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Hospital Management System

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Abstract:- The primary goal of this Hospital Management System project is to give hospitals that suggest E-Medical Management a web-based platform that does away with the necessity for paper prescriptions. Traditionally, a hospital's various administration departments are run independently and by hand. This takes a lot of time, paperwork, and people. Many essential everyday procedures at the hospital will be automated by this project. Furthermore, the technology facilitates the management of patient records, doctor record and appointments. The Three categories that make up this project: Admin Panel, Doctor Panel, and Patient Panel. The system is fully within the admin's control. A patient can sign up and begin using it in accordance with their requirements.

Keywords:- *Hospital Management System, Online Appointments.*

I. INTRODUCTION

The most important component of our society is health care, although providing services to people can be difficult for many healthcare institutions. Hospital Management System was created to help hospitals deal with less difficulties. In essence, a hospital management system is a software solution created to aid healthcare organizations in a variety of duties. It also aids hospitals in scheduling, billing, and other administrative tasks. It gathers and manages medical records, doctor information, error-free administration, etc. Additionally, it increases productivity by decreasing various kinds of mistakes. A hospital management system is necessary for healthcare organizations because it minimizes wait times, such as those at the front desk, and allows for more precise, better patient care. It appears that the hospital data is better secured by the hospital management system.

However, the current manual system can have a risk of document loss, which can be a problem at times. Hence, a system is required in order to overcome all such disadvantages or problems or the challenges that are being faced by the people that are associated with the hospital.

II. LITERATURE SURVEY

[1] In the year 2022, the paper proposed a system that helps in replacing the manual paper-based system with a clear description of all the topics to be followed in order to develop a project. They include all the aspects such as methodology, project plan, feasible schedule, risk management, background study, design, implementation, testing. It gives a clear picture about how to go through the entire process of development of project in a better, efficient and planned way.

[2] On the other hand, in the year 2022, the proposed system computerized most of the hospital's daily operations and divided the complete system into five modules and included many features that are needed to the people by replacing the paper work and this system makes it simpler to sort information by using the search feature. In simpler words, it can be said that they automated many hospital’s operations and provided a better understanding to develop it through web technologies.

[3] In the year 2017, the paper had demonstrated a very simple design and implementation that helps you to collect most of the information about hospitality which is user-friendly software with minimum resources. They mainly focused on allocating patients to doctors and doctor search. The system that they developed is user-friendly where administrator is given the complete control over the whole system with greater efficiency and accuracy. The primary aim is to reduce paper work in the reception area and to reduce the time wasted by patients for waiting for their files to be retrieved.

[4] In the year 2005, a paper reviewed the HIS (Hospital Information Systems) which are widely used in many hospitals in China mainly to provide easier and faster way for daily medical tasks or activities with a GUI and provides a way for overcoming some of the limitations of HIS like improving quality of health care services but do not have way of evaluating /measuring those. So, this paper proposes HSMS (Hospital Services Management System) which aims at improving quality of services, identifying cost reduction areas, analyses and evaluate/rate healthcare services.

[5] In the year 2015, the was made on the automated system that helps in managing patient information and administration. They presented their complete work of Hospital Management System in this project which is having the description of all the operations along with the necessary requirements.

III. METHODOLOGY

- The project contains 3 modules-Admin, doctor and patient. Initially, the modules are developed individually and then integrated into one system. The system was implemented using python's Django framework and to design a user-friendly interface, HTML, CSS, Bootstrap are used.
- Django framework helps to develop the projects in an easier and efficient way with high level abstractions as it follows ORM (Object Relational Mapping). The database used is SQLite which is Django's default database with the Django's development server. The primary operations included are management of appointments, reports, doctors, patients, feedbacks.
- Moreover, the Admin module has been given the complete control over the system through which he can be able to do many of the primary operations such as booking appointments, managing patients, managing doctors along with their respective feedbacks.
- On the other hand, the doctor can manage the appointments of their respective patients and their reports.
- Finally, the patient simply registers and uses the system as per their need.

