



EAST WEST UNIVERSITY

Healthcare Organization Database
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Course Name: Database Systems

Course: CSE301

Section: 01

Group No: 11

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## **Healthcare Organization Database**

### **Project Description:**

In this project, we have made an application for the healthcare organization system. Healthcare management is a user-friendly web application system that is generally small or medium in size and this system is to automate day to day activity of a healthcare organization. It is basically used by healthcare centers to manage the healthcare-related records using the patient's details, doctor's details, nurse's details, laboratory details, and so on. The project includes the features of a database that is adding, deleting, modifying, searching of required records that are designed and we have constructed an ER diagram by using ERDPlus. The search facilities provide a faster and easier way of viewing the records.

It uses different entities to provide the best service.

### **Objective:**

Databases in healthcare sectors provide a proper system for storing, organizing, and managing critical health statistics such as labs, finances, billing and payments, patient identification, and more. This information must remain confidential to the public, but easily accessible for the healthcare professionals who use this data to save lives.

Databases in healthcare collect information about healthcare operations. Every piece of data a medical practitioner collects from a patient—including medications, prescriptions, procedures, operations data, and registries like encounter and discharge forms—is logged in a healthcare database. It's almost impossible to imagine the sheer amount of healthcare data gathered daily.

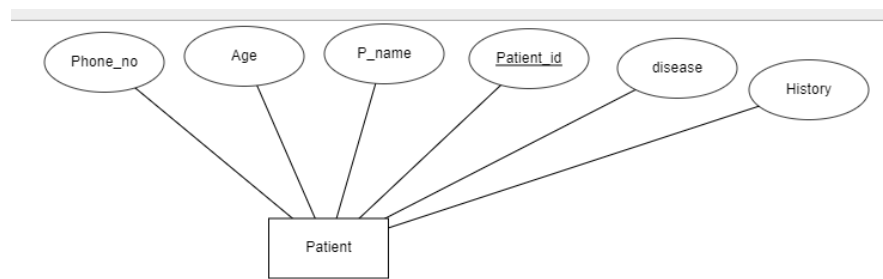
Databases used in the healthcare industry can store loads of information and can assist with several tasks, including the most important healthcare mission of saving lives. Overall, along with supporting the daily operations of healthcare professionals, databases in healthcare can promote efficiency, information exchange, health quality assessment, and monitoring.

### **Entity sets:**

In our project, we used a total of 5 entity sets. Entity sets are patient, doctor, nurse, laboratory, and reception. All of those are strong entity sets.

**Patient:** Patient keeps the information about the phone number, age, patient name, patient id, disease, and history.

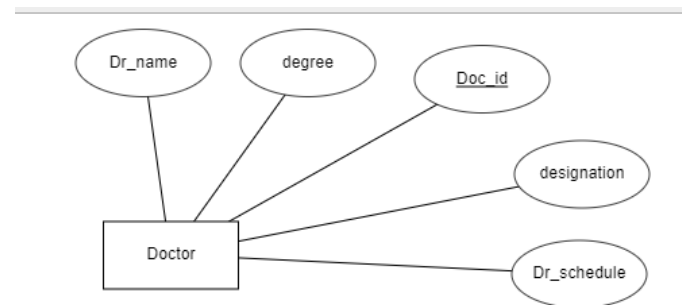
**ER Diagram:**



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**Doctor:** Doctor entity set keeps the information about the doctor name, degree, doctor id, designation, doctor schedule.

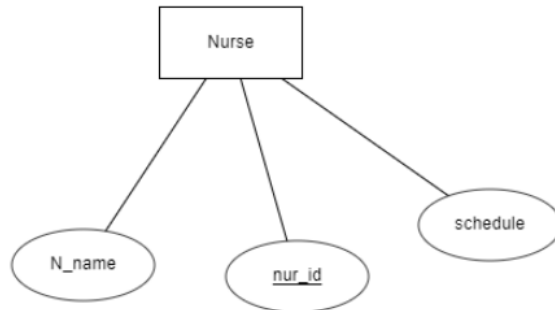
**ER Diagram:**



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**Nurse:** Nurse entity set keeps the information about the nurse name, nurse id, schedule.

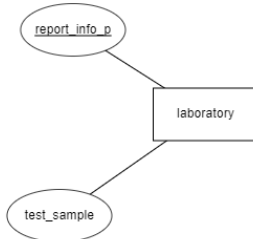
**ER Diagram:**



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**Laboratory:** Laboratory entity set keeps the information about the report information of patient and test sample.

