GnuCOBOL Quick Reference

For Version 3.2 - Final [07 December 2024 at 17:32 GMT.], for 3.3 and 4.0 (partial & tentative only).

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This manual documents GnuCOBOL 3.2 - Final, 07 December 2024 at 17:32 GMT. build.

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1 CDF

When the compiler is operating in Fixed Format Mode, all CDF statements must begin in column eight (8) or beyond.

There are two types of supported CDF statements in GnuCOBOL — Text Manipulation Statements and Compiler Directives.

The CDF text manipulation statements COPY and REPLACE are used to introduce new code into programs either with or without changes, or may be used to modify existing statements already in the program. Text manipulation statements are always terminated with a period.

CDF directives, denoted by the presence of a ">>" character sequence as part of the statement name itself, are used to influence the process of program compilation.

Compiler directives are never terminated with a period.

CDF CALL-CONVENTION Statement Syntax

```
>>CALL-CONVENTION    { COBOL   }
~~~~~~~~~~~~~~~~~    { EXTERN  }
                     { STDCALL }
                     { STATIC  }
```

CDF COPY Statement Syntax

```
COPY copybook-name
~~~~
[ IN|OF library-name ]
  ~~ ~~
[ SUPPRESS PRINTING ]
  ~~~~~~~~
[ REPLACING { Phrase-Clause | String-Clause }...  ]  .
  ~~~~~~~~~
```

CDF COPY Phrase-Clause Syntax

```
{ ==pseudo-text-1== } BY { ==pseudo-text-2== }
{ identifier-1      } ~~ { identifier-2      }
{ literal-1         }    { literal-2         }
{ word-1            }    { word-2            }
```

CDF COPY String-Clause Syntax

```
[ LEADING|TRAILING ] ==partial-word-1== BY ==partial-word-2==
  ~~~~~~~ ~~~~~~~~                         ~~
```

CDF REPLACE Statement (Format 1) Syntax

```
REPLACE [ ALSO ] { Phrase-Clause | String-Clause }...  .
~~~~~~~   ~~~~
```

CDF REPLACE Statement (Format 2) Syntax

```
REPLACE [ LAST ] OFF .
~~~~~~~   ~~~~   ~~~
```

CDF REPLACE Phrase-Clause Syntax

```
{ ==pseudo-text-1== } BY { ==pseudo-text-2== }
                       ~~
```

CDF REPLACE String-Clause Syntax

```
[ LEADING|TRAILING ] ==partial-word-1== BY ==partial-word-2==
  ~~~~~~~ ~~~~~~~~                        ~~
```

CDF >>DEFINE Directive Syntax

```
>>DEFINE [ CONSTANT ] cdf-variable-1 AS { OFF                   }
~~~~~~~~   ~~~~~~~~                     { ~~~                 }
                                        { literal-1 [ OVERRIDE ] }
                                        {             ~~~~~~~~  }
                                        { PARAMETER [ OVERRIDE ] }
                                          ~~~~~~~~~   ~~~~~~~~
```

CDF >>IF Directive Syntax

```
>>IF CDF-Conditional-Expression-1
~~~~     [ Program-Source-Lines-1 ]

[ >>ELIF CDF-Conditional-Expression-2
  ~~~~~~ [ Program-Source-Lines-2 ] ]...

[ >>ELSE
  ~~~~~~ [ Program-Source-Lines-3 ] ]

>>END-IF
~~~~~~~~
```

CDF-Conditional-Expression Syntax

```
{ cdf-variable-1 } IS [ NOT ] { DEFINED                     }
{ literal-1      }      ~~~   { ~~~~~~~                     }
                              { SET                         }
                              { ~~~                         }
                              { CDF-RelOp { cdf-variable-2 } }
                              {           { literal-2      } }
```

CDF-RelOp Syntax

```
>=    or    GREATER THAN OR EQUAL TO
            ~~~~~~~      ~~ ~~~~~

>     or    GREATER THAN
            ~~~~~~~

<=    or    LESS THAN OR EQUAL TO
            ~~~~      ~~ ~~~~~

<     or    LESS THAN
            ~~~~

=     or    EQUAL TO
            ~~~~~

<>    or    EQUAL TO (with "NOT")
            ~~~~~
```

CDF >>SET Directive Syntax

```
>>SET { [ CONSTANT ] cdf-variable-1 literal-1 ]                          }
~~~~~ {   ~~~~~~~~                                                      }
      { SOURCEFORMAT AS FIXED|FREE|VARIABLE|XOPEN|XCARD|CRT|TERMINAL|COBOLX }
      { ~~~~~~~~~~~~    ~~~~~ ~~~~ ~~~~~~~~ ~~~~~ ~~~~~ ~~~ ~~~~~~~~ ~~~~~~ }
      { NOFOLDCOPYNAME                                                  }
      { ~~~~~~~~~~~~~~                                                  }
      { FOLDCOPYNAME AS UPPER|LOWER                                     }
        ~~~~~~~~~~~~    ~~~~~ ~~~~~
```

CDF >>SOURCE Directive Syntax

```
>>SOURCE FORMAT IS { FIXED|FREE|VARIABLE|XOPEN|XCARD|CRT|TERMINAL|COBOLX }
~~~~~~~~           ~~~~~ ~~~~ ~~~~~~~~ ~~~~~ ~~~~~ ~~~ ~~~~~~~~ ~~~~~~
```

CDF >>TURN Directive Syntax

```
>>TURN { exception-name-1 [ file-name-1 ]...  }...
~~~~~~
   { OFF                          }
   { ~~~                          }
   { CHECKING ON [ WITH LOCATION ] }
     ~~~~~~~~ ~~        ~~~~~~~~
```

CDF >>D Directive Syntax

```
>>D
~~~
```

CDF >>DISPLAY Directive Syntax

```
>>DISPLAY source-text [ VCS = version-string ]
~~~~~~~~~               ~~~
```

CDF >>PAGE Directive Syntax

```
>>PAGE [ comment-text ]
~~~~~~
```

CDF >>LISTING Directive Syntax

```
>>LISTING  {ON}
~~~~~~~~~  {OFF}
```

CDF >>LEAP-SECONDS Directive Syntax

```
>>LEAP-SECONDS
~~~~~~~~~~~~~~
```

The `>>LEAP-SECONDS` CDF directive is syntactically recognized but is otherwise non-functional.

CDF $ Directives Syntax

```
$ (Dollar) Directives - Active.

These directives are active and have the same function as ones starting with >>:

$DEFINE
$DISPLAY ON|OFF
$IF
$ELIF
$ELSE
$ELSE-IF
$END
$SET

It is recommended to use the standard directives only instead of the MF
directives (when possible) as these have a higher chance for being portable.

$ (Dollar) Directives - Not Active.
These are NOT active and will produce a warning message:

$DISPLAY VCS ...

Recognised but otherwise ignored.

@OPTIONS options-text

Additional Micro-Focus directives accepted :

ADDRSV | ADD-RSV literal-1
ADDSYN | ADD-SYN literal-1 = literal-2
ASSIGN  "EXTERNAL" | "DYNAMIC"
BOUND
CALLFH  literal-1
COMP1  |  COMP-1  "BINARY" | "FLOAT"
FOLDCOPYNAME | FOLD-COPY-NAME  AS "UPPER" | "LOWER"
MAKESYN  |  MAKE-SYN
NOBOUND  |  NO-BOUND
NOFOLDCOPYNAME  |  NOFOLD-COPY-NAME  |  NO-FOLD-COPY-NAME
OVERRIDE  literal-1 = literal-2
REMOVE  literal-1
SOURCEFORMAT | SOURCE-FORMAT "FIXED" | "FREE" | "VARIABLE"
SSRANGE "2"
NOSSRANGE  |  NO-SSRANGE
```

CDF Predefined Compilation Variables Syntax

```
GnuCOBOL defines compilation variables when various conditions are true.
If the condition associated with a variable is false, the variable is not defined.

DEBUG       The -d debug flag is specified.
EXECUTABLE  Module being compiled contains the main program.
GCCOMP      The size of a COMP item is determined according to the GnuCOBOL scheme,
            where for a picture of length:
             1 - 2,  item = 1 byte
             3 - 4,  item = 2 bytes
             5 - 9,  item = 4 bytes
            10 - 18, item = 8 bytes.

GNUCOBOL    GnuCOBOL is compiling the source unit.
HOSTSIGNS   A signed packed decimal item's value may be considered NUMERIC if
            sign = X"F".
IBMCOMP     The size of a COMP item is determined according to the IBM scheme,
            where for a PICTURE of length :
             1 - 4,  item = 2 bytes
             5 - 9,  item = 4 bytes
            10 - 18, item = 8 bytes.

MODULE      The element being compiled does not contain the main program.
NOHOSTSIGNS A signed packed decimal item's value may NOT be considered
            NUMERIC if sign = X"F".
NOIBMCOMP   The size of a COMP item is NOT determined according to the IBM scheme.
NOSTICKY-LINKAGE
            Sticky linkage (linkage section items remaining allocated between
            invocations) is NOT active.
NOTRUNC     Numeric data items are truncated according to their internal
            representation.
P64         Pointers are greater than 32 bits.
STICKY-LINKAGE
            Sticky linkage (linkage section items remaining allocated between
            invocations) is active.
TRUNC       Numeric data items are truncated according to their PICTURE clauses.

These, while still supported may well be removed in the future and should not be
used.  See GCCOMP and GNUCOBOL instead:

OCCOMP      The size of a COMP item is determined according to the GnuCOBOL scheme,
            where for a PICTURE of length :
             1 - 2,  item = 1 byte
             3 - 4,  item = 2 bytes
             5 - 9,  item = 4 bytes
            10 - 18, item = 8 bytes.
```

2 IDENTIFICATION DIVISION Syntax

IDENTIFICATION DIVISION Syntax

```
[ { IDENTIFICATION } DIVISION. ]
[ { ~~~~~~~~~~~~~~ } ~~~~~~~~  ]
[ { ID             }           ]
[ { ~~             }           ]

{ PROGRAM-ID.  } { program name  } .
{ ~~~~~~~~~~   } { literal-1     } [ AS { literal-2 } ] [ Type-clause ] .
{ FUNCTION-ID. } { literal-3     } [ AS   literal-4   ] .
  ~~~~~~~~~~~~    { function-name } .

[ { OPTIONS. }                                          ]
[   ~~~~~~~                                            ]
[ [ ARITHMETIC IS NATIVE. ]                             ]
[ [ ~~~~~~~~~~    ~~~~~   ]                             ]
[                                                       ]
[ [ DEFAULT ROUNDED MODE IS {AWAY-FROM-ZERO         } ] ]
[ [ ~~~~~~~ ~~~~~~~         {NEAREST-AWAY-FROM-ZERO } ] ]
[ [                         {NEAREST-EVEN           } ] ]
[ [                         {NEAREST-TOWARDS-ZERO   } ] ]
[ [                         {PROHIBITED             } ] ]
[ [                         {TOWARDS-GREATER        } ] ]
[ [                         {TOWARDS-LESSER         } ] ]
[ [                         {TRUNCATION             }.]  ]
[                                                       ]
[ [ ENTRY-CONVENTION IS {COBOL  } ]                     ]
[ [ ~~~~~~~~~~~~~~~~    {EXTERN } ]                     ]
[ [                     {STDCALL}.]                                   ]

[ AUTHOR.          [ comment-entry-1.  ]...]
  ~~~~~~
[ DATE-COMPILED.   [ comment-entry-2.  ]...]
  ~~~~~~~~~~~~~
[ DATE-MODIFIED.   [ comment-entry-3.  ]...]
  ~~~~~~~~~~~~~
[ DATE-WRITTEN.    [ comment-entry-4.  ]...]
  ~~~~~~~~~~~~
[ INSTALLATION.    [ comment-entry-5.  ]...]
  ~~~~~~~~~~~~
[ REMARKS.         [ comment-entry-6.  ]...]
  ~~~~~~~
[ SECURITY.        [ comment-entry-7.  ]...]
  ~~~~~~~~
```

The AUTHOR, DATE-COMPILED, DATE-MODIFIED, DATE-WRITTEN, INSTALLATION, REMARKS and SECURITY paragraphs are supported by GnuCOBOL only to provide compatibility with programs written for the ANS1974 (or earlier) standards. As of the ANS1985 standard, these clauses have become obsolete and should not be used in new programs.

PROGRAM-ID Type Clause Syntax

```
IS [ COMMON ] [ INITIAL|RECURSIVE PROGRAM ]
     ~~~~~~     ~~~~~~~ ~~~~~~~~~
```

3 ENVIRONMENT DIVISION Syntax

ENVIRONMENT DIVISION Syntax

```
  ENVIRONMENT DIVISION.
  ~~~~~~~~~~~ ~~~~~~~~
[ CONFIGURATION SECTION. ]
  ~~~~~~~~~~~~~ ~~~~~~~~
[ SOURCE-COMPUTER.         Compilation-Computer-Specification .  ]
  ~~~~~~~~~~~~~~~
[ OBJECT-COMPUTER.         Execution-Computer-Specification .  ]
  ~~~~~~~~~~~~~~~
[ SPECIAL-NAMES.           Program-Configuration-Specification .  ]
  ~~~~~~~~~~~~~
[ REPOSITORY.              Prototype-Specification ...  .  ]
  ~~~~~~~~~~
[ INPUT-OUTPUT SECTION. ]
  ~~~~~~~~~~~~ ~~~~~~~
[ FILE-CONTROL.            General-File-Description ...  .  ]
  ~~~~~~~~~~~~
[ I-O-CONTROL.             File-Buffering Specification ...  .  ]
  ~~~~~~~~~~~
```

CONFIGURATION SECTION Syntax

```
  CONFIGURATION SECTION.
  ~~~~~~~~~~~~~ ~~~~~~~
[ SOURCE-COMPUTER. Compilation-Computer-Specification .  ]
  ~~~~~~~~~~~~~~~
[ OBJECT-COMPUTER. Execution-Computer-Specification .  ]
  ~~~~~~~~~~~~~~~
[ SPECIAL-NAMES.   Program-Configuration-Specification .  ]
  ~~~~~~~~~~~~~
[ REPOSITORY.      Prototype-Specification...  .  ]
  ~~~~~~~~~~
```

SOURCE-COMPUTER Syntax

```
SOURCE-COMPUTER. computer-name [ WITH DEBUGGING MODE ] .
~~~~~~~~~~~~~~~                      ~~~~~~~~~ ~~~~
```

OBJECT-COMPUTER Syntax

```
OBJECT-COMPUTER.  [ computer-name ]
~~~~~~~~~~~~~~~
[ MEMORY SIZE IS integer-1 WORDS|CHARACTERS ]
  ~~~~~~ ~~~~               ~~~~~ ~~~~~~~~~~
[ PROGRAM COLLATING SEQUENCE IS alphabet-name-1 ]
          ~~~~~~~~
[ SEGMENT-LIMIT IS integer-2 ]
  ~~~~~~~~~~~~~
[ CHARACTER CLASSIFICATION IS { locale-name-1  } ]
            ~~~~~~~~~~~~~~    { LOCALE         }
                              { ~~~~~~         }
                              { USER-DEFAULT   }
                              { ~~~~~~~~~~~~   }
                              { SYSTEM-DEFAULT }
                                ~~~~~~~~~~~~~~
.
```

The `MEMORY SIZE` and `SEGMENT-LIMIT` clauses are syntactically recognized but are otherwise non-functional.

SPECIAL-NAMES Syntax

```
SPECIAL-NAMES.
~~~~~~~~~~~~~~
  [ CALL-CONVENTION integer-1 IS mnemonic-name-1 ]
    ~~~~~~~~~~~~~~~~
  [ CONSOLE IS CRT ]
    ~~~~~~~    ~~~
  [ CRT STATUS IS identifier-1 ]
    ~~~ ~~~~~~
  [ CURRENCY SIGN IS literal-1 ]
    ~~~~~~~~ ~~~~
  [ CURSOR IS identifier-2 ]
    ~~~~~~
  [ DECIMAL-POINT IS COMMA ]
    ~~~~~~~~~~~~~    ~~~~~
  [ EVENT STATUS IS identifier-3 ]
    ~~~~~ ~~~~~~
  [ LOCALE locale-name-1 IS literal-2 ]...
    ~~~~~~
  [ NUMERIC SIGN IS TRAILING SEPARATE ]
    ~~~~~~~ ~~~~    ~~~~~~~~ ~~~~~~~~
  [ SCREEN CONTROL IS identifier-4 ]
    ~~~~~~ ~~~~~~~
  [ device-name-1 IS mnemonic-name-2 ]...

  [ feature-name-1 IS mnemonic-name-3 ]...

  [ Alphabet-Clause ]...

  [ Class-Definition-Clause ]...

  [ Switch-Definition-Clause ]...

  [ Symbolic-Characters-Clause ]...
  .
```

The `EVENT STATUS` and `SCREEN CONTROL` clauses are syntactically recognized but are otherwise non-functional.

