HOSPITAL MANAGEMENT SYSTEM

Hospital Management System

BY:-SIDDHI PATIL

HOSPITAL MANAGEMENT SYSTEM

Overview:-

A Hospital Management System (HMS) is a digital solution designed to streamline hospital operations, including patient registration, appointment scheduling, billing, and medical records management. It integrates various departments to ensure efficient workflow, accurate data handling, and improved patient care. HMS reduces manual errors, enhances communication, and supports data-driven decision-making within healthcare facilities**.**

Project Description:

The Hospital Management System is a comprehensive software application developed to automate and manage all hospital operations efficiently. It handles patient registration, appointments, billing, medical records, staff management, and inventory control. The system ensures smooth coordination between departments, reduces paperwork, and improves service quality. It aims to enhance patient care while optimizing administrative and clinical workflows.

PROJECT AIM:

- To automate and streamline all hospital operations and processes.
- To improve the quality and efficiency of patient care.
- To ensure accurate and secure management of patient and hospital data.
- To enhance communication and coordination among hospital departments.
- To reduce manual work, errors, and administrative overhead.
- To support data-driven decision-making and reporting.

OBJECTIVES:

1. Set up the Hospital Management System Database:
Design and populate the database with key tables such as:

- **Patients:** Personal and medical details of patients
- **Doctors:** Profiles, specialties, and schedules
- **Appointments:** Booking and consultation records
- **Admissions:** Inpatient stay records, room assignments
- **Billing:** Invoices, payment status, and insurance details
- **Staff:** Information about nurses, administrative staff, and technicians
- **Pharmacy:** Medicines, stock levels, and prescriptions
- **LabTests:** Diagnostic tests and reports

2. CRUD Operations:

Implement Create, Read, Update, and Delete operations for:

- Patient registration and profile updates
- Doctor and staff management
- Appointment scheduling and rescheduling
- Admission/discharge processes
- Pharmacy stock updates and prescriptions
- Lab test entries and results
- Billing and payment processing

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3. Advanced SQL Queries:

Develop complex queries to:

- Generate reports on daily/monthly patient admissions and discharges
- Track doctor-wise appointment count or specialty-wise demand
- Calculate revenue from treatments, pharmacy, and lab tests
- Identify patients with unpaid bills or upcoming appointments
- Summarize medicine usage per department or patient
- Monitor staff shift patterns and performance indicators

ER Diagram For Hosital Management System:

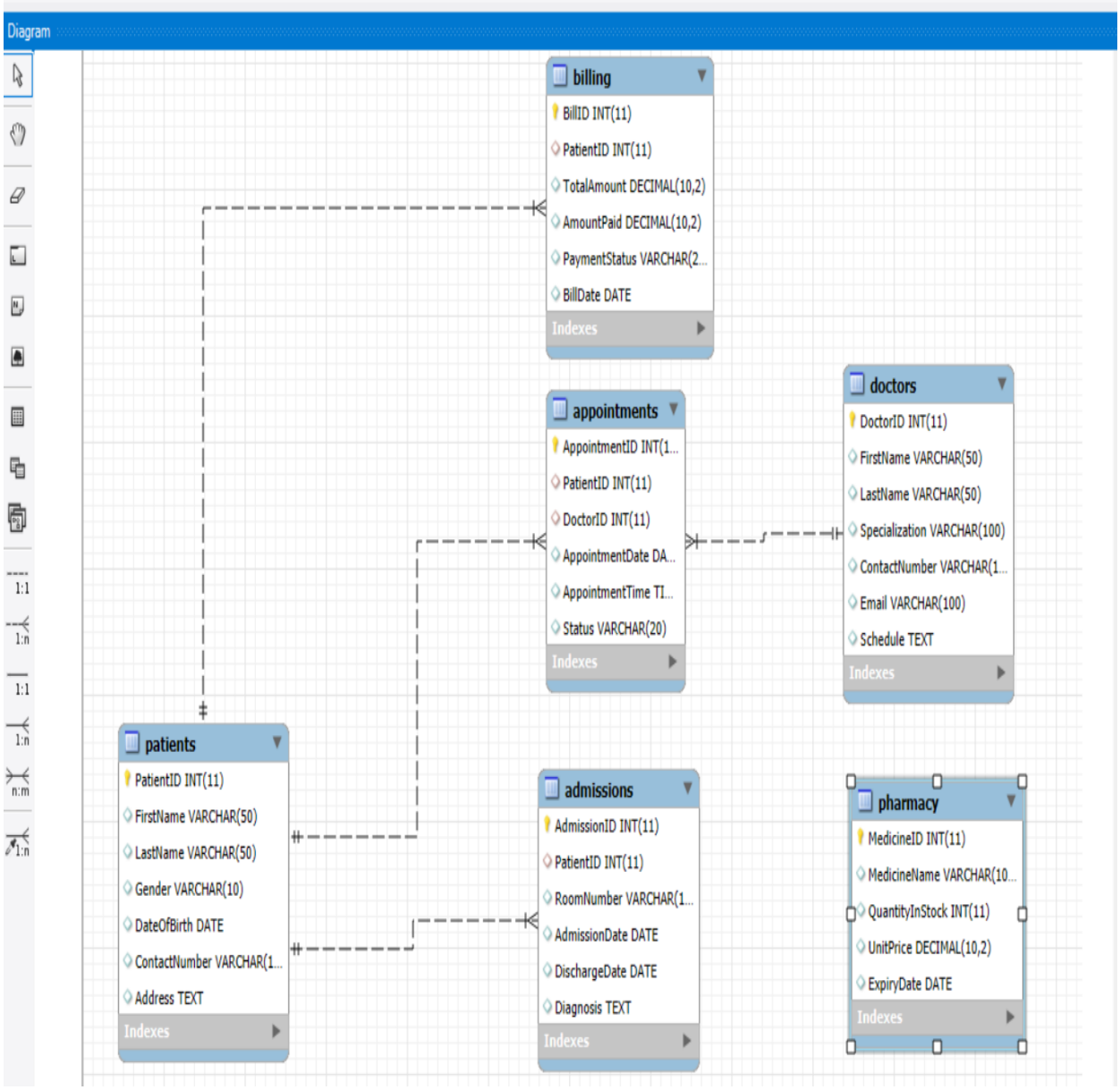


Table Description:

1.Patients:

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Field	Type	Null	Key	Default	Extra
PatientID	int(11)	NO	PRI	NULL	auto_increment
FirstName	varchar(50)	YES		NULL	
LastName	varchar(50)	YES		NULL	
Gender	varchar(10)	YES		NULL	
DateOfBirth	date	YES		NULL	
ContactNumber	varchar(15)	YES		NULL	
Address	text	YES		NULL	

2.Doctors:

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Field	Type	Null	Key	Default	Extra
DoctorID	int(11)	NO	PRI	NULL	auto_increment
FirstName	varchar(50)	YES		NULL	
LastName	varchar(50)	YES		NULL	
Specialization	varchar(100)	YES		NULL	
ContactNumber	varchar(15)	YES		NULL	
Email	varchar(100)	YES		NULL	
Schedule	text	YES		NULL	

