HOSPITAL DATABASE

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Deliverables:

1.Business Requirements Document

2.ERD

3. Database Design Document

4. mapping

5.normalization

6. SQL Script

7.sample data

8.frontend (bonus)

Overview:

The Hospital Database Project aims to design and implement a relational database system to manage the essential operations of a hospital. This includes tracking patient information, scheduling appointments, managing medical staff, and prescribing medications. The project involves creating a normalized database schema based on a thorough analysis of business requirements and representing it visually through an Entity-Relationship Diagram (ERD). The design will be translated into SQL statements for implementation, and a set of sample data will be populated to showcase the functionality

1. Business Requirements Document:

A) OBJECTIVES

1-Patient Management

2-Staff Information

3-Medication Records

4-Departmental Relationships

5-Appointment Scheduling

6-Patients prescription

1)Patient Management:

This module includes the storage and management of patient information, such as demographics, medical history, allergies, and contact details. It also involves tracking patient visits, admissions, and discharges.

→patient have mandatory one to many with medicine that means that patient can take one or more than one medicine

→patient have mandatory many to one with doctor that means that patient must work with one doctor

→patient have mandatory one to many with prescription that means that patient can have one or more than one prescription

→patient have mandatory one to many with appointment that means that patient can assigned one or more than one appointnment

2)Staff Information: (doctor,nurse)

→DOCTOR have mandatory one to many with prescription that means that doctor can do one or more prescription

→DOCTOR have mandatory many to one with department that means that doctor can associated with one or more department

→DOCTOR have mandatory one to many with nurse that means that doctor can have one or more nurse to work with them

→DOCTOR have mandatory one to many with appointment that means that doctor can have one or more assigned appointment

→DOCTOR have mandatory one to many with patient that means that doctor can treats with one or more patient

→nurse have mandatory many to one with department that means that nurse can associated with one or more department

→nurse have mandatory many to one with doctor that means that many nurse can work with one doctor

→nurse have mandatory one to many with appointment that means that nurse can have one or more assigned appointment

Staff information management involves keeping records of healthcare professionals and support staff. This includes details like names, contact information, roles, responsibilities, qualifications, and work schedules.

3)Medication Records:

This module is responsible for managing information related to medications. It includes details on prescribed medications, dosage, frequency, and duration. It may also involve tracking medication dispensing and administration.

→medicine have mandatory many to one with patient that means that patient can take by patient

4)Departmental Relationships:

→department have mandatory many to one with doctor that means that doctor can assigned from one doctor

This component focuses on the relationships and interactions between different departments within the hospital. It includes information on how departments collaborate, share resources, and work together to provide comprehensive patient care.

5)Appointment Scheduling:

→ appointment have mandatory many to one with doctor that means that appointment can assigned from one doctor

→ appointment have mandatory many to one with patient that means that appointment can assigned from one patient

→ appointment have mandatory many to one with nurse that means that appointment can assigned from one nurse

Appointment scheduling is crucial for managing patient visits and ensuring that healthcare providers are available to attend to patients. This module includes features for setting appointments, rescheduling, and managing the overall appointment calendar.

