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SOFTWARE DEVELOPMENT  
AKURDI, PUNE

Documentation On

**“Online Doctor Appointment System”**  
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*Submitted By:*

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**Project Guide**

# **1. INTRODUCTION**

The main objective is to develop a Java based web application named “Online Hospital Appointment System” that covers all the aspects of making appointment of doctors. It enables healthcare providers to improve operational effectiveness, reduce costs, reduce medical errors, reduce time consumption and enhance delivery of quality of care.

This system help reduce the problems occur when using the manual system and helps patients to skip endless queues. The important thing is it will become easier for the data record and retrieval. This software also stores all the patient details, patients profile, prescriptions etc. This system enables doctors and clinic assistant to manage patient records and appointments. User can enter their details, update their profile and they can select doctors to make appointments. Other than that, the system is user friendly and it can help the clinic to manage their appointments. The system helps to avoid making duplicate appointments. Users can view available doctors and their timings and can make appointments according to it. Users also get an option to cancel their appointments. Users can view their upcoming appointments and past appointments are deleted automatically.

The system also allows doctors to log in. Doctors can edit their profile and view their upcoming appointments, patients etc. They can even send prescriptions to their patients by selecting their patients from the dropdown list. The system also has an administrator section, where only a single person can manage the whole system. Administrator can add/remove patients, doctors and departments and search for appointments.

The system features a very intuitive and responsive design that fits devices of all screen size (Smartphones, PCs, Tablets, and Notebooks etc.). The application automatically adapts its layout to match user’s screen size.

## **2. SYSTEM STUDY**

System study is the first stage of system development life cycle. This gives a clear picture of what actually the physical system is. The system is done in two phase. In the first phase, the preliminary survey of the system is done which helps in identify the scope of the system. The second phase of the system study is more detailed and in-depth study in which the identification of user’s requirement and limitations and problem of the present system are studied. After completing the system study, a proposal is prepared by the user.

### **2.1 EXISTING SYSTEM**

Presently people are making appointments manually. This is a time consuming process, patient has to physically go to the clinic in order to make appointment. Some clinics provide the opportunity to make appointments by placing a phone call. But in this case, people are often left unattended.

## **LIMITATIONS OF EXISTING SYSTEM**

By analyzing the existing system, some of its drawbacks are listed.

1. Time consuming.
2. Lack of efficiency.
3. Needs to be physically present at the clinic.
4. Can't make appointments in advance for long intervals.

## **2.2 PROPOSED SYSTEM**

Proposed system will overcome the drawbacks of existing system. Existing system is manual and available appointment applications are not user friendly. Proposed system is computerized and user friendly. The proposed system has many advantages.

## **MERITS OF PROPOSED SYSTEM**

The use of proposed system will avoid the problems of the existing system and we also get a new system for managing information under the Clinic Appointment System. The proposed system offers:

- Manual work which is time consuming can be reduced
- Easy to store data in the database.
- Administrator can add/remove new doctors, patients & departments.
- Increase processing speed.
- An easily access environment for users.
- Doctors can view/cancel appointments.
- Doctors can send prescription.
- Automatic removal of past appointments.
- Easy to use real time search facility.
- Responsive layout that fits all devices.
- Improved security.

### **3. SYSTEM ANALYSIS**

System analysis is the detailed study of the various operations performed by the system and relationship within and outside the system. It is the most essential part of the development of the project. During system analysis data are collected on the available file, decisions points and transactions handled by the presence system. System analysis must carry out a customary approach to the use of computers for the problem solving. Nowadays systems are so big and complex that teams of architectures, analyst, programmers, testers and users must work together to create the millions of lines of custom-return code that drive our enterprise. Assuming that a new system is to be developed, the next phase is system analysis. Analysis involved a detailed study of the current system, leading to specification of a new system.

#### **3.1 SYSTEM REQUIREMENTS**

##### **SOFTWARE AND HARDWARE REQUIREMENT**

The software requirement specification (SRS) and hardware specification forms the basis of software development. A main purpose of software requirement specification is the clear definition and specification of functionality and of the software product. It allows the developer to be carried out, performance level to be obtained and corresponding interface to be established.

##### **HARDWARE REQUIREMENTS**

- Processor: Intel Pentium
- Monitor size: 14 inch
- RAM: 250MB
- Hard Disk: 80GB

##### **SOFTWARE REQUIREMENTS**

- Technology: Web Application.
- Front end: PHP, HTML, JQuery, Bootstrap & CSS.
- Back end : Java, Spring Boot
- Database: Mysql.
- Web browser : Mozilla Firefox, Google Chrome, Apple Safari or any Gecko/Web Kit based browser



## 4. SYSTEM DESIGN

Design is the first step in the development phase for any engineered product or system. It may be defined “The process of applying various techniques principles for the purpose of defining a device, a processor or a system in sufficient to permit its physical realization.