REPOSITORY Syntax

```
REPOSITORY.
~~~~~~~~~~

FUNCTION { { intrinsic-function-name-1 } ...} INTRINSIC
~~~~~~~~ {   ALL INTRINSIC                  } ~~~~~~~~~
             ~~~ ~~~~~~~~~

         {   function-prototype-name-1 [ AS literal-1 ] } ...
                                         ~~

PROGRAM  {   program-prototype-name-1  [ AS literal-2 ] } ...    .
~~~~~~~                                  ~~
```

SPECIAL-NAMES Alphabet-Clause Syntax

```
 ALPHABET alphabet-name-1 IS { ASCII              }
 ~~~~~~~~                    { ~~~~~              }
                             { EBCDIC             }
                             { ~~~~~~             }
                             { NATIVE             }
                             { ~~~~~~             }
                             { STANDARD-1         }
                             { ~~~~~~~~~~         }
                             { STANDARD-2         }
                             { ~~~~~~~~~~         }
                             { Literal-Clause...  }
```

SPECIAL-NAMES ALPHABET Literal-Clause Syntax

```
 literal-1 [ { THRU|THROUGH literal-2 } ]
             { ~~~~ ~~~~~~~           }
             { {ALSO literal-3}...    }
                ~~~~
```

SPECIAL-NAMES Class-Definition-Clause Syntax

```
 CLASS class-name-1 IS { literal-1 [ THRU|THROUGH literal-2 ] }...
 ~~~~~                           ~~~~ ~~~~~~~
```

SPECIAL-NAMES Switch-Definition-Clause Syntax

```
 switch-name-1 [ IS mnemonic-name-1 ]

   [ ON STATUS IS condition-name-1 ]
     ~~
   [ OFF STATUS IS condition-name-2 ]
     ~~~
```

SPECIAL-NAMES-Symbolic-Characters-Clause Syntax

```
SYMBOLIC CHARACTERS
~~~~~~~~
  { symbolic-character-1...  IS|ARE integer-1...  }...

  [ IN alphabet-name-1 ]
    ~~
```

INPUT-OUTPUT SECTION Syntax

```
[ INPUT-OUTPUT SECTION. ]
  ~~~~~~~~~~~~ ~~~~~~~
[ FILE-CONTROL. ]
  ~~~~~~~~~~~~
    [ SELECT-Statement...  ]

[ I-O-CONTROL. ]
  ~~~~~~~~~~~
    [ MULTIPLE-FILE-Statement ]

    [ SAME-RECORD-Statement ]
```

I-O-CONTROL MULTIPLE FILE Syntax

```
MULTIPLE FILE TAPE CONTAINS
~~~~~~~~
   { file-name-1 [ POSITION integer-1 ] }...
                 ~~~~~~~~

   .
```

The `MULTIPLE FILE TAPE` clause is obsolete and is therefore recognized but not functional.

I-O-CONTROL SAME AREA Syntax

```
SAME { SORT-MERGE } AREA FOR file-name-1...  .
~~~~ { ~~~~~~~~~~ }
     { SORT       }
     { ~~~~       }
     { RECORD     }
       ~~~~~~
```

The `SAME SORT-MERGE` and `SAME SORT` clauses are syntactically recognized but are otherwise non-functional.

SELECT Statement Syntax

```
SELECT [ [ NOT ] OPTIONAL ] file-name-1
~~~~~~     ~~~   ~~~~~~~~
[ ASSIGN { TO    } [{ EXTERNAL }] [{ DISC|DISK      }] [{ identifier-1 }] ]
  ~~~~~~ { USING }  { ~~~~~~~~ }   { ~~~~ ~~~~      }   { word-1       }
                    { DYNAMIC  }   { DISPLAY        }   { literal-1    }
                      ~~~~~~~      { ~~~~~~~        }
                                   { KEYBOARD       }
                                   { ~~~~~~~~       }
                                   { LINE ADVANCING }
                                   { ~~~~ ~~~~~~~~~ }
                                   { PRINTER        }
                                   { ~~~~~~~        }
                                   { RANDOM         }
                                   { ~~~~~~         }
                                   { TAPE           }
                                     ~~~~
[ COLLATING SEQUENCE IS alphabet-name-1 ]
  ~~~~~~~~~
[ FILE|SORT ] STATUS IS identifier-2 [ identifier-3 ] ]
  ~~~~ ~~~~   ~~~~~~
[ LOCK MODE IS { MANUAL|AUTOMATIC                                  } ]
  ~~~~         { ~~~~~~ ~~~~~~~~                                   }
               { EXCLUSIVE [ WITH { LOCK ON MULTIPLE RECORDS } ] }
                 ~~~~~~~~~        { ~~~~ ~~ ~~~~~~~~ ~~~~~~~ }
                                  { LOCK ON RECORD            }
                                  { ~~~~ ~~ ~~~~~~            }
                                  { ROLLBACK                  }
                                  { ~~~~~~~~                  }
[ ORGANIZATION Clause ]
  ~~~~~~~~~~~~
[ ORGANISATION Clause ]
  ~~~~~~~~~~~~
[ RECORD DELIMITER IS STANDARD-1 ]
  ~~~~~~ ~~~~~~~~~    ~~~~~~~~~~
[ RESERVE integer-1 AREAS ]
  ~~~~~~~
[ SHARING WITH { ALL OTHER } ]
  ~~~~~~~      { ~~~       }
               { NO OTHER  }
               { ~~        }
               { READ ONLY }
                 ~~~~ ~~~~
```

The `COLLATING SEQUENCE`, `RECORD DELIMITER`, `RESERVE` and `ALL OTHER` clauses are syntactically recognized but are otherwise non-functional.

ORGANIZATION SEQUENTIAL Clause Syntax

```
[ ORGANIZATION|ORGANISATION IS ] RECORD BINARY SEQUENTIAL
  ~~~~~~~~~~~~ ~~~~~~~~~~~~                   ~~~~~~~~~~

   [ ACCESS MODE IS SEQUENTIAL ]
     ~~~~~~         ~~~~~~~~~~
```

ORGANIZATION LINE SEQUENTIAL Clause Syntax

```
[ ORGANIZATION|ORGANISATION IS ] LINE SEQUENTIAL
  ~~~~~~~~~~~~ ~~~~~~~~~~~~      ~~~~ ~~~~~~~~~~

   [ ACCESS MODE IS SEQUENTIAL ]
     ~~~~~~         ~~~~~~~~~~

   [ PADDING CHARACTER IS literal-1 | identifier-1 ]
     ~~~~~~~
```

The `PADDING CHARACTER` clause is syntactically recognized but is otherwise non-functional.

ORGANIZATION RELATIVE Clause Syntax

```
[ ORGANIZATION|ORGANISATION IS ] RELATIVE
  ~~~~~~~~~~~~ ~~~~~~~~~~~~      ~~~~~~~~

   [ ACCESS MODE IS { SEQUENTIAL } ]
     ~~~~~~         { ~~~~~~~~~~ }
                    { DYNAMIC    }
                    { ~~~~~~~    }
                    { RANDOM     }
                      ~~~~~~

   [ RELATIVE KEY IS identifier-1 ]
     ~~~~~~~~
```

ORGANIZATION INDEXED Clause Syntax

```
[ ORGANIZATION|ORGANISATION IS ] INDEXED
  ~~~~~~~~~~~~ ~~~~~~~~~~~~      ~~~~~~~

   [ ACCESS MODE IS { SEQUENTIAL } ]
     ~~~~~~         { ~~~~~~~~~  }
                    { DYNAMIC    }
                    { ~~~~~~~    }
                    { RANDOM     }
                      ~~~~~~

   [ RECORD KEY IS { [ data-name-1       ]
     ~~~~~~
                   { [ record-key-name-1 ]
                     [ =|{SOURCE IS} data-name-2 ] ...  ]  }
                         ~~~~~~

   [ ALTERNATE RECORD KEY IS { [ data-name-3       ]
     ~~~~~~~~~ ~~~~~~
                               { [ record-key-name-2 ]
                                 [ =|{SOURCE IS} data-name-4 ] ...  ]  }
                                     ~~~~~~
                               [ WITH DUPLICATES ] ]...
                                     ~~~~~~~~~~
                               [ SUPPRESS WHEN ALL literal     ]
                                 ~~~~~~~~~~~~~~~~~
                               [ SUPPRESS WHEN SPACES | ZEROES ]
                                 ~~~~~~~~~~~~~~~~~~~   ~~~~~~
```

4 DATA DIVISION Syntax

DATA DIVISION Syntax

```
  DATA DIVISION.
  ~~~~ ~~~~~~~~
[ FILE SECTION.
  ~~~~ ~~~~~~~
  { File/Sort-Description [ { FILE-SECTION-Data-Item } ]...  }...  ]
  {                         { 01-Level-Constant      }      }
  {                         { 78-Level-Constant      }      }
  { 01-Level-Constant                                       }
  { 78-Level-Constant                                       }
[ WORKING-STORAGE SECTION.
  ~~~~~~~~~~~~~~~ ~~~~~~~
  [ { WORKING-STORAGE-SECTION-Data-Item } ]...  ]
    { 01-Level-Constant                 }
    { 78-Level-Constant                 }
[ LOCAL-STORAGE SECTION.
  ~~~~~~~~~~~~~ ~~~~~~~
  [ { LOCAL-STORAGE-SECTION-Data-Item } ]...  ]
    { 01-Level-Constant               }
    { 78-Level-Constant               }
[ LINKAGE SECTION.
  ~~~~~~~ ~~~~~~~
  [ { LINKAGE-SECTION-Data-Item } ]...  ]
    { 01-Level-Constant         }
    { 78-Level-Constant         }
[ REPORT SECTION.
  ~~~~~~ ~~~~~~~
  { Report-Description [ { Report-Group-Definition } ]...  }...  ]
  {                      { 01-Level-Constant       }      }
  {                      { 78-Level-Constant       }      }
  { 01-Level-Constant                                     }
  { 78-Level-Constant                                     }
[ SCREEN SECTION.
  ~~~~~~ ~~~~~~~
  [ { SCREEN-SECTION-Data-Item } ]...  ]
    { 01-Level-Constant        }
    { 78-Level-Constant        }
```

File/Sort-Description Syntax

```
FD|SD file-name-1 [ IS EXTERNAL|GLOBAL ]
~~ ~~               ~~~~~~~~ ~~~~~~
[ BLOCK CONTAINS [ integer-1 TO ] integer-2 CHARACTERS|RECORDS ]
  ~~~~~          ~~             ~~~~~~~~~~ ~~~~~~~
[ CODE-SET IS alphabet-name-1 ]
  ~~~~~~~~
[ DATA { RECORD IS   } identifier-1...  ]
  ~~~~ { ~~~~~~     }
       { RECORDS ARE }
         ~~~~~~~
[ LABEL { RECORD IS   } OMITTED|STANDARD ]
  ~~~~~ { ~~~~~~     } ~~~~~~~ ~~~~~~~~
        { RECORDS ARE }
          ~~~~~~~
[ LINAGE IS integer-3 | identifier-2 LINES
  ~~~~~~
    [ LINES AT BOTTOM integer-4 | identifier-3 ]
              ~~~~~~
    [ LINES AT TOP integer-5 | identifier-4 ]
              ~~~
    [ WITH FOOTING AT integer-6 | identifier-5 ] ]
           ~~~~~~~
[ RECORD { CONTAINS [ integer-7 TO ] integer-8 CHARACTERS   } ]
  ~~~~~~ {                         ~~                      }
         { IS VARYING IN SIZE                               }
         {    ~~~~~~~                                       }
         {     [ FROM [ integer-7 TO ] integer-8 CHARACTERS }
         {                            ~~                    }
         {         DEPENDING ON identifier-6 ]              }
                   ~~~~~~~~~
[ RECORDING MODE IS recording-mode ]
  ~~~~~~~~~
[ { REPORT IS   } report-name-1...  ]
  { ~~~~~~     }
  { REPORTS ARE }
    ~~~~~~~
[ VALUE OF implementor-name-1 IS literal-1 | identifier-7 ] .
  ~~~~~ ~~
```

The `BLOCK CONTAINS`, `DATA RECORD`, `LABEL RECORD`, `RECORDING MODE` and `VALUE OF` clauses are syntactically recognized but are obsolete and non-functional. These clauses should not be coded in new programs.

FILE-SECTION-Data-Item Syntax

```
level-number [ identifier-1 | FILLER ] [ IS GLOBAL|EXTERNAL ]
                              ~~~~~~         ~~~~~~ ~~~~~~~~

[ BLANK WHEN ZERO ]
  ~~~~~      ~~~~

[ JUSTIFIED RIGHT ]
  ~~~~

[ OCCURS [ integer-1 TO ] integer-2 TIMES
  ~~~~~~             ~~

      [ DEPENDING ON identifier-2 ]
        ~~~~~~~~~

      [ STEP identifier-6 ]
      [ ASCENDING|DESCENDING KEY IS identifier-3 ]
        ~~~~~~~~~ ~~~~~~~~~~

      [ INDEXED BY identifier-4 ] ]
        ~~~~~~~

[ PICTURE IS picture-string ]
  ~~~

[ REDEFINES identifier-5 ]
  ~~~~~~~~~

[ SIGN IS LEADING|TRAILING [ SEPARATE [CHARACTER] ] ]
  ~~~~    ~~~~~~~ ~~~~~~~~   ~~~~~~~~

[ SYNCHRONIZED|SYNCHRONISED [ LEFT|RIGHT ] ]
  ~~~~        ~~~~           ~~~~ ~~~~~

[ USAGE IS data-item-usage ] .  [ FILE-SECTION-Data-Item ]...
  ~~~~~
```

The `LEFT` and `RIGHT` (SYNCHRONIZED) clauses are syntactically recognized but are otherwise non-functional.

WORKING-STORAGE-SECTION-Data-Item Syntax

```
level-number [ identifier-1 | FILLER ] [ IS GLOBAL | EXTERNAL ]
                              ~~~~~~         ~~~~~~   ~~~~~~~~

[ BASED ]
  ~~~~~

[ BLANK WHEN ZERO ]
  ~~~~~      ~~~~

[ JUSTIFIED RIGHT ]
  ~~~~

[ OCCURS [ integer-1 TO ] integer-2 TIMES
  ~~~~~~             ~~

      [ DEPENDING ON identifier-2 ]
        ~~~~~~~~~

      [ ASCENDING|DESCENDING KEY IS identifier-3 ]
        ~~~~~~~~~ ~~~~~~~~~~

      [ INDEXED BY identifier-4 ] ]
        ~~~~~~~

[ PICTURE IS picture-string ]
  ~~~

[ REDEFINES identifier-5 ]
  ~~~~~~~~~

[ SIGN IS LEADING|TRAILING [ SEPARATE CHARACTER ] ]
  ~~~~    ~~~~~~~ ~~~~~~~~   ~~~~~~~~

[ SYNCHRONIZED|SYNCHRONISED [ LEFT|RIGHT ] ]
  ~~~~        ~~~~           ~~~~ ~~~~~

[ USAGE IS data-item-usage ]
  ~~~~~

[ VALUE IS [ ALL ] literal-1 ] .  [ WORKING-STORAGE-SECTION-Data-Item ]...
  ~~~~~      ~~~
```

The LEFT and RIGHT (SYNCHRONIZED) clauses are syntactically recognized but are otherwise non-functional.

LOCAL-STORAGE-SECTION-Data-Item Syntax

```
level-number [ identifier-1 | FILLER ] [ IS GLOBAL|EXTERNAL ]
                              ~~~~~~         ~~~~~~ ~~~~~~~~

[ BASED ]
  ~~~~~

[ BLANK WHEN ZERO ]
  ~~~~~      ~~~~

[ JUSTIFIED RIGHT ]
  ~~~~

[ OCCURS [ integer-1 TO ] integer-2 TIMES
  ~~~~~~              ~~

      [ DEPENDING ON identifier-2 ]
        ~~~~~~~~~

      [ ASCENDING|DESCENDING KEY IS identifier-3 ]
        ~~~~~~~~~ ~~~~~~~~~~

      [ INDEXED BY identifier-4 ] ]
        ~~~~~~~

[ PICTURE IS picture-string ]
  ~~~

[ REDEFINES identifier-5 ]
  ~~~~~~~~~

[ SIGN IS LEADING|TRAILING [ SEPARATE CHARACTER ] ]
  ~~~~    ~~~~~~~ ~~~~~~~~   ~~~~~~~~

[ SYNCHRONIZED|SYNCHRONISED [ LEFT|RIGHT ] ]
  ~~~~        ~~~~           ~~~~ ~~~~~

[ USAGE IS data-item-usage ]
  ~~~~~

[ VALUE IS [ ALL ] literal-1 ] .  [ LOCAL-STORAGE-SECTION-Data-Item ]...
  ~~~~~      ~~~
```

The `LEFT` and `RIGHT` (SYNCHRONIZED) clauses are syntactically recognized but are otherwise non-functional.

