1- **To prevent two appointments for the same doctor from overlapping, you can implement either a constraint or a trigger:**

sql

CREATE TABLE Appointment (

AppointmentID INT PRIMARY KEY,

DoctorID INT,

AppointmentDate DATE,

StartTime TIME,

EndTime TIME,

-- other columns...

CONSTRAINT no\_overlapping\_appointments

EXCLUDE USING gist (

DoctorID WITH =,

tsrange(

(AppointmentDate + StartTime)::timestamp,

(AppointmentDate + EndTime)::timestamp

) WITH &&

)

);

“Trigger Approach

⁠ sql

CREATE OR REPLACE FUNCTION check\_appointment\_overlap()

RETURNS TRIGGER AS $$

BEGIN

IF EXISTS (

SELECT 1 FROM Appointment

WHERE DoctorID = NEW.DoctorID

AND AppointmentDate = NEW.AppointmentDate

AND (

(NEW.StartTime < EndTime AND NEW.EndTime > StartTime)

OR

(StartTime < NEW.EndTime AND EndTime > NEW.StartTime)

)

AND AppointmentID != COALESCE(NEW.AppointmentID, -1)

) THEN

RAISE EXCEPTION 'Doctor already has an appointment scheduled during this time';

END IF;

RETURN NEW;

END;

$$ LANGUAGE plpgsql; ⁠

2- **Query to Fetch Patients and Their Appointments**

⁠ sql

SELECT

p.PatientID,

p.Name AS PatientName,

p.PhoneNumber,

p.Address,

a.AppointmentID,

a.AppointmentDate,

a.StartTime,

a.EndTime,

a.Status,

a.Diagnosis,

d.Name AS DoctorName,

c.Name AS ClinicName,

dept.Name AS DepartmentName

FROM

Patient p

LEFT JOIN

Appointment a ON p.PatientID = a.PatientID

LEFT JOIN

Doctor d ON a.DoctorID = d.DoctorID

LEFT JOIN

Clinic c ON d.DepartmentID = c.DepartmentID

LEFT JOIN

Department dept ON c.DepartmentID = dept.DepartmentID

ORDER BY

p.Name, a.AppointmentDate DESC;

3- ⁠**You need a view showing each doctor’s upcoming appointment count for next month. What would its GROUP BY look like?**

sql

CREATE VIEW DoctorUpcomingAppointments AS

SELECT

d.DoctorID,

d.Name AS DoctorName,

dept.Name AS Department,

COUNT(a.AppointmentID) AS UpcomingAppointments

FROM

Doctor d

JOIN

Department dept ON d.DepartmentID = dept.DepartmentID

LEFT JOIN

Appointment a ON d.DoctorID = a.DoctorID

WHERE

a.AppointmentDate BETWEEN

DATE\_TRUNC('month', CURRENT\_DATE + INTERVAL '1 month')

AND

DATE\_TRUNC('month', CURRENT\_DATE + INTERVAL '2 month') - INTERVAL '1 day'

AND a.Status = 'Scheduled'

GROUP BY

d.DoctorID, d.Name, dept.Name

ORDER BY

UpcomingAppointments DESC;