System design is the creation of specification for a new system. It deals with creation of input, which is usually the acquiring of needed data, creation of needed database, the input procedures and output to meet system objectives.

### 4.1 INITIAL DESIGN

#### MAIN MODULES: -

Main modules of these systems are given below.

#### 1. ADMIN MODULE: -

- **Add New User** Administrator can add new user by filling out required fields.
- **Remove Existing User** Administrator can remove existing user by selecting user ID from the dropdown box.
- **Doctor registration** Administrator can add doctors and assign them duty times and schedules.
- **Remove Existing Doctor** Remove existing doctors by selecting them from a dropdown menu.
- **Add New Department** The administrator can add new department by entering its name.
- **Remove Existing Department** Administrator can remove existing departments.

## 2. USER MODULE: -

- **User Registration** Registering the user by the details that includes Name, Username, Email Address, Password, Residential Address, Phone Number, Gender etc.
- **Profile** Users can edit and update their profile including their password.
- **Doctors List** Users can browse through the entire list of doctors and select one for making appointment.
- **View Prescription** User can view, print or delete prescriptions sent by doctors.
- **Upcoming Appointments** User can view/delete upcoming appointments. Past appointments are automatically removed from the list to show only the relevant contents.
- **Make Appointment** User can search desired departments using the intelligent, auto filling search engine. The form shows suggestions / gets automatically filled as user starts typing. The search result shows relevant doctors list with available time, days etc. User can click make appointment and they get redirected to the date and time selection page. After selecting desired date, the system returns to user with an appointment ID.
- **Notifications** User can view notifications if one his/her appointment request has been marked as 'Pending' by the doctor.

## 3. DOCTOR MODULE: -

- **Doctor Profile** Doctors can edit their profile details such as Name, Qualification etc.
- **Send Prescription** Doctor select their patient name, appointment ID to send prescription.
- **Upcoming Appointments** Doctors can view their upcoming appointments here. They can change appointment status to Pending or Active. They can even cancel the appointment.

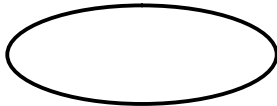
## 4.2 DATA FLOW DIAGRAM (DFD)

Generally, DFD's are used as a design notation to represent architectural design (External design) and top level design (internal design) specifications. DFD's represent the system in hierarchical manner with one top level and many lower level diagrams with each representing separate parts of the system. A DFD shows what kind of information will be input to and output from the system, where the data will come from and go to, and where the data will be stored. It does not show information about the timing of processes or information about whether processes will operate in sequence or in parallel Since diagrammatic representations are easier to interpret as compared to the technical

descriptions, the non-technical users can also understand the system details clearly. DFD consists of four basic notations which help to depict the information in the system. These notations are rectangle, circle, open-ended rectangle, and arrows.



Represents an external entity that is the source or destination of data within the system. Each external entity is represented by a meaningful and unique name.



Represent processes that show transformation or manipulation of data within the system



Represent data stores that indicate the place for storing information within the system.



They are used to represent data flows that show the movement of data from its source to destination within the system.

### 4.3 ER DIAGRAM

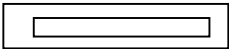
An entity–relationship model (ER model) is a data model for describing the data or information aspects of a business domain or its process requirements, in an abstract way that lends itself to ultimately being implemented in a database such as a relational database. The main components of ER models are entities (things) and the relationships that can exist among them, and databases. An entity may be defined as a thing capable of an independent existence that can be uniquely identified. An entity is an abstraction from the complexities of a domain. When we speak of an entity, we normally speak of some aspect of the real world that can be distinguished from other aspects of the real world. A relationship captures how entities are related to one another. Relationships can be thought of as verbs, linking two or more nouns. Examples: an owns relationship between a company and a computer, a supervises relationship between an employee and a department, a performs relationship between an artist and a song, a proved relationship between a mathematician and a theorem. Entities and relationships can both have attributes. Every entity (unless it is a weak entity) must have a minimal set of uniquely identifying attributes, which is called the entity's primary key. Entity–relationship diagrams don't show single entities or single instances of relations. Rather, they show entity sets and relationship sets.



