-- Create a table for patients

CREATE TABLE Patients (

PatientID INT PRIMARY KEY,

Name VARCHAR(255),

Age INT,

Gender VARCHAR(10),

AdmissionDate DATE,

DischargeDate DATE

);

-- Create a table for treatments

CREATE TABLE Treatments (

TreatmentID INT PRIMARY KEY,

PatientID INT,

TreatmentName VARCHAR(255),

TreatmentDate DATE,

FOREIGN KEY (PatientID) REFERENCES Patients(PatientID)

);

-- sample data

INSERT INTO Patients (PatientID, Name, Age, Gender, AdmissionDate, DischargeDate) VALUES

(1, 'John Doe', 45, 'Male', '2024-01-10', '2024-01-20'),

(2, 'Jane Smith', 35, 'Female', '2024-02-05', '2024-02-15'),

(3, 'Alice Johnson', 60, 'Female', '2024-03-01', NULL),

(4, 'Bob Brown', 50, 'Male', '2024-03-05', NULL),

(5, 'Emily Brown', 30, 'Female', '2024-02-20', '2024-03-10'),

(6, 'David Lee', 55, 'Male', '2024-03-15', NULL),

(7, 'Sophia Garcia', 40, 'Female', '2024-01-01', '2024-01-10'),

(8, 'Michael Wilson', 65, 'Male', '2024-02-10', '2024-02-20'),

(9, 'Olivia Martinez', 25, 'Female', '2024-03-01', NULL),

(10, 'William Anderson', 48, 'Male', '2024-02-05', NULL);

INSERT INTO Treatments (TreatmentID, PatientID, TreatmentName, TreatmentDate) VALUES

(1, 1, 'Angioplasty', '2024-01-15'),

(2, 2, 'MRI Scan', '2024-02-10'),

(3, 3, 'Knee Replacement Surgery', '2024-03-10'),

(4, 4, 'Heart Surgery', '2024-03-15');

--1. Subquery to find patients who have been discharged:

SELECT \* FROM Patients WHERE PatientID IN (SELECT PatientID FROM Patients WHERE DischargeDate IS NOT NULL);

--2. Subquery to find patients who have not been discharged:

SELECT \* FROM Patients WHERE PatientID NOT IN (SELECT PatientID FROM Patients WHERE DischargeDate IS NOT NULL);

--3. Subquery to find the number of treatments for each patient:

SELECT PatientID, (SELECT COUNT(\*) FROM Treatments WHERE Treatments.PatientID = Patients.PatientID) AS NumTreatments FROM Patients;

--4. Subquery to find patients who have had a specific treatment:

SELECT \* FROM Patients WHERE PatientID IN (SELECT PatientID FROM Treatments WHERE TreatmentName = 'Angioplasty');

--5. Subquery to find patients who are older than the average age:

SELECT \* FROM Patients WHERE Age > (SELECT AVG(Age) FROM Patients);

--6. Subquery to find patients who have been admitted before a specific date:

SELECT \* FROM Patients WHERE AdmissionDate < '2024-02-05';

--7. Subquery to find patients who have had treatments after a specific date:

SELECT \* FROM Patients WHERE PatientID IN (SELECT PatientID FROM Treatments WHERE TreatmentDate > '2024-02-01');

--8. Subquery to find patients who have not had any treatments:

SELECT \* FROM Patients WHERE PatientID NOT IN (SELECT PatientID FROM Treatments);

--9. Subquery to find patients who have had more than one treatment:

SELECT \* FROM Patients WHERE PatientID IN (SELECT PatientID FROM Treatments GROUP BY PatientID HAVING COUNT(\*) > 1);

--10. Subquery to find patients who have had treatments on the same day they were admitted:

SELECT \*

FROM Patients p

WHERE EXISTS (

SELECT 1

FROM Treatments t

WHERE t.PatientID = p.PatientID

AND t.TreatmentDate = p.AdmissionDate

);