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**HOSPITAL MANAGEMENT SYSTEM  
CASE STUDY: JOHN F. KENNEDY MEDICAL CENTER  
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**A DISSERTATION SUBMITTED TO THE SCHOOL OF SCIENCES AND  
TECHNOLOGY IN PARTIAL FULFILLMENT OF THE ACADEMIC  
REQUIREMENTS FOR THE AWARD OF BACHELOR'S DEGREE IN  
COMPUTER SCIENCES.**

**Kigali, September 2024**

## DECLARATION

I, **P. Chuebar Barchue Jr**, thus certify that the study I have done for my thesis, "**HOSPITAL MANAGEMENT SYSTEM**," is original to me and was done on my own, with guidance from **Mr. BYIRINGIRO Eric** certify that no other university or institution has accepted this research, in whole or in part, for the award of any other degree or diploma. Through cites and references, every information source and piece of literature used in the study has been appropriately acknowledged.

This study was carried out in compliance with the regulations and ethical standards established by **KIGALI INDEPENDENT UNIVERSITY (ULK)**.

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Signed: \_\_\_\_\_

## APPROVAL

This is to certify that the research work titled "**Hospital management system**" has been conducted and completed by **P. Chuebar Barchue Jr.** under the supervision of

**Mr. BYIRINGIRO Eric.** This research has been examined and is hereby approved as meeting the requirements for the degree of **BSc Computer Science** at **Kigali Independent University (ULK)**.

**Supervisor:**

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Signature: \_\_\_\_\_

Date: \_\_\_\_\_

## DEDICATION

In loving memory of my late mother, **Elizabeth T.R. Barchue**, My father **Rev. Jacob G. Barchue**, grandma **Mailia Ricks** and my beloved aunty, **Dorathy W. Ricks**, as well as my mentor, **Adeen T. Juillie Jr.**, as well as my little brother **Amuchin B.D. Ricks and Emmanuel B. George** and other family members, I express my deepest gratitude for their unwavering support and guidance. I also extend my heartfelt thanks to the **Ricks's** and **Barchue's family** for their steadfast support throughout this study. In addition to my friends and family, I dedicate this work to my late sister **Peneteh S. Warner**, and to **Lauraine D. Yeai**, my friend, for their unshakable belief in me. Lastly, I am profoundly grateful to all of my professors and fellow students at **ULK** for their invaluable contributions to my academic journey.

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I want to thank everyone who has helped me during this study project from the bottom of my heart.

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## ABBREVIATIONS AND ACRONYMS

<b>BMI</b>	: Body Mass Index.
<b>CSS</b>	: Cascading Style Sheets.
<b>DB</b>	: Database.
<b>DF</b>	: Dataflow Diagram.
<b>ER</b>	: Entity Relationship.
<b>HMS</b>	: Hospital Management System.
<b>HTML</b>	: Hypertext Markup Language.
<b>JFK</b>	: John F. Kennedy.
<b>JS</b>	: JavaScript.
<b>LR</b>	: Logistics Regression.
<b>PHP</b>	: Hypertext Preprocessor.
<b>RF</b>	: Random Forest.
<b>SSADM</b>	: Structured Systems Analysis and Design Method.
<b>UML</b>	: Unified Modeling Language.
<b>ULK</b>	: Kigali Independent University.
<b>VSC</b>	: Visual Studio Code.
<b>XAMP</b>	: Cross-Platform, Apache.

## ABSTRACT

The project focused on developing and implementing a hospital management system (HMS) aimed at addressing inefficiencies in manual hospital processes. Utilizing various technologies, including **UML** for system analysis, **XAMPP** for database creation, and **PHP**, a widely-used server-side scripting language for web development, the system was designed to streamline administrative tasks. PHP, embedded within HTML, facilitated dynamic web pages interacting with databases to manage essential operations such as patient data, appointments, billing, and staff management. It also handled critical tasks like processing forms, managing sessions, and sending notifications. For front-end development, **HTML** and **JavaScript** were used, with **JavaScript frameworks** employed to enhance back-end functionality. The HMS was designed to eliminate paperwork, improve resource management, and ensure high-quality patient services, data management, and operational efficiency.

Upon implementation, the system achieved significant improvements, notably reducing patient registration and appointment processing times, thus enhancing hospital workflows. It also improved **transparency** in billing, ensuring fairness and accountability in medical services and payments. Data accuracy, accessibility, and real-time monitoring of patient records were greatly improved, with seamless integration into hospital regulatory frameworks.

In conclusion, the adoption of the **Hospital Management System** proved highly beneficial, streamlining hospital operations, reducing administrative burdens, and ensuring regulatory compliance. The system notably enhanced efficiency, transparency, and communication between medical staff, patients, and administrative bodies, leading to faster response times and better patient outcomes.

**Recommendations** include continued updates to adapt to evolving healthcare regulations and technological advancements. Close collaboration with medical regulatory authorities and stakeholders is advised to ensure interoperability and smooth integration of new system features. Rigorous testing was performed to ensure the system met the hospital's operational needs and delivered expected results.

**Keyword: Hospital Management System, Patient Call, Doctor –Patient, Medical Record, Schedule**

## CHAPTER ONE: GENERAL INTRODUCTION

### 1.0. Introduction

The project Hospital Management System includes patient registration and data storage. The application allows you to give each patient a unique ID and save their information. The Hospital Management System may be accessed using a username and password. It may be accessed by either an administrator. They are the only ones who can add data to the database. Data may be simply obtained. The UI is really user-friendly. The data is properly safeguarded for personal use, and the data processing is really rapid. Hospital Management System is powerful, adaptable, and simple to use, and it was created and built to provide real-world advantages to hospitals. (Keutchafo & Kerr, 2019)

Hospital Management System is intended for multispecialty hospitals and encompasses a wide variety of hospital administration and management procedures. It is a fully integrated Hospital Management System that offers important information throughout the hospital to enable successful decision making for patient care, hospital administration, and vital financial accounting in a unified flow. (Mafi 2024)

The Hospital Management System is a software product package that aims to improve the quality and administration of hospital operations through clinical process analysis and activity-based pricing. The Hospital Management System allows you to grow your business while also improving its efficacy and work quality. Managing the major processes efficiently is crucial to the hospital's performance and may assist you manage your procedures. (Appropriate use of medical Resource, 2023)

### 1.1. Background of the Study

The Hospital Management System (HMS) is intended to replace John F. Kennedy Hospital's current manual, paper-based system. The new system will manage the following information: patient information, room availability, staff and operating room schedules, and patient bills. These services must be delivered in an efficient and cost-effective way, with the objective of lowering the time and resources now required for similar jobs. (Moyimanae et al. 2017)

A crucial aspect of John F. Kennedy Hospital's functioning is the capture, management, and prompt retrieval of large amounts of information. This information often includes patient personal information and medical history, staff information, room and ward scheduling, staff scheduling, operating theatre scheduling, and waiting lists for various hospitals. All of this information must be managed in an efficient and cost-effective manner so that an institution's resources may be successfully used. HMS will automate hospital administration, resulting in increased efficiency and error-free operations. It seeks to standardize data, consolidate it, ensure data integrity, and reduce discrepancies. (Mash et al. 2018).

### **1.2. Problem Statement**

Hospitals now employ a manual approach for managing and maintaining essential information. The existing method necessitates several paper forms, with data storage dispersed across the hospital administrative infrastructure. Often, information (on forms) is missing or does not meet management requirements. Forms are frequently lost in transit between departments, necessitating a thorough auditing procedure to guarantee that no critical information is lost. The hospital has many copies of the same information, which might lead to data discrepancies across different data sources. A crucial aspect of John F. Kennedy Hospital's functioning is the capture, management, and prompt retrieval of large amounts of information. (Southall et al. 2017).

This information often includes patient personal information and medical history, staff information, room and ward scheduling, staff scheduling, operating theatre scheduling, and waiting lists for various hospitals. All of this information must be managed in an efficient and cost-effective manner so that an institution's resources may be successfully used. HMS will automate hospital administration, resulting in increased efficiency and error-free operations. It seeks to standardize data, consolidate it, ensure data integrity, and reduce discrepancies. (Dreiss, 2018)

### **1.3. Objective of the project**

The initiative intends to streamline and automate hospital activities, therefore increasing efficiency, accuracy, and patient care. Key goals include better patient care, more effective operations management, centralized data management, correct invoicing, operational efficiency,

decision-making, and support for growth and scalability. The system should deliver real-time statistics, secure patient information, and support for future expansions.

(Dejaco et al., 2019) (Dreiss, 2018) (Moyimane et al., 2017).

### **1.3.1. General Objective**

The general objective of this study is to assess the effectiveness and impact of implementing an hospital management system in improving the hospital management system process at John F. Kennedy Hospital.

### **1.3.2. Specific objectives**

- i. To Collect and Organize Hospital, data Gather and centralize all relevant patient, staff, and operational data for John F. Kennedy Hospital, ensuring accuracy, completeness, and secure access to facilitate effective hospital management.
- ii. To Design a User-Friendly Interface, develop an intuitive, user-friendly interface for the hospital management system, tailored to the needs of doctors, nurses, administrative staff, and patients of John F. Kennedy Hospital ensuring ease of use and efficient workflow navigation.
- iii. To Implement an Integrated Hospital Management System, deploy a comprehensive hospital management system at John F. Kennedy Hospital that integrates key hospital functions including patient records, appointment scheduling, billing, inventory, and reporting for seamless operations.
- iv. To Facilitate Data-Driven Decision Making, enable effective data processing and real-time analytics within the hospital management system to support informed decision-making by hospital administrators, enhancing strategic planning and operational efficiency at John F. Kennedy Hospital.

### **1.4. Research Questions**

- i. How can data be accurately gathered and structured to support hospital operations, ensuring comprehensive and secure access for all relevant stakeholders?



- ii. How can the interface be optimized for ease of use, efficiency, and accessibility for various users such as doctors, nurses, administrative staff, and patients?
- iii. Integrated hospital management system that addresses the hospital's operational needs?
- iv. What processes and analytical tools are required to ensure that the data collected can support real-time decision-making and improve management outcomes?

## **1.5. Scope of the Study**

The scope of this study is to evaluate the impact and effectiveness of implementing a hospital management system at John F. Kennedy Hospital. This includes examining the changes in the hospital management system process, efficiency, accuracy, waiting times, patient satisfaction, communication and coordination between patients and healthcare providers, healthcare provider productivity and efficiency, cost-effectiveness, usability, functionality, and impact from the perspective of healthcare providers and administrators. Additionally, the scope includes analyzing factors influencing patients' choices in utilizing diversified appointment registration systems at John F. Kennedy Hospital.