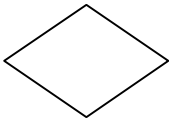
**ER Diagram Notations**



Entity



Weak entity



Relationship



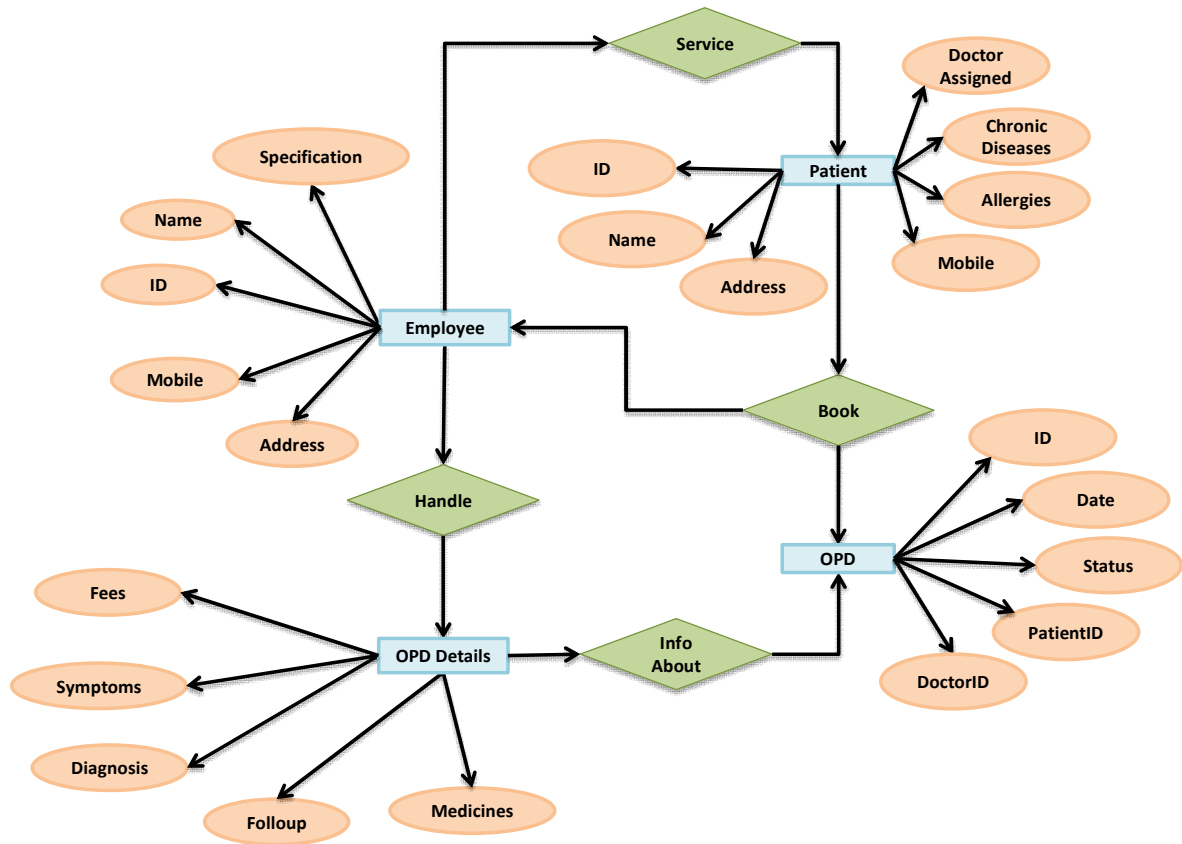
