Low Level Design Document

Hospital Management System

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1. **Introduction**

The main aim of the design phase is to provide the solution for the specified requirements. To solve the health problems of the human beings, hospitals play a major role. To make the work of the staffs at the hospitals easy, this hospital management system can play a major role. Hospital management system is the system which is developed to minimize the pen paper work at the hospitals.

1.2 Purpose

The purpose of the low-level design for the Hospital Management System project is to provide a detailed technical blueprint for the implementation of the application's functionality and features. The low-level design will outline the specific steps and processes required to create the web-based application, including the specific technologies, programming languages, and frameworks that will be used. It will also provide a detailed description of the system's architecture, including the structure of the database, the flow of data between different components, and the overall system design.

This software will help to be more efficient in registration of their patients and manage appointments, records of patients. The purpose of this project is to computerize all details regarding patient details and hospital details.

1.3 Document Conventions:

1.3.2 Diagrams: diagrams are used to help explain complex concepts and relationships

1.4 Intended Audience and Reading Suggestions:

This document is intended for developers, project managers and other technical stakeholders who will be involved in the design, development, and implementation of the hospital management system.

The document is organized in a way that allows readers to understand the system's architecture and implementation details, even if they are not familiar with all the technologies

1.5 References

Java documentation: https://docs.oracle.com/en/java/
Html documentation: https://developer.mozilla.org/en-US/docs/Web/HTML
My SQL documentation:
https://docs.spring.io/springboot/docs/current/reference/htmlsingle/

2. System details
System Architecture:
The system architecture of the Healthcare Management System software project will be based on a three-tier architecture, with the following components:

Presentation Layer: This layer will consist of the user interface, which will be responsible for displaying information to the user and accepting input from the user.

Application Layer: This layer will consist of the business logic and data access components, which will be responsible for processing data and implementing the business rules of the system.

Database Layer: This layer will consist of the database, which will be responsible for storing and retrieving data.

Technology Stack:
The technology stack for the Hospital Management System software project will include scripting languages such as spring boot, and a front-end technology, such as HTML, CSS, and JavaScript. A relational database management system, such as MySQL, will be used to store and manage the data.

Data Structures:
The data structures used in the Hospital Management System software project will be based on the relational database management system. The system will store data in tables, with each table representing a different type of data, such as patient information, appointment information, treatment information, and billing information. The data will be stored in a structured format and will be accessible through the use of SQL queries.

Software Architecture:

The software architecture of the hospital Management System software project will be based on a client-server architecture, with the front-end and the back-end separated into two distinct components. The front-end will be responsible for the presentation of the data and the user interface, while the back-end will be responsible for the processing and management of the data. The communication between the front-end and the back-end will be handled through APIs.
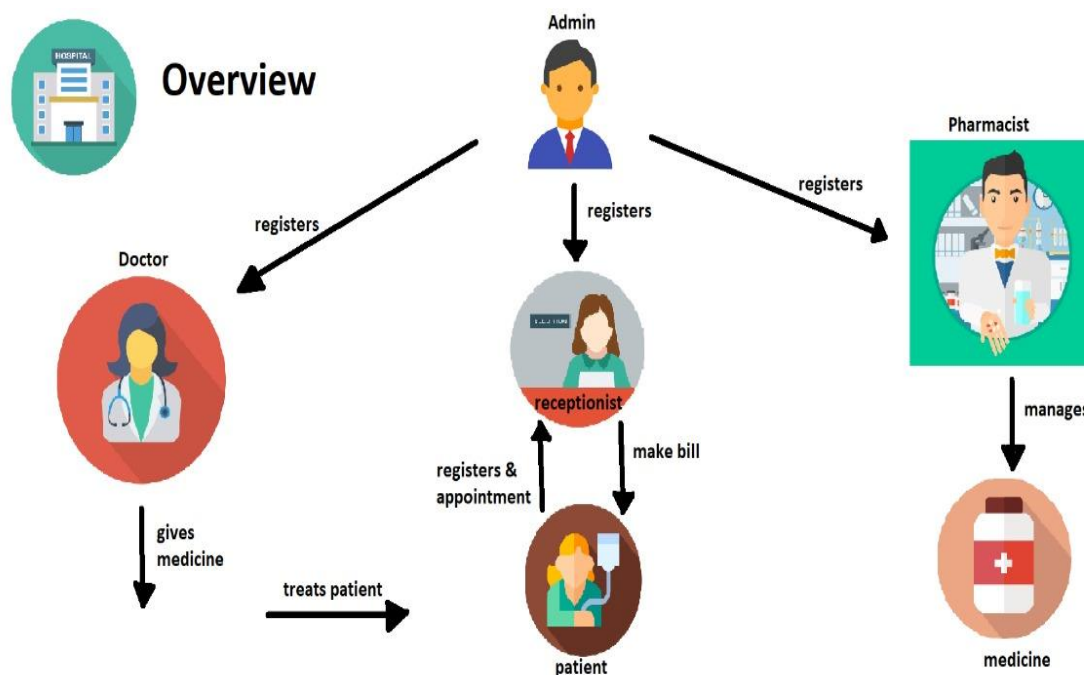
3 System Use Cases
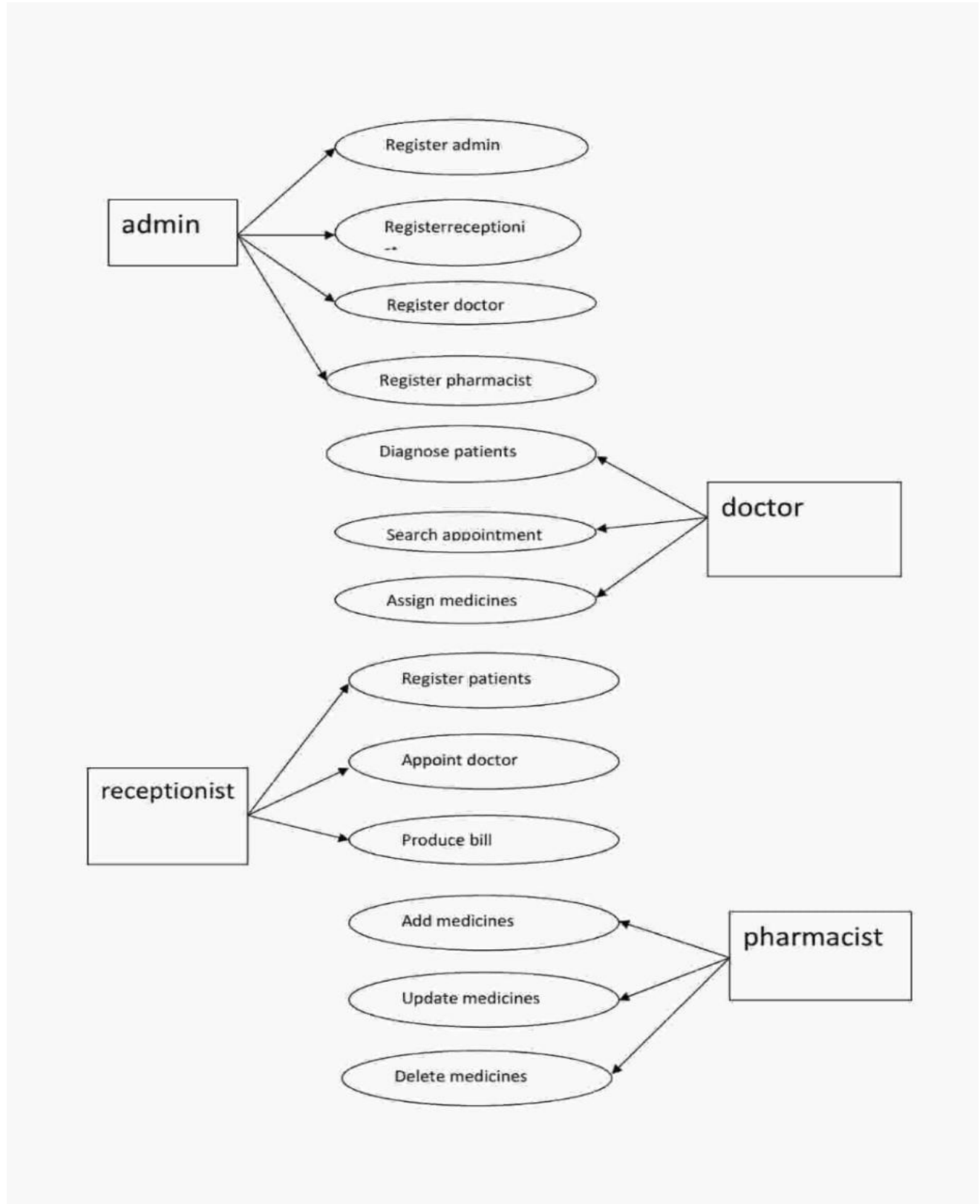
➢ Admin