### **1.5.1 Content scope**

The content scope of this project is focused on the implementation and impact of the hospital management system at John F. Kennedy Hospital. This includes evaluating the changes in the hospital management system process, communication and coordination between patients and healthcare providers, healthcare provider productivity and efficiency, and the cost-effectiveness of the system.

### **1.5.2. Geographical scope**

The geographical scope of this project is limited to John F. Kennedy Hospital and its patient population in Liberia. While the findings may have broader applications, the focus remains on the specific context of John F. Kennedy Hospital in Liberia, including its impact on surrounding communities and healthcare infrastructure.

### **1.5.3. Time frame**

The time scope of developing of hospital management system to keep patients record at the hospital. According to this project hospital management system can spend approximately 5 to 6 months. Initial weeks are dedicated to understanding user needs and planning. Design work takes about a month, followed by development lasting around 1 to 2 months. Rigorous testing requires another 1 to 1 months. Deployment and user training take up around 1 to 2 months. Even after launch, continuous monitoring and updates are essential for optimal performance.

## **1.6. Significance of the project**

### **1.6.1. Personal interest**

I am personally invested in leading this project because I want to enhance patient care and improve the healthcare journey for individuals at John F. Kennedy Hospital. The introduction of a hospital management system aims to simplify and automate different tasks such as scheduling appointments, accessing medical records, facilitating communication between patients and healthcare professionals, and monitoring treatment progress. By implementing a comprehensive and user-friendly system, we can empower patients to take control of their healthcare and improve the overall patient experience.

### **1.6.2. Institutional interest**

John F. Kennedy Hospital has a strong incentive to implement the Hospital management system, as it will enhance efficiency and productivity in healthcare delivery. This improvement will result in higher patient satisfaction, reduced administrative burden, better data management and analytics capabilities, and improved communication between healthcare providers and patients.

### **1.6.3. Public interest**

The implementation of a hospital management system at John F. Kennedy Hospital will also benefit the wider public as it allows patients too conveniently and securely access and manage their healthcare information. In addition, by utilizing an online system, patients will have the opportunity to schedule their own appointments and check doctor availability, ultimately saving time and effort for both patients and healthcare professionals.

Furthermore, the system will provide real-time updates on appointment status, reducing wait times and enhancing the overall patient experience.

### **1.6. Project Methodology**

The data collection techniques for this project will involve a combination of quantitative and qualitative methods. Quantitative data will be collected through surveys and analysis of system usage data, such as the number of online appointments made and patient satisfaction ratings. Qualitative data will be collected through interviews and focus groups with healthcare providers, administrators, and patients to gain insights into their experiences with the hospital management system. The project will use the agile methodology for software development, providing flexibility and adaptability. The requirements will be gathered, the functionality of the system will be examined, and the system architecture will be designed using techniques from system analysis and design, such as object-oriented and structured analysis. In terms of software development, the project will utilize programming languages and non-programming languages tools such as PHP, MYSQL, HTML, CSS, and JAVASCRIPT for data analysis and Hospital management system model for development.

### **1.8. Limitations of the study**

One limitation of the hospital management system project is that it focuses solely on patients in inpatient wards and does not include outpatients. Additionally, the study may also be limited by potential cultural differences among the participants. Another limitation is that the project may face challenges related to the integration of different hospital infrastructure systems and the need to replace or decommission existing medical applications. The implementation of the hospital management system at John F. Kennedy Hospital may also face limitations in terms of access to proprietary hospital infrastructure systems and the training of staff on the use and benefits of the system. Furthermore, the project may face challenges related to data security and privacy concerns, as patient information will be stored and accessed online. Another limitation of the hospital management system project is the potential resistance or reluctance from some patients to use online registration and trust the internet for healthcare purposes.

Additionally, the project may face limitations in terms of the availability of resources and funding required for the development and implementation of the system.

### **1.9. Organization of the research**

This study is structured and articulated into five chapters sequentially:

#### **Chapter 1: INTRODUCTION TO THE STUDY:**

This chapter gives an introduction and background of this research. It introduces the main research purpose including, the statement of the problem, Research objectives, research questions, scope and the limitations.

#### **Chapter 2: LITERATURE REVIEW:**

The main purpose of this chapter is to describe the key terms or concepts used in our study, to review the existing related systems and how previous researchers addressed data exchange problems.

#### **Chapter 3: SYSTEM ANALYSIS AND DESIGN:**

This chapter will present the analysis of the system Vs the new system to be implemented along with research methodologies used and the system design and overview.

#### **Chapter 4: SYSTEM IMPLEMENTATION:**

In this chapter will describe the tools and technologies used for implementation and system implementation flow and Specifications.

#### **Chapter 5: CONCLUSION AND RECOMMENDATIONS:**

This chapter offers the conclusion of the study and suggestions to call institutions to adhere on the importance and advantages of using machine learning algorithms in Organization.

## CHAPTER TWO: LITERATURE REVIEW

### 2.1. Introduction

The main purpose of this chapter is to provide to the reader or contains explanations of the basic information system concepts useful for the developer or user before it is developed a complete understanding, comprehensive and practical set of concepts and explanations used in this project. This project contains a set of guidelines and most important information to develop this project in an easier and tangible manner. My study will provide the best way to interact with the desktop application and represents the best and important background information on the characteristics, features and benefits of the desktop application in professional and practical life. It provides a well understanding of company information system, database and related tools to support the conception and development of this project.

### 2.1 Definition of key concepts

#### 2.1.1 Logistics

Is basically ensuring that all personal and all materials are in the right place and the right moment to ensure that the project objective is fulfilled. (Project Management Institute. 2021).

#### 2.1.2 Management

Management is a relatively recent discipline that merges with business management. Its mission is to plan, organize, direct, and govern an organization in order to fulfill its goals. ” (Project Management Institute, 2021).

And in software development, is a general phrase used to describe a category of computer software designed to help streamline the complexity of large projects and tasks as well as facilitate team collaboration and project reporting. (Investopedia, 2024).

#### 2.1.3 Information

Information is one of the most important key terms while talking about software development. It can be defined as data converted into something valuable and usable for certain user. (IBM, 2024).

#### 2.1.4 Software

Software is a collection of computer programs and associated data that instructs the computer on what to do and how to do it.

A software is one or more computer programs and data stored on a computer for specific purposes.

It is also a collection of programs, techniques, algorithms, and accompanying documentation. (Margaret Rouse, 2023).

### **2.1.5 System**

A collection of comprehensive processes, procedures, and routines developed to carry out a certain task, execute a duty, or solve an issue, or when examining a computer system, which refers to the hardware and software components that power computers. (Educative, 2024).

### **2.1.6 Database Management Systems (DBMS)**

A database management system (DBMS) is a software package that allows you to define, manipulate, retrieve, and manage data in a database. A database management system (DBMS) often manipulates the data itself, including the data format, field names, record structure, and file structure. It also specifies standards for validating and manipulating this data. (Dataversity, 2024).

### **2.1.7. Technologies and tools that have been used in the development of the system:**

- Visual Studio Code: a redesigned and enhanced code editor for creating and debugging contemporary online and cloud apps.
- Bootstrap: A CSS framework designed for responsive, mobile-first front-end web development.

HTML is used for frontend development of web applications.

- CSS: use for the style in the frontend development for web application.
- PHP is used for backend development of web applications.
- XAMP: Is use for the Database local web server environment.

## **2.2 Review of Related literature**

Othman, M., Ismail, S I., & Noradzan, H. (2018, October 1) focuses on the challenges faced by practitioners in managing and making decisions on software development projects, as well as the various methodologies and models used in the development process.

It also highlights the significance of continuous improvement and exceeding patient expectations in order to achieve competitive advantage in the healthcare industry. Pinem, A., & Fajrina, H R. (2017, January1).

Explores the impact of algorithm-driven care and the use of literature assessment, analysis of local outcome and process data, as well as regular measurement and open discussion of clinical outcomes and operational metrics on process improvement in ambulatory surgery centers. Additionally, the literature review discusses the importance of patient involvement in policy development and the role of technology, such as web-based systems and electronic medical records, in enhancing patient care and improving overall healthcare delivery. Pinem, A., & Fajrina, H R. (2017, January 1). Also emphasizes the importance of considering cultural factors, social mores, and power relationships in quality improvement activities in developing healthcare systems. The Hospital management system in the case study of John F Kennedy aims to address the challenges faced by the existing healthcare system by providing a fast and efficient platform for patients to manage their medical information, appointments, and communication with healthcare providers.

Khoshronezhad, F., & Khoshronezhad, S. (2018, November 10). Provides a detailed review of the current research and expertise in the subject of hospital management systems. It highlights the gaps in the current systems and proposes new innovations that the researcher will bring. These innovations include the development of a user-friendly interface that can be accessed on various devices, such as smartphones and tablets. The researcher will also focus on incorporating advanced security measures to ensure the privacy and confidentiality of patient information. Overall, the literature review sets the foundation for the research study by discussing the current state of Hospital management systems and their potential impact on healthcare delivery. Ebnehoseini, Z., Tara, M., Meraji, M., Deldar, K. also highlights the critical success factors and variables that contribute to service quality and competitive advantage in healthcare organizations. By examining previous studies and analyzing the current literature, the researcher aims to identify best practices and strategies for implementing a successful Hospital management system.

The researcher will also conduct a thorough analysis of operating room scheduling and planning research to optimize the effectiveness of schedules and plans within the hospital management system (Gür & Eren, 2018). This will involve studying various factors such as patient flow, resource allocation, and surgeon availability to ensure that surgeries are scheduled in the most efficient and effective manner possible. Additionally, the researcher will delve into the importance of cultural factors in implementing quality improvement strategies within a developing healthcare system. This is essential in order to address potential challenges and barriers that may arise during the implementation process and to ensure that the hospital management system caters to diverse cultural backgrounds and social norms. Furthermore, the researcher will conduct a systematic review of the literature to examine how health literacy has been addressed within the context of internet-based services in order to promote effective communication and patient engagement within the Hospital management system. Gür, S., & Eren, T. (2018).



## CHAPTER THREE: SYSTEM ANALYSIS AND DESIGN

### 3.1 Introduction

This chapter presents the analysis and design process of this project on the structural and logical part. System analysis and design relate to shaping organization, improving performance and Achieving objective for profitability and growth. It describes the area of study, sample size technique, and data collection methods and process design.