Attribute

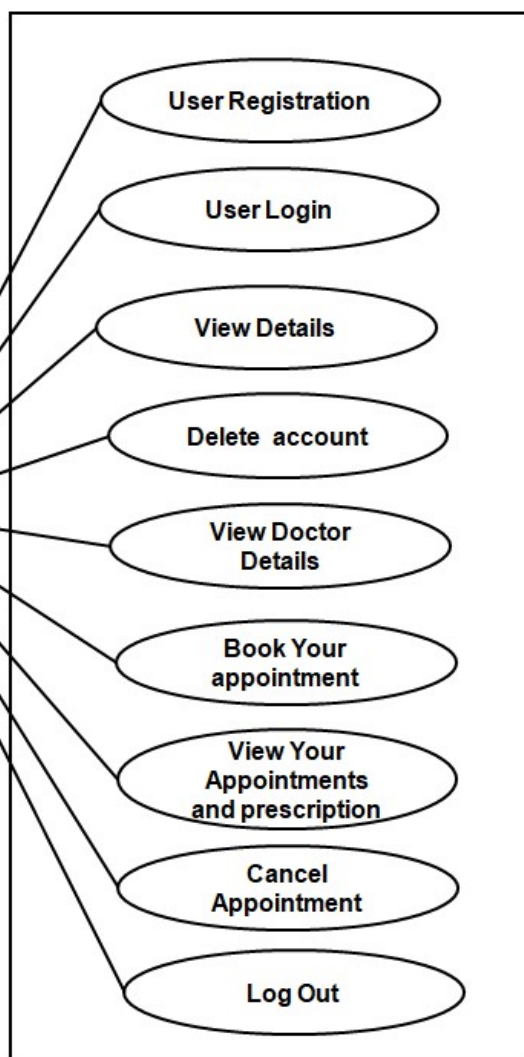


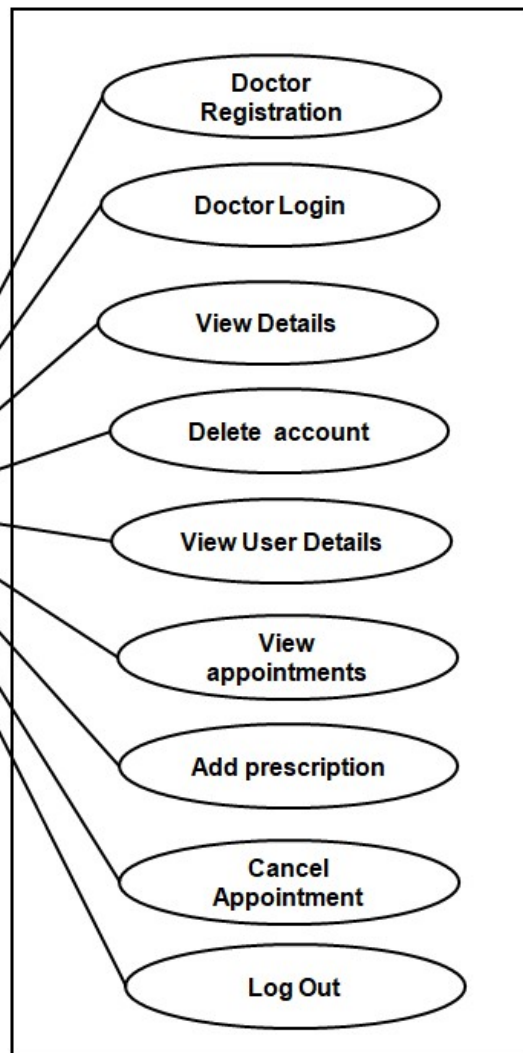
Key Attribut

