

**HOSPITAL MANAGEMENT DATABASE**

**TEAM MEMBERS**

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**PROBLEM STATEMENT:**

Our aim is to create a hospital database management system to keep records of all the patients' medical records, doctors, tests, medicines, appointments, rooms, other employees, etc. The main goal is to computerize all the details regarding the patient and the hospital. This model helps the hospital management system to use their database efficiently.

The hospital management system is essential for all healthcare establishments, like hospitals, nursing homes, health clinics, dispensaries, or clinics. The use of this database management system will result in the improvement in administrative functions and hence better patient care.

**OUR THOUGHT PROCESS:**

Patient enters a hospital and takes an appointment. Patient waits for his turn and then undergoes diagnosis by the doctor. Then, patient gets treated by the doctor and is provided with a prescription. Then patient takes some tests. According to prescription, patient buys medicine and pays the bill and completes their treatment. And if it is mentioned in prescription that patient needs to get admitted, and they are also expected to pay the room bill. All the payment is done at bill-counter where patient gives his patient\_id and gets the details of his payment.

Patient exits

Bill payment

Buys medicine

No room

Gets room

Admits?

Takes tests

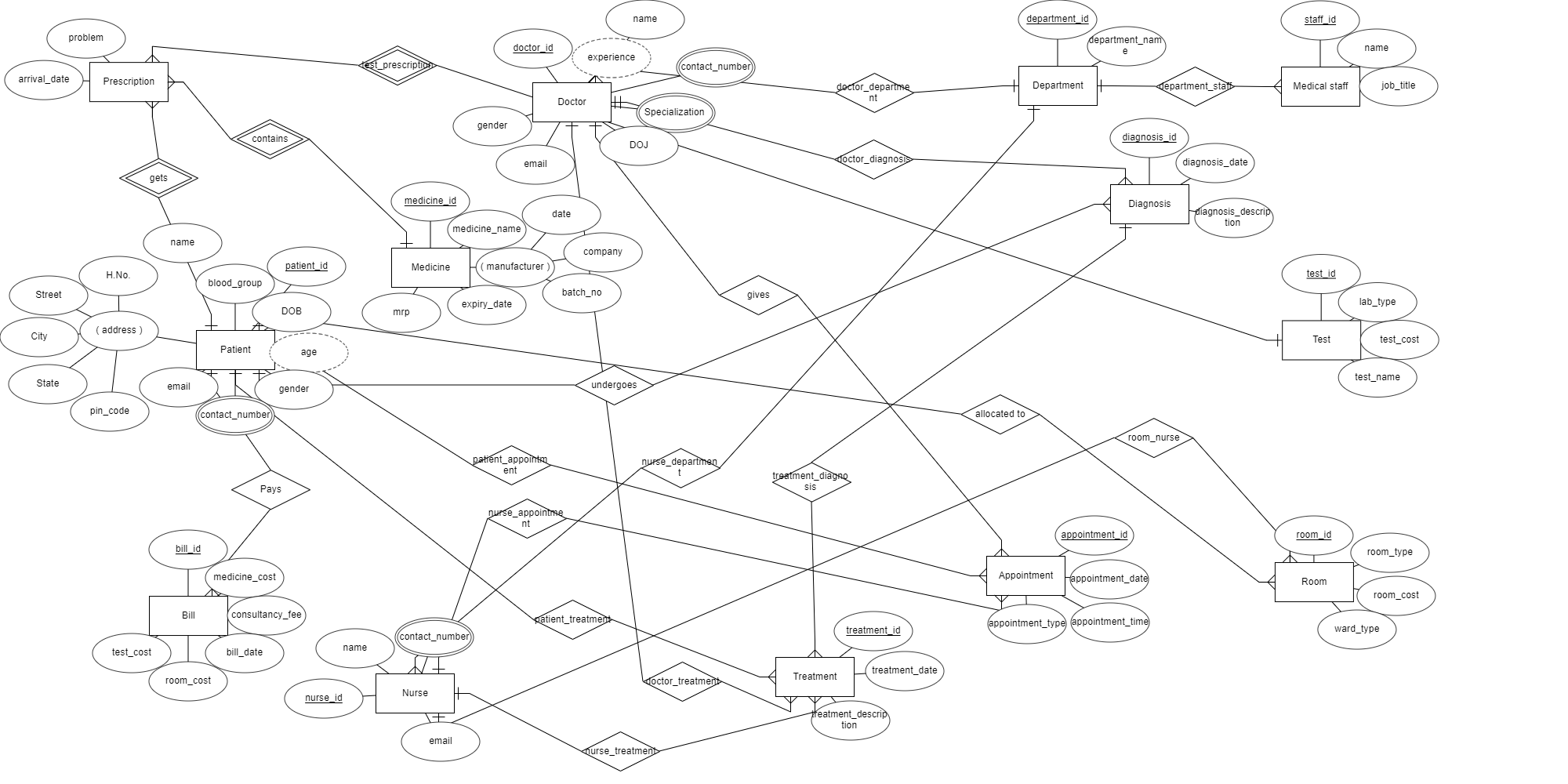
Treatment

Diagnosis

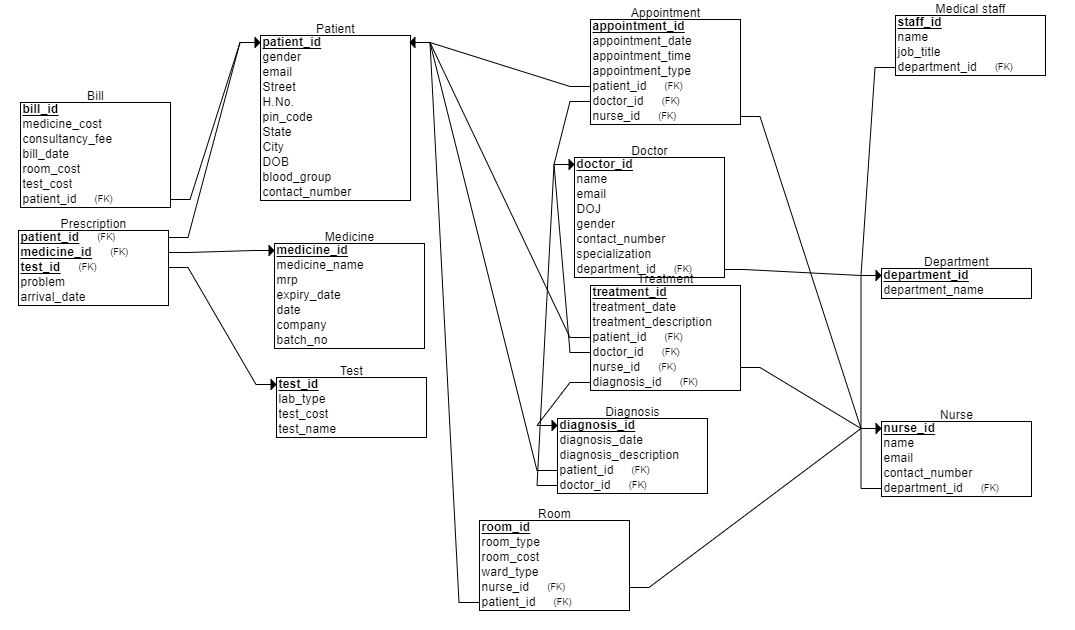
Takes appointment

Patient enters

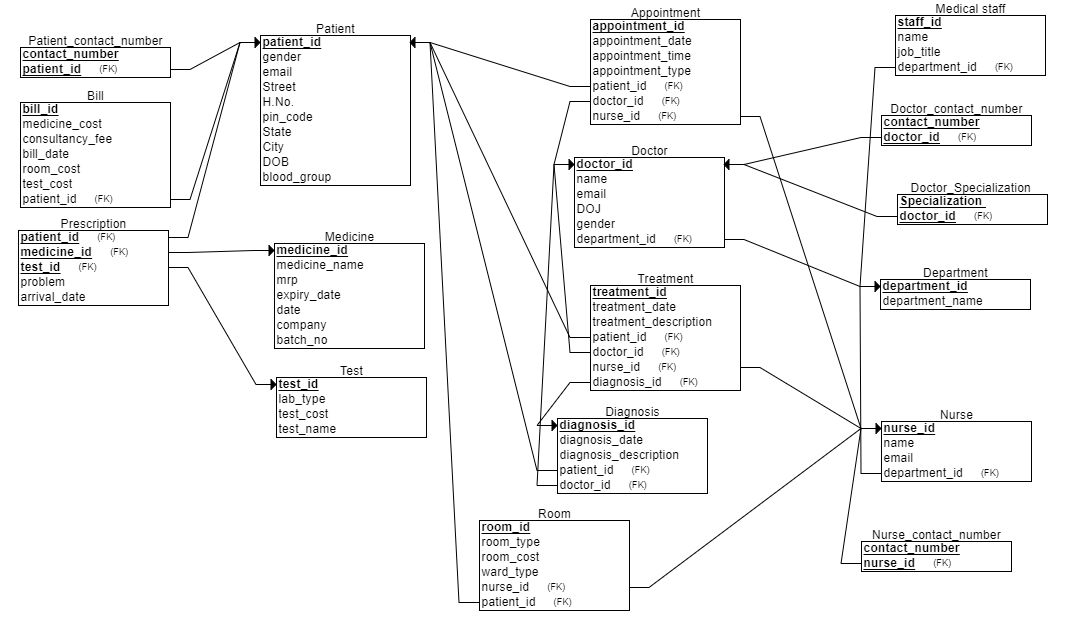
**ER DIAGRAM:**



**RELATIONAL SCHEMA**



**AFTER FIRST NORMAL FORM**



**Functional Dependencies:**

Functional dependencies in each relation define the relationship between attributes in a relation. Here are the functional dependencies in each of the relations mentioned in the hospital database system:

**Test:**

test\_id → lab\_type, test\_cost, test\_name

**Medicine:**

medicine\_id → medicine\_name, mrp, expiry\_date, date, company, batch\_no

**Patient:**

patient\_id → gender, email, street, H\_No, pincode, city, street, state, DOB, blood\_group, contact\_number

**Prescription:**

(patient\_id, medicine\_id, test\_id) → problem,arrival\_date

**Bill:**

bill\_id → medicine\_cost, consultancy\_fee, bill\_date, room\_cost, test\_cost, patient\_id

**Department:**

department\_id → department\_name

**Doctor:**

doctor\_id → name, email, DOJ, gender, department\_id

**Nurse:**

nurse\_id → name, email, contact\_number, department\_id

**Appointment:**

appointment\_id → patient\_id, doctor\_id, n urse\_id, appointment\_date, appointment\_time, appointment\_type

**Diagnosis:**

diagnosis\_id → patient\_id, doctor\_id, diagnosis\_date, diagnosis\_description

**Treatment:**

treatment\_id → patient\_id, doctor\_id, nurse\_id, treatment\_date, treatment\_description

**Medical\_staff:**

staff\_id → department\_id, name, job\_title

**Room:**

room\_id → nurse\_id, patient\_id, room\_type, room\_cost, ward\_type

**NORMAL FORMS:**

**1st NF:**

Atomic attributes: To ensure that all attributes are atomic, for composite attributes, all it’s components are included in the table. (address attribute in *Patient* table) and for multivalued attributes, we maintained a separate table referencing to the main table(patient\_contact\_no with patient\_id referencing to patient, doctor\_contact\_no with doctor\_id referencing to doctor, specialization with doctor\_id referencing to doctor and nurse\_contact\_no with nurse\_id referencing to nurse).

