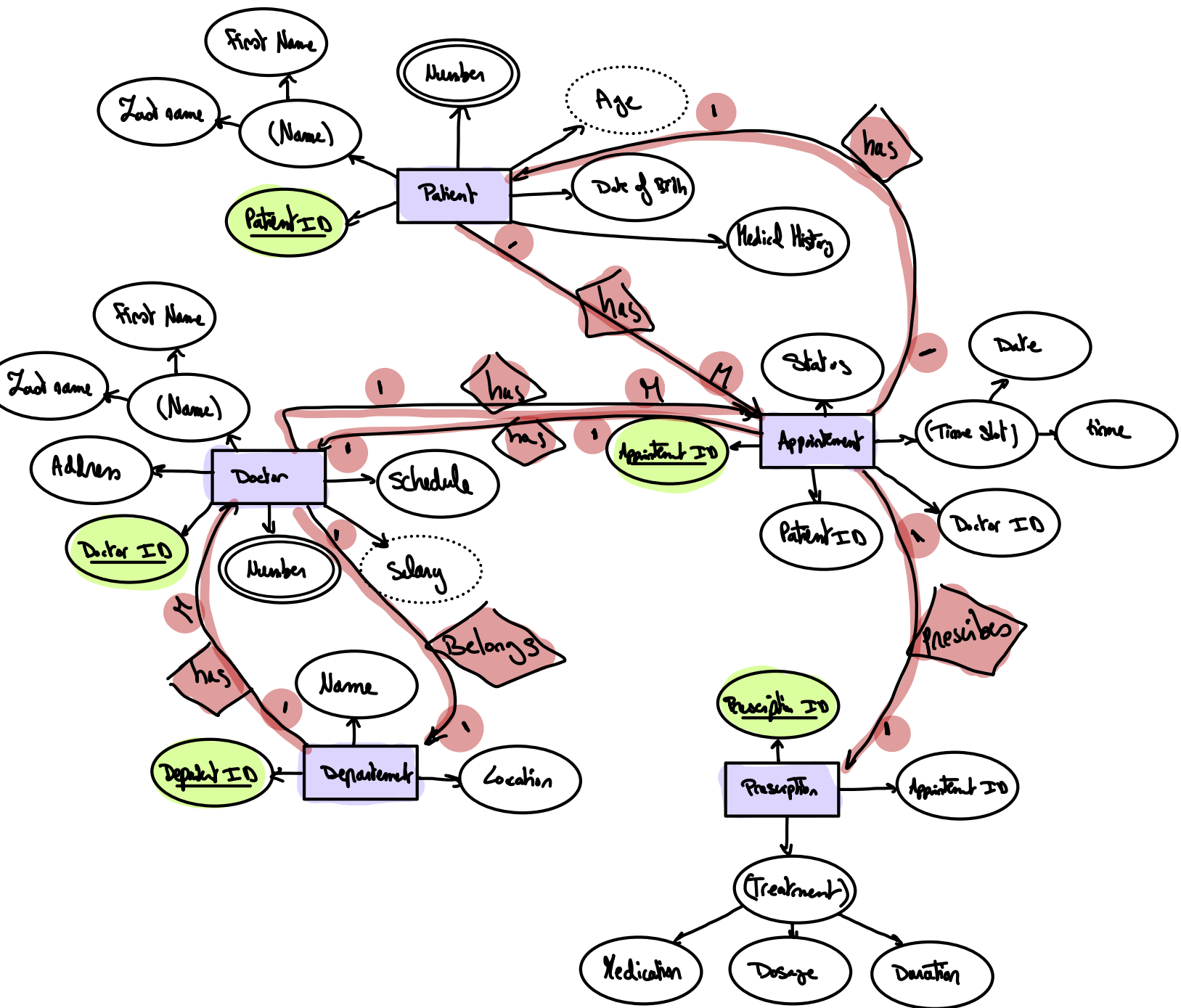


Hospital system



1] Patient

Attribute	Type	Key	Description
Patient-ID	INT	PK	Unique identifier for each patient
First-Name	VARCHAR	composite attribute of Name	Patient's First Name
Last-Name	VARCHAR	//	// Last
Number	VARCHAR		Contact number (could be multiple)
Date-of-Birth	DATE		Birth date
Age	INT	Derived	Derived from Birth date
Medical-history	TEXT		Summary of Patient's Records

