

Capstone Project: Hospital Management System

CREATING THE DATABASE:

```
CREATE DATABASE HospitalDB;  
USE HospitalDB;
```

Step 1: Tables to Create

CREATING THE TABLES:

```
CREATE TABLE Patients(  
patient_id INT PRIMARY KEY,  
name VARCHAR(50),  
age INT,  
gender CHAR(1),  
city VARCHAR(50)  
);
```

```
CREATE TABLE Doctors(  
doctor_id INT PRIMARY KEY,  
name VARCHAR(50),  
specialization VARCHAR(50),  
experience INT  
);
```

```
CREATE TABLE Appointments(  
appointment_id INT PRIMARY KEY,  
patient_id INT,  
doctor_id INT,  
appointment_date DATE,  
status VARCHAR(20),  
FOREIGN KEY(patient_id) REFERENCES Patients(patient_id),  
FOREIGN KEY (doctor_id) REFERENCES Doctors(doctor_id)  
);
```

```
CREATE TABLE MedicalRecords(  
record_id INT PRIMARY KEY,  
patient_id INT,  
doctor_id INT,  
diagnosis VARCHAR(100),  
treatment VARCHAR(100),  
date DATE,  
FOREIGN KEY(patient_id) REFERENCES Patients(patient_id),
```

```
FOREIGN KEY (doctor_id) REFERENCES Doctors(doctor_id)
);
```

```
CREATE TABLE Billing(
bill_id INT PRIMARY KEY,
patient_id INT,
amount DECIMAL(10,2),
bill_date DATE,
status VARCHAR(20),
FOREIGN KEY(patient_id) REFERENCES Patients(patient_id)
);
```

Step 2: Sample Data

INSERTING VALUE INTO THE TABLES:

```
INSERT INTO Patients VALUES
(1, 'Rahul Sharma', 30, 'M', 'Delhi'),
(2, 'Anita Desai', 45, 'F', 'Mumbai'),
(3, 'Vikram Mehta', 27, 'M', 'Bangalore'),
(4, 'Pooja Rani', 35, 'F', 'Chennai'),
(5, 'Amit Verma', 50, 'M', 'Kolkata'),
(6, 'Neha Kapoor', 22, 'F', 'Hyderabad'),
(7, 'Rakesh Yadav', 40, 'M', 'Ahmedabad'),
(8, 'Sunita Nair', 60, 'F', 'Pune'),
(9, 'Karan Joshi', 33, 'M', 'Jaipur'),
(10, 'Meena Iyer', 28, 'F', 'Lucknow');
```

```
INSERT INTO Doctors VALUES
(1, 'Dr. Arjun Singh', 'Cardiology', 15),
(2, 'Dr. Seema Nair', 'Orthopedics', 10),
(3, 'Dr. Rajesh Kumar', 'Pediatrics', 8),
(4, 'Dr. Neeta Sharma', 'Dermatology', 12),
(5, 'Dr. Mohan Das', 'Neurology', 20);
```

```
INSERT INTO Appointments VALUES
(1, 1, 1, '2025-09-01', 'Completed'),
(2, 2, 2, '2025-09-03', 'Cancelled'),
(3, 3, 3, '2025-09-05', 'Completed'),
(4, 4, 4, '2025-09-10', 'Scheduled'),
(5, 5, 5, '2025-09-15', 'Completed'),
(6, 6, 1, '2025-09-20', 'Completed'),
(7, 7, 2, '2025-09-22', 'Scheduled');
```

(8, 8, 3, '2025-09-25', 'Completed'),
(9, 9, 4, '2025-09-28', 'Scheduled'),
(10, 10, 5, '2025-09-30', 'Scheduled');

