**Project Report**

**On**

**Hospital Management System**



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**Team No- 10**

**CERTIFICATE**

This is to certify that our Databased Management System project report entitled **"Hospital Management System"** is the work carried outby **Abik Saha** and **Hrishav Manana** students of B.Tech in Computer Science and Business System (CSBS) ,Semester-V of Institute of Engineering & Management , Kolkata under the supervision of **Dr. Deepsubhra Guha Roy** (**Assistant Professor**) department of Computer Science and Business System, Institute of Engineering & Management.

**Dr. Deepsubhra Guha Roy**

(Project Guide)

**ACKNOWLEDGEMENT**

The satisfaction that accompanies that the successful completion of any task would be incomplete without the mention of people whose ceaseless cooperation made it possible, whose constant guidance and encouragement crown all efforts with success.

We are grateful to our teacher **Dr. Deepsubhra Guha Roy** for the guidance, inspiration and constructive suggestions that helpful us in the preparation of this project.

We also thank our friends who have helped in successful completion of the project.

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1. **INTRODUCTION**

**1.1 Purpose**

The primary purpose of the Hospital Management System (HMS) in DBMS project is to revolutionize the way healthcare facilities manage their operations. The project aims to:

* Simplify and streamline the storage and retrieval of critical hospital data, including patient records, administrative information, and clinical data.
* Enhance patient care by providing healthcare professionals with quick and accurate access to patient information, thereby improving decision-making and reducing medical errors.
* Automate administrative tasks such as patient registration, appointment scheduling, and billing to increase operational efficiency and reduce administrative burdens.
* Optimize financial management by facilitating accurate and timely billing and insurance claims processing, ensuring the financial stability of healthcare facilities.
* Improve inventory control by efficiently managing medical supplies and equipment, reducing wastage and minimizing stock-related issues.
* Enhance laboratory operations through a Laboratory Information System (LIS) that streamlines test scheduling, result reporting, and sample tracking, leading to quicker diagnoses and improved patient care.
* Empower hospital administrators with data analytics and reporting capabilities, enabling data-driven decision-making for continuous improvement in patient care and operational efficiency.

**1.2 Scope**

The scope of the Hospital Management System in DBMS project encompasses a wide range of functionalities and services tailored to the needs of healthcare facilities. Key components within the project's scope include:

* **Patient Management:** This module focuses on patient registration, appointment scheduling, and the efficient management of electronic health records.
* **Billing and Finance:** The system handles billing and invoicing for medical services, as well as insurance claims processing, contributing to better financial management.
* **Pharmacy Management:** It provides tools for managing medication inventory, prescriptions, and drug interactions, ensuring safe and effective medication administration.
* **Laboratory Information System**: The Laboratory Information System module streamlines laboratory operations, managing test requests, results, and sample tracking.
* **Inventory Management:** This component tracks and manages medical supplies and equipment within the hospital, optimizing inventory levels.
* **Reporting and Analytics:** The system offers advanced reporting and analytics capabilities, enabling hospital administrators to make informed decisions and drive continuous improvements.

**1.3 Technologies Used**

The Hospital Management System in DBMS project leverages state-of-the-art technologies to ensure robust functionality, security, and scalability. The technologies used include:

* Relational Database Management System for efficient data storage and retrieval.
* Web-based user interface for accessibility and ease of use.
* Security protocols and encryption to protect sensitive patient data.
* Programming languages such as Java, Python, or .NET for application development.
* Data analytics tools for generating valuable insights.

**1.4 Overview**

The Hospital Management System (HMS) in DBMS project is envisioned as a comprehensive and integrated solution that centralizes and automates critical hospital processes. By doing so, it enhances the quality of patient care, streamlines administrative tasks, optimizes financial management, and ultimately supports healthcare providers in their mission to deliver exceptional healthcare services. This project represents a significant step towards the modernization and efficiency of healthcare operations, benefiting both healthcare providers and patients.

**2. Overall Description**

**2.1 Goals of Proposed System**

The overarching goals of the proposed Hospital Management System in DBMS project are as follows:

1. **Efficiency Enhancement:** Streamline and optimize hospital operations, reducing manual tasks and increasing the overall efficiency of the healthcare facility.
2. **Patient Care:** Improve patient care by facilitating easy access to accurate patient information, ensuring better decision-making, and reducing medical errors.
3. **Administrative Simplification**: Automate administrative tasks, including patient registration, appointment scheduling, and billing, to reduce paperwork and administrative burdens on staff.
4. **Financial Optimization**: Enhance financial management by automating billing and insurance claims processing, contributing to the financial stability of healthcare facilities.
5. **Inventory Control:** Efficiently manage medical supplies and equipment, minimizing wastage and ensuring critical resources are readily available.
6. **Laboratory Efficiency:** Streamline laboratory operations through the Laboratory Information System to expedite test scheduling, result reporting, and sample tracking.
7. **Data-Driven Decision-Making:** Empower hospital administrators with advanced reporting and analytics tools, enabling data-driven decisions for continuous improvement.

**2.2 Background**

Modern healthcare facilities face increasing demands to deliver high-quality patient care while managing complex administrative and operational challenges. Traditional manual processes are often inefficient and error-prone. The Hospital Management System in DBMS project is conceived to address these challenges by leveraging technology to modernize healthcare management.

**2.3 Project Requirements**

The project requirements encompass the development of a robust and user-friendly DBMS for hospitals, including but not limited to the following:

* Implementation of a relational database for data storage.
* Creation of a web-based user interface for accessibility.
* Security measures to safeguard patient data.
* Application development using programming languages such as Java, Python, or .NET.
* Integration of data analytics tools for generating valuable insights.

**2.4 User Characteristics**

The system is intended for use by a diverse group of users within the healthcare facility, including:

* Hospital administrators and managers responsible for overall system management and decision-making.
* Medical professionals, such as doctors and nurses, who require quick and accurate access to patient data.
* Administrative staff involved in patient registration, billing, and appointment scheduling.
* Pharmacists managing medication inventory and dispensing.
* Laboratory staff overseeing test requests, results, and sample tracking.

**2.5 Constraints**

The Hospital Management System in DBMS project must operate within certain constraints, including:

* Budgetary constraints that dictate resource allocation for development.
* Time constraints to ensure project completion within a specified timeframe. Regulatory constraints, including compliance with healthcare data privacy laws.
* Integration constraints, ensuring seamless integration with existing hospital systems.

**2.6 Definition of Problems**

The problems the Hospital Management System in DBMS project aims to address include:

* Inefficient manual processes leading to operational bottlenecks.
* Fragmented patient information across various systems.
* Errors in billing and insurance claims processing.
* Inventory mismanagement and wastage.
* Delayed laboratory test results.
* Lack of data-driven decision-making tools for administrators.

**2.7 Alternative Solutions**

Several alternative solutions were considered before proposing the Hospital Management System in DBMS project, including:

* Customization of existing hospital management software.
* Implementation of separate software for each department (e.g., pharmacy, laboratory).
* Manual process improvements without digitalization.

However, these alternatives lacked the comprehensive integration, efficiency, and data-driven capabilities offered by the proposed Hospital Management System in DBMS project, making it the most viable and effective solution to address the healthcare facility's needs.

**3. Feasibility Study**

Before embarking on the development of the Hospital Management System (HMS) DBMS project, it is crucial to conduct a comprehensive feasibility study to assess the project's technical, economical, operational, and schedule feasibility.

**3.1 Technical Feasibility**

**Objective:** To determine whether the proposed Hospital Management System in DBMS project is technically viable and can be successfully implemented.

The technical feasibility study examines:

* **Technology Requirements:** Assess the availability and compatibility of the required technologies, including hardware, software, and database systems.
* **Development Expertise:** Evaluate whether the necessary technical expertise is available within the development team or can be acquired.
* **Integration Capabilities:** Determine if the system can seamlessly integrate with existing hospital systems and databases.
* **Scalability:** Assess whether the system can handle future growth and increased data loads.
* **Security Measures**: Ensure that adequate security measures can be implemented to protect patient data and comply with healthcare regulations.