Uniqueness: We made sure that every attribute in a table has a unique name and there are no repeated tuples.

Thus, 1st NF is achieved.

**2nd NF:**

Partial dependency: There is no relation with one of the proper subsets of the candidate keys functionally dependent on the non- prime attributes. Hence, there is no partial dependency in any of the relations.

As all relations are in 1st NF and there is no partial dependency, we can say that the relational schema is already in 2nd NF.

**3rd NF:**

Transitive dependency: Except for *patient* relation, there is no relation where there is a functional dependency between two non-prime attributes. I.e. only *patient* relation is transitively dependent. So, all relations except *patient* are in 3rd NF. In *patient* relation, we have a FD *pincode->(state, city).* To convert it into 3rd normal form, we are creating a relation with *pincode* as primary key and  *state* and *city* as the other two attributes. In the main table we referenced pincode attribute to the pincode from this table.

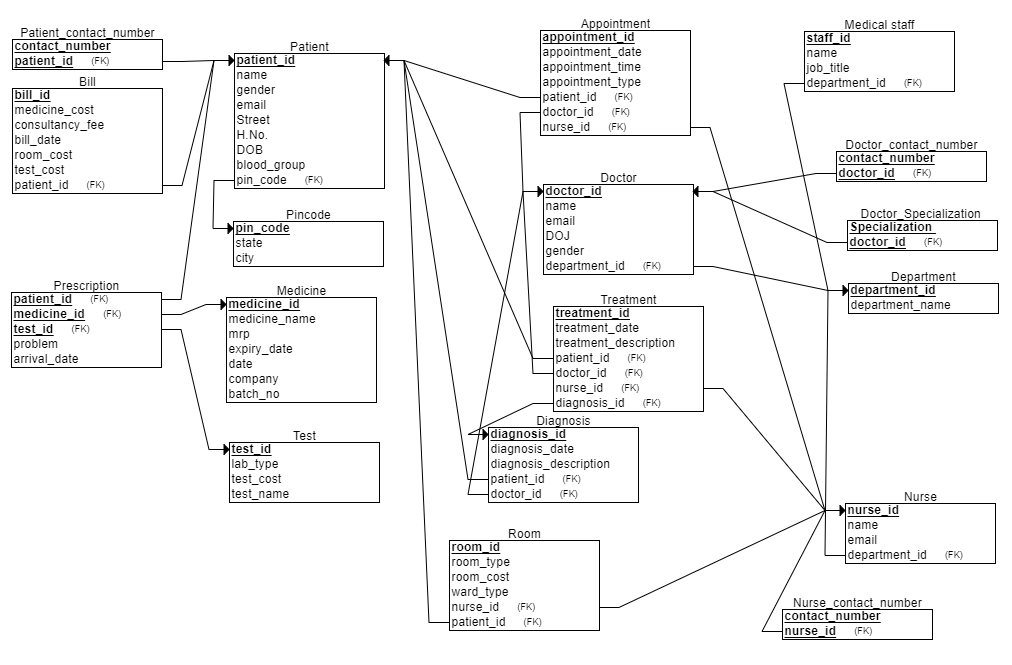
**BCNF:**

Here, after converting the schema into 3rd NF there are no relations with functional dependencies without their left hand side being a super key. So, the relational schema is in BCNF.

**NOTE:**

Before conversion into 1st NF, there are 13 relations in the schema. After conversion into 1st NF there are 17 relations. After conversion BCNF there are 18 relations.

**AFTER BCNF:**



**SQL PART:**

CREATE TABLE Pincode

(

pin\_code INT NOT NULL,

state VARCHAR2(30) NOT NULL,

city VARCHAR2(30) NOT NULL,

PRIMARY KEY (pin\_code)

);

INSERT INTO Pincode VALUES (123456, 'California', 'Los Angeles');

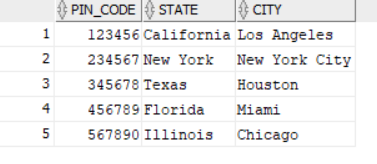
INSERT INTO Pincode VALUES (234567, 'New York', 'New York City');

INSERT INTO Pincode VALUES (345678, 'Texas', 'Houston');

INSERT INTO Pincode VALUES (456789, 'Florida', 'Miami');

INSERT INTO Pincode VALUES (567890, 'Illinois', 'Chicago');

select \*from pincode;



CREATE TABLE Test

(

test\_id INT NOT NULL,

lab\_type VARCHAR2(30) NOT NULL,

test\_cost INT NOT NULL,

test\_name VARCHAR2(30) NOT NULL,

PRIMARY KEY (test\_id)

);

INSERT INTO Test VALUES (1, 'Blood', 100, 'Complete Blood Count');

INSERT INTO Test VALUES (2, 'Urine', 50, 'Urinalysis');

INSERT INTO Test VALUES (3, 'X-ray', 200, 'Chest X-ray');

INSERT INTO Test VALUES (4, 'MRI', 500, 'Brain MRI');

INSERT INTO Test VALUES (5, 'Ultrasound', 300, 'Abdominal Ultrasound');

INSERT INTO Test VALUES (6, 'EKG', 150, 'Electrocardiogram');

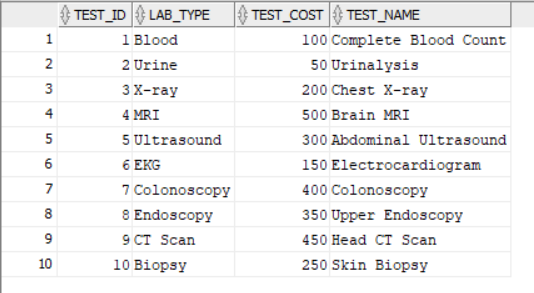
INSERT INTO Test VALUES (7, 'Colonoscopy', 400, 'Colonoscopy');

