Day 14 – SQL Detailed Notes (JOINS)

1. What is a JOIN?

A JOIN combines rows from two or more tables based on a related column. Joins are essential in relational databases because data is stored in normalized tables.

2. INNER JOIN

Returns only rows where the join condition is TRUE in both tables. Represents the intersection of tables.

Example – INNER JOIN

SELECT e.first_name, b.branch_name FROM Employee e INNER JOIN Branch b ON e.branch_id = b.branch_id;

3. LEFT JOIN

Returns all rows from the left table and matching rows from the right table. Unmatched right-side values become NULL.

4. RIGHT JOIN

Returns all rows from the right table and matching rows from the left table. Unmatched left-side values become NULL.

5. FULL OUTER JOIN (Conceptual)

Returns all rows from both tables whether matches exist or not. In MySQL, simulated using LEFT JOIN UNION RIGHT JOIN.

6. SELF JOIN

A SELF JOIN joins a table with itself using aliases to represent different roles (e.g., employee and supervisor).

Example – SELF JOIN

SELECT e.first_name AS Employee, s.first_name AS Supervisor FROM Employee e LEFT JOIN Employee s ON e.super_id = s.emp_id;

7. Employees without Supervisor

Use LEFT JOIN and filter WHERE supervisor column IS NULL.

8. Identifying Supervisors

Employees whose emp_id appears in super_id column are supervisors.

9. Important Concepts

JOIN condition connects foreign key to primary key. NULL does not match in INNER JOIN. Aliases are mandatory in SELF JOIN.

10. Interview Summary

INNER JOIN = intersection. LEFT JOIN = preserve left table. SELF JOIN = hierarchical relationships.