**3.2 Economical Feasibility**

**Objective:** To assess the financial viability of the Hospital Management System in DBMS project and determine if it can be completed within budget.

The economical feasibility study involves:

* **Cost Analysis**: Estimate the project's development, implementation, and maintenance costs, including hardware, software licenses, development resources, and ongoing operational expenses.
* **ROI (Return on Investment) Analysis:** Evaluate the potential return on investment, factoring in improved operational efficiency, reduced administrative costs, and enhanced patient care.
* **Cost-Benefit Analysis:** Compare the projected benefits (e.g., increased revenue, cost savings) with the anticipated costs to determine if the project is economically justified.
* **Risk Assessment:** Identify potential financial risks and uncertainties associated with the project.

**3.3 Operational Feasibility**

**Objective:** To determine whether the proposed Hospital Management System in DBMS project can be effectively integrated into the daily operations of the healthcare facility.

The operational feasibility study includes:

* **User Acceptance:** Assess whether hospital staff, from administrators to medical professionals, are willing to adopt and use the system.
* **Training Needs:** Identify training requirements for users to ensure they can effectively use the system.
* **Change Management:** Evaluate the potential impact of system implementation on existing processes and workflows.
* **Support and Maintenance:** Analyz the feasibility of providing ongoing technical support and system maintenance.
* **Impact on Patient Care:** Consider how the system will affect the quality of patient care and whether it will result in operational improvements.

**3.4 Schedule Feasibility**

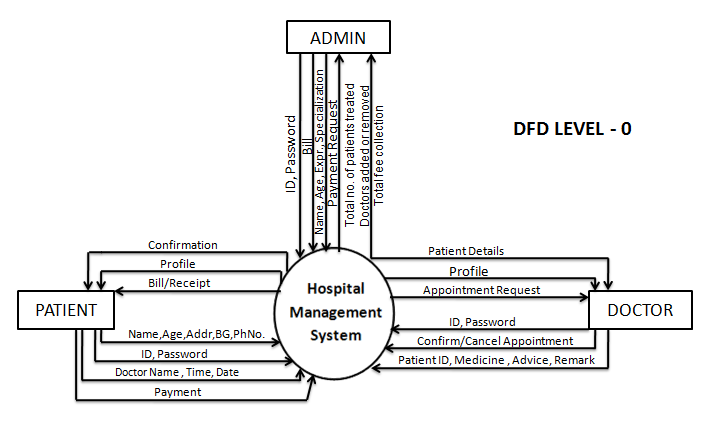
**Objective:** To determine whether the Hospital Management System in DBMS project can be completed within the defined timeframe.

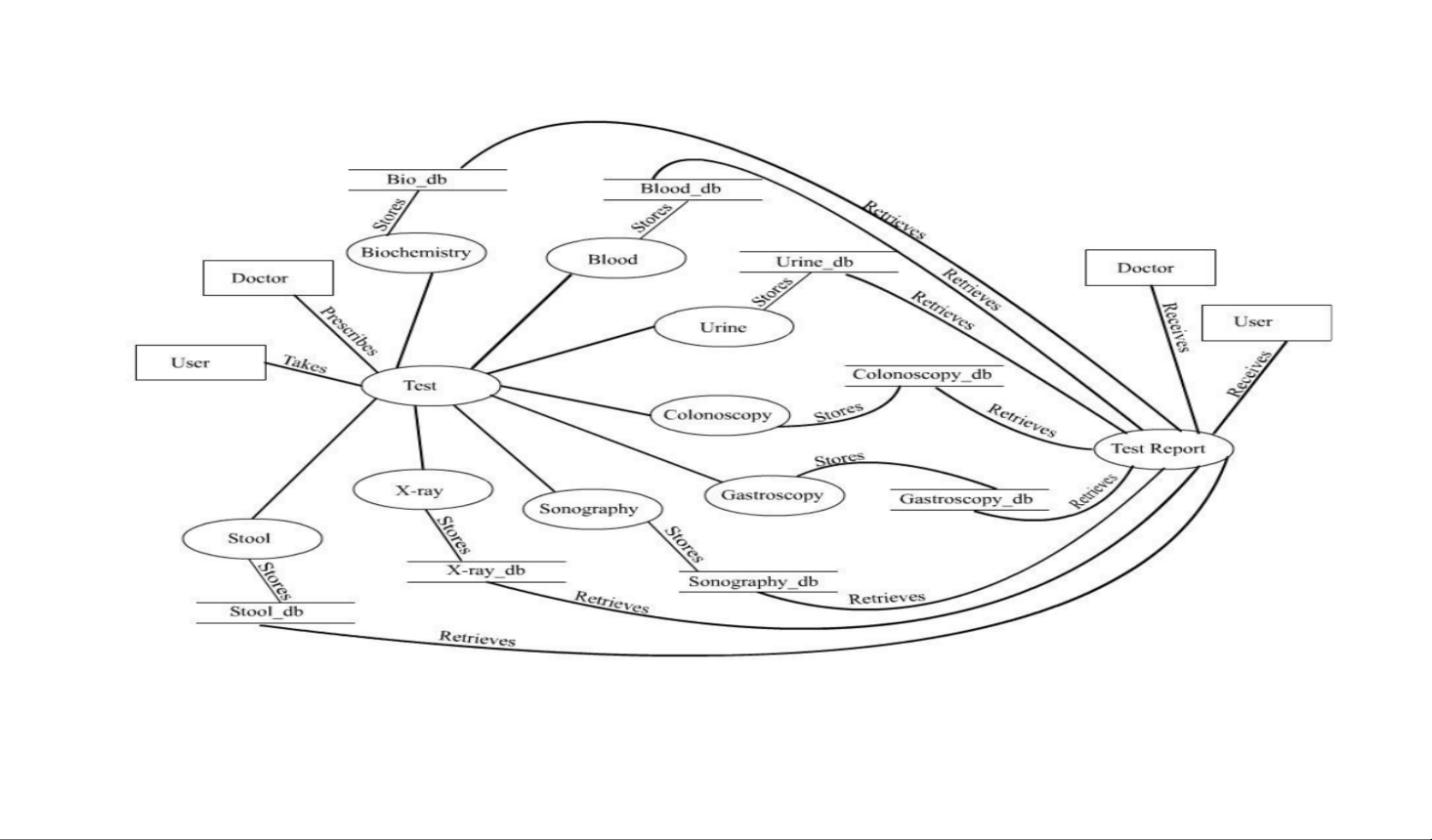
The schedule feasibility study involves:

* **Project Timeline:** Develop a detailed project timeline, including milestones and deadlines for each phase of development and implementation.
* **Resource Availability:** Ensure that the necessary human and technological resources are available to adhere to the project schedule.
* **Risk Assessment:** Identify potential schedule-related risks, such as delays due to unforeseen technical issues or resource constraints.
* **Contingency Planning:** Develop contingency plans to address potential delays and mitigate their impact on the project's schedule.

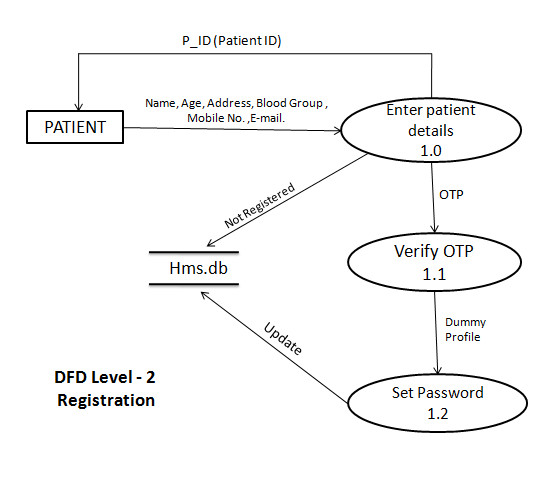
Upon completion of these feasibility studies, the project stakeholders can make informed decisions regarding the viability and potential benefits of the Hospital Management System DBMS project. These studies provide critical insights into whether the project should proceed, what resources are required, and how risks can be managed to ensure successful implementation.