INSERT INTO Test VALUES (8, 'Endoscopy', 350, 'Upper Endoscopy');

INSERT INTO Test VALUES (9, 'CT Scan', 450, 'Head CT Scan');

INSERT INTO Test VALUES (10, 'Biopsy', 250, 'Skin Biopsy');

select \*from test;



CREATE TABLE Medicine

(

medicine\_id INT NOT NULL,

medicine\_name VARCHAR2(30) NOT NULL,

mrp INT NOT NULL,

expiry\_date DATE NOT NULL,

manufactory\_date DATE NOT NULL,

company VARCHAR2(30) NOT NULL,

batch\_no INT NOT NULL,

PRIMARY KEY (medicine\_id)

);

INSERT INTO Medicine VALUES (1, 'Paracetamol', 10, DATE '2023-12-31', DATE '2021-01-01', 'ABC Pharmaceuticals', 123);

INSERT INTO Medicine VALUES (2, 'Ibuprofen', 15, DATE '2024-06-30', DATE '2021-02-01', 'XYZ Pharmaceuticals', 456);

INSERT INTO Medicine VALUES (3, 'Amoxicillin', 20, DATE '2023-09-30', DATE '2021-03-01', 'PQR Pharmaceuticals', 789);

INSERT INTO Medicine VALUES (4, 'Lisinopril', 25, DATE '2024-02-29', DATE '2021-04-01', 'LMN Pharmaceuticals', 101);

INSERT INTO Medicine VALUES (5, 'Simvastatin', 30, DATE '2023-11-30', DATE '2021-05-01', 'JKL Pharmaceuticals', 112);

INSERT INTO Medicine VALUES (6, 'Omeprazole', 35, DATE '2024-08-31', DATE '2021-06-01', 'DEF Pharmaceuticals', 223);

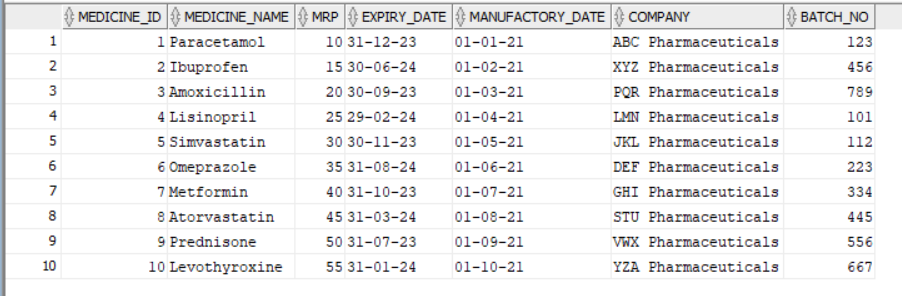
INSERT INTO Medicine VALUES (7, 'Metformin', 40, DATE '2023-10-31', DATE '2021-07-01', 'GHI Pharmaceuticals', 334);

INSERT INTO Medicine VALUES (8, 'Atorvastatin', 45, DATE '2024-03-31', DATE '2021-08-01', 'STU Pharmaceuticals', 445);

INSERT INTO Medicine VALUES (9, 'Prednisone', 50, DATE '2023-07-31', DATE '2021-09-01', 'VWX Pharmaceuticals', 556);

INSERT INTO Medicine VALUES (10, 'Levothyroxine', 55, DATE '2024-01-31', DATE '2021-10-01', 'YZA Pharmaceuticals', 667);

select \*from Medicine;



CREATE TABLE Patient

(

patient\_id INT NOT NULL,

name VARCHAR2(30) NOT NULL,

gender VARCHAR2(30) NOT NULL,

email VARCHAR2(30) NOT NULL,

Street VARCHAR2(30) NOT NULL,

H\_No VARCHAR2(30) NOT NULL,

DOB DATE NOT NULL,

blood\_group VARCHAR2(30) NOT NULL,

pin\_code INT NOT NULL,

PRIMARY KEY (patient\_id),

FOREIGN KEY (pin\_code) REFERENCES Pincode(pin\_code)

);

INSERT INTO Patient VALUES (1, 'John Doe', 'Male', 'johndoe@gmail.com', 'Main Street', '123', TO\_DATE('1990-01-01', 'YYYY-MM-DD'), 'A+', 123456);

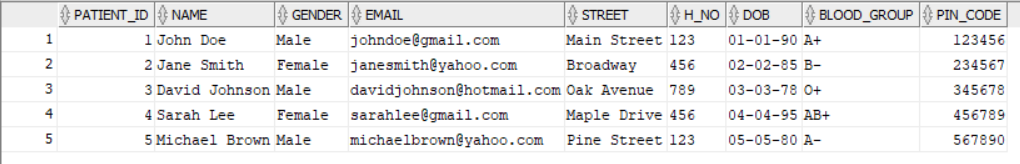
INSERT INTO Patient VALUES (2, 'Jane Smith', 'Female', 'janesmith@yahoo.com', 'Broadway', '456', TO\_DATE('1985-02-02', 'YYYY-MM-DD'), 'B-', 234567);

INSERT INTO Patient VALUES (3, 'David Johnson', 'Male', 'davidjohnson@hotmail.com', 'Oak Avenue', '789', TO\_DATE('1978-03-03', 'YYYY-MM-DD'), 'O+', 345678);

INSERT INTO Patient VALUES (4, 'Sarah Lee', 'Female', 'sarahlee@gmail.com', 'Maple Drive', '456', TO\_DATE('1995-04-04', 'YYYY-MM-DD'), 'AB+', 456789);

INSERT INTO Patient VALUES (5, 'Michael Brown', 'Male', 'michaelbrown@yahoo.com', 'Pine Street', '123', TO\_DATE('1980-05-05', 'YYYY-MM-DD'), 'A-', 567890);

select \*from patient;