### 3.2. Analysis of the current system

Until now, the majority of the systems in the John F. Kennedy Hospital remain manual, with managers and registers using a paper-based book to preserve the information of their patients. They record the data of their patients manually. This procedure is obsolete and outdated that it is not efficient. This manual way will take more time utilization and it is not interactive. The paper-based book in which information are recorded will not last for a long time, it might be lost. It is also exhausting to transfer the book from time to time. Looking for patient information in this book is not easy; it is a waste of time, as you need to go through some pages before getting the needed details of the patient.

#### 3.2.1. Problem with the existing System

Knowing that the old system is manually, it counts on so many problems. The common problems encountered in manual filling and computations are error, and file handling.

**These problems led to many others, such as:**

- Slow processing of the patient's data.
- Difficult to locate information in the hospital register book.
- Data that are saved on hard copies are risked to be lost.
- The patient cannot know whether the hospital is open or not.
- Patient data may be lost.
- There is a threat about the security.

### 3.3. Analysis of the new system

#### 3.3.1. Introduction

This new system is design for medical practitioner/physician to keep track of all patient's medical record/information such as diagnosis, drug prescribed, admission and discharged, etc.

The new system will take care of the old system in a nut shell, this will improve the efficiency of the management in a daily work as it can provide required records on time. The proposed system also has been designed to overcome all the problems found in the existing system. The suggested system has additional functions that were not included in the old system.

This computerized system of John F. Kennedy has the following importance:

- Data security is easy to implement.
- Validation ensures accurate data entry.
- Low memory use and high processing speed.
- Data reports are supplied in close style.

#### 3.3.2. System requirement:

##### 3.3.2.1. Function requirement

The functional requirements represent the expected behavior of the system. This behavior may be expressed as services, tasks or functions the system is required to perform (Thomas & Raphael., 2008).

- **Efficiency:** Due to the increasing of patient, it is becoming progressively harder to copy with the paper worked involved in the manual system of processing.
- **Accessibility:** The system will be accessible in every computer, which access the Internet and web browser installed in.

**Safety and Security:** The information saved on the computer is protected from animals, insects, and intruders. In addition, a password is used to make a system accessible to only authorized persons.

### 3.3.2.2. Hardware requirement

**Servers:** High-performance servers to host the hospital management software, databases, and backup systems.

**Desktop Computers/Laptops:** For staff to manage bookings, and patient information.

**Tablets/Portable Devices:** For staff to use on the go, especially useful for checking in/out patient in the hospital.

**Walkie-Talkies:** For quick communication between staff members, especially in hospital.

### 3.3.2.3. Software requirement

**Therefore, the proposed system is able to:**

- Capture patient information, store it and make it available at the time of need.
- Enable users to look for available beds by location.
- Enable users to book a car, select pick-up and drop-off locations, and make secure payments.
- Search and display patient information details.

### 3.3.2.4. Non-function requirement

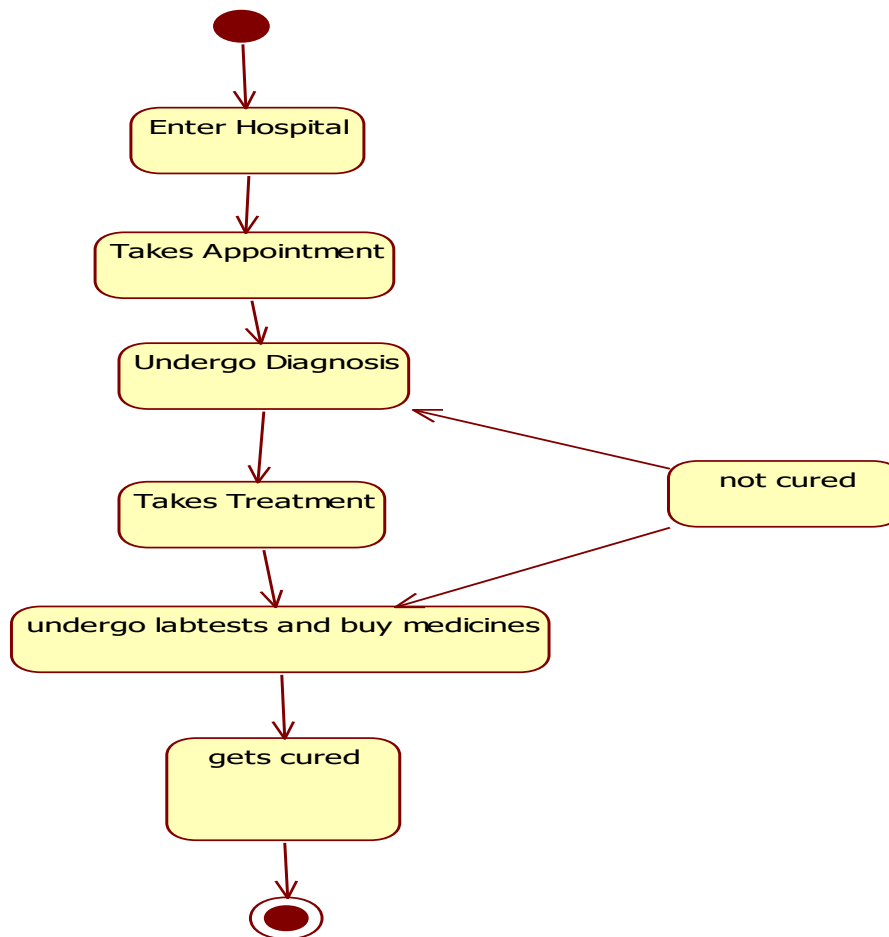
Non-functional requirements are those that establish criteria for evaluating the functioning of a system rather than particular actions. This is in contrast to functional requirements, which define particular behavior or functions. Systems must exhibit software quality attributes, such as accuracy, performance, cost, security and modifiability plus usability that is easy to use for the intended users. It also helps to meet a system's functional requirements. (Thomas & Raphael., 2008).

**Thus, the new system does the following:**

- The system should be highly available and scalable to accommodate peak traffic on weekends and holidays.
- The system should be user-friendly, responsive, and accessible across devices and platforms.
- The system prevents unauthorized access to the system with user authentication via login-on system.

### 3.3.3. Functional Diagram

A functional diagram is a graphical depiction of the interactions between different components or parts of a system or process. It gives a visual representation of how several components work together to reach a given aim or outcome.



*Figure 1 Functional Diagram*

### 3.3.4. Methodological approach

### 3.3.5. Data collection techniques

Data collection is the process of gathering and assessing information or data from various sources in order to solve research issues, answer questions, assess results, and anticipate trends and probability. It is a necessary step in all sorts of research, analysis, and decision-making, including those conducted in the social sciences, business, and healthcare. (Simplilearn, 2023).

### **3.3.6. Interview**

A good conversation broadens the perspectives of everyone who participates. From that, my interviews were structured as conversation where I was asking questions to participant for to gain more information.

### **3.3.7. Observation**

The observation is an action of attentive follow up, without the willing to modify them, using investigation and appropriate study. The observation as a tool helped me in this researcher to know and muster the real situation of existing system. In addition, that helped me to notice with own eyes what is going on practically in the present field of car rental companies.

### **3.3.8. Documentation**

This technique as it allows the consultation of books, reviews, memoire, class notes and web pages related to the subject of this work.

It has been used in this project to add on our shelf more information for to build a system that able to answer on market requirements.

This technic permitted the research to consult books, reviews, class notes and web page related to Diabetes model prediction using hospital management system.

### **3.3.9. System analysis and Design Methodology:**

The Structured Systems Analysis and Design Method (SSADM) is a systems-based method to information system analysis and design. It uses a systematic and disciplined methodology, breaking down systems development into stages that include feasibility study, requirements analysis, design, and implementation.

SSADM emphasizes thorough documentation and detailed modeling techniques to ensure that the final system meets user requirements and is delivered on time and within budget. It is particularly useful for large, complex projects where a structured approach can help manage risks and ensure quality.

SSADM utilizes several key tools for system development. Data Flow Diagrams (DFDs) illustrate the flow of data within a system, showing how data is processed through inputs and

outputs. Entity-Relationship Diagrams (ERDs) model data entities and their relationships, providing a clear view of the system's data structure. A Data Dictionary serves as a centralized repository of information about data, including its meaning, relationships, origin, usage, and format, ensuring consistency across the project.

#### **4.1. System Design Methodology:**

Agile approach stresses iterative development, in which requirements and solutions emerge from cooperation among self-organizing cross-functional teams. Agile methodology promotes flexibility and customer satisfaction by delivering small, functional pieces of the software incrementally.

Teams using agile methodology often hold regular meetings, called sprints, to review progress and plan the next steps. The Agile methodology promotes continual feedback and adaptation, ensuring that the final product closely matches customer needs and expectations.

One of the core principles of agile methodology is the ability to respond quickly to change, rather than strictly adhering to a fixed plan. This methodology fosters close collaboration among team members and stakeholders, ensuring that everyone is aligned and working towards common goals.

Agile also values individuals and interactions over processes and tools, emphasizing the importance of communication and teamwork. By focusing on delivering tangible results in short cycles, Agile helps teams identify and address issues early, leading to higher quality outcomes.

Agile practices often include daily stand-up meetings, where team members briefly discuss their progress, plans for the day, and any obstacles they face. This regular communication helps to quickly identify and resolve issues, maintaining momentum and alignment. Retrospectives at the end of each sprint or iteration allow teams to reflect on their performance and identify areas for improvement, fostering a culture of continuous learning and adaptation.

#### **DATA FLOW DIAGRAMS**

The DFD takes an input-process-output view of a system i.e. Data items enter the software, are modified by processing components, and finally exit the software.

