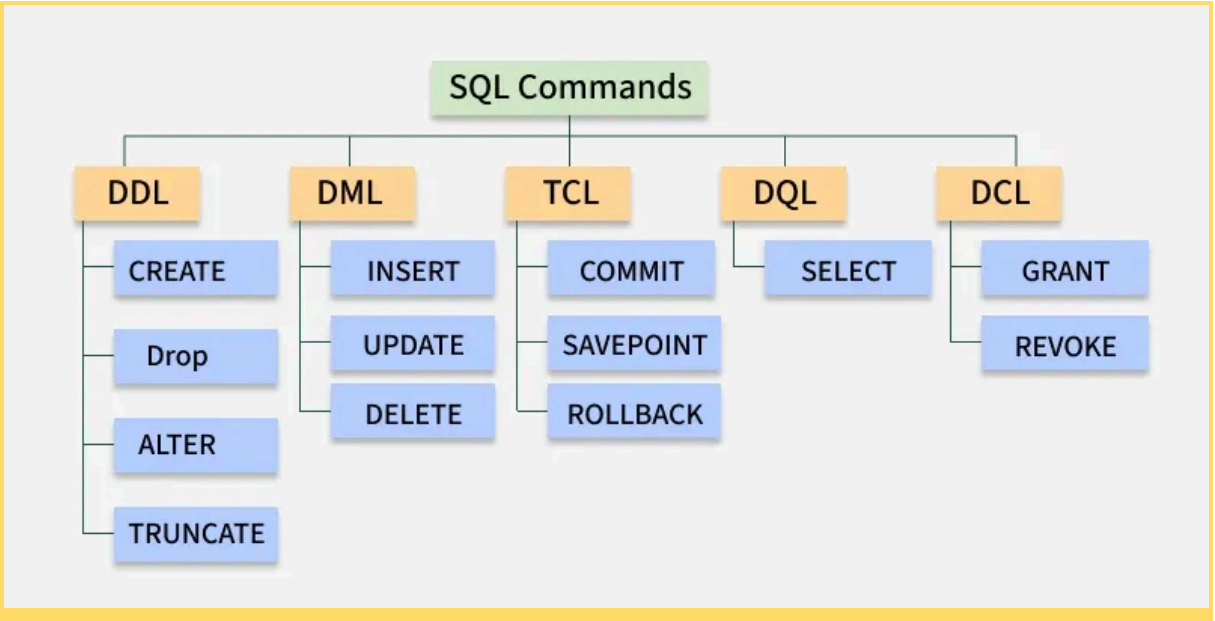
SQL Commonds



1️⃣ DDL (Data Definition Language)

- **Purpose:** Commands that **define or change the structure** of database objects like tables.
- **Examples:** `CREATE`, `ALTER`, `DROP`.

a) CREATE

- **What it does:** Makes a **new table or database**.
- **Example:**

```
CREATE TABLE Students (
    id INT,
    name VARCHAR(50),
    age INT
);
```

This creates a table `Students` with columns `id`, `name`, and `age`.

b) ALTER

- **What it does: Changes the structure** of an existing table.
- **Example:**

```
ALTER TABLE Students
ADD email VARCHAR(50);
```

This adds a new column `email` to the `Students` table.

c) DROP

- **What it does: Deletes a table or database** completely.
- **Example:**

```
DROP TABLE Students;
```

This deletes the table `Students` forever.

d)TRUNCATE

What it does:
Removes **all data from a table at once**, but **keeps the table structure**.

👉 Think of it like:
"Empty the table completely, but don't delete the table."

Example

```
TRUNCATE TABLE Students;
```

2DML (Data Manipulation Language)

- **What it is:**
  DML is used to **add, change, or delete data** in a table.
- **Main DML commands:**
  `INSERT`, `UPDATE`, `DELETE`

INSERT

Use: Add new data

```
INSERT INTO Students VALUES (1, 'Rakesh', 25);
```

→ Adds a new row

UPDATE

Use: Change existing data

```
UPDATE Students SET age = 26 WHERE id = 1;
```

→ Changes age

DELETE

Use: Remove data

```
DELETE FROM Students WHERE id = 1;
```

→ Deletes one row

TCL (Transaction Control Language)

- **Purpose:** Commands to **manage changes made by DML** (save, undo, etc.).
- **Examples:** `COMMIT`, `ROLLBACK`, `SAVEPOINT`.

a) COMMIT

- **What it does: Saves all changes** permanently.
- **Example:**

```
INSERT INTO Students (id, name, age) VALUES (2, 'Amit', 24);
COMMIT;
```

Now Amit's data is saved permanently.

b) ROLLBACK

- **What it does: Undo changes** made since last commit.
- **Example:**

```
INSERT INTO Students (id, name, age) VALUES (3, 'Sita', 23);
ROLLBACK;
```

The new row for Sita will not be saved.

c) SAVEPOINT

- **What it does:** Creates a **checkpoint** in a transaction to roll back to that point.
- **Example:**

```sql
INSERT INTO Students (id, name, age) VALUES (4, 'Raj', 22);
SAVEPOINT sp1;

INSERT INTO Students (id, name, age) VALUES (5, 'Simran', 21);
ROLLBACK TO sp1;
```

DCL (Data Control Language)

- **Purpose:** Commands to control access to the database.
- **Examples:** GRANT, REVOKE.

```sql
-- Gives permission to user1 to READ (SELECT) and ADD (INSERT) data in Students table
GRANT SELECT, INSERT ON Students TO 'user1';

-- Removes permission to ADD (INSERT) data from user1, user1 can still READ (SELECT)
REVOKE INSERT ON Students FROM 'user1';
```