LINKAGE-SECTION-Data-Item Syntax

```
level-number [ identifier-1 | FILLER ] [ IS GLOBAL|EXTERNAL ]
                              ~~~~~~         ~~~~~~ ~~~~~~~~

[ ANY LENGTH ]
  ~~~ ~~~~~~

[ ANY NUMERIC ]
  ~~~ ~~~~~~~

[ BASED ]
  ~~~~~

[ BLANK WHEN ZERO ]
  ~~~~~      ~~~~

[ JUSTIFIED RIGHT ]
  ~~~~

[ OCCURS [ integer-1 TO ] integer-2 TIMES
  ~~~~~~              ~~   UNBOUNDED
                           ~~~~~~~~~

      [ DEPENDING ON identifier-3 ]
        ~~~~~~~~~

      [ ASCENDING|DESCENDING KEY IS identifier-4 ]
        ~~~~~~~~~ ~~~~~~~~~~

      [ INDEXED BY identifier-5 ] ]
        ~~~~~~~

[ PICTURE IS picture-string ]
  ~~~

[ REDEFINES identifier-6 ]
  ~~~~~~~~~

[ SIGN IS LEADING|TRAILING [ SEPARATE CHARACTER ] ]
  ~~~~    ~~~~~~~ ~~~~~~~~   ~~~~~~~~

[ SYNCHRONIZED|SYNCHRONISED [ LEFT|RIGHT ] ]
  ~~~~        ~~~~           ~~~~ ~~~~~

[ USAGE IS data-item-usage ] .  [ LINKAGE-SECTION-Data-Item ]...
  ~~~~~
```

The LEFT and RIGHT (SYNCHRONIZED) clauses are syntactically recognized but are otherwise non-functional.

Report-Description (RD) Syntax

```
RD report-name [ IS GLOBAL ]
~~                 ~~~~~~
[ CODE IS literal-1 | identifier-1 ]
  ~~~~
[ { CONTROL IS   } { FINAL        }...  ]
  { ~~~~~~~     } { ~~~~~        }
  { CONTROLS ARE } { identifier-2 }
    ~~~~~~~~
[ PAGE [ { LIMIT IS   } ] [ { literal-2    } LINES ]
  ~~~~   { ~~~~~     }     { identifier-3 } ~~~~
         { LIMITS ARE }
           ~~~~~~
      [ literal-3 | identifier-4 COLUMNS|COLS ]
                                 ~~~~~~~ ~~~~
      [ HEADING IS literal-4 | identifier-5 ]
        ~~~~~~~
      [ FIRST DE|DETAIL IS literal-5 | identifier-6 ]
        ~~~~~ ~~ ~~~~~~
      [ LAST CH|{CONTROL HEADING} IS literal-6 | identifier-7 ]
        ~~~~ ~~  ~~~~~~~ ~~~~~~~
      [ LAST DE|DETAIL IS literal-7 | identifier-8 ]
        ~~~~ ~~ ~~~~~~
      [ FOOTING IS literal-8 | identifier-9 ] ] .
        ~~~~~~~
```

Report-Group-Definition Syntax

```
01 [ identifier-1 ]

[ LINE NUMBER IS { integer-1 [ [ ON NEXT PAGE ] ] } ]
  ~~~~           {                 ~~~~ ~~~~   }
                 { +|PLUS integer-1            }
                 {   ~~~~                      }
                 { ON NEXT PAGE                }
                      ~~~~ ~~~~
[ NEXT GROUP IS { [ +|PLUS ] integer-2  } ]
  ~~~~ ~~~~~    {     ~~~~              }
                { NEXT|{NEXT PAGE}|PAGE }
                  ~~~~  ~~~~ ~~~~  ~~~~
[ TYPE IS { RH|{REPORT HEADING}                      } ]
  ~~~~    { ~~  ~~~~~~ ~~~~~~~                       }
          { PH|{PAGE HEADING}                        }
          { ~~  ~~~~ ~~~~~~~                         }
          { CH|{CONTROL HEADING} FINAL|identifier-2  }
          { ~~  ~~~~~~~ ~~~~~~~  ~~~~~               }
          { DE|DETAIL                                }
          { ~~ ~~~~~~                                }
          { CF|{CONTROL FOOTING} FINAL|identifier-2  }
          { ~~  ~~~~~~~ ~~~~~~~  ~~~~~               }
          { PF|{PAGE FOOTING}                        }
          {  ~~ ~~~~ ~~~~~~~                         }
          { RF|{REPORT FOOTING}                      }
            ~~  ~~~~~~ ~~~~~~~
.  [ REPORT-SECTION-Data-Item ]...
```

REPORT-SECTION-Data-Item Syntax

```
level-number [ identifier-1 ]

[ BLANK WHEN ZERO ]
  ~~~~~      ~~~~
[ COLUMN [ { NUMBER IS   } ] [ +|PLUS ] integer-1 ]
  ~~~      { ~~~~~~     }       ~~~~
           { NUMBERS ARE }
             ~~~~~~~
[ GROUP INDICATE ]
  ~~~~~ ~~~~~~~~
[ JUSTIFIED RIGHT ]
  ~~~~
[ LINE NUMBER IS { integer-2 [ [ ON NEXT PAGE ] } ]
  ~~~~           { +|PLUS integer-2 ~~~~ ~~~~   }
                 {   ~~~~                       }
                 { ON NEXT PAGE                 }
                      ~~~~ ~~~~
[ OCCURS [ integer-3 TO ] integer-4 TIMES
  ~~~~~~             ~~
    [ DEPENDING ON identifier-2 ]
      ~~~~~~~~~
    [ STEP integer-5 ]
      ~~~~
    [ VARYING identifier-3 FROM { identifier-4 } BY { identifier-5 } ]
      ~~~~~~~              ~~~~ { integer-6    } ~~ { integer-7    }
[ PICTURE IS picture-string ]
  ~~~
[ PRESENT WHEN condition-name ]
  ~~~~~~~ ~~~~
[ SIGN IS LEADING|TRAILING [ SEPARATE CHARACTER ] ]
  ~~~~    ~~~~~~~ ~~~~~~~~   ~~~~~~~~
[ { SOURCE IS literal-1|identifier-6 [ ROUNDED ]                    } ]
  { ~~~~~~                           ~~~~~~~                        }
  { SUM OF { identifier-7 }...  [ { RESET ON FINAL|identifier-8 } ] }
  { ~~~    { literal-2    }       { ~~~~~    ~~~~~              }   }
  { VALUE IS [ ALL ] literal-3    { UPON identifier-9           }   }
    ~~~~~      ~~~                  ~~~~
.  [ REPORT-SECTION-Data-Item ]...
```

SCREEN-SECTION-Data-Item Syntax

```
level-number [ identifier-1 | FILLER ]
                              ~~~~~~

[ AUTO | AUTO-SKIP | AUTOTERMINATE | TAB ] [ BELL | BEEP ]
  ~~~~   ~~~~~~~~~   ~~~~~~~~~~~~~   ~~~     ~~~~   ~~~~
[ BACKGROUND-COLOR|BACKGROUND-COLOUR IS integer-1 | identifier-2 ]
  ~~~~~~~~~~~~~~~~ ~~~~~~~~~~~~~~~~

[ BLANK LINE|SCREEN ] [ ERASE EOL|EOS ]
  ~~~~~ ~~~~ ~~~~~~     ~~~~~ ~~~ ~~~
[ BLANK WHEN ZERO ] [ JUSTIFIED RIGHT ]
  ~~~~~      ~~~~     ~~~~
[ BLINK ] [ HIGHLIGHT | LOWLIGHT ] [ REVERSE-VIDEO | REVERSE | REVERSED ]
  ~~~~~     ~~~~~~~~~   ~~~~~~~~     ~~~~~~~~~~~~~   ~~~~~~~   ~~~~~~~~

[ COLUMN NUMBER IS [ { +|PLUS  } ] integer-2 | identifier-3 ]
[ ~~~              [ {   ~~~~  } ]                          ]
[                  [ { -|MINUS } ]                          ]
[                  [ {   ~~~~~ } ]                          ]

[ CURSOR  { identifier-10 } ]
  ~~~~~~
[ FOREGROUND-COLOR|FOREGROUND-COLOUR IS integer-3 | identifier-4 ]
  ~~~~~~~~~~~~~~~~ ~~~~~~~~~~~~~~~~
[ { FROM literal-1 | identifier-5 } ]
[ { ~~~~                          } ]
[ { TO identifier-5               } ]
[ { ~~                            } ]
[ { USING identifier-5            } ]
[ { ~~~~~                         } ]
[ { VALUE IS [ ALL ] literal-1    } ]
    ~~~~~      ~~~
[ FULL | LENGTH-CHECK ] [ REQUIRED | EMPTY-CHECK ] [ SECURE | NO-ECHO ]
  ~~~~   ~~~~~~~~~~~~     ~~~~~~~~   ~~~~~~~~~~~     ~~~~~~   ~~~~~~~
[ LEFTLINE ] [ OVERLINE ] [ UNDERLINE ]
  ~~~~~~~~     ~~~~~~~~     ~~~~~~~~~

[ LINE NUMBER IS [ { +|PLUS  } ] integer-4 | identifier-6 ]
[ ~~~            [ {   ~~~~  } ]                         ]
[                [ { -|MINUS } ]                         ]
[                [ {   ~~~~~ } ]                         ]

[ NO-ECHO | NO UPDATE ]
  ~~~~~~~   ~~ ~~~~~~
[ OCCURS integer-5 TIMES ]
  ~~~~~~
[ PICTURE IS picture-string ]
  ~~~
[ PROMPT [ CHARACTER IS literal-2 | identifier-7 ]
```

```
  ~~~~~~   ~~~~~~~~~
[ SCROLL DOWN | SCROLL UP | SIZE | TIME OUT ]
  ~~~~~~ ~~~~   ~~~~~~ ~~   ~~~~   ~~~~ ~~~

[ SIGN IS LEADING|TRAILING [ SEPARATE CHARACTER ] ]
  ~~~~    ~~~~~~~ ~~~~~~~~   ~~~~~~~~
[ UPDATE ]  .
  ~~~~~~
```

01-Level-Constant Syntax

```
01 constant-name-1 CONSTANT [ IS GLOBAL ]
                   ~~~~~~~~      ~~~~~~

  { AS { literal-1                          } }
  {    { arithmetic-expression-1            } }
  {    { { BYTE-LENGTH } OF { identifier-1 } } }
  {    { { ~~~~~~~~~~~ }    { usage-name   } } }
  {    { { LENGTH      }                    } }
  {        ~~~~~~                             }
  { FROM CDF-variable-name-1                  }
    ~~~~
```

66-Level-Data-Item Syntax

```
66 identifier-1 RENAMES identifier-2 [ THRU|THROUGH identifier-3 ] .
                ~~~~~~~               ~~~~ ~~~~~~~
```

77-Level-Data-Item Syntax

```
77 identifier-1 [ IS GLOBAL|EXTERNAL ]
                     ~~~~~~ ~~~~~~~~

[ BASED ]
  ~~~~~

[ BLANK WHEN ZERO ]
  ~~~~~      ~~~~

[ JUSTIFIED RIGHT ]
  ~~~~

[ PICTURE IS picture-string ]
  ~~~

[ REDEFINES identifier-5 ]
  ~~~~~~~~~

[ SIGN IS LEADING|TRAILING [ SEPARATE CHARACTER ] ]
  ~~~~    ~~~~~~~ ~~~~~~~~   ~~~~~~~~

[ SYNCHRONIZED|SYNCHRONISED [ LEFT|RIGHT ] ]
  ~~~~         ~~~~           ~~~~ ~~~~~

[ USAGE IS data-item-usage ]
  ~~~~~

[ VALUE IS [ ALL ] literal-1 ] .
  ~~~~~      ~~~
```

The `LEFT` and `RIGHT` (SYNCHRONIZED) clauses are syntactically recognized but are otherwise non-functional.

78-Level-Constant Syntax

```
78 constant-name-1 VALUE IS
                   ~~~~~

 { integer-1                 } [ { +|-|*|/|** } { integer-3                 } ]
 { identifier-1              } [ { AND        } { identifier-3              } ]
 { literal-1                 } [ { ~~~        } { literal-3                 } ]
```

```
{ arithmetic-expression-1    } [ { OR         } { arithmetic-expression-3    } ]
{ LENGTH OF { identifier-2 } } [ { ~~         } { LENGTH OF { identifier-4 } } ]
{ ~~~~~~    { literal-2    } } [                 { ~~~~~~    { literal-4    } } ]

{ START OF  identifier-5  }
{ ~~~~~                   }
```

88-Level-Data-Item Syntax

```
88 condition-name-1 { VALUE IS   } {literal-1 [ THRU|THROUGH literal-2 ]}...
                    { ~~~~~      }              ~~~~ ~~~~~~~
                    { VALUES ARE }
                      ~~~~~~

  [ WHEN SET TO FALSE IS literal-3 ] .
                ~~~~~
```

5 PROCEDURE DIVISION Syntax

PROCEDURE DIVISION Syntax

```
  PROCEDURE DIVISION [ { USING Subprogram-Argument ...        } ]
  ~~~~~~~~~ ~~~~~~~~   { ~~~~~                              }
                       { CHAINING Main-Program-Argument...}
                         ~~~~~~~~
                     [ RETURNING identifier-1 ] .
[ DECLARATIVES. ]      ~~~~~~~~~
  ~~~~~~~~~~~~
[ Event-Handler-Routine...  .  ]

[ END DECLARATIVES. ]
  ~~~ ~~~~~~~~~~~~
  General-Program-Logic

[ Nested-Subprogram...  ]

[ END PROGRAM|FUNCTION name-1 ]
  ~~~ ~~~~~~~ ~~~~~~~~
```

PROCEDURE DIVISION Subprogram-Argument Syntax

```
[ BY { REFERENCE [ OPTIONAL ]                       } ] identifier-1
     { ~~~~~~~~~   ~~~~~~~~                         }
     { VALUE [ [ UNSIGNED ] SIZE IS { AUTO      } ] }
       ~~~~~     ~~~~~~~~   ~~~~    { ~~~~      }
                                    { DEFAULT   }
                                    { ~~~~~~~   }
                                    { integer-1 }
```

PROCEDURE DIVISION Main-Program-Argument Syntax

```
[ BY REFERENCE ] [ OPTIONAL ] identifier-1
     ~~~~~~~~~     ~~~~~~~~
```

PROCEDURE DIVISION RETURNING Syntax

```
RETURNING identifier-1
~~~~~~~~~
```

DECLARATIVES Syntax

```
 [ DECLARATIVES.                                          ]
 [ ~~~~~~~~~~~~~                                          ]
 [ {section-name-1 SECTION.                               ]
 [                 ~~~~~~~~                               ]
 [ USE statement.                                         ]
 [                                                        ]
 [ [sentence]...[paragraph-name-1.  [sentence]...]...}...]
 [                                                        ]
 [ END DECLARATIVES.                                      ]
 [ ~~~~~~~~~~~~~~~~~                                      ]
```

Where the USE statement can be one of 4 formats:

1. FILE EXCEPTIONS procedure,
2. DEBUGGING procedures,
3. REPORTING procedure to be executed before the printing of the designated Report Group,
4. EXCEPTION CONDITIONS procedures to be executed after detection of exception conditions.

```
 USE { [ GLOBAL ] AFTER STANDARD { EXCEPTION } PROCEDURE ON { INPUT           } }
 ~~~ {   ~~~~~~                  { ~~~~~~~~~ }             { ~~~~~           } }
     {                           { ERROR     }             { OUTPUT          } }
     {                           { ~~~~~     }             { ~~~~~~          } }
     {                                                     { I-O             } }
     {                                                     { ~~~             } }
     {                                                     { EXTEND          } }
     {                                                     { ~~~~~~          } }
     {                                                     { {file-name-1 }..} }
     {                                                                         }
     {                                                                         }
     { FOR DEBUGGING ON { procedure-name-1           }                         }
     {     ~~~~~~~~~    { ALL PROCEDURES             }                         }
     {                  { ~~~ ~~~~~~~~~~             }                         }
     {                  { REFERENCES OF identifier-1 }                         }
     {                                                                         }
     { [ GLOBAL ] BEFORE REPORTING identifier-2                                }
     {  ~~~~~~   ~~~~~~ ~~~~~~~~~                                             }
     {                                                                         }
     { AFTER {EC|EXCEPTION CONDITION} {exception-name-1                      } }
     {       ~~ ~~~~~~~~~ ~~~~~~~~~   {exception-name-2 {FILE file-name-2}..} } }
     {                                                  ~~~~                   }
```

The AFTER EXCEPTION CONDITION and AFTER EC clauses are syntactically recognized but are otherwise non-functional.

