

# GnuCOBOL Sample Programs

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For Version 3.2 - Final [14 January 2024 at 15:30 GMT.], for 3.3 and 4.0 (partial & tentative only).

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This manual documents GnuCOBOL 3.2 - Final, 14 January 2024 at 15:30 GMT. build.  
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# 1 FileStat-Msgs

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

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

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

Here's the 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.
```

## 2 COBDUMP

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

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

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

2022/03/06  
CORBUMP.cbl

Page: 1

[illegible]



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

Page: 3

```

Line   Statement
=====
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

Page: 4

Line Statement

```
=====
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	

### 3 Colors

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

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

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



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

ACS Cobol Xref v2.02.02

Dictionary File for COLORS

07/12/2019 16:57:00:16

```

1      >>SOURCE FREE
2  IDENTIFICATION DIVISION.
3  PROGRAM-ID. colors.
4  DATA DIVISION.
5  WORKING-STORAGE SECTION.
6  SCREEN SECTION.
7  01 S-COLORSTST-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

```

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'.

```

ACS Cobol Xref v2.02.02

Dictionary File for COLORS

07/12/2019 16:57:00:17

```

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'.
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'.

```



ACS Cobol Xref v2.02.02

Dictionary File for COLORS

07/12/2019 16:57:00:17

```

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'.
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'.
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'.
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'.
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'.
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'.
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'.
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'.
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'.
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 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 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'.
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'.
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'.

```

ACS Cobol Xref v2.02.02

Dictionary File for COLORS

07/12/2019 16:57:00:21

```

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'.
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'.

```

ACS Cobol Xref v2.02.02

Dictionary File for COLORS

07/12/2019 16:57:00:21

```

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-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-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'.
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'.

```

ACS Cobol Xref v2.02.02

Dictionary File for COLORS

07/12/2019 16:57:00:21

```
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
```

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

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

S-COLORTST-SCR	000007S	000934
----------------	---------	--------



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

-----  
Unreferenced Procedures

None



## 4 DAY-FROM-DATE

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

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

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

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

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

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

GNU COBOL 2.1 23NOV2013 Source Listing

2014/03/27

C:/Users/tda010/Documents/Programs/Samples/DAY-FROM-DATE.cbl

Line Statement

Page: 1

```

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

```

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

Page: 1

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



## 5 GCic

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

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

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

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

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

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

- Using the following built-in subroutines:
  - C\$JUSTIFY built-in system subroutine
  - C\$SLEEP built-in system subroutine
  - CBL\_CHANGE\_DIR built-in system subroutine
  - CBL\_CHECK\_FILE\_EXIST built-in system subroutine
  - CBL\_DELETE\_FILE built-in system subroutine
  - SYSTEM built-in system subroutine
- Using the following intrinsic functions:
  - CONCATENATE intrinsic function
  - LENGTH intrinsic function
  - LOWER-CASE intrinsic function
  - NUMVAL intrinsic function
  - TRIM intrinsic function
  - UPPER-CASE intrinsic function
- Using the `COB-CRT-STATUS,Special Registers` special register
- Programmatically producing a report destined for either portrait or landscape printing

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



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

```

1      >>SOURCE FORMAT IS FIXED
2      *> CONFIGURATION SETTINGS: adjust const-set-1.cpy before
3      *> compiling GCic to adjust the way it works.
4      *copy "const-set-1.cpy".
5      *> CONFIGURATION SETTINGS: Set these switches before compiling:
6      *>
7      *> Set these 2 for the compiler version.
8      *>
9      >>DEFINE CONSTANT COMP-VERS AS 'GNUCOBOL 3.1.2 06MAR2022'
10     >>DEFINE CONSTANT COMP-YEAR AS '2022'
11     *>
12     *> LINEDRAW Set to:
13     *> 0 To use spaces (no lines)
14     *> 1 To use the line-drawing character set (PC codepage 437)
15     *> 2 To use conventional ASCII characters (+, -, |)
16     *>
17     *> OSX USERS - To use the linedrawing character set,
18     *> set your 'terminal' font to 'Lucida Console'
19     *>
20     *> OS Set to one of the following:
21     *> 'CYGWIN' For a Windows/Cygwin version
22     *> 'MINGW' For a Windows/MinGW version
23     *> 'OSX' For a Macintosh OSX version
24     *> 'UNIX' For a Unix/Linux version
25     *> 'WINDOWS' For a Native Windows version
26     *>
27     *> SELCHAR Set to the desired single character to be used as the red
28     *> 'feature selected' character on the screen.
29     *> SUGGESTIONS: '>', '*', '=', '+'
30     *>
31     *> LPP Set to maximum printable lines per page when the listing
32     *> should be generated for LANDSCAPE orientation (can be over-
33     *> ridden at execution time using the GCXREF_LINES environment
34     *> variable.
35     *>
36     *> LPPP Set to maximum printable lines per page when the listing
37     *> should be generated for PORTRAIT orientation (can be over-
38     *> ridden at execution time using the GCXREF_LINES_PORT
39     *> environment variable.
40     *>
41     GC0712 >>DEFINE CONSTANT LINEDRAW AS 2
42     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     *>
63     *>
64     *>
65     *>
66     *>
67     *>
68     *>
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    *>*****

