CREATE TABLE Department (

DeptID INT PRIMARY KEY IDENTITY(1,1),

DeptName VARCHAR(50),

Location VARCHAR(100)

);

CREATE TABLE Doctor (

DoctorID INT PRIMARY KEY IDENTITY(1,1),

FirstName VARCHAR(30),

LastName VARCHAR(30),

Specialization VARCHAR(50),

DeptID INT FOREIGN KEY REFERENCES Department(DeptID),

ContactNo VARCHAR(15)

);

CREATE TABLE Patient (

PatientID INT PRIMARY KEY IDENTITY(1,1),

FirstName VARCHAR(30),

LastName VARCHAR(30),

DOB date, Gender VARCHAR(1),

ContactNo VARCHAR(10),

Address VARCHAR(80)

);

CREATE TABLE Appointment (

ApptID INT PRIMARY KEY IDENTITY(1,1),

PatientID INT,

DoctorID INT,

ApptDate DATE,

TimeSlot VARCHAR(20),

Reason VARCHAR(100),

FOREIGN KEY (PatientID) REFERENCES Patient(PatientID),

FOREIGN KEY (DoctorID) REFERENCES Doctor(DoctorID)

);

CREATE TABLE Room (

RoomID INT PRIMARY KEY IDENTITY(1,1),

RoomType VARCHAR(20), -- e.g., General, ICU, Private

ChargesPerDay DECIMAL(10,2) -- daily charges like 1500.00

);

CREATE TABLE Admission (

AdmissionID INT PRIMARY KEY IDENTITY(1,1),

PatientID int,

RoomID int ,

AdmitDate date,

DischargeDate date,

foreign key (PatientID) references Patient(PatientID),

foreign key (RoomID) references Room(RoomID)

);

CREATE TABLE Treatment (

TreatmentID INT PRIMARY KEY IDENTITY(1,1),

ApptID INT, Diagnosis varchar(80), Notes text,

foreign key (ApptID) references Appointment(ApptID)

);

CREATE TABLE Medication

(

MedicationID INT PRIMARY KEY IDENTITY(1,1),

TreatmentID INT,

DrugName varchar(40),

Dosage varchar(15),

Duration INT,

foreign key (TreatmentID) references Treatment(TreatmentID)

);

CREATE TABLE LabTest (

TestID INT PRIMARY KEY IDENTITY(1,1),

TestName varchar(40),

Result VARCHAR(100),

Charges decimal(10,2)

);

CREATE TABLE PatientTest (

PatientTestID INT PRIMARY KEY IDENTITY(1,1),

PatientID INT, TestID INT, TestDate date, Result varchar(20),

foreign key (PatientID) references Patient(PatientID),

foreign key (TestID) references LabTest(TestID)

);

CREATE TABLE Billing (

BillID INT PRIMARY KEY IDENTITY(1,1),

PatientID INT,

BillDate date,

TotalAmount decimal(13,2),

PaymentStatus varchar(7),

foreign key (PatientID) references Patient(PatientID)

);

**Audit Table**

Audit Table

CREATE TABLE PatientAudit (

    AuditID INT IDENTITY(1,1) PRIMARY KEY,

    PatientID INT,

    OldContactNo VARCHAR(10),

    NewContactNo VARCHAR(10),

    ChangeDate DATETIME,

    ChangedBy SYSNAME

);

CREATE TABLE AppointmentLog (

    LogID INT IDENTITY(1,1) PRIMARY KEY,

    ApptID INT,

    PatientID INT,

    DoctorID INT,

    ApptDate DATE,

    LogTime DATETIME DEFAULT GETDATE()

);

CREATE TABLE BillingDeleteLog (

    LogID INT IDENTITY(1,1) PRIMARY KEY,

    BillID INT,

    PatientID INT,

    TotalAmount DECIMAL(13,2),

    DeletedOn DATETIME,

    DeletedBy SYSNAME

);

--INSERTING RECORDS

INSERT INTO Room (RoomType, ChargesPerDay) VALUES

('General', 1000.00),

('Private', 2500.00),

('ICU', 5000.00),

('Semi-Private', 1800.00);