INSERT INTO MedicalRecords VALUES

(1, 1, 1, 'Hypertension', 'Medication and diet change', '2025-09-01'),
(2, 3, 3, 'Flu', 'Rest and fluids', '2025-09-05'),
(3, 5, 5, 'Migraine', 'Painkillers and sleep therapy', '2025-09-15'),
(4, 6, 1, 'High Cholesterol', 'Statins and exercise', '2025-09-20'),
(5, 8, 3, 'Chickenpox', 'Antivirals and rest', '2025-09-25'),
(6, 2, 2, 'Fractured Arm', 'Cast and physiotherapy', '2025-09-03'),
(7, 4, 4, 'Eczema', 'Topical cream', '2025-09-10'),
(8, 7, 2, 'Arthritis', 'NSAIDs and physiotherapy', '2025-09-22'),
(9, 9, 4, 'Acne', 'Topical treatment', '2025-09-28'),
(10, 10, 5, 'Epilepsy', 'Anticonvulsants', '2025-09-30');

INSERT INTO Billing VALUES

(1, 1, 1500.00, '2025-09-01', 'Paid'),
(2, 2, 3000.00, '2025-09-03', 'Unpaid'),
(3, 3, 800.00, '2025-09-05', 'Paid'),
(4, 4, 1200.00, '2025-09-10', 'Unpaid'),
(5, 5, 2500.00, '2025-09-15', 'Paid'),
(6, 6, 1800.00, '2025-09-20', 'Paid'),
(7, 7, 2200.00, '2025-09-22', 'Unpaid'),
(8, 8, 900.00, '2025-09-25', 'Paid'),
(9, 9, 1100.00, '2025-09-28', 'Unpaid'),
(10, 10, 2700.00, '2025-09-30', 'Unpaid');

PATIENTS:

	patient_id	name	age	gender	city
▶	1	Rahul Sharma	30	M	Delhi
	2	Anita Desai	45	F	Mumbai
	3	Vikram Mehta	27	M	Bangalore
	4	Pooja Rani	35	F	Chennai
	5	Amit Verma	50	M	Kolkata
	6	Neha Kapoor	22	F	Hyderabad
	7	Rakesh Yadav	40	M	Ahmedabad
	8	Sunita Nair	60	F	Pune
	9	Karan Joshi	33	M	Jaipur
	10	Meena Iyer	28	F	Lucknow
⬆	NULL	NULL	NULL	NULL	NULL

DOCTORS:

	doctor_id	name	specialization	experience
▶	1	Dr. Arjun Singh	Cardiology	15
	2	Dr. Seema Nair	Orthopedics	10
	3	Dr. Rajesh Kumar	Pediatrics	8
	4	Dr. Neeta Sharma	Dermatology	12
	5	Dr. Mohan Das	Neurology	20
⬆	NULL	NULL	NULL	NULL

APPOINTMENTS:

	appointment_id	patient_id	doctor_id	appointment_date	status
▶	1	1	1	2025-09-01	Completed
	2	2	2	2025-09-03	Cancelled
	3	3	3	2025-09-05	Completed
	4	4	4	2025-09-10	Scheduled
	5	5	5	2025-09-15	Completed
	6	6	1	2025-09-20	Completed
	7	7	2	2025-09-22	Scheduled
	8	8	3	2025-09-25	Completed
	9	9	4	2025-09-28	Scheduled
	10	10	5	2025-09-30	Scheduled
	NULL	NULL	NULL	NULL	NULL

MEDICALRECORDS:

	record_id	patient_id	doctor_id	diagnosis	treatment	date
▶	1	1	1	Hypertension	Medication and diet change	2025-09-01
	2	3	3	Flu	Rest and fluids	2025-09-05
	3	5	5	Migraine	Painkillers and sleep therapy	2025-09-15
	4	6	1	High Cholesterol	Statins and exercise	2025-09-20
	5	8	3	Chickenpox	Antivirals and rest	2025-09-25
	6	2	2	Fractured Arm	Cast and physiotherapy	2025-09-03
	7	4	4	Eczema	Topical cream	2025-09-10
	8	7	2	Arthritis	NSAIDs and physiotherapy	2025-09-22
	9	9	4	Acne	Topical treatment	2025-09-28
	10	10	5	Epilepsy	Anticonvulsants	2025-09-30
	NULL	NULL	NULL	NULL	NULL	NULL