```

```

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 intrinsic=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

```

```

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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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      *>1234567890123456789012345678901234567890123456789012345678901234567890
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   | XXXXXXXX |
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      *>1234567890123456789012345678901234567890123456789012345678901234567890
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'CO'.
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          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 ')' GNUCIBOL 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

```

```

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                        WHEN COB-SCR-F2
1039                            IF WS-CS-TRACEALL-CHR = SPACE
1040                                GC0712      MOVE SELCHAR TO WS-CS-TRACEALL-CHR
1041                            ELSE
1042                                GC0712      MOVE ' ' TO WS-CS-TRACEALL-CHR
1043                            END-IF
1044                        WHEN COB-SCR-F3
1045                            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                                GC0712      MOVE ' ' TO WS-CS-EXECUTE-CHR
1055                            END-IF
1056                        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                            END-IF
1061                        WHEN COB-SCR-F6
1062                            IF WS-CS-NOFUNC-CHR = SPACE
1063                                GC0712      MOVE SELCHAR TO WS-CS-NOFUNC-CHR
1064                            ELSE
1065                                GC0712      MOVE ' ' TO WS-CS-NOFUNC-CHR
1066                            END-IF
1067                        WHEN COB-SCR-F7
1068                            IF WS-CS-WARNALL-CHR = SPACE
1069                                GC0712      MOVE SELCHAR TO WS-CS-WARNALL-CHR
1070                            ELSE
1071                                GC0712      MOVE ' ' TO WS-CS-WARNALL-CHR
1072                            END-IF
1073                        WHEN COB-SCR-F8
1074                            IF WS-CS-FREE-CHR = SPACE
1075                                GC0712      MOVE SELCHAR TO WS-CS-FREE-CHR
1076                            ELSE
1077                                GC0712      MOVE ' ' TO WS-CS-FREE-CHR
1078                            END-IF
1079                        WHEN COB-SCR-F9
1080                            GC0712          IF WS-CS-NOTRUNC-CHR = SPACE

```

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```

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 GC0909      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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```
-----
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
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  
 -----+-----

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
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 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
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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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
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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 Symbols of Module: GCIC (GCIC)

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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-COMPILE-CHR	WS-RS-COMPILE-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-COMPILE-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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 Symbols of Module: GCIC (GCIC)

```

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

```
-----  
Called Procedures                    Type    Locations  
-----+-----  
  
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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Symbols of Module: GCIC (GCIC)

Procedure	Defn	Locations
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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 Symbols of Module: GCIC (GCIC)

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

-----  
 Unreferenced Working Storage Symbols

COB-SCR-F55	000299W
COB-SCR-F56	000300W
COB-SCR-F57	000301W
COB-SCR-F58	000302W
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)

-----  
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



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```

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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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).	
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
1843		05 VALUE ' CHARACTER	' PIC X(33).	
1844		05 VALUE ' CHARACTERS	' PIC X(33).	

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).	
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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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-INTEGERS	' 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-INTEGERS	' 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).	
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).	

1953		05 VALUE ' END-ACCEPT	' PIC X(33).	
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 'ENTRY	' PIC X(33).	
1977		05 VALUE ' ENTRY-CONVENTION	' PIC X(33).	UNIMPLEMENTED
1978		05 VALUE 'ENVIRONMENT	' 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
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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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).	
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).	

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).	
2069		05 VALUE 'KINDEXED	' PIC X(33).	
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2071		05 VALUE ' INDIRECT	' PIC X(33).	UNIMPLEMENTED
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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).	
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).	
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

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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

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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
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
3764 GC1213          *> PORTRAIT
3765 GC1213          IF WS-SDL-Statement-TXT(90:167) > SPACES
3766 GC1213              ADD 1 TO WS-Src-Lines-NUM
3767 GC1213          IF WS-SDL-Statement-TXT(179:78) > SPACES
3768 GC1213              ADD 1 TO WS-Src-Lines-NUM
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
3788 GC1213                  *> PORTRAIT

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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
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 stmtnt
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 stmtnt
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 stmtnt
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 stmtnt
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 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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Data Section (WORKING-STORAGE)  Defn      Locations
-----+-----
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
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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-----
Data Section (WORKING-STORAGE)  Defn      Locations
-----+-----
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-MAVED-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
                                   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
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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 Symbols of Module: GCIC (LISTING)

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
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

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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

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 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

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 Symbols of Module: GCIC (LISTING)

Called Procedures	Type	Locations
C\$JUSTIFY	SYSTEM	002668 003555 003556 003812 003813
CBL_CHECK_FILE_EXIST	SYSTEM	002685

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 Symbols of Module: GCIC (LISTING)

Procedure	Defn	Locations
COMP-VERS	002641P	
COMP-YEAR	002635P	

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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

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Symbols of Module: GCIC (LISTING)