The super user, admin class represents complete authority over the system an admin can

1. Admin can register Doctors, Pharmacists and Receptionists
2. View the number of users.
3. Admin can update his own profile.
4. Admin can update and delete the users.
5. Admin can view his dashboard which displays all the data entered and generated by the system.
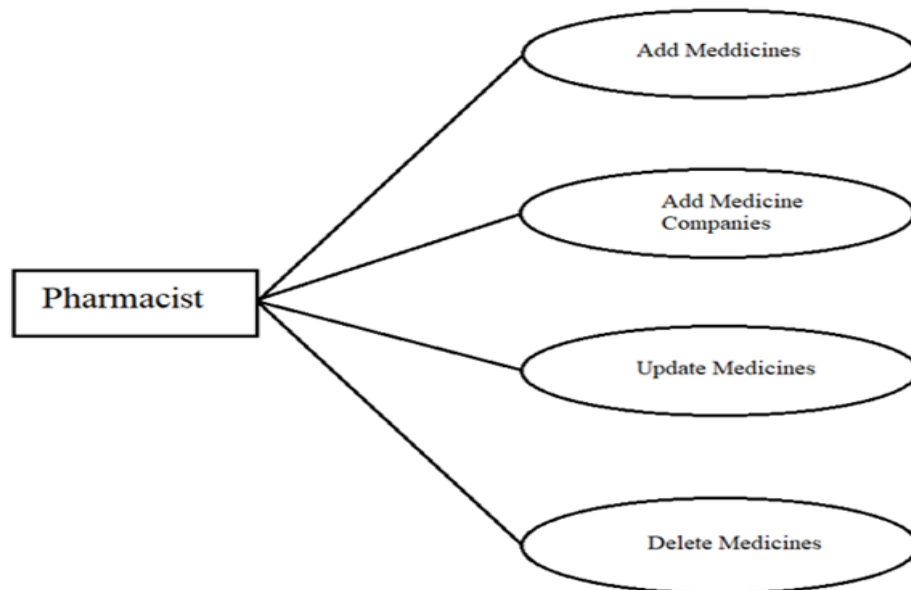6. Admin can see bill report for particular patient.
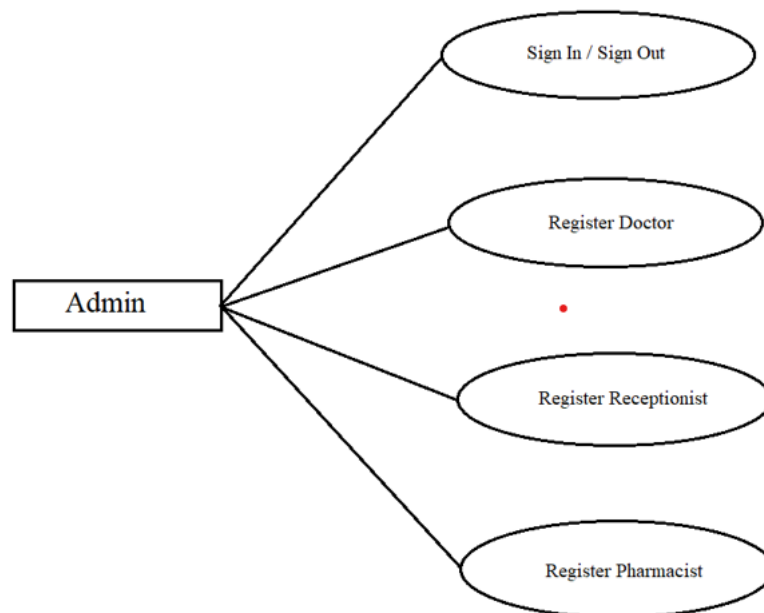
➢ **Doctor**