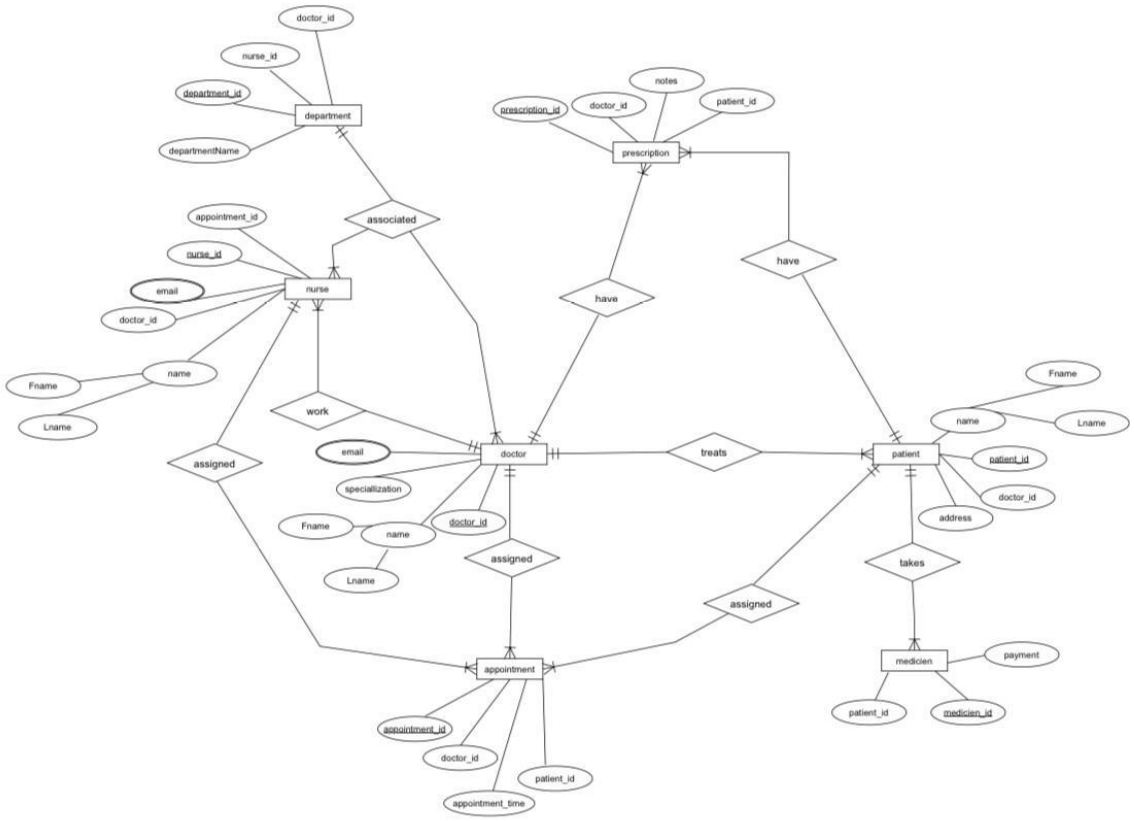
6)Patient Prescription:

→prescription have mandatory many to one with patient that means that prescription can have it with one patient

