
   411                             PERFORM 030-Validate-Handle-NonZero
   412                             PERFORM 300-WRITE
   413                             MOVE 2 TO WS-Arg-Length-NUM
   414                             MOVE X"0D0A" TO WS-Delim-Buffer-TXT
   415                        WHEN OTHER
   416                             MOVE -4 TO L-SCB-Return-CD
   417                             PERFORM 099-ERROR-Return

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                                                 C:/Users/tda010/Documents/Programs/
Samples/STREAMIO.cbl
Line   Statement                                                             Page: 10
====== ========================================================================================
   418                     END-EVALUATE
   419                     CALL "CBL_WRITE_FILE" USING L-SCB-Handle-NUM
   420                                                 L-SCB-Offset-NUM
   421                                                 WS-Arg-Length-NUM
   422                                                 0
   423                                                 WS-Delim-Buffer-TXT
   424                     PERFORM 040-Check-WRITE-SCB-Return-CD
   425                     ADD WS-Arg-Length-NUM TO L-SCB-Offset-NUM
   426                 WHEN OTHER
   427                     MOVE -1 TO L-SCB-Return-CD
   428                     PERFORM 099-ERROR-Return
   429             END-EVALUATE
   430             GOBACK
   431             .
   432         020-Validate-Handle-Zero SECTION.
   433             IF L-SCB-Handle-NUM NOT = ZERO
   434                 MOVE 10 TO L-SCB-Return-CD
   435                 PERFORM 099-ERROR-Return
```

```
   436            END-IF
   437            .
   438        030-Validate-Handle-NonZero SECTION.
   439            IF L-SCB-Handle-NUM = ZERO
   440                MOVE 10 TO L-SCB-Return-CD
   441                PERFORM 099-ERROR-Return
   442            END-IF
   443            .
   444        040-Check-WRITE-SCB-Return-CD SECTION.
   445            IF RETURN-CODE < 0
   446                MOVE -3 TO L-SCB-Return-CD
   447                PERFORM 099-ERROR-Return
   448            END-IF
   449            IF RETURN-CODE = 30
   450                MOVE 12 TO L-SCB-Return-CD
   451                PERFORM 099-ERROR-Return
   452            END-IF
   453            MOVE 00 TO L-SCB-Return-CD
   454            .
   455        050-Check-READ-SCB-Return-CD SECTION.
   456            IF RETURN-CODE < 0
   457                MOVE -3 TO L-SCB-Return-CD
   458                PERFORM 099-ERROR-Return
   459            END-IF
   460            IF RETURN-CODE = 10
   461                MOVE 01 TO L-SCB-Return-CD
   462                GOBACK
   463            END-IF
   464            MOVE 00 TO L-SCB-Return-CD
   465            .
   466        060-Identify-TEMP SECTION.

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GNU COBOL 2.1 23NOV2013 Source Listing                                  2014/03/27
                                                C:/Users/tda010/Documents/Programs/
Samples/STREAMIO.cbl
Line   Statement                                                         Page: 11
====== ================================================================================
```

```
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 =

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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: 12
====== ========================================================================================
   516                         RANDOM(SECONDS-PAST-MIDNIGHT) * 100000000
   517                     STRING
   518                         TRIM(WS-Env-Temp-TXT,TRAILING)
   519                         WS-Slash-CHR
   520                         "STREAMIO-"
   521                         WS-8-Digit-NUM
   522                         TRIM(WS-256-Byte-TXT,TRAILING)
   523                         DELIMITED BY SIZE
   524                         INTO L-SCB-Filename-TXT
   525             END-EVALUATE
   526             EVALUATE TRUE
   527                 WHEN L-SCB-Mode-Input-BOOL
   528                     MOVE 1 TO WS-Access-Mode-CD
   529                 WHEN L-SCB-Mode-Output-BOOL
   530                     MOVE 2 TO WS-Access-Mode-CD
   531                 WHEN L-SCB-Mode-Both-BOOL
   532                     MOVE 3 TO WS-Access-Mode-CD
   533                 WHEN OTHER
   534                     MOVE -2 TO L-SCB-Return-CD
   535                     PERFORM 099-ERROR-Return
   536             END-EVALUATE
   537             CALL "CBL_OPEN_FILE" USING TRIM(L-SCB-Filename-TXT,TRAILING)
   538                                        WS-Access-Mode-CD
```