1. Can view his/her Patients and their appointments.
2. Can update Patient treatment status.
3. Can assign medicines to Patients based on their diagnosis
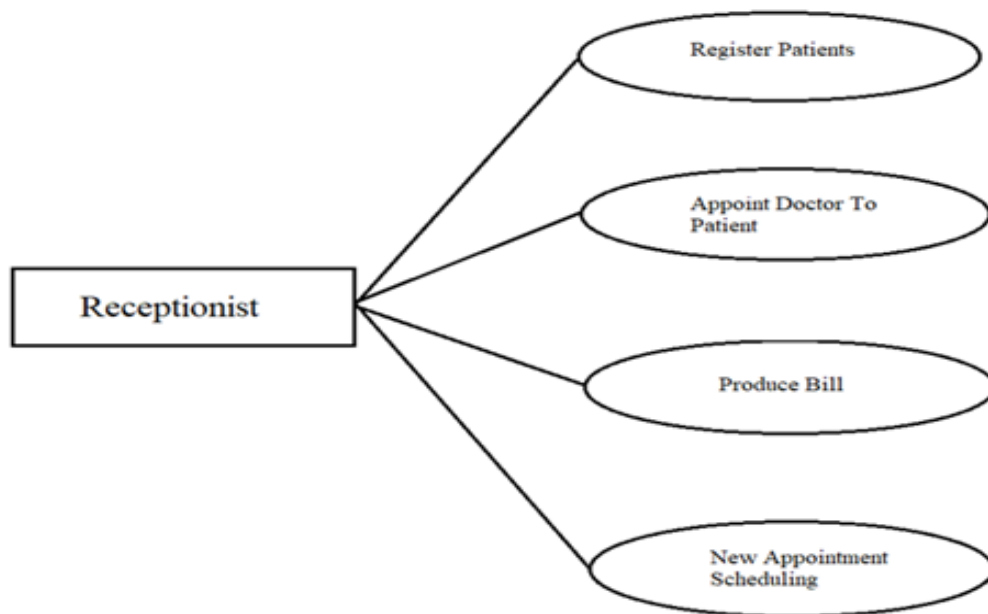4. Adds the fee amount for that particular patient.
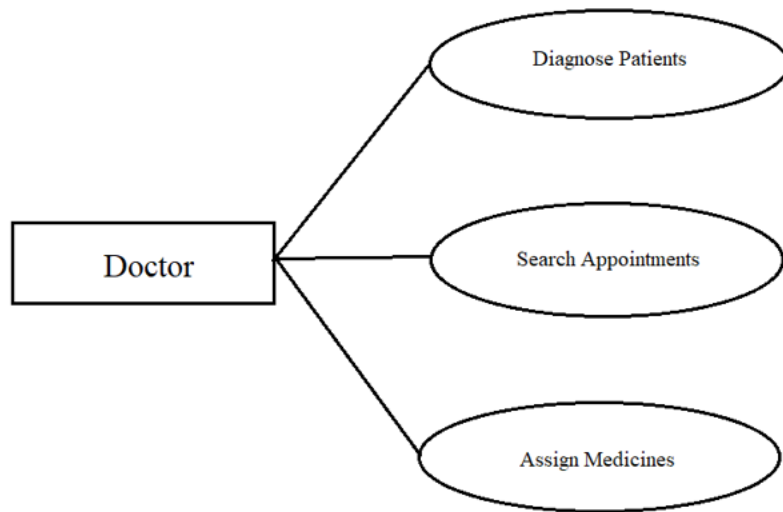
pharmacist

