Name: Ketaki Deo
Class: TE-Computer
Roll no: 0001
Batch: T-1
Subject: Database Management Systems
Assignment no: 3

- **Title:**
  SQL Queries - all types of Join, Sub-Query and View

- **Date of completion:**

- **Problem statement:**

Write at least10 SQL queries for suitable database application using SQL DML statements.

Note: Instructor will design the queries which demonstrate the use of concepts like all types of Join ,Sub-Query and View

- **Objectives:**
  1. To develop Database programming skills.
  2. To develop basic Database administration skills.
  3. To learn, understand and execute process of software applicationdevelopment.
  4. To learn the join query of SQL database.

- **Software and Hardware Requirements:**
  Software – 64-bit Open-Source Linux/Windows, MySQL WorkBench.
  Hardware – Computer ,Mouse ,Keyboard , CPU

- **Theory :**

What are SQL SUB QUERIES? –

In SQL, a subquery is a query that is nested inside another query. SQL subqueries are also known as nested queries or inner queries, whereas the SQL statement containing the subquery is typically referred to as an outer query. Subqueries are enclosed in parentheses and can be used in various parts of a SQL statement, including SELECT, FROM, and WHERE clauses. They are a powerful tool for retrieving and manipulating data.

What are SQL JOINS? –

The SQL JOIN is a command clause that combines records from two or more tables in a database. It is a means of combining data in fields from two tables by using values common to each table. The JOIN clause retrieves data from related tables in a database. Different types of Joins are as follows:

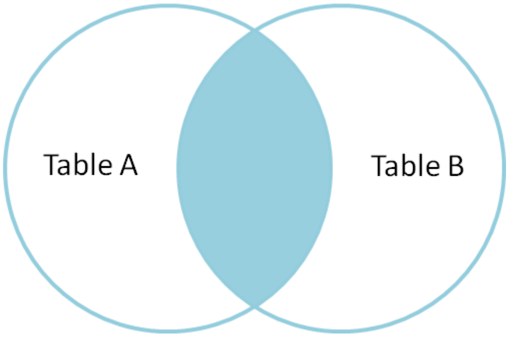
- INNER JOIN
- LEFT JOIN
- RIGHT JOIN
- FULL JOIN

a. INNER JOIN

An INNER JOIN in SQL is a method used to combine rows from two or more tables based on a related column between them. It retrieves only the rows that have matching values in both tables involved in the join.

Syntax:

```
SELECT table1.column1,table1.column2,table2.column1,....

FROM table1 INNER JOIN table2

ON table1.matching_column = table2.matching_column;
```

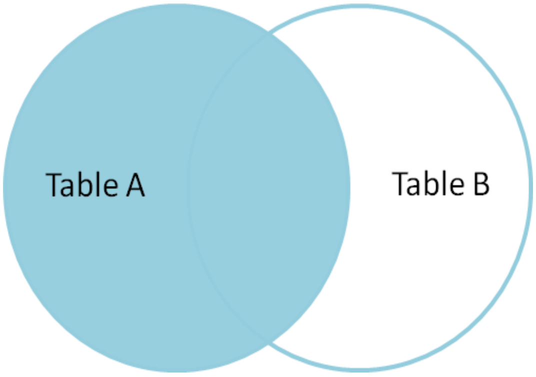


b. LEFT JOIN

The LEFT JOIN in SQL returns all records from the left (first) table and the matched records from the right (second) table. LEFT JOIN is also known as LEFT OUTER JOIN. If there is no match for a specific record, the result-set will contain NULL in the corresponding columns of the right table.

Syntax:

```
SELECT table1.column1,table1.column2,table2.column1,....
FROM table1 LEFT JOIN table2
ON table1.matching_column = table2.matching_column;
```

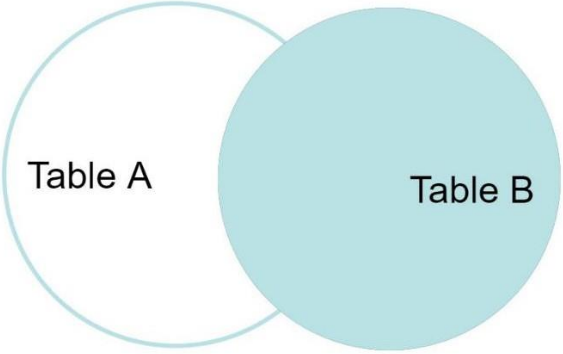


c. RIGHT JOIN

The RIGHT JOIN is used to joins two or more tables and returns all rows from the right-hand table. If it finds unmatched records from the left side table, the result-set contains NULL in the corresponding columns of the left table. It is similar to the LEFT JOIN, except it gives the reverse result of the join tables. It is also known as RIGHT OUTER JOIN.