INSERT INTO Department (DeptName, Location) VALUES

('Cardiology', 'Block A'),

('Neurology', 'Block B'),

('General Medicine', 'Block C'),

('Pediatrics', 'Block D');

INSERT INTO Room (RoomType, ChargesPerDay) VALUES

('General', 1000.00),

('Private', 2500.00),

('ICU', 5000.00),

('Semi-Private', 1800.00);

INSERT INTO Doctor (FirstName, LastName, Specialization, DeptID, ContactNo) VALUES

('Anita', 'George', 'Cardiologist', 1, '9876543211'),

('Rahul', 'Varma', 'Neurologist', 2, '9833224455'),

('Meena', 'Singh', 'General Physician', 3, '9812345678');

INSERT INTO Patient (FirstName, LastName, DOB, Gender, ContactNo, Address) VALUES

('Arun', 'Kumar', '1985-07-12', 'M', '9876543210', 'Chennai'),

('Divya', 'Ramesh', '1990-03-25', 'F', '9823123456', 'Coimbatore'),

('Suresh', 'Menon', '1972-11-10', 'M', '9845012345', 'Madurai'),

('Priya', 'Nair', '2000-01-08', 'F', '9888011122', 'Salem');

INSERT INTO Treatment (Diagnosis, Notes) VALUES

('Mild Hypertension', 'Advised lifestyle changes'),

( 'Migraine', 'Prescribed medication'),

( 'Angina', 'Referred for angiogram'),

('Viral Infection', 'Prescribed rest and meds');

INSERT INTO Appointment (PatientID, DoctorID, ApptDate, TimeSlot, Reason) VALUES

(1, 1, '2025-06-10', '10:00 AM', 'Routine Checkup'),

(2, 2, '2025-06-11', '11:30 AM', 'Headache'),

(3, 1, '2025-06-12', '12:00 PM', 'Chest Pain'),

(4, 3, '2025-06-13', '09:30 AM', 'Fever and cold');

INSERT INTO Admission (PatientID, RoomID, AdmitDate, DischargeDate) VALUES

(1, 2, '2025-06-10', '2025-06-15'),

(2, 1, '2025-06-11', NULL),  -- still admitted

(3, 3, '2025-06-12', '2025-06-14');

INSERT INTO Medication (DrugName, Dosage, Duration) VALUES

( 'Amlodipine', '5mg/day', 30),

( 'Sumatriptan', '50mg', 15),

('Nitroglycerin', '0.4mg ', 10),

('Paracetamol', '500mg 3tim/day', 5);

INSERT INTO PatientTest (PatientID, TestID, TestDate, Result) VALUES

(1, 1, '2025-06-10', 'Normal'),

(2, 2, '2025-06-11', 'Irregular ECG'),

(3, 3, '2025-06-12', 'Stroke Detected');

INSERT INTO Billing (PatientID, BillDate, TotalAmount, PaymentStatus) VALUES

(1, '2025-06-15', 7800.00, 'Paid'),

(2, '2025-06-13', 3500.00, 'Unpaid'),

(3, '2025-06-14', 9800.00, 'Paid');

--COMPLEX QUERIES

 --List all patients along with their doctor’s name and appointment date

SELECT

    P.FirstName + ' ' + P.LastName AS PatientName,

    D.FirstName + ' ' + D.LastName AS DoctorName,

    A.ApptDate,

    A.TimeSlot,

    A.Reason

FROM Appointment A

JOIN Patient P ON A.PatientID = P.PatientID

JOIN Doctor D ON A.DoctorID = D.DoctorID;

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 --Show medications prescribed to a specific patient (say PatientID = 1)

SELECT

    P.FirstName + ' ' + P.LastName AS PatientName,

    M.DrugName,

    M.Dosage,

    M.Duration

FROM Medication M

JOIN Treatment T ON M.TreatmentID = T.TreatmentID

JOIN Appointment A ON T.ApptID = A.ApptID

JOIN Patient P ON A.PatientID = P.PatientID

WHERE P.PatientID = 1;