Zero Level DFD

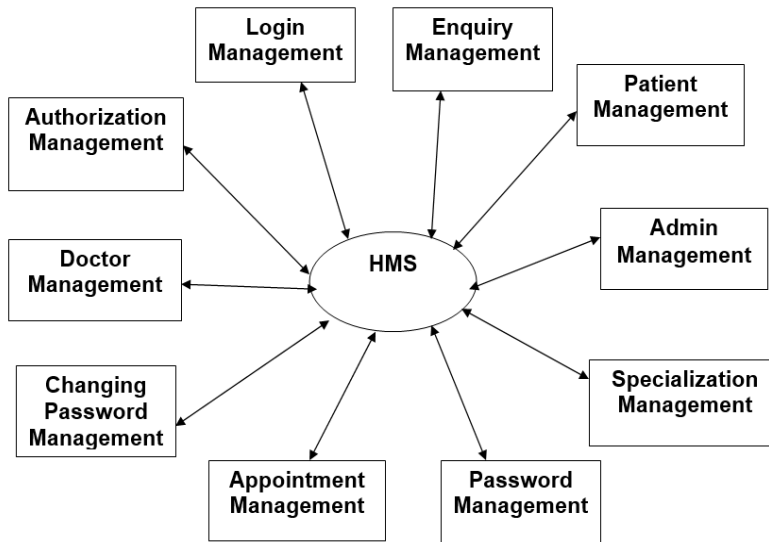


Figure 2 DFD Level 0

First Level DFD

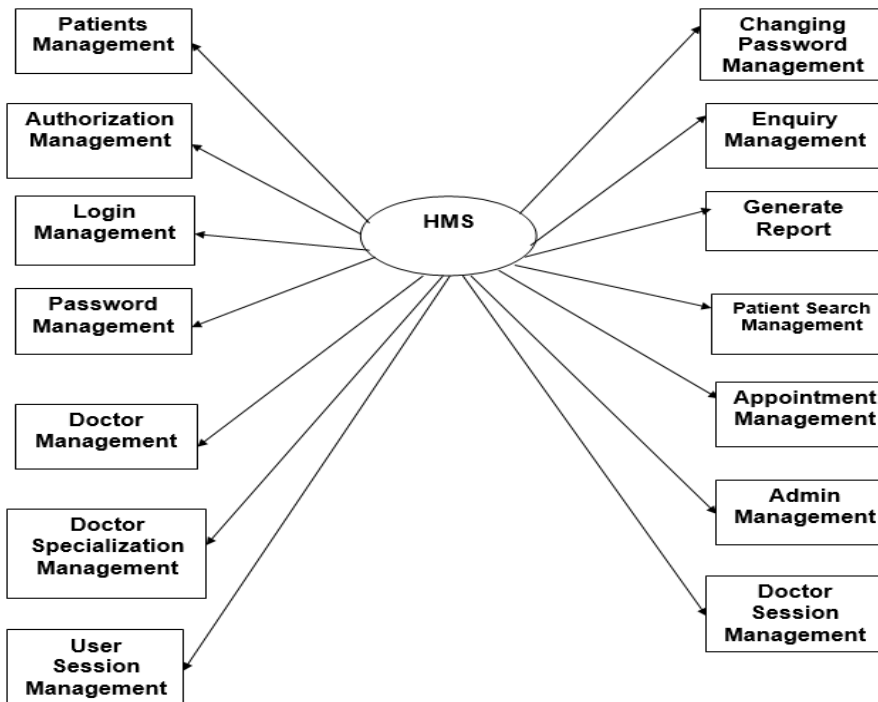
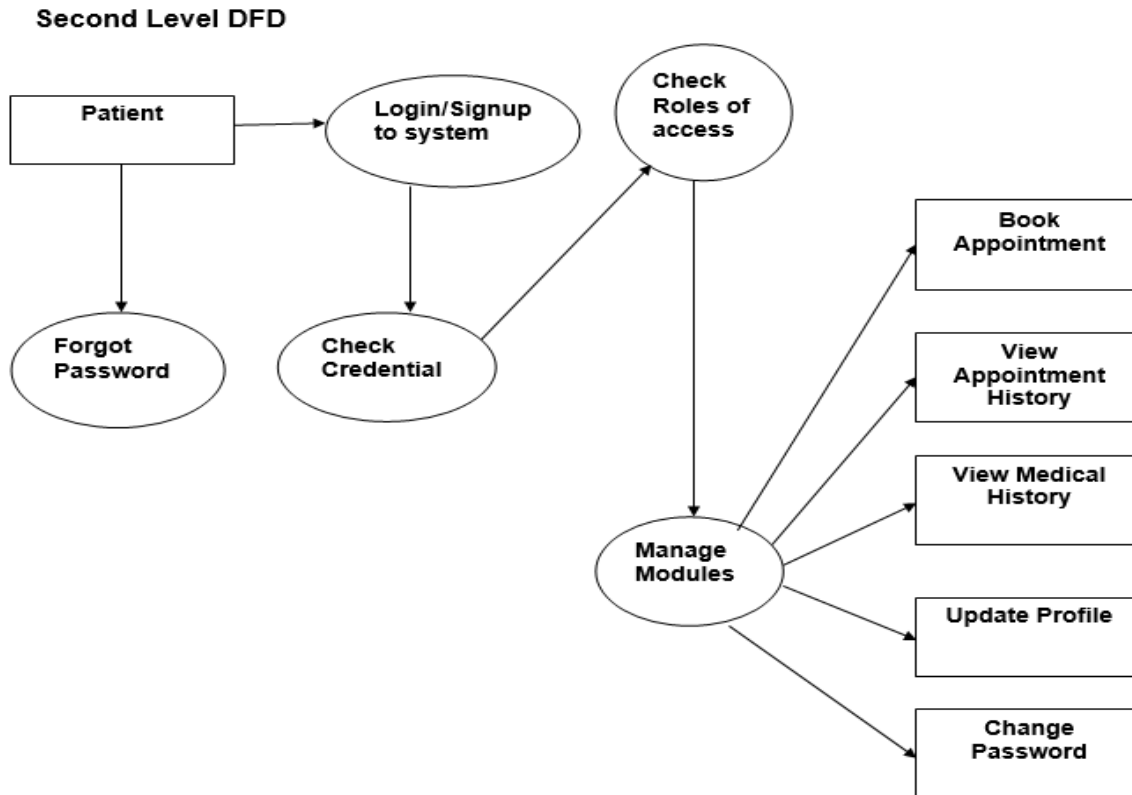


Figure 3 DFD Level 1

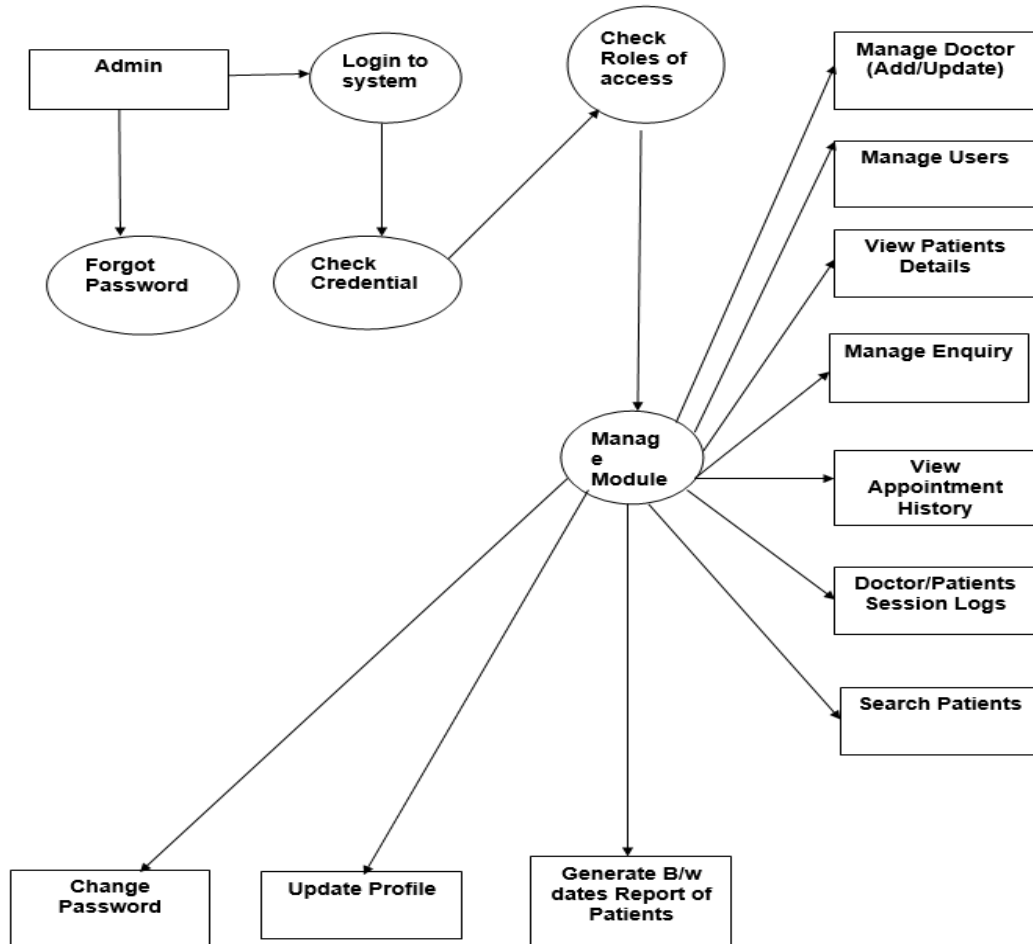
The First-Level Data Flow Diagram (DFD) illustrates the communication between various management elements in a Hospital Management System (HMS). It illustrates the interdependence and complexity of the system, highlighting the functionalities offered by the HMS.



*Figure 4 DFD Level 2*

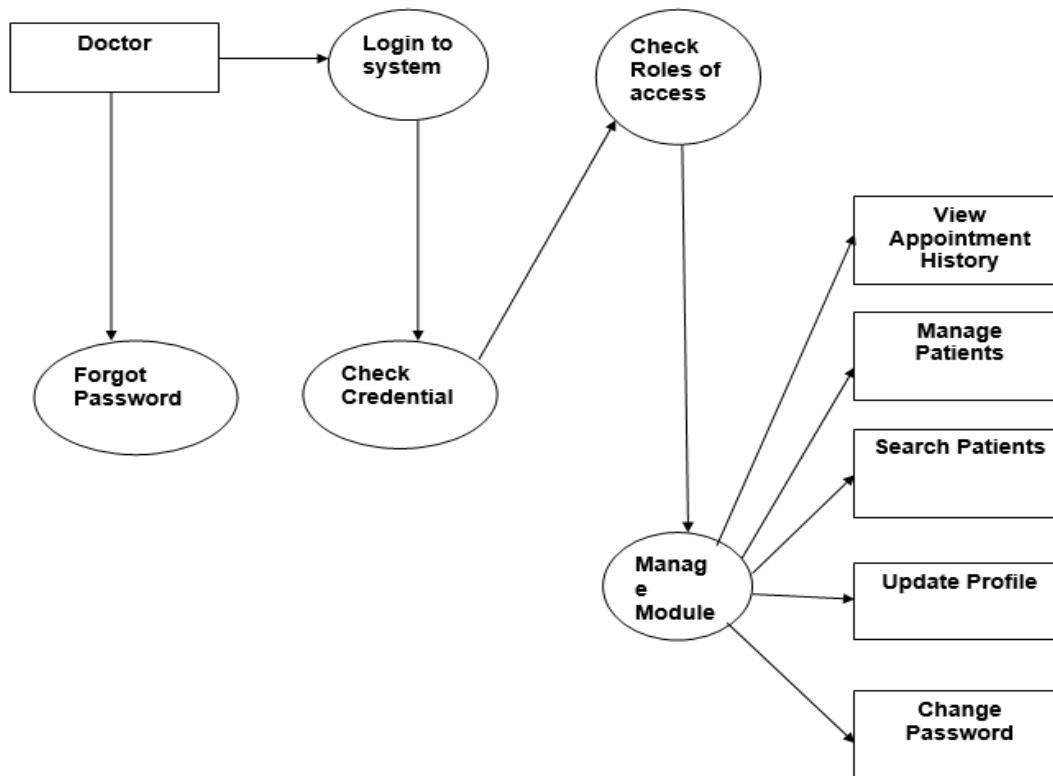
The Hospital Management System (HMS) data flow diagram is a Second-Level Data Flow Diagram (DFD) detailing the patient's access control and contact steps. It outlines the process from signup to managing appointments, medical records, profile changes, and password changes, ensuring efficient patient management within the system.