-----  
Unreferenced Procedures

COMP-VERS	002641P
COMP-YEAR	002635P

## 6 STREAMIO

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

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

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

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

- Coding a GnuCOBOL subroutine
- Using the REPLACING clause on a CDF COPY statement
- Using hexadecimal alphanumeric literals
- Using the following statements:
  - ACCEPT FROM ENVIRONMENT statement
  - INSPECT statement
  - STRING statement
- Using the following built-in subroutines:
  - C\$PARAMSIZE built-in system subroutine
  - CBL\_CLOSE\_FILE built-in system subroutine
  - CBL\_DELETE\_FILE built-in system subroutine
  - CBL\_EXIT\_PROC built-in system subroutine
  - CBL\_OPEN\_FILE built-in system subroutine
  - CBL\_READ\_FILE built-in system subroutine
  - CBL\_WRITE\_FILE built-in system subroutine
- Using the following intrinsic functions:
  - RANDOM intrinsic function
  - TRIM intrinsic function

First, here is the STREAMIOcb.cpy copybook:

```

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

```

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

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Line Statement

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```

=====
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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Line Statement

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```

=====
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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```

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

```

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Line Statement

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```

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

```

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Line Statement

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```

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

```

GNU COBOL 2.1 23NOV2013 Source Listing

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Line Statement

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```

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

```

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Line Statement

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```

=====
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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Line Statement

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```

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

```

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```

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

```

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```

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

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```

=====
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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```

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

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```

=====
613             MOVE -3 TO L-SCB-Return-CD
614             PERFORM 099-ERROR-Return
615             END-IF
616             IF RETURN-CODE = 10
617                 GOBACK
618             END-IF
619             MOVE 0 TO WS-Tally-NUM
620             INSPECT WS-Buffer-TXT
621                 TALLYING WS-Tally-NUM FOR ALL X"OA"
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"OA"
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"OA"
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"OD"
641                         COMPUTE WS-Arg-Length-NUM =
642                             WS-Arg-Length-NUM
643                             - WS-Tally-NUM
644                             + 1
645                     ELSE
646                         COMPUTE WS-Arg-Length-NUM =
647                             WS-Arg-Length-NUM
648                             - WS-Tally-NUM
649                         ADD 1 TO WS-Tally-NUM
650                     END-IF
651                 MOVE SPACES
652                     TO L-Arg2-TXT(WS-Tally-NUM:WS-Arg-Length-NUM)
653             ELSE
654                 MOVE SPACES
655                     TO L-Arg2-TXT(1:WS-Arg-Length-NUM)
656             END-IF
657             END-IF
658             .
=====

```

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PROGRAM-ID	Identifier/Register/Function	Defn	Where Defined	References	Page: 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 ]			
STREAMIO	L-SCB-MODE-Input-BOOL	379	[STREAMIOcb ]	486	527	
STREAMIO	L-SCB-MODE-Output-BOOL	379	[STREAMIOcb ]	529		
STREAMIO	L-SCB-Offset-NUM	379	[STREAMIOcb ]	420C	425*	551*
				566C	571*	578C
				583*	590C	602*

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PROGRAM-ID	Identifier/Register/Function	Defn	Where Defined	References	Page: 16
=====	=====	=====	=====	=====	=====
				608C 623* 629*	
				638*	
STREAMIO	L-SCB-Return-CD	379	[STREAMIOcb ]	384* 416* 427*	
				434* 440* 446*	
				450* 453* 457*	
				461* 464* 488*	
				534* 543* 547*	
				550* 556* 559*	
				603* 613*	
STREAMIO	L-StreamIO-Control-Block-TXT	377	LINKAGE	381	
STREAMIO	RETURN-CODE		PROCEDURE	445 449 456	
				460 542 546	
				555 564 575	
				587 612 616	
STREAMIO	WS-256-Byte-TXT	375	WORKING-STORAGE	510* 512* 522	
STREAMIO	WS-8-Digit-NUM	374	WORKING-STORAGE	496* 503 515*	
				521	
STREAMIO	WS-Access-Mode-CD	367	WORKING-STORAGE	528* 530* 532*	
				538C	
STREAMIO	WS-Arg-Length-NUM	368	WORKING-STORAGE	408* 413* 421C	
				425 564* 567C	
				571 575* 576	
				579C 583 587*	
				588 591C 596	
				599 600 602	
				604* 609C 635	
				641* 642 646*	
				647 652 655	
STREAMIO	WS-Buffer-TXT	369	WORKING-STORAGE	606* 611C	
STREAMIO	WS-Delim-Buffer-TXT	370	WORKING-STORAGE	409* 414* 423C	
STREAMIO	WS-Env-Temp-TXT	371	WORKING-STORAGE	467* 469 471	
				474* 500 518	
STREAMIO	WS-Slash-CHR	372	WORKING-STORAGE	470* 472* 475*	
				501 519	
STREAMIO	WS-Tally-NUM	373	WORKING-STORAGE	595* 597* 598	
				619* 621* 622	
				625* 627* 629	
				634* 636* 638	
				639 640 643	
				648 649* 652	

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