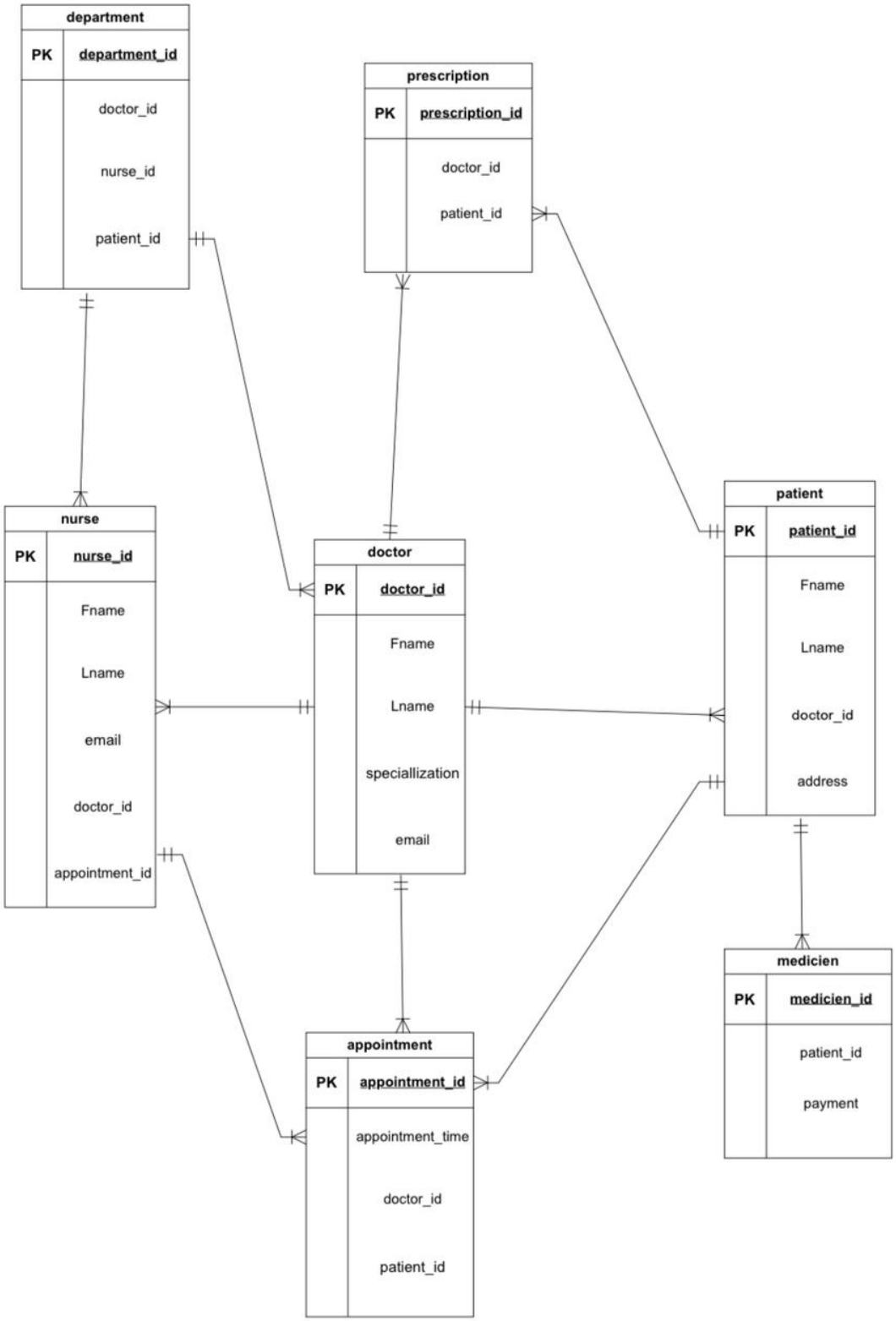
→prescription have mandatory many to one with doctor that means that prescription can have it with one or more doctor

The patient prescription module involves the generation and management of prescriptions. It includes details about prescribed medications, dosage instructions, and any additional notes from the healthcare provider. Integration with the medication records is often necessary. These components collectively contribute to the efficiency and effectiveness of hospital operations. They help in providing quality patient care, managing staff resources, ensuring the proper administration of medications, fostering collaboration between departments, and organizing patient appointments and prescriptions.