CREATE TABLE Prescription

(

problem VARCHAR2(30) NOT NULL,

arrival\_date DATE NOT NULL,

patient\_id INT NOT NULL,

medicine\_id INT NOT NULL,

test\_id INT NOT NULL,

PRIMARY KEY (patient\_id, medicine\_id, test\_id),

FOREIGN KEY (patient\_id) REFERENCES Patient(patient\_id),

FOREIGN KEY (medicine\_id) REFERENCES Medicine(medicine\_id),

FOREIGN KEY (test\_id) REFERENCES Test(test\_id)

);

INSERT INTO Prescription VALUES ('Fever', DATE '2023-01-01', 1, 1, 1);

INSERT INTO Prescription VALUES ('Headache', DATE '2023-02-02', 2, 2, 2);

INSERT INTO Prescription VALUES ('Cough', DATE '2023-03-03', 3, 3, 3);

INSERT INTO Prescription VALUES ('Allergies', DATE '2023-04-04', 4, 4, 4);

INSERT INTO Prescription VALUES ('Stomachache', DATE '2023-05-05', 5, 5, 5);

INSERT INTO Prescription VALUES ('Back Pain', DATE '2023-06-06', 1, 6, 6);

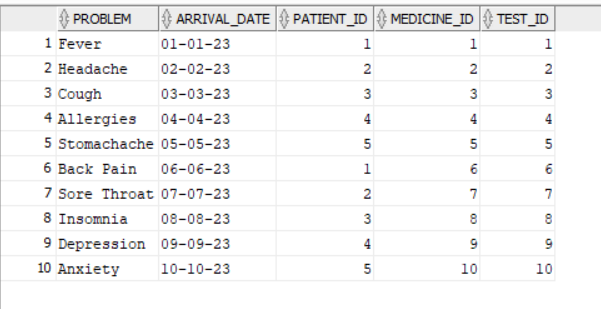
INSERT INTO Prescription VALUES ('Sore Throat', DATE '2023-07-07', 2, 7, 7);

INSERT INTO Prescription VALUES ('Insomnia', DATE '2023-08-08', 3, 8, 8);

INSERT INTO Prescription VALUES ('Depression', DATE '2023-09-09', 4, 9, 9);

INSERT INTO Prescription VALUES ('Anxiety', DATE '2023-10-10', 5, 10, 10);

select \*from Prescription;



CREATE TABLE Bill

(

bill\_id INT NOT NULL,

medicine\_cost INT NOT NULL,

consultancy\_fee INT NOT NULL,

bill\_date DATE NOT NULL,

room\_cost INT NOT NULL,

test\_cost INT NOT NULL,

patient\_id INT NOT NULL,

PRIMARY KEY (bill\_id),

FOREIGN KEY (patient\_id) REFERENCES Patient(patient\_id)

);

INSERT INTO Bill VALUES (1, 50, 100, DATE '2023-01-01', 500, 200, 1);

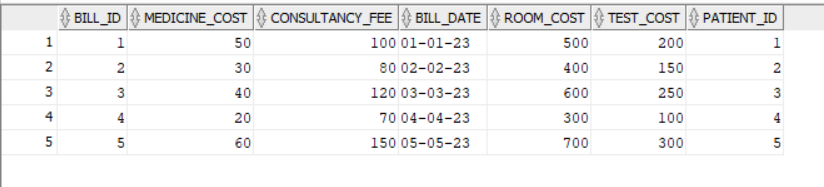
INSERT INTO Bill VALUES (2, 30, 80, DATE '2023-02-02', 400, 150, 2);

INSERT INTO Bill VALUES (3, 40, 120, DATE '2023-03-03', 600, 250, 3);

INSERT INTO Bill VALUES (4, 20, 70, DATE '2023-04-04', 300, 100, 4);

INSERT INTO Bill VALUES (5, 60, 150, DATE '2023-05-05', 700, 300, 5);

select \*from bill;



CREATE TABLE Patient\_contact\_number

(

contact\_number INT NOT NULL,

patient\_id INT NOT NULL,

PRIMARY KEY (contact\_number, patient\_id),

FOREIGN KEY (patient\_id) REFERENCES Patient(patient\_id)

);

INSERT INTO Patient\_contact\_number VALUES (1234567890, 1);

INSERT INTO Patient\_contact\_number VALUES (2345678901, 2);

INSERT INTO Patient\_contact\_number VALUES (3456789012, 3);

INSERT INTO Patient\_contact\_number VALUES (4567890123, 4);

INSERT INTO Patient\_contact\_number VALUES (5678901234, 5);

INSERT INTO Patient\_contact\_number VALUES (6789012345, 1);

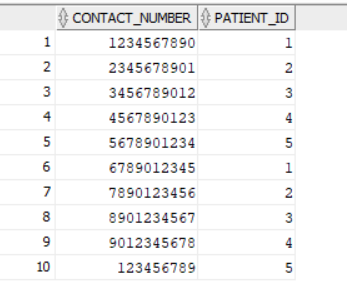
INSERT INTO Patient\_contact\_number VALUES (7890123456, 2);

INSERT INTO Patient\_contact\_number VALUES (8901234567, 3);

INSERT INTO Patient\_contact\_number VALUES (9012345678, 4);

INSERT INTO Patient\_contact\_number VALUES (0123456789, 5);

select \*from patient\_contact\_number;



CREATE TABLE Department

(

department\_id INT NOT NULL,

department\_name VARCHAR2(30) NOT NULL,

PRIMARY KEY (department\_id)

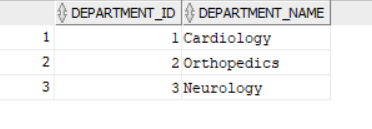
);

INSERT INTO Department VALUES (1, 'Cardiology');

INSERT INTO Department VALUES (2, 'Orthopedics');

INSERT INTO Department VALUES (3, 'Neurology');

select \*from department;