*Figure 5 DFD Level 2*

This figure, which focusses on the patient contact and access control procedures, is a Second-Level Data Flow figure (DFD) for a Hospital Management System (HMS). It describes in detail how a patient uses the system, beginning with signup or login. The "Forgot Password" procedure is available to the patient if necessary. The system verifies the patient's credentials and role after they log in to establish the proper access level. Once an appointment has been made, the patient can see their medical history, schedule future visits, update their profile, and change their password, among other things. This DFD deconstructs the data flow and patient actions that occur during information access and management within the HMS.



*Figure 6 DFD Level 2*

This diagram illustrates a patient's access to a healthcare management system. They log in, verify credentials, and manage various modules like appointments, medical records, profile changes, and passwords. This organized flow allows patients to effectively manage interactions with healthcare providers and personal data.

### **Entity Relationship Data Model**

An ERD is a category or group of things that has similar attributes and common behavior. . The class's icon is a rectangle, which is divided into three regions. The uppermost section carries the name, the middle area provides the characteristics, and the lower regions display the operations. ERD diagrams give the representation from which developers operate. Class diagrams are also useful in terms of analysis.

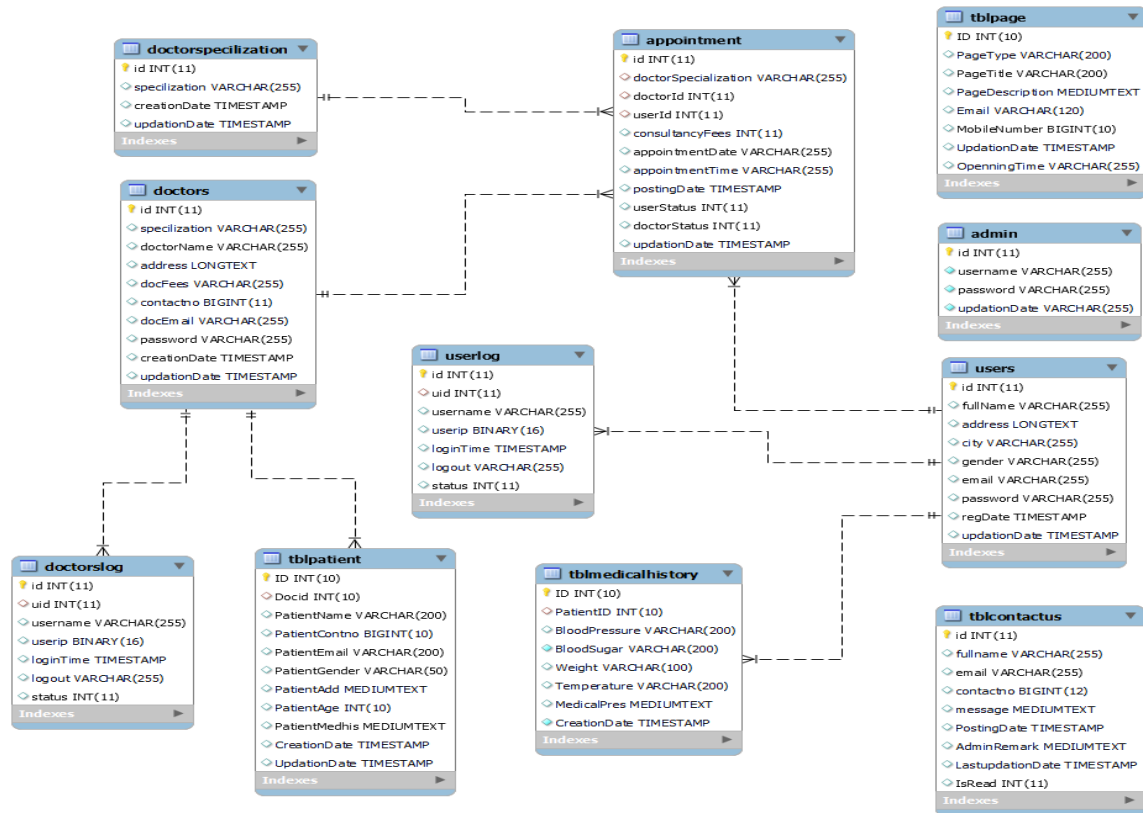


Figure 7 ERD

The diagram is an Entity-Relationship Diagram (ERD) for a hospital management system database. It includes several tables representing different entities and their relationships. Key tables include doctorspecialization, doctors, appointment, userlog, tblpatient, tblmedicalhistory, tblpage, admin, users, doctorlog, and tblcontactus. Each table contains attributes relevant to the entity it represents, such as id, specialization, and creationDate for doctorspecialization, and doctorName, address, and password for doctors. The relationships between tables are depicted with connecting lines, indicating how data in one table relates to data in another. For instance, the appointment table is linked to the doctors, users, and tblpatient tables, showing how appointments are associated with doctors, patients, and users. This ERD provides a structured overview of the database schema, facilitating understanding of data flow and relationships within the hospital management system.

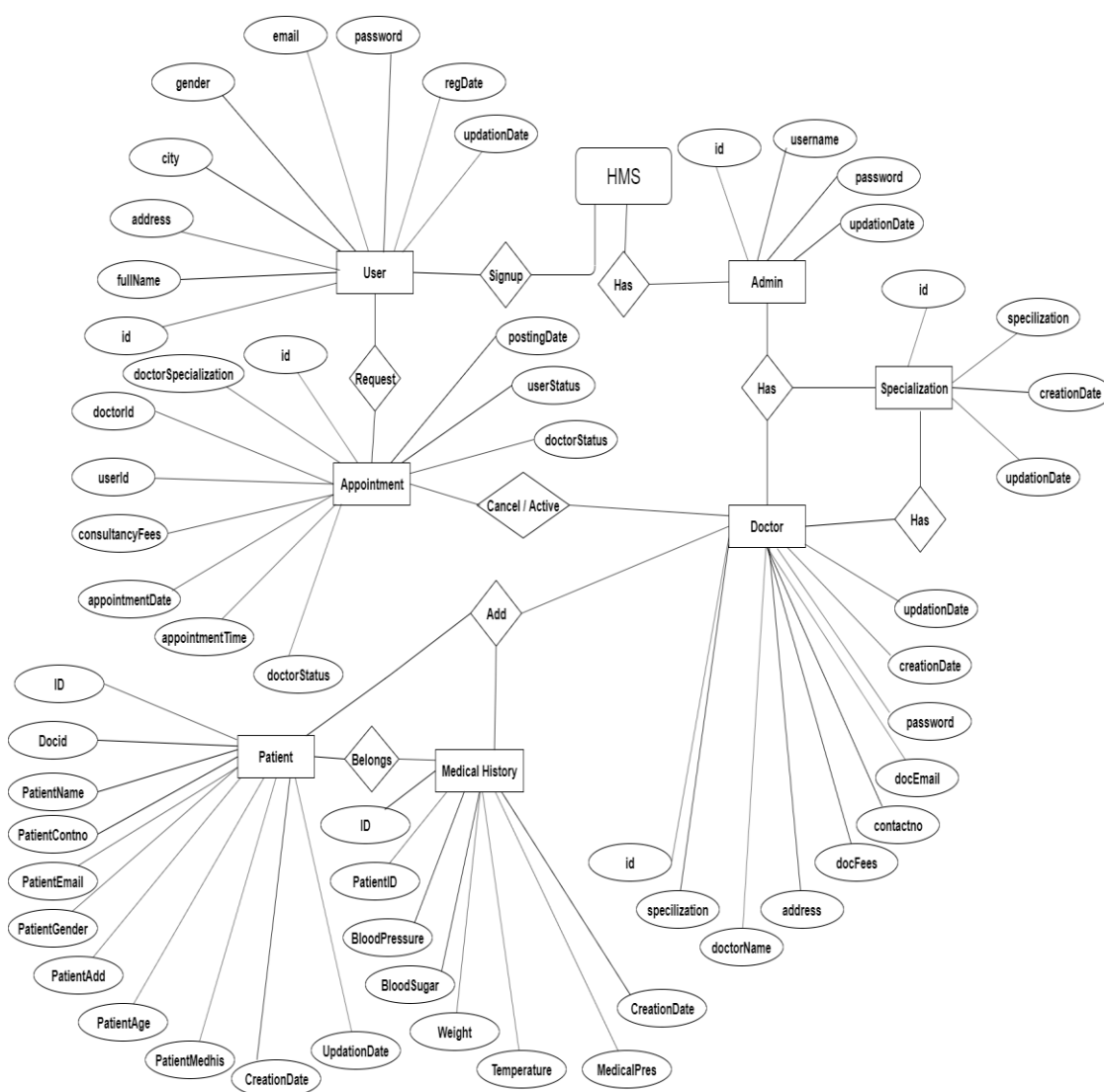


Figure 8 ERD

The ER diagram depicts the database schema of a hospital management system (HMS). It includes several entities such as User, Admin, Doctor, Patient, Appointment, Specialization, and Medical History, along with their respective attributes. The User entity, with attributes like email, password, and regDate, is linked to Appointment through a "Request" relationship. The Admin entity manages the system, linked to Doctor and Specialization entities indicating administrative control. The Doctor entity, with attributes like docName and specialization, is associated with Appointment and Patient entities through "Add" and "Cancel/Active" relationships. The Patient entity, containing personal details, is connected to Medical History, which records health metrics like BloodPressure and Weight.