➢ *Existing System*

Presently, all the hospital functionalities are done manually. So much paper work is needed under the current approach, and data repositories are dispersed throughout the hospital administration infrastructure. Information is frequently lacking or is inconsistent to management standards.

The limitations of the existing system include problems such as retrieval of records of previous user's details is a tedious task, lot of paper work and services are done manually, is a time-consuming task, lack of security for the data, anyone can disarrange the records, requires large quantities of file cabinets for storing the data, which is huge and require huge space and retrieving data from that it is very tough task.

➢ *Proposed System*

The proposed system is an idea that emerged to design a web application. The goal was to replace any hospital's manual paper-based system. This new thing would compile all of the hospital's data and operations into one place. That way, the employees can control patient information, staff info, and even make invoices for patients all from one platform. On top of that it'll be efficient and cost-effective by reducing the time and resources needed compared to what's currently being used.

IV. IMPLEMENTATION

The Hospital Management System is developed using Django framework which follows MVT architecture. One type of software design pattern is the Model View Template, or MVT.

The three main parts of it are the Model, View, and Template. The Model facilitates database management. The entire User Interface portion is handled by the Template, a presentation layer.

The View interacts with a model to transfer data, renders a template, and carries out business logic. We use Visual Studio Code as a source code editor for this HMS.

➢ *In Order to Set up the Development Environment for the Django, Framework we Require the Following Steps:*

- *Python Installation:*

Django is a Python web framework, so the first step is to ensure you have Python installed on your system. If not install it from python's official website.

- *Virtual Environment (Optional):*

It's good practice to create a virtual environment for your Django project. Run this command to create a new virtual Environment : python -m veny myenv.

- *Django Installation:*

Once Django is installed, use the following command to start a new Django project: pip install Django.

- *Create a Django Project:*

After Django is installed Start a new project using the below command: django-admin startproject projectname The necessary files will be automatically created in a directory.

- *Database Setup & Initial Migrations:*

Configure database settings in settings.py file inside the project directory. Create the initial database schema by running the following command: python manage.py migrate

- *Development Server:*

You can start a development server to test your Django application locally. Use the following command: python manage.py runserver

This will start the server, and you can access your project by opening a web browser and navigating to http://localhost:8000.

- *Building UI:*

Create all the templates which handles logins, registrations and all required web pages and place them in Template folder in our project folder. Also, place the CSS files and required images in static folder and configure the settings.py file for templates and static files.

- *Handling the Operations:*

Handling the operations by writing the business logic in views.py file which is in our project folder.

V. RESULT AND ANALYSIS

➢ *User Management*

Introduction of HMS in order to overcome some of the challenges that are being faced by the many of the hospitals like lots of paper work, consumption of time and efforts. Using HMS, patients will be able to book their appointments easily without a lot of waiting times. It also reduces the burden of patients about carrying the past reports.

Initially the user has to first register to get login in case of patient. But, in case of doctor, the user should get approval for registration from admin and then he will be able to login with the corresponding credentials. Admin has his own fixed credentials, manages all the remaining users.