CREATE TABLE Doctor

(

doctor\_id INT NOT NULL,

name VARCHAR2(30) NOT NULL,

email VARCHAR2(30) NOT NULL,

DOJ DATE NOT NULL,

gender VARCHAR2(30) NOT NULL,

department\_id INT NOT NULL,

PRIMARY KEY (doctor\_id),

FOREIGN KEY (department\_id) REFERENCES Department(department\_id)

);

INSERT INTO Doctor VALUES (1, 'Dr. John Smith', 'johnsmith@gmail.com', DATE'2023-01-01', 'Male', 1);

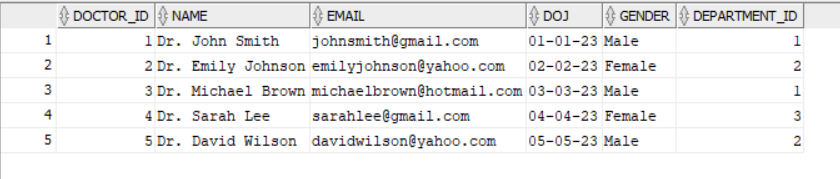
INSERT INTO Doctor VALUES (2, 'Dr. Emily Johnson', 'emilyjohnson@yahoo.com', DATE '2023-02-02', 'Female', 2);

INSERT INTO Doctor VALUES (3, 'Dr. Michael Brown', 'michaelbrown@hotmail.com', DATE '2023-03-03', 'Male', 1);

INSERT INTO Doctor VALUES (4, 'Dr. Sarah Lee', 'sarahlee@gmail.com', DATE '2023-04-04', 'Female', 3);

INSERT INTO Doctor VALUES (5, 'Dr. David Wilson', 'davidwilson@yahoo.com', DATE '2023-05-05', 'Male', 2);

select \*from doctor;



CREATE TABLE Nurse

(

nurse\_id INT NOT NULL,

name VARCHAR2(30) NOT NULL,

email VARCHAR2(30) NOT NULL,

department\_id INT NOT NULL,

PRIMARY KEY (nurse\_id),

FOREIGN KEY (department\_id) REFERENCES Department(department\_id)

);

INSERT INTO Nurse VALUES (1, 'Nurse 1', 'nurse1@example.com', 1);

INSERT INTO Nurse VALUES (2, 'Nurse 2', 'nurse2@example.com', 2);

INSERT INTO Nurse VALUES (3, 'Nurse 3', 'nurse3@example.com', 1);

INSERT INTO Nurse VALUES (4, 'Nurse 4', 'nurse4@example.com', 3);

INSERT INTO Nurse VALUES (5, 'Nurse 5', 'nurse5@example.com', 2);

INSERT INTO Nurse VALUES (6, 'Nurse 6', 'nurse6@example.com', 1);

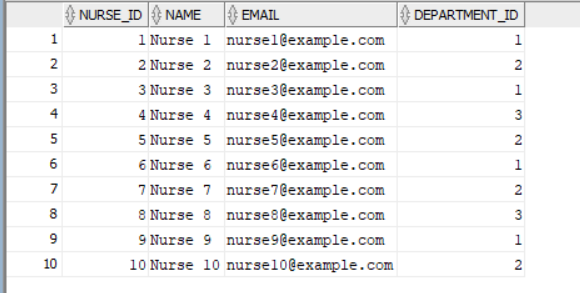
INSERT INTO Nurse VALUES (7, 'Nurse 7', 'nurse7@example.com', 2);

INSERT INTO Nurse VALUES (8, 'Nurse 8', 'nurse8@example.com', 3);

INSERT INTO Nurse VALUES (9, 'Nurse 9', 'nurse9@example.com', 1);

INSERT INTO Nurse VALUES (10, 'Nurse 10', 'nurse10@example.com', 2);

select \*from nurse;



CREATE TABLE Appointment

(

appointment\_id INT NOT NULL,

appointment\_date DATE NOT NULL,

appointment\_time TIMESTAMP NOT NULL,

appointment\_type VARCHAR2(30) NOT NULL,

patient\_id INT NOT NULL,

doctor\_id INT NOT NULL,

nurse\_id INT NOT NULL,

PRIMARY KEY (appointment\_id),

FOREIGN KEY (patient\_id) REFERENCES Patient(patient\_id),

FOREIGN KEY (doctor\_id) REFERENCES Doctor(doctor\_id),

FOREIGN KEY (nurse\_id) REFERENCES Nurse(nurse\_id)

);

INSERT INTO Appointment VALUES (1, DATE '2023-01-01', TIMESTAMP '2023-01-01 10:00:00', 'Check-up', 1, 1, 1);

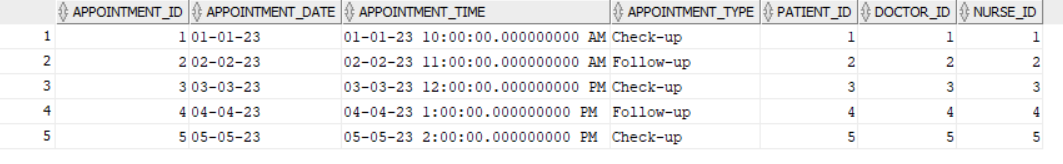
INSERT INTO Appointment VALUES (2, DATE '2023-02-02', TIMESTAMP '2023-02-02 11:00:00', 'Follow-up', 2, 2, 2);

INSERT INTO Appointment VALUES (3, DATE '2023-03-03', TIMESTAMP '2023-03-03 12:00:00', 'Check-up', 3, 3, 3);

INSERT INTO Appointment VALUES (4, DATE '2023-04-04', TIMESTAMP '2023-04-04 13:00:00', 'Follow-up', 4, 4, 4);

INSERT INTO Appointment VALUES (5, DATE '2023-05-05', TIMESTAMP '2023-05-05 14:00:00', 'Check-up', 5, 5, 5);

select \*from appointment;