3. Appointments:

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

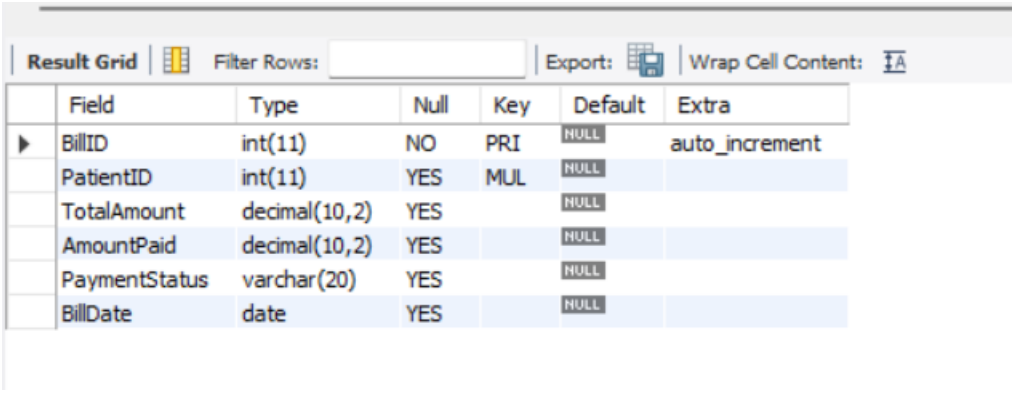
Field	Type	Null	Key	Default	Extra
AppointmentID	int(11)	NO	PRI	NULL	auto_increment
PatientID	int(11)	YES	MUL	NULL	
DoctorID	int(11)	YES	MUL	NULL	
AppointmentDate	date	YES		NULL	
AppointmentTime	time	YES		NULL	
Status	varchar(20)	YES		NULL	

4.Admissions:

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Field	Type	Null	Key	Default	Extra
AdmissionID	int(11)	NO	PRI	NULL	auto_increment
PatientID	int(11)	YES	MUL	NULL	
RoomNumber	varchar(10)	YES		NULL	
AdmissionDate	date	YES		NULL	
DischargeDate	date	YES		NULL	
Diagnosis	text	YES		NULL	

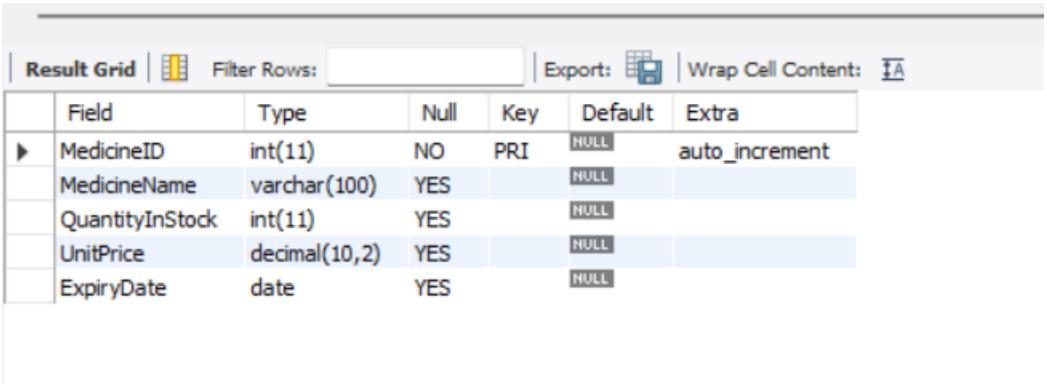
5.Billing:



Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Field	Type	Null	Key	Default	Extra
BillID	int(11)	NO	PRI	NULL	auto_increment
PatientID	int(11)	YES	MUL	NULL	
TotalAmount	decimal(10,2)	YES		NULL	
AmountPaid	decimal(10,2)	YES		NULL	
PaymentStatus	varchar(20)	YES		NULL	
BillDate	date	YES		NULL	

6.pharmacy:



Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Field	Type	Null	Key	Default	Extra
MedicineID	int(11)	NO	PRI	NULL	auto_increment
MedicineName	varchar(100)	YES		NULL	
QuantityInStock	int(11)	YES		NULL	
UnitPrice	decimal(10,2)	YES		NULL	
ExpiryDate	date	YES		NULL	

CREATING DATABASE:

CREATE DATABASE Hospital;

USE Hospital;

Table Creation & Insertion Commands:

1) **Create Table Patients:**

```
CREATE TABLE Patients (
   PatientID INT PRIMARY KEY AUTO_INCREMENT,
   FirstName VARCHAR(50),
   LastName VARCHAR(50),
   Gender VARCHAR(10),
   DateOfBirth DATE,
   ContactNumber VARCHAR(15),
   Address TEXT
);
```

Insert into Patients:

```
INSERT INTO Patients (FirstName, LastName, Gender, DateOfBirth, ContactNumber,
Address) VALUES
('John', 'Doe', 'Male', '1985-06-15', '1234567890', '123 Main St' ),
('Jane', 'Smith', 'Female', '1990-02-10', '9876543210', '456 Oak Ave'),
('Alice', 'Johnson', 'Female', '1978-09-25', '6541237890', '789 Pine Rd'),
('Bob', 'Williams', 'Male', '1965-11-12', '3216549870', '321 Maple Dr'),
('Emily', 'Brown', 'Female', '1988-03-08', '7412589630', '111 Elm St' ),
('Michael', 'Davis', 'Male', '2000-07-19', '3698521470', '333 Cedar Blvd' ),
('Sarah', 'Miller', 'Female', '1995-05-30', '8523697410', '222 Birch Ln'),
('David', 'Wilson', 'Male', '1982-12-03', '9631478520', '444 Spruce Ct' ),
('Laura', 'Taylor', 'Female', '1975-01-14', '7419638520', '555 Willow Way'),
('Kevin', 'Anderson', 'Male', '1992-10-20', '7531598420', '666 Aspen St' );
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell C

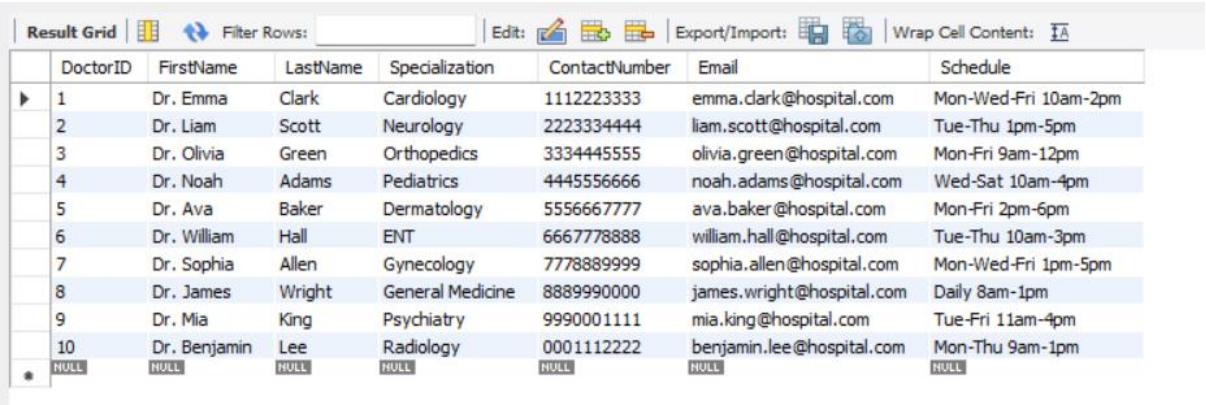
PatientID	FirstName	LastName	Gender	DateOfBirth	ContactNumber	Address
1	John	Doe	Male	1985-06-15	1234567890	123 Main St
2	Jane	Smith	Female	1990-02-10	9876543210	456 Oak Ave
3	Alice	Johnson	Female	1978-09-25	6541237890	789 Pine Rd
4	Bob	Williams	Male	1965-11-12	3216549870	321 Maple Dr
5	Emily	Brown	Female	1988-03-08	7412589630	111 Elm St
6	Michael	Davis	Male	2000-07-19	3698521470	333 Cedar Blvd
7	Sarah	Miller	Female	1995-05-30	8523697410	222 Birch Ln
8	David	Wilson	Male	1982-12-03	9631478520	444 Spruce Ct
9	Laura	Taylor	Female	1975-01-14	7419638520	555 Willow Way
10	Kevin	Anderson	Male	1992-10-20	7531598420	666 Aspen St
NULL	NULL	NULL	NULL	NULL	NULL	NULL

2) Create Table Doctors:

```
CREATE TABLE Doctors (
   DoctorID INT PRIMARY KEY AUTO_INCREMENT,
   FirstName VARCHAR(50),
   LastName VARCHAR(50),
   Specialization VARCHAR(100),
   ContactNumber VARCHAR(15),
   Email VARCHAR(100),
   Schedule TEXT
);
```

Insert into Doctors:

```
INSERT INTO Doctors (FirstName, LastName, Specialization, ContactNumber, Email, Schedule) VALUES
('Dr. Emma', 'Clark', 'Cardiology', '1112223333', 'emma.clark@hospital.com', 'Mon-Wed-Fri 10am-2pm'),
('Dr. Liam', 'Scott', 'Neurology', '2223334444', 'liam.scott@hospital.com', 'Tue-Thu 1pm-5pm'),
('Dr. Olivia', 'Green', 'Orthopedics', '3334445555', 'olivia.green@hospital.com', 'Mon-Fri 9am-12pm'),
('Dr. Noah', 'Adams', 'Pediatrics', '4445556666', 'noah.adams@hospital.com', 'Wed-Sat 10am-4pm'),
('Dr. Ava', 'Baker', 'Dermatology', '5556667777', 'ava.baker@hospital.com', 'Mon-Fri 2pm-6pm'),
('Dr. William', 'Hall', 'ENT', '6667778888', 'william.hall@hospital.com', 'Tue-Thu 10am-3pm'),
('Dr. Sophia', 'Allen', 'Gynecology', '7778889999', 'sophia.allen@hospital.com', 'Mon-Wed-Fri 1pm-5pm'),
('Dr. James', 'Wright', 'General Medicine', '8889990000', 'james.wright@hospital.com', 'Daily 8am-1pm'),
('Dr. Mia', 'King', 'Psychiatry', '9990001111', 'mia.king@hospital.com', 'Tue-Fri 11am-4pm'),
('Dr. Benjamin', 'Lee', 'Radiology', '0001112222', 'benjamin.lee@hospital.com', 'Mon-Thu 9am-1pm');
```



Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

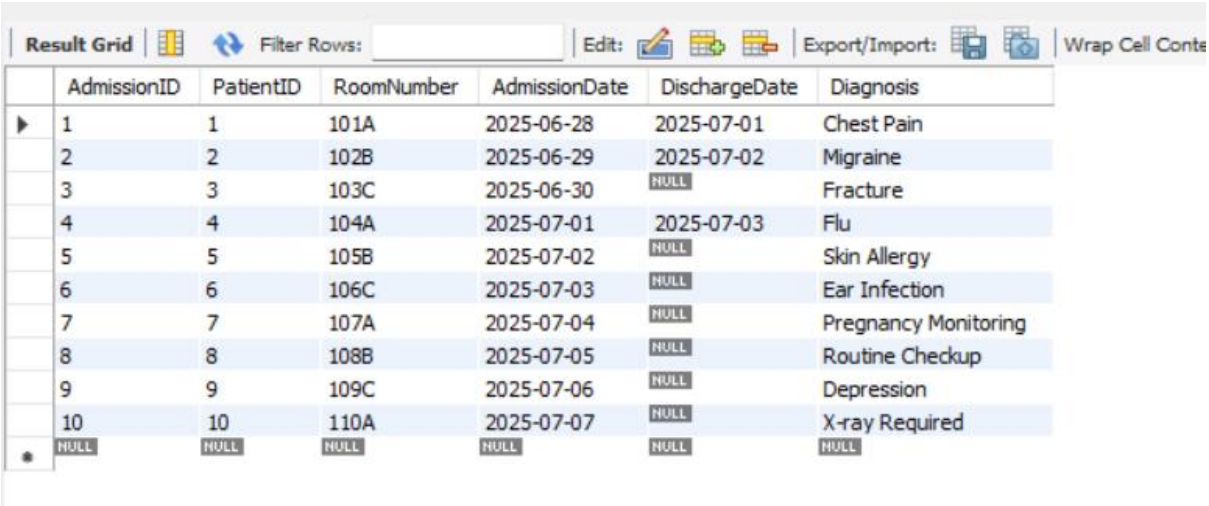
DoctorID	FirstName	LastName	Specialization	ContactNumber	Email	Schedule
1	Dr. Emma	Clark	Cardiology	1112223333	emma.clark@hospital.com	Mon-Wed-Fri 10am-2pm
2	Dr. Liam	Scott	Neurology	2223334444	liam.scott@hospital.com	Tue-Thu 1pm-5pm
3	Dr. Olivia	Green	Orthopedics	3334445555	olivia.green@hospital.com	Mon-Fri 9am-12pm
4	Dr. Noah	Adams	Pediatrics	4445556666	noah.adams@hospital.com	Wed-Sat 10am-4pm
5	Dr. Ava	Baker	Dermatology	5556667777	ava.baker@hospital.com	Mon-Fri 2pm-6pm
6	Dr. William	Hall	ENT	6667778888	william.hall@hospital.com	Tue-Thu 10am-3pm
7	Dr. Sophia	Allen	Gynecology	7778889999	sophia.allen@hospital.com	Mon-Wed-Fri 1pm-5pm
8	Dr. James	Wright	General Medicine	8889990000	james.wright@hospital.com	Daily 8am-1pm
9	Dr. Mia	King	Psychiatry	9990001111	mia.king@hospital.com	Tue-Fri 11am-4pm
10	Dr. Benjamin	Lee	Radiology	0001112222	benjamin.lee@hospital.com	Mon-Thu 9am-1pm
NULL	NULL	NULL	NULL	NULL	NULL	NULL

3) **Create Table Admission:**