**ER Diagram**

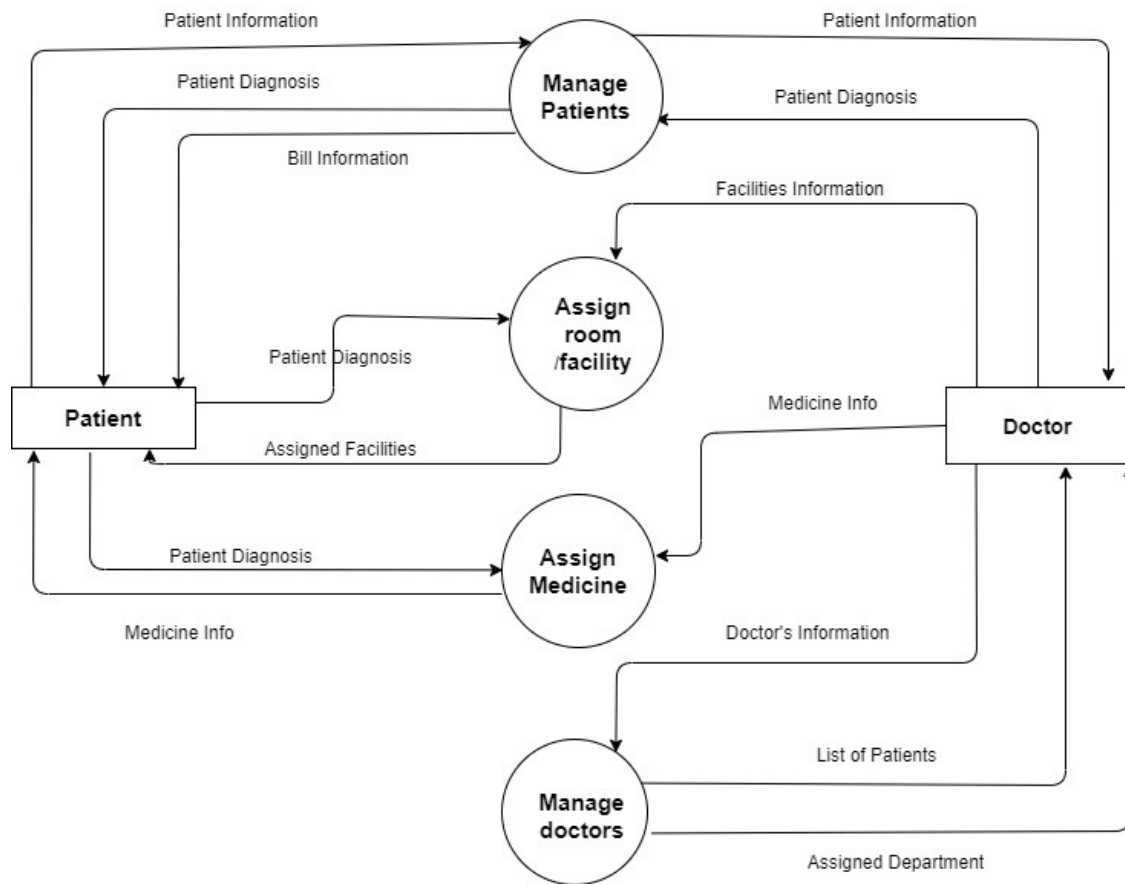
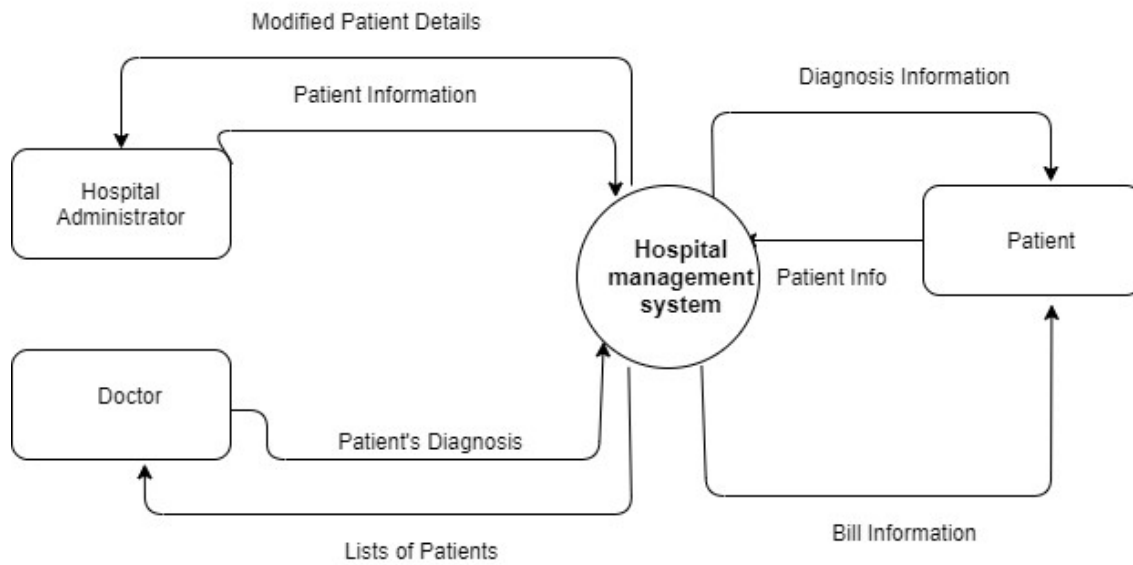
## ER Diagram Hospital Management System