CREATE TABLE Diagnosis

(

diagnosis\_id INT NOT NULL,

diagnosis\_date DATE NOT NULL,

diagnosis\_description VARCHAR2(30) NOT NULL,

patient\_id INT NOT NULL,

doctor\_id INT NOT NULL,

PRIMARY KEY (diagnosis\_id),

FOREIGN KEY (patient\_id) REFERENCES Patient(patient\_id),

FOREIGN KEY (doctor\_id) REFERENCES Doctor(doctor\_id)

);

INSERT INTO Diagnosis VALUES (1, DATE '2023-01-01', 'Fever', 1, 1);

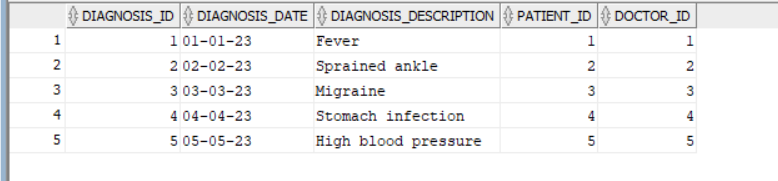
INSERT INTO Diagnosis VALUES (2, DATE '2023-02-02', 'Sprained ankle', 2, 2);

INSERT INTO Diagnosis VALUES (3, DATE '2023-03-03', 'Migraine', 3, 3);

INSERT INTO Diagnosis VALUES (4, DATE '2023-04-04', 'Stomach infection', 4, 4);

INSERT INTO Diagnosis VALUES (5, DATE '2023-05-05', 'High blood pressure', 5, 5);

select \*from diagnosis;



CREATE TABLE Treatment

(

treatment\_id INT NOT NULL,

treatment\_date DATE NOT NULL,

treatment\_description VARCHAR2(30) NOT NULL,

patient\_id INT NOT NULL,

doctor\_id INT NOT NULL,

nurse\_id INT NOT NULL,

diagnosis\_id INT NOT NULL,

PRIMARY KEY (treatment\_id),

FOREIGN KEY (patient\_id) REFERENCES Patient(patient\_id),

FOREIGN KEY (doctor\_id) REFERENCES Doctor(doctor\_id),

FOREIGN KEY (nurse\_id) REFERENCES Nurse(nurse\_id),

FOREIGN KEY (diagnosis\_id) REFERENCES Diagnosis(diagnosis\_id)

);

INSERT INTO Treatment VALUES (1, '2023-01-01', 'Prescribed medication', 1, 1, 1, 1);

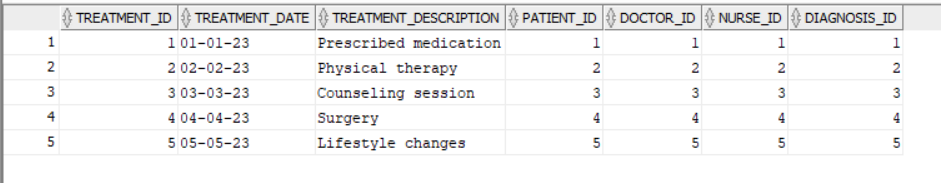
INSERT INTO Treatment VALUES (2, '2023-02-02', 'Physical therapy', 2, 2, 2, 2);

INSERT INTO Treatment VALUES (3, '2023-03-03', 'Counseling session', 3, 3, 3, 3);

INSERT INTO Treatment VALUES (4, '2023-04-04', 'Surgery', 4, 4, 4, 4);

INSERT INTO Treatment VALUES (5, '2023-05-05', 'Lifestyle changes', 5, 5, 5, 5);

select \* from treatment;



CREATE TABLE Medical\_staff

(

staff\_id INT NOT NULL,

name VARCHAR2(30) NOT NULL,

job\_title VARCHAR2(30) NOT NULL,

department\_id INT NOT NULL,

PRIMARY KEY (staff\_id),

FOREIGN KEY (department\_id) REFERENCES Department(department\_id)

);

INSERT INTO Medical\_staff VALUES (1, 'John Doe', 'Doctor', 1);

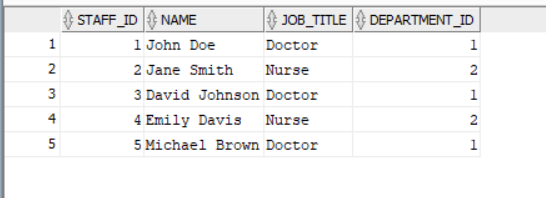
INSERT INTO Medical\_staff VALUES (2, 'Jane Smith', 'Nurse', 2);

INSERT INTO Medical\_staff VALUES (3, 'David Johnson', 'Doctor', 1);

INSERT INTO Medical\_staff VALUES (4, 'Emily Davis', 'Nurse', 2);

INSERT INTO Medical\_staff VALUES (5, 'Michael Brown', 'Doctor', 1);

select \*from medical\_staff;



CREATE TABLE Room

(

room\_id INT NOT NULL,

room\_type VARCHAR2(30) NOT NULL,

room\_cost INT NOT NULL,

ward\_type VARCHAR2(30) NOT NULL,

nurse\_id INT NOT NULL,

patient\_id INT NOT NULL,

PRIMARY KEY (room\_id),

FOREIGN KEY (nurse\_id) REFERENCES Nurse(nurse\_id),

FOREIGN KEY (patient\_id) REFERENCES Patient(patient\_id)

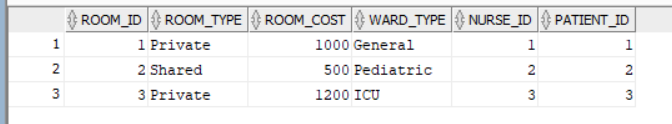
);

INSERT INTO Room VALUES (1, 'Private', 1000, 'General', 1, 1);