```
   539                                      0
   540                                      0
   541                                      L-SCB-Handle-NUM
   542            IF RETURN-CODE = 35
   543                MOVE 11 TO L-SCB-Return-CD
   544                PERFORM 099-ERROR-Return
   545            END-IF
   546            IF RETURN-CODE < 0
   547                MOVE -2 TO L-SCB-Return-CD
   548                PERFORM 099-ERROR-Return
   549            END-IF
   550            MOVE 00 TO L-SCB-Return-CD
   551            MOVE 0 TO L-SCB-Offset-NUM
   552            .
   553        200-CLOSE SECTION.
   554            CALL "CBL_CLOSE_FILE" USING L-SCB-Handle-NUM
   555            IF RETURN-CODE < 0
   556                MOVE -2 TO L-SCB-Return-CD
   557                PERFORM 099-ERROR-Return
   558            END-IF
   559            MOVE 00 TO L-SCB-Return-CD
   560            MOVE 0 TO L-SCB-Handle-NUM
   561            .
   562        300-WRITE SECTION.
   563            CALL "C$PARAMSIZE" USING 2
   564            MOVE RETURN-CODE TO WS-Arg-Length-NUM

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Samples/STREAMIO.cbl
Line   Statement                                                           Page: 13
====== ========================================================================================
   565            CALL "CBL_WRITE_FILE" USING L-SCB-Handle-NUM
   566                                        L-SCB-Offset-NUM
   567                                        WS-Arg-Length-NUM
   568                                        0
   569                                        L-Arg2-TXT
```

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

```
   609                                                 WS-Arg-Length-NUM
   610                                                 0
   611                                                 WS-Buffer-TXT
   612                     IF RETURN-CODE < 0

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Samples/STREAMIO.cbl
Line   Statement                                                           Page: 14
====== ========================================================================================
   613                         MOVE -3 TO L-SCB-Return-CD
   614                         PERFORM 099-ERROR-Return
   615                     END-IF
   616                     IF RETURN-CODE = 10
   617                         GOBACK
   618                     END-IF
   619                     MOVE 0 TO WS-Tally-NUM
   620                     INSPECT WS-Buffer-TXT
   621                         TALLYING WS-Tally-NUM FOR ALL X"0A"
   622                     IF WS-Tally-NUM = 0
   623                         ADD 256 TO L-SCB-Offset-NUM
   624                     ELSE
   625                         MOVE 0 TO WS-Tally-NUM
   626                         INSPECT WS-Buffer-TXT
   627                             TALLYING WS-Tally-NUM
   628                             FOR CHARACTERS BEFORE INITIAL X"0A"
   629                         ADD WS-Tally-NUM, 1 TO L-SCB-Offset-NUM
   630                         GOBACK
   631                     END-IF
   632                 END-PERFORM
   633             ELSE         *> There is (at least) one LF in the buffer
   634                 MOVE 0 TO WS-Tally-NUM
   635                 INSPECT L-Arg2-TXT(1:WS-Arg-Length-NUM)
   636                     TALLYING WS-Tally-NUM
   637                     FOR CHARACTERS BEFORE INITIAL X"0A"
   638                 ADD WS-Tally-NUM, 1 TO L-SCB-Offset-NUM
   639                 IF WS-Tally-NUM > 1
```

```
   640                     IF L-Arg2-TXT(WS-Tally-NUM:1) = X"0D"
   641                         COMPUTE WS-Arg-Length-NUM =
   642                                   WS-Arg-Length-NUM
   643                                 - WS-Tally-NUM
   644                                 + 1
   645                     ELSE
   646                         COMPUTE WS-Arg-Length-NUM =
   647                                   WS-Arg-Length-NUM
   648                                 - WS-Tally-NUM
   649                         ADD 1 TO WS-Tally-NUM
   650                     END-IF
   651                     MOVE SPACES
   652                       TO L-Arg2-TXT(WS-Tally-NUM:WS-Arg-Length-NUM)
   653                 ELSE
   654                     MOVE SPACES
   655                       TO L-Arg2-TXT(1:WS-Arg-Length-NUM)
   656                 END-IF
   657             END-IF
   658             .
```