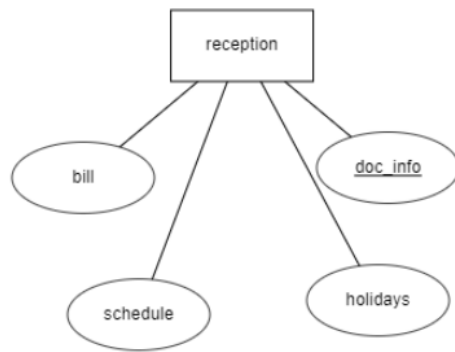
**ER Diagram:**



**Prepared by: Md Jannatul Haq**

**Reception:** The reception entity set keeps the information about the report information of bills, doctors information, schedule, and holidays.

**ER Diagram:**



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**Cardinality constraints and participation:**

- **Patient – Doctor:**

Here, one patient can have many doctors and one doctor can have many patients. For this reason, this relation will be many to many relationships.

**Prepared by: Md. Jannatul Haq, Samia Islam**

**Patient – Laboratory:**

Here, one patient can use only one laboratory but one laboratory can be used for many patients. For this reason, the relation will be many to one relation.

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**Patient-Reception:**

Here, one patient can use only one reception but one reception can be used for many patients. For this reason, the relation will be many to one relation.

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**Laboratory-Reception:**

Here, one reception can use many laboratories but one laboratory can use only one reception. For this reason, the relation will be many to one relation.

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**Doctor-Reception:**

Here, one reception can use many doctors but one doctor can use only one reception. So, the relation will be many to one relation.

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**Doctor-Nurse:**

Here, one doctor can have many nurses and one nurse can have many doctors. So, the relation will be many to many relations.

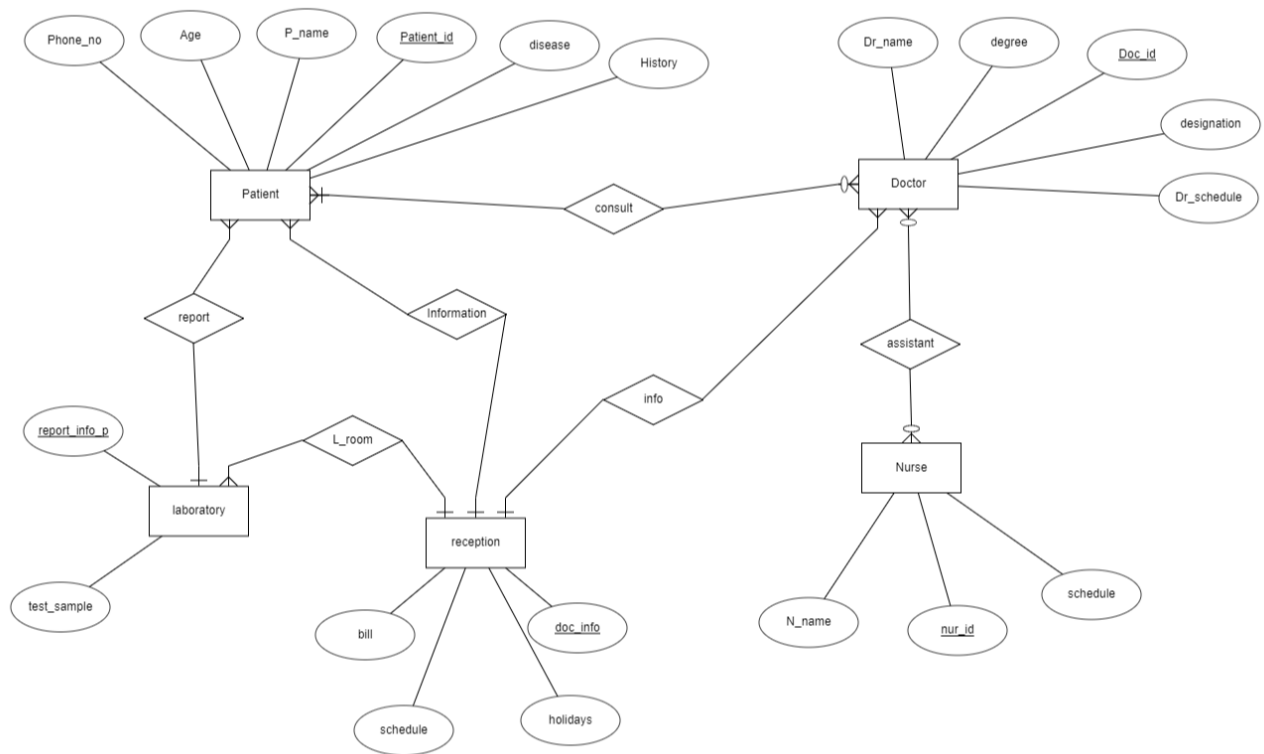
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**Entity Relationship Table:**