LENGTH OF Syntax

```
LENGTH OF numeric-literal-1 | identifier-1
~~~~~~
```

Reference Modifier (Format 1) Syntax

```
identifier-1 [ OF|IN identifier-2 ] [ (subscript...)  ]  (start:[ length ])
               ~~ ~~
```

Reference Modifier (Format 2) Syntax

```
intrinsic-function-reference (start:[ length ])
```

Arithmetic-Expression Syntax

```
Unary-Expression-1 { **   } Unary-Expression-2
                   {  *|/ }
                   {  +|- }
```

Unary-Expression Syntax

```
{ [ +|- ] { ( Arithmetic-Expression-1 )          } }
{         { [ LENGTH OF ] { identifier-1       } } }
{         {   ~~~~~~ ~~   { literal-1          } } }
{         {               { Function-Reference } } }
{ Arithmetic-Expression-2                          }
```

Class-Condition Syntax

```
identifier-1 IS [ NOT ] { NUMERIC          }
                  ~~~   { ~~~~~~~          }
                        { ALPHABETIC       }
                        { ~~~~~~~~~~       }
                        { ALPHABETIC-LOWER }
                        { ~~~~~~~~~~~~~~~~ }
                        { ALPHABETIC-UPPER }
                        { ~~~~~~~~~~~~~~~~ }
                        { OMITTED          }
                        { ~~~~~~~          }
                        { class-name-1     }
```

Sign-Condition Syntax

```
identifier-1 IS [ NOT ] { POSITIVE }
                  ~~~   { ~~~~~~~~ }
                        { NEGATIVE }
                        { ~~~~~~~~ }
                        { ZERO     }
                          ~~~~
```

Relation-Condition Syntax

```
{ identifier-1            } IS [ NOT ] RelOp { identifier-2            }
{ literal-1               }      ~~~         { literal-2               }
{ arithmetic-expression-1 }                  { arithmetic-expression-2 }
{ index-name-1            }                  { index-name-2            }
```

Boolean-Expression Syntax

```
General Boolean-Expression Syntax

[ Operand-1 ] { Boolean-Operator } Operand-2

  B-NOT operand-3

Boolean Operators         Meaning
B-SHIFT-L                 LEFT operation
B-SHIFT-LC                Circular Shift Left operation
B-SHIFT-R                 Shift Right operation
B-SHIFT-RC                Circular Shift Right operation

Binary boolean operators  Meaning
B-AND                     AND operation (boolean conjunction)
B-OR                      Inclusive OR operation (boolean inclusive disjunction)
B-XOR                     Exclusive OR operation (boolean exclusive disjunction)

Unary boolean operator   Meaning
B-NOT                    Negation operation
```

RelOp Syntax

```
{ EQUAL TO                  }
{ ~~~~~                     }
{ EQUALS                    }
{ ~~~~~~                    }
{ GREATER THAN              }
{ ~~~~~~~                   }
{ GREATER THAN OR EQUAL TO  }
{ ~~~~~~~      ~~ ~~~~~     }
{ LESS THAN                 }
{ ~~~~                      }
{ LESS THAN OR EQUAL TO     }
{ ~~~~      ~~ ~~~~~       }
{ =                         }
{ >                         }
{ >=                        }
{ <                         }
{ <=                        }
{ <>                        }
```

Combined Condition Syntax

```
[ ( ] Condition-1 [ ) ] { AND } [ ( ] Condition-2 [ ) ]
                       { ~~~ }
                       { OR  }
                       { ~~  }
```

Negated Condition Syntax

```
NOT Condition-1
~~~
```

ACCEPT FROM CONSOLE Syntax

```
  ACCEPT { identifier-1 }   [ FROM mnemonic-name-1 ]
  ~~~~~~                      ~~~~

         { OMITTED      }
           ~~~~~~~


[ END-ACCEPT ]
  ~~~~~~~~~~
```

ACCEPT FROM COMMAND-LINE Syntax

```
ACCEPT identifier-1
~~~~~~
       FROM { COMMAND-LINE                                  }
       ~~~~ { ~~~~~~~~~~~~                                  }
            { ARGUMENT-NUMBER                               }
            { ~~~~~~~~~~~~~~~                               }
            { ARGUMENT-VALUE                                }
            { ~~~~~~~~~~~~~~                                }
            [ ON EXCEPTION imperative-statement-1 ]
                 ~~~~~~~~~
            [ NOT ON EXCEPTION imperative-statement-2 ]
              ~~~    ~~~~~~~~~
[ END-ACCEPT ]
  ~~~~~~~~~~
```

ACCEPT FROM ENVIRONMENT Syntax

```
ACCEPT identifier-1
~~~~~~
       FROM { ENVIRONMENT-VALUE            }
       ~~~~ { ~~~~~~~~~~~~~~~~~            }
            { ENVIRONMENT { literal-1    } }
            { ~~~~~~~~~~~ { identifier-1 } }
     [ ON EXCEPTION imperative-statement-1 ]
         ~~~~~~~~~
     [ NOT ON EXCEPTION imperative-statement-2 ]
       ~~~    ~~~~~~~~~
[ END-ACCEPT ]
  ~~~~~~~~~~
```

ACCEPT Data-Item Syntax

```
ACCEPT { identifier-1 }
~~~~~~
       { OMITTED      }
         ~~~~~~~
                        [{ FROM EXCEPTION-STATUS }]
                           ~~~~ ~~~~~~~~~~~~~~~~
                        [{ FROM CRT ] [ MODE IS BLOCK ]}
                           ~~~~ ~~~     ~~~~    ~~~~~

       [ AT { | LINE NUMBER { integer-1    }                | } ]
         ~~ { | ~~~~        { identifier-2 }                | }
            { | COLUMN|COL|POSITION|POS NUMBER { integer-2    }
            { | ~~~~~~ ~~~ ~~~~~~~~ ~~~        { identifier-3 }
            {                                                 }
            { { integer-3    }                                }
            { { identifier-4 }                                }

       [ WITH [ Attribute-Specification ]...
         ~~~~
              [ LOWER|UPPER ]
                ~~~~~ ~~~~~
              [ SCROLL { UP   } [ { integer-4    } LINE|LINES ] ]
                ~~~~~~ { ~~   }   { identifier-5 }
                       { DOWN }
                         ~~~~
              [ TIMEOUT|TIME-OUT AFTER { integer-5    } ]
                ~~~~~~~ ~~~~~~~~       { identifier-6 }
              [ CONVERSION ]
                ~~~~~~~~~~
              [ UPDATE ]
                ~~~~~~
              [ PROTECTED SIZE IS  { integer-6    }  ]
                           ~~~~    { identifier-7 }
              [ CONTROL        { literal-8    } ]
                ~~~~~~~        { identifier-8 }
              [ { COLOUR } IS  { integer-9    } ]
                { COLOR  }     { identifier-9 }
                  ~~~~~~
              [ CURSOR { identifier-10 } ]
                ~~~~~~

       [ ON EXCEPTION|ESCAPE imperative-statement-1 ]
            ~~~~~~~~~ ~~~~~~
       [ NOT ON EXCEPTION|ESCAPE imperative-statement-2 ]
         ~~~    ~~~~~~~~~ ~~~~~~
[ END-ACCEPT ]
  ~~~~~~~~~~
```

The `FROM CRT`, `MODE IS BLOCK` and `CONVERSION` clauses are syntactically recognized but are otherwise non-functional.

ACCEPT FROM DATE/TIME Syntax

```
ACCEPT identifier-1 FROM { DATE [ YYYYMMDD ] }
~~~~~~               ~~~~ { ~~~~   ~~~~~~~~   }
                          { DAY [ YYYYDDD ]   }
                          { ~~~   ~~~~~~~     }
                          { DAY-OF-WEEK       }
                          { ~~~~~~~~~~~       }
                          { TIME              }
                          { ~~~~              }
                          { MICROSECOND-TIME  }
                          { ~~~~~~~~~~~~~~~~  }
[ END-ACCEPT ]
  ~~~~~~~~~~
```

ACCEPT FROM Screen-Info Syntax

```
ACCEPT identifier-1
~~~~~~
       FROM { LINES|LINE-NUMBER }
       ~~~~ { ~~~~~ ~~~~~~~~~~ }
            { COLS|COLUMNS      }
            { ~~~~ ~~~~~~~      }
            { ESCAPE KEY        }
              ~~~~~~ ~~~
[ END-ACCEPT ]
  ~~~~~~~~~~
```

ACCEPT FROM Runtime-Info Syntax

```
ACCEPT identifier-1
~~~~~~
       FROM { EXCEPTION STATUS }
       ~~~~ { ~~~~~~~~~ ~~~~~~ }
            { USER NAME        }
              ~~~~ ~~~~
[ END-ACCEPT ]
  ~~~~~~~~~~
```

ACCEPT OMITTED Syntax

```
ACCEPT OMITTED
~~~~~~

1.    For console :  See 6.17.1.1 (ACCEPT FROM CONSOLE Syntax)

2.    For Screen  :  See 6.17.1.4 (ACCEPT screen-data-item Syntax)

[ END-ACCEPT ]
  ~~~~~~~~~~
```

ACCEPT FROM EXCEPTION STATUS Syntax

```
ACCEPT exception-status-pic-9-4   FROM EXCEPTION STATUS
~~~~~~                            ~~~~ ~~~~~~~~~ ~~~~~~

[ END-ACCEPT ]
  ~~~~~~~~~~
```

ADD TO Syntax

```
ADD { literal-1    }...
~~~ { identifier-1 }

    TO { identifier-2
    ~~
       [ ROUNDED [ MODE IS { AWAY-FROM-ZERO         } ] ] }...
         ~~~~~~~   ~~~~    { ~~~~~~~~~~~~~~         }
                           { NEAREST-AWAY-FROM-ZERO }
                           { ~~~~~~~~~~~~~~~~~~~~~~ }
                           { NEAREST-EVEN           }
                           { ~~~~~~~~~~~~           }
                           { NEAREST-TOWARD-ZERO    }
                           { ~~~~~~~~~~~~~~~~~~~    }
                           { PROHIBITED             }
                           { ~~~~~~~~~~             }
                           { TOWARD-GREATER         }
                           { ~~~~~~~~~~~~~~         }
                           { TOWARD-LESSER          }
                           { ~~~~~~~~~~~~~          }
                           { TRUNCATION             }
                             ~~~~~~~~~~

  [ ON SIZE ERROR imperative-statement-1 ]
       ~~~~ ~~~~~
  [ NOT ON SIZE ERROR imperative-statement-2 ]
    ~~~    ~~~~ ~~~~~

[ END-ADD ]
  ~~~~~~~
```

ADD GIVING Syntax

```
ADD { literal-1    }...
~~~ { identifier-1 }

  [ TO identifier-2 ]
    ~~
    GIVING { identifier-3
    ~~~~~~
      [ ROUNDED [ MODE IS { AWAY-FROM-ZERO         } ] ] }...
        ~~~~~~~   ~~~~    { ~~~~~~~~~~~~~~         }
                          { NEAREST-AWAY-FROM-ZERO }
                          { ~~~~~~~~~~~~~~~~~~~~~~ }
                          { NEAREST-EVEN           }
                          { ~~~~~~~~~~~~           }
                          { NEAREST-TOWARD-ZERO    }
                          { ~~~~~~~~~~~~~~~~~~     }
                          { PROHIBITED             }
                          { ~~~~~~~~~~             }
                          { TOWARD-GREATER         }
                          { ~~~~~~~~~~~~~~         }
                          { TOWARD-LESSER          }
                          { ~~~~~~~~~~~~           }
                          { TRUNCATION             }
                            ~~~~~~~~~~

  [ ON SIZE ERROR imperative-statement-1 ]
       ~~~~ ~~~~~

  [ NOT ON SIZE ERROR imperative-statement-2 ]
    ~~~    ~~~~ ~~~~~

[ END-ADD ]
  ~~~~~~~
```

ADD CORRESPONDING Syntax

```
  ADD CORRESPONDING identifier-1
  ~~~
      TO identifier-2
      ~~
    [ ROUNDED [ MODE IS { AWAY-FROM-ZERO         } ] ]
      ~~~~~~~   ~~~~    { ~~~~~~~~~~~~~~         }
                        { NEAREST-AWAY-FROM-ZERO }
                        { ~~~~~~~~~~~~~~~~~~~~~~ }
                        { NEAREST-EVEN           }
                        { ~~~~~~~~~~~~           }
                        { NEAREST-TOWARD-ZERO    }
                        { ~~~~~~~~~~~~~~~~~~     }
                        { PROHIBITED             }
                        { ~~~~~~~~~~             }
                        { TOWARD-GREATER         }
                        { ~~~~~~~~~~~~~~         }
                        { TOWARD-LESSER          }
                        { ~~~~~~~~~~~~~          }
                        { TRUNCATION             }
                          ~~~~~~~~~~
    [ ON SIZE ERROR imperative-statement-1 ]
        ~~~~ ~~~~~
    [ NOT ON SIZE ERROR imperative-statement-2 ]
      ~~~    ~~~~ ~~~~~
[ END-ADD ]
  ~~~~~~~
```

ALLOCATE Syntax

```
FORMAT 1.  ALLOCATE a "BASED" ITEM.

 ALLOCATE  identifier-1
 ~~~~~~~~
           [{ INITIALIZED } ]  [ RETURNING identifier-3 ]
           [{ ~~~~~~~~~~~ } ]    ~~~~~~~~~
           [{ INITIALISED } ]
           [{ ~~~~~~~~~~~ } ]


FORMAT 2.  ALLOCATE a memory block.

 ALLOCATE   arithmetic-expression-1  CHARACTERS
 ~~~~~~~~                            ~~~~~~~~~~
           [{ INITIALIZED } [ TO { identifier-2}] ]  RETURNING identifier-3
           [{ ~~~~~~~~~~~ } [ ~~ {             }] ]  ~~~~~~~~~
           [{ INITIALISED } [    { literal-1   }] ]
           [{ ~~~~~~~~~~~ }                      ]
```

ALTER Syntax

```
ALTER procedure-name-1 TO PROCEED TO procedure-name-2
~~~~~                  ~~
```

CALL Syntax

```
CALL [ {STDCALL        } ]  [ WITH {STDCALL} LINKAGE ]   {literal-1   }
~~~~ [ {~~~~~~~        } ]  [ ~~~~ {~~~~~~~} ~~~~~~~ ]   {identifier-1}
     [ {STATIC         } ]  [      {C      }         ]
     [ {~~~~~~         } ]  [      {~      }         ]
     [ {C              } ]  [      {PASCAL }         ]
     [ {~              } ]  [      {~~~~~~ }         ]
     [ {EXTERN         } ]
     [ {~~~~~~         } ]
     [ {PASCAL         } ]
     [ {~~~~~~         } ]
     [ {mnemonic-name-1} ]

     [USING{[BY{REFERENCE}] {[{         SIZE IS AUTO     }] literal-2   }}...]
     [~~~~~{[  {~~~~~~~~~}} {[{         ~~~~    ~~~~     }] identifier-2}}   ]
     [     {[  { CONTENT }] {[{         SIZE IS DEFAULT  }]             }}   ]
     [     {[  { ~~~~~~~ }] {[{         ~~~~    ~~~~~~~  }]             }}   ]
     [     {[  { VALUE   }] {[{         SIZE IS integer-1}]             }}   ]
     [     {[  { ~~~~~   }] {[{         ~~~~             }]             }}   ]
     [     {               {[{UNSIGNED SIZE IS AUTO     }]             }}   ]
     [     {               {[{~~~~~~~~ ~~~~    ~~~~     }]             }}   ]
     [     {               {[{UNSIGNED SIZE IS integer-2}]             }}   ]
     [     {               {[{~~~~~~~~ ~~~~    ~~~~     }]             }}   ]
     [     {               {                                OMITTED    }}   ]
     [     {               {                                ~~~~~~~    }}   ]

     [ RETURNING|GIVING { INTO identifier-3      } ]
     [ ~~~~~~~~~ ~~~~~~ { ADDRESS OF identifier-4} ]
     [                  { ~~~~~~~                } ]
     [                  { NOTHING                } ]
     [                  { ~~~~~~~                } ]
     [                  { NULL                   } ]
     [                  { ~~~~                   } ]
     [                  { OMITTED                } ]
     [                  { ~~~~~~~                } ]


     [ ON OVERFLOW|EXCEPTION     imperative-statement-1 ]
          ~~~~~~~~ ~~~~~~~~~

     [ NOT ON OVERFLOW|EXCEPTION imperative-statement-2 ]
       ~~~    ~~~~~~~~ ~~~~~~~~~

[ END-CALL ]
  ~~~~~~~~
```

CANCEL Syntax

```
CANCEL { literal-1    }...
~~~~~~ { identifier-1 }
```

CLOSE Syntax

```
CLOSE { file-name-1 [ { REEL|UNIT [ FOR REMOVAL ] } ] }...
~~~~~                 { ~~~~ ~~~~       ~~~~~~~   }
                      { WITH LOCK                 }
                      {      ~~~~                 }
                      { WITH NO REWIND            }
                             ~~ ~~~~~~
```

The `REEL`, `LOCK` and `NO REWIND` clauses are syntactically recognized but are otherwise non-functional, except for the `CLOSE...NO REWIND` statement, which will generate a file status of 07 rather than the usual 00 (but take no other action).

COMMIT Syntax

```
COMMIT
~~~~~~
```

COMPUTE Syntax

```
  COMPUTE { identifier-1
  ~~~~~~~
      [ ROUNDED [ MODE IS { AWAY-FROM-ZERO         } ] ]...
        ~~~~~~~   ~~~~    { ~~~~~~~~~~~~~~         }
                          { NEAREST-AWAY-FROM-ZERO }
                          { ~~~~~~~~~~~~~~~~~~~~~~ }
                          { NEAREST-EVEN           }
                          { ~~~~~~~~~~~~           }
                          { NEAREST-TOWARD-ZERO    }
                          { ~~~~~~~~~~~~~~~~~~     }
                          { PROHIBITED             }
                          { ~~~~~~~~~~             }
                          { TOWARD-GREATER         }
                          { ~~~~~~~~~~~~~~         }
                          { TOWARD-LESSER          }
                          { ~~~~~~~~~~~~~          }
                          { TRUNCATION             }
                            ~~~~~~~~~~
        = | EQUAL arithmetic-expression-1  |  boolean-expression-1
          ~~~~~
      [ ON SIZE ERROR imperative-statement-1 ]
           ~~~~ ~~~~~
      [ NOT ON SIZE ERROR imperative-statement-2 ]
        ~~~    ~~~~ ~~~~~
[ END-COMPUTE ]
  ~~~~~~~~~~~
```