INSERT INTO Room VALUES (2, 'Shared', 500, 'Pediatric', 2, 2);

INSERT INTO Room VALUES (3, 'Private', 1200, 'ICU', 3, 3);

select \*from room;



CREATE TABLE Doctor\_Specialization\_

(

Specialization\_ VARCHAR2(30) NOT NULL,

doctor\_id INT NOT NULL,

PRIMARY KEY (Specialization\_, doctor\_id),

FOREIGN KEY (doctor\_id) REFERENCES Doctor(doctor\_id)

);

INSERT INTO Doctor\_Specialization\_ VALUES ('Cardiology', 1);

INSERT INTO Doctor\_Specialization\_ VALUES ('Pediatrics', 2);

INSERT INTO Doctor\_Specialization\_ VALUES ('Orthopedics', 3);

INSERT INTO Doctor\_Specialization\_ VALUES ('Dermatology', 4);

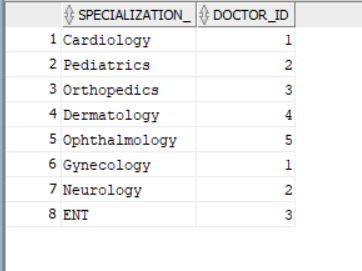
INSERT INTO Doctor\_Specialization\_ VALUES ('Ophthalmology', 5);

INSERT INTO Doctor\_Specialization\_ VALUES ('Gynecology', 1);

INSERT INTO Doctor\_Specialization\_ VALUES ('Neurology', 2);

INSERT INTO Doctor\_Specialization\_ VALUES ('ENT', 3);

select \*from Doctor\_Specialization\_;



CREATE TABLE Doctor\_contact\_number

(

contact\_number INT NOT NULL,

doctor\_id INT NOT NULL,

PRIMARY KEY (contact\_number, doctor\_id),

FOREIGN KEY (doctor\_id) REFERENCES Doctor(doctor\_id)

);

INSERT INTO Doctor\_contact\_number VALUES (1234567890, 1);

INSERT INTO Doctor\_contact\_number VALUES (9876543210, 2);

INSERT INTO Doctor\_contact\_number VALUES (1112223333, 3);

INSERT INTO Doctor\_contact\_number VALUES (4445556666, 4);

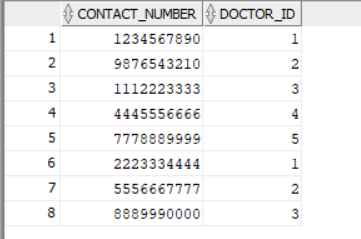
INSERT INTO Doctor\_contact\_number VALUES (7778889999, 5);

INSERT INTO Doctor\_contact\_number VALUES (2223334444, 1);

INSERT INTO Doctor\_contact\_number VALUES (5556667777, 2);

INSERT INTO Doctor\_contact\_number VALUES (8889990000, 3);

select \* from doctor\_contact\_number;



CREATE TABLE Nurse\_contact\_number

(

contact\_number INT NOT NULL,

nurse\_id INT NOT NULL,

PRIMARY KEY (contact\_number, nurse\_id),

FOREIGN KEY (nurse\_id) REFERENCES Nurse(nurse\_id)

);

INSERT INTO Nurse\_contact\_number VALUES (1111111111, 1);

INSERT INTO Nurse\_contact\_number VALUES (2222222222, 2);

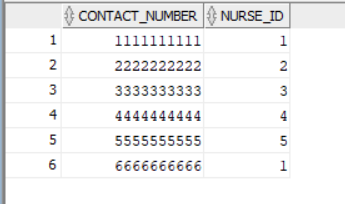
INSERT INTO Nurse\_contact\_number VALUES (3333333333, 3);

INSERT INTO Nurse\_contact\_number VALUES (4444444444, 4);

INSERT INTO Nurse\_contact\_number VALUES (5555555555, 5);

INSERT INTO Nurse\_contact\_number VALUES (6666666666, 1);

select \*from nurse\_contact\_number;

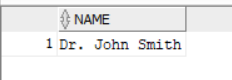


SELECT d.name

FROM Doctor d

JOIN Doctor\_Specialization\_ ds ON d.doctor\_id = ds.doctor\_id

WHERE ds.Specialization\_ = 'Cardiology';



SELECT d.name, COUNT(a.appointment\_id) AS appointment\_count

FROM Doctor d

LEFT JOIN Appointment a ON d.doctor\_id = a.doctor\_id

GROUP BY d.name;

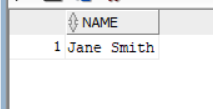


SELECT p.name

FROM Patient p

JOIN Treatment t ON p.patient\_id = t.patient\_id

WHERE t.treatment\_description = 'Physical therapy';



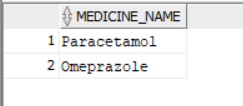
SELECT m.medicine\_name

FROM Medicine m

JOIN Prescription p ON m.medicine\_id = p.medicine\_id

JOIN Patient pat ON p.patient\_id = pat.patient\_id

WHERE pat.name = 'John Doe';

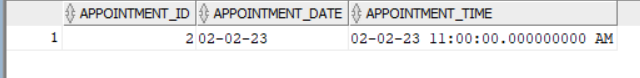


SELECT a.appointment\_id, a.appointment\_date, a.appointment\_time

FROM Appointment a

JOIN Patient p ON a.patient\_id = p.patient\_id

WHERE p.name = 'Jane Smith';



SELECT p.name, b.bill\_id, (b.medicine\_cost + b.consultancy\_fee + b.room\_cost + b.test\_cost) AS total\_cost

FROM Patient p

JOIN Bill b ON p.patient\_id = b.patient\_id

WHERE (b.medicine\_cost + b.consultancy\_fee + b.room\_cost + b.test\_cost) > 500;