<b>First Entity</b>	<b>Second Entity</b>	<b>Relation Type</b>
Patient	Doctor	n-n
Patient	Laboratory	n-1
Patient	Reception	n-1
Laboratory	Reception	n-1
Doctor	Reception	n-1
Doctor	Nurse	n-n

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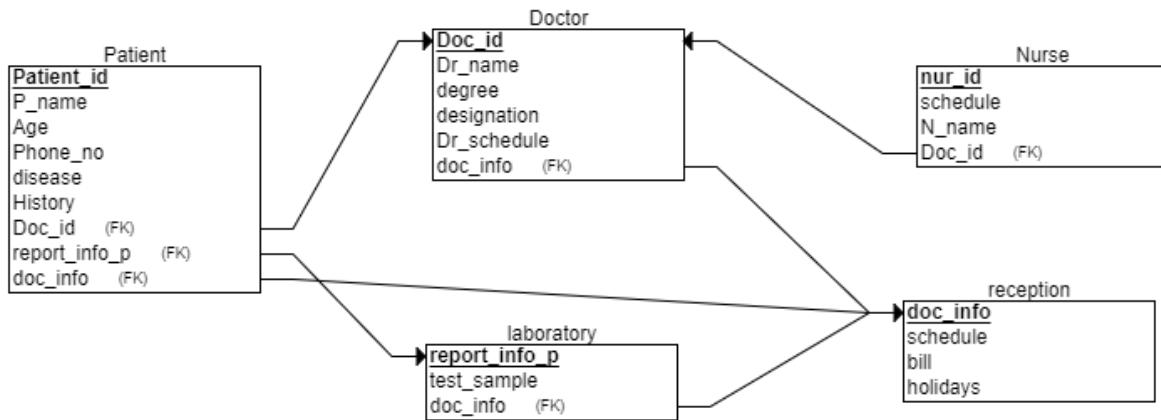
## **ER Diagram:**



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## Relational Schema:



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## SQL Schema:

An attachment has been provided.

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## Insertion of sample values:

An attachment has been provided.

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### **Join Queries:**

1. SELECT Dr\_name, N\_name, nur\_id FROM doctor NATURAL JOIN nurse

Dr_name	N_name	nur_id
Sam	Jenny	20
Sam	Jenny	20
Jack	Malena	30
Ragnar	Amy	40

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2. SELECT Doc\_id, Dr\_name, bill FROM doctor NATURAL JOIN reception

Doc_id	Dr_name	bill
20	Sam	500.00
30	Jack	300.00
40	Ragnar	200.00
50	Sam	600.00

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3. SELECT doc\_info, test\_sample, report\_info\_p, bill FROM laboratory NATURAL JOIN reception

doc_info	test_sample	report_info_p	bill
dentist	Sample 01	Healthy	500.00
hematologist	Sample 04	Normal	200.00
cardiologists	Sample 02	Strong	600.00
eye specialist	Sample 03	Weak	300.00

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4. SELECT P\_name, Age, Dr\_name FROM patient NATURAL JOIN doctor

P_name	Age	Dr_name
Nayeem	24	Sam
Rayhan	20	Ragnar
Samia	23	Sam

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5. SELECT Patient\_id, Phone\_no, test\_sample, report\_info\_p FROM patient NATURAL JOIN laboratory

Patient_id	Phone_no	test_sample	report_info_p
224	234543	Sample 01	Healthy
225	284543	Sample 04	Normal
40	234563	Sample 02	Strong

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6. SELECT \* FROM doctor INNER JOIN nurse USING (doc\_id)

Doc_id	Dr_name	degree	designation	Dr_schedule	doc_info	schedule	nur_id	N_name
20	Sam	MBBS	Pro.	6	dentist	6	20	Jenny
50	Sam	MBBS	Pro.	6	cardiologists	7	20	Jenny
30	Jack	MBBS	Asst. Pro.	8	eye specialist	8	30	Malena
40	Ragnar	MBBS	Pro.	9	hematologist	9	40	Amy