CONTINUE Syntax

```
CONTINUE
~~~~~~~~

                { identifier-1            }
CONTINUE AFTER  { literal-1               }   SECONDS
~~~~~~~~ ~~~~~  { arithmetic-expression-1 }   ~~~~~~~
```

DELETE Syntax

```
  DELETE file-name-1 RECORD
  ~~~~~~
    [ INVALID KEY imperative-statement-1 ]
      ~~~~~~~
    [ NOT INVALID KEY imperative-statement-2 ]
      ~~~ ~~~~~~~
[ END-DELETE ]
  ~~~~~~~~~~
```

DISPLAY UPON Device Syntax

```
  DISPLAY { literal-1    }...
  ~~~~~~~ { identifier-1 }
     [ UPON mnemonic-name-1 ]
       ~~~~
     [ WITH NO ADVANCING ]
            ~~ ~~~~~~~~~
     [ ON EXCEPTION imperative-statement-1 ]
          ~~~~~~~~~
     [ NOT ON EXCEPTION imperative-statement-2 ]
       ~~~    ~~~~~~~~~
[ END-DISPLAY ]
  ~~~~~~~~~~~
```

DISPLAY UPON COMMAND-LINE Syntax

```
  DISPLAY { literal-1    }...
  ~~~~~~~ { identifier-1 }
       UPON { ARGUMENT-NUMBER|COMMAND-LINE }
       ~~~~ { ~~~~~~~~~~~~~~~ ~~~~~~~~~~~ }
     [ ON EXCEPTION imperative-statement-1 ]
          ~~~~~~~~~
     [ NOT ON EXCEPTION imperative-statement-2 ]
       ~~~    ~~~~~~~~~
[ END-DISPLAY ]
  ~~~~~~~~~~~
```

DISPLAY UPON ENVIRONMENT-NAME Syntax

```
DISPLAY { literal-1    }...  UPON { ENVIRONMENT-VALUE }
~~~~~~~ { identifier-1 }    ~~~~ { ~~~~~~~~~~~~~~~~~ }
                                 { ENVIRONMENT-NAME  }
                                   ~~~~~~~~~~~~~~~~

   [ ON EXCEPTION imperative-statement-1 ]
        ~~~~~~~~~
   [ NOT ON EXCEPTION imperative-statement-2 ]
     ~~~    ~~~~~~~~~

[ END-DISPLAY ]
  ~~~~~~~~~~~
```

DISPLAY Data-Item Syntax

```
DISPLAY identifier-1 [ UPON CRT|CRT-UNDER ]
~~~~~~~              ~~~~ ~~~ ~~~~~~~~~

        OMITTED
        ~~~~~~~
    [ AT { | LINE NUMBER { integer-1    }            | } ]
      ~~ { | ~~~~        { identifier-2 }            | }
         { | COLUMN|COL|POSITION|POS NUMBER { integer-2    }
         { | ~~~~~~ ~~~ ~~~~~~~~ ~~~        { identifier-3 }
         {                                              }
         { { integer-3    }                             }
         { { identifier-4 }                             }

    [ WITH [ Attribute-Specification ]...
      ~~~~
           [ SCROLL { UP   } [ { integer-4    } LINE|LINES ] ]
             ~~~~~~ { ~~   }   { identifier-5 }
                    { DOWN }
                      ~~~~
           [ SIZE { integer-5    }
             ~~~~ { identifier-6 }  ]
           [ CONTROL  { literal-7    } ]
             ~~~~~~~  { identifier-7 }
           [ COLOR  { IS } { integer-8    } ]
             COLOUR { IS } { identifier-8 } ]
               ~~~~~~
    [ ON EXCEPTION imperative-statement-1 ]
         ~~~~~~~~~
    [ NOT ON EXCEPTION imperative-statement-2 ]
      ~~~    ~~~~~~~~~

[ END-DISPLAY ]
  ~~~~~~~~~~~
```

The `UPON CRT`, `UPON CRT-UNDER` and `CONVERSION` clauses are syntactically recognized but are otherwise non-functional. They are supported to provide compatibility with COBOL source written for other COBOL implementations.

DISPLAY data-item (Microsoft format) Syntax

```
DISPLAY  [position-spec] {identifier-2 | literal-1} ...
~~~~~~~

  [ WITH [ Attribute-Specification ]...
    ~~~~
        [ ERASE  { SCREEN|LINE }  ]
        [ SCROLL { UP   } [ { integer-3    } LINE|LINES ] ]
          ~~~~~~  { ~~   }   { identifier-3 }
                                { DOWN }
                                  ~~~~
        [ SIZE { integer-4    }
          ~~~~ { identifier-4 } ]
[ END-DISPLAY ]
  ~~~~~~~~~~~


  where  position-spec is
  { (position-spec-num, position-spec-num) }
  { (,position-spec-num)                   }
  { (position-spec-num,)                   }

  where  position-spec-num  is
  { identifier-1 } [{ + } integer-1 ]
  { integer-2    } [{ - }           ]
```

DIVIDE INTO Syntax

```
 DIVIDE { literal-1    } INTO { literal-2    } GIVING { identifier-3
 ~~~~~~ { identifier-1 } ~~~~ { identifier-2 } ~~~~~~

            [ ROUNDED [ MODE IS { AWAY-FROM-ZERO         } ] ] }...
              ~~~~~~~   ~~~~    { ~~~~~~~~~~~~~~         }
                                { NEAREST-AWAY-FROM-ZERO }
                                { ~~~~~~~~~~~~~~~~~~~~~~ }
                                { NEAREST-EVEN           }
                                { ~~~~~~~~~~~~           }
                                { NEAREST-TOWARD-ZERO    }
                                { ~~~~~~~~~~~~~~~~~~     }
                                { PROHIBITED             }
                                { ~~~~~~~~~~             }
                                { TOWARD-GREATER         }
                                { ~~~~~~~~~~~~~~         }
                                { TOWARD-LESSER          }
                                { ~~~~~~~~~~~~~          }
                                { TRUNCATION             }
                                  ~~~~~~~~~~

    [ REMAINDER identifier-4 ]
      ~~~~~~~~~

    [ ON SIZE ERROR imperative-statement-1 ]
         ~~~~ ~~~~~

    [ NOT ON SIZE ERROR imperative-statement-2 ]
      ~~~    ~~~~ ~~~~~

 [ END-DIVIDE ]
   ~~~~~~~~~~
```

For further clarification, the following examples are provided to be used with the various flavours of the DIVIDE statement when using BY, INTO and GIVING.

DIVIDE Operation	A	B	C	D
DIVIDE A INTO B	A	B/A		
DIVIDE A INTO B GIVING C	A	B	B/A	
DIVIDE A BY B GIVING C	A	B	A/B	
DIVIDE A INTO B GIVING C REMAINDER D	A	B	Integer(B/A)	Integer remainder

DIVIDE INTO GIVING Syntax

```
DIVIDE { literal-1    } INTO { literal-2    } GIVING { identifier-3
~~~~~~ { identifier-1 } ~~~~ { identifier-2 } ~~~~~~

           [ ROUNDED [ MODE IS { AWAY-FROM-ZERO         } ] ] }...
             ~~~~~~~   ~~~~    { ~~~~~~~~~~~~~~         }
                               { NEAREST-AWAY-FROM-ZERO }
                               { ~~~~~~~~~~~~~~~~~~~~~~ }
                               { NEAREST-EVEN           }
                               { ~~~~~~~~~~~~           }
                               { NEAREST-TOWARD-ZERO    }
                               { ~~~~~~~~~~~~~~~~~~     }
                               { PROHIBITED             }
                               { ~~~~~~~~~~             }
                               { TOWARD-GREATER         }
                               { ~~~~~~~~~~~~~~         }
                               { TOWARD-LESSER          }
                               { ~~~~~~~~~~~~~          }
                               { TRUNCATION             }
                                 ~~~~~~~~~~

   [ REMAINDER identifier-4 ]
     ~~~~~~~~~

   [ ON SIZE ERROR imperative-statement-1 ]
        ~~~~ ~~~~~

   [ NOT ON SIZE ERROR imperative-statement-2 ]
     ~~~    ~~~~ ~~~~~

[ END-DIVIDE ]
  ~~~~~~~~~~
```

DIVIDE BY GIVING Syntax

```
DIVIDE { literal-1    } BY { literal-2    } GIVING { identifier-3
~~~~~~ { identifier-1 } ~~ { identifier-2 } ~~~~~~

           [ ROUNDED [ MODE IS { AWAY-FROM-ZERO         } ] ] }...
             ~~~~~~~   ~~~~    { ~~~~~~~~~~~~~~         }
                               { NEAREST-AWAY-FROM-ZERO }
                               { ~~~~~~~~~~~~~~~~~~~~~~ }
                               { NEAREST-EVEN           }
                               { ~~~~~~~~~~~~           }
                               { NEAREST-TOWARD-ZERO    }
                               { ~~~~~~~~~~~~~~~~~~     }
                               { PROHIBITED             }
                               { ~~~~~~~~~~             }
                               { TOWARD-GREATER         }
                               { ~~~~~~~~~~~~~~         }
                               { TOWARD-LESSER          }
                               { ~~~~~~~~~~~~~          }
                               { TRUNCATION             }
                                 ~~~~~~~~~~

   [ REMAINDER identifier-4 ]
     ~~~~~~~~~

   [ ON SIZE ERROR imperative-statement-1 ]
        ~~~~ ~~~~~

   [ NOT ON SIZE ERROR imperative-statement-2 ]
     ~~~    ~~~~ ~~~~~

[ END-DIVIDE ]
  ~~~~~~~~~~
```

ENTRY Syntax

```
ENTRY [ {STDCALL        } ]  [ WITH {STDCALL} LINKAGE ]   literal-1
~~~~  [ {~~~~~~~        } ]  [ ~~~~ {~~~~~~~} ~~~~~~~ ]
      [ {STATIC         } ]  [      {C      }         ]
      [ {~~~~~~         } ]  [      {~      }         ]
      [ {C              } ]  [      {PASCAL }         ]
      [ {~              } ]  [      {~~~~~~ }         ]
      [ {EXTERN         } ]
      [ {~~~~~~         } ]
      [ {PASCAL         } ]
      [ {~~~~~~         } ]
      [ {mnemonic-name-1} ]

      [USING {[BY{REFERENCE}] {[{         SIZE IS AUTO     }] literal-2   }}...]
      [~~~~~ {[  {~~~~~~~~~}] {[{         ~~~~    ~~~~     }] identifier-2}}   ]
      [      {[  { CONTENT }] {[{         SIZE IS DEFAULT  }]             }}   ]
      [      {[  { ~~~~~~~ }] {[{         ~~~~    ~~~~~~~  }]             }}   ]
      [      {[  { VALUE   }] {[{         SIZE IS integer-1}]             }}   ]
      [      {[  { ~~~~~   }] {[{         ~~~~             }]             }}   ]
      [      {                {[{UNSIGNED SIZE IS AUTO     }]             }}   ]
      [      {                {[{~~~~~~~~ ~~~~    ~~~~     }]             }}   ]
      [      {                {[{UNSIGNED SIZE IS integer-2}]             }}   ]
      [      {                {[{~~~~~~~~ ~~~~    ~~~~     }]             }}   ]
      [      {                {                                OMITTED    }}   ]
      [      {                {                                ~~~~~~~    }}   ]
```

```
Format 2 (Special purpose and for GO TO )

ENTRY FOR GO TO literal-3
~~~~~ ~~~ ~~ ~~
```

EVALUATE Syntax

```
  EVALUATE Selection-Subject-1 [ ALSO Selection-Subject-2 ]...
  ~~~~~~~~                     ~~~~
{ { WHEN Selection-Object-1 [ ALSO Selection-Object-2 ] }...
    ~~~~                    ~~~~
        [ imperative-statement-1 ] }...
  [ WHEN OTHER
    ~~~~ ~~~~~
        imperative-statement-other ]

[ END-EVALUATE ]
  ~~~~~~~~~~~~
```

EVALUATE Selection Subject Syntax

```
{ TRUE         }
{ ~~~~         }
{ FALSE        }
{ ~~~~~        }
{ expression-1 }
{ identifier-1 }
{ literal-1    }
```

EVALUATE Selection Object Syntax

```
{ ANY                                                 }
{ ~~~                                                 }
{ TRUE                                                }
{ ~~~~                                                }
{ FALSE                                               }
{ ~~~~~                                               }
{ partial-expression-1                                }
{                                                     }
{ { expression-2 } [ THRU|THROUGH { expression-3 } ] }
{ { identifier-2 }   ~~~~ ~~~~~~~ { identifier-3 }   }
{ { literal-2    }                { literal-3    }   }
```

EXAMINE Syntax

```
EXAMINE identifier-1
~~~~~~~

   {           {  ALL          }                                    }
   {           {  ~~~          }                                    }
   { TALLYING  {  LEADING      } literal-1 [REPLACING BY literal-2] }
   { ~~~~~~~~  {  ~~~~~~~      }             ~~~~~~~~~ ~~           }
   {           {  UNTIL FIRST  }                                    }
   {           {  ~~~~~ ~~~~~  }                                    }
   {                                                                }
   {           {  ALL          }                                    }
   {           {  ~~~          }                                    }
   { REPLACING {  LEADING      } literal-3 BY literal-4             }
   { ~~~~~~~~~ {  ~~~~~~~      }           ~~                       }
   {           { [UNTIL] FIRST }                                    }
   {           {  ~~~~~  ~~~~~ }                                    }
```

EXHIBIT Syntax

```
EXHIBIT [CHANGED][NAMED] [position-spec] [ERASE] {identifier-1 | literal-1} ...
~~~~~~~  ~~~~~~~  ~~~~~                   ~~~~~
        [UPON mnemonic-name-1]
         ~~~~

where position-spec is

  {(position-spec-num, position-spec-num)}
  {(, position-spec-num)                 }
  {(position-spec-num, )                 }

where position-spec-num is

  {identifier-2} [{+} integer-2]
  {integer-1   } [{-}          ]
```

EXIT Syntax

```
EXIT [ { PROGRAM           }   [ { RETURNING } ] { identifier-1 } ]
~~~~                           [ { GIVING    } ] { literal-1    } ]
       { FUNCTION          } ]
       { ~~~~~~~~          } ]
       { PERFORM [ CYCLE ] } ]
       { ~~~~~~~   ~~~~~   } ]
       { SECTION           } ]
       { ~~~~~~~           } ]
       { PARAGRAPH         } ]
         ~~~~~~~~~
```

FREE Syntax

```
FREE { [ ADDRESS OF ] identifier-1 }...
~~~~     ~~~~~~~
```

GENERATE Syntax

```
GENERATE { report-name-1 }
~~~~~~~~ { identifier-1  }
```

GOBACK Syntax

```
GOBACK [ { RETURNING|GIVING { literal-1    }  ]
~~~~~~   { ~~~~~~~~~ ~~~~~~ { identifier-1 }
```

Simple GO TO Syntax

```
GO TO procedure-name-1
~~
GO TO ENTRY literal-3
~~    ~~~~~
```

GO TO DEPENDING ON Syntax

```
GO TO {procedure-name-1} ...
~~
                             DEPENDING ON identifier-1
                             ~~~~~~~~~
GO TO ENTRY {literal-3} ...
~~    ~~~~~
                             DEPENDING ON identifier-1
                             ~~~~~~~~~
```

IF Syntax

```
  IF conditional-expression
  ~~
  THEN { imperative-statement-1 }
       { NEXT SENTENCE          }
         ~~~~ ~~~~~~~~
[ ELSE { imperative-statement-2 } ]
  ~~~~ { NEXT SENTENCE          }
         ~~~~ ~~~~~~~~
[ END-IF ]
  ~~~~~~
```

INITIALIZE Syntax

```
 INITIALIZE|INITIALISE identifier-1...
 ~~~~~~~~~~ ~~~~~~~~~~
     [ WITH FILLER ]
            ~~~~~~
     [ { category-name-1 } TO VALUE ]
       { ALL             }    ~~~~~
         ~~~
     [ THEN REPLACING { category-name-2 DATA BY
            ~~~~~~~~~                       ~~
           [ LENGTH OF ] { literal-1    } }...  ]
             ~~~~~~      { identifier-1 }

     [ THEN TO DEFAULT ]
              ~~~~~~~
```

INITIATE Syntax

```
INITIATE report-name-1
~~~~~~~~
```

INSPECT Syntax

```
INSPECT { literal-1            }
~~~~~~~ { identifier-1         }
        { function-reference-1 }

 [ TALLYING { identifier-2 FOR { ALL|LEADING|TRAILING { literal-2    } }
   ~~~~~~~~                ~~~ { ~~~ ~~~~~~~ ~~~~~~~~ { identifier-3 } }
                               { CHARACTERS                            }
                                 ~~~~~~~~~~

             [ | { AFTER|BEFORE } INITIAL { literal-3    } | ] }...  ]
               |   ~~~~~ ~~~~~~           { identifier-4 } |

 [ REPLACING { { { ALL|FIRST|LEADING|TRAILING { literal-4    } }
   ~~~~~~~~~   { { ~~~ ~~~~~ ~~~~~~~ ~~~~~~~~ { identifier-5 } }
               { CHARACTERS                                  }
               { ~~~~~~~~~~                                  }

                BY { [ ALL ] literal-5 }
                ~~ {   ~~~             }
                   { identifier-6      }

             [ | { AFTER|BEFORE } INITIAL { literal-6    } | ] }...  ]
               |   ~~~~~ ~~~~~~           { identifier-7 } |