Patient-ID	First-Name	Last-Name	Number	D.O.B	Age	Medical-history
2020-023	Kaidan	Shrif	012625225~	19/11/2004	20	_____
2020-011	Malak	Almed	010- - - -	- - - -	40	_____

⋮

2] Doctor

Attribute	Type	Key	Description
Doctor-ID	INT	PK	Unique identifier for each Dr
First-Name	Varchan	composite of Name	Dr's First Name
Last-Name	Varchan	//	// Last
Address	Varchan		Dr's address
Number	Varchan		Dr's number/s
schedule	Varchan		Work schedule
Salary	decimal		Monthly salary
Dept-ID	INT	FK	references department (dept-ID)

Doctor-ID	First-Name	Last-Name	Address	Number	Schedule	Salary	Dept-ID
09576	Mohamed	Ahmed	264, Harr City	020...	9 to 5	70000	02
09500	Ahmed	Mohamed	New City	010...	9 to 9	20000	20

⋮

3) Department

Attribute	Type	Key	Description
Dept-ID	INT	PK	Unique identifier for each Dept
Name	Varchar		Dept Name
Location	Varchar		Dept's physical location

Dept-ID	Name	Location
02	cardiology	2nd floor room 140
20	physiology	1st floor room 15

⋮

4) Appointment

Attribute	Type	Key	Description
Appointment-ID	INT	PK	Unique identifier for each Appt
Date	DATE	composite attribute of time slot	Appt date
Time	TIME	//	Appt time
Status	VARCHAR		Appt status (scheduled/completed...)
Patient-ID	INT	FK	References Patient (Patient-ID)
Doctor-ID	INT	FK	References Doctor (Doctor-ID)

Appnt-ID	Date	time	Status	Patient-ID	Doctor-ID
20001	15/12/2025	4 PM	Scheduled	20200875	02
19551	7/11/2025	10 AM	Canceled	2020---	20

⋮

5} Prescription.

Attribute	Type	Key	Description
Prescription-ID	INT	PK	Unique identifier for each prescription
Appoint-ID	INT	FK	References Appoint (Appoint-ID)
Medication	VARCHAR	constituent of Treatment	Name of prescribed Medicine
Dosage	VARCHAR	//	Amount and frequency
Duration	VARCHAR	//	Duration of use

Prescription-ID	Appoint-ID	Medication	Dosage	Duration
1190	20001	Paracetamol	1 tablet a day	1 month
1195	20020	—	2 capsules a day	2 weeks

In the ERD, key entities such as Patient, Doctor, Department, Appointment, and Prescription were identified as the main components of the system.

Each entity includes its relevant attributes, and relationships were correctly defined based on real-world hospital interactions:

- Each Doctor belongs to one Department, while a Department can have many Doctors → one-to-many relationship.
- Each Patient can book many Appointments, and each Doctor can attend many Appointments, but each appointment links to only one of each → many-to-one relationships toward Patient and Doctor.
- Each Appointment produces exactly one Prescription, representing a one-to-one relationship.

Additionally, attributes such as Name and Treatment were modeled as composite attributes in the ERD:

- Name is composed of First_Name and Last_Name.
- Treatment is composed of Medication, Dosage, and Duration.

When converting the ERD into the Relational Data Model, these composite attributes were decomposed into their atomic sub-attributes, since the relational model only supports atomic (non-divisible) data fields.

Each table in the relational data model was designed to represent a main real-world entity in the hospital system.

The Patient table stores personal and medical information, while the Doctor table includes professional and contact details, each linked to a Department through a foreign key.

The Appointment table connects patients and doctors, recording the date, time, and status of each visit.

Finally, the Prescription table holds the medical instructions resulting from each appointment, including the medication, dosage, and duration details.

**[https://github.com/
mariamsherifsoliman/
Assignment2_SoftwareEngineeri
ng.git](https://github.com/mariamsherifsoliman/Assignment2_SoftwareEngineering.git)**