Syntax:

```
SELECT table1.column1,table1.column2,table2.column1,....
FROM table1 RIGHT JOIN table2
ON table1.matching_column = table2.matching_column;
```

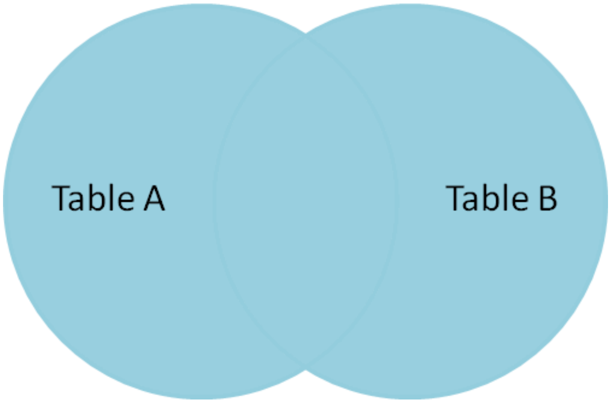


d. FULL JOIN

A FULL JOIN returns all the rows from both joined tables, whether they have a matching row or not. Therefore, a FULL JOIN is also known as a FULL OUTER JOIN. A FULL JOIN returns unmatched rows from both tables as well as the overlap between them. When no matching rows exist for a row in the left table, the columns of the right table will contain NULL. Similarly, when no matching rows exist for a row in the right table, the columns of the left table will contain NULL.

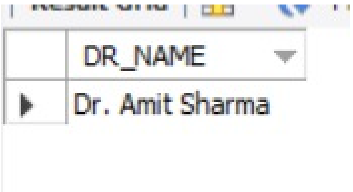
Syntax:

```
SELECT table1.column1,table1.column2,table2.column1,....
FROM table1 FULL JOIN table2
ON table1.matching_column = table2.matching_column;
```



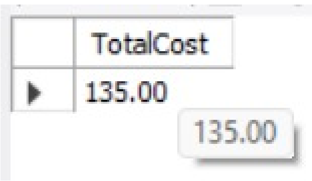
SUB-QUERIES

```
-- List all doctors who have appointment on 2024-07-12
SELECT DR_NAME
FROM DOCTOR
WHERE DR_ID IN (
   SELECT DR_ID
   FROM APPOINTMENT
   WHERE DATE = '2024-07-12'
);
```



DR_NAME
Dr. Amit Sharma

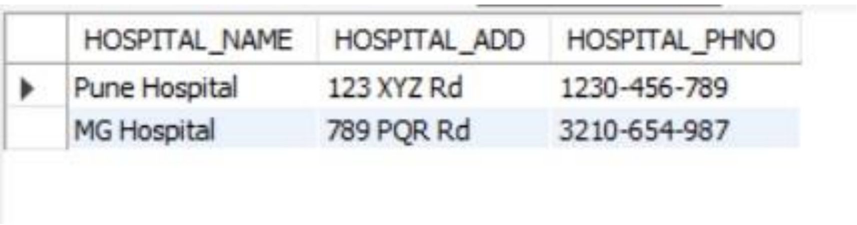
```
-- Find the total cost of prescriptions for patients who have appointments in July 2024
SELECT SUM(COST) AS TotalCost
FROM PRESC
WHERE PAT_ID IN (
   SELECT PAT_ID
   FROM APPOINTMENT
   WHERE DATE BETWEEN '2024-07-01' AND '2024-07-31'
);
```



