Complete SQL Notes – SELECT, ALTER, Transactions & DCL

1. SELECT Command (DQL)

SELECT is used to retrieve data from database tables.

- Retrieve all columns:
  SELECT * FROM student;

- Retrieve specific columns:
  SELECT stud_name, age FROM student;

- Using WHERE clause:
  SELECT * FROM student WHERE standard = 8;

- Using BETWEEN:
  SELECT * FROM emp WHERE salary BETWEEN 1000 AND 2000;

- Using IN:
  SELECT * FROM emp WHERE deptno IN (10, 20);

2. ALTER Command (DDL)

ALTER is used to modify the structure of an existing table.

- Add column:
  ALTER TABLE student ADD address VARCHAR(100);

- Modify column:
  ALTER TABLE student MODIFY age INT;

- Rename column:
  ALTER TABLE student RENAME COLUMN stud_name TO student_name;

- Drop column:
  ALTER TABLE student DROP COLUMN address;

3. Transactions (TCL)

Transactions ensure consistency using COMMIT and ROLLBACK.

- START TRANSACTION;

- INSERT INTO student (stud_name, standard, age) VALUES ('Tejas', 8, 13);

- SAVEPOINT sp1;

- ROLLBACK TO sp1;

- COMMIT;

4. DCL Commands

DCL controls user permissions.

- GRANT SELECT, INSERT ON student TO tejas;
- REVOKE INSERT ON student FROM tejas;

5. Constraints

- PRIMARY KEY – unique and not null
- FOREIGN KEY – maintains relational integrity
- UNIQUE – prevents duplicates
- NOT NULL – restricts null values
- CHECK – applies conditions
- DEFAULT – sets default value
- ON DELETE CASCADE – deletes child records automatically