```
CREATE TABLE Admissions (
    AdmissionID INT PRIMARY KEY AUTO_INCREMENT,
    PatientID INT,
    RoomNumber VARCHAR(10),
    AdmissionDate DATE,
    DischargeDate DATE,
    Diagnosis TEXT,
    FOREIGN KEY (PatientID) REFERENCES Patients(PatientID)
);
```

Insert into Admission:

```
INSERT INTO Admissions (PatientID, RoomNumber, AdmissionDate, DischargeDate,
Diagnosis) VALUES
(1, '101A', '2025-06-28', '2025-07-01', 'Chest Pain'),
(2, '102B', '2025-06-29', '2025-07-02', 'Migraine'),
(3, '103C', '2025-06-30', NULL, 'Fracture'),
(4, '104A', '2025-07-01', '2025-07-03', 'Flu'),
(5, '105B', '2025-07-02', NULL, 'Skin Allergy'),
(6, '106C', '2025-07-03', NULL, 'Ear Infection'),
(7, '107A', '2025-07-04', NULL, 'Pregnancy Monitoring'),
(8, '108B', '2025-07-05', NULL, 'Routine Checkup'),
(9, '109C', '2025-07-06', NULL, 'Depression'),
(10, '110A', '2025-07-07', NULL, 'X-ray Required');
```



Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Conte

AdmissionID	PatientID	RoomNumber	AdmissionDate	DischargeDate	Diagnosis
1	1	101A	2025-06-28	2025-07-01	Chest Pain
2	2	102B	2025-06-29	2025-07-02	Migraine
3	3	103C	2025-06-30	NULL	Fracture
4	4	104A	2025-07-01	2025-07-03	Flu
5	5	105B	2025-07-02	NULL	Skin Allergy
6	6	106C	2025-07-03	NULL	Ear Infection
7	7	107A	2025-07-04	NULL	Pregnancy Monitoring
8	8	108B	2025-07-05	NULL	Routine Checkup
9	9	109C	2025-07-06	NULL	Depression
10	10	110A	2025-07-07	NULL	X-ray Required
NULL	NULL	NULL	NULL	NULL	NULL

4) **Create Table Appointments:**

```
CREATE TABLE Appointments (
   AppointmentID INT PRIMARY KEY AUTO_INCREMENT,
   PatientID INT,
   DoctorID INT,
   AppointmentDate DATE,
   AppointmentTime TIME,
   Status VARCHAR(20),
   FOREIGN KEY (PatientID) REFERENCES Patients(PatientID),
   FOREIGN KEY (DoctorID) REFERENCES Doctors(DoctorID)
);
```

Insert into Appointments:

```
INSERT INTO Appointments (PatientID, DoctorID, AppointmentDate,
AppointmentTime, Status) VALUES
(1, 1, '2025-07-01', '10:00:00', 'Completed'),
(2, 2, '2025-07-02', '13:30:00', 'Scheduled'),
(3, 3, '2025-07-03', '09:15:00', 'Cancelled'),
(4, 4, '2025-07-04', '10:45:00', 'Completed'),
(5, 5, '2025-07-05', '15:00:00', 'Scheduled'),
(6, 6, '2025-07-06', '11:00:00', 'Completed'),
(7, 7, '2025-07-07', '14:20:00', 'Scheduled'),
(8, 8, '2025-07-08', '08:30:00', 'Completed'),
(9, 9, '2025-07-09', '12:00:00', 'Scheduled'),
(10, 10, '2025-07-10', '09:45:00', 'Scheduled');
```

Result Grid | Filter Rows: | Edit: | Export/Import:

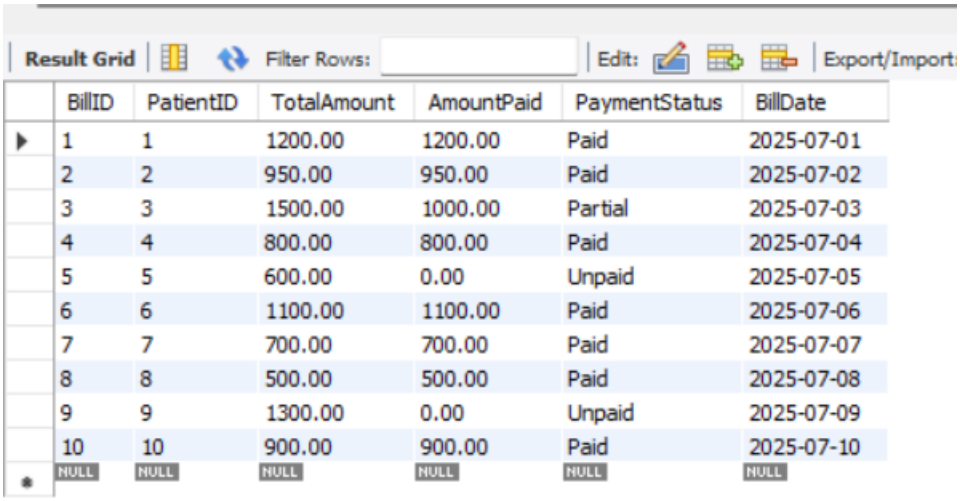
AppointmentID	PatientID	DoctorID	AppointmentDate	AppointmentTime	Status
1	1	1	2025-07-01	10:00:00	Completed
2	2	2	2025-07-02	13:30:00	Scheduled
3	3	3	2025-07-03	09:15:00	Cancelled
4	4	4	2025-07-04	10:45:00	Completed
5	5	5	2025-07-05	15:00:00	Scheduled
6	6	6	2025-07-06	11:00:00	Completed
7	7	7	2025-07-07	14:20:00	Scheduled
8	8	8	2025-07-08	08:30:00	Completed
9	9	9	2025-07-09	12:00:00	Scheduled
10	10	10	2025-07-10	09:45:00	Scheduled
NULL	NULL	NULL	NULL	NULL	NULL

5) **Create Table Billings:**

```
BillID INT PRIMARY KEY AUTO_INCREMENT,
   PatientID INT,
   TotalAmount DECIMAL(10, 2),
   AmountPaid DECIMAL(10, 2),
   PaymentStatus VARCHAR(20),
   BillDate DATE,
   FOREIGN KEY (PatientID) REFERENCES Patients(PatientID)
);
```

Insert into Billing:

```
INSERT INTO Billing (PatientID, TotalAmount, AmountPaid, PaymentStatus, BillDate)
VALUES
(1, 1200.00, 1200.00, 'Paid', '2025-07-01'),
(2, 950.00, 950.00, 'Paid', '2025-07-02'),
(3, 1500.00, 1000.00, 'Partial', '2025-07-03'),
(4, 800.00, 800.00, 'Paid', '2025-07-04'),
(5, 600.00, 0.00, 'Unpaid', '2025-07-05'),
(6, 1100.00, 1100.00, 'Paid', '2025-07-06'),
(7, 700.00, 700.00, 'Paid', '2025-07-07'),
(8, 500.00, 500.00, 'Paid', '2025-07-08'),
(9, 1300.00, 0.00, 'Unpaid', '2025-07-09'),
(10, 900.00, 900.00, 'Paid', '2025-07-10');
```



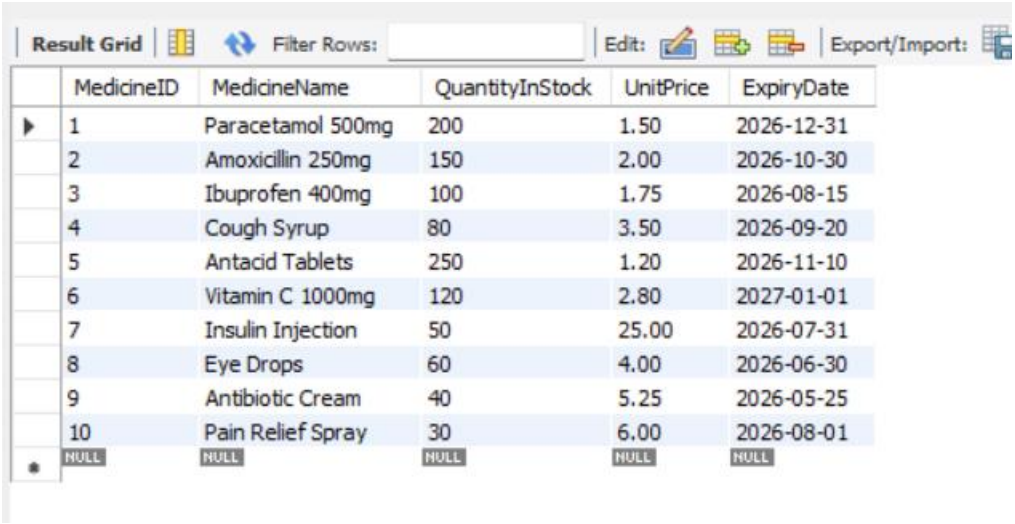
Result Grid | Filter Rows: | Edit: | Export/Import:

BillID	PatientID	TotalAmount	AmountPaid	PaymentStatus	BillDate
1	1	1200.00	1200.00	Paid	2025-07-01
2	2	950.00	950.00	Paid	2025-07-02
3	3	1500.00	1000.00	Partial	2025-07-03
4	4	800.00	800.00	Paid	2025-07-04
5	5	600.00	0.00	Unpaid	2025-07-05
6	6	1100.00	1100.00	Paid	2025-07-06
7	7	700.00	700.00	Paid	2025-07-07
8	8	500.00	500.00	Paid	2025-07-08
9	9	1300.00	0.00	Unpaid	2025-07-09
10	10	900.00	900.00	Paid	2025-07-10
NULL	NULL	NULL	NULL	NULL	NULL

6) **Create Table pharmacy:**