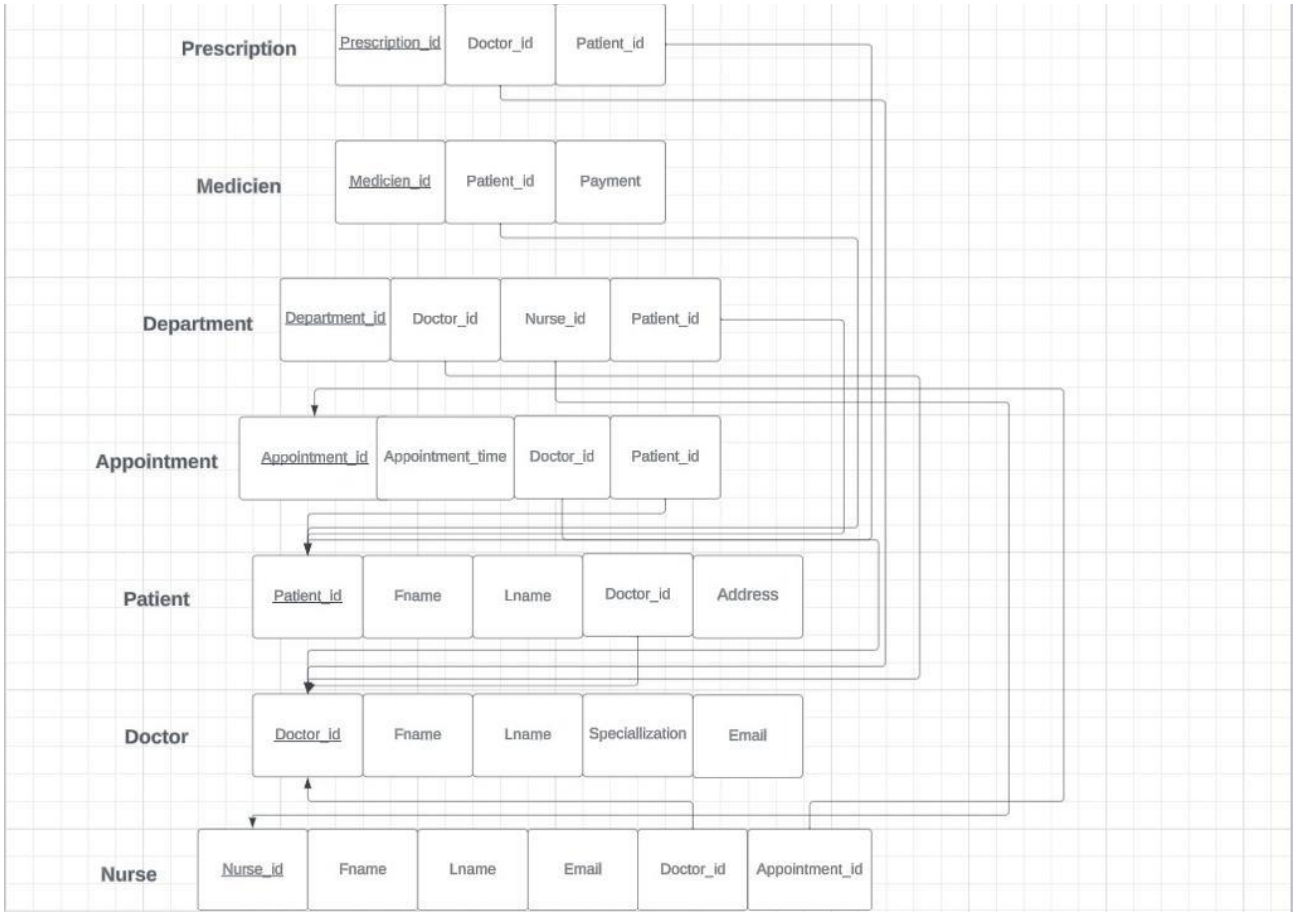
2. ERD:


doctor_id
nurse_id
department_id
department
departmentName
notes
prescription_id
doctor_id
patient_id
prescription
associated
have
have
appointment_id
nurse_id
email
nurse
doctor_id
name
Fname
Lname
work
assigned
email
doctor
treats
patient
specialization
Fname
name
Lname
doctor_id
assigned
Fname
name
Lname
patient_id
doctor_id
address
takes
assigned
appointment
medicien
payment
patient_id
medicien_id
appointment_id
doctor_id
patient_id
appointment_time

3. Database Design Document:



4.MAPPING


Prescription
Prescription_id
Doctor_id
Patient_id
Medicien
Medicien_id
Patient_id
Payment
Department
Department_id
Doctor_id
Nurse_id
Patient_id
Appointment
Appointment_id
Appointment_time
Doctor_id
Patient_id
Patient
Patient_id
Fname
Lname
Doctor_id
Address
Doctor
Doctor_id
Fname
Lname
Speciallization
Email
Nurse
Nurse_id
Fname
Lname
Email
Doctor_id
Appointment_id

5.NORMALIZATION:

CREATE TABLE person (person_id INT PRIMARY KEY not null, Fname VARCHAR(20) not null, Lname VARCHAR(20) not null);

CREATE TABLE email (email_id INT PRIMARY KEY not null, email_address VARCHAR(20));