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## Update & Delete Queries:

1. DELETE FROM patient WHERE patient.report\_info\_p IN (  
SELECT report\_info\_p FROM laboratory WHERE  
report\_info\_p='Weak')

				P_name	Age	Phone_no	Patient_id	disease	History	Doc_id	report_info_p	doc_info
<input type="checkbox"/>				Samia	23	234563	40	Heart Infection	Old	50	Strong	cardiologists
<input type="checkbox"/>				Nayeem	24	234543	224	Fever	New	20	Healthy	dentist
<input type="checkbox"/>				Rayhan	20	284543	225	Anemia	New	40	Normal	hematologist
<input type="checkbox"/>				Rayhan1	201	2845431	2251	Anemia1	New1	401	Normal1	cardiologists1

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2. UPDATE patient SET P\_name ='x' WHERE age = 20

+ Options												
				P_name	Age	Phone_no	Patient_id	disease	History	Doc_id	report_info_p	doc_info
<input type="checkbox"/>				Samia	23	234563	40	Heart Infection	Old	50	Strong	cardiologists
<input type="checkbox"/>				Nayeem	24	234543	224	Fever	New	20	Healthy	dentist
<input type="checkbox"/>				x	20	284543	225	Anemia	New	40	Normal	hematologist
<input type="checkbox"/>				Rayhan1	201	2845431	2251	Anemia1	New1	401	Normal1	cardiologists1

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3. UPDATE patient SET P\_name ='y' WHERE Patient\_id = 2251

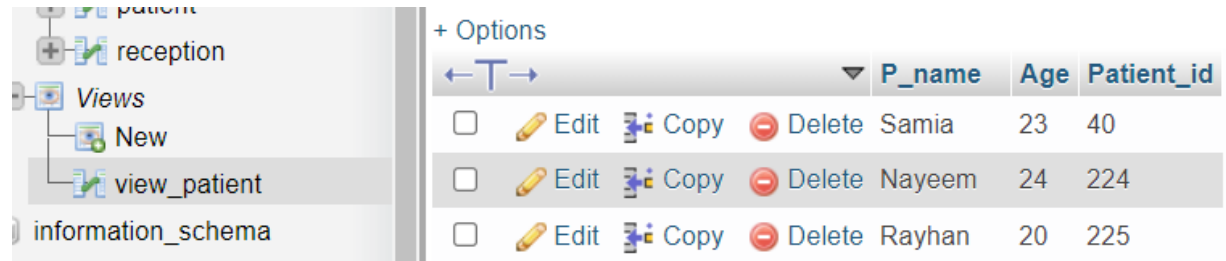
+ Options												
				P_name	Age	Phone_no	Patient_id	disease	History	Doc_id	report_info_p	doc_info
<input type="checkbox"/>				Samia	23	234563	40	Heart Infection	Old	50	Strong	cardiologists
<input type="checkbox"/>				Nayeem	24	234543	224	Fever	New	20	Healthy	dentist
<input type="checkbox"/>				x	20	284543	225	Anemia	New	40	Normal	hematologist
<input type="checkbox"/>				y	201	2845431	2251	Anemia1	New1	401	Normal1	cardiologists1

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### **View and Materialized View:**

Here, in our project, there is not enough place to use view or materialized view, but if we want, we can make here the view of employee table.

```
CREATE VIEW view_Patient AS SELECT P_name, Age, Patient_id FROM patient
```



				P_name	Age	Patient_id
<input type="checkbox"/>				Samia	23	40
<input type="checkbox"/>				Nayeem	24	224
<input type="checkbox"/>				Rayhan	20	225

**Prepared by: Md. Jannatul Haq, Samia Islam, Anika Hassan Mysha**

### **Conclusion:**

SQL database is the board application that is very much utilized in the advanced world in getting sorted out and controlling a database. Despite the fact that SQL doesn't have the GUI interface like Microsoft access is having and they all deal with the database agreeable. Contingent upon the client or clients, on the off chance that an association has different clients, at that point they should go for SQL worker-based application. This undertaking tells the best way to make tables in SQL and how to make basic information control language and information definition language with how to execute them. It likewise shows how connections are set up with the ideas of an essential and unfamiliar key inside a table. Finally, the undertaking shows how questions are made in SQL worker, inquiries like the make order, see, update, modify, and so on.