Module 13 – Insert, Update, Delete

Module Objectives

Describe each DML statement

INSERT, UPDATE, and DELETE rows in a table

Implement control transactions in each SQL dialect

Describe each DML statement

Data manipulation language (DML) is a core part of SQL. When you want to add, modify, or remove data in the database, you execute a DML statement. A collection of DML statements that form a logical unit of work is known as a transaction.

Consider a banking database. When a bank customer transfers money from a savings account to a checking account, the transaction might consist of three separate operations: decrease the savings account, increase the checking account, and record the transaction in the transaction journal. The database must guarantee that all three SQL statements are performed to maintain the accounts in proper balance. When something prevents one of the SQL statements in the transaction from executing, the other statements of the transaction must be undone.

The SQL statements that are used to perform DML statements are INSERT, UPDATE, and DELETE.

To add data to a database, you perform an INSERT statement.

To modify existing data in a database, you perform an UPDATE statement.

To remove existing data from a database, you perform a DELETE statement.

INSERT, UPDATE, and DELETE rows in a table

INSERT statements may be perform by issuing an IMPLICIT or and EXPLICIT INSERT statement.

To perform an IMPLICIT INSERT statement, you must provide a value for every column in the table, even if that value is NULL.

The syntax for an IMPLICIT INSERT follows this format:

INSERT INTO *table_name*

VALUES (*first_column_value, second_column_value, third_column_value, …*);

In an implicit insert, no column names are required in the statement.

To perform an EXPLICIT INSERT statement, you must provide both the column name and a value for each column you would like to insert a value into and any column that has a not null constraint on it.

The syntax for an EXPLICIT INSERT follows this format:

INSERT INTO *table_name* (*first_column_name, second_column_name, …*)

VALUES (*first_column_value, second_column_value, third_column_value, …*);

In an explicit insert, both column names and column values are required in the statement.

UPDATE statements may be performed on a single column or multiple columns. It is important to note that you should never perform an update on a column that is designated as a primary key.

To perform an UPDATE statement, follow this format:

UPDATE *table_name*

SET *column_name = new_value*;

Although this statement will perform an update, it is important to note that it will update all rows in the table. If a specific record is the only record to be modified, it is best to include a WHERE clause that specifies the record by identifying the primary key. For instance:

UPDATE *table_name*

SET *column_name = new_value*

WHERE *primary_key_column_name = specific_value*;

If multiple columns of data need to be modified follow this example.

UPDATE *table_name*

SET *column_name = new_value*,

column_name = new_value,

column_name = new_value

WHERE *primary_key_column_name = specific_value*;

DELETE statements are issued when you need to remove one or more records from a table.

To DELETE a row from a table, follow this format:

DELETE FROM table_name

WHERE *primary_key_column_name = specific_value*;

Similar to a UPDATE statement, a DELETE statement can effect an entire table unless you include a WHERE clause to specify which record or records you need to remove. This should be done by identifying the primary key of the record to want to remove.

Implement control transactions in each SQL dialect

With Oracle and MySQL, when you begin executing DML statements, the database begins an implicit transaction for you. By doing this, it enables you to perform a ROLLBACK at any time, thus undoing any and all DML statements that you have issued since the last COMMIT.

Once a COMMIT is issued, all DML statements are permanently saved to the database.

Microsoft will perform the same process only if you issue a BEGIN TRANSACTION statement prior to issuing your first DML statement.