**4.Dataflow Diagram**

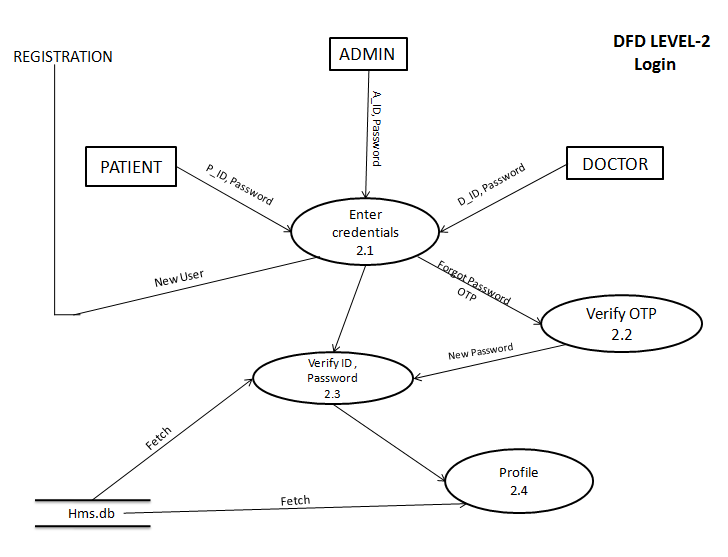




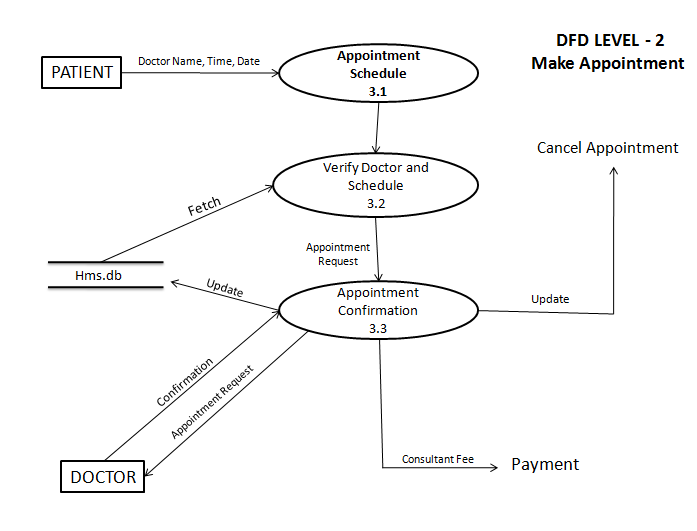
DFD LEVEL - 01

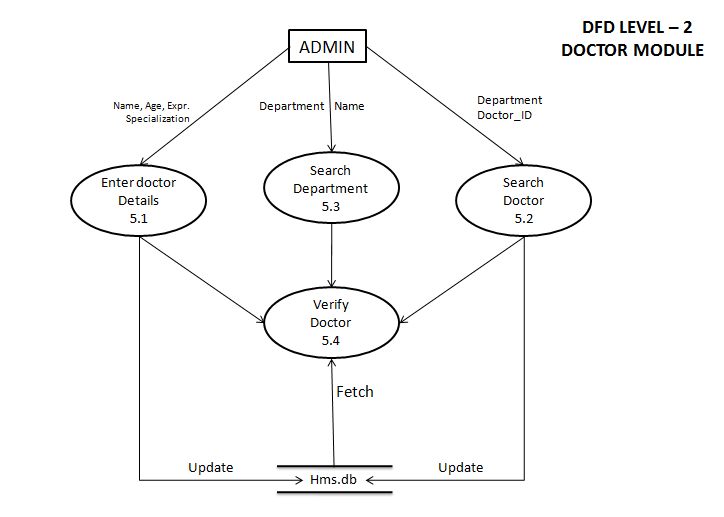


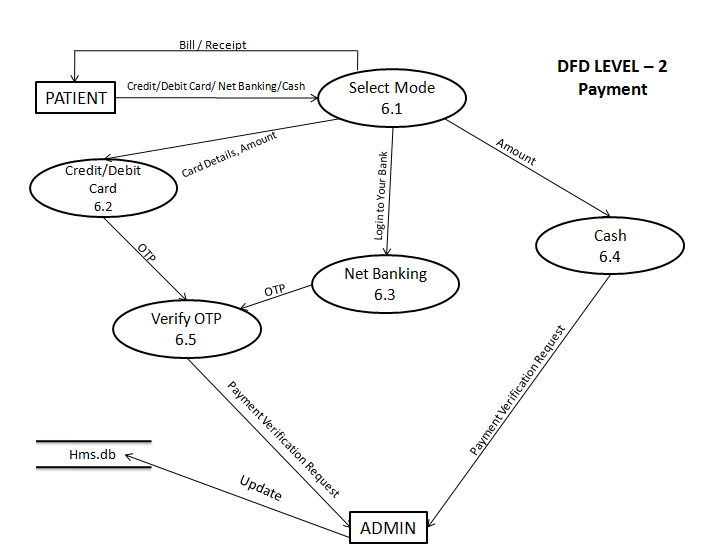
DFD LEVEL – 2 Registration



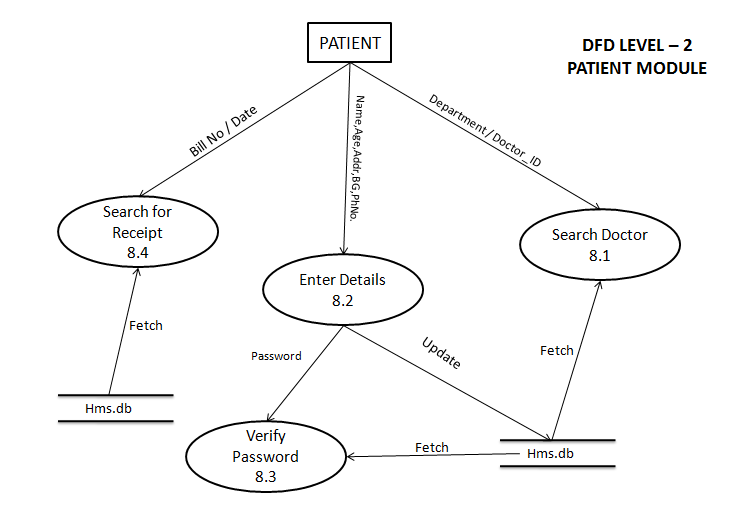
DFD LEVEL – 2 LOGIN

  
DFD LEVEL- 2 MAKE APPOINTMENT

DFD LEVEL – DOCTOR MODULE

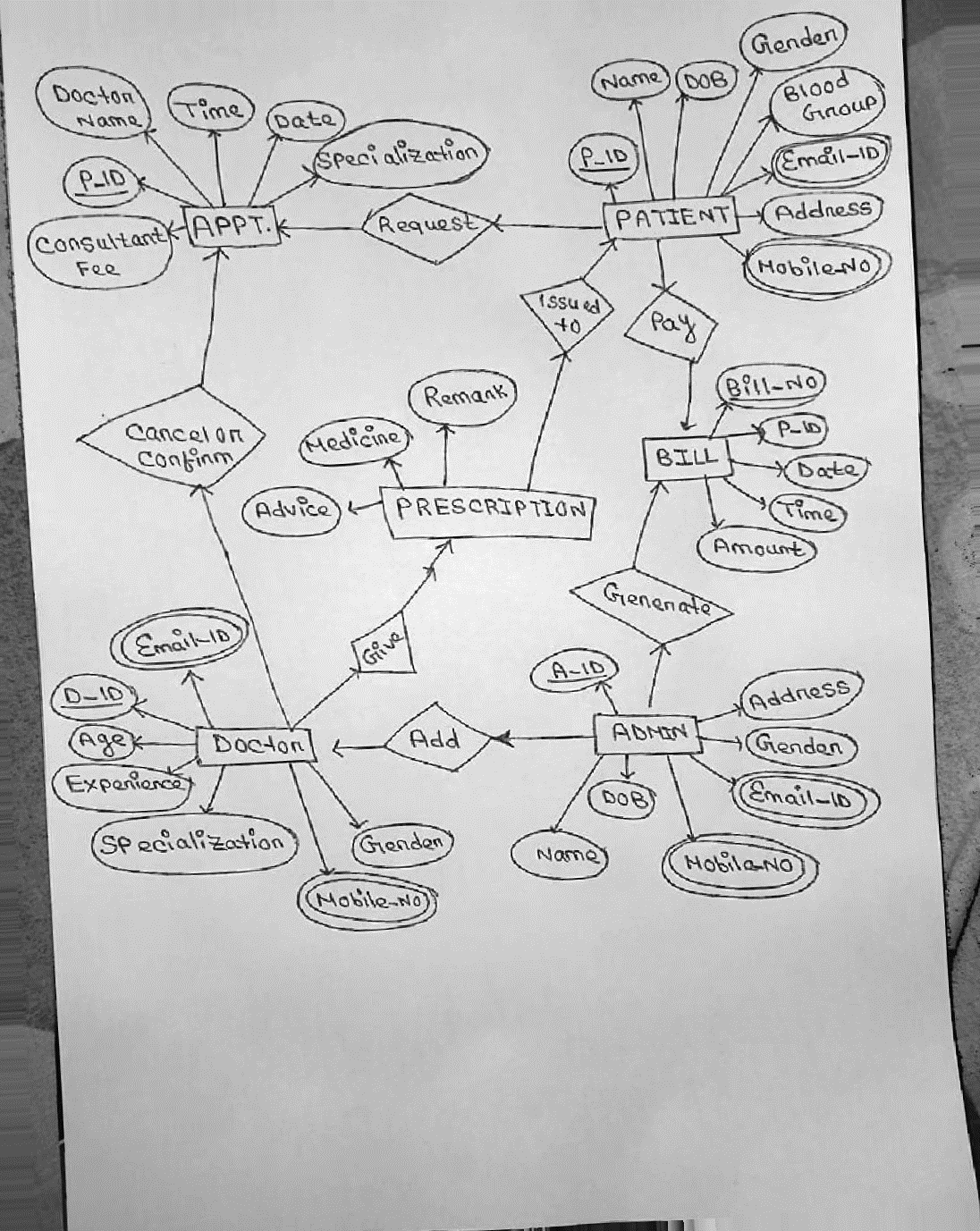


DFD LEVEL- 2 PAYMENT



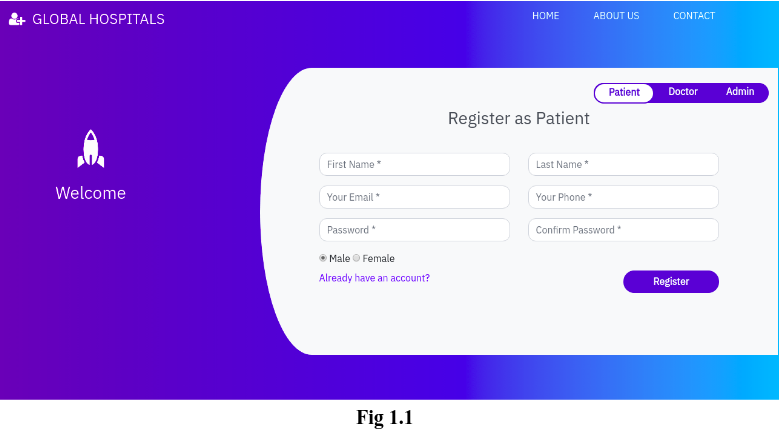
DFD LEVEL –PATIENT MODULE