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

--Show total bill amount for each patient

SELECT

    P.PatientID,

    P.FirstName + ' ' + P.LastName AS PatientName,

    SUM(B.TotalAmount) AS TotalBilled

FROM Billing B

JOIN Patient P ON B.PatientID = P.PatientID

GROUP BY P.PatientID, P.FirstName, P.LastName;

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

--Get patients who have taken more than one test

SELECT

    P.PatientID,

    P.FirstName + ' ' + P.LastName AS PatientName,

    COUNT(PT.TestID) AS TestCount

FROM PatientTest PT

JOIN Patient P ON PT.PatientID = P.PatientID

GROUP BY P.PatientID, P.FirstName, P.LastName

HAVING COUNT(PT.TestID) > 1;

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

-- Find patients currently admitted

SELECT

    P.PatientID,

    P.FirstName + ' ' + P.LastName AS PatientName,

    A.AdmitDate,

    R.RoomType

FROM Admission A

JOIN Patient P ON A.PatientID = P.PatientID

JOIN Room R ON A.RoomID = R.RoomID

WHERE A.DischargeDate IS NULL;

--DischargeDate is NULL\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 -- Show patients with more than one appointment on the same day

SELECT

    P.PatientID,

    P.FirstName + ' ' + P.LastName AS PatientName,

    A.ApptDate,

    COUNT(\*) AS ApptCount

FROM Appointment A

JOIN Patient P ON A.PatientID = P.PatientID

GROUP BY P.PatientID, P.FirstName, P.LastName, A.ApptDate

HAVING COUNT(\*) > 1;

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

-- Find doctors who have appointments in the next 7 days

SELECT

    D.DoctorID,

    D.FirstName + ' ' + D.LastName AS DoctorName,

    A.ApptDate,

    A.TimeSlot

FROM Appointment A

JOIN Doctor D ON A.DoctorID = D.DoctorID

WHERE A.ApptDate BETWEEN GETDATE() AND DATEADD(DAY, 7, GETDATE());

-- Show each doctor's total number of patients treated

SELECT

    D.DoctorID,

    D.FirstName + ' ' + D.LastName AS DoctorName,

    COUNT(DISTINCT A.PatientID) AS TotalPatients

FROM Doctor D

JOIN Appointment A ON D.DoctorID = A.DoctorID

JOIN Treatment T ON A.ApptID = T.ApptID

GROUP BY D.DoctorID, D.FirstName, D.LastName;

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

-- List all currently admitted patients with room type and days admitted

 SELECT

    P.FirstName + ' ' + P.LastName AS PatientName,

    R.RoomType,

    A.AdmitDate,

    DATEDIFF(DAY, A.AdmitDate, ISNULL(A.DischargeDate, GETDATE())) AS DaysAdmitted

FROM Admission A

JOIN Patient P ON A.PatientID = P.PatientID

JOIN Room R ON A.RoomID = R.RoomID

WHERE A.DischargeDate IS NULL;

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

-- Find patients who have not received any treatment yet

SELECT

    P.PatientID,

    P.FirstName + ' ' + P.LastName AS PatientName

FROM Patient P

WHERE P.PatientID NOT IN (

    SELECT DISTINCT A.PatientID

    FROM Appointment A

    JOIN Treatment T ON A.ApptID = T.ApptID

);

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

-- Show total charges for tests taken by each patient

SELECT

    P.PatientID,

    P.FirstName + ' ' + P.LastName AS PatientName,

    SUM(L.Charges) AS TotalTestCharges

FROM PatientTest PT

JOIN Patient P ON PT.PatientID = P.PatientID

JOIN LabTest L ON PT.TestID = L.TestID

GROUP BY P.PatientID, P.FirstName, P.LastName;

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

-- List doctors who have no appointments scheduled

SELECT

    D.DoctorID,

    D.FirstName + ' ' + D.LastName AS DoctorName

FROM Doctor D

LEFT JOIN Appointment A ON D.DoctorID = A.DoctorID

WHERE A.ApptID IS NULL;

