--LECTURE- 4--

1️⃣ Any row gets skipped in database because of UNIQUE or CHECK

- In SQL, we can define **constraints** on columns to control what values can go in.
- **UNIQUE constraint** → Makes sure no two rows have the same value in that column.
    - Example: If you have a column id with UNIQUE constraint, and you try to insert 1, 2, 2, 3, the second 2 will **not be allowed**.
- **CHECK constraint** → Makes sure the values satisfy a condition.
    - Example: CHECK (age >= 18) → If someone tries to insert age = 16, SQL **rejects that row**.
- That's why your note says numbers like 1, 2, 4, 5, 7 — some numbers might get skipped if they violate UNIQUE or CHECK rules.
- ✅ Key idea: **Constraints prevent invalid or duplicate data from entering the table.**

2️⃣ CDL, CREATE, ALTER, DROP, TRUNCATE, RENAME

- **CDL** = **Data Definition Language (DDL)** → Used to **define and modify database structures** (not the data itself).
- **Commands:**
    1. **CREATE** → Makes a new table, database, or other objects.
    2. CREATE TABLE students (
    3. id INT,
    4. name VARCHAR(50)
    5.);
    6. **ALTER** → Change an existing table structure (add column, modify column, rename, drop column).
    7. **DROP** → Completely deletes a table or database.
    8. **TRUNCATE** → Deletes **all rows from a table** but keeps the table structure.
    9. **RENAME** → Changes the name of a table.

3 SHOW TABLES

- Lists all tables in the **current database**.
- SHOW TABLES;

4 SHOW DATABASES

- Lists **all databases** on the server.
- SHOW DATABASES;

5 Semicolon ;

- Marks the **end of a SQL statement**.
- Important when you run multiple commands at once.
- SELECT * FROM students; -- semicolon ends the statement

6 Currently selected database

- To see which database you are using:
- SELECT DATABASE();
- This tells SQL: “Which database am I working with right now?”

7 DROP TABLE

- Deletes a table **completely**, including all rows and structure.
- DROP TABLE students;

8 DROP TABLE IF EXISTS

- Prevents errors if table doesn’t exist:
- DROP TABLE IF EXISTS students;

9️⃣ DROP DATABASE

- Deletes an entire database.
- If you want to delete multiple databases at once, you can list them (depends on SQL version):
- DROP DATABASE db1, db2;

🔟 DDL vs DML rollback

- **DDL (CREATE, ALTER, DROP, TRUNCATE)** → Changes **structure**, cannot be rolled back in most SQL databases.
- **DML (INSERT, UPDATE, DELETE)** → Changes **data**, can usually be rolled back if you use transactions.
- ✅ Example: If you DROP TABLE students, it's gone forever (unless you have a backup).

1️⃣1️⃣ ALTER TABLE

- Used to **change table structure**.
- Syntax examples:
    1. **Modify column type**:
    2. ALTER TABLE students MODIFY age INT;
    3. **Change column name**:
    4. ALTER TABLE students CHANGE old_name new_name VARCHAR(50);
    5. **Rename table**:
    6. ALTER TABLE students RENAME TO learners;
    7. **Add column**:
    8. ALTER TABLE students ADD grade VARCHAR(5);
    9. **Drop column**:
    10. ALTER TABLE students DROP COLUMN grade;

1️⃣2️⃣ TRUNCATE

- **Deletes all rows** from a table **but keeps the table structure**.
- **Resets auto-increment indexing** to 0.
- Example: Table had IDs 1, 2, 3… after TRUNCATE, the next inserted row will be 1 again.
- ✅ Difference from DELETE: DELETE keeps indexes intact, TRUNCATE resets them.
- DELETE FROM students; -- rows deleted, IDs continue from last number
- TRUNCATE TABLE students; -- rows deleted, IDs reset

Quick Summary Table

Command	Does what?	Can rollback?	Special notes
CREATE	Create table/database	No	**DDL**
ALTER	Modify table	No	**DDL**
DROP	Delete table/database	No	**DDL**
TRUNCATE	Delete all rows	No	**Resets indexes**
RENAME	Rename table	No	**DDL**
SHOW TABLES	Lists tables	N/A	**Useful to check structure**
SHOW DATABASES	Lists databases	N/A	**Useful for server overview**
SELECT DATABASE()	**Shows current database**	**N/A**	**Helps know context**