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**Concepts of SQL**

Module 5 - DML Command in SQL

**What is a DML Command in SQL?**

DML stands for Data Manipulation Language. It is a subset of SQL (Structured Query Language) used to manipulate the data stored in relational databases. DML commands allow users to retrieve, insert, update, and delete data from database tables.

**Key DML Commands**

Command	Description
SELECT	Retrieves data from one or more tables.
INSERT	Adds new records (rows) into a table.
UPDATE	Modifies existing records in a table.
DELETE	Removes existing records from a table.

**1. SELECT Command in SQL**

The SELECT command is one of the most commonly used SQL commands. It is part of DML (Data Manipulation Language) and is used to retrieve data from one or more tables in a relational database.

**Purpose of SELECT**

To query and fetch data from a database table. It allows you to:

- View all or specific columns
- Filter rows based on conditions
- Sort, group, or join data
- Perform calculations using functions

**Syntax of Select Command:**

```
SELECT column1, column2,...
FROM table name
WHERE condition
```

**Examples and Usage**

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**1. Selecting All Columns**

SELECT \* FROM employees;

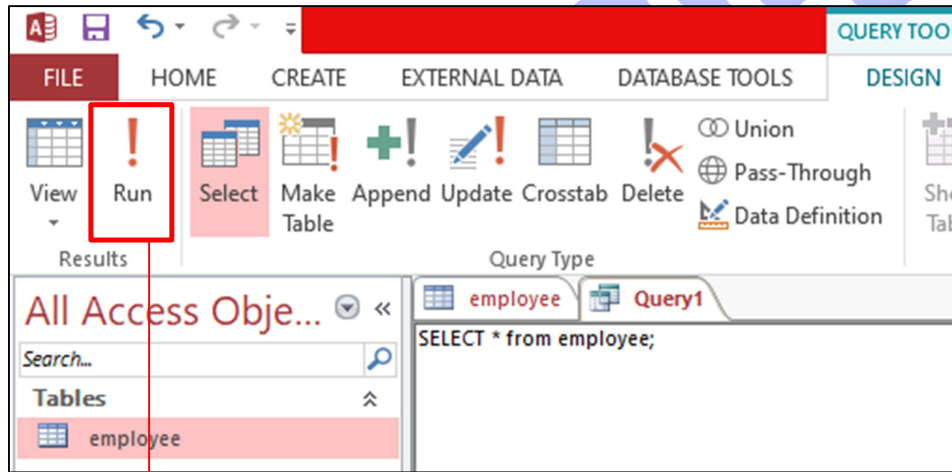
This returns all columns and all rows from the employees table.

**Example**

Employee table:

emp_id	name	age	department	salary	hire_date	Click to Add
101	Ravi Kumar	28	IT	\$65,000.00	15-Mar-22	
102	Pooja Sharma	32	HR	\$58,000.00	01-Jul-21	
103	Amit Singh	45	Finance	\$72,000.00	10-Dec-19	
104	Neha Verma	26	Marketing	\$50,000.00	20-May-23	
*						

**After Running query**



Click on Run to display all columns

emp_id	name	age	department	salary	hire_date
101	Ravi Kumar	28	IT	\$65,000.00	15-Mar-22
102	Pooja Sharma	32	HR	\$58,000.00	01-Jul-21
103	Amit Singh	45	Finance	\$72,000.00	10-Dec-19
104	Neha Verma	26	Marketing	\$50,000.00	20-May-23
*					

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**2. Selecting Specific Columns**

SELECT name, salary FROM employees;

Returns only the name and salary columns.

name	salary
Ravi Kumar	\$65,000.00
Pooja Sharma	\$58,000.00
Amit Singh	\$72,000.00
Neha Verma	\$50,000.00
*	

**3. Using WHERE to Filter Rows**

SELECT name, department FROM employees  
WHERE salary > 50000;

Returns employees with a salary greater than 50,000.

name	department
Ravi Kumar	IT
Pooja Sharma	HR
Amit Singh	Finance
*	

**INSERT Command in SQL**

The INSERT command in SQL is used to add new rows (records) into a table. It is part of DML (Data Manipulation Language) and is essential for inserting data into a relational database.

Syntax:

INSERT INTO table\_name (column1, column2, ...)  
VALUES (value1, value2, ...);

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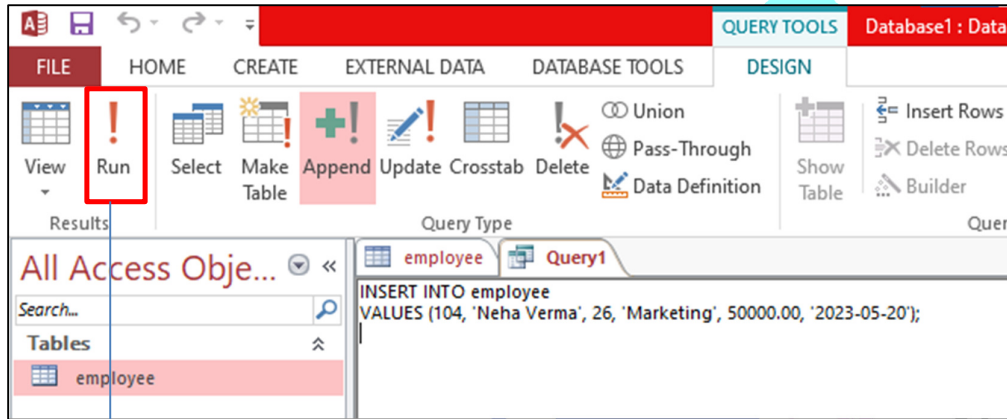
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Example:  
INSERT INTO employee (emp\_id, name, age, department, salary, hire\_date)  
VALUES  
(102, 'Pooja Sharma', 32, 'HR', 58000.00, '2021-07-01');