1. Can add Medicines.
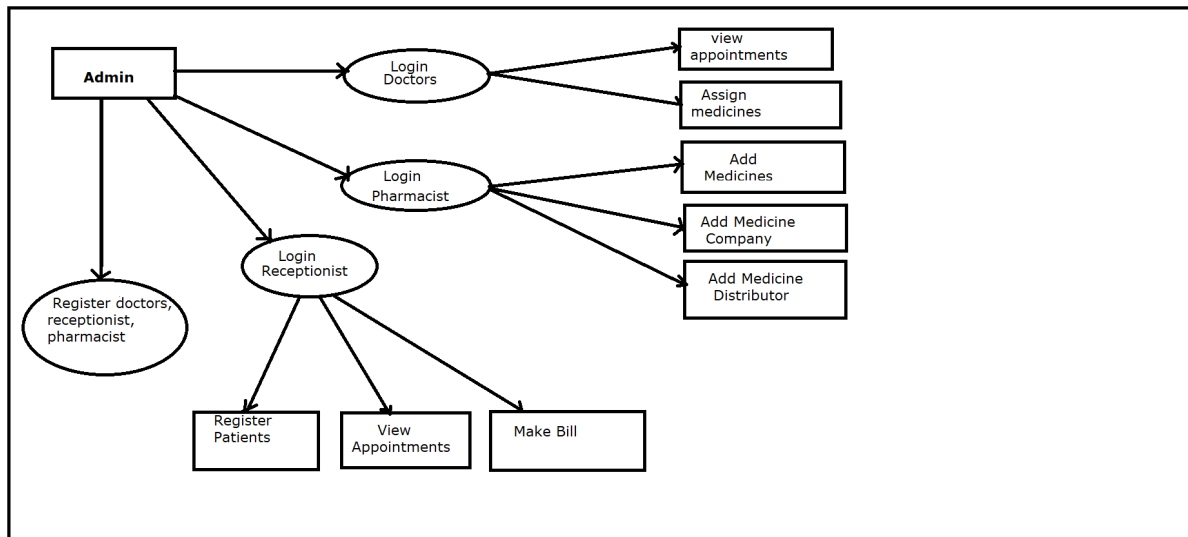2. Can add Distributors.
3. Can add Medicine Company.

➢ Receptionist

1. Can register Patients.
2. Can book appointments for patients.
3. Can view Appointment status and Treatment status for patients.
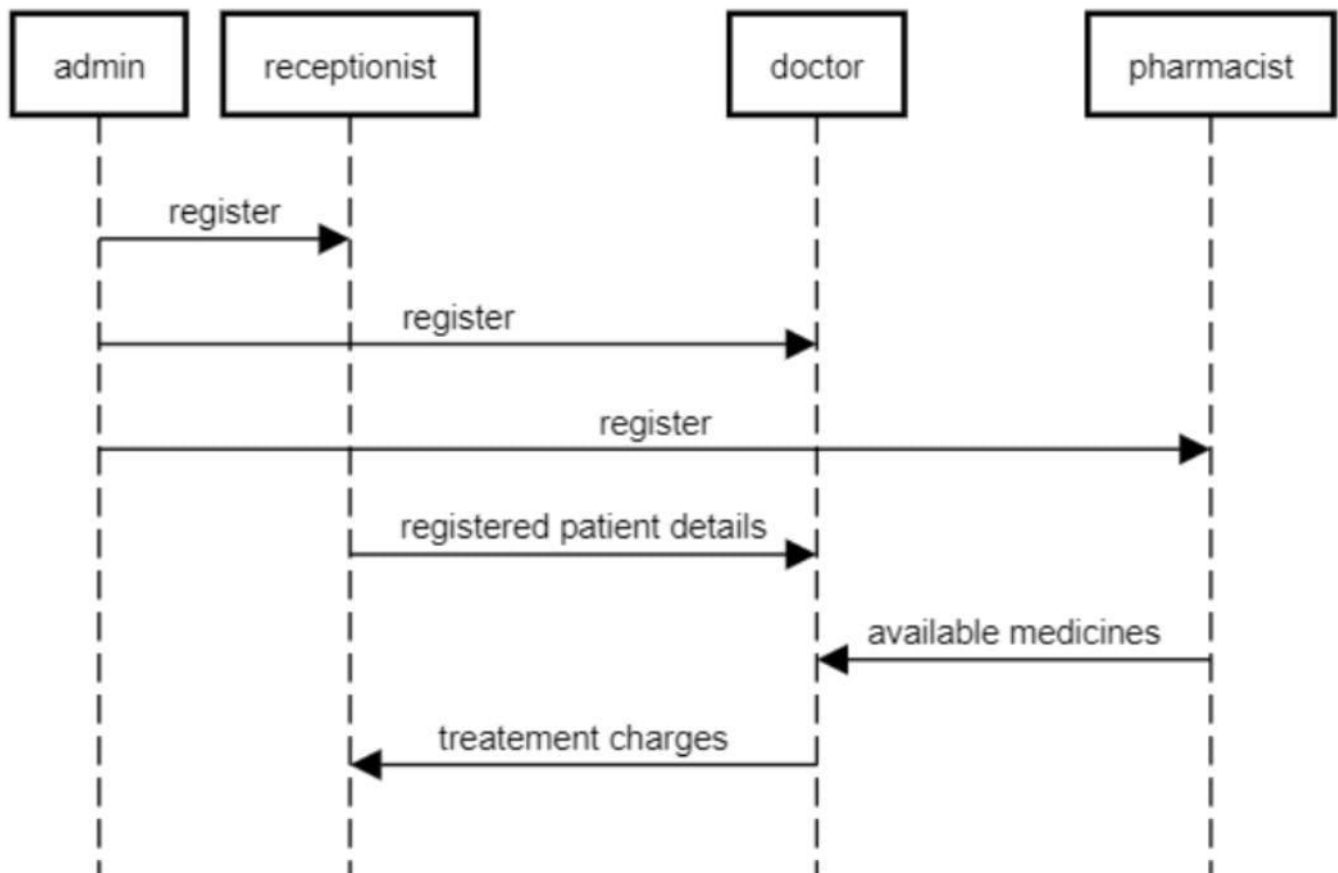4. Can generate and download patient Bill.

4. Detailed System Design

Design Description:

Sequence diagram:

hospital management system

Hospital Management System includes registration of patients, storing their details into the system, and also computerized billing in the pharmacy, and labs. The software has the facility to give a unique id for every patient and stores the details of every patient automatically. The Hospital Management System can be accessed by different users using a username and password. It is accessible by an administrator, receptionist, doctor and a pharmacist. Only the admin can register users into the database. The data can be retrieved easily. The interface is very user-friendly. The data is well protected for personal use and makes the data processing very fast.

Hospital Management System is powerful, flexible, and easy to use and is designed and developed to deliver real conceivable benefits to hospitals.

Hospital Management System is designed for multi speciality hospitals, to cover a wide range of hospital administration and management processes. It is an integrated end-to-end Hospital Management System that provides relevant information across the hospital to support effective decision making for patient care, hospital administration in a seamless flow.

Hospital Management System enables you to develop your organization and improve its effectiveness and quality of work.

Admin:

The super user, admin class represents complete authority over the system. An admin has the power to control and manage all aspects of the system. The responsibilities of the admin include:

Registering Doctors, Pharmacists, and Receptionists: The admin has the ability to add new users to the system. This includes registering doctors, pharmacists, and receptionists who will be using the system to perform their respective tasks.

Viewing the number of users:

The admin can easily view the total number of users in the system, which will help him to keep track of the number of people using the system.

Updating their own profile:

The admin can update their own profile information, such as their name, contact details, and other personal information.