```
CREATE TABLE Pharmacy (
   MedicineID INT PRIMARY KEY AUTO_INCREMENT,
   MedicineName VARCHAR(100),
   QuantityInStock INT,
   UnitPrice DECIMAL(10, 2),
   ExpiryDate DATE
);
```

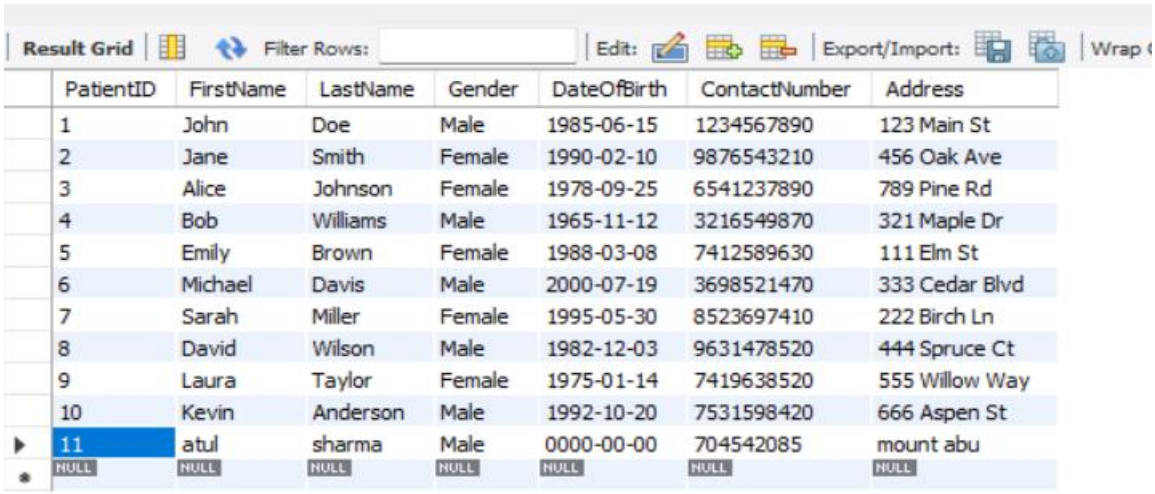
```
INSERT INTO Pharmacy (MedicineName, QuantityInStock, UnitPrice, ExpiryDate) VALUES
('Paracetamol 500mg', 200, 1.50, '2026-12-31'),
('Amoxicillin 250mg', 150, 2.00, '2026-10-30'),
('Ibuprofen 400mg', 100, 1.75, '2026-08-15'),
('Cough Syrup', 80, 3.50, '2026-09-20'),
('Antacid Tablets', 250, 1.20, '2026-11-10'),
('Vitamin C 1000mg', 120, 2.80, '2027-01-01'),
('Insulin Injection', 50, 25.00, '2026-07-31'),
('Eye Drops', 60, 4.00, '2026-06-30'),
('Antibiotic Cream', 40, 5.25, '2026-05-25'),
('Pain Relief Spray', 30, 6.00, '2026-08-01');
```


Result Grid | Filter Rows: | Edit: | Export/Import:

MedicineID	MedicineName	QuantityInStock	UnitPrice	ExpiryDate
1	Paracetamol 500mg	200	1.50	2026-12-31
2	Amoxicillin 250mg	150	2.00	2026-10-30
3	Ibuprofen 400mg	100	1.75	2026-08-15
4	Cough Syrup	80	3.50	2026-09-20
5	Antacid Tablets	250	1.20	2026-11-10
6	Vitamin C 1000mg	120	2.80	2027-01-01
7	Insulin Injection	50	25.00	2026-07-31
8	Eye Drops	60	4.00	2026-06-30
9	Antibiotic Cream	40	5.25	2026-05-25
10	Pain Relief Spray	30	6.00	2026-08-01
NULL	NULL	NULL	NULL	NULL

BASIC QUESTIONS:

1. **How do you insert a new record in your patients Table?**
   insert into Patients values (12,"atul","sharma","Male","1999-06-19",704542085,"mount abu");
   Select * from patients;

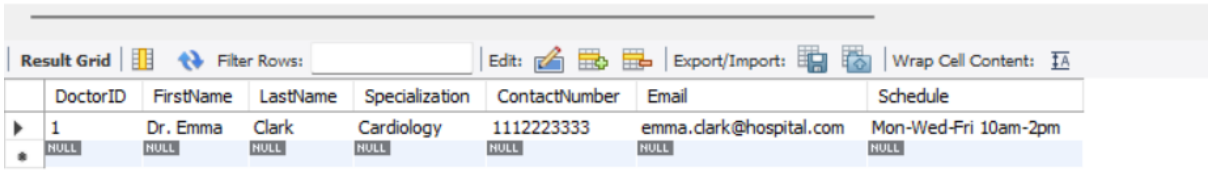


PatientID	FirstName	LastName	Gender	DateOfBirth	ContactNumber	Address
1	John	Doe	Male	1985-06-15	1234567890	123 Main St
2	Jane	Smith	Female	1990-02-10	9876543210	456 Oak Ave
3	Alice	Johnson	Female	1978-09-25	6541237890	789 Pine Rd
4	Bob	Williams	Male	1965-11-12	3216549870	321 Maple Dr
5	Emily	Brown	Female	1988-03-08	7412589630	111 Elm St
6	Michael	Davis	Male	2000-07-19	3698521470	333 Cedar Blvd
7	Sarah	Miller	Female	1995-05-30	8523697410	222 Birch Ln
8	David	Wilson	Male	1982-12-03	9631478520	444 Spruce Ct
9	Laura	Taylor	Female	1975-01-14	7419638520	555 Willow Way
10	Kevin	Anderson	Male	1992-10-20	7531598420	666 Aspen St
11	atul	sharma	Male	0000-00-00	704542085	mount abu

2. **Find all doctors specialized in 'Cardiology'.**

SELECT * FROM Doctors

WHERE Specialization = 'Cardiology';



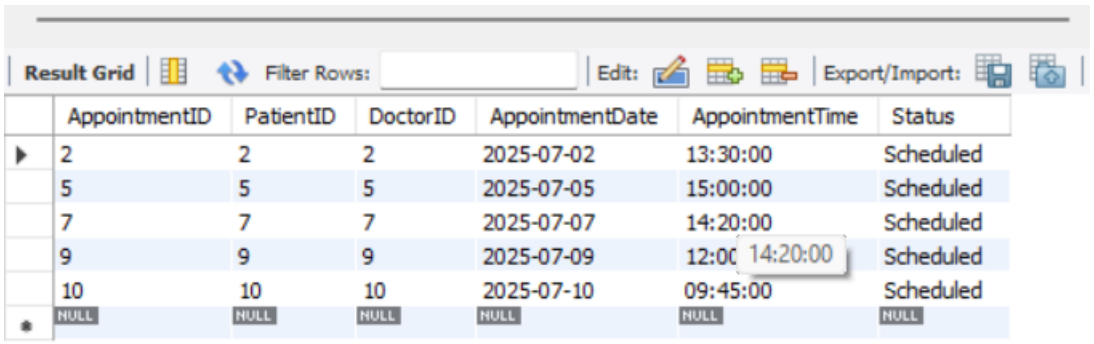
DoctorID	FirstName	LastName	Specialization	ContactNumber	Email	Schedule
1	Dr. Emma	Clark	Cardiology	1112223333	emma.clark@hospital.com	Mon-Wed-Fri 10am-2pm

3. Show all upcoming (scheduled) appointments.

SELECT *

FROM Appointments

WHERE Status = 'Scheduled';



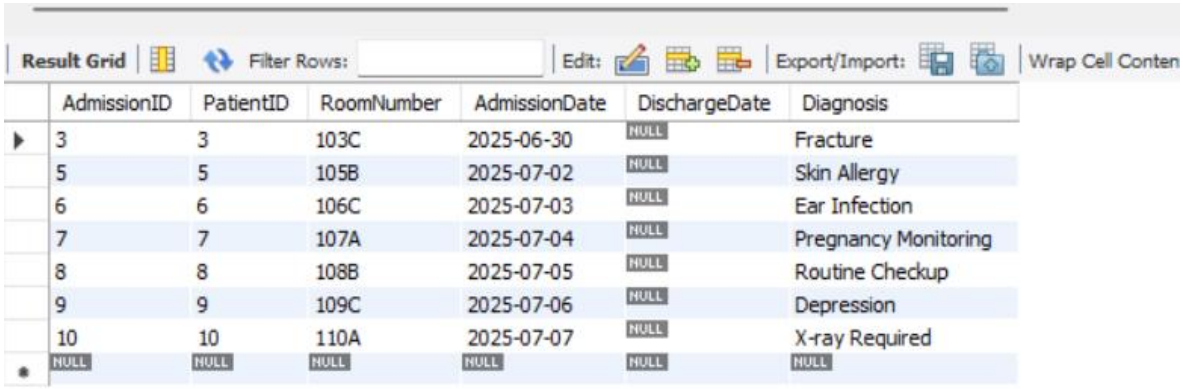
AppointmentID	PatientID	DoctorID	AppointmentDate	AppointmentTime	Status
2	2	2	2025-07-02	13:30:00	Scheduled
5	5	5	2025-07-05	15:00:00	Scheduled
7	7	7	2025-07-07	14:20:00	Scheduled
9	9	9	2025-07-09	12:00	Scheduled
10	10	10	2025-07-10	09:45:00	Scheduled

4.Get a list of patients who have not yet been discharged.

SELECT *

FROM Admissions

WHERE DischargeDate IS NULL;



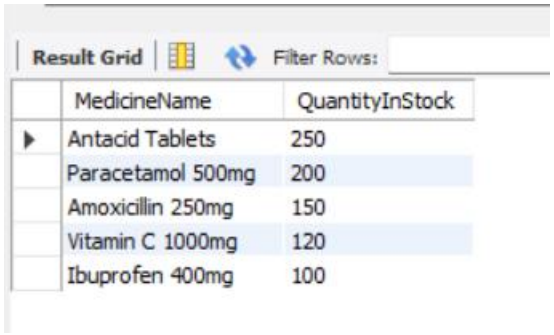
Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Conten

AdmissionID	PatientID	RoomNumber	AdmissionDate	DischargeDate	Diagnosis
3	3	103C	2025-06-30	NULL	Fracture
5	5	105B	2025-07-02	NULL	Skin Allergy
6	6	106C	2025-07-03	NULL	Ear Infection
7	7	107A	2025-07-04	NULL	Pregnancy Monitoring
8	8	108B	2025-07-05	NULL	Routine Checkup
9	9	109C	2025-07-06	NULL	Depression
10	10	110A	2025-07-07	NULL	X-ray Required
NULL	NULL	NULL	NULL	NULL	NULL

5. Show the top 5 most stocked medicines.

SELECT MedicineName, QuantityInStock FROM Pharmacy

ORDER BY QuantityInStock DESC LIMIT 5;



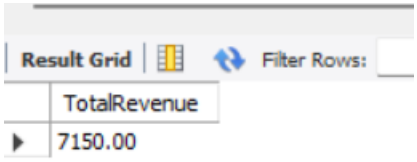
Result Grid | Filter Rows:

MedicineName	QuantityInStock
Antacid Tablets	250
Paracetamol 500mg	200
Amoxicillin 250mg	150
Vitamin C 1000mg	120
Ibuprofen 400mg	100

6.Calculate total revenue received (sum of amount paid).

SELECT SUM(AmountPaid) AS TotalRevenue

FROM Billing;



Result Grid | Filter Rows:

TotalRevenue
7150.00

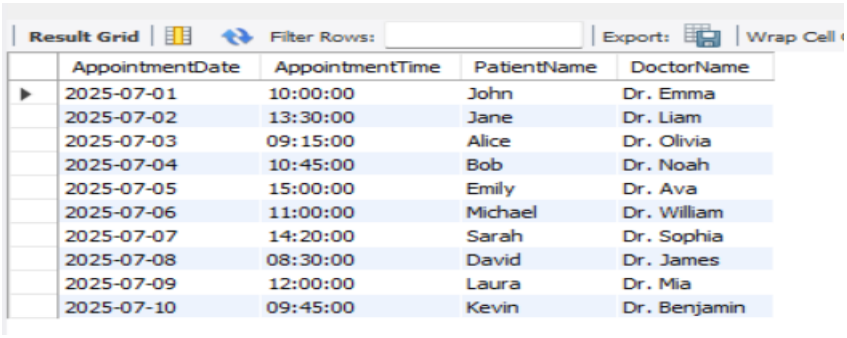
SQL Questions Using JOINs:

1. List all appointments with patient and doctor names.

a.AppointmentDate, a.AppointmentTime,p.FirstName AS PatientName,d.FirstName AS DoctorName FROM Appointments a

JOIN Patients p ON a.PatientID = p.PatientID

JOIN Doctors d ON a.DoctorID = d.DoctorID;



Result Grid | Filter Rows: | Export: | Wrap Cell

AppointmentDate	AppointmentTime	PatientName	DoctorName
2025-07-01	10:00:00	John	Dr. Emma
2025-07-02	13:30:00	Jane	Dr. Liam
2025-07-03	09:15:00	Alice	Dr. Olivia
2025-07-04	10:45:00	Bob	Dr. Noah
2025-07-05	15:00:00	Emily	Dr. Ava
2025-07-06	11:00:00	Michael	Dr. William
2025-07-07	14:20:00	Sarah	Dr. Sophia
2025-07-08	08:30:00	David	Dr. James
2025-07-09	12:00:00	Laura	Dr. Mia
2025-07-10	09:45:00	Kevin	Dr. Benjamin

2.Show admitted patients along with their room numbers and diagnoses.

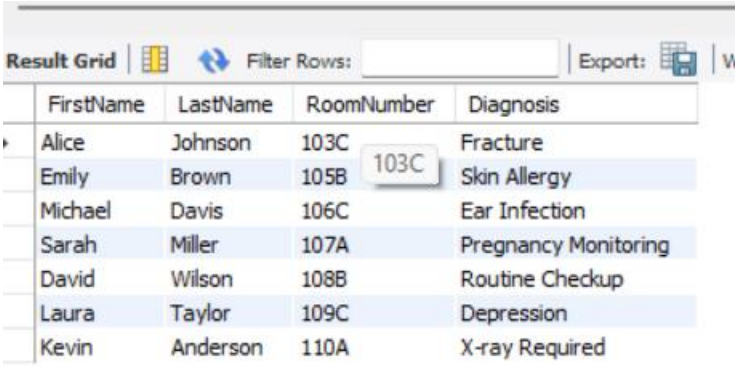
p.FirstName, p.LastName,

a.RoomNumber, a.Diagnosis

FROM Admissions a

JOIN Patients p ON a.PatientID = p.PatientID

WHERE a.DischargeDate IS NULL;

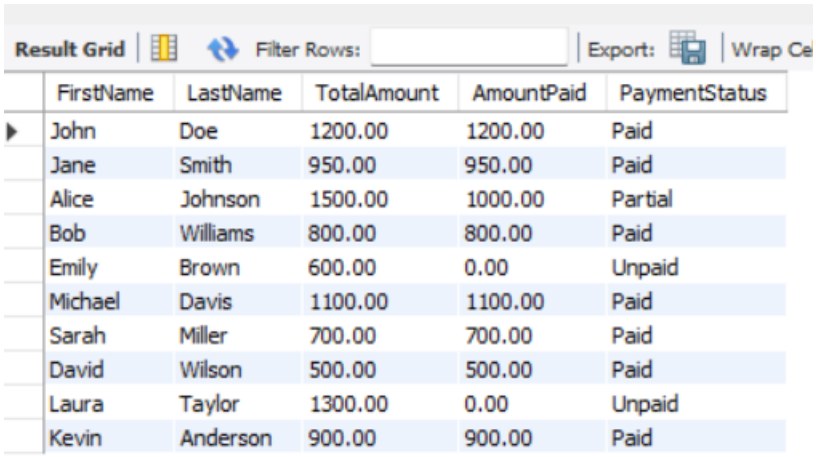


Result Grid | Filter Rows: | Export:

FirstName	LastName	RoomNumber	Diagnosis
Alice	Johnson	103C	Fracture
Emily	Brown	105B	Skin Allergy
Michael	Davis	106C	Ear Infection
Sarah	Miller	107A	Pregnancy Monitoring
David	Wilson	108B	Routine Checkup
Laura	Taylor	109C	Depression
Kevin	Anderson	110A	X-ray Required

3. Display billing information along with patient names.