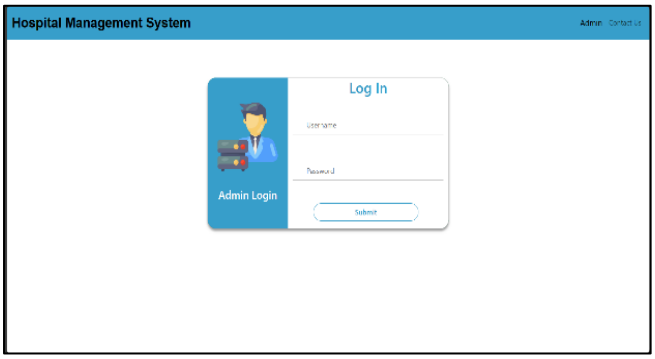

Fig 1 Admin Login Page

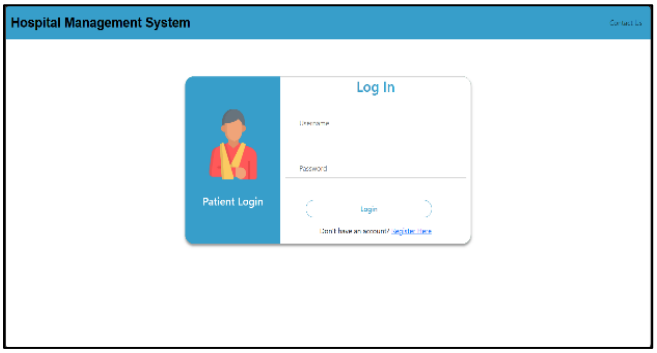

Fig 2 Patient Login Page

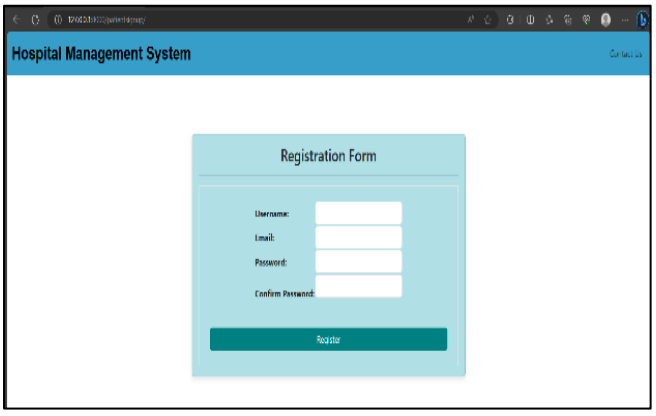

Fig 3 Patient Registration Page

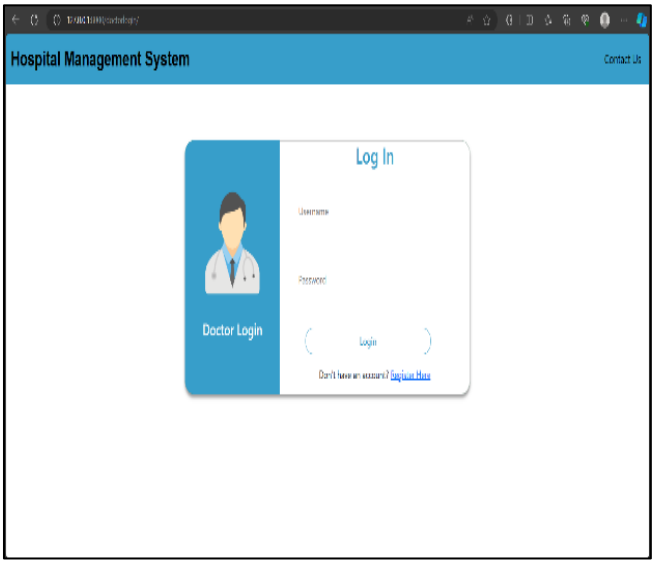

Fig 4 Doctor Login Page

- *Doctors Need to Apply to get Registered and when they Apply the Admin has to Approve their Account.*