Updating and deleting users:

The admin has the ability to update the information of the users and can also delete any user from the system if needed.

Viewing their dashboard:

The admin has access to a dashboard that displays all the data entered and generated by the system. This dashboard provides a comprehensive overview of the entire system, including the number of patients, appointments, and other important information.

Viewing the bill report for a particular patient:

The admin can view the bill report for a particular patient, which will provide him with details about the patient's treatment, medicines, fees, and other important information.

Doctor:

Doctors are the primary users of the system and have the responsibility of providing medical treatment to patients. The responsibilities of the doctor include:

Viewing their patients and appointments:

The doctor can view a list of their patients and their appointments, which will help them keep track of their schedule and provide better medical care to their patients.

Updating patient treatment status:

The doctor can update the treatment status of a patient, which will help the patient and their family to track their medical progress.

Assigning medicines to patients based on their diagnosis:

The doctor can assign medicines to patients based on their diagnosis, which will help the patient to get better faster.

Adding the fee amount for a particular patient:

The doctor can add the fee amount for a particular patient, which will be used to generate the patient's bill.

Pharmacist:

Pharmacists are responsible for maintaining the medicine inventory and providing medicines to patients. The responsibilities of the pharmacist include:

Adding medicines: The pharmacist can add new medicines to the system, which will help keep the medicine inventory up to date.

Adding medicine companies: The pharmacist can add new medicine companies to the system, which will help keep the record of all the

medicine companies supplying medicines to the hospital.

Receptionist:

Receptionists are the first point of contact for patients and are responsible for managing appointments and generating bills. The responsibilities of the receptionist include:

Registering patients: The receptionist can register new patients to the system, which will help keep the patient database up to date.

Booking appointments for patients: The receptionist can book appointments for patients, which will help the doctor to manage their schedule better.

Viewing appointment and treatment status for patients: The receptionist can view the appointment and treatment status for patients, which will help the patient and their family to keep track of their medical progress.

Generating and downloading patient bill: The receptionist can generate the patient bill, which will include the patient's details and medicines

