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**Subject :** Task 5

Task 5: SQL Joins (Inner, Left, Right, Full)

**Objective** : Learn to combine data from multiple tables

**Tools** : DB Browser for SQLite / MySQL Workbench

**Deliverables** : SQL queries using all join types

**1.Create two related tables (e.g., Doctor ↔ Patient)**

I give my practical file in [github.com](https://github.com/harshtankariya/SQL-DEVELOPER-INTERNSHIP-ELEVATE-LABS)

**2.Use INNER, LEFT, RIGHT, FULL JOIN**

I give my practical file in [github.com](https://github.com/harshtankariya/SQL-DEVELOPER-INTERNSHIP-ELEVATE-LABS)

Interview Questions

1. Difference between INNER JOIN and LEFT JOIN?

| **Join Type** | **Returns** |
| --- | --- |
| INNER JOIN | Only matching rows from both tables |
| LEFT JOIN | All rows from left table + matched right |

**2. What is a FULL OUTER JOIN?**

It returns **all rows** from both tables.  
If no match, NULL is shown for missing side.

**3. Can joins be nested?**

Yes. You can join inside another join.

**Example :**  SELECT ...

FROM (Table1 INNER JOIN Table2) INNER JOIN Table3;

**4. How to join more than 2 tables?**

Use **multiple JOINs** in one query.

**Example :** SELECT ...

FROM Doctor

JOIN Doctor\_Patient ON ...

JOIN Patient ON ...;

**5. What is a CROSS JOIN?**

Returns **all combinations** of rows (Cartesian Product).

**Example :** SELECT \* FROM A CROSS JOIN B;

**6. What is a NATURAL JOIN?**

A join that **automatically matches columns** with the same name and type.  
Not commonly used because it can be unpredictable.

**7. Can you join tables without a foreign key?**

Yes. You can join using **any matching column**, but foreign key makes it safer.

**8. What is a self-join?**

A table **joined with itself** using aliases.  
Example: finding employees with the same manager.

**Example :** SELECT A.Name, B.Name

FROM Employee A, Employee B

WHERE A.ManagerID = B.EmpID;

**9. What causes a Cartesian Product?**

* Missing or incorrect join condition
* Using CROSS JOIN or forgetting ON

**10. How to optimize joins?**

Tips:

* Use proper **indexes**
* Filter early with WHERE
* Avoid unnecessary SELECT \*
* Use appropriate join type (INNER, LEFT, etc.)

**Key Concepts**: Joins, Relationship

**1. Relationships in SQL**

**What are relationships?**

Relationships define how **tables are connected** using **keys** (usually Primary Key → Foreign Key).

| **Type** | **Example in Your DB** |
| --- | --- |
| One-to-Many | One hospital → many patients/doctors |
| Many-to-Many | Doctor ↔ Patient via Doctor\_Patient |
| One-to-One | Patient → Indoor/Outdoor (1:1 per type) |

**2. Joins in SQL**

Joins help you **combine data** from related tables.

**INNER JOIN**

Returns **matching rows** from both tables.

**LEFT JOIN**

Returns **all rows from left** table, matching right (or NULL).

**RIGHT JOIN**

Returns **all rows from right** table, matching left (or NULL).

**FULL OUTER JOIN**

Returns **all rows from both** tables, matching where possible.

**Many-to-Many Join: Doctor ↔ Patient**

Using a third table (Doctor\_Patient)