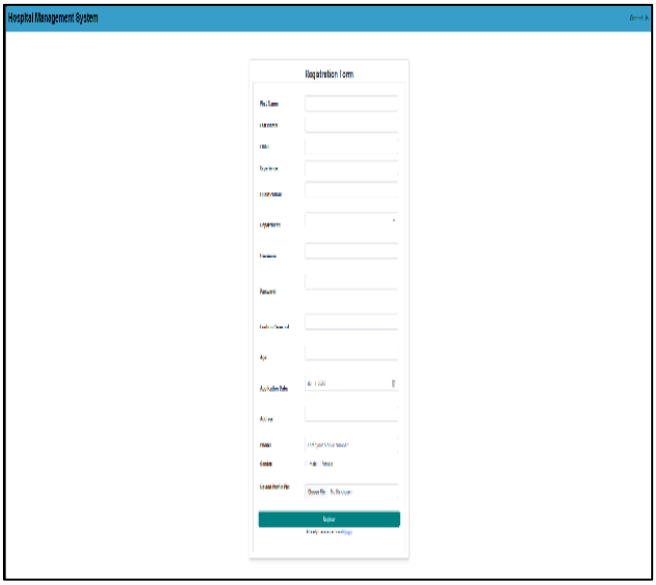

Fig 5 Doctor Registration Page

➢ *Admin Module*

Usually, an admin can do many of the operations that are done by both patients and doctors. The operations are managing appointments, managing doctors along with the approvals, managing patients, generating invoice for the discharged patients, managing feedbacks sent by doctors and patients. A basic search operation to fetch the specific doctor record is also available. The management of all the above operations includes add, delete and update. Finally, the admin need not register in the HMS as his credentials are fixed unlike doctor and patient. And admin also manages billing like printing the bill for discharged patients.

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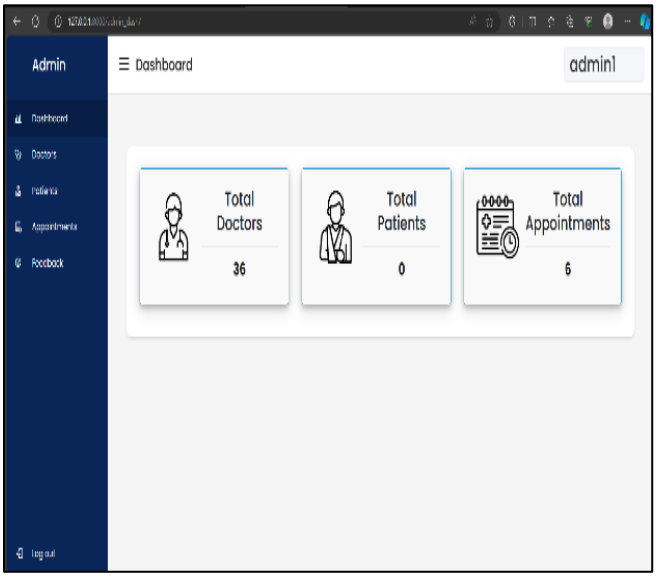