TotalCost
135.00

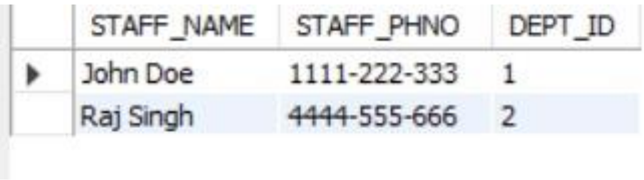
135.00

```
-- List all hospitals that have more than one department
SELECT HOSPITAL_NAME, HOSPITAL_ADD, HOSPITAL_PHNO
FROM HOSPITAL
WHERE HOSPITAL_ID IN (
   SELECT HOSPITAL_ID
   FROM DEPT
   GROUP BY HOSPITAL_ID
   HAVING COUNT(DEPT_ID) > 1
);
```



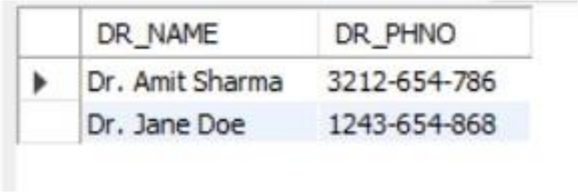
	HOSPITAL_NAME	HOSPITAL_ADD	HOSPITAL_PHNO
▶	Pune Hospital	123 XYZ Rd	1230-456-789
	MG Hospital	789 PQR Rd	3210-654-987

```
-- Find all staff members who work in hospitals that have the highest number of departments
SELECT STAFF_NAME, STAFF_PHNO, DEPT_ID
FROM STAFF
WHERE DEPT_ID IN (
   SELECT DEPT_ID
   FROM DEPT
   WHERE HOSPITAL_ID = (
      SELECT HOSPITAL_ID
      FROM DEPT
      GROUP BY HOSPITAL_ID
      ORDER BY COUNT(*) DESC
      LIMIT 1
   )
);
```



	STAFF_NAME	STAFF_PHNO	DEPT_ID
▶	John Doe	1111-222-333	1
	Raj Singh	4444-555-666	2

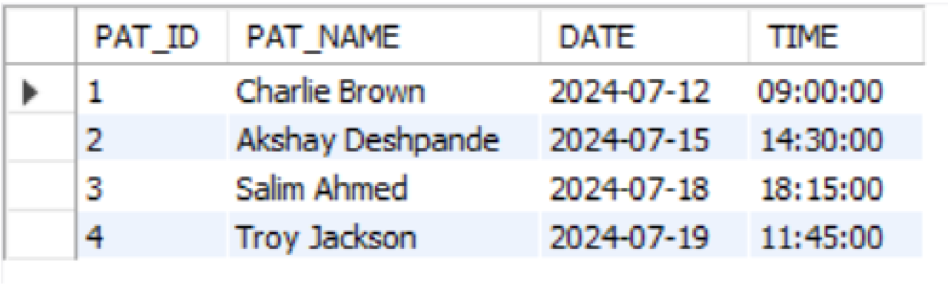
```
-- List all doctors who belong to departments located in a specific hospital
SELECT DR_NAME, DR_PHNO
FROM DOCTOR
WHERE DEPT_ID IN (
   SELECT DEPT_ID
   FROM DEPT
   WHERE HOSPITAL_ID = (
      SELECT HOSPITAL_ID
      FROM HOSPITAL
      WHERE HOSPITAL_NAME = 'Pune Hospital'
   )
);
```



	DR_NAME	DR_PHNO
▶	Dr. Amit Sharma	3212-654-786
	Dr. Jane Doe	1243-654-868

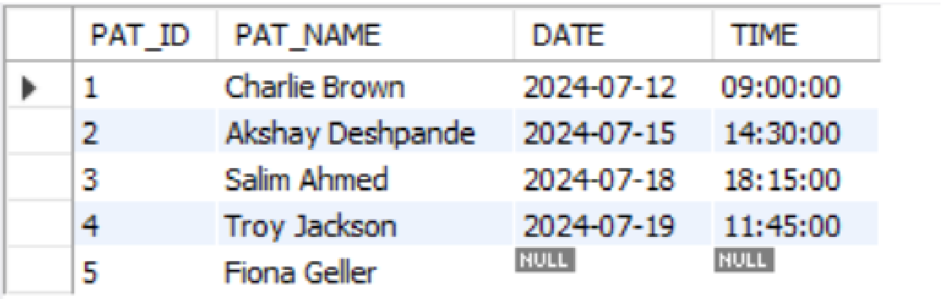
JOINS

```
-- Find the details of patients along with their appointment details

SELECT

PATIENT.PAT_ID, PATIENT.PAT_NAME, APPOINTMENT.DATE,
APPOINTMENT.TIME

FROM PATIENT

INNER JOIN APPOINTMENT

ON PATIENT.PAT_ID = APPOINTMENT.PAT_ID;
```