CREATE TABLE doctor (doctor_id INT PRIMARY KEY not null, person_id INT, specialization VARCHAR(20) not null, email_id INT, FOREIGN KEY (person_id) REFERENCES person(person_id), FOREIGN KEY (email_id) REFERENCES email(email_id));

CREATE TABLE patient (patient_id INT PRIMARY KEY not null, person_id INT, doctor_id INT, address VARCHAR(20), FOREIGN KEY(doctor_id) references doctor(doctor_id); FOREIGN KEY(person_id) references person(person_id));

CREATE TABLE prescription (prescription_id INT PRIMARY KEY not null, doctor_id INT, patient_id INT, FOREIGN KEY(doctor_id) references doctor(doctor_id), FOREIGN KEY(patient_id) references patient(patient_id));

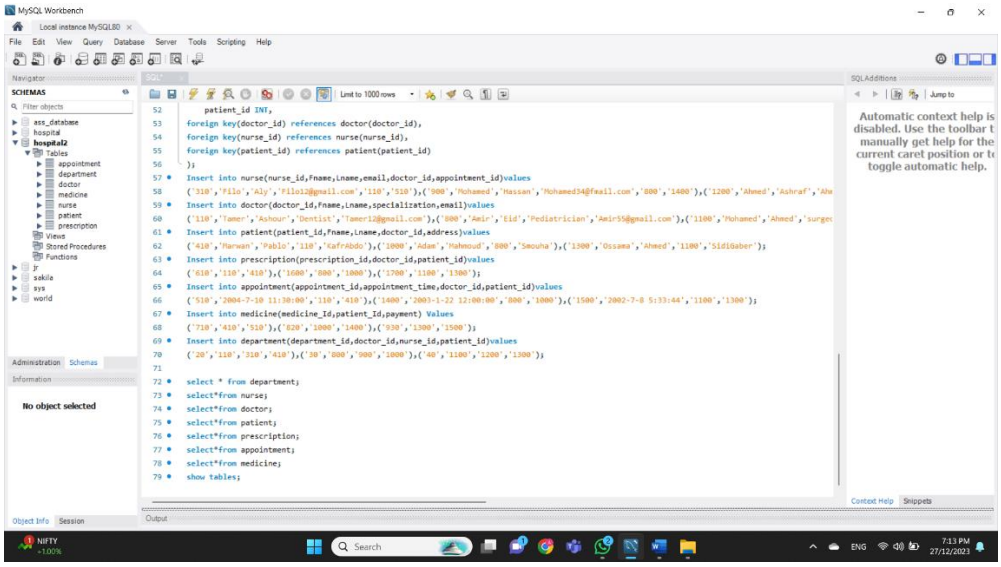
CREATE TABLE medicine(medicine_id INT PRIMARY KEY not null, patient_id INT, payment FLOAT, FOREIGN KEY(patient_id) references patient(patient_id));

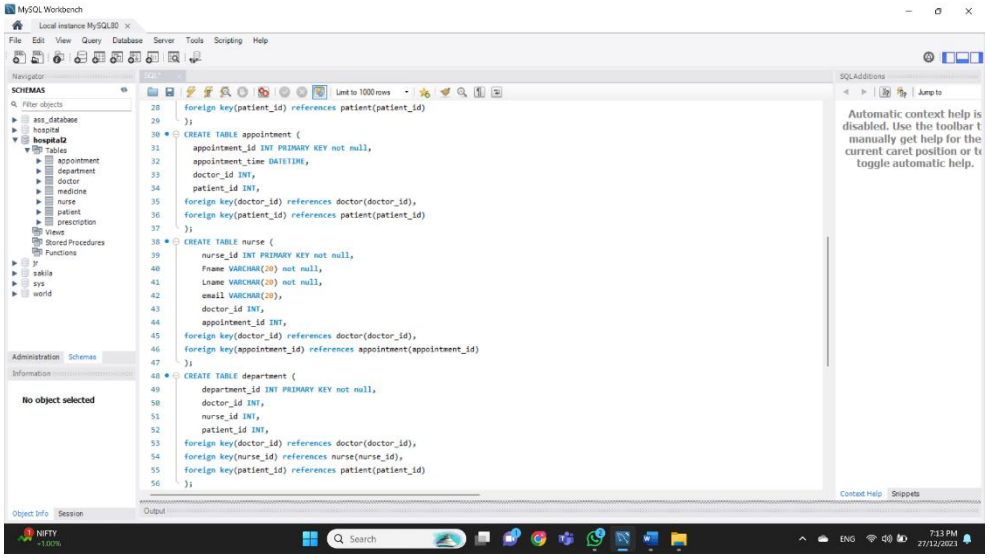
CREATE TABLE appointment (appointment_id INT PRIMARY KEY not null, appointment_time DATETIME, doctor_id INT, patient_id INT, FOREIGN KEY(doctor_id) references doctor(doctor_id), FOREIGN KEY(patient_id) references patient(patient_id));