 [ CONVERTING { { literal-7    } TO { literal-8    }
   ~~~~~~~~~~   { identifier-8 } ~~ { identifier-9 }

             [ | { AFTER|BEFORE } INITIAL { literal-9     } | ] ]
               |   ~~~~~ ~~~~~~           { identifier-10 } |
```

JSON GENERATE Syntax

```
JSON GENERATE identier-1 FROM identier-2
~~~~ ~~~~~~~~              ~~~~

   [COUNT IN identier-3]
    ~~~~~

   NAME OF {identier-4 IS literal-1} .  .  .]
   ~~~~

   SUPPRESS {identier-5} .  .  .]
   ~~~~~~~~

   [ON EXCEPTION imperative-statement-1
    ~~ ~~~~~~~~~

    NOT ON EXCEPTION imperative-statement-2]
    ~~~    ~~~~~~~~~

   END-JSON
   ~~~~~~~~
```

JSON PARSE Syntax

```
JSON PARSE identier-1 INTO identier-2
~~~~ ~~~~~             ~~~~

   [WITH DETAIL]
         ~~~~~~

   [NAME OF {identier-3 IS literal-1} .  .  .]
    ~~~~

   [SUPPRESS {identier-4} .  .  .]
    ~~~~~~~~

   [ON EXCEPTION imperative-statement-1
       ~~~~~~~~~

    NOT ON EXCEPTION imperative-statement-2 ]
    ~~~    ~~~~~~~~~

END-JSON
~~~~~~~~
```

MERGE Syntax

```
MERGE sort-file-1
~~~~~
   { ON { ASCENDING  } KEY identifier-1...  }...
        { ~~~~~~~~~  }
        { DESCENDING }
          ~~~~~~~~~~
   [ WITH DUPLICATES IN ORDER ]
          ~~~~~~~~~~
   [ COLLATING SEQUENCE IS alphabet-name-1 ]
     ~~~~~~~~~
     USING file-name-1 file-name-2...
     ~~~~~
   { OUTPUT PROCEDURE IS procedure-name-1     }
   { ~~~~~~ ~~~~~~~~~                         }
   {       [ THRU|THROUGH procedure-name-2 ]  }
   {         ~~~~ ~~~~~~~                     }
   { GIVING file-name-3...                    }
   { ~~~~~~                                   }
```

The DUPLICATES clause is syntactically recognized but is otherwise non-functional.

Simple MOVE Syntax

```
MOVE { literal-1    } TO identifier-2...
~~~~ { identifier-1 } ~~
```

MOVE CORRESPONDING Syntax

```
MOVE CORRESPONDING identifier-1 TO identifier-2...
~~~~ ~~~~                       ~~
```

MULTIPLY BY Syntax

```
MULTIPLY { literal-1    } BY { identifier-2
~~~~~~~~ { identifier-1 } ~~

     [ ROUNDED [ MODE IS { AWAY-FROM-ZERO         } ] ] }...
       ~~~~~~~   ~~~~    { ~~~~~~~~~~~~~~         }
                         { NEAREST-AWAY-FROM-ZERO }
                         { ~~~~~~~~~~~~~~~~~~~~~~ }
                         { NEAREST-EVEN           }
                         { ~~~~~~~~~~~~           }
                         { NEAREST-TOWARD-ZERO    }
                         { ~~~~~~~~~~~~~~~~~~     }
                         { PROHIBITED             }
                         { ~~~~~~~~~~             }
                         { TOWARD-GREATER         }
                         { ~~~~~~~~~~~~~~         }
                         { TOWARD-LESSER          }
                         { ~~~~~~~~~~~~~          }
                         { TRUNCATION             }
                           ~~~~~~~~~~

   [ ON SIZE ERROR imperative-statement-1 ]
        ~~~~ ~~~~~

   [ NOT ON SIZE ERROR imperative-statement-2 ]
     ~~~    ~~~~ ~~~~~

[ END-MULTIPLY ]
  ~~~~~~~~~~~~
```

MULTIPLY GIVING Syntax

```
MULTIPLY { literal-1    } BY { literal-2    } GIVING { identifier-3
~~~~~~~~ { identifier-1 } ~~ { identifier-2 } ~~~~~~

     [ ROUNDED [ MODE IS { AWAY-FROM-ZERO         } ] ] }...
       ~~~~~~~   ~~~~    { ~~~~~~~~~~~~~~         }
                         { NEAREST-AWAY-FROM-ZERO }
                         { ~~~~~~~~~~~~~~~~~~~~~~ }
                         { NEAREST-EVEN           }
                         { ~~~~~~~~~~~~           }
                         { NEAREST-TOWARD-ZERO    }
                         { ~~~~~~~~~~~~~~~~~~     }
                         { PROHIBITED             }
                         { ~~~~~~~~~~             }
                         { TOWARD-GREATER         }
                         { ~~~~~~~~~~~~~~         }
                         { TOWARD-LESSER          }
                         { ~~~~~~~~~~~~~          }
                         { TRUNCATION             }
                           ~~~~~~~~~~

   [ ON SIZE ERROR imperative-statement-1 ]
        ~~~~ ~~~~~

   [ NOT ON SIZE ERROR imperative-statement-2 ]
     ~~~    ~~~~ ~~~~~

[ END-MULTIPLY ]
  ~~~~~~~~~~~~
```

OPEN Syntax

```
OPEN { { INPUT  } [ SHARING WITH { ALL OTHER } ] file-name-1
~~~~   { ~~~~~  }   ~~~~~~~      { ~~~       }
       { OUTPUT }                { NO OTHER  }
       { ~~~~~~ }                { ~~        }
       { I-O    }                { READ ONLY }
       { ~~~    }                  ~~~~ ~~~~
       { EXTEND }
         ~~~~~~

     [ { REVERSED           } ] }...
       { ~~~~~~~~           }
       { WITH { NO REWIND } }
       {      { ~~ ~~~~~~ } }
       {      { LOCK      } }
                ~~~~
```

The NO REWIND, and REVERSED clauses are syntactically recognized but are otherwise non-functional.

Procedural PERFORM Syntax

```
PERFORM procedure-name-1 [ THRU|THROUGH procedure-name-2 ]
~~~~~~~                  ~~~~ ~~~~~~~
   [ { [ WITH TEST { BEFORE } ] { VARYING-Clause                } } ]
     {        ~~~~ { ~~~~~~ }   { UNTIL conditional-expression-1 } }
     {             { AFTER  }     ~~~~~                          }
     {               ~~~~~                                       }
     { UNTIL EXIT|FOREVER                                        }
     { ~~~~~ ~~~~ ~~~~~~~                                        }
     { { literal-1    } TIMES                                    }
     { { identifier-1 } ~~~~~                                    }
```

Inline PERFORM Syntax

```
  PERFORM
  ~~~~~~~
   [ { [ WITH TEST { BEFORE } ] { VARYING-Clause                } } ]
     {        ~~~~ { ~~~~~~ }   { UNTIL conditional-expression-1 } }
     {             { AFTER  }     ~~~~~                          }
     {               ~~~~~                                       }
     { UNTIL EXIT|FOREVER                                        }
     { ~~~~~ ~~~~ ~~~~~~~                                        }
     { { literal-1    } TIMES                                    }
     { { identifier-1 } ~~~~~                                    }

     imperative-statement-1

  END-PERFORM
  ~~~~~~~~~~
```

VARYING Syntax

```
VARYING identifier-2 FROM { literal-2    } [ BY { literal-3    } ]
~~~~~~~              ~~~~ { identifier-3 }   ~~ { identifier-4 }
       [ UNTIL conditional-expression-1 ]
         ~~~~~
[ AFTER identifier-5 FROM { literal-4    } [ BY { literal-5    } ]
  ~~~~~              ~~~~ { identifier-6 }   ~~ { identifier-7 }
       [ UNTIL conditional-expression-2 ] ]...
         ~~~~~
```

Sequential READ Syntax

```
READ file-name-1 [ { NEXT|PREVIOUS } ] RECORD [ INTO identifier-1 ]
~~~~               { ~~~~ ~~~~~~~~ }           ~~~~
 [ { IGNORING LOCK    } ]
   { ~~~~~~~~ ~~~~    }
   { WITH [ NO ] LOCK }
   {        ~~   ~~~~ }
   { WITH KEPT LOCK   }
   {      ~~~~ ~~~~   }
   { WITH IGNORE LOCK }
   {      ~~~~~~ ~~~~ }
   { WITH WAIT        }
          ~~~~
 [ AT END imperative-statement-1 ]
     ~~~
 [ NOT AT END imperative-statement-2 ]
   ~~~    ~~~
[ END-READ ]
  ~~~~~~~~
```

Random READ Syntax

```
READ file-name-1 RECORD [ INTO identifier-1 ]
~~~~                      ~~~~
 [ { IGNORING LOCK    } ]
   { ~~~~~~~~ ~~~~    }
   { WITH [ NO ] LOCK }
   {        ~~   ~~~~ }
   { WITH KEPT LOCK   }
   {      ~~~~ ~~~~   }
   { WITH IGNORE LOCK }
   {      ~~~~~~ ~~~~ }
   { WITH WAIT        }
          ~~~~
 [ KEY IS identifier-2 ]
   ~~~
 [ INVALID KEY imperative-statement-1 ]
   ~~~~~~~
 [ NOT INVALID KEY imperative-statement-2 ]
   ~~~ ~~~~~~~
[ END-READ ]
  ~~~~~~~~
```

READY TRACE Syntax

```
READY TRACE
~~~~~ ~~~~~
```

RELEASE Syntax

```
RELEASE record-name-1 [ FROM { literal-1    } ]
~~~~~~~                      ~~~~ { identifier-1 }
```

RESET TRACE Syntax

```
RESET TRACE
~~~~~ ~~~~~
```

RETURN Syntax

```
  RETURN sort-file-name-1 RECORD
  ~~~~~~
   [ INTO identifier-1 ]
     ~~~~
     AT END imperative-statement-1
        ~~~
   [ NOT AT END imperative-statement-2 ]
     ~~~    ~~~
[ END-RETURN ]
  ~~~~~~~~~~
```

REWRITE Syntax

```
  REWRITE record-name-1
  ~~~~~~~
     [ FROM { literal-1    } ]
       ~~~~ { identifier-1 }

     [ WITH [ NO ] LOCK ]
              ~~   ~~~~
     [ INVALID KEY imperative-statement-1 ]
       ~~~~~~~
     [ NOT INVALID KEY imperative-statement-2 ]
       ~~~ ~~~~~~~
[ END-REWRITE ]
  ~~~~~~~~~~~
```

ROLLBACK Syntax

```
ROLLBACK
~~~~~~~~
```

SEARCH Syntax

```
  SEARCH table-name-1
  ~~~~~~
     [ VARYING index-name-1 ]
       ~~~~~~~
     [ AT END imperative-statement-1 ]
          ~~~
     { WHEN conditional-expression-1 imperative-statement-2 }...
       ~~~~
[ END-SEARCH ]
  ~~~~~~~~~~
```

SEARCH ALL Syntax

```
  SEARCH ALL table-name-1
  ~~~~~~ ~~~
     [ AT END imperative-statement-1 ]
          ~~~
       WHEN conditional-expression-1 imperative-statement-2
       ~~~~
[ END-SEARCH ]
  ~~~~~~~~~~
```

SET ENVIRONMENT Syntax

```
SET ENVIRONMENT { literal-1    } TO { literal-2    }
~~~ ~~~~~~~~~~~ { identifier-1 } ~~ { identifier-2 }
```

SET Program-Pointer Syntax

```
SET program-pointer-1 TO ENTRY { literal-1    }
~~~                      ~~ ~~~~~ { identifier-1 }
```

SET ADDRESS Syntax

```
SET [ ADDRESS OF ] { pointer-name-1 }...
~~~   ~~~~~~~ ~~   { identifier-1   }

    TO [ ADDRESS OF ]  { pointer-name-2 }
    ~~   ~~~~~~~ ~~    { identifier-2   }
```

SET Index Syntax

```
SET index-name-1 TO { literal-1    }
~~~              ~~ { identifier-2 }
```

SET UP/DOWN Syntax

```
SET identifier-1 { UP   } BY [ LENGTH OF ] { literal-1    }
~~~              { ~~   } ~~   ~~~~~~ ~~   { identifier-2 }
                 { DOWN }
                   ~~~~
```

SET Condition Name Syntax

```
SET condition-name-1...  TO { TRUE  }
~~~                      ~~ { ~~~~  }
                            { FALSE }
                              ~~~~~
```

SET Switch Syntax

```
SET mnemonic-name-1...  TO { ON  }
~~~                     ~~ { ~~  }
                           { OFF }
                             ~~~
```

SET ATTRIBUTE Syntax

```
SET identifier-1 ATTRIBUTE { { BELL          } { ON  }...
~~~              ~~~~~~~~~   { ~~~~          } { ~~  }
                             { BLINK         } { OFF }
                             { ~~~~~         }   ~~~
                             { HIGHLIGHT     }
                             { ~~~~~~~~~     }
                             { LEFTLINE      }
                             { ~~~~~~~~      }
                             { LOWLIGHT      }
                             { ~~~~~~~~      }
                             { OVERLINE      }
                             { ~~~~~~~~      }
                             { REVERSE-VIDEO }
                             { ~~~~~~~~~~~~~ }
                             { UNDERLINE     }
                               ~~~~~~~~~
```

SET LAST EXCEPTION Syntax

```
SET LAST EXCEPTION TO { OFF }
~~~ ~~~~ ~~~~~~~~~ ~~   ~~~
```

File-Based SORT Syntax

```
SORT sort-file-1
~~~~
   { ON { ASCENDING  } KEY identifier-1...  }...
        { ~~~~~~~~~  }
        { DESCENDING }
          ~~~~~~~~~~
   [ WITH DUPLICATES IN ORDER ]
          ~~~~~~~~~~
   [ COLLATING SEQUENCE IS alphabet-name-1 ]
     ~~~~~~~~~


   { INPUT PROCEDURE IS procedure-name-1        }
   { ~~~~~~ ~~~~~~~~~                           }
   {       [ THRU|THROUGH procedure-name-2 ]    }
   {         ~~~~ ~~~~~~~                       }
   { USING file-name-1 ...                      }
     ~~~~~


   { OUTPUT PROCEDURE IS procedure-name-3       }
   { ~~~~~~ ~~~~~~~~~                           }
   {       [ THRU|THROUGH procedure-name-4 ]    }
   {         ~~~~ ~~~~~~~                       }
   { GIVING  file-name-2 ...                    }
     ~~~~~~
```

The `DUPLICATES` clause is syntactically recognized but is otherwise non-functional.

Table SORT Syntax

```
SORT table-name-1
~~~~
   { ON { ASCENDING  } KEY identifier-1...  }...
        { ~~~~~~~~~  }
        { DESCENDING }
          ~~~~~~~~~~
   [ WITH DUPLICATES IN ORDER ]
          ~~~~~~~~~~
   [ COLLATING SEQUENCE IS alphabet-name-1 ]
     ~~~~~~~~~
```

The `DUPLICATES` clause is syntactically recognized but is otherwise non-functional.