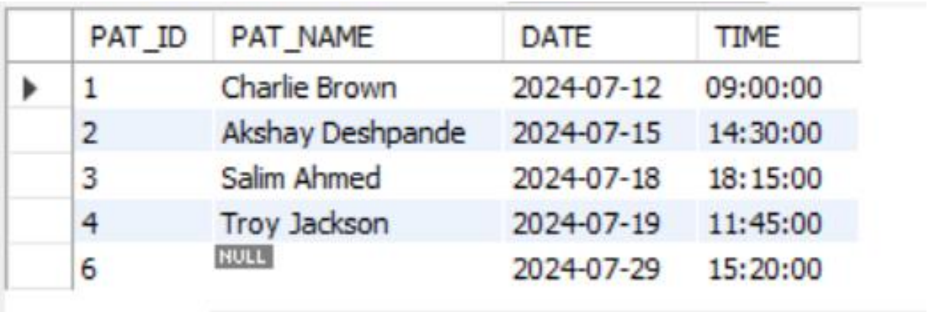
PAT_ID	PAT_NAME	DATE	TIME
1	Charlie Brown	2024-07-12	09:00:00
2	Akshay Deshpande	2024-07-15	14:30:00
3	Salim Ahmed	2024-07-18	18:15:00
4	Troy Jackson	2024-07-19	11:45:00

```
-- Find all patients and their appointment details (if they have any appointments)

SELECT

    PATIENT.PAT_ID, PATIENT.PAT_NAME, APPOINTMENT.DATE,
APPOINTMENT.TIME

FROM PATIENT

LEFT JOIN APPOINTMENT

ON PATIENT.PAT_ID = APPOINTMENT.PAT_ID;
```



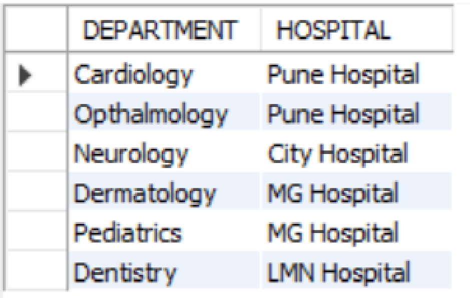
PAT_ID	PAT_NAME	DATE	TIME
1	Charlie Brown	2024-07-12	09:00:00
2	Akshay Deshpande	2024-07-15	14:30:00
3	Salim Ahmed	2024-07-18	18:15:00
4	Troy Jackson	2024-07-19	11:45:00
5	Fiona Geller	NULL	NULL

```
-- Find all appointments and their corresponding patient details (if any)

SELECT

   PATIENT.PAT_ID, PATIENT.PAT_NAME, APPOINTMENT.DATE,
APPOINTMENT.TIME

FROM APPOINTMENT

RIGHT JOIN PATIENT

ON PATIENT.PAT_ID = APPOINTMENT.PAT_ID;
```



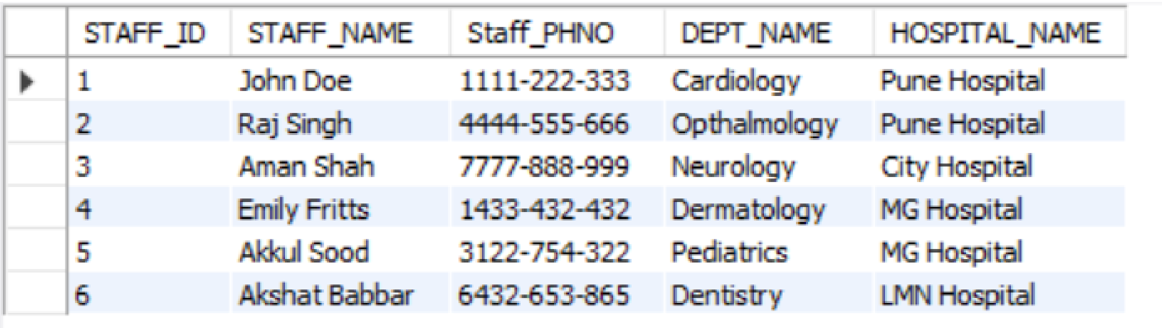
	PAT_ID	PAT_NAME	DATE	TIME
▶	1	Charlie Brown	2024-07-12	09:00:00
	2	Akshay Deshpande	2024-07-15	14:30:00
	3	Salim Ahmed	2024-07-18	18:15:00
	4	Troy Jackson	2024-07-19	11:45:00
	6	NULL	2024-07-29	15:20:00

```
-- Get a list of all departments along with the hospital they belong to

SELECT

   DP.DEPT_NAME AS Department,
   H.HOSPITAL_NAME AS Hospital

FROM DEPT DP

JOIN HOSPITAL H

ON DP.H_ID = H.HOSPITAL_ID;
```



