

# Hospital Database Management System

Faysal Sarder  
Department of CSE, City University  
Dhaka, Bangladesh  
Email: faysalsardere369@gmail.com

**Abstract-**My project Hospital Database Management system includes registration of patients, storing their disease details into the system. It will also contain doctor's information and will digitalize the whole billing system. It has the facility to give a unique id for every patient and stores the details of every patient and staff automatically. It includes a search facility to know the current status of each room. User can search availability of a doctor and the details of a patient using the id. And the whole process conducted by Administrator.

**Keywords-** Hospital, Administrator, Patients, Doctor, Diseases, Staff, Treatments, Test, Lab reports, Schema.

## 1. BACKGROUND

A Hospital Database Management System (HDMS) is a computer or web based system that facilitates managing the functioning of a hospital or any medical set up. This system will help in making the whole functioning paperless.

The hospital database includes all the necessary patient data. The disease history, test results, prescribed treatment can be accessed by doctors without much delay in order to make an accurate diagnosis and monitor the patient's health. It enables lower risks of mistakes.

A hospital is a place where Patients come up for general diseases. Hospitals Provide facilities like:

- Consultation by Doctors on Diseases.
- Diagnosis for diseases.
- Providing treatment facility.
- Facility for admitting Patients (providing beds, nursing, medicines etc.)
- Immunization for Patients/Children.

Various operational works that are done in a Hospital are:

- Recording information about the Patients that come.
- Generating bills.
- Recording information related to diagnosis given to Patients.
- Keeping record of the Immunization provided to Children/Patients.
- Keeping information about various diseases and medicines available to cure them.

These are the various jobs that need to be done in a Hospital by the operational staff and Doctors. All these works are done on papers.

The work is done as follows:

- Information about Patients is done by just writing the Patients name, age, and gender. Whenever the Patient comes up his information is stored freshly.
- Bills are generated by recording price for each facility provided to Patient on a separate sheet and at last they all are summed up.
- Diagnosis information to patients is generally recorded on the document, which contains Patients information. It is destroyed after some time period to decrease the paper load in the office.
- Immunization records of the children are maintained in pre-formatted sheets, which are kept in a file.
- Information about various diseases is not kept as any document. Doctors themselves do this job by remembering various medicines

All this work is done manually by the receptionist and other operational staff and lot of papers are needed to be handled and taken care of. Doctors have to remember various medicines available for diagnosis and sometimes miss better alternatives as they can't remember them at that time.

## 2. IDEAS

The hospital database includes all the necessary patient data. The disease history, lab reports, prescribed treatment can be accessed by doctors without much delay in order to make an accurate diagnosis and monitor the patient's health. It enables lower risks of mistakes.

- The project maintains two levels of users:
  - Administrator.
  - User Level-Data Entry Operator.
- Now, I discuss the main facilities in this project are:
  - Maintaining records of indoor/outdoor patients.
  - Maintaining patient's test and examinations details.
  - Providing different test facilities to a Doctor for doctor for diagnosis of a patients.
  - Maintaining patient's prescription, medicine and diet advice details.
  - Providing billing details for indoor/outdoor patients.
  - Results of tests, prescription, precautions and diet advice will be automatically updated in the database.
  - In this project collection of data in form different pathology labs.
  - Related test reports, patient's details report, billing reports can be generated as per user requirements.

- User or administrator can search a patient's record by his id.
- Hospital Database Management System Design:  
The Hospital database management system design is a database design use for managing hospital functions and events. It enables the admin to register a patient for the hospital, stores their disease details into the database. Any of the staff members, doctor & admin is able to add, view, edit, update or delete data.
- Purpose of Hospital Database Management System:  
The purpose of the Hospital Management System database Design is to make a secure and easy way of storing information of the patient, doctors, inpatient, outpatient, Rooms, and Bill payment.
- Features of the Hospital Database Management System:  
There are seven (8) common features of Hospital Management System Database Design such as Managing Administrator, Doctors, laboratory, Inpatient, Outpatient, Rooms, and Hospital Bills information.
  - Administrator

- ER Diagram of Hospital Database Management System

### 3. Staff Table:

Fields	Data Type	Relationships
s_name	Varchar(15)	Not Null
s_id	Int(5)	Primary Key
NID	Int(12)	Not Null
salary	Int(5)	Not Null
a_id	Int(5)	Foreign Key

### 4. Lab table:

Fields	Data Type	Relationships
lab_no	int(5)	Primary Key
Patient_id	int(5)	Not Null
weight	int	Not Null
Doctor_id	int(5)	Foreign Key
date	Date/Time[6]	Not Null
category	Varchar(15)	Not Null
patient_type	Varchar(15)	Not Null
amount	Int(10)	Not Null