This diagram visualizes the structured relationships and data flow within the hospital management system, ensuring efficient data management and access control.


### DATA Dictionary

The data in the system must be saved and retrieved from the database. Database design is part of the system design process. Data components and data structures that will be stored have been discovered during the analysis step. They are organized and placed together to create a data storage and retrieval system.

A database is a collection of connected data that is stored with minimal redundancy in order to serve a large number of users quickly and efficiently. The overall goal is to make database access simple, rapid, affordable, and adaptable for the user. Relationships between data items are formed, and extraneous data elements are deleted. Normalization is used to achieve internal data consistency, as well as to reduce redundancy and increase stability. This guarantees that data storage requirements are kept to a minimum, that data inconsistencies are avoided, and that updates are optimized. The MySQL database has been chosen to create the necessary databases.


### Hospital Management System (HMS) contains 10 MySQL tables:

*Table 1 Admin*

#	Name	Type	Collation	Attributes	Null	Default
1	id 	int(11)			No	None
2	username	varchar(255)	latin1_swedish_ci		No	None
3	password	varchar(255)	latin1_swedish_ci		No	None
4	updationDate	varchar(255)	latin1_swedish_ci		No	None


**Admin table Structure:** This table store the login details of admin.

*Table 2 Specialization*

#	Name	Type	Collation	Attributes	Null	Default
1	id 	int(11)			No	None
2	specilization	varchar(255)	latin1_swedish_ci		Yes	NULL
3	creationDate	timestamp			Yes	current_timestamp()
4	updationDate	timestamp			Yes	NULL


**Doctor specialization table Structure:** This table store the specializations of doctors.

Table 3 Doctors

#	Name	Type	Collation	Attributes	Null	Default
1	id 	int(11)			No	None
2	specilization	varchar(255)	latin1_swedish_ci		Yes	NULL
3	doctorName	varchar(255)	latin1_swedish_ci		Yes	NULL
4	address	longtext	latin1_swedish_ci		Yes	NULL
5	docFees	varchar(255)	latin1_swedish_ci		Yes	NULL
6	contactno	bigint(11)			Yes	NULL
7	docEmail	varchar(255)	latin1_swedish_ci		Yes	NULL
8	password	varchar(255)	latin1_swedish_ci		Yes	NULL
9	creationDate	timestamp			Yes	current_timestamp()
10	updatationDate	timestamp			Yes	NULL



**Doctors table Structure:** This table contains the logins and personal information of physicians.

Table 4 Doctors Log

#	Name	Type	Collation	Attributes	Null	Default
1	id 	int(11)			No	None
2	uid	int(11)			Yes	NULL
3	username	varchar(255)	latin1_swedish_ci		Yes	NULL
4	userip	binary(16)			Yes	NULL
5	loginTime	timestamp			Yes	current_timestamp()
6	logout	varchar(255)	latin1_swedish_ci		Yes	NULL
7	status	int(11)			Yes	NULL


**Doctors log table Structure:** This table contains the doctor login and logout details.

Table 5 User Table

#	Name	Type	Collation	Attributes	Null	Default
1	id 	int(11)			No	None
2	fullName	varchar(255)	latin1_swedish_ci		Yes	NULL
3	address	longtext	latin1_swedish_ci		Yes	NULL
4	city	varchar(255)	latin1_swedish_ci		Yes	NULL
5	gender	varchar(255)	latin1_swedish_ci		Yes	NULL
6	email 	varchar(255)	latin1_swedish_ci		Yes	NULL
7	password	varchar(255)	latin1_swedish_ci		Yes	NULL
8	regDate	timestamp			Yes	current_timestamp()
9	updatationDate	timestamp			Yes	NULL

**Users table Structure:** This table stores the user's login and personal information.

Table 6 User log

#	Name	Type	Collation	Attributes	Null	Default
1	id 	int(11)			No	None
2	uid	int(11)			Yes	NULL
3	username	varchar(255)	latin1_swedish_ci		Yes	NULL
4	userip	binary(16)			Yes	NULL
5	loginTime	timestamp			Yes	current_timestamp()
6	logout	varchar(255)	latin1_swedish_ci		Yes	NULL
7	status	int(11)			Yes	NULL

**User log table Structure:** This table store the users login and personal details.

*Table 8 Appointments*

#	Name	Type	Collation	Attributes	Null	Default
1	id 🍌	int(11)			No	None
2	doctorSpecialization	varchar(255)	latin1_swedish_ci		Yes	NULL
3	doctorId	int(11)			Yes	NULL
4	userId	int(11)			Yes	NULL
5	consultancyFees	int(11)			Yes	NULL
6	appointmentDate	varchar(255)	latin1_swedish_ci		Yes	NULL
7	appointmentTime	varchar(255)	latin1_swedish_ci		Yes	NULL
8	postingDate	timestamp			Yes	current_timestamp()
9	userStatus	int(11)			Yes	NULL
10	doctorStatus	int(11)			Yes	NULL
11	updationDate	varchar(255)	latin1_swedish_ci		Yes	NULL

**Appointment table Structure:** This table stores the user's appointment information.

*Table 7 Table Patient*

#	Name	Type	Collation	Attributes	Null	Default
1	ID 🍌	int(10)			No	None
2	Docid	int(10)			Yes	NULL
3	PatientName	varchar(200)	latin1_swedish_ci		Yes	NULL
4	PatientContno	bigint(10)			Yes	NULL
5	PatientEmail	varchar(200)	latin1_swedish_ci		Yes	NULL
6	PatientGender	varchar(50)	latin1_swedish_ci		Yes	NULL
7	PatientAdd	mediumtext	latin1_swedish_ci		Yes	NULL
8	PatientAge	int(10)			Yes	NULL
9	PatientMedhis	mediumtext	latin1_swedish_ci		Yes	NULL
10	CreationDate	timestamp			Yes	current_timestamp()
11	UpdationDate	timestamp			Yes	NULL

**Table patient table Structure:** This table stores patient information.

*Table 8 Medical History*

#	Name	Type	Collation	Attributes	Null	Default
1	ID 🍌	int(10)			No	None
2	PatientID	int(10)			Yes	NULL
3	BloodPressure	varchar(200)	latin1_swedish_ci		Yes	NULL
4	Blood Sugar	varchar(200)	latin1_swedish_ci		No	None
5	Weight	varchar(100)	latin1_swedish_ci		Yes	NULL
6	Temperature	varchar(200)	latin1_swedish_ci		Yes	NULL
7	MedicalPres	mediumtext	latin1_swedish_ci		Yes	NULL
8	CreationDate	timestamp			No	current_timestamp()

**tblmedicalhistory table Structure :** This table stores the patient's medical history.

*Table 11 contact us*

#	Name	Type	Collation	Attributes	Null	Default
1	id 🍌	int(11)			No	None
2	fullname	varchar(255)	latin1_swedish_ci		Yes	NULL
3	email	varchar(255)	latin1_swedish_ci		Yes	NULL
4	contactno	bigint(12)			Yes	NULL
5	message	mediumtext	latin1_swedish_ci		Yes	NULL
6	PostingDate	timestamp			Yes	current_timestamp()
7	AdminRemark	mediumtext	latin1_swedish_ci		Yes	NULL
8	LastupdationDate	timestamp			Yes	NULL
9	IsRead	int(11)			Yes	NULL

**tblcontactus table Structure :** This table contains the contact us inquiry information.

*Table 12 About us*

<b>tblpage</b>						
#	Name	Type	Collation	Attributes	Null	Default
1	<b>ID</b>	int(10)			No	<i>None</i>
2	<b>PageType</b>	varchar(200)	utf8mb4_general_ci		Yes	<i>NULL</i>
3	<b>PageTitle</b>	varchar(200)	utf8mb4_general_ci		Yes	<i>NULL</i>
4	<b>PageDescription</b>	mediumtext	utf8mb4_general_ci		Yes	<i>NULL</i>
5	<b>Email</b>	varchar(120)	utf8mb4_general_ci		Yes	<i>NULL</i>
6	<b>MobileNumber</b>	bigint(10)			Yes	<i>NULL</i>
7	<b>UpdationDate</b>	timestamp			Yes	<i>current_timestamp()</i>
8	<b>OpenningTime</b>	varchar(255)	utf8mb4_general_ci		Yes	<i>NULL</i>

<b>Indexes</b>								
Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
<b>PRIMARY</b>	BTREE	Yes	No	ID	2	A	No	

