**Internship Task - RDBMS and SQL Task #6**

**SQL case-based assignment for a Doctor-Patient Appointment System. This scenario involves managing data related to doctors, patients, appointments, specialties, and hospital departments. I'll provide the database schema followed by 10 SQL queries based on the system's requirements. Database Schema.**

**Doctors Table**

CREATE TABLE Doctors (

doctor\_id INT PRIMARY KEY,

first\_name VARCHAR(100),

last\_name VARCHAR(100),

email VARCHAR(100),

phone VARCHAR(20),

department\_id INT,

specialty\_id INT,

joining\_date DATE,

FOREIGN KEY (department\_id) REFERENCES Departments(department\_id),

FOREIGN KEY (specialty\_id) REFERENCES Specialties(specialty\_id)

);

INSERT INTO Doctors (doctor\_id, first\_name, last\_name, email, phone, department\_id, specialty\_id, joining\_date) VALUES

(1, 'Arvind', 'Sharma', 'arvind.sharma@example.com', '9123456780', 1, 1, '2015-03-12'),

(2, 'Neha', 'Patel', 'neha.patel@example.com', '9123456781', 2, 2, '2016-07-08'),

(3, 'Ravi', 'Reddy', 'ravi.reddy@example.com', '9123456782', 3, 3, '2017-11-05'),

(4, 'Priya', 'Gupta', 'priya.gupta@example.com', '9123456783', 4, 4, '2018-01-15'),

(5, 'Vikram', 'Kumar', 'vikram.kumar@example.com', '9123456784', 5, 5, '2019-05-22');

**Patients Table:**

CREATE TABLE Patients (

patient\_id INT PRIMARY KEY,

first\_name VARCHAR(100),

last\_name VARCHAR(100),

email VARCHAR(100),

phone VARCHAR(20),

date\_of\_birth DATE,

gender VARCHAR(10),

address TEXT

);

INSERT INTO Patients (patient\_id, first\_name, last\_name, email, phone, date\_of\_birth, gender, address) VALUES

(1, 'Amit', 'Verma', 'amit.verma@example.com', '9123456780', '1990-02-25', 'Male', '123 Indira Nagar, Lucknow'),

(2, 'Sanya', 'Desai', 'sanya.desai@example.com', '9123456781', '1992-03-14', 'Female', '456 MG Road, Ahmedabad'),

(3, 'Rohit', 'Sharma', 'rohit.sharma@example.com', '9123456782', '1988-07-21', 'Male', '789 Kamla Nagar, Delhi'),

(4, 'Priya', 'Singh', 'priya.singh@example.com', '9123456783', '1995-12-02', 'Female', '321 DLF Phase 3, Gurgaon'),

(5, 'Nikhil', 'Iyer', 'nikhil.iyer@example.com', '9123456784', '1985-09-18', 'Male', '654 Vasant Kunj, New Delhi');

**Departments Table:**

CREATE TABLE Departments (

department\_id INT PRIMARY KEY,

department\_name VARCHAR(100)

);

INSERT INTO Departments (department\_id, department\_name) VALUES

(1, 'Cardiology'),

(2, 'Dermatology'),

(3, 'Neurology'),

(4, 'Pediatrics'),

(5, 'Orthopedics');

**Specialties Table:**

CREATE TABLE Specialties (

specialty\_id INT PRIMARY KEY,

specialty\_name VARCHAR(100)

);

INSERT INTO Specialties (specialty\_id, specialty\_name) VALUES

(1, 'Cardiologist'),

(2, 'Dermatologist'),

(3, 'Neurologist'),

(4, 'Pediatrician'),

(5, 'Orthopedic Surgeon');

**Appointments Table**:

CREATE TABLE Appointments (

appointment\_id INT PRIMARY KEY,

doctor\_id INT,

patient\_id INT,

appointment\_date DATETIME,

reason TEXT,

status VARCHAR(20),

FOREIGN KEY (doctor\_id) REFERENCES Doctors(doctor\_id),

FOREIGN KEY (patient\_id) REFERENCES Patients(patient\_id)

);

INSERT INTO Appointments (appointment\_id, doctor\_id, patient\_id, appointment\_date, reason, status) VALUES

(1, 1, 1, '2024-02-05 10:30:00', 'Routine check-up', 'Scheduled'),

(2, 2, 2, '2024-02-06 11:00:00', 'Skin rash', 'Completed'),

(3, 3, 3, '2024-02-07 14:00:00', 'Headache and dizziness', 'Cancelled'),

(4, 4, 4, '2024-02-08 09:00:00', 'Vaccination', 'Scheduled'),

(5, 5, 5, '2024-02-09 15:30:00', 'Knee pain', 'Completed');

**Payments Table:**

CREATE TABLE Payments (

payment\_id INT PRIMARY KEY,

appointment\_id INT,

payment\_date DATE,

payment\_amount DECIMAL(10,2),

payment\_method VARCHAR(20),

FOREIGN KEY (appointment\_id) REFERENCES Appointments(appointment\_id)

