Instructor Notes:

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8.1: Concept of Data Manipulation Language

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.

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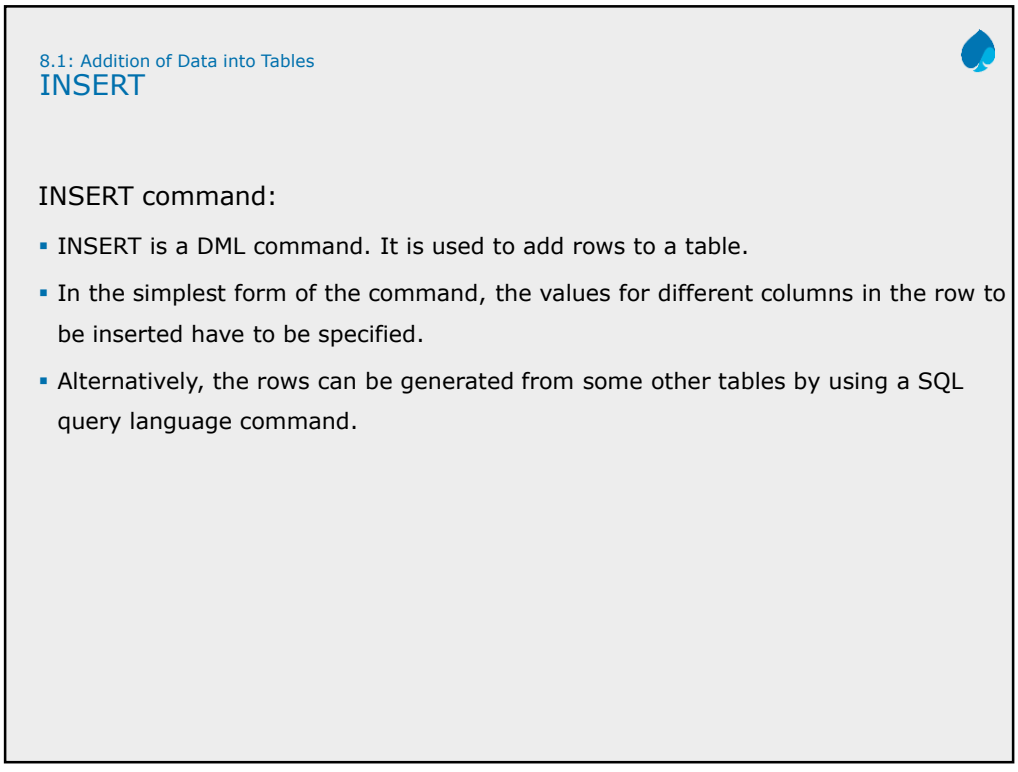

Addition of Data into Tables:

Requisites for using INSERT command:

- If values are specified for all columns in the order specified at creation, then col_names could be omitted.
- Values should match “data type” of the respective columns.
- Number of values should match the number of column names mentioned.
- All columns declared as NOT NULL should be supplied with a value.
- Character strings should be enclosed in quotes.
- Date values should be enclosed in quotes.
- Values will insert one row at a time.
- Query will insert all the rows returned by the query.
- The table_name can be a “table” or a “view”. If table_name is a “view”, then the following restrictions apply:
    1. The “view” cannot have a GROUP BY, CONNECT BY, START WITH, DISTINCT, UNION, INTERSECT, or MINUS clause or a join.
    2. If the “view” has WITH CHECK OPTION clause, then a row, which will not be returned by the view, cannot be inserted.

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8.1: Addition of Data into Tables

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:

Example:

- Inserting a row in EMP table giving all values.

```
INSERT INTO student_master
VALUES(1001,'Amit',10,'11-Jan-80','Chennai');
```

  - 10 is a dept number which exists in DEPARTMENT_MASTER table

- Inserting a row in STAFF_MASTER table giving some values.

```
INSERT INTO staff_master
(staff_code,staff_name,design_code,dept_code)
VALUES(100001,'Arvind',102,30);
```

  - This row will be created if all the constraints like NOT NULL are satisfied.

Instructor Notes:

8.1: Addition of Data into Tables

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';
```

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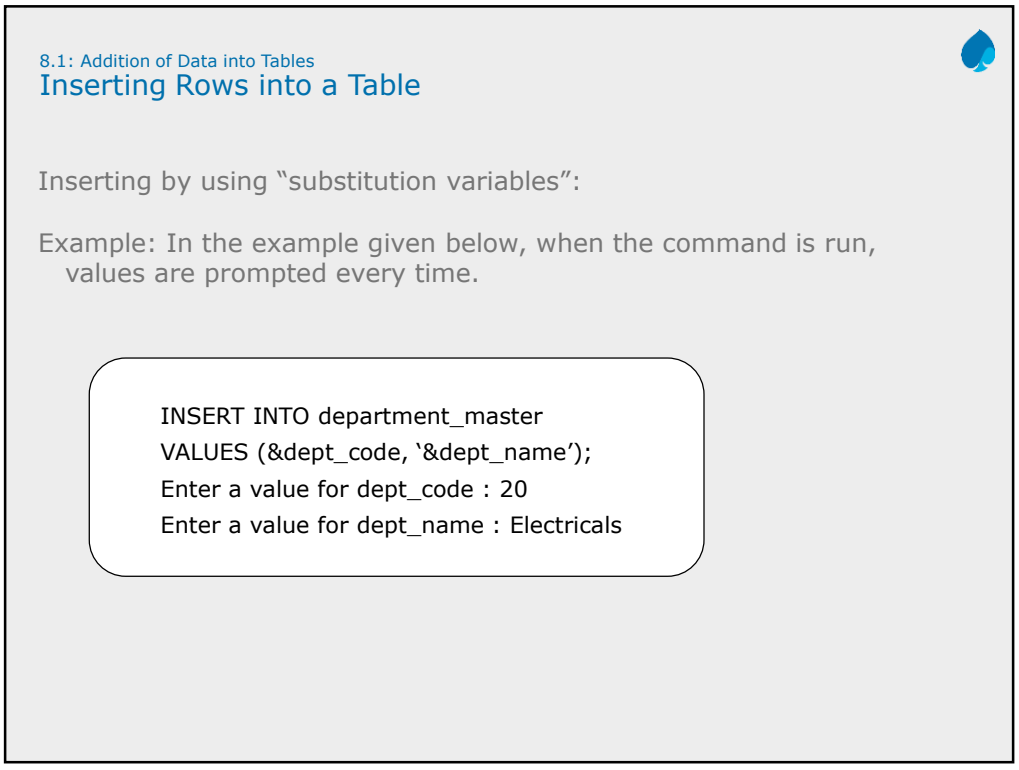

Inserting Rows into a Table:

Inserting by using "substitution variables":

- The problem with the INSERT statement is that it adds only "one row" to the table.
- However, by using "substitution variables" the speed of data input can be increased.
- Whenever a "substitution variable" is placed in a "value" field, the user will be prompted to enter the "actual value" when the command is executed.

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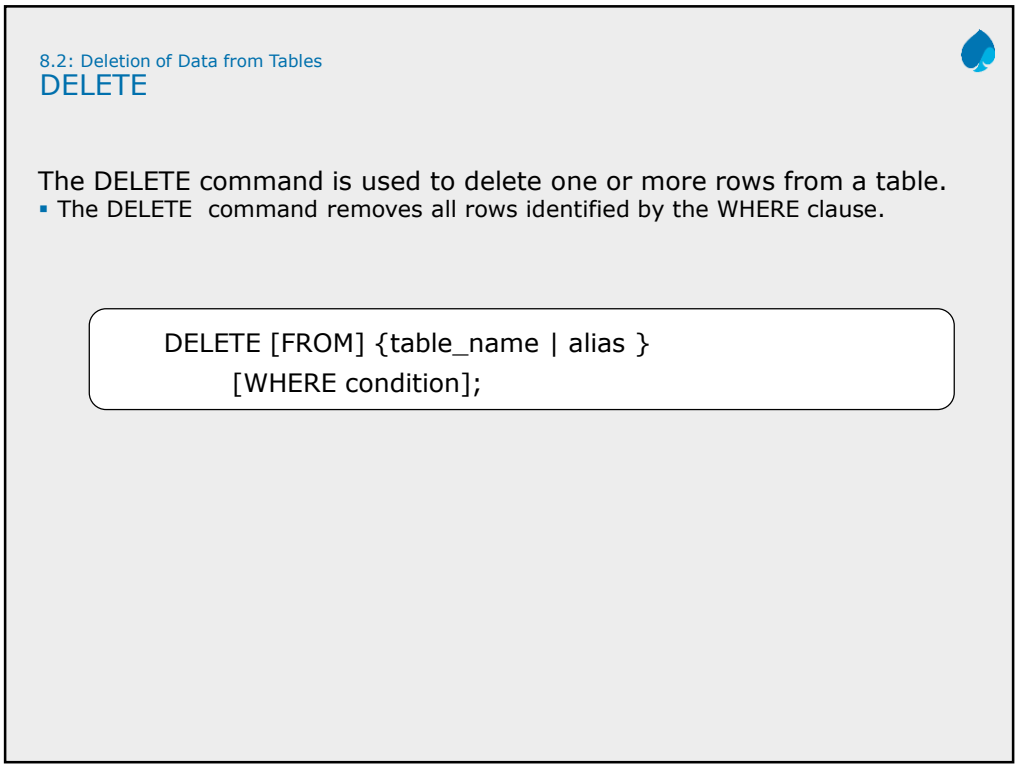

Deletion of Data from Tables

- The table_name can be a “table” or a “view”.
- The DELETE command is used to delete one or more rows from a table.
- The DELETE statement removes all rows identified by the WHERE clause.
  - This is another DML, which means we can rollback the deleted data, and that to make our changes permanent.
- If WHERE clause is omitted, all rows from the table are removed. Else all rows which satisfy the condition are removed.
- FROM clause can be omitted without affecting the statement.

Instructor Notes:

8.2: Deletion of Data from Tables

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

```
DELETE
    FROM staff_master;
```

```
DELETE
    FROM student_master
    WHERE  dept_code=10;
```

Deletion of Data from Tables

Example 3:

```
DELETE staff_master WHERE staff_name = 'Anil';
```

Instructor Notes:

8.3: Modifying / Updating existing Data in a Table

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];
```

Modifying / Updating existing Data in a Table:

- The table_name can be a "table" or a "view".
- The "value" can be a value, an expression, or a query, which returns a single value.
- The UPDATE command provides automatic navigation to the data.
- **Note:** If the WHERE clause is omitted, all rows in the table will be updated by a value that is currently specified for the field. Else only those rows which satisfy the condition will be updated.

Instructor Notes:

8.3: Modifying / Updating existing Data in a Table

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;
```

Instructor Notes:

8.3: Modifying / Updating existing Data in a Table

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;
```

Instructor Notes:

8.3: Modifying / Updating existing Data in a Table

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';
```

Instructor Notes:

Summary

In this lesson, you have learnt:

- The concept of Data Manipulation Language
- Inserting rows into a table
- Deleting rows from a table
- Updating rows in a table

Instructor Notes:

Answers to Review Questions

Question 1: True

Question 2: False

Question 3: Option 2

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: 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