Hospital Management System

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Abstract

A Hospital Management System (HMS) is a computer-based software application that is designed to manage the administrative and clinical operations of a hospital or healthcare facility. The system is designed to automate the day-to-day tasks of a hospital, improve patient care, and enhance the operational efficiency of the facility.

HMS consists of various modules that manage different aspects of the healthcare operations. For example, the patient management module manages the patient registration, appointment scheduling, and tracking of medical records. The clinical module manages patient care, such as diagnosis, treatment, prescriptions. The billing module generates invoices, handles payments, and manages insurance claims. The inventory module keeps track of medical supplies, equipment, and medication stocks.

HMS also includes a reporting module that generates reports on patient care, financial performance, operational efficiency, and inventory management. These reports provide valuable insights to hospital administrators and help them make informed decisions to improve the overall performance of the hospital.

By using HMS, hospitals can streamline their administrative and clinical workflows, reduce errors, improve communication, and enhance patient care. The system allows healthcare providers to access patient records and treatment history, making it easier to diagnose and treat patients. Overall, HMS is an essential tool for any modern healthcare facility looking to improve their operations and deliver high-quality patient care.

Introduction

In this project we have developed the Backend of the project using Spring boot in JAVA and the Front end of the project is developed in the Angular and we have used the Cross Origins to Communicate between the Frontend and the backend of the project.

This Project is unique as we have implimented the role based content to the according to the Login Level.Only Certain users will be having the certain features enabled.This application is not prone to the CSRF Attacks as we have implimented the application using the JAVA web tockens and some Authorization and the Access levels.

Proposed System

This Application has Three levels of login like we can login as Doctor or Patient or An Admin and Patient can register and book an oppointment with the available doctors

Once Doctor is registered if the registration is success then the doctor will be receiving an email saying that the registration is success with the database then the admin of the Hospital Management will be verifying the doctor and approve the doctor once the doctor is approved Then the doctor will be notified through email to which the doctor used at the time of the registration saying the verification is

success and can login to schedule an Availabilty then the doctor will be populated to the Doctors page and available for the appointemts according to the Availabilty of the doctor.

once the Patient is registered After the successful registration the patient will be receiving an email saying that the registration is Successfull and a link to logint to the account then the patient can schedule an appointment with the available doctor according to the patient problem once the patient schedules an appointment with the doctor then the patient will be receiving an email from our hospital email with the contents of the appointment.

Once the patient scheduled an appointment then on the day of the appointment the patients that have appointment will be displayed under the doctor login and doctor can admit the patient when the patient shows up once the patient is examined then the doctor will be able to provide the prescription.Once the prescription is added to the patieent then the prescription will be availabe under the patient login.

WORK FLOW

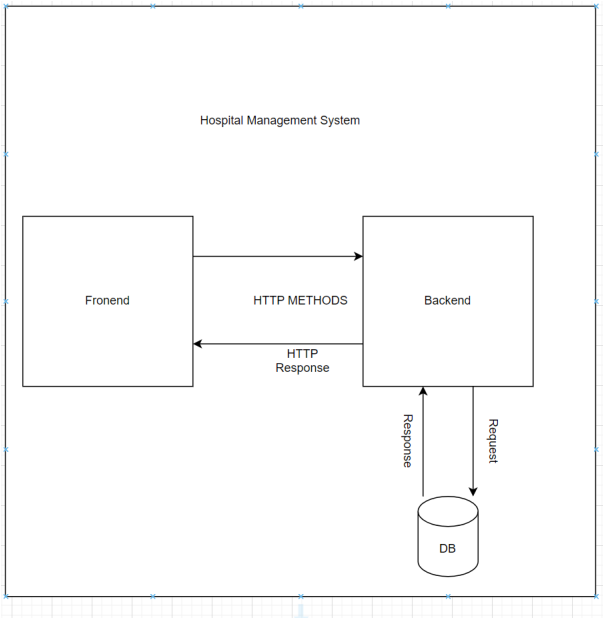

Fig 2: Work flow diagram

The project has been done in a different method such that both applications Front end and Backend have a common database in which the data is stored. The we have implimeted controllers in java such that once the end point of the API's is accessed then the controller will come to play and access all the business logic.