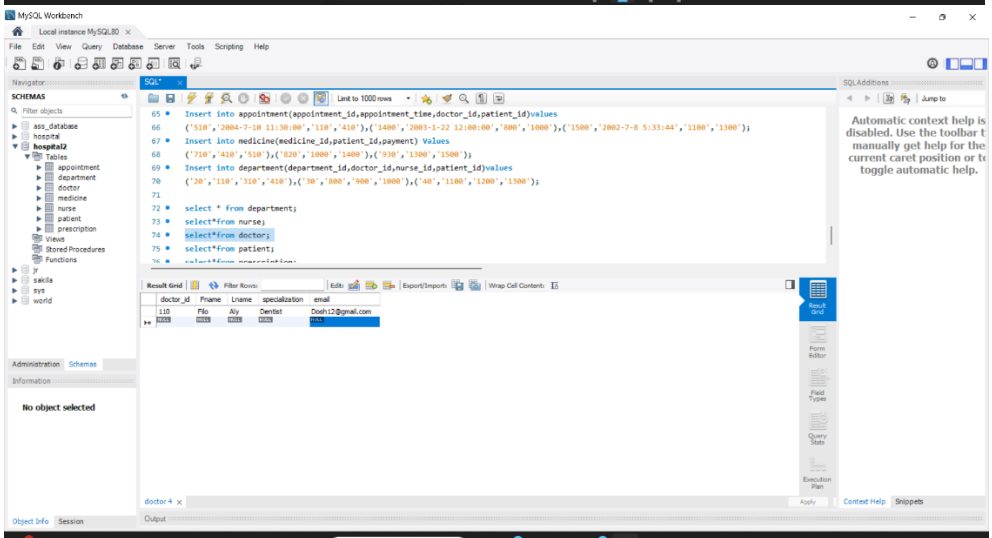
CREATE TABLE nurse (nurse_id INT PRIMARY KEY not null, person_id INT, email_id INT, doctor_id INT, appointment_id INT, FOREIGN KEY(doctor_id) references doctor(doctor_id), FOREIGN KEY(person_id) references person(person_id), FOREIGN KEY(email_id) references email(email_id), FOREIGN KEY(appointment_id) references appointment(appointment_id));