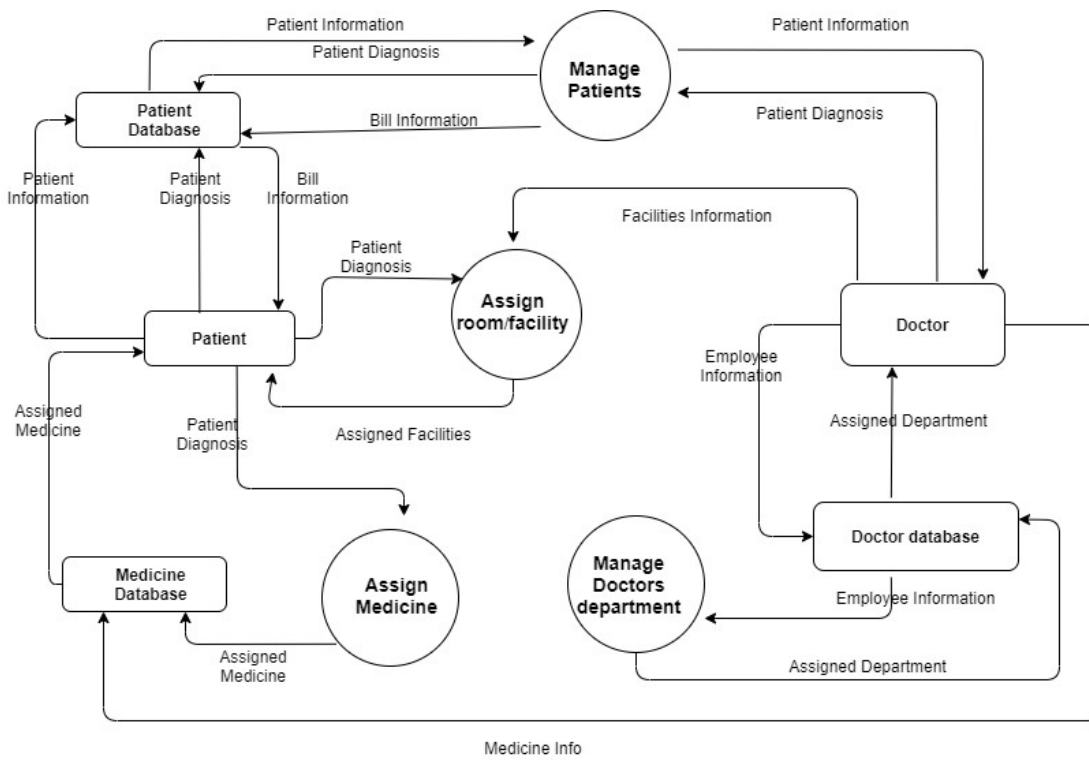




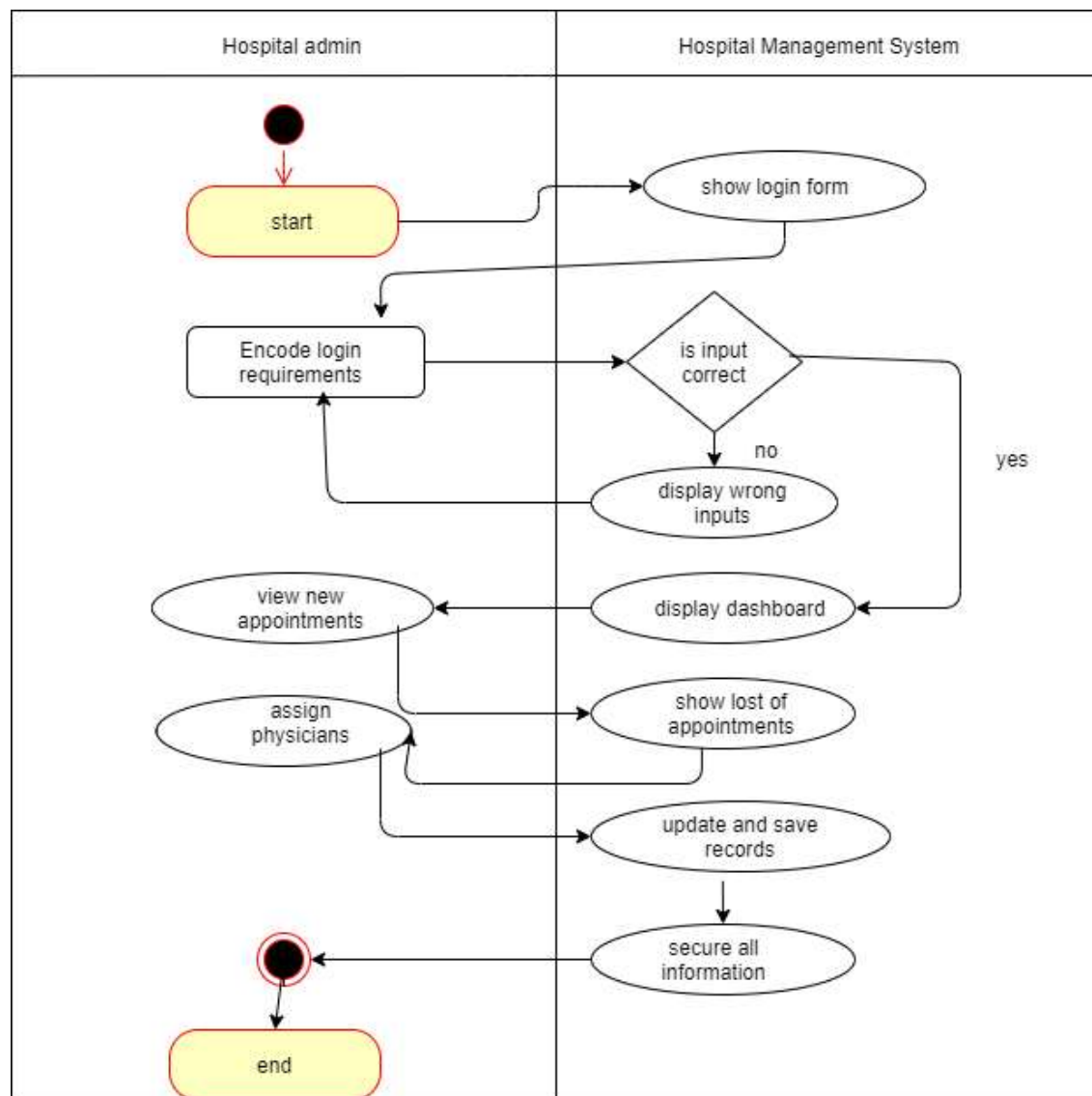
## Data Flow Diagram Level 0

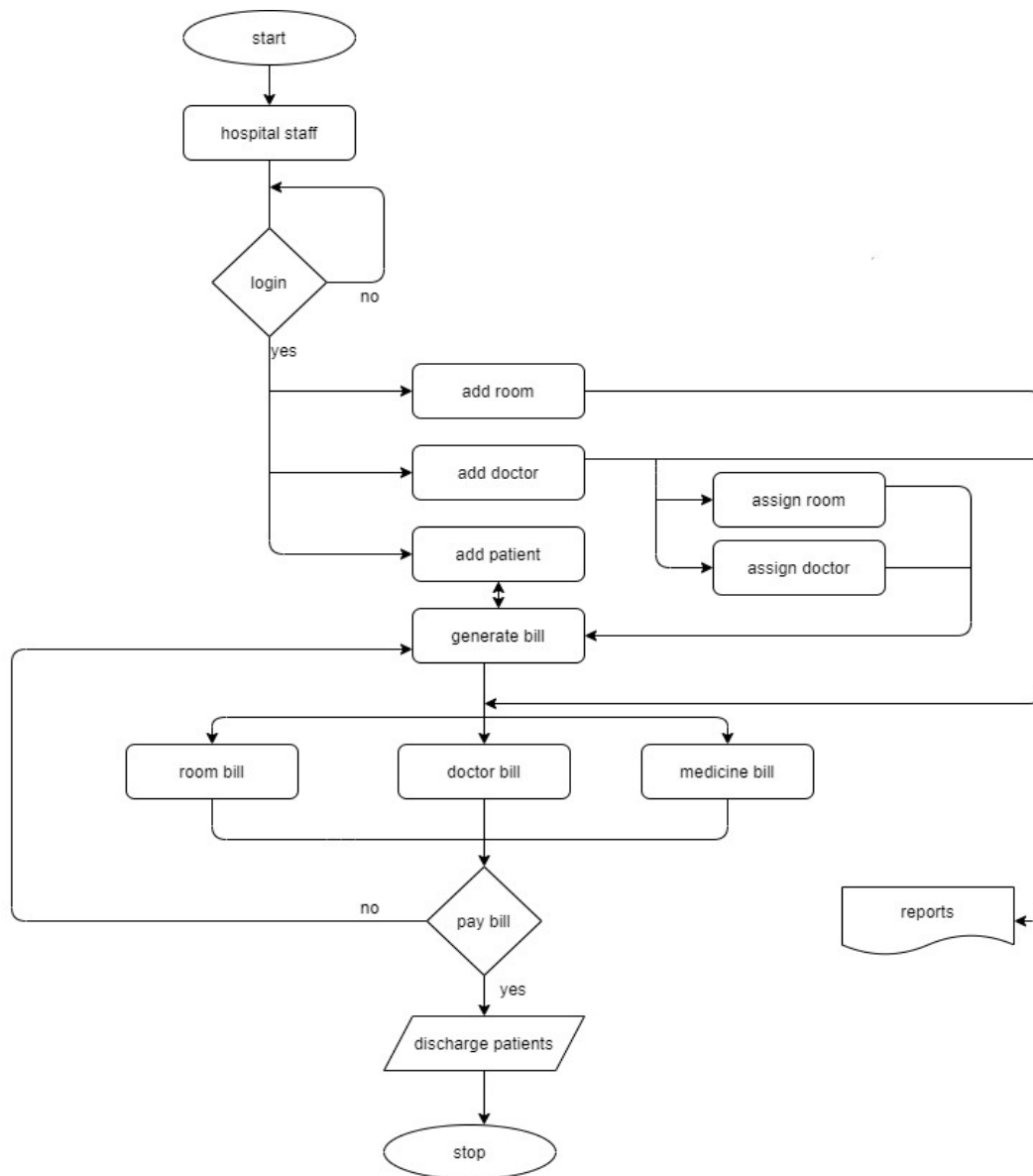


## DFD level 1

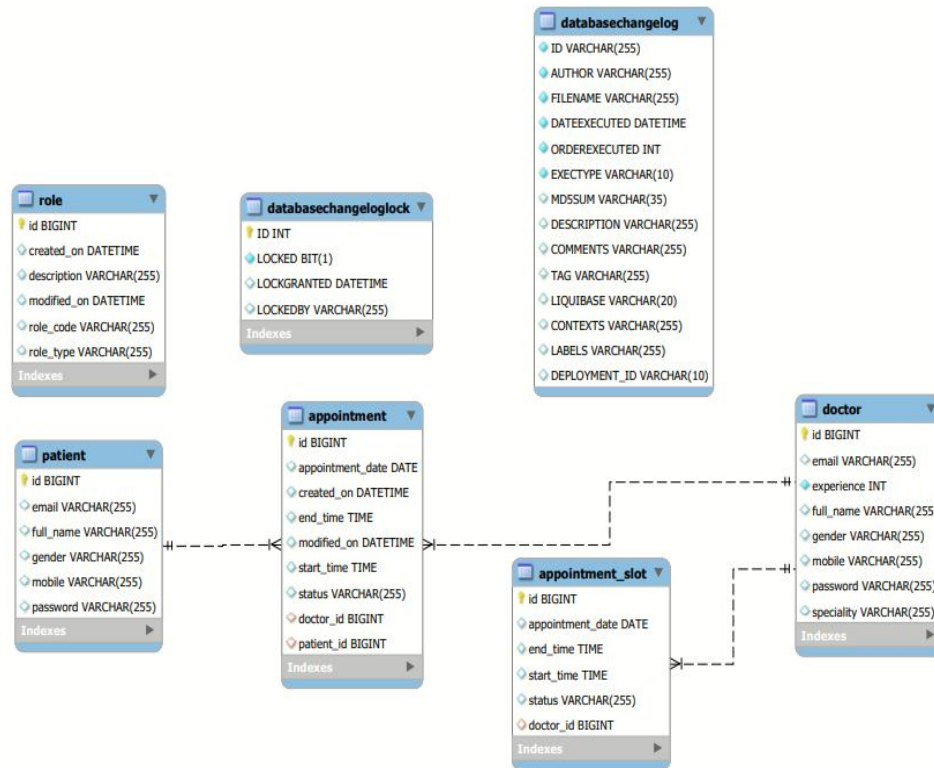


DFD level 2









Activate Window  
Go to Settings to act

### 4.3 DATABASE DESIGN

Database design is the process of producing a detailed data model of a database. This logical data model contains all the needed logical and physical design choices and physical storage parameters needed to generate a design in a data definition language, which can then be used to create a database. The term database design can be used to describe many different parts of the design of an overall database system. Principally, and most correctly, it can be thought of as the logical design of the base data structures used to store the data. In the relational model these are the tables and views. In an object database the entities and relationships map directly to object classes and named relationships. However, the term database design could also be used to apply to the overall process of designing, not just the base data structures, but also the forms and queries used as part of the overall database application within the database management system. The process of doing database design generally consists of a number of steps which will be carried out by the database designer.

