Data Manipulation Language (DML)

1. INSERT

- Used to add new records into a table
- Syntax:

INSERT INTO table_name (column1, column2, ...) VALUES (value1, value2, ...);

- Example:

INSERT INTO employees (emp_name, emp_email) VALUES ('John Doe', 'john@example.com');

2. SELECT

- Used to retrieve data from one or more tables
- Syntax:

SELECT column1, column2, ... FROM table_name WHERE condition;

- Example:

SELECT emp_name, emp_email FROM employees WHERE emp_id = 1;

3. UPDATE

- Used to modify existing records in a table
- Syntax:

UPDATE table_name SET column1 = value1, column2 = value2, ... WHERE condition;

- Example:

UPDATE employees SET emp_salary = 55000 WHERE emp_id = 1;

4. DELETE

- Used to remove specific records from a table
- Syntax:

DELETE FROM table_name WHERE condition;

- Example:

DELETE FROM employees WHERE emp_id = 1;

II. Comparison: DROP vs TRUNCATE vs DELETE

A. **DROP**

- Definition: Removes an entire table structure from the database
- Syntax: **DROP TABLE table_name;**

- Characteristics:
  * Removes table structure, indexes, constraints, and data
  * Cannot be rolled back (in most databases)
  * Faster than DELETE as it doesn't log individual row deletions

B. TRUNCATE
- Definition: Removes all records from a table, but keeps the table structure intact
- Syntax: **TRUNCATE TABLE table_name;**
- Characteristics:
  * Faster than DELETE for removing all records
  * Resets AUTO_INCREMENT counters
  * Cannot be rolled back in most cases
  * Doesn't activate DELETE triggers

C. DELETE
- Definition: Removes specific records from a table based on a condition
- Syntax: **DELETE FROM table_name WHERE condition;**
- Characteristics:
  * Can remove specific records based on a WHERE condition
  * Slower than TRUNCATE for removing all records
  * Can be rolled back
  * Activates DELETE triggers
  * Logs individual row deletions

Comparison Table

Aspect	DROP	TRUNCATE	DELETE
Structure	Removes table structure	Keeps structure	Keeps structure
Data	Removes all data	Removes all data	Can be selective
Speed	Fastest	Fast	Slowest
Rollback	Generally not possible	Generally not	Possible

Triggers	No triggers	No DELETE triggers	Activates
WHERE clause	Not applicable	Not applicable	Supported
Space release	Immediate	Immediate	Not immediate

Use Cases

- Use DROP when you want to completely remove a table from the database
- Use TRUNCATE when you want to quickly remove all data from a table but keep its structure
- Use DELETE when you need to remove specific records or when you need to log the deletions