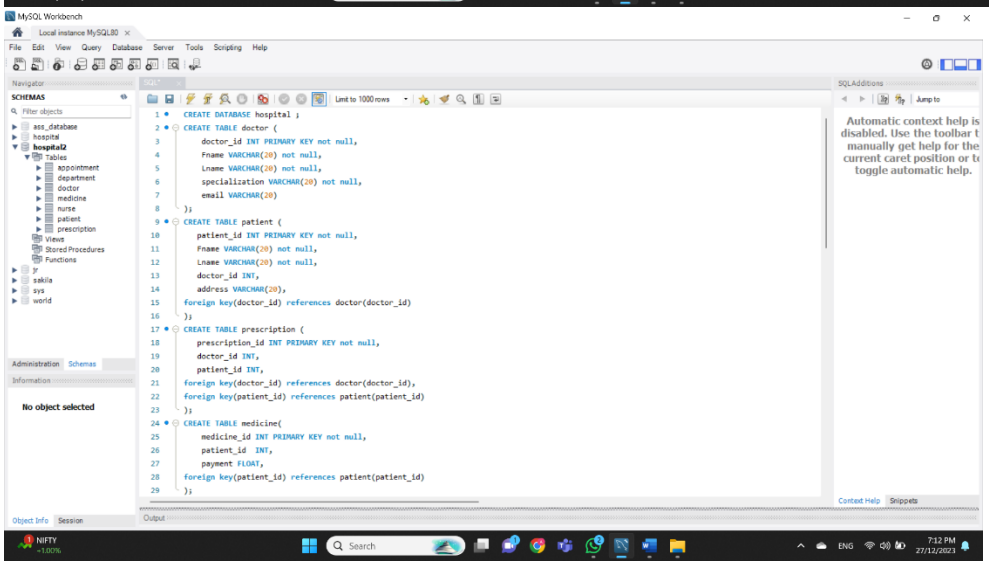
CREATE TABLE department (department_id INT PRIMARY KEY not null, doctor_id INT, nurse_id INT, patient_id INT, FOREIGN KEY(doctor_id) references doctor(doctor_id), FOREIGN KEY(nurse_id) references nurse(nurse_id), FOREIGN KEY(patient_id) references patient(patient_id));

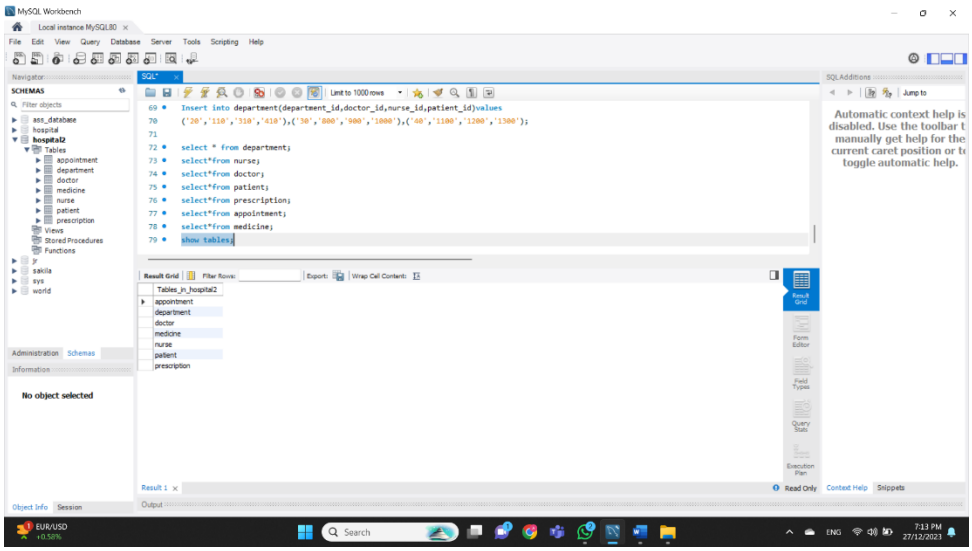
6. SQL Script:




MySQL Workbench
foreign key(patient_id) references patient(patient_id)
);
CREATE TABLE appointment (
appointment_id INT PRIMARY KEY not null,
appointment_time DATETIME,
doctor_id INT,
patient_id INT,
foreign key(doctor_id) references doctor(doctor_id),
foreign key(patient_id) references patient(patient_id)
);
CREATE TABLE nurse (
nurse_id INT PRIMARY KEY not null,
Fname VARCHAR(20) not null,
Lname VARCHAR(20) not null,
email VARCHAR(20),
doctor_id INT,
appointment_id INT,
foreign key(doctor_id) references doctor(doctor_id),
foreign key(appointment_id) references appointment(appointment_id)
);
CREATE TABLE department (
department_id INT PRIMARY KEY not null,
doctor_id INT,
nurse_id INT,
patient_id INT,
foreign key(doctor_id) references doctor(doctor_id),
foreign key(nurse_id) references nurse(nurse_id),
foreign key(patient_id) references patient(patient_id)
);
No object selected