Class Diagram

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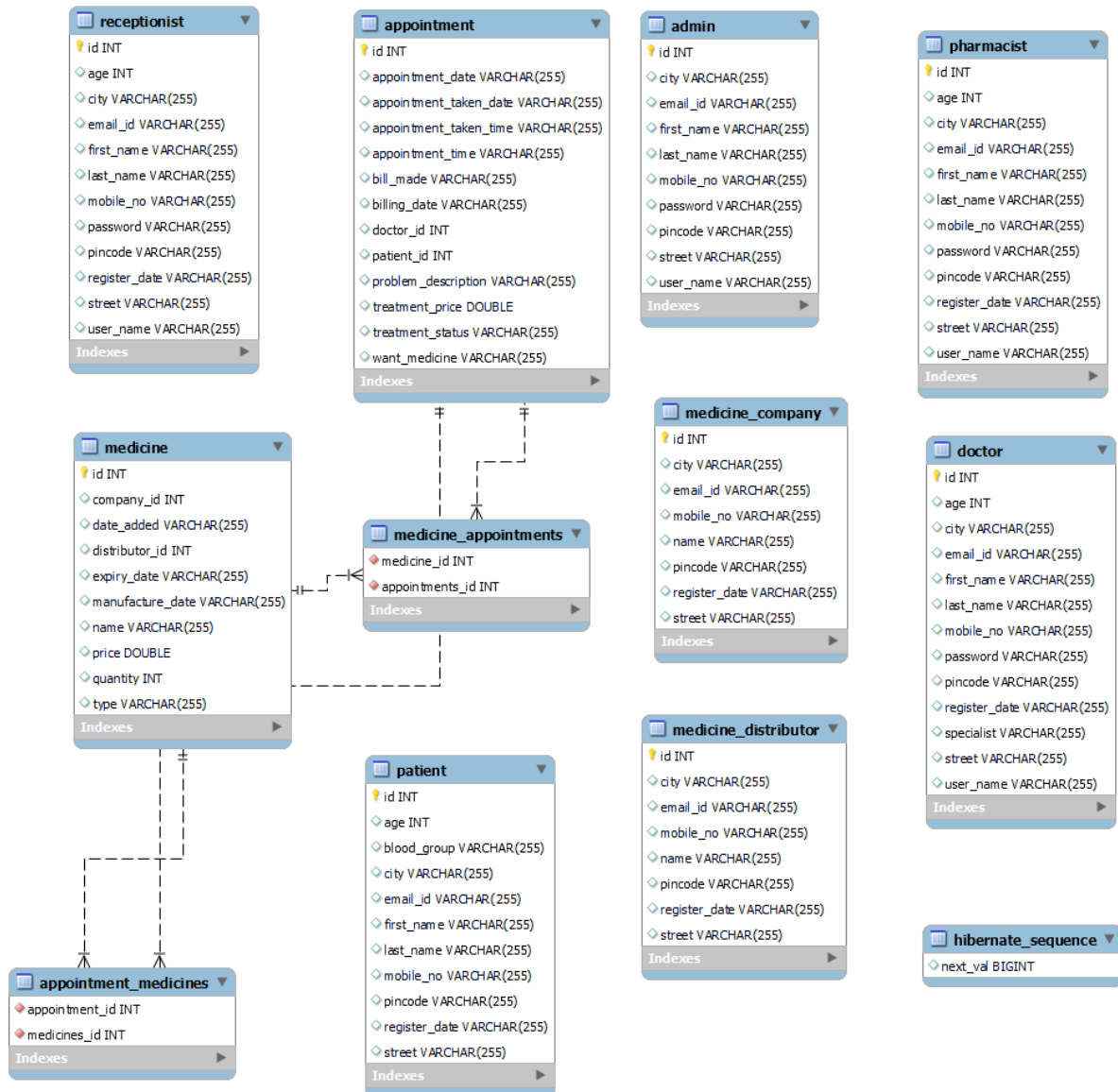
Admin: This table will store information about the administrative users of the system, including their username, password, and details about their role and responsibilities within the system.

Appointment: This table will store information about the appointments made by patients, including the billing date and time of the appointment, doctor id , and also treatment status.

Appointment Medicines: This table will store information about the medicines prescribed to a patient during a specific appointment. This table will include columns such as the appointment ID, the medicine ID.

Medicine Distributor: This table will store information about the distributors of the medicines, including register date and any other relevant details.

Doctor: This table will store information about the doctors who work within the healthcare system, including their name, specialty, and contact information.

Medicine: This table will store information about the medicines used in the healthcare system, including the name of the medicine, the manufacturer, and the price of the medicine and also the quantity.

Medicine Appointments: This table will store information about the relationship between medicines and appointments, including the appointment ID and the medicine ID.

Patient: This table will store information about the patients who book an appointment, including their name, contact information, and blood group.

Pharmacist: This table will store information about the pharmacists who work within the healthcare system, including their name, contact information, and any other relevant details.

Receptionist: This table will store information about the receptionists who work within the healthcare system, including their name, contact information, and any other relevant details.

5.1 External Interface Requirements.
The interface requirements for the hospital management system would outline the key features and functionality that the user interface should provide in order to meet the needs of the users, including administrators and patients

5.1.1 User Interfaces.
The user interface for the software shall be compatible to any browser such as Internet Explorer, Mozilla or Netscape Navigator by which user can access to the system.
The user interface shall be implemented using any tool or software package like Java Applet, MS Front Page, EJB etc.

5.1.2 Hardware Interface
Since the application must run over the internet, all the hardware shall require to connect internet will be hardware interface for the system.
As for e.g. Modem, WAN – LAN, Ethernet Cross-Cable.

5.1.3 Software Interface
The management system shall communicate with the Configurator to identify all the employees present.

5.1.4 Communications Interface
The Employee Management system shall use the HTTP protocol for communication over the internet and for intranet communication will be through TCP or IP protocol suite.