```
    p.FirstName, p.LastName,
    b.TotalAmount, b.AmountPaid, b.PaymentStatus
FROM Billing b
JOIN Patients p ON b.PatientID = p.PatientID;
```



Result Grid | Filter Rows: | Export: | Wrap Ce

FirstName	LastName	TotalAmount	AmountPaid	PaymentStatus
John	Doe	1200.00	1200.00	Paid
Jane	Smith	950.00	950.00	Paid
Alice	Johnson	1500.00	1000.00	Partial
Bob	Williams	800.00	800.00	Paid
Emily	Brown	600.00	0.00	Unpaid
Michael	Davis	1100.00	1100.00	Paid
Sarah	Miller	700.00	700.00	Paid
David	Wilson	500.00	500.00	Paid
Laura	Taylor	1300.00	0.00	Unpaid
Kevin	Anderson	900.00	900.00	Paid

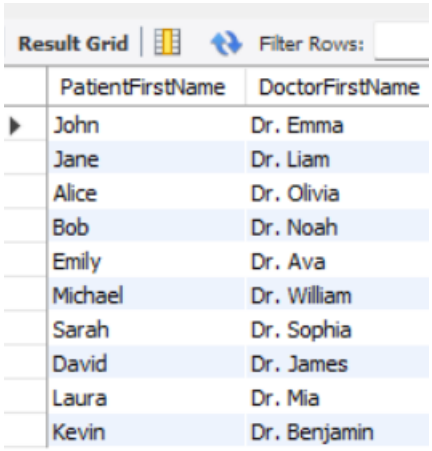
4.Show appointments with doctor specialization.

