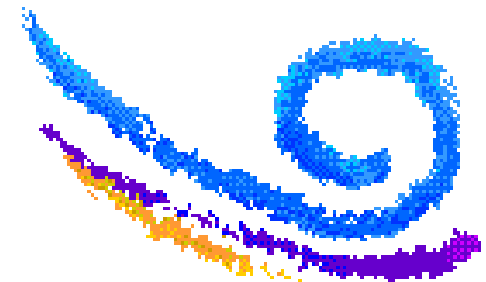


IBM Enterprise COBOL

Data types allowed in COBOL programs

All Data Items Must Be Described

- ▶ Two clauses are relevant to the description:
 - USAGE IS clause
 - Strangely enough, both the words USAGE and IS are optional - the compiler looks for the actual allowed data types
 - PICTURE clause
 - Required for some usages; for others, it is not allowed



USAGE Types

► Here is the complete list of reserved words for USAGE:

BINARY - same as COMP and COMP-4; binary integer
COMP - binary integer data
COMP-1 - single precision floating point
COMP-2 - double precision floating point
COMP-3 - packed decimal data
COMP-4 - binary integer data

NOTE: binary, comp, comp-4 are all the same; values in these kinds of fields may be truncated, based on compiler options and the particular work being done

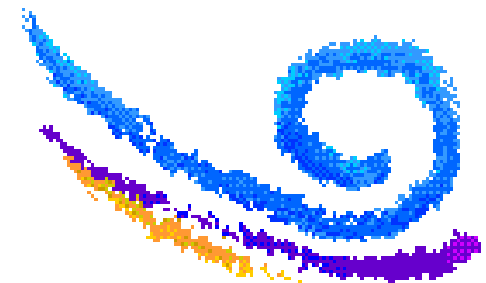
COMP-5 - binary integer, but will never be truncated
PACKED-DECIMAL - same as comp-3

INDEX - binary value: displacement into a table

DISPLAY - character string; single byte characters
DISPLAY-1 - character string; double byte characters (DBCS)
NATIONAL - character string; UTF-16 (Unicode)

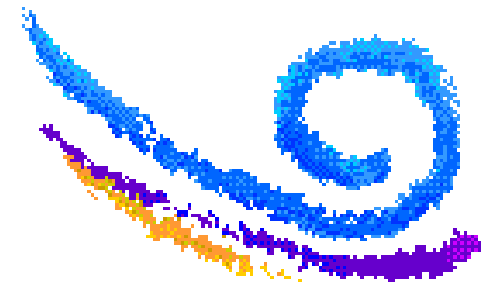
POINTER - address of data item
PROCEDURE-POINTER - address of program entry point (8 bytes)
FUNCTION-POINTER - address of program entry point (4 bytes)

OBJECT-REFERENCE - handle for accessing a class in OO COBOL



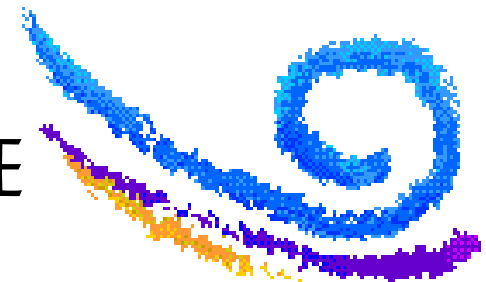
PICTURE Clause

- ▶ A PICTURE (or simply PIC) clause is required for these data types:
 - Numeric data
 - Binary, comp, comp-4, comp-5
 - Comp-3, packed-decimal
 - String data
 - Display
 - Display-1
 - National



PICTURE Clause, continued

- ▶ A PICTURE (or simply PIC) clause is required for these data types:
 - Edited numeric data
 - This is data containing numeric digits and editing symbols such as commas, a decimal point, a sign or sign indicator (CR or DB), a currency symbol, or a slash (for date data)
 - Edited numeric data has an implied USAGE of DISPLAY

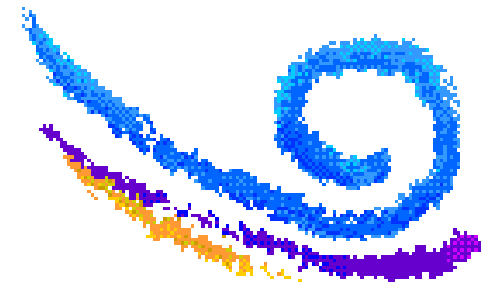


PICTURE Clause, continued

- ▶ A data item may have a PIC clause with no USAGE
 - In that case, the implied USAGE is
 - DISPLAY if the PIC has no G nor N items
 - DISPLAY-1 if the PIC has G items, or N items if the compiler option NSYMBOL is DBCS
 - NATIONAL if the PIC has N items and the compiler option NSYMBOL is NATIONAL (the default)

USAGE Clause

- ▶ The following data types must have a USAGE clause and must not have a PICTURE clause:
 - Pointer
 - Procedure-pointer
 - Function-pointer
 - Object-reference





6790 East Cedar Avenue, Suite 201
Denver, Colorado 80224
USA

<http://www.trainersfriend.com>
303.393.8716

Sales: kitty@trainersfriend.com
Technical: steve@trainersfriend.com