**tblpage table Structure :** This table stores information about us and how to reach us.



Use case diagram

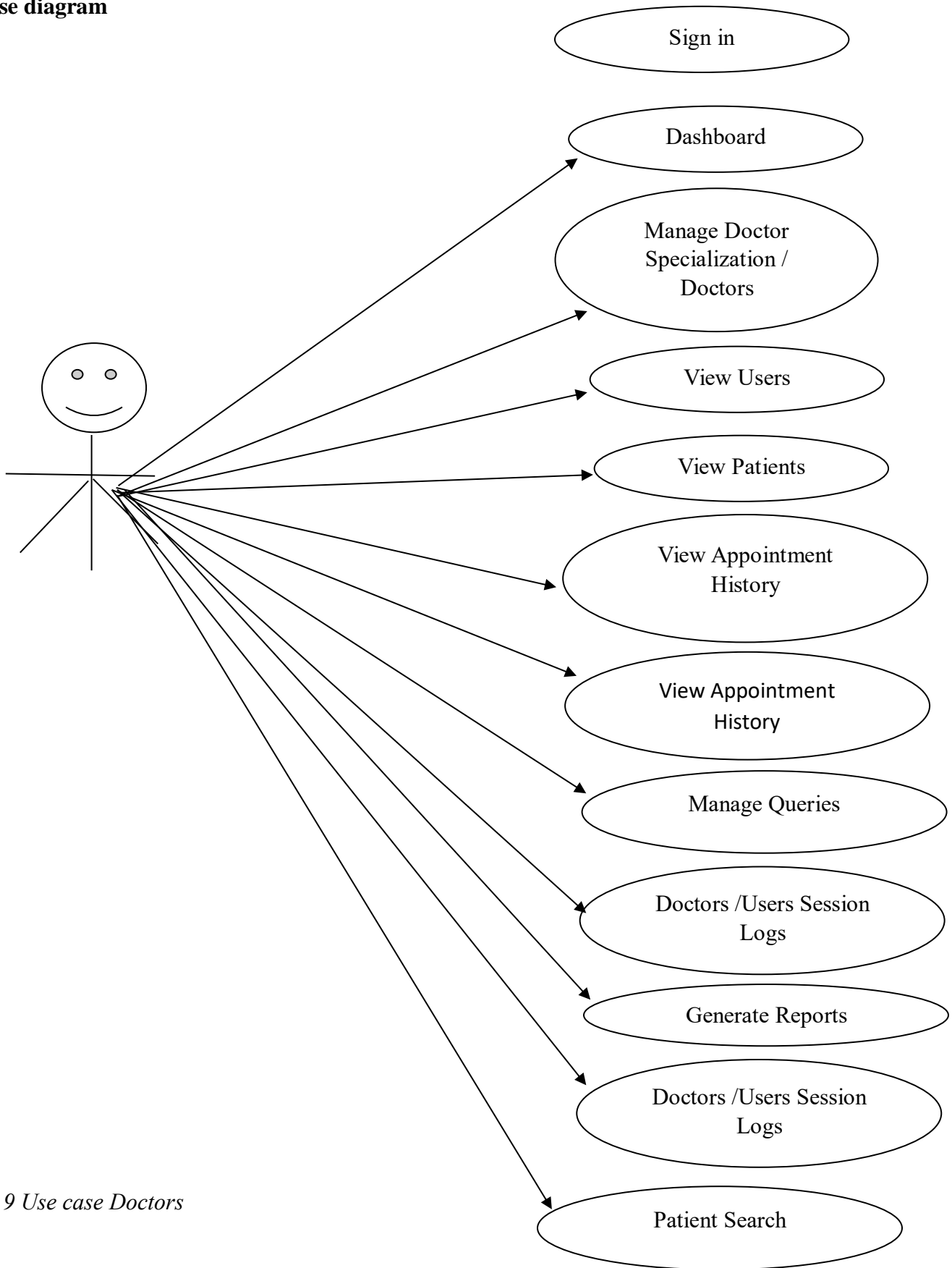


Figure 9 Use case Doctors

## CHAPTER FOUR: SYSTEM IMPLEMENTATION

### 4.1.1. Introduction

System implementation is the process of determining how an information system should be built (physical system design), ensuring that the information system is operational and usable, and ensuring that the information system fulfills quality standards.

### 4.1.2. Description of implementation tools and technology

**To implement this application, I have used the Web Development technologies such as:**

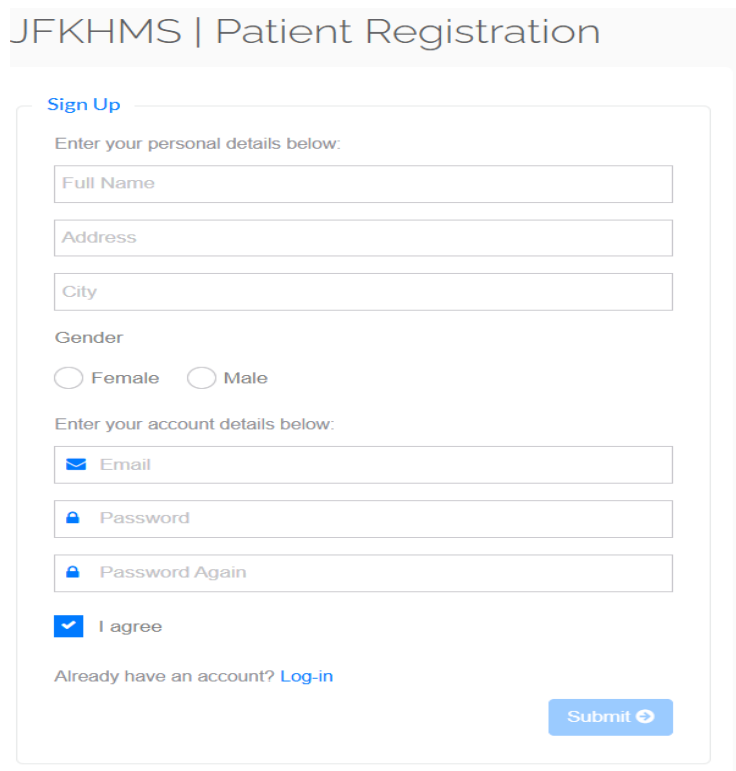
- PHP (Hypertext Preprocessor): which is a widely-used open-source general-purpose scripting language that is especially suited for web development and can be embedded into HTML. We used it for making dynamic the application content accordingly to the need of the user send queries to the database.
- MySQL: is a freely available open-source Relational Database Management System (RDBMS) that uses Structured Query Language (SQL) we use it to design, implement and access the Database.
- Bootstrap: We utilized the HTML, CSS, and JavaScript framework to create a responsive web application and design the user interface.
- XAMP: It is a simple, lightweight Apache distribution that makes it extremely easy for developers to create a local web server for testing and deployment purposes, I used it to run our PHP application serve “APACHE” and our database management system.
- JavaScript: is a programming language commonly used in web development it was original developed by Netscape as a means to add dynamic and interactive element to website.
- HTML (Hypertext Markup Language) is the standard markup language for creating web pages.
- Cascading Style Sheets (CSS): It is a style sheet language used for describing the look and formatting of a document written in a markup language.

### 4.1.3. Screenshots

#### Patient Panel

#### Signup Page

The image shows a "Signup Page" for the Patient Panel in a hospital management system. It allows new patients to create an account by entering their personal details, including name, address, city, gender, email address, password, and terms and conditions.

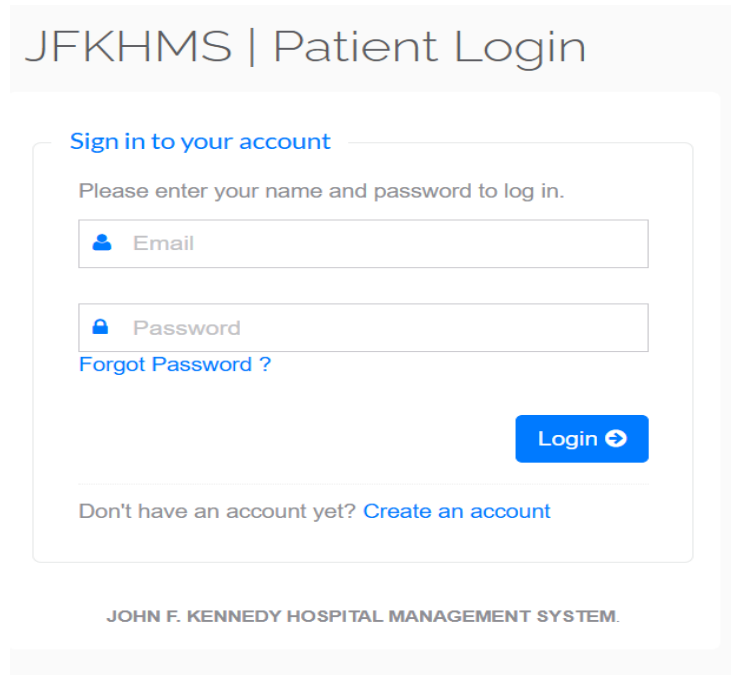


The screenshot displays the "JFKHMS | Patient Registration" page. The main heading is "Sign Up". Below it, the instruction "Enter your personal details below:" is followed by three input fields: "Full Name", "Address", and "City". The "Gender" section includes two radio buttons for "Female" and "Male". The instruction "Enter your account details below:" is followed by three input fields: "Email" (with an envelope icon), "Password" (with a lock icon), and "Password Again" (with a lock icon). A checked checkbox labeled "I agree" is present. At the bottom left, there is a link "Already have an account? Log-in". A blue "Submit" button with a right-pointing arrow is located at the bottom right.

*Figure 1 Sign up*

## Login Page

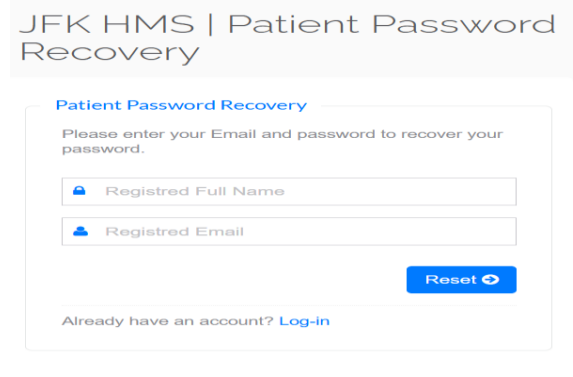
The image shows a Hospital Management System (HMS) login page for patients, requiring login with username and password. It includes a "Forgot Password?" link for password recovery and a "Create an account" option for new users.



*Figure 2 Log in*

## Forgot Password

The image shows the Hospital Management System's "Forgot Password" page for patient password recovery. Users enter their full name and email address, click "Reset" and log in directly. This interface ensures secure and efficient password recovery for existing accounts.



*Figure 3 Forget Password*

## Reset Password

The image shows the Hospital Management System's "Reset Password" page, designed for patients. Users can set a new password by entering it twice, confirm it, and update it. Existing account holders can login directly.

Figure 4 Reset Password

## Dashboard

The image shows a doctor's dashboard in a Hospital Management System (HMS), offering a centralized view for managing tasks and information. Key features include a navigation menu, a main dashboard area for updating profiles, and a profile icon for easy access. The interface streamlines management and efficiency.

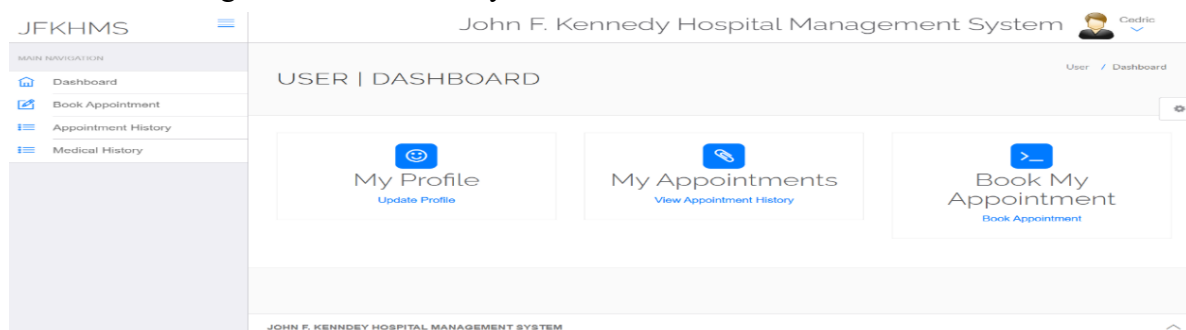


Figure 5 Dash board

## Profile

The image shows the "Edit Profile" page for a user in the Hospital Management System (HMS). It features a header and navigation, with a sidebar for Dashboard, Book Appointment, Appointment History, and Medical History. The main content area is labeled "USER | EDIT PROFILE," which displays the user's profile details, including registration date, last update date, name, address, city, gender, and email.

