DBMS SQL

Lesson 10: Data Manipulation Language

Capgemini

Lesson Objectives

➢ To understand the following topics:
- Concept of Data Manipulation Language
- Inserting rows into a table
- Deleting rows from a table
- Updating rows in a table

Data Manipulation Language

➢ Data Manipulation Language (DML) is used to perform the following routines on database information:
  • Retrieve
  • Insert
  • Modify

➢ DML changes data in an object. If you insert a row into a table, that is DML.

➢ All DML statements change data, and must be committed before the change becomes permanent.

INSERT

➢ INSERT command:
- INSERT is a DML command. It is used to add rows to a table.
- In the simplest form of the command, the values for different columns in the row to be inserted have to be specified.
- Alternatively, the rows can be generated from some other tables by using a SQL query language command.

Inserting Rows into a Table

➢Inserting by specifying values:

Example: To insert a new record in the DEPT table

```
INSERT INTO table_name[(col_name1,col_name2,...)]
        {VALUES (value1,value2,....) | query};
```

```
INSERT INTO Department_master
VALUES (10, 'Computer Science');
```

Inserting Rows into a Table

➤Inserting rows in a table from another table using Subquery:

Example: The example given below assumes that a new_emp_table exists. You can use a subquery to insert rows from another table.

INSERT INTO new_staff_table

SELECT * FROM staff_master

WHERE staff_master.hiredate > '01-jan-82';

Inserting Rows into a Table

➢Inserting by using "substitution variables":

Example: In the example given below, when the command is run, values are prompted every time.

```
INSERT INTO department_master
VALUES (&dept_code, '&dept_name');
Enter a value for dept_code : 20
Enter a value for dept_name : Electricals
```

DELETE

➢ The DELETE command is used to delete one or more rows from a table.

- The DELETE command removes all rows identified by the WHERE clause.

DELETE [FROM] {table_name | alias }

     [WHERE condition];

Deleting Rows from Table

Example 1: If the WHERE clause is omitted, all rows will be deleted

from the table.

Example 2: If we want to delete all information about department

10 from the Emp table:

DELETE FROM staff_master;

DELETE FROM student_master WHERE dept_code=10;

UPDATE

➢ Use the UPDATE command to change single rows, groups of rows, or all rows in a table.

- In all data modification statements, you can change the data in only "one table at a time".

UPDATE table_name

SET   col_name = value|

    col_name =

SELECT_statement_returning_single_value|

    (col_name,…) = SELECT_statement

[WHERE condition];

Updating Rows from Table

Example 1: To UPDATE the column "dname" of a row, where deptno is 10, give the following command:

UPDATE department_master

SET dept_name= 'Information Technology'

WHERE dept_code=10;

Updating Rows from Table

Example 2: To UPDATE the subject marks details of a particular student, give the following command:

```
UPDATE student_marks
SET subject1= 80 , subject2= 70
            WHERE student_code=1005;
```

Using a Subquery to do an Update

➢ For making salary of "Anil" equal to that of staff member 100006, use the following command:

> UPDATE staff_master
>
> SET staff_sal = (SELECT staff_sal FROM staff_master
>
>   WHERE staff_code = 100006)
>
> WHERE staff_name = 'Anil';

MERGE statement

➢ The MERGE statement, provides the ability to conditionally update or insert data into a database table.

➢ The MERGE statement, performs an UPDATE if the row exists, and an INSERT if it is a new row:

- Increases performance and ease of use
- Is useful in data warehousing applications
- Avoids separate updates

MERGE statement

➢ You can conditionally insert or update rows in a table by using the MERGE statement

```
MERGE INTO table_name table_alias
  USING (table|view|sub_query) alias
  ON (join condition)   WHEN MATCHED THEN
    UPDATE SET
    col1 = col_val1,
    col2 = col2_val
  WHEN NOT MATCHED THEN
    INSERT (column_list)
    VALUES (column_values);
```

Example on Merge

Example

CREATE table staff_copy as select staff_code,staff_name FROM
staff_master where 1=2;

MERGE into staff_copy using staff_master
   ON (staff_master.deptno=staff_copy.deptno)
   WHEN MATCHED THEN
   UPDATE SET staff_code=staff_master.staff_code,
   staff_name=staff_master.staff_name
   WHEN NOT MATCHED THEN
  INSERT (staff_code,staff_name) values
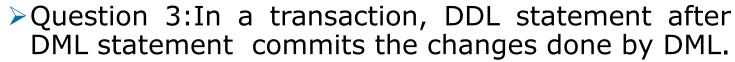 (staff_master.staff_code,staff_master.staff_name);

Summary

➢The concept of Data Manipulation Language

➢Inserting rows into a table

➢Deleting rows from a table

➢Updating rows in a table

➢Using Merge Statement
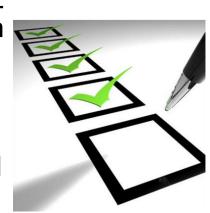
Review - Questions

➢ Question 1: Both TRUNCATE statement and DELETE without condition removes the entire date from a table
  - True/False

➢ Question 2: All DML statements are auto committed
  - True/False

➢ Question 3: In a transaction, DDL statement after DML statement commits the changes done by DML.
  - True/False

Review - Questions

➢ Question 4: Inserting rows in a table emp1 from another table can be done using ____.

- Option 1: insert into emp1(t1) as select empno from emp
- Option 2: insert into emp1(t1) select empno from emp
- Option 3: insert into emp1(t1) as select * from emp