MySQL Workbench
Insert into appointment(appointment_id,appointment_time,doctor_id,patient_id)values
('510','2004-7-10 11:30:00','110','410'),('1400','2003-1-22 12:00:00','800','1000'),('1500','2002-7-8 5:33:44','1100','1300');
Insert into medicine(medicine_id,patient_id,payment) Values
('710','410','510'),('820','1000','1400'),('930','1300','1500');
Insert into department(department_id,doctor_id,nurse_id,patient_id)values
('20','110','310','410'),('30','800','900','1000'),('40','1100','1200','1300');
select * from department;
select*from nurse;
select*from doctor;
select*from patient;
doctor_id Fname Lname specialization email
110 Filo Aly Dentist Dosh12@gmail.com
No object selected


MySQL Workbench
CREATE DATABASE hospital ;
CREATE TABLE doctor (
doctor_id INT PRIMARY KEY not null,
Fname VARCHAR(20) not null,
Lname VARCHAR(20) not null,
specialization VARCHAR(20) not null,
email VARCHAR(20)
);
CREATE TABLE patient (
patient_id INT PRIMARY KEY not null,
Fname VARCHAR(20) not null,
Lname VARCHAR(20) not null,
doctor_id INT,
address VARCHAR(20),
foreign key(doctor_id) references doctor(doctor_id)
);
CREATE TABLE prescription (
prescription_id INT PRIMARY KEY not null,
doctor_id INT,
patient_id INT,
foreign key(doctor_id) references doctor(doctor_id),
foreign key(patient_id) references patient(patient_id)
);
CREATE TABLE medicine(
medicine_id INT PRIMARY KEY not null,
patient_id INT,
payment FLOAT,
foreign key(patient_id) references patient(patient_id)
);
No object selected



7. Sample Data

Insert into nurse(nurse_id,Fname,Lname,email,doctor_id,appointment_id)values

('310','Filo','Aly','Filo12@gmail.com','110','510'),('900','Mohamed','Hassan','Mohamed34@fmail.com','800','1400'),('1200','Ahmed','Ashraf','Ahmed56@gmail.com','1100','1500');

Insert into doctor(doctor_id,Fname,Lname,specialization,email)values

('110','Tamer','Ashour','Dentist','Tamer12@gmail.com'),('800','Amir','Eid','Pediatrician','Amir55@gmail.com'),('1100','Mohamed','Ahmed','surgeon','Mohamed99@gmail.com');

Insert into patient(patient_id,Fname,Lname,doctor_id,address)values

('410','Marwan','Pablo','110','KafrAbdo'),('1000','Adam','Mahmoud','800','Smouha'),('1300','Ossama','Ahmed','1100','SidiGaber');

Insert into prescription(prescription_id,doctor_id,patient_id)values

('610','110','410'),('1600','800','1000'),('1700','1100','1300');

Insert into appointment(appointment_id,appointment_time,doctor_id,patient_id)values

('510','2004-7-10 11:30:00','110','410'),('1400','2003-1-22 12:00:00','800','1000'),('1500','2002-7-8 5:33:44','1100','1300');

Insert into medicine(medicine_Id,patient_Id,payment) Values

('710','410','510'),('820','1000','1400'),('930','1300','1500');

Insert into department(department_id,doctor_id,nurse_id,patient_id)values

('20','110','310','410'),('30','800','900','1000'),('40','1100','1200','1300');

8.FRONTEND (bonus)

Patient Operations

First Name:

Last Name:

Doctor ID:

Address:

Add Patient

Admin Login

Username:

Password:

Login

Patient ID to Update:

New First Name:

New Last Name:

New Doctor ID:

New Address:

Update Patient

Patient ID to Delete:

Delete Patient

THANK YOU