**5. ENTITY RELATIONSHIP MODEL**



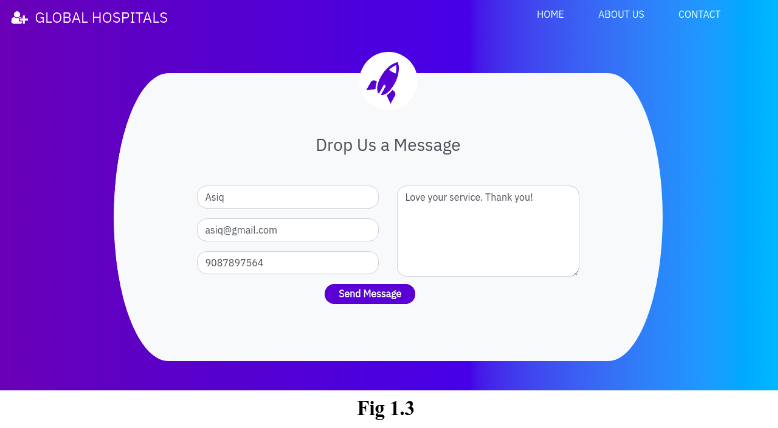
**6.GETTING INTO THE PROJECT**

Hospital Management System in PHP and MySQL. This system has a ‘Home’ page from where the patient, doctor & administrator can login into their accounts. Fig 1.1 shows the ‘Home’ page of our project.



**Fig 1.1**

The ‘Contact’ page allows users to provide feedback or queries about the services of the hospital. Fig 1.2 shows the ‘Contact’ page.



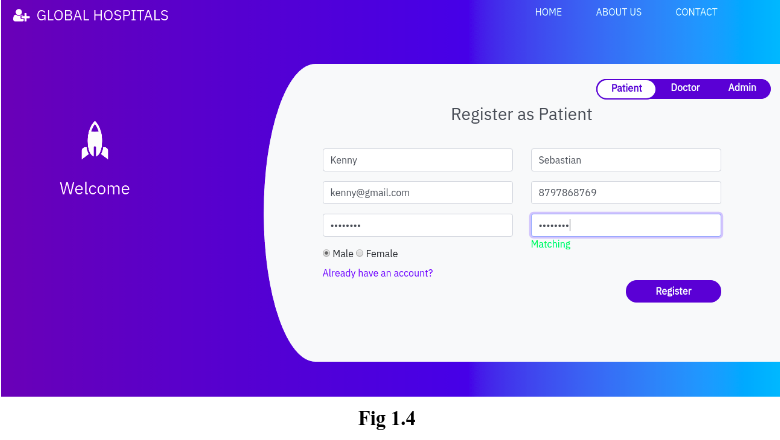
**Fig 1.2**

The ‘Home’ page consists of 3 modules:

