APPENDIX **C**

Valid DB2 Data Types

Data Type	Physical Storage	Value Range	COBOL Picture
SMALLINT	2 bytes	–32,768 to +32,767	PIC S9(4) COMP
INTEGER	4 bytes	–2,147,483,648 to +2,147,483,647	PIC S9(9) COMP
REAL	4 bytes	5.4E –79 to 7.2E+75	PIC USAGE COMP-1
FLOAT(1..21)	4 bytes	5.4E –79 to 7.2E+75	PIC USAGE COMP-1
DOUBLE PRECISION	8 bytes	5.4E –79 to 7.2E+75	PIC USAGE COMP-2
FLOAT(22..53)	8 bytes	5.4E –79 to 7.2E+75	PIC USAGE COMP-2
DECIMAL(*m*,*n*)	(*m*/2)+1 bytes	1 -10^{31} to $10^{31}-1$	PIC S9(*m*-*n*)V9(*n*) COMP-3
CHARACTER(*n*)	n bytes	254 chars maximum	PIC X(*n*)
VARCHAR(*n*)	2 to *n*+2 bytes	4,046 bytes maximum 32,704 for 32KB pages	01 VARCHAR. 49 LTH PIC S9(4)COMP. 49 COLUMN PIC X(*n*).
GRAPHIC(*n*)	2*n* bytes	127 double-byte characters maximum	PIC G(*n*) DISPLAY-1
VARGRAPHIC(*n*)	2 to 2*n*+2 bytes	2,023 double-byte characters maximum 32,704 for 32KB pages	01 VGRAPHIC. 49 LENGTH PIC S9(4) 49 COLUMN PIC G(n) DISPLAY-1
DATE	4 bytes	0001-01-01 to 9999-12-31	PIC X(10)
TIME	3 bytes	00.00.00 to 24.00.00	PIC X(8)
TIMESTAMP	10 bytes	0001-01-01.00.00.00.000000 to 9999-12-31.24.00.00.000000	PIC X(26)
ROWID	up to 40 bytes	internal identifier	01 ROWID-VAR USAGE IS SQL USAGE IS ROWID
BLOB	*varies*	up to 2GB	01 BLOB-VAR USAGE IS SQL TYPE IS BLOB(*n*).

Data Type	Physical Storage	Value Range	COBOL Picture
- or -			`01 BLOB-LOC USAGE IS SQL TYPE IS BLOB-LOCATOR.`
`CLOB`	*varies*	up to 2GB	`01 CLOB-VAR USAGE IS SQL TYPE IS CLOB(`*n*`).`
- or -			`01 CLOB-LOC USAGE IS SQL TYPE IS CLOB-LOCATOR.`
`DBCLOB`	*varies*	up to 2GB	`01 DBCLOB-VAR USAGE IS SQL TYPE IS DBCLOB(`*n*`).`
- or -			`01 DBCLOB-LOC USAGE IS SQL TYPE IS DBCLOB-LOCATOR.`

NOTE

Applications that access or manipulate LOB data require either declared host variables to hold the LOB data or LOB locator variables to point to the LOB data.

DB2 will generate a `PIC S9(9) USAGE IS BINARY` field to be used for LOB locators defined as shown earlier.

For BLOB, CLOB, and DBCLOB, host variables defined for DB2 will generate a field structure to hold the LOB data. The first component is a `PIC 9(9) COMP` field to hold the length of the LOB, followed by the declaration for the actual LOB data. But the largest character and graphic variable declaration permitted in a COBOL program is 32,767 bytes. So, for LOBs greater than 32,767 bytes, DB2 will create multiple host language declarations of 32,767 or fewer bytes.