CS 1555

Lecture 18

**Database Programming at Large (continued)**

NULL values & indicators

- INDICATORS are used to hold the status of variables and test for NULL values

- An indicator is associated with each variable

- Short integer (2 bytes)

- 1: NULL

- 0: valid

- Always check indicator when reading

- Always set indicator when writing

- Each field in a struct is a separate variable 🡪 needs own indicator

- Indicators could be struct/array depending on implementation

ESQL cursors

- If more than one tuple can be selected, then tuples must be processed one at a time by means of cursor

Cursor retrieval

- Sequential access

- FETCH <cursor-name> INTO <variable-list>

- Copies into variables the current tuple and advances the cursor

- Random access

- FETCH orientation FROM <cursor-name> INTO <variable-list>

- where orientation: NEXT (default), PRIOR, LAST, …

Dynamic SQL statements

- An SQL statement is passed to DBMS in the form of a string to be interpreted and executed

- EXECUTE IMMEDIATE

- PREPARE, EXECUTE, USING

- Create/drop table

- Insert, delete, update

- Dynamic DECLARE CURSOR, DESCRIBE, OPEN, FETCH

- RELEASE

Prepare-Execute-Using

- Compiles SQL statement with parameters indicated with “?”

- USING statement allows the passing of parameters

SQLJ: SQL – Java

- Semi-static version of embedded SQL in Java

- SQL statements are introduced with: #sql

- Iterator object supports the notion of cursor

JDBC: an example of SQL API

- Resembles dynamic SQL, in which SQL statements are passed in the form of strings

- Java applet executes an SQL statement by submitting it to the JDBC driver manager

Executing an SQL statement

- Statement class: execute SQL statements without parameters