Information filled by student:

Course basic information

Code	Course Name	Credit Hours		
IS212	Database	**Lecture**	**Practice**	**Total**
		2	**2**	**3**

Research Title

(Hospital Management System)

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Level: 2nd level
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Theoretical analysis and discussion

Hospital Management System

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System Description

Hospital management system database design is uploaded in this page. A database is a collection of information and is systematically stored in tables in the form of rows and columns. The table in the database has unique name that identifies its contents. The database in turn is further described in detail giving all the fields used with the data types, constraints available, primary key and foreign key. Database design is used to manage large bodies of information. In this database we describe all the 4 tables available in the software, which are used to store all the records.

Data Dictionaries

Data types and its description:

Fields in database table have a data type. Some of the data types used in database table are explained below.

a) **Integer:-**

One optional sign character (+ or -) followed by at least one digit (0-9). Leading and trailing blanks are ignored. No other character is allowed.

b) **Varchar:-**

It is used to store alpha numeric characters. In this data type we can set the maximum number of characters up to 8000 ranges by default SQL server will set the size to 50 characters large.

c) **Date/Time:-**

Date/Time data type is used for representing data or time

Patient Table:

Fields	Data Type	Relationships
Pid	Varchar(5)	Primary Key
name	Varchar(20)	Not Null
age	int	Not Null

weight	int	Not Null
gender	Varchar(10)	Not null
address	Varchar(50)	Not Null
phoneno	int	Not Null
disease	Varchar(20)	Not Null
doctorid	Varchar(5)	Not Null

Doctor Table:

Fields	Data Type	Relationships
doctorid	Varchar(5)	Primary Key
doctorname	Varchar(15)	Not Null
dept	Varchar(15)	Not Null

Lab Table:

Fields	Data Type	Relationships
labno	Varchar(5)	Primary Key
pid	Varchar(5)	Not Null
weight	int	Not Null
doctorid	Varchar(5)	Foreign Key
date	Date/Time	Not Null
category	Varchar(15)	Not Null
patient_type	Varchar(15)	Not Null
amount	int	Not Null

Inpatient Table

Fields	Data Type	Relationships
pid	Varchar(5)	Primary Key
room_no	Varchar(50)	Not Null
date_of_adm	Date/Time	Not Null
date_of_dis	Date/Time	Not Null
advance	int	Not Null
labno	Varchar(5)	Foreign Key

Outpatient Table

Fields	Data Type	Relationships
pid	Varchar(5)	Primary Key
date	Date/Time	Not Null
labno	Varchar(5)	Foreign Key

Room Table:

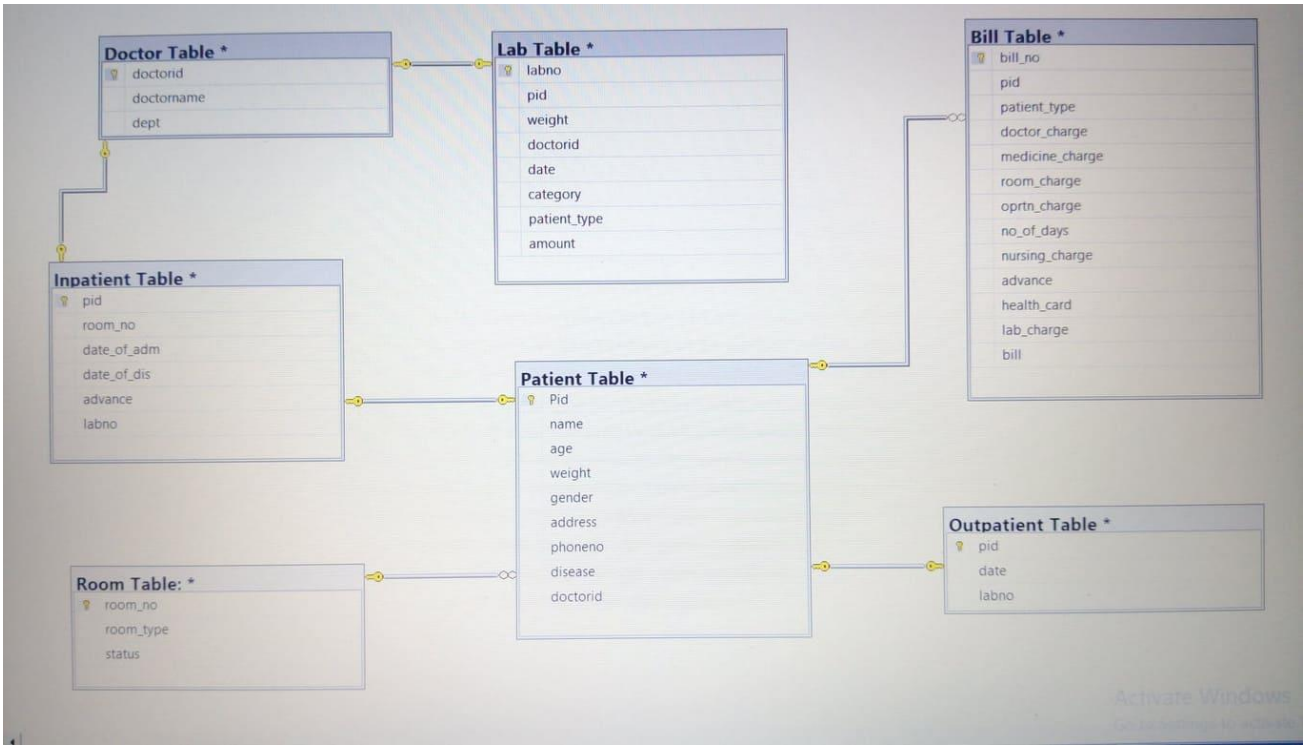
Fields	Data Type	Relationships
room_no	Varchar(50)	Primary Key
room_type	Varchar(10)	Not Null
status	Varchar(10)	Not Null

Bill Table:

Fields	Data Type	Relationships
bill_no	Varchar(50)	Primary Key
pid	Varchar(5)	Foreign Key
patient_type	Varchar(10)	Allow Null
doctor_charge	int	Not Null
medicine_charge	int	Not Null
room_charge	int	Not Null
oprtn_charge	int	Allow Null
no_of_days	int	Allow Null
nursing_charge	int	Allow Null
advance	int	Allow Null
health_card	Varchar(50)	Allow Null
lab_charge	int	Allow Null
bill	int	Not Null

Entity Relationship Diagram

This diagram explains the relationships between every field of a table in the database.



Select statements

1. **Display records of Doctor Table**

   Select * doctorid, doctorname

   From Doctor;

2. **Display records of Patient Table**

   Select * name, id, age

   From Patient;

3. **Display records of Patient Table**

   Select * address, phoneno

   From Patient;

4. **List patients who are over 18 years old**

```
Select * from patients
Where age > 18;
```

5. **View patients who are less18 years old**

```
Select * from patients
Where age < 18;
```

6. **list patients id lower**

```
Select * id, lower
From patients;
```

7. **List first name , last name of patients in descending order**

```
Select fName, lName
From patients
Order by desc;
```

8. **find all details of patient which start date is 2019-01-01 and end date is 2019-01-05**

```
Select *
 From patient
Where startdate =’ 2019-01-01 ‘and enddate=’ 2019-01-05 ‘;
```

9. **Display records of Inpatient Table**

```
Select * pi, room_no
From Inpatient;
```

10. **Find location of all doctors**

```
Select location
From vehicle;
```

11. **List records of Inpatient Table**

```
Select * date_of_adm, date_of_dis
From Inpatient;
```

12. **Display records of lap Table**

```
Select * labno, pi
From lap;
```

13. **Show records of lap Table**

Select * patient_type, category, date

From lap;

14. **List records of Outpatient Table**

Select * data, labno, p id

From Outpatient;

15. **List records of room Table**

Select * room_type, status, room_no

From room;

16. **View patient bill records**

Select * bill_no, p id, patient_type, doctor_charge, medicine_charge, room_charge

From bill;