1. Patient Module
2. Doctor Module
3. Admin Module

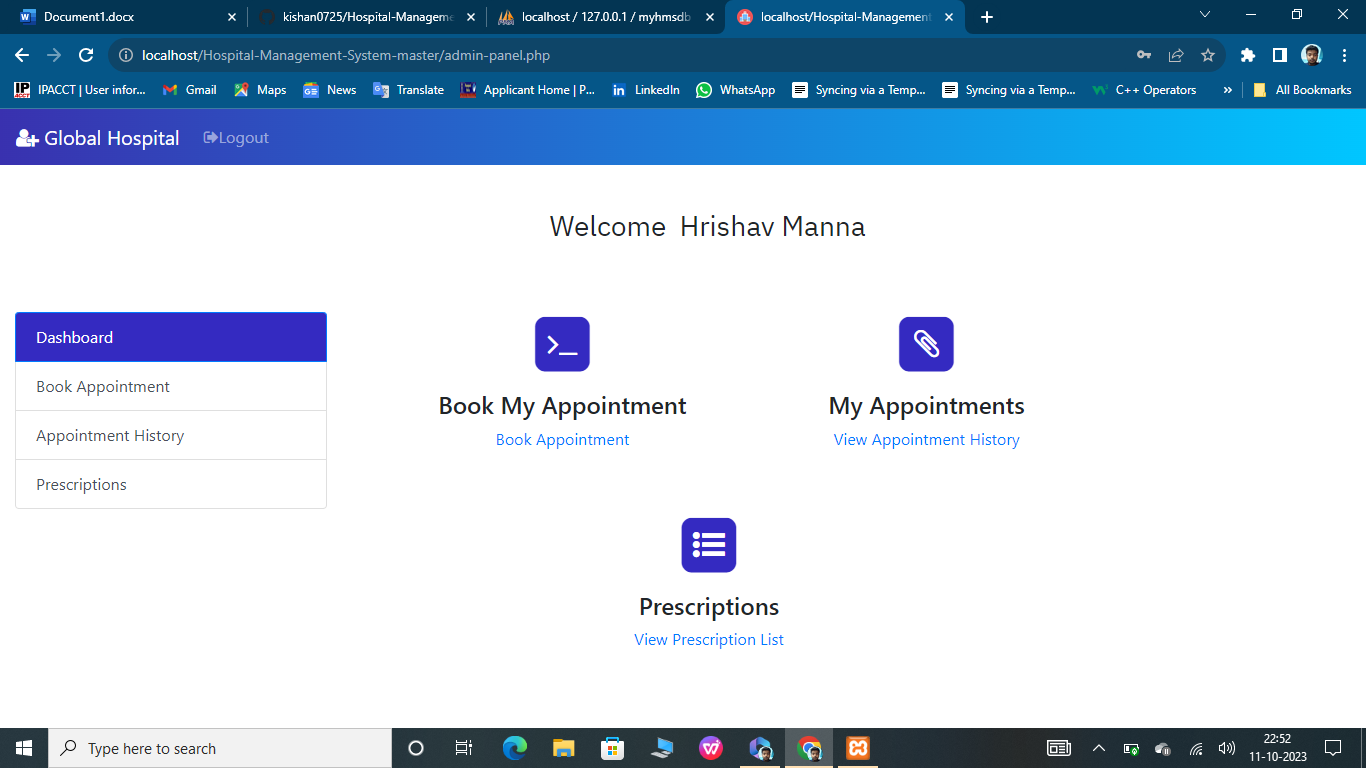
### **[Patient Module:](https://github.com/kishan0725/Hospital-Management-System" \l "patient-module)**

This module allows patients to create their account, book an appointment to see a doctor and see their appointment history. The registration page asks patients to enter their First Name, Last Name, Email ID, Contact Number, Password and to select their gender.



**Fig 1.3**

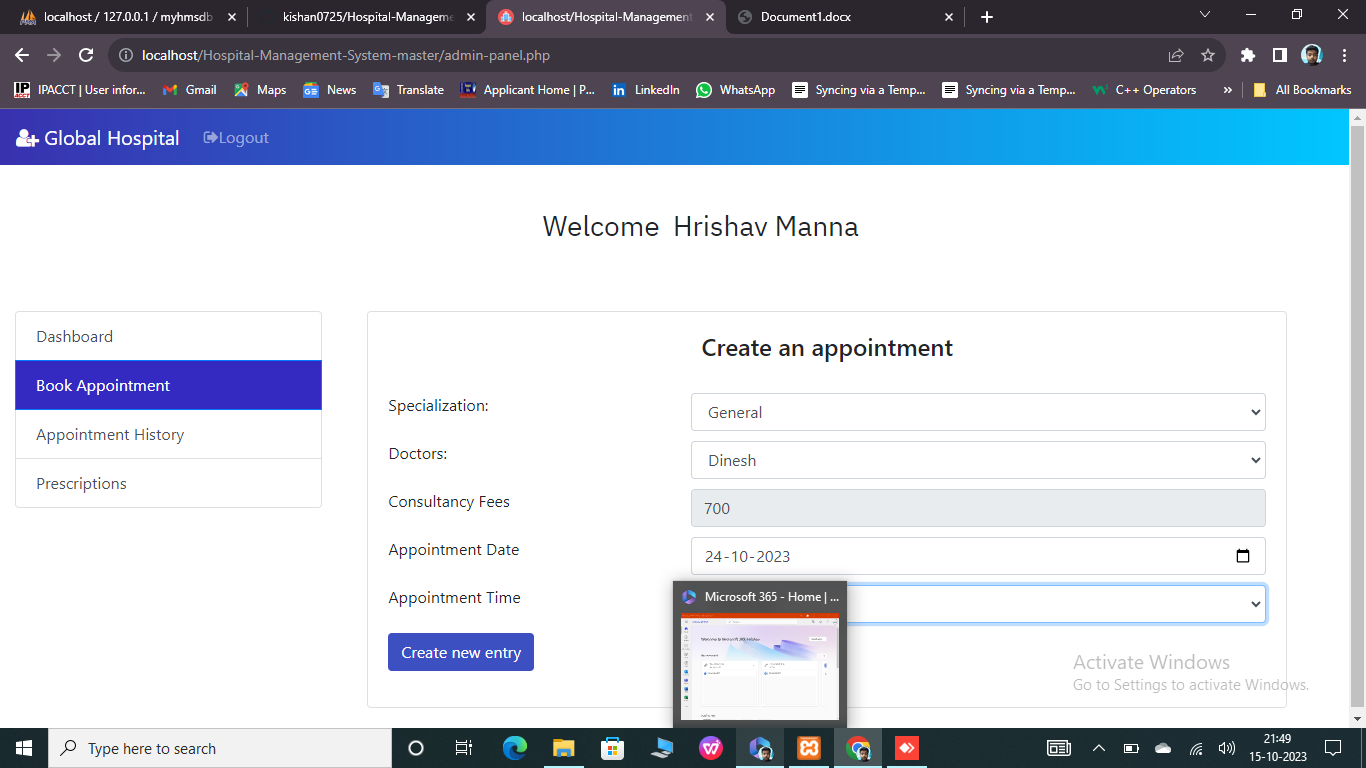
Once the patient has created account after clicking the ‘Register’ button, then the patient will be redirected to their Dashboard (Fig 1.4).



**Fig 1.4**

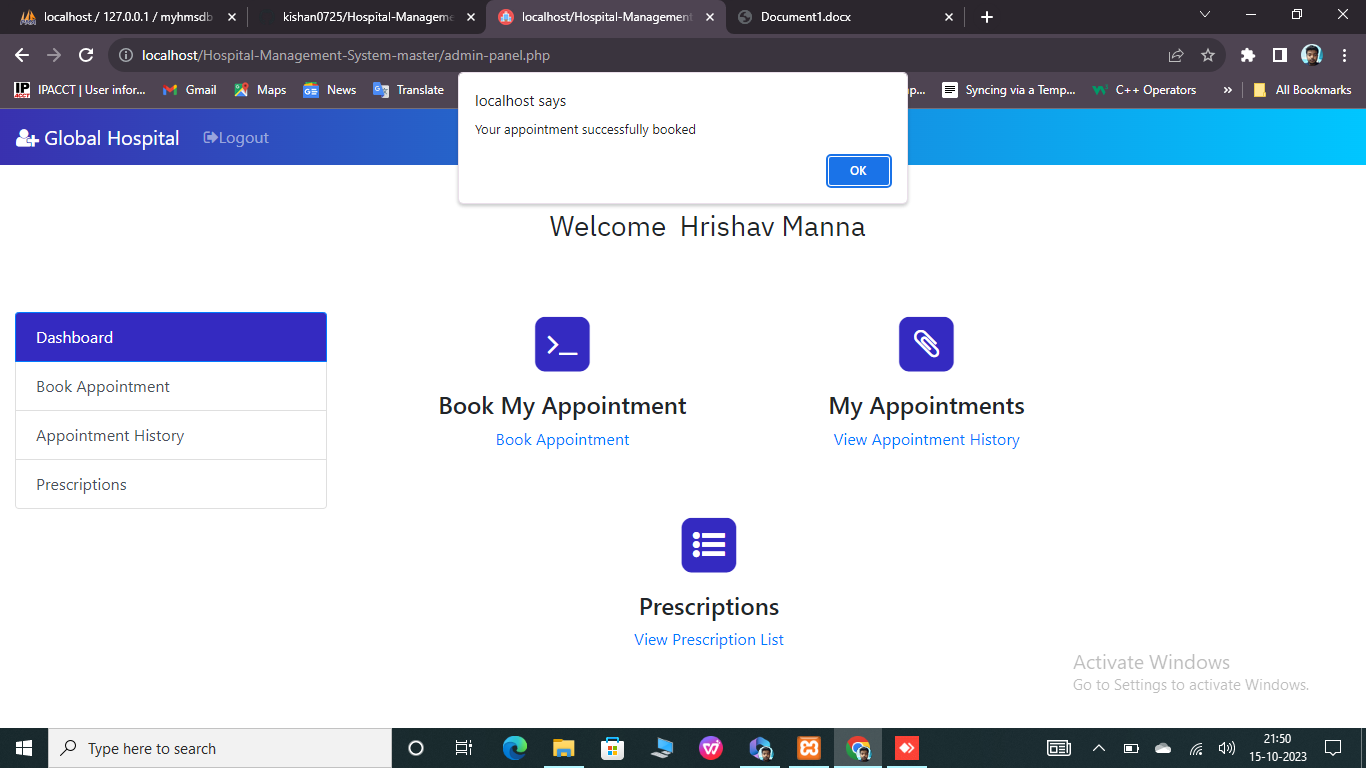
The Dashboard page allows patients to perform two operations:

**1. Book appointment:**

Here, the patients can able to book their appointments to see a doctor. The appointment form (Fig 1.5) requires patients to select the doctor that they want to see, Date and Time that they want to meet with the doctor. The consultancy fee will be shown accordingly to the patient as it was already determined by the doctor.

**Fig 1.5**

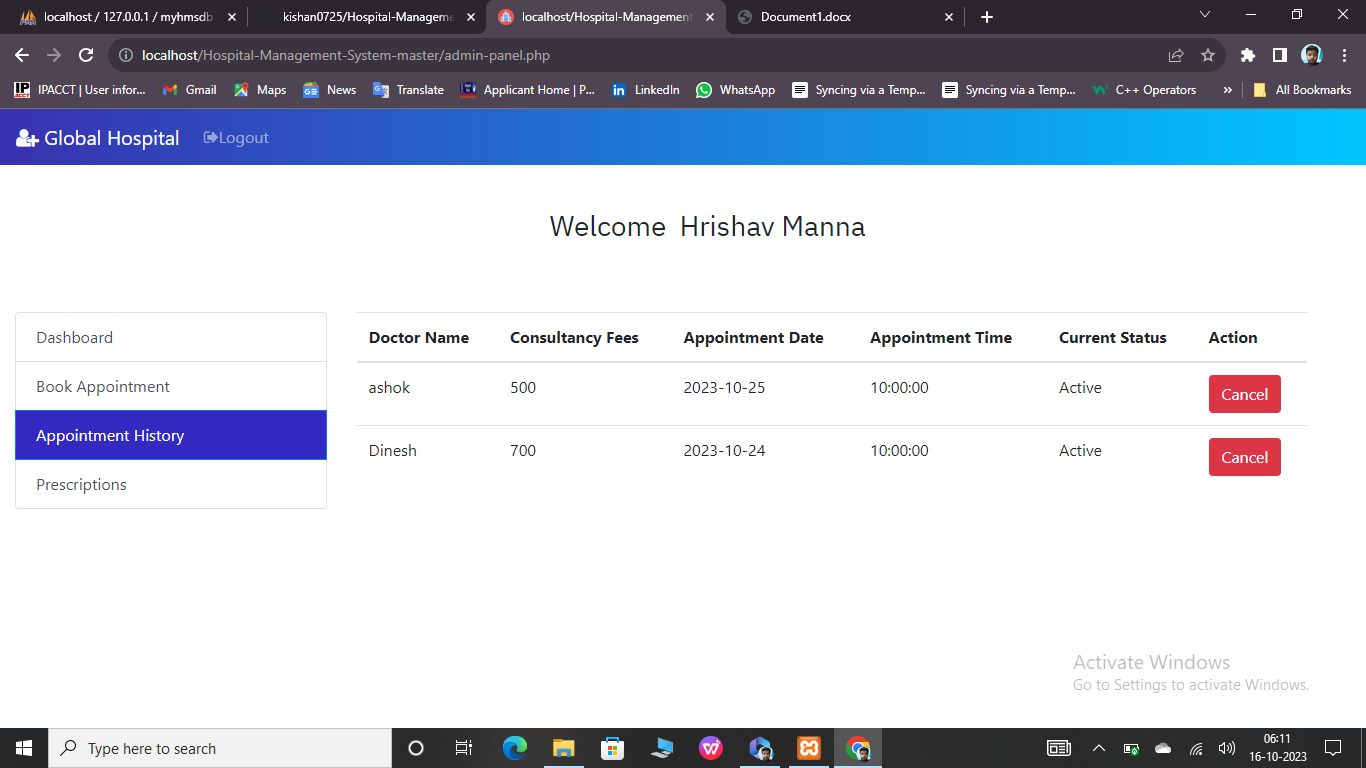
After clicking on the ‘Create new entry’ button, the patient will receive an alert that acknowledges the successful appointment of the patient. (See Fig 1.6)



**Fig 1.6**

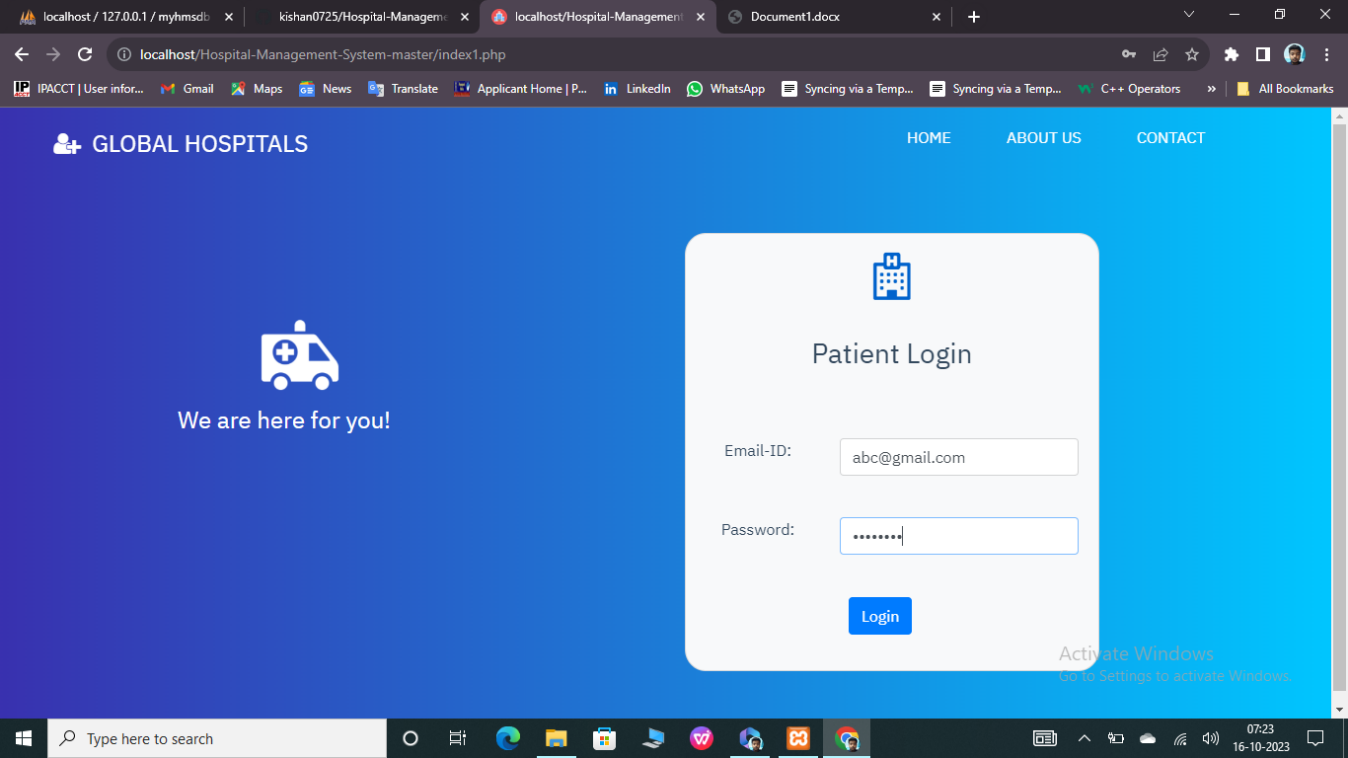
**2. View patients’ Appointment History:**