### 5. Inpatient Table:

Fields	Data Type	Relationships
Patient_id	int(5)	Primary Key
name	Varchar(20)	Not Null
gender	Varchar(10)	Not Null
address	Varchar(20)	Not Null
room_no	int(5)	Not Null
date_of_admit	Date/Time[ 6]	Not Null
date_of_discharge	Date/Time[6 ]	Not Null
advance	Int(10)	Not Null
lab_no	int(5)	Foreign Key
Doctor_id	Int(5)	Foreign Key
disease	Varchar(20)	Not Null

### 6. Outpatient Table:

Fields	Data Type	Relationships
Patient_id	int(5)	Primary Key
date	Date/Time	Not Null
lab_no	int(5)	Foreign Key

### 7. Room Table:

Fields	Data Type	Relationships
room_no	Int(5)	Primary Key
room_type	Varchar(10)	Not Null
status	Varchar(10)	Not Null
Patient_id	Int(5)	Foreign Key

### 8. Bill Table:

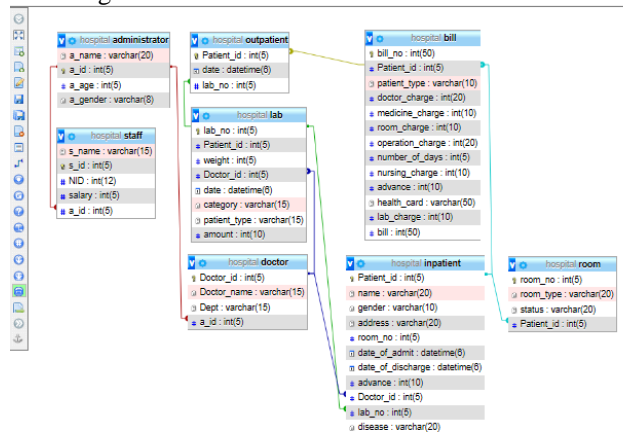
Fields	Data Type	Relationships
bill_no	int(50)	Primary Key
Patient_id	int(5)	Foreign Key
patient_type	Varchar(10)	Allow Null
doctor_charge	int	Not Null
medicine_charge	int	Not Null
room_charge	int	Not Null
operation_charge	int	Allow Null
number_of_days	int	Allow Null
nursing_charge	int	Allow Null
advance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

### Snapshot:

- Hospital DBMS Tables list in SQL Database Server

Table	Action
administrator	Browse Structure Search Insert Empty Drop
bill	Browse Structure Search Insert Empty Drop
doctor	Browse Structure Search Insert Empty Drop
inpatient	Browse Structure Search Insert Empty Drop
lab	Browse Structure Search Insert Empty Drop
outpatient	Browse Structure Search Insert Empty Drop
room	Browse Structure Search Insert Empty Drop
staff	Browse Structure Search Insert Empty Drop

- Hospital DBMS SQL Server Database Schema Diagram



Insert data into all Tables:

Now, we can use insert statement for Insert (add) data or record into tables.

- For Administrator table:  
The statement below enters 2 records or rows into patient table:

```

1 INSERT INTO administrator(`a_name`,`a_id`,`a_age`,`a_gender`)
2 VALUES('Tamim',12121,30,'male'),
3 ('Khan',12122,32,'male');
4

```

Table:

Options		a_name	a_id	a_age	a_gender
<input type="checkbox"/>	Edit Copy Delete	Tamim	12121	30	male
<input type="checkbox"/>	Edit Copy Delete	Khan	12122	32	male

- For doctor table:  
The statement below enters 2 records or rows into doctor table:

```

1 INSERT INTO doctor(`Doctor_id`,`Doctor_name`,`Dept`)
2 VALUES(51501,'Emam','phycology'),
3 (51502,'Akhram','Medicine');
4

```

Table:

Options		Doctor_id	Doctor_name	Dept
<input type="checkbox"/>	Edit Copy Delete	51501	Emam	phycology
<input type="checkbox"/>	Edit Copy Delete	51502	Akhram	Medicine

- For lab Table:  
The statement below enters 2 records or rows into lab table:

```

1 INSERT INTO lab(`lab_no`,`Patient_id`,`weight`,`Doctor_id`,`date`,`category`,`patient_type`,`amount`)
2 VALUES(01,12345,61,51501,'13-06-20','Sonogram','unknown',2500),
3 (02,12346,61,51502,'13-06-20','x-ray','unknown',1500);
4

```

Table:

Options		lab_no	Patient_id	weight	Doctor_id	date	category	patient_type	amount
<input type="checkbox"/>	Edit Copy Delete	1	12345	61	51501	0000-00-00 00:00:00.000000	Sonogram	unknown	2500
<input type="checkbox"/>	Edit Copy Delete	2	12346	61	51502	0000-00-00 00:00:00.000000	x-ray	unknown	1500

- For inpatient table:  
The statement below enters 2 records or rows into inpatient table:

```

1 INSERT INTO inpatient(`Patient_id`,`name`,`gender`,`address`,`room_no`,`date_of_admit`,`date_of_discharge`,`advance`,`Doctor_id`,`lab_no`,`disease`)
2 VALUES(12345,'Fayaz','male','keramlang',01,000,000,2500,12121,01,'fever'),
3 (12346,'Asin','male','dhaka',02,0,0,2500,12122,01,'fever');
4