Usually, the designer must:

- Determine the relationships between the different data elements.
- Superimpose a logical structure upon the data on the basis of these relationships

The Clinic Appointment System uses 'clinic' as its database for storing all the data in tables for data processing.

## 4.4.2 TABLE DESIGN

**Table: Appointment**

Field	Type	Null	Key	Default	Extra
Id	Bigint	NO	PRI	NULL	auto_increment
Appointment_date	Date	YES		NULL	
created_on	datetime	YES		NULL	
end_time	Time	YES		NULL	
modified_on	datetime	YES		NULL	
Start_time	Time	YES		NULL	
status	varchar(255)	YES		NULL	
doctor_id	Bigint	YES	MUL	NULL	
patient_id	Bigint	YES	MUL	NULL	

**Table: appointment\_slot**

Field	Type	Null	Key	Default	Extra
Id	bigint	NO	PRI	NULL	auto_increment
appointment_date	date	YES		NULL	
end_time	time	YES		NULL	
Start_time	time	YES		NULL	
status	Varchar(255)	YES		NULL	
Doctor_id	bigint	YES	MUL	NULL	

**Table: doctor**

Field	Type	Null	Key	Default	Extra
Id	bigint	NO	PRI	NULL	auto_increment
email	varchar(255)	YES		NULL	
experience	int	NO		NULL	
full_name	varchar(255)	YES		NULL	
gender	varchar(255)	YES		NULL	
mobile	varchar(255)	YES		NULL	
password	varchar(255)	YES		NULL	
speciality	varchar(255)	YES		NULL	