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 -- CTE Example – Top 2 patients with highest total bill

WITH PatientBills AS (

    SELECT

        P.PatientID,

        P.FirstName + ' ' + P.LastName AS PatientName,

        SUM(B.TotalAmount) AS TotalBilled

    FROM Billing B

    JOIN Patient P ON B.PatientID = P.PatientID

    GROUP BY P.PatientID, P.FirstName, P.LastName

)

SELECT TOP 2 \*

FROM PatientBills

ORDER BY TotalBilled DESC;

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

-- CASE Statement Example – Flag bill status

SELECT

    B.BillID,

    P.FirstName + ' ' + P.LastName AS PatientName,

    B.TotalAmount,

    B.PaymentStatus,

    CASE

        WHEN B.PaymentStatus = 'Paid' THEN 'Clear'

        WHEN B.PaymentStatus = 'Unpaid' THEN 'Pending'

        ELSE 'Unknown'

    END AS BillFlag

FROM Billing B

JOIN Patient P ON B.PatientID = P.PatientID;

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

-- Use RANK() to list patients by their total billing amount (Top spenders first)

WITH BillSummary AS (

    SELECT

        P.PatientID,

        P.FirstName + ' ' + P.LastName AS PatientName,

        SUM(B.TotalAmount) AS TotalSpent

    FROM Billing B

    JOIN Patient P ON B.PatientID = P.PatientID

    GROUP BY P.PatientID, P.FirstName, P.LastName

)

SELECT

    PatientID,

    PatientName,

    TotalSpent,

    RANK() OVER (ORDER BY TotalSpent DESC) AS BillingRank

FROM BillSummary;

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Daily Dashboard

CREATE PROCEDURE DailyHospitalDashboard

AS

BEGIN

    SET NOCOUNT ON;

    ---------------------------------------

    -- 1. Appointments Scheduled Today

    ---------------------------------------

    PRINT 'Today''s Appointments';

    SELECT

        A.ApptID,

        P.FirstName + ' ' + P.LastName AS PatientName,

        D.FirstName + ' ' + D.LastName AS DoctorName,

        A.TimeSlot,

        A.Reason

    FROM Appointment A

    JOIN Patient P ON A.PatientID = P.PatientID

    JOIN Doctor D ON A.DoctorID = D.DoctorID

    WHERE A.ApptDate = CAST(GETDATE() AS DATE);

    ---------------------------------------

    -- 2. Admissions and Discharges Today

    ---------------------------------------

    PRINT 'Today''s Admissions and Discharges';

    SELECT

        'Admitted' AS EventType,

        A.AdmissionID,

        P.FirstName + ' ' + P.LastName AS PatientName,

        A.AdmitDate,

        R.RoomType

    FROM Admission A

    JOIN Patient P ON A.PatientID = P.PatientID

    JOIN Room R ON A.RoomID = R.RoomID

    WHERE A.AdmitDate = CAST(GETDATE() AS DATE)

    UNION ALL

    SELECT

        'Discharged' AS EventType,

        A.AdmissionID,

        P.FirstName + ' ' + P.LastName AS PatientName,

        A.DischargeDate,

        R.RoomType

    FROM Admission A

    JOIN Patient P ON A.PatientID = P.PatientID

    JOIN Room R ON A.RoomID = R.RoomID

    WHERE A.DischargeDate = CAST(GETDATE() AS DATE);

    ---------------------------------------

    -- 3. Billing Summary Today

    ---------------------------------------

    PRINT 'Today''s Billing Summary';

    SELECT

        B.BillID,

        P.FirstName + ' ' + P.LastName AS PatientName,

        B.TotalAmount,

        B.PaymentStatus

    FROM Billing B

    JOIN Patient P ON B.PatientID = P.PatientID

    WHERE B.BillDate = CAST(GETDATE() AS DATE);

    ---------------------------------------

    -- 4. Lab Tests Conducted Today

    ---------------------------------------

    PRINT 'Today''s Lab Tests';