Here, the patient can see their appointment history which contains Doctor Name, Consultancy Fee, Appointment Date and Time. (See Fig 1.7)



**Fig 1.7**

Once the patient has logged out of his account, if he wants to go into his account again, he can login his account, instead of register his account again. Fig 1.8 shows the login page. Clicking on ‘Login’ button will redirect the patient to his dashboard page.

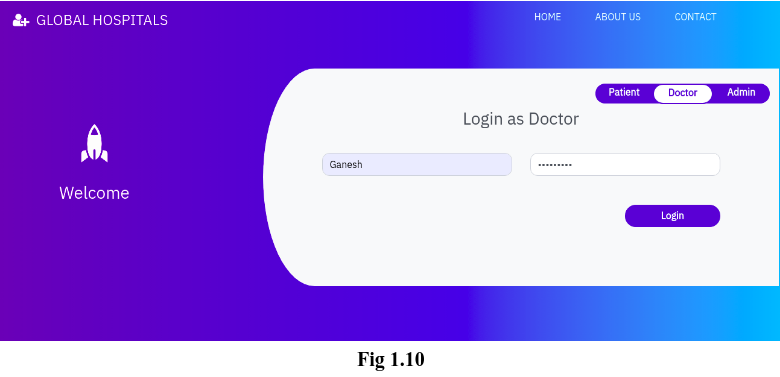


**Fig 1.8**

This is how the patient module works. On the whole, this module allows patients to register their account or login their account book an appointment and view their appointment history.

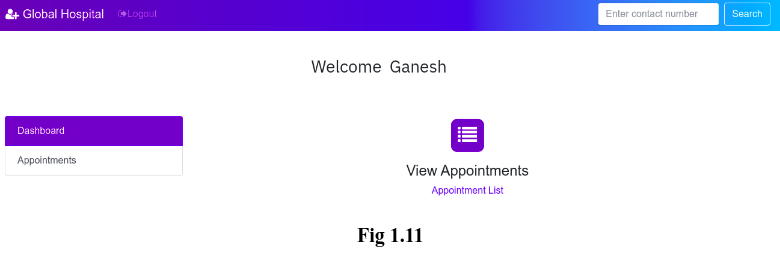
### **[Doctor Module:](https://github.com/kishan0725/Hospital-Management-System" \l "doctor-module)**

The doctors can login into their account which can be done by toggling the tab from ‘Patient’ to ‘Doctor’. Fig 1.9 shows the login form for a doctor. Registration of a doctor account can be done only by admin.



**Fig 1.9**

Once the doctor clicking the ‘Login’ button, they will be redirected to their own dashboard which is shown in Fig 1.10



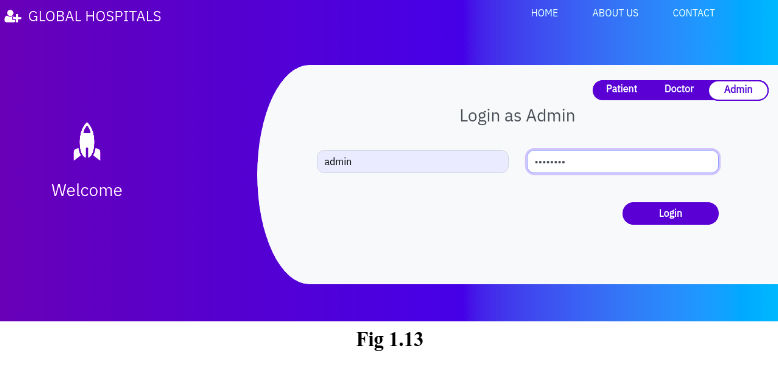
**Fig 1.10**

In doctors this page, doctors can able to see the appointments that have been booked by the patients.

[Admin Module:](https://github.com/kishan0725/Hospital-Management-System" \l "admin-module)

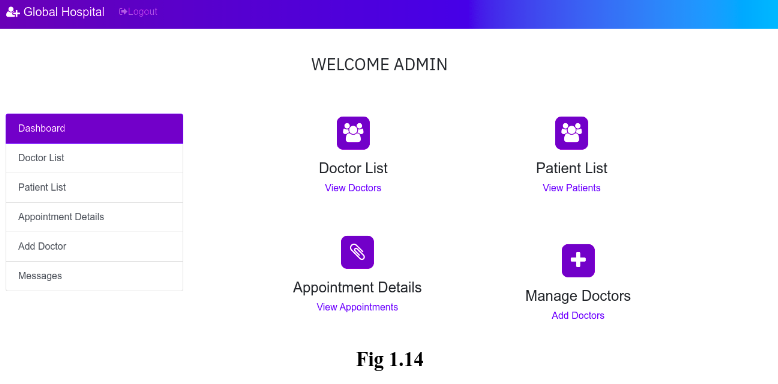
This module of our project where an admin can see the list of all patients. Doctors and appointments and the feedback/queries received from the ‘Contact’ page. Also, admin can add a doctor too.

Login into the admin account can be done by toggling into the admin tab of the Home page. Fig 1.11 shows the login page for admin. username: admin, password: admin123



**Fig 1.11**

On clicking the ‘Login’ button, the admin will be redirected to his/her dashboard as shown in Fig 1.12.

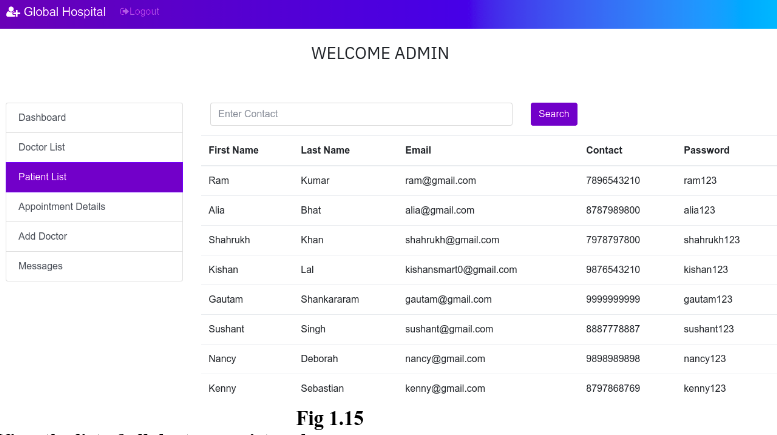


**Fig 1.12**

This module allows admin to perform five major operations:

1. **View the list of all patients registered:**

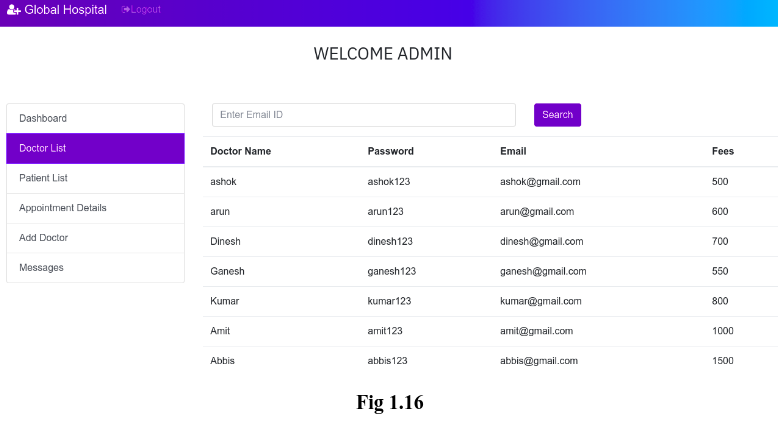
Admin can able to view all the patients registered. This includes the patients’ First Name, Last Name, Email ID, Contact Number and Password. (See Fig 1.13). As like in doctor module, admin can also search for a patient by their contact number in the search box.