**Table: patient**

Field	Type	Null	Key	Default	Extra
Id	bigint	NO	PRI	NULL	auto_increment
email	varchar(255)	YES		NULL	
full_name	varchar(255)	YES		NULL	

<b>gender</b>	<b>varchar(255)</b>	<b>YES</b>		<b>NULL</b>	
<b>mobile</b>	<b>varchar(255)</b>	<b>YES</b>		<b>NULL</b>	
<b>password</b>	<b>varchar(255)</b>	<b>YES</b>		<b>NULL</b>	

## **6.Conclusion:**

This proposed Online clinical appointment System gives a reliable platform for both User and doctor. The BBMS is a web-based application that helps to minimize human errors and problems pertaining to data redundancy. It is a fast-paced and efficient way to communicate without any security threats as the data entered will be verified and frequently updated thereby increasing the probability of saving one's life.

### **Future scope**

Online clinical appointment System which we believe will bring remarkable change. Support of various regional languages for better reach. The size of the database may increase exponentially, so our BBMS is made such that it is scalable and can be deployed on cloud storage systems like Amazon Elastic Compute Cloud (EC2) or Google's Kubernetes Engine (GKE) after containerizing the application.

## **References:**

ONLINE REFERENCE

<https://www.eraktkosh.in/BLDAHIMS/bloodbank/transactions/bbpublicindex.html>