START Syntax

```
START file-name-1
~~~~~
  [ { FIRST                                                    } ]
    { ~~~~~                                                    }
    { LAST                                                     }
    { ~~~~                                                     }
    { KEY { IS EQUAL TO | IS = | EQUALS         } identifier-1 }
      ~~~ {    ~~~~~             ~~~~~~         }
          { IS GREATER THAN | IS >               }
          {    ~~~~~~~                           }
          { IS GREATER THAN OR EQUAL TO | IS >= }
          {    ~~~~~~~      ~~ ~~~~~             }
          { IS NOT LESS THAN                     }
          {    ~~~ ~~~~                          }
          { IS LESS THAN | IS <                  }
          {    ~~~~                              }
          { IS LESS THAN OR EQUAL TO | IS <=     }
          {    ~~~~      ~~ ~~~~~               }
          { IS NOT GREATER THAN                  }
               ~~~ ~~~~~~~

    [ WITH {SIZE}   arithmetic-expression ]
           ~~~~
    [      {LENGTH} arithmetic-expression ]
           ~~~~~~

  [ INVALID KEY imperative-statement-1 ]
    ~~~~~~~
  [ NOT INVALID KEY imperative-statement-2 ]
    ~~~ ~~~~~~~
[ END-START ]
  ~~~~~~~~~
```

STOP Syntax

```
STOP { RUN [ { RETURNING|GIVING { literal-1    }           } ] }
~~~~ { ~~~   { ~~~~~~~~~ ~~~~~~ { identifier-1 }           }   }
     {       {                                             }   }
     {       { WITH { ERROR  } STATUS [ { literal-2    } ] }   }
     {       {      { ~~~~~  }          { identifier-2 }   }   }
     {       {      { NORMAL }                            }   }
     {                ~~~~~~                                  }
     { literal-3                                              }
```

STRING Syntax

```
  STRING
  ~~~~~~
     { { literal-1    } [ DELIMITED BY { SIZE         } ] }...
       { identifier-1 }   ~~~~~~~~~    { ~~~~         }
                                       { literal-2    }
                                       { identifier-2 }
       INTO identifier-3
       ~~~~
     [ WITH POINTER identifier-4 ]
            ~~~~~~~
     [ ON OVERFLOW imperative-statement-1 ]
          ~~~~~~~~
     [ NOT ON OVERFLOW imperative-statement-2 ]
       ~~~    ~~~~~~~~
[ END-STRING ]
  ~~~~~~~~~~
```

SUBTRACT FROM Syntax

```
  SUBTRACT { literal-1    }...  FROM { identifier-2
  ~~~~~~~~ { identifier-1 }     ~~~~

         [ ROUNDED [ MODE IS { AWAY-FROM-ZERO         } ] ] }...
           ~~~~~~~   ~~~~    { ~~~~~~~~~~~~~~         }
                             { NEAREST-AWAY-FROM-ZERO }
                             { ~~~~~~~~~~~~~~~~~~~~~~ }
                             { NEAREST-EVEN           }
                             { ~~~~~~~~~~~~           }
                             { NEAREST-TOWARD-ZERO    }
                             { ~~~~~~~~~~~~~~~~~~     }
                             { PROHIBITED             }
                             { ~~~~~~~~~~             }
                             { TOWARD-GREATER         }
                             { ~~~~~~~~~~~~~~         }
                             { TOWARD-LESSER          }
                             { ~~~~~~~~~~~~~          }
                             { TRUNCATION             }
                               ~~~~~~~~~~
    [ ON SIZE ERROR imperative-statement-1 ]
         ~~~~ ~~~~~
    [ NOT ON SIZE ERROR imperative-statement-2 ]
      ~~~    ~~~~ ~~~~~
[ END-SUBTRACT ]
  ~~~~~~~~~~~~
```

SUBTRACT GIVING Syntax

```
SUBTRACT { literal-1    }...  FROM identifier-2
~~~~~~~~ { identifier-1 }     ~~~~

    GIVING { identifier-3
    ~~~~~~
       [ ROUNDED [ MODE IS { AWAY-FROM-ZERO         } ] ] }...
         ~~~~~~~   ~~~~    { ~~~~~~~~~~~~~~         }
                           { NEAREST-AWAY-FROM-ZERO }
                           { ~~~~~~~~~~~~~~~~~~~~~~ }
                           { NEAREST-EVEN           }
                           { ~~~~~~~~~~~~           }
                           { NEAREST-TOWARD-ZERO    }
                           { ~~~~~~~~~~~~~~~~~~     }
                           { PROHIBITED             }
                           { ~~~~~~~~~~             }
                           { TOWARD-GREATER         }
                           { ~~~~~~~~~~~~~~         }
                           { TOWARD-LESSER          }
                           { ~~~~~~~~~~~~~          }
                           { TRUNCATION             }
                             ~~~~~~~~~~

   [ ON SIZE ERROR imperative-statement-1 ]
       ~~~~ ~~~~~

   [ NOT ON SIZE ERROR imperative-statement-2 ]
     ~~~    ~~~~ ~~~~~

[ END-SUBTRACT ]
  ~~~~~~~~~~~~
```

SUBTRACT CORRESPONDING Syntax

```
SUBTRACT CORRESPONDING identifier-1 FROM identifier-2
~~~~~~~~               ~~~~~~~~~~~~ ~~~~
  [ ROUNDED [ MODE IS { AWAY-FROM-ZERO         } ] ]
    ~~~~~~~   ~~~~    { ~~~~~~~~~~~~~~         }
                      { NEAREST-AWAY-FROM-ZERO }
                      { ~~~~~~~~~~~~~~~~~~~~~~ }
                      { NEAREST-EVEN           }
                      { ~~~~~~~~~~~~           }
                      { NEAREST-TOWARD-ZERO    }
                      { ~~~~~~~~~~~~~~~~~~     }
                      { PROHIBITED             }
                      { ~~~~~~~~~~             }
                      { TOWARD-GREATER         }
                      { ~~~~~~~~~~~~~~         }
                      { TOWARD-LESSER          }
                      { ~~~~~~~~~~~~~          }
                      { TRUNCATION             }
                        ~~~~~~~~~~
  [ ON SIZE ERROR imperative-statement-1 ]
       ~~~~ ~~~~~
  [ NOT ON SIZE ERROR imperative-statement-2 ]
    ~~~    ~~~~ ~~~~~
[ END-SUBTRACT ]
  ~~~~~~~~~~~~
```

SUPPRESS Syntax

```
SUPPRESS PRINTING
~~~~~~~~
```

TERMINATE Syntax

```
TERMINATE report-name-1...
~~~~~~~~~
```

TRANSFORM Syntax

```
TRANSFORM identifier-1 CHARACTERS FROM { literal-1    } TO { literal-2    }
~~~~~~~~~                         ~~~~ { identifier-2 } ~~ { identifier-3 }
```

UNLOCK Syntax

```
UNLOCK filename-1 RECORD|RECORDS
~~~~~~
```

UNSTRING Syntax

```
UNSTRING identifier-1
~~~~~~~~
     DELIMITED BY { [ ALL ] literal-1 } [ OR { [ ALL ] literal-2 } ]...
     ~~~~~~~~~    {   ~~~              }   ~~ {   ~~~              }
                  { identifier-2       }      { identifier-3      }

     INTO { identifier-4
     ~~~~ [ DELIMITER IN identifier-5 ] [ COUNT IN identifier-6 ] }...
            ~~~~~~~~~                     ~~~~~

   [ WITH POINTER identifier-7 ]
          ~~~~~~~

   [ TALLYING IN identifier-8 ]
     ~~~~~~~~

   [ ON OVERFLOW imperative-statement-1 ]
       ~~~~~~~~

   [ NOT ON OVERFLOW imperative-statement-2 ]
     ~~~    ~~~~~~~~

[ END-UNSTRING ]
  ~~~~~~~~~~~~
```

WRITE Syntax

```
WRITE record-name-1
~~~~~

   [ FROM { literal-1    } ]
     ~~~~ { identifier-1 }

   [ WITH [ NO ] LOCK ]
            ~~   ~~~~

   [ { BEFORE } ADVANCING { { literal-2    } LINE|LINES } ]
     { ~~~~~~ }           { { identifier-2              }
     { AFTER  }           { PAGE                        }
       ~~~~~              { ~~~~                        }
                          { mnemonic-name-1             }

   [ AT END-OF-PAGE|EOP imperative-statement-1 ]
       ~~~~~~~~~~~ ~~~

   [ NOT AT END-OF-PAGE|EOP imperative-statement-2 ]
     ~~~    ~~~~~~~~~~~ ~~~

   [ INVALID KEY imperative-statement-3 ]
     ~~~~~~~

   [ NOT INVALID KEY imperative-statement-4 ]
     ~~~ ~~~~~~~

[ END-WRITE ]
  ~~~~~~~~~
```

XML GENERATE Syntax

```
XML GENERATE identifier-1 FROM identifier-2
~~~ ~~~~~~~~              ~~~~
     [COUNT IN identifier-3]
      ~~~~~
    [ WITH ENCODING codepage ]
           ~~~~~~~~
    [ WITH  XML-DECLARATION ]
            ~~~~~~~~~~~~~~~
    [ WITH ATTRIBUTES ]
           ~~~~~~~~~~
    [NAMESPACE IS {identifier-4 }[ NAMESPACE-PREFIX IS {identifier-5 }]
     ~~~~~~~~~    {literal-4    }  ~~~~~~~~~~~~~~~~    {literal-5    }]]

    [NAME OF   {identifier-6 IS literal-6 } ...  ]
     ~~~~
    [TYPE OF   {identifier-7 IS {ATTRIBUTE|ELEMENT|CONTENT}} ...  ]
     ~~~~                        ~~~~~~~~~ ~~~~~~~ ~~~~~~~

    [SUPPRESS  {identifier-8 [when-phrase] }  ...  ]
     ~~~~~~~~  {generic-suppression-phrase }

    [ ON EXCEPTION imperative-statement-1 ]
         ~~~~~~~~~
    [ NOT ON EXCEPTION imperative-statement-2 ]
      ~~~    ~~~~~~~~~
[ END-XML ]
  ~~~~~~~
```

```
when-phraseFormat

   WHEN   {     ZERO    }   [ [ OR ] {     ZERO    }  ] ...
   ~~~~   {    ZEROES   }            {    ZEROES   }
          {     ZEROS   }            {     ZEROS   }
          {     SPACE   }            {     SPACE   }
          {    SPACES   }            {    SPACES   }
          {  LOW-VALUE  }            {  LOW-VALUE  }
          {  LOW-VALUES }            {  LOW-VALUES }
          {  HIGH-VALUE }            {  HIGH-VALUE }
          { HIGH-VALUES }            { HIGH-VALUES }
```

```
Generic-suppression-phraseFormat

   [[EVERY  {NUMERIC    [ATTRIBUTE|ELEMENT|CONTENT] } ]  when-phrase  ]
            {NONNUMERIC [ATTRIBUTE|ELEMENT|CONTENT] }
            {ATTRIBUTE                              }
            {CONTENT                                }
            {ELEMENT                                }
```

XML PARSE Syntax

```
XML PARSE identier-1
~~~ ~~~~~
    WITH ENCODING identier-2
         ~~~~~~~~
                  literal-1

    RETURNING NATIONAL
    ~~~~~~~~~ ~~~~~~~~
  VALIDATING WITH identier-3
  ~~~~~~~~~~
  PROCESSING PROCEDURE IS procedure-name-1  { THROUGH }
  ~~~~~~~~~~ ~~~~~~~~~                      { THRU    } procedure-name-2
  ON EXCEPTION imperative-statement-1
     ~~~~~~~~~
  NOT ON EXCEPTION imperative-statement-2
  ~~~    ~~~~~~~~~
  END-XML
  ~~~~~~~
```

6 Intrinsic Functions Syntax

ABS Function Syntax

```
ABS(number)
~~~
```

ACOS Function Syntax

```
ACOS(cosine)
~~~~
```

ANNUITY Function Syntax

```
ANNUITY(interest-rate, number-of-periods)
~~~~~~~
```

ASIN Function Syntax

```
ASIN(sine)
~~~~
```

ATAN Function Syntax

```
ATAN(tangent)
~~~~
```

BIT-OF Function Syntax

```
BIT-OF (argument-1)
~~~~~~
```

BIT-TO-CHAR Function Syntax

```
BIT-TO-CHAR {argument-1)
~~~~~~~~~~~
```

BOOLEAN-OF-INTEGER function Syntax

```
BOOLEAN-OF-INTEGER(argument-1 argument-2)
~~~~~~~~~~~~~~~~~~
```

BYTE-LENGTH Function Syntax

```
BYTE-LENGTH(string)
~~~~~~~~~~~
```

CHAR Function Syntax

```
CHAR(integer)
~~~~
```

CHAR-NATIONAL Function Syntax

```
CHAR-NATIONAL(argument-1)
~~~~~~~~~~~~~
```

COMBINED-DATETIME Function Syntax

```
COMBINED-DATETIME(days, seconds)
~~~~~~~~~~~~~~~~~
```

CONCATENATE Function Syntax

```
CONCAT | CONCATENATE (argument-1 [, argument-2 ]...)
~~~~~~   ~~~~~~~~~~~
```

CONTENT-LENGTH Function Syntax

```
 CONTENT-LENGTH argument-1
 ~~~~~~~~~~~~~~
```

CONTENT-OF Function Syntax

```
 CONTENT-OF pointer-1 { length }
 ~~~~~~~~~~
```

COS Function Syntax

```
COS(angle)
~~~
```

CURRENCY-SYMBOL Function Syntax

```
CURRENCY-SYMBOL
~~~~~~~~~~~~~~~
```

CURRENT-DATE Function Syntax

```
CURRENT-DATE
~~~~~~~~~~~~
```

DATE-OF-INTEGER Function Syntax

```
DATE-OF-INTEGER(integer)
~~~~~~~~~~~~~~~
```

DATE-TO-YYYYMMDD Function Syntax

```
DATE-TO-YYYYMMDD(yymmdd [, yy-cutoff [, yy-execution-time ]])
~~~~~~~~~~~~~~~~
```

DAY-OF-INTEGER Function Syntax

```
DAY-OF-INTEGER(integer)
~~~~~~~~~~~~~~
```

DAY-TO-YYYYDDD Function Syntax

```
DAY-TO-YYYYDDD(yyddd [, yy-cutoff [, yy-execution-time ]])
~~~~~~~~~~~~~~
```

DISPLAY-OF Function Syntax

```
DISPLAY-OF(argument-1 [ argument-2] )
~~~~~~~~~~
```

E Function Syntax

```
E
~
```

EXCEPTION-FILE Function Syntax

```
EXCEPTION-FILE
~~~~~~~~~~~~~~
```

EXCEPTION-FILE-N Function Syntax

```
EXCEPTION-FILE-N
~~~~~~~~~~~~~~~
```

EXCEPTION-LOCATION Function Syntax

```
EXCEPTION-LOCATION
~~~~~~~~~~~~~~~~~~
```

EXCEPTION-LOCATION-N Function Syntax

```
EXCEPTION-LOCATION-N
~~~~~~~~~~~~~~~~~~~~
```

EXCEPTION-STATEMENT Function Syntax

```
EXCEPTION-STATEMENT
~~~~~~~~~~~~~~~~~~~
```

EXCEPTION-STATUS Function Syntax

```
EXCEPTION-STATUS
~~~~~~~~~~~~~~~~
```

EXP Function Syntax

```
EXP(number)
~~~
```

EXP10 Function Syntax

```
EXP10(number)
~~~~~
```

FACTORIAL Function Syntax

```
FACTORIAL(number)
~~~~~~~~~
```

FORMATTED-CURRENT-DATE Function Syntax

```
FORMATTED-CURRENT-DATE ( argument-1 )
~~~~~~~~~~~~~~~~~~~~~~
```

FORMATTED-DATE Function Syntax

```
FORMATTED-DATE ( argument-1, argument-2 )
~~~~~~~~~~~~~~
```

FORMATTED-DATETIME Function Syntax

```
FORMATTED-DATETIME ( argument-1, argument-2, argument-3, argument-4 )
~~~~~~~~~~~~~~~~~~
```

FORMATTED-TIME Function Syntax

```
FORMATTED-TIME ( argument-1, argument-2, argument-3 )
~~~~~~~~~~~~~~
```

FRACTION-PART Function Syntax

```
FRACTION-PART(number)
~~~~~~~~~~~~~
```

HEX-OF Function Syntax

```
HEX-OF {argument-1)
~~~~~~
```

HEX-TO-CHAR Function Syntax

```
HEX-TO-CHAR {argument-1)
~~~~~~~~~~~
```

HIGHEST-ALGEBRAIC Function Syntax

```
HIGHEST-ALGEBRAIC(numeric-identifier)
~~~~~~~~~~~~~~~~~
```

INTEGER Function Syntax

```
INTEGER(number)
~~~~~~~
```

INTEGER-OF-BOOLEAN Function Syntax

```
INTEGER-OF-BOOLEAN(argument-1)
~~~~~~~~~~~~~~~~~~
```

INTEGER-OF-DATE Function Syntax

```
INTEGER-OF-DATE(date)
~~~~~~~~~~~~~~~
```

INTEGER-OF-DAY Function Syntax

```
INTEGER-OF-DAY(date)
~~~~~~~~~~~~~~
```

INTEGER-OF-FORMATTED-DATE Function Syntax

```
INTEGER-OF-FORMATTED-DATE ( argument-1, argument-2 )
~~~~~~~~~~~~~~~~~~~~~~~~~
```

INTEGER-PART Function Syntax

```
INTEGER-PART(number)
~~~~~~~~~~~~
```

LENGTH Function Syntax

```
LENGTH(string)
~~~~~~
```

LENGTH-AN Function Syntax

```
LENGTH-AN(string)
~~~~~~~~~
```

LOCALE-COMPARE Function Syntax

```
LOCALE-COMPARE(argument-1, argument-2 [ , locale ])
~~~~~~~~~~~~~~
```

LOCALE-DATE Function Syntax

```
LOCALE-DATE(date [, locale ])
~~~~~~~~~~~
```

LOCALE-TIME Function Syntax

```
LOCALE-TIME(time [, locale ])
~~~~~~~~~~~
```

LOCALE-TIME-FROM-SECONDS Function Syntax

```
LOCALE-TIME-FROM-SECONDS(seconds [, locale ])
~~~~~~~~~~~~~~~~~~~~~~~~
```

LOG Function Syntax

```
LOG(number)
~~~
```

LOG10 Function Syntax

```
LOG10(number)
~~~~~
```

LOWER-CASE Function Syntax

```
LOWER-CASE(string)
~~~~~~~~~~
```

LOWEST-ALGEBRAIC Function Syntax

```
LOWEST-ALGEBRAIC(numeric-identifier)
~~~~~~~~~~~~~~~~
```

MAX Function Syntax

```
MAX(number-1 [, number-2 ]...)
~~~
```

MEAN Function Syntax

```
MEAN(number-1 [, number-2 ]...)
~~~~
```

MEDIAN Function Syntax

```
MEDIAN(number-1 [, number-2 ]...)
~~~~~~
```

MIDRANGE Function Syntax

```
MIDRANGE(number-1 [, number-2 ]...)
~~~~~~~~
```

MIN Function Syntax

```
MIN(number-1 [, number-2 ]...)
~~~
```

MOD Function Syntax

```
MOD(value, modulus)
~~~
```

MODULE-CALLER-ID Function Syntax