17. **List all doctors which name start with ‘ D’**

```
Select *
 From doctor
Where vname like ‘D %’;
```

18. **List all details of patient which enter in 2019-05-22 in descending order**

```
Select *
From patient
Where startdate =’ 2019-05-22’ Order by desc;
```

19. **List first name , address of patient who stay in hospital in 2019-02-5 to 2019-03- 1**

Select fName, address

From patient

Where c. cid = r. cid and startdate =’ 2019-02-05 ‘and enddate=’ 2019-03-01 ‘;

20. **Find the first name of patients named ‘ Mohamed ‘**

Select fName

From patient

Where fname=’ Mohamed ‘;

Sub Query statements

1. **List patient room size is the most preferred**

   Select rSize

   From room

   Where mileage = (select MAX (mileage) from room);

2. **find patients who are more than 25 years old**

   Select *

   From patient

   Where age > 25;

3. **List patients which are reserved for maximum time**

   Select *

   From patient

   Where pid=

   (Select pid from patient where ROUND ((enddatestartdate)/360) =

   (Select Max (ROUND (enddatestartdate)/360) from reservation)) ;

Count and Group functions

1. **List average age of all the patients grouped by their blond group**

   SELECT blood group, AVG (age) as 'Average Age'

   From Patients group by blood group;

2. **Find count of all doctors**

   Select count (*)

   From doctor

   Group by doctorid;

3. **Find count of all patients**

   Select count (*)

   From patient

Group by pid;

Join statements

1. **Inner join**

   Select Patient_Visits.visit_time, Patients.name, Patients.gender

   From Patient_Visits

   Inner join Patients

   On Patient_Visits.patient_id Patients.id;

2. **Left join**

   Select Patients.name, Patients.gender, Patient_Visits.visit_time

   From Patients

   Left join Patient_Visits

   On Patients.id = Patient_Visits.patient_id

3. **Right join**

   Select Patient Visits.visit time, Patients.name, Patients.gender

   From Patient Visits

   RIGHT join Patients

   On Patient Visits.patient_id Patients.id;

4. **Full join**

   Select Patient_Visits.visit time, Patients.name, Patients.gender

   From Patient_Visits

   Full join Patients

   On Patient_Visits.patient_id Patients.id

5. **Select Patients.name, Examinations.name, Examinations.price**

   From Patients

   Join Patient Examination on Patients.id Patient Examination.patient_id

   Join Examinations on Patient Examination.examination_id Examinations.id

Insert statements

1) **Insert into doctor values (‘102’, ‘smith ‘, ‘Lone’, ‘France’);**

2) **Insert into patient values (‘p101’, ‘70’, ‘compact’, ‘France ‘);**

3) **Insert into room values (‘101’, ‘r102 ‘, ‘2019-02-01‘, ‘2019-02-05);**

4) **Insert into lap values (‘105’, ‘ahmed ‘, ‘wahab’, ‘Egypt’);**

5) **Insert into new patient values (‘p104’, ‘80’, ‘compact’’, ‘Egypt‘);**

Update statements

1) **Update doctor**
   Set fName = ‘blal ‘
   Where doctorid=’101’;
2) **Update patient**
   set location=’ second floor t’
   where vid=’p103’;
3) **Update room**
   Set startdate=’2019-05-07’
   Where rid=’103’;
4) **Update patient**
   Set fName = ‘ahmed‘
   Where pid=’106’;
5) **Update lap**
   set location=’ Floor 4 ’
   Where lapid=’106’;

Delete Statements

1) **Delete from doctor**
   Where fName=' kaled ';
2) **Delete from patient**
   Where pid='p102';
3) **Delete from room**
   Where rid ='103 ';
4) **Delete from lap**
   Where lapid='102';
5) **Delete from doctor**
   Where doctorid='106 ';

References

Much of this topic was delivered from

- https://stackoverflow.com/questions/5706437/whats-the-difference-between-inner-join-left-join-right-join-and-full-join
- https://www.mathworks.com/help/database/ug/select.html
- **Date base book by dr. Reda M. hussien**