    SELECT

        PT.PatientTestID,

        P.FirstName + ' ' + P.LastName AS PatientName,

        L.TestName,

        PT.Result,

        L.Charges

    FROM PatientTest PT

    JOIN LabTest L ON PT.TestID = L.TestID

    JOIN Patient P ON PT.PatientID = P.PatientID

    WHERE PT.TestDate = CAST(GETDATE() AS DATE);

    ---------------------------------------

    -- 5. New Patients Registered Today

    ---------------------------------------

    PRINT 'New Patients Registered Today';

    SELECT

        PatientID,

        FirstName,

        LastName,

        Gender,

        DOB,

        ContactNo

    FROM Patient

    WHERE CONVERT(DATE, DOB) = CAST(GETDATE() AS DATE);  -- Only if DOB == registration date

    -- Ideally, use a RegistrationDate column here

END;

Daily Dashboard

CREATE PROCEDURE DailyHospitalDashboard

AS

BEGIN

    SET NOCOUNT ON;

    ---------------------------------------

    -- 1. Appointments Scheduled Today

    ---------------------------------------

    PRINT 'Today''s Appointments';

    SELECT

        A.ApptID,

        P.FirstName + ' ' + P.LastName AS PatientName,

        D.FirstName + ' ' + D.LastName AS DoctorName,

        A.TimeSlot,

        A.Reason

    FROM Appointment A

    JOIN Patient P ON A.PatientID = P.PatientID

    JOIN Doctor D ON A.DoctorID = D.DoctorID

    WHERE A.ApptDate = CAST(GETDATE() AS DATE);

    ---------------------------------------

    -- 2. Admissions and Discharges Today

    ---------------------------------------

    PRINT 'Today''s Admissions and Discharges';

    SELECT

        'Admitted' AS EventType,

        A.AdmissionID,

        P.FirstName + ' ' + P.LastName AS PatientName,

        A.AdmitDate,

        R.RoomType

    FROM Admission A

    JOIN Patient P ON A.PatientID = P.PatientID

    JOIN Room R ON A.RoomID = R.RoomID

    WHERE A.AdmitDate = CAST(GETDATE() AS DATE)

    UNION ALL

    SELECT

        'Discharged' AS EventType,

        A.AdmissionID,

        P.FirstName + ' ' + P.LastName AS PatientName,

        A.DischargeDate,

        R.RoomType

    FROM Admission A

    JOIN Patient P ON A.PatientID = P.PatientID

    JOIN Room R ON A.RoomID = R.RoomID

    WHERE A.DischargeDate = CAST(GETDATE() AS DATE);

    ---------------------------------------

    -- 3. Billing Summary Today

    ---------------------------------------

    PRINT 'Today''s Billing Summary';

    SELECT

        B.BillID,

        P.FirstName + ' ' + P.LastName AS PatientName,

        B.TotalAmount,

        B.PaymentStatus

    FROM Billing B

    JOIN Patient P ON B.PatientID = P.PatientID

    WHERE B.BillDate = CAST(GETDATE() AS DATE);

    ---------------------------------------

    -- 4. Lab Tests Conducted Today

    ---------------------------------------

    PRINT 'Today''s Lab Tests';

    SELECT

        PT.PatientTestID,

        P.FirstName + ' ' + P.LastName AS PatientName,

        L.TestName,

        PT.Result,

        L.Charges

    FROM PatientTest PT

    JOIN LabTest L ON PT.TestID = L.TestID

    JOIN Patient P ON PT.PatientID = P.PatientID

    WHERE PT.TestDate = CAST(GETDATE() AS DATE);

    ---------------------------------------

    -- 5. New Patients Registered Today

    ---------------------------------------

    PRINT 'New Patients Registered Today';

    SELECT

        PatientID,

        FirstName,

        LastName,

        Gender,

        DOB,

        ContactNo

    FROM Patient

    WHERE CONVERT(DATE, DOB) = CAST(GETDATE() AS DATE);  -- Only if DOB == registration date

    -- Ideally, use a RegistrationDate column here

END;