Fig 6 Admin Dashboard

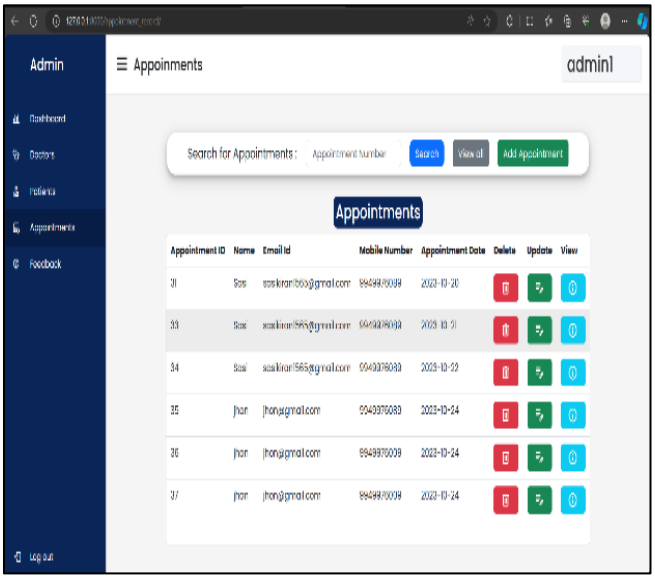

Fig 9 Admin's Appointment Panel

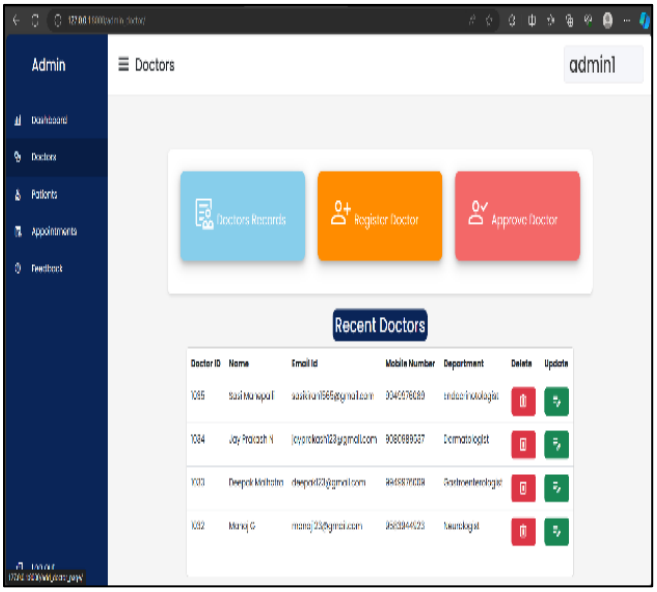

Fig 7 Admin's Doctor Panel

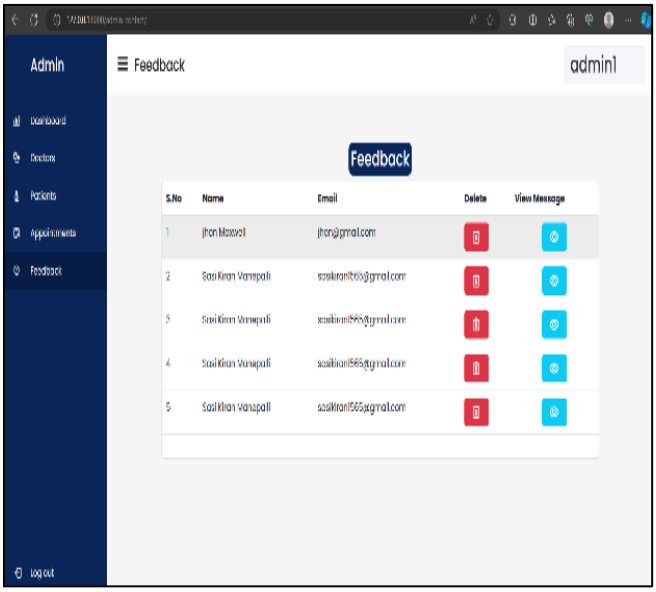

Fig 10 Feedback Panel

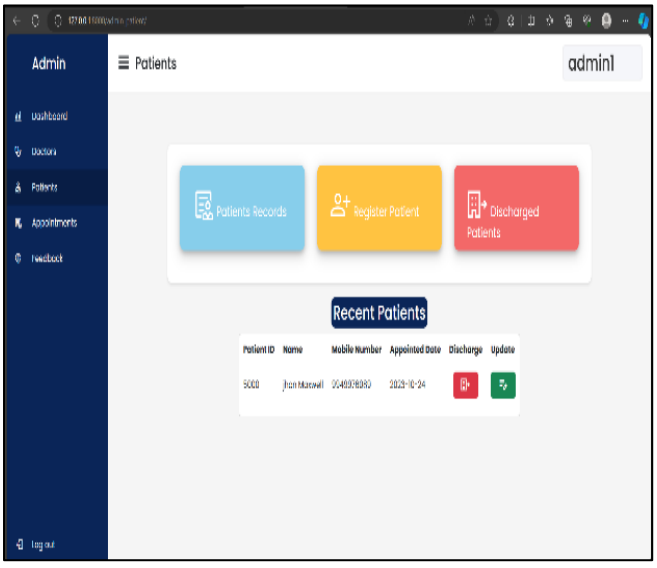

Fig 8 Admin's Patient Panel

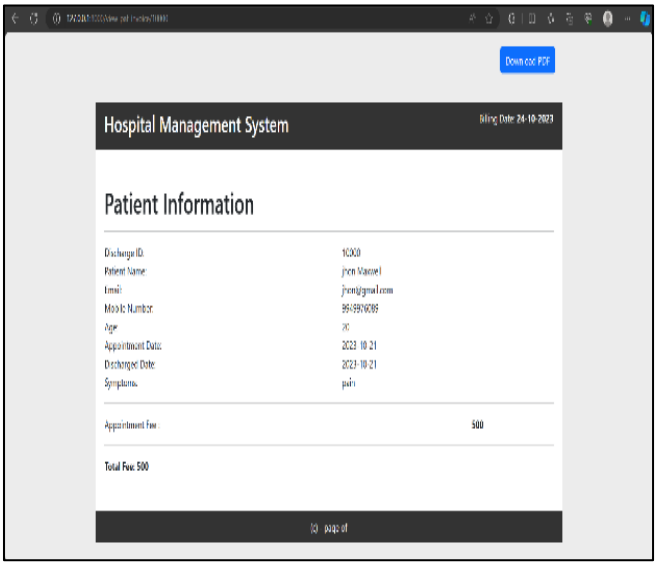

Fig 11 Billing Page

➢ *Doctor Module*

Basically, the doctor will first go through his registration process, after receiving the approval from the admin. As soon as the appointment of the patient is booked for the respective doctor, he will be able to view the details of the patient that has booked the appointment from here. After the treatment of the patient is done, he can discharge the patient. However, an additional feature of the doctor panel is the reports. The doctor has to post the reports of the patients after his treatment has been completed and those reports can be viewed in another template. That template consists of all the reports of patients with an additional search operation. Finally, a feedback form will be available where that feedbacks are sent to the admin.