BILLING:

	bill_id	patient_id	amount	bill_date	status
▶	1	1	1500.00	2025-09-01	Paid
	2	2	3000.00	2025-09-03	Unpaid
	3	3	800.00	2025-09-05	Paid
	4	4	1200.00	2025-09-10	Unpaid
	5	5	2500.00	2025-09-15	Paid
	6	6	1800.00	2025-09-20	Paid
	7	7	2200.00	2025-09-22	Unpaid
	8	8	900.00	2025-09-25	Paid
	9	9	1100.00	2025-09-28	Unpaid
	10	10	2700.00	2025-09-30	Unpaid
	NULL	NULL	NULL	NULL	NULL

Step 3: Tasks / Exercises

Basic Queries

1. List all patients assigned to a cardiologist.

```
SELECT p.patient_id,p.name,p.age,p.gender
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.specialization= 'Cardiology';
```

	patient_id	name	age	gender
▶	1	Rahul Sharma	30	M
	6	Neha Kapoor	22	F

2. Find all appointments for a given doctor.

```
SELECT a.appointment_id, a.appointment_date, a.status
FROM Appointments a
JOIN Doctors d ON a.doctor_id=d.doctor_id
WHERE d.doctor_id=3;
```

	appointment_id	appointment_date	status
▶	3	2025-09-05	Completed
	8	2025-09-25	Completed

3. Show unpaid bills of patients.

```
SELECT b.bill_id,p.name,b.amount,b.bill_date
FROM Billing b
JOIN Patients p ON p.patient_id=b.patient_id
WHERE b.status='Unpaid';
```

	bill_id	name	amount	bill_date
▶	2	Anita Desai	3000.00	2025-09-03
	4	Pooja Rani	1200.00	2025-09-10
	7	Rakesh Yadav	2200.00	2025-09-22
	9	Karan Joshi	1100.00	2025-09-28
	10	Meena Iyer	2700.00	2025-09-30

Stored Procedures

4. Procedure: GetPatientHistory(patient_id) → returns all visits, diagnoses, and treatments for a patient.

```
DELIMITER $$
```

```
CREATE PROCEDURE GetPatientHistory(IN pid INT)
BEGIN
SELECT p.name, p.age,p.gender,p.city, d.name, m.diagnosis,m.treatment,m.date
```

```

FROM Patients p
JOIN MedicalRecords m ON m.patient_id=p.patient_id
JOIN Doctors d ON m.doctor_id=d.doctor_id
WHERE m.patient_id=pid;
END$$

```

DELIMITER ;

CALL GetPatientHistory(5);

	name	age	gender	city	doctor_name	diagnosis	treatment	date
▶	Amit Verma	50	M	Kolkata	Dr. Mohan Das	Migraine	Painkillers and sleep therapy	2025-09-15

DELIMITER \$\$

5. Procedure: GetDoctorAppointments(doctor_id) → returns all appointments for a doctor.

```

CREATE PROCEDURE GetDoctorAppointments(IN did INT)
BEGIN
SELECT d.name as doctor_name, p.name as patient_name, a.appointment_date,a.status
FROM Patients p
JOIN Appointments a ON a.patient_id=p.patient_id
JOIN Doctors d ON a.doctor_id=d.doctor_id
WHERE a.doctor_id=did;
END$$

```

DELIMITER ;

CALL GetDoctorAppointments(4);

	doctor_name	patient_name	appointment_date	status
▶	Dr. Neeta Sharma	Pooja Rani	2025-09-10	Scheduled
	Dr. Neeta Sharma	Karan Joshi	2025-09-28	Scheduled