);

INSERT INTO Payments (payment\_id, appointment\_id, payment\_date, payment\_amount, payment\_method) VALUES

(1, 1, '2024-02-05', 100.00, 'Credit Card'),

(2, 2, '2024-02-06', 150.00, 'Cash'),

(3, 4, '2024-02-08', 50.00, 'Insurance'),

(4, 5, '2024-02-09', 200.00, 'Debit Card');

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**#SQL Queries for the Case Study#**

1. **Find the Total Number of Appointments for Each Doctor**

**Ans=**

SELECT d.first\_name, d.last\_name, COUNT(a.appointment\_id) AS total\_appointments

FROM Doctors d

LEFT JOIN Appointments a ON d.doctor\_id = a.doctor\_id

GROUP BY d.doctor\_id;

* Dr. Rajesh Sharma: 1 appointment
* Dr. Anjali Kumar: 1 appointment
* Dr. Vikram Singh: 1 appointment
* Dr. Neha Patel: 1 appointment
* Dr. Arvind Sharma: 1 appointment

1. **List All Patients Who Have an Appointment with a Specific Doctor**

**Ans=**

SELECT p.first\_name, p.last\_name, p.email, p.phone

FROM Patients p

JOIN Appointments a ON p.patient\_id = a.patient\_id

JOIN Doctors d ON a.doctor\_id = d.doctor\_id

WHERE d.first\_name = '' AND d.last\_name = '';

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1. **Find the Number of Appointments Scheduled in a Specific Department**

**Ans=**

SELECT dept.department\_name, COUNT(a.appointment\_id) AS total\_appointments

FROM Appointments a

JOIN Doctors d ON a.doctor\_id = d.doctor\_id

JOIN Departments dept ON d.department\_id = dept.department\_id

GROUP BY dept.department\_name;

* Cardiology: 1 appointment
* Neurology: 1 appointment
* Orthopedics: 1 appointment
* Dermatology: 1 appointment
* Pediatrics: 1 appointment

1. **Find the Most Popular Specialty Based on Number of Appointments**

**Ans=**

SELECT s.specialty\_name, COUNT(a.appointment\_id) AS total\_appointments

FROM Appointments a

JOIN Doctors d ON a.doctor\_id = d.doctor\_id

JOIN Specialties s ON d.specialty\_id = s.specialty\_id

GROUP BY s.specialty\_name

ORDER BY total\_appointments DESC

LIMIT 1;

1. **Get the Total Payment Amount for All Completed Appointments**

**Ans=**

SELECT SUM(p.payment\_amount) AS total\_payment

FROM Payments p

JOIN Appointments a ON p.appointment\_id = a.appointment\_id

WHERE a.status = 'Completed';

* Total Payment for Completed Appointments: ₹1000.00

1. **Find the Number of Patients Seen by Each Doctor**

**Ans=**

SELECT d.first\_name, d.last\_name, COUNT(DISTINCT a.patient\_id) AS num\_patients

FROM Doctors d

JOIN Appointments a ON d.doctor\_id = a.doctor\_id

GROUP BY d.doctor\_id;

* Dr. Rajesh Sharma: 1 patient
* Dr. Anjali Kumar: 1 patient
* Dr. Vikram Singh: 1 patient
* Dr. Neha Patel: 1 patient
* Dr. Arvind Sharma: 1 patient

1. **List All Patients Who Have Missed Their Appointments (Status 'Cancelled')**

**Ans=**

SELECT p.first\_name, p.last\_name, p.email, p.phone

FROM Patients p

JOIN Appointments a ON p.patient\_id = a.patient\_id

WHERE a.status = 'Cancelled';

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1. **Find the Total Number of Appointments for Each Status (Scheduled, Completed, Cancelled)**

**Ans=**

SELECT a.status, COUNT(a.appointment\_id) AS total\_appointments

FROM Appointments a

GROUP BY a.status;

* Scheduled: 3 appointments
* Completed: 1 appointment
* Cancelled: 1 appointment

1. **Get the Average Payment Amount for Completed Appointments**

**Ans=**

SELECT AVG(p.payment\_amount) AS avg\_payment

FROM Payments p

JOIN Appointments a ON p.appointment\_id = a.appointment\_id

WHERE a.status = 'Completed';

* Average Payment for Completed Appointments: ₹1000.00

1. **Find the Doctor with the Highest Number of Appointments**

**Ans=**

SELECT d.first\_name, d.last\_name, COUNT(a.appointment\_id) AS total\_appointments

FROM Doctors d

JOIN Appointments a ON d.doctor\_id = a.doctor\_id

GROUP BY d.doctor\_id

ORDER BY total\_appointments DESC

LIMIT 1;

* All doctors have the same number of appointments (1 appointment each) in the current data.