Insert without Column list:  
INSERT INTO employee  
VALUES (104, 'Neha Verma', 26, 'Marketing', 50000.00, '2023-05-20');

Example:



Click Run to add one row

After Insertion Table:

emp_id	name	age	department	salary	hire_date	Click to Add
101	Ravi Kumar	28	IT	\$65,000.00	15-Mar-22	
102	Pooja Sharma	32	HR	\$58,000.00	01-Jul-21	
103	Amit Singh	45	Finance	\$72,000.00	10-Dec-19	
104	Neha Verma	26	Marketing	\$50,000.00	20-May-23	
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Update Command in SQL

The UPDATE command in SQL is a DML (Data Manipulation Language) statement used to modify existing records in a table. It changes the values of one or more columns for all rows that meet the specified condition.

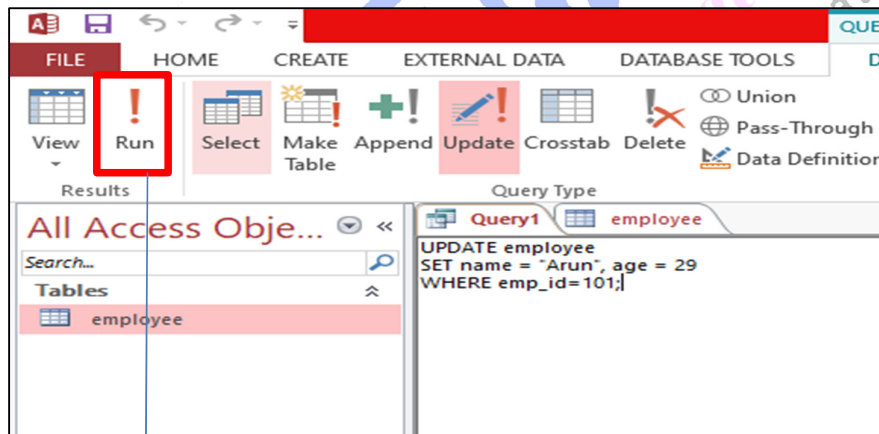
Syntax of UPDATE

UPDATE table\_name  
SET column1 = value1, column2 = value2, ...  
WHERE condition;

- **table\_name:** The name of the table you want to update.
- **SET:** Specifies the columns and their new values.
- **WHERE:** Filters the rows to be updated; only rows matching this condition will be updated.

Example:

UPDATE employee  
SET name = "Arun", age = 29  
WHERE emp\_id=101;



Click run to update record of Employee id 101

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**Updated Table:**

emp_id	name	age	department	salary	hire_date	Click to Add
101	Arun	29	IT	\$65,000.00	15-Mar-22	
102	Pooja Sharma	32	HR	\$58,000.00	01-Jul-21	
103	Amit Singh	45	Finance	\$72,000.00	10-Dec-19	
104	Neha Verma	26	Marketing	\$50,000.00	20-May-23	

Updated value

**Examples**

**Example 1: Update a single row**

```
UPDATE employee
SET department = 'Marketing'
WHERE emp_id = 101;
```

- This changes the Department of the employee with ID 101 to "Marketing".

**Example 2: Update multiple rows**

```
UPDATE employee
SET salary = salary * 1.05
WHERE department = "IT";
```

- This gives a 5% salary raise to all employees in the Engineering department.

**Example 3: Update multiple columns**

```
UPDATE employee
SET department = 'Finance', salary = 70000
WHERE emp_id = 102;
```

- Changes both the Department and salary for employee 102.

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What happens without WHERE clause?

UPDATE employee  
SET department = 'HR';

- All rows in the employee table will have their Department set to "HR".

Delete Command in SQL

The DELETE command in MS Access is used to remove one or more records from a table. It is part of the Data Manipulation Language (DML) in SQL.

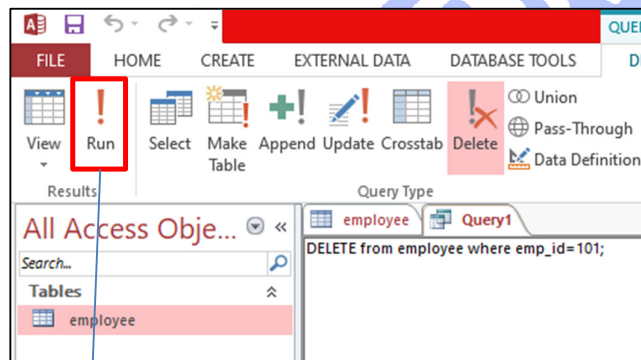
Syntax:

DELETE FROM table\_name WHERE condition;

- table\_name is the name of the table from which you want to delete records.
- The WHERE clause specifies which records should be deleted.

**Important:** If you omit the WHERE clause, all records in the table will be deleted.

Example:



Click run to delete the records of emp\_id 101

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**Resultant Table**

emp_id	name	age	department	salary	hire_date	Click to Add
#Deleted	#Deleted	#Deleted	#Deleted	#Deleted	#Deleted	#Deleted
102	Pooja Sharma	32	HR	\$60,900.00	01-Jul-21	
104	Neha Verma	26	Marketing	\$50,000.00	20-May-23	

Record Deleted

**Examples:**

1. Delete a specific record:

DELETE FROM Employees WHERE EmployeeID = 101;

This deletes the employee with ID 101.

2. Delete multiple records:

DELETE FROM Employees WHERE Department = 'HR';

This deletes all employees in the HR department.

3. Delete all records from a table:

DELETE FROM Employees;

This deletes all records from the Employees table but keeps the table structure.