```

Table:

Options		Patient_id	name	gender	address	room_no	date_of_admit	date_of_discharge	advance	Doctor_id	lab_no	disease
<input type="checkbox"/>	Edit Copy Delete	12345	Fayaz	male	keramlang	1	0000-00-00 00:00:00.000000	0000-00-00 00:00:00.000000	2500	51501	1	fever
<input type="checkbox"/>	Edit Copy Delete	12346	Asin	male	dhaka	2	0000-00-00 00:00:00.000000	0000-00-00 00:00:00.000000	2500	51502	2	fever

- For outpatient table:  
The statement below enters 2 records or rows into outpatient table:

```

1 INSERT INTO outpatient(`Patient_id`,`date`,`lab_no`)
2 VALUES(12345,0,01),
3 (12346,0,02);

```

Table:

Options		Patient_id	date	lab_no
<input type="checkbox"/>	Edit Copy Delete	12345	0000-00-00 00:00:00.000000	1
<input type="checkbox"/>	Edit Copy Delete	12346	0000-00-00 00:00:00.000000	2

- For room table:  
The statement below enters 2 records or rows into room table:

```

1 INSERT INTO room(`room_no`,`room_type`,`status`)
2 VALUES(01,'Special ward','unknown'),
3 (02,'Sharing ward','unknown');

```

Table:

Options		room_no	room_type	status	Patient_id
<input type="checkbox"/>	Edit Copy Delete	1	special	unknown	12345
<input type="checkbox"/>	Edit Copy Delete	2	local	unknown_status	12346

- For bill Table:  
The statement below enters 2 records or rows into bill table:

```

1 INSERT INTO bill(`bill_no`,`Patient_id`,`patient_type`,`doctor_charge`,`medicine_charge`,`room_charge`,`operation_charge`,`nursing_charge`,`advance`,`health_card`,`lab_charge`,`bill`)
2 VALUES(123,12345,'unknown',500,1000,20,20000,13-06-20,50,200,'unknown',30,25000),
3 (124,12346,'unknown',550,1050,25,20050,13-06-20,60,250,'unknown',60,26000);
4

```

Table:

bill_no	Patient_id	patient_type	doctor_charge	medicine_charge	room_charge	operation_charge	number_of_days	nursing_charge	advance	health_card	lab_charge	bill
123	12345	unknown	500	1000	20	20000	-13	50	200	unknown	30	25000
124	12346	unknown	550	1050	25	20050	-13	60	250	unknown	60	26000

- For staff Table:  
The statement below enters 2 records or rows into staff table:

```

1 INSERT INTO staff(`s_name`,`s_id`,`NID`,`salary`,`a_id`)
2 VALUES('kalam',21212,10101011,10000,12121),
3 ('Abul',21213,10101012,10500,12122);

```

Table:

Options		s_name	s_id	NID	salary	a_id
<input type="checkbox"/>	Edit Copy Delete	kalam	21212	10101011	10000	12121
<input type="checkbox"/>	Edit Copy Delete	Abul	21213	10101012	10500	12122

Note: We will store this kind of record or information by using above process.

- Search a patient's record by his id:  
To see patient's record, we will use select statement.  
I would like to see how much bill, doctor charge, medicine charge, room charge, operation charge, nursing charge are came and how much advance given the first patient's

```

1 SELECT
2 `bill`,`doctor_charge`,`medicine_charge`,`room_charge`,`operation_charge`,`nursing_charge`,`advance`
3 FROM bill WHERE Patient_id=12345;

```

Options

Options		bill	doctor_charge	medicine_charge	room_charge	operation_charge	nursing_charge	advance
<input type="checkbox"/>	Edit Copy Delete	25000	500	1000	20	20000	50	200

### 3. Conclusion

The project Hospital Data Management System (MDBS) is for computerizing the working in a hospital. It takes care of all the requirements of an average hospital and is capable to provide easy and effective storage of information related to patients that come up to the hospital. It generates test reports, provide medicines prescribed to patient and doctor. It also provides billing facility on the basis of patient's status whether it is an indoor or outdoor patient. The system also provide the facility of backup as per the requirement.

## REFERENCES

- [1] [https://www.academia.edu/6880602/09\\_Project-Hospital\\_management\\_system?email\\_work\\_card=thumbnail](https://www.academia.edu/6880602/09_Project-Hospital_management_system?email_work_card=thumbnail)
- [2] <https://www.slideshare.net/EliasDinsa/hospital-management-system-database-design>
- [3] [https://www.academia.edu/29078722/Hospital\\_Management\\_System\\_Design\\_and\\_Implementation?email\\_work\\_card=thumbnail](https://www.academia.edu/29078722/Hospital_Management_System_Design_and_Implementation?email_work_card=thumbnail)