Session 3 – SQL Basics for Analysts Assignment

Data Analytics Course

31-09-2025

Objective

This assignment will help you practice SQL basics including **SELECT, WHERE, ORDER BY, GROUP BY, HAVING, and JOINs**. You will also work on real-world business queries using sample hospital data.

Database Schema

Doctors Table

```
CREATE TABLE doctors (
    doctor_id SERIAL PRIMARY KEY,
    doctor_name VARCHAR(100),
    department VARCHAR(50)
);
```

Patients Table

```
CREATE TABLE patients (
    patient_id SERIAL PRIMARY KEY,
    patient_name VARCHAR(100),
    age INT,
    department VARCHAR(50),
    doctor_id INT,
    admission_date DATE,
    FOREIGN KEY (doctor_id) REFERENCES doctors(doctor_id)
);
```

Donations Table

```
CREATE TABLE donations (
    donation_id SERIAL PRIMARY KEY,
    patient_id INT,
    donation_date DATE,
    amount DECIMAL(10,2),
```

```
    FOREIGN KEY (patient_id) REFERENCES patients(patient_id)
);
```

Sample Data

Doctors

```
INSERT INTO doctors (doctor_name, department) VALUES
('Dr. Sharma', 'Cardiology'),
('Dr. Mehta', 'Neurology'),
('Dr. Patel', 'Orthopedics'),
('Dr. Khan', 'Oncology'),
('Dr. Iyer', 'Pediatrics');
```

Patients

```
INSERT INTO patients (patient_name, age, department, doctor_id, admission_date) VALUES
('Amit Verma', 45, 'Cardiology', 1, '2025-01-15'),
('Riya Sharma', 30, 'Neurology', 2, '2025-02-10'),
('Kunal Patel', 55, 'Orthopedics', 3, '2025-03-05'),
('Sana Khan', 40, 'Oncology', 4, '2025-03-12'),
('Arjun Vankani', 28, 'Cardiology', 1, '2025-04-01'),
('Meera Joshi', 35, 'Pediatrics', 5, '2025-04-15'),
('Vikram Singh', 60, 'Cardiology', 1, '2025-05-10'),
('Priya Desai', 25, 'Neurology', 2, '2025-05-20'),
('Rohan Gupta', 50, 'Oncology', 4, '2025-06-01'),
('Sneha Nair', 33, 'Orthopedics', 3, '2025-06-10'),
('Aditya Shah', 29, 'Cardiology', 1, '2025-06-18'),
('Neha Kapoor', 42, 'Pediatrics', 5, '2025-07-02'),
('Manish Yadav', 36, 'Neurology', 2, '2025-07-15'),
('Alok Tiwari', 48, 'Oncology', 4, '2025-08-01'),
('Pooja Chauhan', 39, 'Cardiology', 1, '2025-08-12');
```

Donations

```
INSERT INTO donations (patient_id, donation_date, amount) VALUES
(1, '2025-01-20', 5000),
(2, '2025-02-15', 2000),
(3, '2025-03-07', 8000),
(4, '2025-03-20', 12000),
(5, '2025-04-05', 3000),
(6, '2025-04-18', 2500),
(7, '2025-05-15', 7000),
(8, '2025-05-22', 1500),
(9, '2025-06-03', 4000),
(10, '2025-06-12', 6000),
(11, '2025-06-20', 2000),
(12, '2025-07-05', 3500),
```

```
(13, '2025-07-18', 4500),
(14, '2025-08-05', 9000),
(15, '2025-08-15', 10000),
(1, '2025-02-25', 3000),
(3, '2025-04-01', 5000),
(7, '2025-06-25', 6000),
(9, '2025-07-01', 4000),
(15, '2025-08-25', 8000);
```

Tasks / Assignments

Task 1: Basic Queries

1. Retrieve all patient names and ages.
2. List donations greater than 5000.
3. Show patients ordered by admission date descending.
4. Count total patients per department.
5. Display departments with more than 3 patients.

Task 2: Joins

1. List patient names along with their doctor names.
2. Show patient name, doctor name, and donation amount.

Task 3: Practice Queries

1. Find average donation by month.
2. Count patients per department.
3. Find total donations received by each doctor's patients.
4. List top 5 patients who donated the most.
5. List doctors with more than 20 patients.
6. Show average patient age per department.
7. Find the department with the highest number of patients.
8. Get monthly donation trends (sum per month).
9. Show patients who never made a donation.
10. Find doctors whose patients contributed more than 50,000 in donations.

Task 4: Bonus / Advanced Queries

1. Show distribution of donation amounts (bucketed ranges).
2. List the last 5 admitted patients.

Submission Guidelines

- Submit PDF with all queries executed.
- Include screenshots of query results for verification.
- Bonus points for using advanced functions like `DATE_TRUNC` and `CASE` statements.