```
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GNU COBOL 2.1 23NOV2013 Cross-Reference Listing                              2014/03/27
                                                 C:/Users/tda010/Documents/Programs/
Samples/STREAMIO.cbl
PROGRAM-ID       Identifier/Register/Function      Defn    Where Defined    References
Page: 15
===============     ================================     ======     ===============
========================
STREAMIO        000-Main                             383 PROCEDURE
STREAMIO        020-Validate-Handle-Zero             432 PROCEDURE          392
STREAMIO          030-Validate-Handle-NonZero            438 PROCEDURE            387
395     398
                                                                                401
406     411
STREAMIO       040-Check-WRITE-SCB-Return-CD       444 PROCEDURE          424     570
```

```
STREAMIO        050-Check-READ-SCB-Return-CD        455 PROCEDURE          582     594
STREAMIO        060-Identify-TEMP                   466 PROCEDURE          493     508
STREAMIO         099-ERROR-Return                        478 PROCEDURE             417
428     435
                                                                                   441
447     451
                                                                                   458
489     535
                                                                                   544
548     557
                                                                                614
STREAMIO        100-OPEN                             485 PROCEDURE          393
STREAMIO        200-CLOSE                            553 PROCEDURE          388
STREAMIO         300-WRITE                               562 PROCEDURE             402
407     412
STREAMIO        400-READ                             573 PROCEDURE          396
STREAMIO        500-READ-Delim                       585 PROCEDURE          399
STREAMIO         L-Arg2-TXT                              380 LINKAGE               382
569C    576*
                                                                                  581C
588*    593C
                                                                                   599
600*    640
                                                                             652*    655*
STREAMIO        L-SCB-DELIM-Unix-BOOL                379 [STREAMIOcb   ]    405
STREAMIO        L-SCB-DELIM-Windows-BOOL             379 [STREAMIOcb   ]    410
STREAMIO        L-SCB-Delimiter-Mode-CD              379 [STREAMIOcb   ]
STREAMIO        L-SCB-Error-Routine-NUM              379 [STREAMIOcb   ]    479
STREAMIO       L-SCB-Error-Routine-PTR              379 [STREAMIOcb   ]    379     480C
STREAMIO         L-SCB-Filename-TXT                      379 [STREAMIOcb    ]     390C
487     492
                                                                                  494*
506*    507
                                                                                   509
512     514*
                                                                             524*    537C
STREAMIO        L-SCB-Func-CLOSE-BOOL                379 [STREAMIOcb   ]    386
STREAMIO        L-SCB-Func-DELETE-BOOL               379 [STREAMIOcb   ]    389
STREAMIO        L-SCB-Func-OPEN-BOOL                 379 [STREAMIOcb   ]    391
STREAMIO        L-SCB-Func-READ-BOOL                 379 [STREAMIOcb   ]    394
STREAMIO        L-SCB-Func-READ-Delim-BOOL           379 [STREAMIOcb   ]    397
```

```
STREAMIO        L-SCB-Func-WRITE-BOOL               379 [STREAMIOcb   ]    400
STREAMIO        L-SCB-Func-WRITE-Delim-BOOL         379 [STREAMIOcb   ]    403
STREAMIO        L-SCB-Function-CD                   379 [STREAMIOcb   ]
STREAMIO         L-SCB-Handle-NUM                       379 [STREAMIOcb    ]    419C
433     439
                                                                                541C
554C    560*
                                                                                565C
577C    589C
                                                                                607C
STREAMIO       L-SCB-MODE-Both-BOOL                379 [STREAMIOcb   ]    486     531
STREAMIO        L-SCB-Mode-CD                       379 [STREAMIOcb   ]
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