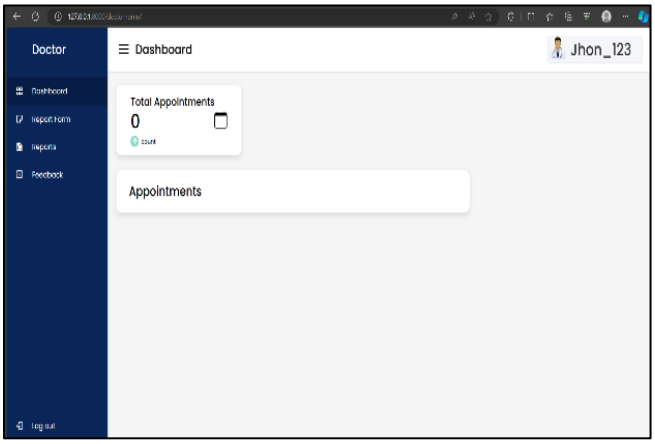

Fig 12 Doctor Dashboard

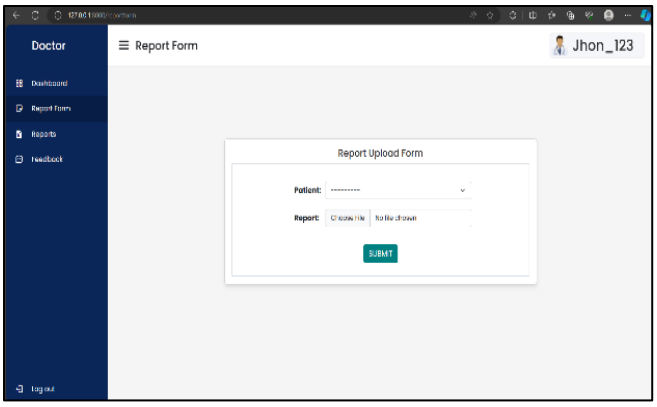

Fig 13 Report Upload Form

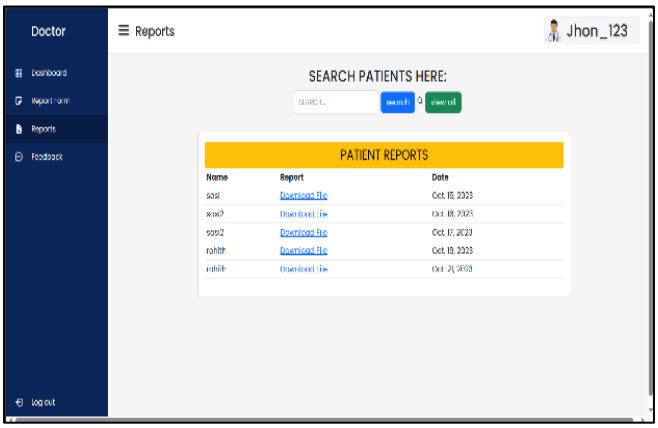

Fig 14 Previous Patients Reports

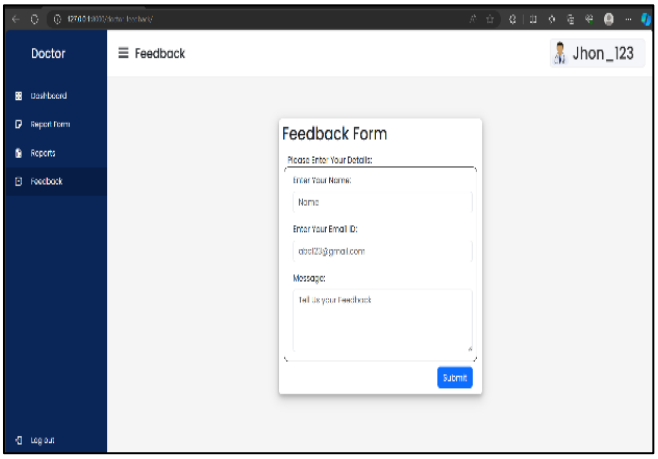

Fig 15 Doctor Feedback Form

➢ *Patient Module*

A patient is free to register in this HMS, after the registration, he can login into Hospital Management System. In his portal, he can book appointment, view his reports. The additional feature in booking appointment is that he can choose his own doctor based on the disease's department he got caused. Furthermore, the patients can view all the doctors working in HMS through their portal according to their departments. Finally, a feedback form will be available for the patients as same as doctors through which the feedbacks can be sent to the admin.