The REST API's are designed and implimented in Java using Spring boot Architecture and these end points are accessed using the Front end of the application.

The application is developed in such a way that most of the properties of the applicaion is available in the sysetem.propertries file so that the development is rapid and easy to migrate from one database to another easily using the properties file.

System Architecture

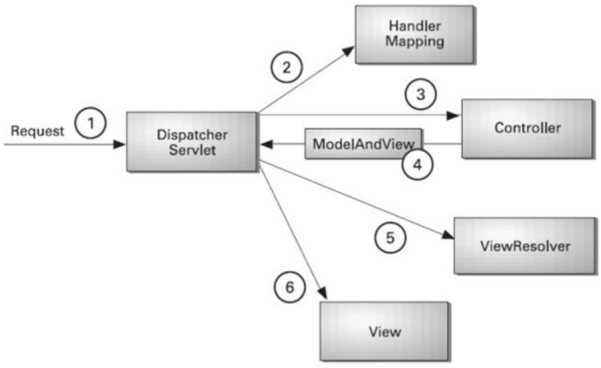

Fig 3: System Architecture diagram

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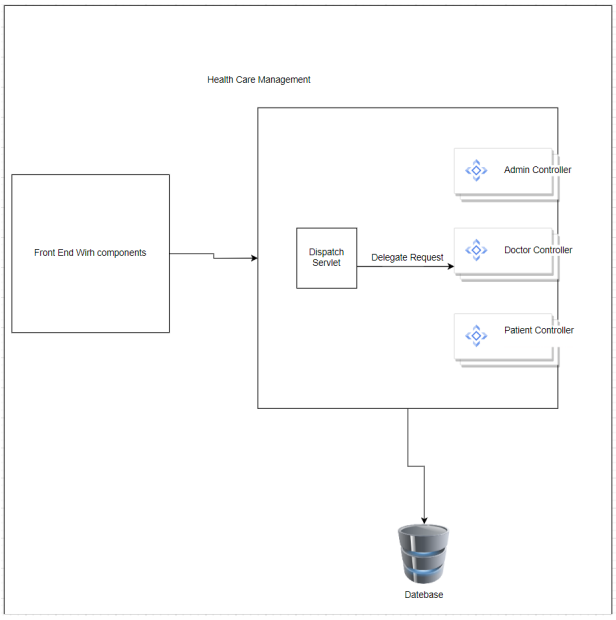

Fig 3: System Architecture diagram

Implementation

The project is implemented in a unique way, with the front end of the application being developed using Angular framework and the back end of the project being implemented using the java Spring boot and developed those API's in Spring architecture and exposed all the end points of the Application once the end points are accessed then the controller methods of the back end prohgram hit the database and access all data and do the appropriate action.

Doctor Login:

Once Doctor is registered if the registration is success then the doctor will be receiving an email saying that the registration is success with the database then the admin of the Hospital Management will be verifying the doctor and approve the doctor once the doctor is approved Then the doctor will be notified through email to which the doctor used at the time of the registration saying the verification is success and can login to schedule an Availabilty then the doctor will be populated to the Doctors page and available for the appointemts according to the Availabilty of the doctor.

B. Patient Login and Registration:

once the Patient is registered After the successful registration the patient will be receiving an email saying that the registration is Successfull and a link to login to the account then the patient can schedule an appointment with the available doctor according to the patient problem once the patient schedules an appointment with the doctor then the patient will be receiving an email from our hospital email with the contents of the appointment.

Once the patient scheduled an appointment then on the day of the appointment the patients that have appointment will be displayed under the doctor login and doctor can admit the patient when the patient shows up once the patient is examined then the doctor will be able to provide the prescription.Once the prescription is added to the patieent then the prescription will be availabe under the patient login.

C. Admin Login:

Under this login we can see all the registered Doctors and the doctors who are registered and should be approved.

Results and Analysis

Conclusion

By Implimenting this way we can defened against all the attacks such as CSRF and Xss Persistant attacks so that the HTTP methods are secure.

Future Work

The project now has limited features of the Hospital Management System which are required and important and in future will see the possibiltites of connecting the database use the endponits to the Mobile Applications and integrate HL7 language with the databse and create End points for the HL7 data.