```
    p.FirstName AS PatientName,
    d.FirstName AS DoctorName,
    d.Specialization,
    a.AppointmentDate
FROM Appointments a
JOIN Patients p ON a.PatientID = p.PatientID
JOIN Doctors d ON a.DoctorID = d.DoctorID;
```

PatientName	DoctorName	Specialization	AppointmentDate
John	Dr. Emma	Cardiology	2025-07-01
Jane	Dr. Liam	Neurology	2025-07-02
Alice	Dr. Olivia	Orthopedics	2025-07-03
Bob	Dr. Noah	Pediatrics	2025-07-04
Emily	Dr. Ava	Dermatology	2025-07-05
Michael	Dr. William	ENT	2025-07-06
Sarah	Dr. Sophia	Gynecology	2025-07-07
David	Dr. James	General Medicine	2025-07-08
Laura	Dr. Mia	Psychiatry	2025-07-09
Kevin	Dr. Benjamin	Radiology	2025-07-10

5. Show the names of all patients and their assigned doctor for appointments.

```
    Patients.FirstName AS PatientFirstName,
    Doctors.FirstName AS DoctorFirstName
FROM Appointments
JOIN Patients ON Appointments.PatientID = Patients.PatientID
JOIN Doctors ON Appointments.DoctorID = Doctors.DoctorID;
```



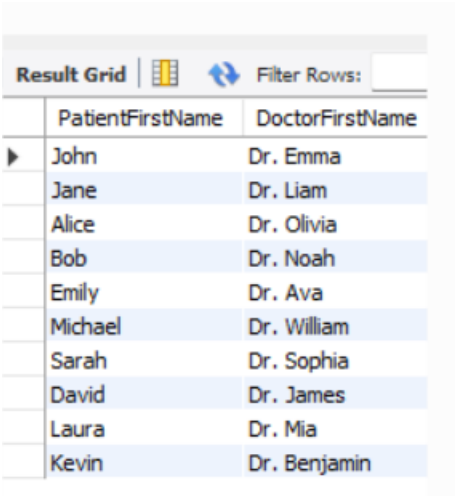
Result Grid | Filter Rows:

PatientFirstName	DoctorFirstName
John	Dr. Emma
Jane	Dr. Liam
Alice	Dr. Olivia
Bob	Dr. Noah
Emily	Dr. Ava
Michael	Dr. William
Sarah	Dr. Sophia
David	Dr. James
Laura	Dr. Mia
Kevin	Dr. Benjamin

SQL Subqueries (Nested Queries):

1. **Find names of patients who have at least one appointment.**

```
SELECT FirstName, LastName
FROM Doctors
WHERE DoctorID = (
   SELECT DoctorID
   FROM Appointments
   GROUP BY DoctorID
   ORDER BY COUNT(*) DESC
   LIMIT 1
);
```

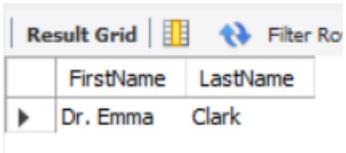


Result Grid | Filter Rows:

PatientFirstName	DoctorFirstName
John	Dr. Emma
Jane	Dr. Liam
Alice	Dr. Olivia
Bob	Dr. Noah
Emily	Dr. Ava
Michael	Dr. William
Sarah	Dr. Sophia
David	Dr. James
Laura	Dr. Mia
Kevin	Dr. Benjamin

2. **Find the name of the doctor with the highest number of appointments.**

```
SELECT FirstName, LastName
FROM Doctors
WHERE DoctorID = (
   SELECT DoctorID
   FROM Appointments
   GROUP BY DoctorID
   ORDER BY COUNT(*) DESC
   LIMIT 1
);
```

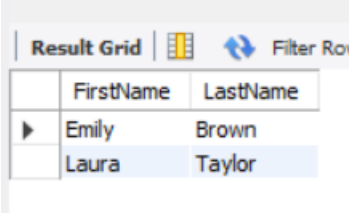


Result Grid | Filter Ro

FirstName	LastName
Dr. Emma	Clark

3. List patients who have unpaid bills.

```
SELECT FirstName, LastName
FROM Patients
WHERE PatientID IN (
   SELECT PatientID
   FROM Billing
   WHERE PaymentStatus = 'Unpaid'
);
```

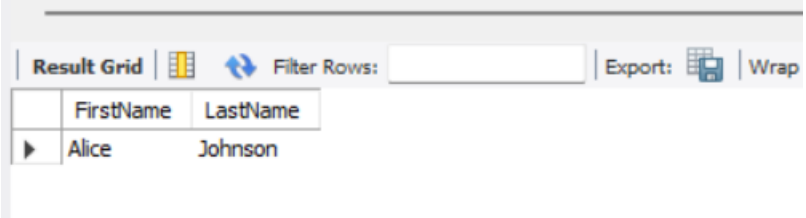


Result Grid | Filter Ro

	FirstName	LastName
▶	Emily	Brown
	Laura	Taylor

4.Get the name of the patient with the highest total bill.

```
SELECT FirstName, LastName
FROM Patients
WHERE PatientID = (
   SELECT PatientID
   FROM Billing
   ORDER BY TotalAmount DESC
   LIMIT 1
);
```

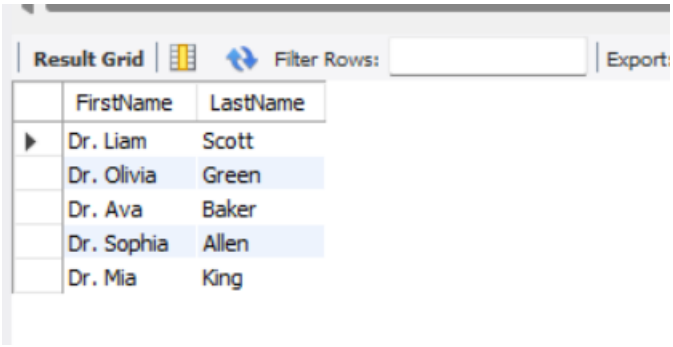


Result Grid | Filter Rows: | Export: | Wrap

	FirstName	LastName
▶	Alice	Johnson

5. Find all doctors who have appointments with female patients.

```
SELECT DISTINCT FirstName, LastName  FROM Doctors
WHERE DoctorID IN (
   SELECT a.DoctorID
   FROM Appointments a
   JOIN Patients p ON a.PatientID = p.PatientID
   WHERE p.Gender = 'Female'
);
```



FirstName	LastName
Dr. Liam	Scott
Dr. Olivia	Green
Dr. Ava	Baker
Dr. Sophia	Allen
Dr. Mia	King

CONCLUSION:-

The Hospital Management System (HMS) is a comprehensive solution designed to streamline and automate the day-to-day operations of a hospital. In the modern healthcare environment, where efficiency, accuracy, and speed are essential, this system plays a crucial role in ensuring that both medical staff and patients benefit from a more organized and responsive healthcare process.

This project integrates multiple essential modules such as Patient Management, Doctor Scheduling, Appointments, Admissions, Discharge, Billing, Pharmacy Inventory, and Reporting. Each module is designed to interact with the others, maintaining consistent and up-to-date data across the entire system. For instance, when a patient is admitted, their records are automatically updated in the admissions and billing modules. Similarly, doctors can view patient history, upcoming appointments, and their schedules in one place, significantly reducing administrative burden.