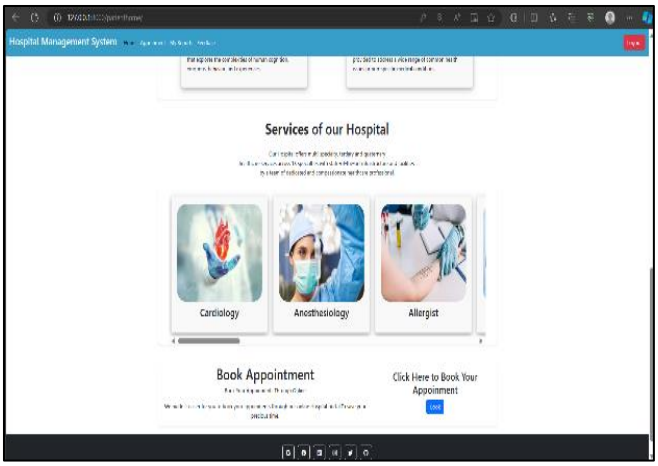

Fig 16 Patient Home Page

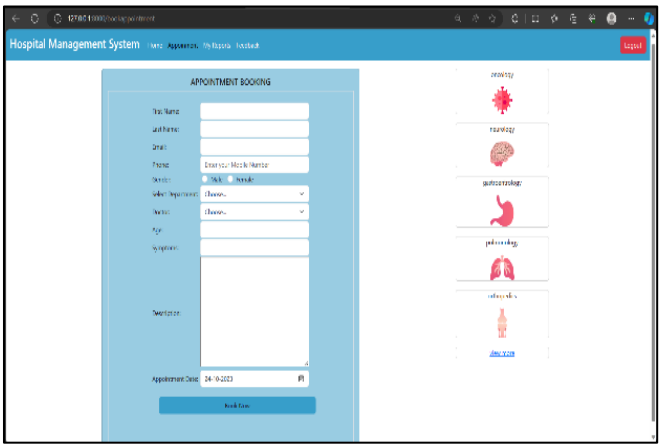

Fig 17 Page to Book Appointments

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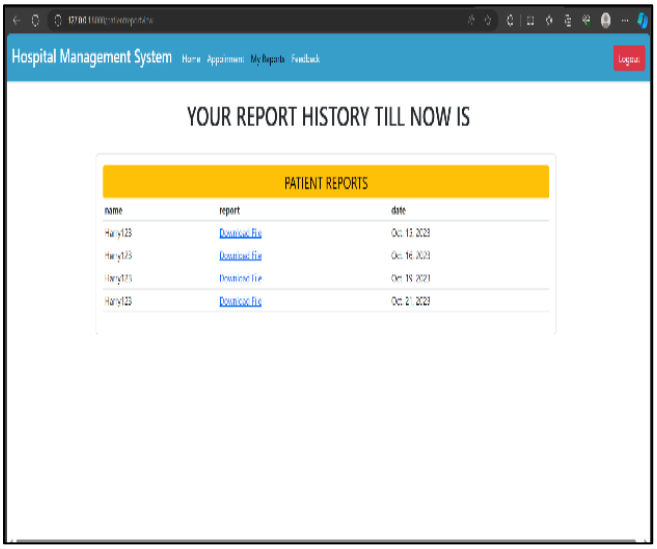

Fig 18 Patients Previous Reports

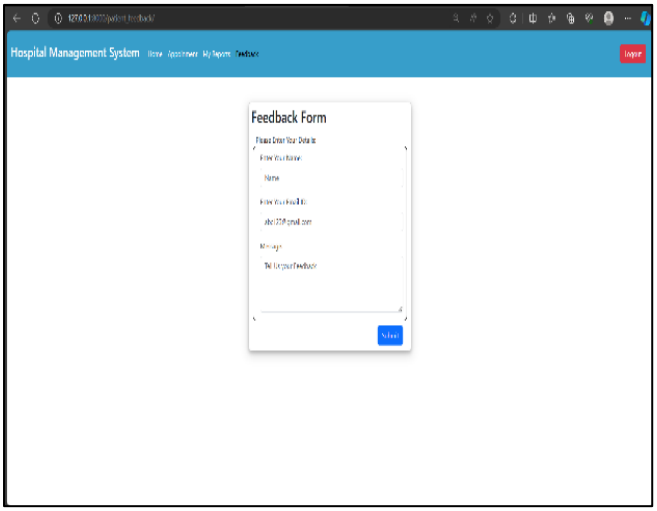

Fig 19 Patients Feedback Form

VI. CONCLUSION

In the end, we created a system that would improve patient care while lowering hospital running expenses and administrative work. The goal of the web application is to offer a more streamlined and dependable hospital management system. People would benefit from the project we developed since it would lessen the time they had to wait for appointments and complete all of their prior reports. A user-friendly system has been built to maintain patient and physician records. It includes every essential everyday task carried out in a hospital. Our hospital management system, which was created with the Django framework, makes it easier for staff, physicians, and patients to handle their tasks effectively. Information can be sorted more easily with this approach by using the search function in the reports. The system provides solutions for a few basic hospital duties.

FUTURE ENHANCEMENT

In the future, it can be changed to include other functions including appointment reminders, bill downloads, and pharmacy to improve user experience and yield better outcomes. For the first conversation, we'll offer a chatbot, and we'll also have online payment choices. When it comes to features like maintaining patient data with complex relationships, the present system cannot keep up. In some situations, switching to a different database will be beneficial later on. The modifications made to the server and database can be adjusted to meet the needs of the application that will be built later on. For example, utilizing a QR code for each reservation can assist patients and those involved save a great deal of time.

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