**Fig 1.13**

1. **View the list of all doctors registered:**

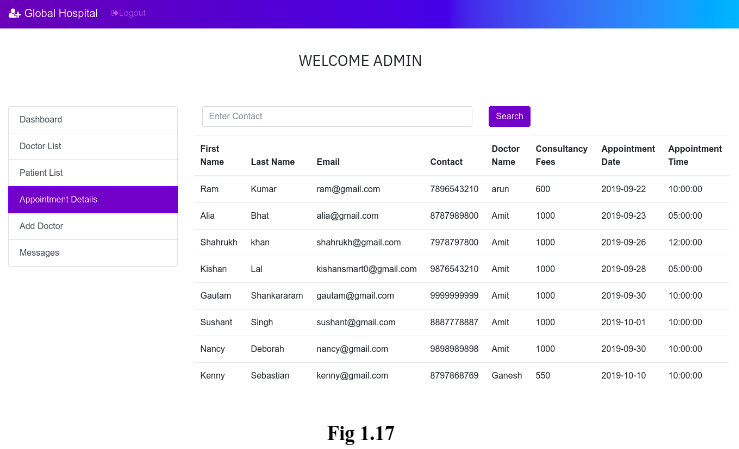
Details of the doctors can also be viewed by the admin. These details include the Name of the doctor, Password, Email and Consultancy fees, shown in Fig 1.14. Searching for a doctor can be done by using the doctor’s Email ID in the search box.



**Fig 1.14**

1. **View the Appointment lists:**

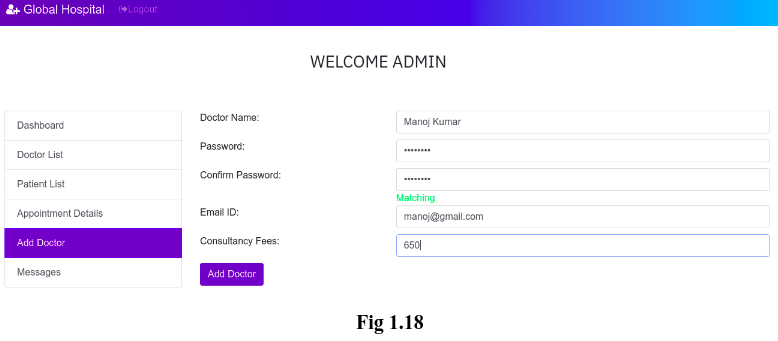
Admin can also able to see the entire details of the appointment that shows the appointment details of the patients with their respective doctors. This includes the First Name, Last Name, Email and Contact Number of patients, doctor’s name, Appointment Date, Time, and Consultancy Fees. (See Fig 1.15).



**Fig 1.15**

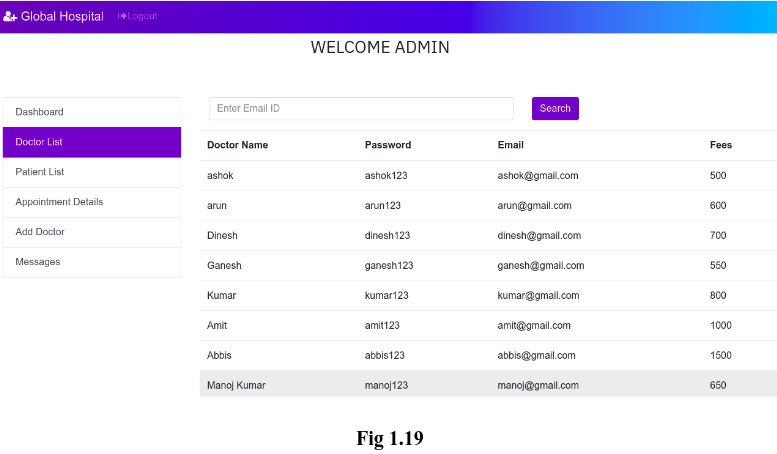
**4. Add Doctor:**

Admin alone can add a new doctor since anyone can register as a doctor if we put this section on the home page. This form asks Doctor’s Name, Email ID, Password and his/Consultancy Fees. (See Fig 1.16)



**Fig 1.16**

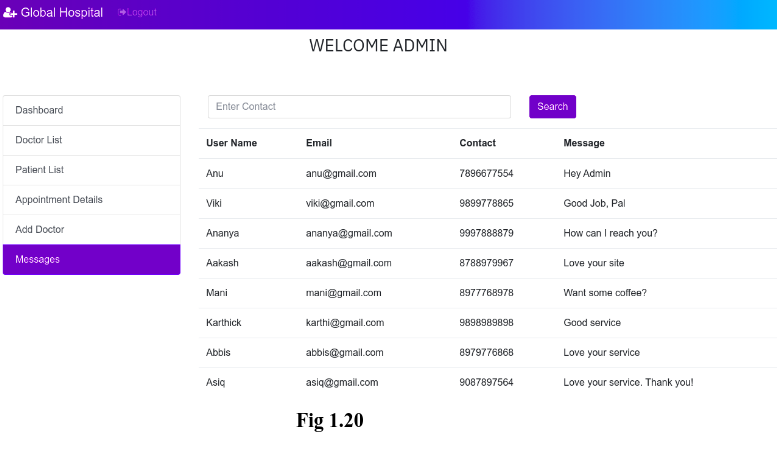
After adding a new doctor, if we check the doctor’s list, we will see the details of the new doctor is added to the list as shown in Fig 1.17



**Fig 1.17**

1. **View User’s feedback/Queries:**

Admin is allowed to view the feedback/Query that has been given by the user on the ‘Contact’ page (Refer to Fig 1.3). This includes the User’s Name, Email Id, Contact Number, and the message(Feedback/ Query) as shown in Fig 1.18.



**Fig 1.18**

**7.Conclusion**

A hospital management system database is a pivotal component in the modern healthcare landscape, playing a multifaceted role in improving patient care, enhancing efficiency, and ensuring data security. This comprehensive digital solution streamlines hospital operations by automating administrative and clinical processes, such as appointment scheduling, billing, and inventory management.

Patient records stored in the database are easily accessible and updatable, facilitating quick and accurate decision-making by healthcare providers. This efficient management of medical data is crucial for delivering high-quality patient care. Moreover, the database's security features, including encryption, access controls, and backup mechanisms, ensure the protection of sensitive patient information, safeguarding hospitals against data breaches and compliance violations.

Financial management is another key aspect, with the database tracking billing and payment transactions, managing insurance claims, and generating financial reports. This functionality aids hospitals in maintaining financial stability and transparency in their operations.

Additionally, reporting and analytics tools provided by the database offer valuable insights to hospital administrators, helping them make data-driven decisions, allocate resources effectively, and monitor the hospital's performance.

Furthermore, features like patient portals and telemedicine capabilities within the system promote patient engagement and provide convenient remote access to healthcare services.

The success of a hospital management system database relies on proper training for staff and administrators, ongoing technical support, and regular updates to keep the system functional and aligned with evolving healthcare requirements. In summary, a well-implemented hospital management system database is a cornerstone in the delivery of top-quality care, operational efficiency, and data security in healthcare institutions.

**8.GITHUB LINK**

## https://github.com/Hrishav2001/Hospital-Management-System