```
MODULE-CALLER-ID
~~~~~~~~~~~~~~~~
```

MODULE-DATE Function Syntax

```
MODULE-DATE
~~~~~~~~~~
```

MODULE-FORMATTED-DATE Function Syntax

```
MODULE-FORMATTED-DATE
~~~~~~~~~~~~~~~~~~~~
```

MODULE-ID Function Syntax

```
MODULE-ID
~~~~~~~~
```

MODULE-PATH Function Syntax

```
MODULE-PATH
~~~~~~~~~~
```

MODULE-SOURCE Function Syntax

```
MODULE-SOURCE
~~~~~~~~~~~~
```

MODULE-TIME Function Syntax

```
MODULE-TIME
~~~~~~~~~~~
```

MONETARY-DECIMAL-POINT Function Syntax

```
MONETARY-DECIMAL-POINT
~~~~~~~~~~~~~~~~~~~~~~
```

MONETARY-THOUSANDS-SEPARATOR Function Syntax

```
MONETARY-THOUSANDS-SEPARATOR
~~~~~~~~~~~~~~~~~~~~~~~~~~~~
```

NATIONAL-OF Function Syntax

```
NATIONAL-OF(argument-1 [argument-2] )
~~~~~~~~~~~
```

NUMERIC-DECIMAL-POINT Function Syntax

```
NUMERIC-DECIMAL-POINT
~~~~~~~~~~~~~~~~~~~~~
```

NUMERIC-THOUSANDS-SEPARATOR Function Syntax

```
NUMERIC-THOUSANDS-SEPARATOR
~~~~~~~~~~~~~~~~~~~~~~~~~~~
```

NUMVAL Function Syntax

```
NUMVAL(string)
~~~~~~
```

NUMVAL-C Function Syntax

```
NUMVAL-C (string [, symbol                ]
~~~~~~~~
                 [, LOCALE locale-name-1 ] [, ANYCASE ])
```

NUMVAL-F Function Syntax

```
NUMVAL-F(char)
~~~~~~~~
```

ORD Function Syntax

```
ORD(char)
~~~
```

ORD-MAX Function Syntax

```
ORD-MAX(char-1 [, char-2 ]...)
~~~~~~~
```

ORD-MIN Function Syntax

```
ORD-MIN(char-1 [, char-2 ]...)
~~~~~~~
```

PI Function Syntax

```
PI
~~
```

PRESENT-VALUE Function Syntax

```
PRESENT-VALUE(rate, value-1 [, value-2 ])
~~~~~~~~~~~~~
```

RANDOM Function Syntax

```
RANDOM[(seed)]
~~~~~~
```

RANGE Function Syntax

```
RANGE(number-1 [, number-2 ]...)
~~~~~
```

REM Function Syntax

```
REM(number,divisor)
~~~
```

REVERSE Function Syntax

```
REVERSE(string)
~~~~~~~
```

SECONDS-FROM-FORMATTED-TIME Function Syntax

```
SECONDS-FROM-FORMATTED-TIME(format,time)
~~~~~~~~~~~~~~~~~~~~~~~~~~
```

SECONDS-PAST-MIDNIGHT Function Syntax

```
SECONDS-PAST-MIDNIGHT
~~~~~~~~~~~~~~~~~~~~
```

SIGN Function Syntax

```
SIGN(number)
~~~~
```

SIN Function Syntax

```
SIN(angle)
~~~
```

SQRT Function Syntax

```
SQRT (number)
~~~~
```

STANDARD-COMPARE Function Syntax

```
STANDARD-COMPARE(argument-1 argument-2 [ordering-name-1] [argument-4] )
~~~~~~~~~~~~~~~~
```

STANDARD-DEVIATION Function Syntax

```
STANDARD-DEVIATION(number-1 [, number-2 ]...)
~~~~~~~~~~~~~~~~~~
```

STORED-CHAR-LENGTH Function Syntax

```
STORED-CHAR-LENGTH(string)
~~~~~~~~~~~~~~~~~~
```

SUBSTITUTE Function Syntax

```
SUBSTITUTE(string, from-1, to-1 [, from-n, to-n ]...)
~~~~~~~~~~
```

SUBSTITUTE-CASE Function Syntax

```
SUBSTITUTE-CASE(string, from-1, to-1 [, from-n, to-n ]...)
~~~~~~~~~~~~~~~
```

SUM Function Syntax

```
SUM(number-1 [, number-2 ]...)
~~~
```

TAN Function Syntax

```
TAN(angle)
~~~
```

TEST-DATE-YYYYMMDD Function Syntax

```
TEST-DATE-YYYYMMDD (date)
~~~~~~~~~~~~~~~~~~
```

TEST-DAY-YYYYDDD Function Syntax

```
TEST-DAY-YYYYDDD (date)
~~~~~~~~~~~~~~~~
```

TEST-FORMATTED-DATETIME Function Syntax

```
TEST-FORMATTED-DATETIME ( argument-1, argument-2 )
~~~~~~~~~~~~~~~~~~~~~~~
```

TEST-NUMVAL Function Syntax

```
TEST-NUMVAL (string)
~~~~~~~~~~
```

TEST-NUMVAL-C Function Syntax

```
TEST-NUMVAL-C (string[,symbol])
~~~~~~~~~~~~~
```

TEST-NUMVAL-F Function Syntax

```
TEST-NUMVAL-F (string)
~~~~~~~~~~~~~
```

TRIM Function Syntax

```
TRIM(string [, LEADING|TRAILING ])
~~~~           ~~~~~~~ ~~~~~~~~
```

UPPER-CASE Function Syntax

```
UPPER-CASE(string)
~~~~~~~~~~
```

VARIANCE Function Syntax

```
VARIANCE(number-1 [, number-2 ]...)
~~~~~~~~
```

WHEN-COMPILED Function Syntax

```
WHEN-COMPILED
~~~~~~~~~~~~~
```

YEAR-TO-YYYY Function Syntax

```
YEAR-TO-YYYY(yy [, yy-cutoff [, yy-execution-time ]])
~~~~~~~~~~~~
```

7 Built-In Subroutines Syntax

C$CALLEDBY Built-In Subroutine Syntax

```
CALL "C$CALLEDBY" USING prog-name-area
~~~~              ~~~~~
```

C$CHDIR Built-In Subroutine Syntax

```
CALL "C$CHDIR" USING directory-path, result
~~~~           ~~~~~
```

C$COPY Built-In Subroutine Syntax

```
CALL "C$COPY" USING src-file-path, dest-file-path, 0
~~~~          ~~~~~
```

C$DELETE Built-In Subroutine Syntax

```
CALL "C$DELETE" USING file-path, 0
~~~~            ~~~~~
```

C$FILEINFO Built-In Subroutine Syntax

```
CALL "C$FILEINFO" USING file-path, file-info
~~~~              ~~~~~
```

C$GETPID Built-In Subroutine Syntax

```
CALL "C$GETPID"
~~~~
```

C$JUSTIFY Built-In Subroutine Syntax

```
CALL "C$JUSTIFY" USING data-item, "justification-type"
~~~~             ~~~~~
```

C$MAKEDIR Built-In Subroutine Syntax

```
CALL "C$MAKEDIR" USING dir-path
~~~~             ~~~~~
```

C$NARG Built-In Subroutine Syntax

```
CALL "C$NARG" USING arg-count-result
~~~~          ~~~~~
```

C$PARAMSIZE Built-In Subroutine Syntax

```
 CALL "C$PARAMSIZE" USING argument-number
 ~~~~               ~~~~~
```

C$PRINTABLE Built-In Subroutine Syntax

```
 CALL "C$PRINTABLE" USING data-item [ , char ]
 ~~~~               ~~~~~
```

C$SLEEP Built-In Subroutine Syntax

```
 CALL "C$SLEEP" USING seconds-to-sleep
 ~~~~           ~~~~~
```

C$TOLOWER Built-In Subroutine Syntax

```
 CALL "C$TOLOWER" USING data-item, BY VALUE convert-length
 ~~~~             ~~~~~            ~~~~~
```

C$TOUPPER Built-In Subroutine Syntax

```
 CALL "C$TOUPPER" USING data-item, BY VALUE convert-length
 ~~~~             ~~~~~            ~~~~~
```

CBL_ALARM_SOUND Built-In Subroutine Syntax

```
CALL "CBL_ALARM_SOUND" USING  ???
~~~~                   ~~~~~

???  More information needed from compiler developers.  ???
```

CBL_AND Built-In Subroutine Syntax

```
 CALL "CBL_AND" USING item-1, item-2, BY VALUE byte-length
 ~~~~           ~~~~~                 ~~~~~
```

CBL_BELL_SOUND Built-In Subroutine Syntax

```
CALL "CBL_BELL_SOUND" USING  ???
~~~~                  ~~~~~

???  More information needed from compiler developers.  ???
```

CBL_CHANGE_DIR Built-In Subroutine Syntax

```
 CALL "CBL_CHANGE_DIR" USING directory-path
 ~~~~                  ~~~~~
```

CBL_CHECK_FILE_EXIST Built-In Subroutine Syntax

```
CALL "CBL_CHECK_FILE_EXIST" USING file-path, file-info
~~~~                        ~~~~~
```

CBL_CLOSE_FILE Built-In Subroutine Syntax

```
CALL "CBL_CLOSE_FILE" USING file-handle
~~~~                  ~~~~~
```

CBL_COPY_FILE Built-In Subroutine Syntax

```
CALL "CBL_COPY_FILE" USING src-file-path, dest-file-path
~~~~                 ~~~~~
```

CBL_CREATE_DIR Built-In Subroutine Syntax

```
CALL "CBL_CREATE_DIR" USING dir-path
~~~~                  ~~~~~
```

CBL_CREATE_FILE Built-In Subroutine Syntax

```
CALL "CBL_CREATE_FILE" USING file-path, 2, 0, 0, file-handle
~~~~                    ~~~~~
```

CBL_DELETE_DIR Built-In Subroutine Syntax

```
CALL "CBL_DELETE_DIR" USING dir-path
~~~~                  ~~~~~
```

CBL_DELETE_FILE Built-In Subroutine Syntax

```
CALL "CBL_DELETE_FILE" USING file-path
~~~~                    ~~~~~
```

CBL_EQ Built-In Subroutine Syntax

```
CALL "CBL_EQ" USING item-1, item-2, BY VALUE byte-length
~~~~          ~~~~~                 ~~~~~
```

CBL_ERROR_PROC Built-In Subroutine Syntax

```
CALL "CBL_ERROR_PROC" USING function, program-pointer
~~~~                  ~~~~~
```

CBL_EXIT_PROC Built-In Subroutine Syntax

```
CALL "CBL_EXIT_PROC" USING function, program-pointer
~~~~                 ~~~~~
```

CBL_FLUSH_FILE Built-In Subroutine Syntax

```
CALL "CBL_FLUSH_FILE" USING file-handle
~~~~                  ~~~~~
```

CBL_GC_FORK Built-In Subroute Syntax

```
CALL "CBL_GC_FORK" USING Child-PID
~~~~               ~~~~~
```

CBL_GC_GETOPT Built-In Subroutine Syntax

```
CALL "CBL_GC_GETOPT" USING BY REFERENCE SHORTOPTIONS LONGOPTIONS LONGIND
~~~~                 ~~~~~
                           BY VALUE LONG-ONLY
                           BY REFERENCE RETURN-CHAR OPT-VAL
```

CBL_GC_HOSTED Built-In Subroutine Syntax

```
CALL "CBL_GC_HOSTED" USING ARG-1  ARG-2
~~~~                 ~~~~~
```

Note replaces CBL_OC_HOSTED which is kept as a legacy item.

CBL_GC_NANOSLEEP Built-In Subroutine Syntax

```
CALL "CBL_GC_NANOSLEEP" USING nanoseconds-to-sleep
~~~~                    ~~~~~
```

Note replaces CBL_OC_NANOSLEEP which is kept as a legacy item.

CBL_GC_PRINTABLE Built-In Subroutine Syntax

```
CALL "CBL_GC_PRINTABLE" USING data-item [ , char ]
~~~~                    ~~~~~
```

Note replaces C$PRINTABLE which is kept as a legacy item.

CBL_GC_SCR_DUMP Built-In Subroutine Syntax

```
CALL "CBL_GC_SCR_DUMP" USING file-name, return-code
~~~~                   ~~~~~
```

CBL_GC_SCR_RESTORE Built-In Subroutine Syntax

```
CALL "CBL_GC_SCR_RESTORE" USING file-name, return-code
~~~~                      ~~~~~
```

CBL_SET_GC_SCR_SIZE Built-In Subroutine Syntax

```
CALL "CBL_GC_SET_SCR_SIZE" USING no-of-lines, no-of-cols
~~~~                       ~~~~~
```

CBL_GC_WAITPID Built-In Subroutine Syntax

```
CALL "CBL_GC_WAITPID" USING ARG-1
~~~~                  ~~~~~
                      RETURNING RET-STATUS
                      ~~~~~~~~~
```

CBL_GET_CSR_POS Built-In Subroutine Syntax

```
CALL "CBL_GET_CSR_POS" USING cursor-locn-buffer
~~~~                    ~~~~~
```

CBL_GET_CURRENT_DIR Built-In Subroutine Syntax

```
CALL "CBL_GET_CURRENT_DIR" USING BY VALUE 0,
~~~~                       ~~~~~    ~~~~~
                                BY VALUE length,
                                   ~~~~~
                                BY REFERENCE buffer
                                   ~~~~~~~~~
```

CBL_GET_SCR_SIZE Built-In Subroutine Syntax

```
CALL "CBL_GET_SCR_SIZE" USING no-of-lines, no-of-cols
~~~~                    ~~~~~
```

CBL_IMP Built-In Subroutine Syntax

```
CALL "CBL_IMP" USING item-1, item-2, BY VALUE byte-length
~~~~           ~~~~~                 ~~~~~
```

CBL_NIMP Built-In Subroutine Syntax

```
CALL "CBL_NIMP" USING item-1, item-2, BY VALUE byte-length
~~~~            ~~~~~                 ~~~~~
```

CBL_NOR Built-In Subroutine Syntax

```
CALL "CBL_NOR" USING item-1, item-2, BY VALUE byte-length
~~~~           ~~~~~                 ~~~~~
```

CBL_NOT Built-In Subroutine Syntax

```
CALL "CBL_NOT" USING item-1, BY VALUE byte-length
~~~~           ~~~~~         ~~~~~
```

CBL_OPEN_FILE Built-In Subroutine Syntax

```
CALL "CBL_OPEN_FILE" USING file-path, access-mode, 0, 0, handle
~~~~                 ~~~~~
```

CBL_OR Built-In Subroutine Syntax

```
CALL "CBL_OR" USING item-1, item-2, BY VALUE byte-length
~~~~          ~~~~~                 ~~~~~
```

CBL_READ_FILE Built-In Subroutine Syntax

```
CALL "CBL_READ_FILE" USING handle, offset, nbytes, flag, buffer
~~~~                 ~~~~~
```

CBL_READ_KBD_CHAR Build-In Subroutine Syntax

```
CALL "CBL_READ_KBD_CHAR" USING char RETURNING status-code.
~~~~                     ~~~~~      ~~~~~~~~~
```

CBL_RENAME_FILE Built-In Subroutine Syntax

```
CALL "CBL_RENAME_FILE" USING old-file-path, new-file-path
~~~~                   ~~~~~
```

CBL_RUNTIME_ERROR Built-In Subroutine Syntax

```
CALL "CBL_RUNTIME_ERROR" USING  ???
~~~~                     ~~~~~

???  More information needed from compiler developers.  ???
```

CBL_SET_CSR_POS Build-In Subroutine Syntax

```
CALL "CBL_SET_CSR_POS" USING cursor-locn-buffer
~~~~                   ~~~~~
```

CBL_TOLOWER Built-In Subroutine Syntax

```
CALL "CBL_TOLOWER" USING data-item, BY VALUE convert-length
~~~~               ~~~~~            ~~~~~
```

CBL_TOUPPER Built-In Subroutine Syntax

```
CALL "CBL_TOUPPER" USING data-item, BY VALUE convert-length
~~~~               ~~~~~            ~~~~~
```

CBL_WRITE_FILE Built-In Subroutine Syntax

```
CALL "CBL_WRITE_FILE" USING handle, offset, nbytes, 0, buffer
~~~~                  ~~~~~
```

CBL_XOR Built-In Subroutine Syntax

```
CALL "CBL_XOR" USING item-1, item-2, BY VALUE byte-length
~~~~           ~~~~~                 ~~~~~
```

EXTFH Built-In Subroutine Syntax

```
CALL "EXTFH" USING  opcode fcd
~~~~         ~~~~~
```

SYSTEM Built-In Subroutine Syntax

```
CALL "SYSTEM" USING command
~~~~          ~~~~~
```

X"91" Built-In Subroutine Syntax

```
CALL X"91" USING return-code, function-code, binary-variable-arg
~~~~       ~~~~~
```

X"E4" Built-In Subroutine Syntax

```
CALL X"E4"
~~~~
```

X"E5" Built-In Subroutine Syntax

```
CALL X"E5"
~~~~
```

X"F4" Built-In Subroutine Syntax

```
CALL X"F4" USING byte, table
~~~~       ~~~~~
```

X"F5" Built-In Subroutine Syntax

```
CALL X"F5" USING byte, table
~~~~       ~~~~~
```

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