	DEPARTMENT	HOSPITAL
▶	Cardiology	Pune Hospital
	Opthalmology	Pune Hospital
	Neurology	City Hospital
	Dermatology	MG Hospital
	Pediatrics	MG Hospital
	Dentistry	LMN Hospital

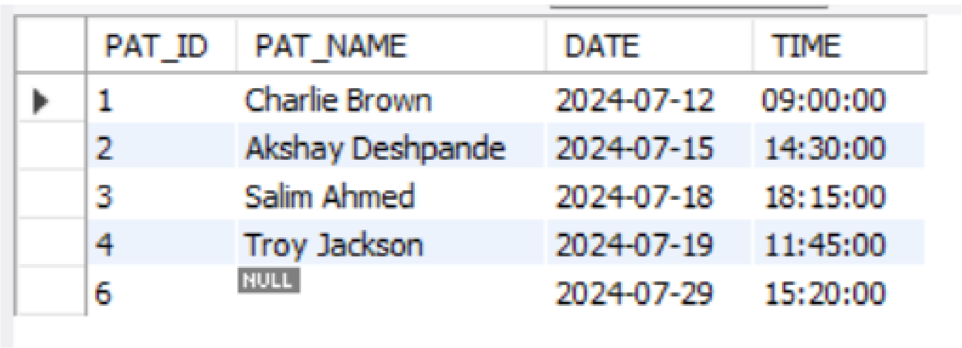
```
-- Get details of staff members, including their department names and the
hospital names

SELECT
   STAFF.STAFF_ID,
   STAFF.STAFF_NAME,
   STAFF.Staff_PHNO,
   DEPT.DEPT_NAME,
   HOSPITAL.HOSPITAL_NAME

FROM STAFF

INNER JOIN

   DEPT ON STAFF.DEPT_ID = DEPT.DEPT_ID

INNER JOIN

   HOSPITAL ON DEPT.HOSPITAL_ID = HOSPITAL.HOSPITAL_ID;
```



	STAFF_ID	STAFF_NAME	Staff_PHNO	DEPT_NAME	HOSPITAL_NAME
▶	1	John Doe	1111-222-333	Cardiology	Pune Hospital
	2	Raj Singh	4444-555-666	Opthalmology	Pune Hospital
	3	Aman Shah	7777-888-999	Neurology	City Hospital
	4	Emily Fritts	1433-432-432	Dermatology	MG Hospital
	5	Akkul Sood	3122-754-322	Pediatrics	MG Hospital
	6	Akshat Babbar	6432-653-865	Dentistry	LMN Hospital

```
-- Find all patients and their appointment details, including patients without
appointments and appointments without patients

SELECT

PATIENT.PAT_ID, PATIENT.PAT_NAME, APPOINTMENT.DATE,
APPOINTMENT.TIME

FROM PATIENT

LEFT JOIN APPOINTMENT ON

PATIENT.PAT_ID = APPOINTMENT.PAT_ID
```

```
UNION

SELECT PATIENT.PAT_ID, PATIENT.PAT_NAME,
APPOINTMENT.DATE, APPOINTMENT.TIME

FROM APPOINTMENT

RIGHT JOIN PATIENT ON

PATIENT.PAT_ID = APPOINTMENT.PAT_ID;
```



PAT_ID	PAT_NAME	DATE	TIME
1	Charlie Brown	2024-07-12	09:00:00
2	Akshay Deshpande	2024-07-15	14:30:00
3	Salim Ahmed	2024-07-18	18:15:00
4	Troy Jackson	2024-07-19	11:45:00
6	NULL	2024-07-29	15:20:00