Figure 6 User Profile

## Change Password

The image shows the user's "Change Password" page in the Hospital Management System (HMS). It features a header and navigation, a change password section, and a "Submit" button for storing the updated password. Users can enter their current password, create a new password, and confirm it, ensuring their accounts are secure.

Figure 7 Change Password

## Book Appointment

The user's "Book Appointment" page from the Hospital Management System (HMS) features a profile icon, navigation options, and an appointment booking form labeled "USER | BOOK APPOINTMENT". The form allows users to select a doctor's specialization, choose a doctor based on their specialization, and view consultancy fees related to the chosen physician.

The screenshot displays the 'Book Appointment' page in the JFKHMS. The page layout includes a header with the system name 'John F. Kennedy Hospital Management System' and a user profile icon. A left sidebar contains navigation links: Dashboard, Book Appointment, Appointment History, and Medical History. The main content area is titled 'USER | BOOK APPOINTMENT' and features a form with the following fields:

- Doctor Specialization:** A dropdown menu with the placeholder text 'Select Specialization'.
- Doctors:** A dropdown menu with the placeholder text 'Select Doctor'.
- Consultancy Fees:** A greyed-out area, likely indicating that fees are not applicable or not visible for the current selection.
- Date:** An empty text input field.
- Time:** A text input field containing '1:00 PM' with an example 'eg : 10:00 PM' below it.

A blue 'Submit' button is located at the bottom of the form.

Figure 8 Book appointment

## Appointment History

The screenshot shows a user's "Appointment History" page in the Hospital Management System (HMS). It includes a header and navigation, a primary content area, and a table with columns for past and future appointments, including the appointment's serial number, doctor name, specialization, consultancy fee, and appointment date.

The screenshot displays the 'Appointment History' page in the JFKHMS. The page layout includes a header with the system name 'John F. Kennedy Hospital Management System' and a user profile icon. A left sidebar contains navigation links: Dashboard, Book Appointment, Appointment History, and Medical History. The main content area is titled 'USER | APPOINTMENT HISTORY' and features a table with the following columns:

#	Doctor Name	Specialization	Consultancy Fee	Appointment Date / Time	Appointment Creation Date	Current Status	Action

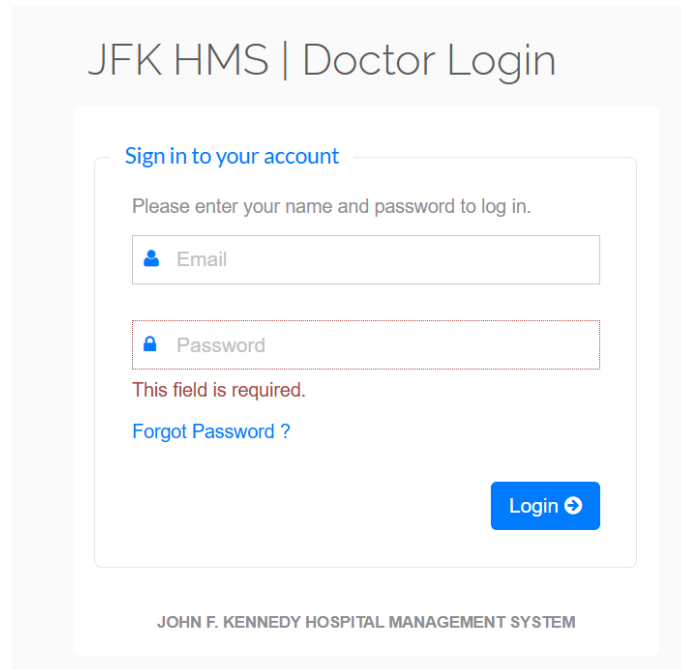
The table is currently empty, showing only the header row.

Figure 9 Appointment History

## **Doctor Panel**

### **Login Page**

The Hospital Management System's (HMS) Doctor Panel's login page allows physicians to access their accounts and manage system-based activities. The page features a prominent "Doctor Panel" and "Login Page," a form for inputting usernames, passwords, and password reset options, and a "Login Button" for submitting credentials.



JFK HMS | Doctor Login

Sign in to your account

Please enter your name and password to log in.

Email

Password

This field is required.

[Forgot Password ?](#)

Login →

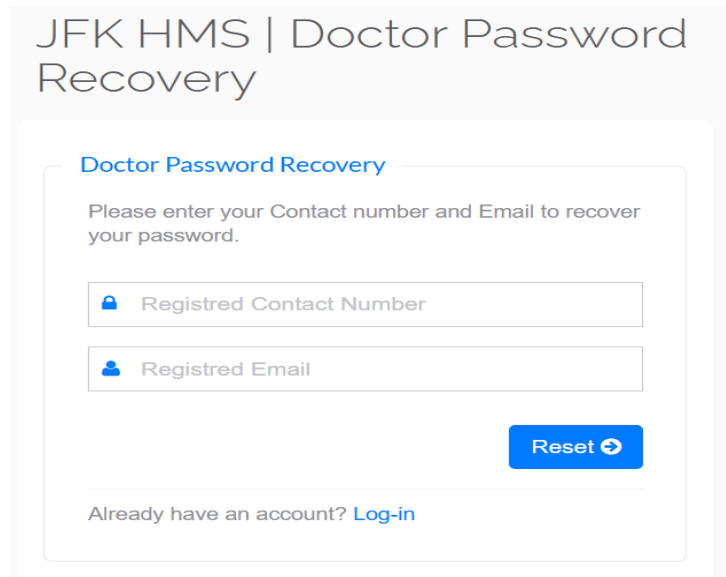
JOHN F. KENNEDY HOSPITAL MANAGEMENT SYSTEM

*Figure 10 Physician Login page*

### **Forgot Password**

The image shows the "Forgot Password" screen in the Hospital Management System (HMS) for the Doctor Panel. It aims to help doctors retrieve their forgotten passwords. The page has a clear title, a form with the title "HMS | Doctor Password Recovery," and an instructional text for regaining the password.





JFK HMS | Doctor Password Recovery

**Doctor Password Recovery**

Please enter your Contact number and Email to recover your password.

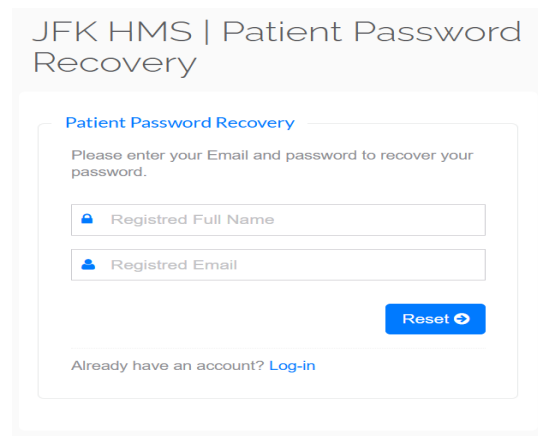
[Reset](#)

Already have an account? [Log-in](#)

*Figure 11 Forget password*

### **Reset Password**

The image shows the "Forgot Password" screen in the Hospital Management System (HMS) for the Doctor Panel. It aims to help doctors retrieve their forgotten passwords. The page has a clear title, a form with the title "HMS | Doctor Password Recovery," and an instructional text for regaining the password.



JFK HMS | Patient Password Recovery

**Patient Password Recovery**

Please enter your Email and password to recover your password.

[Reset](#)

Already have an account? [Log-in](#)

*Figure 12 Reset Password*

## Dashboard

The picture shows the "Dashboard" page for the Doctor Panel, which is the primary interface for doctors to access functions and manage their work. It features a prominent "Dashboard" title, "System Branding" in the upper right corner, user information, bread crumb navigation beneath the system branding, and home page navigation.

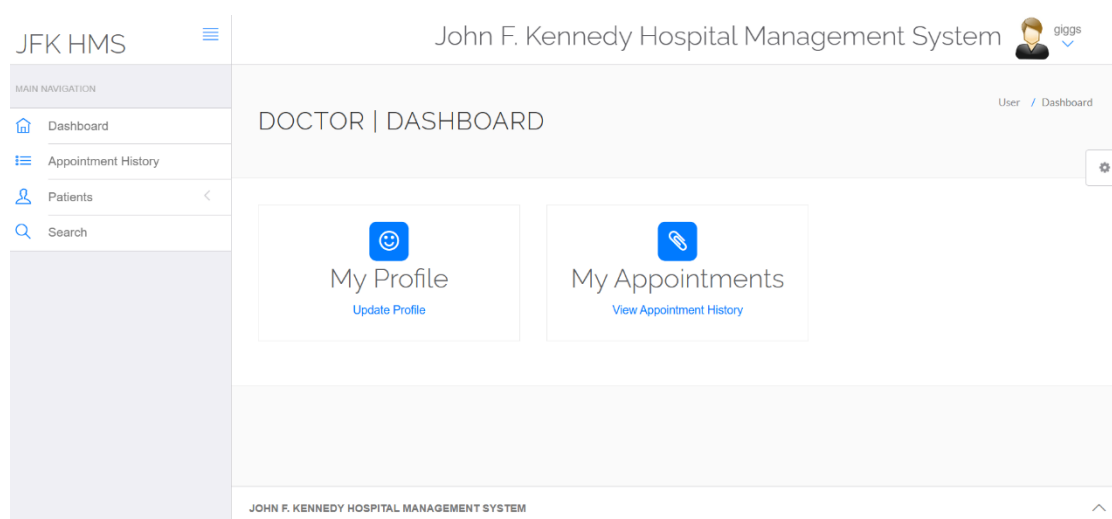


Figure 13 Doctor Dashboard

## Profile

The "Profile" page displays the profile, including the "Hospital Management System" and user information. It also includes a "Doctor / Edit Doctor Details" button, editable fields like specialty, physician name, clinic address, consultation cost, email address, and phone number, and an Update Button.

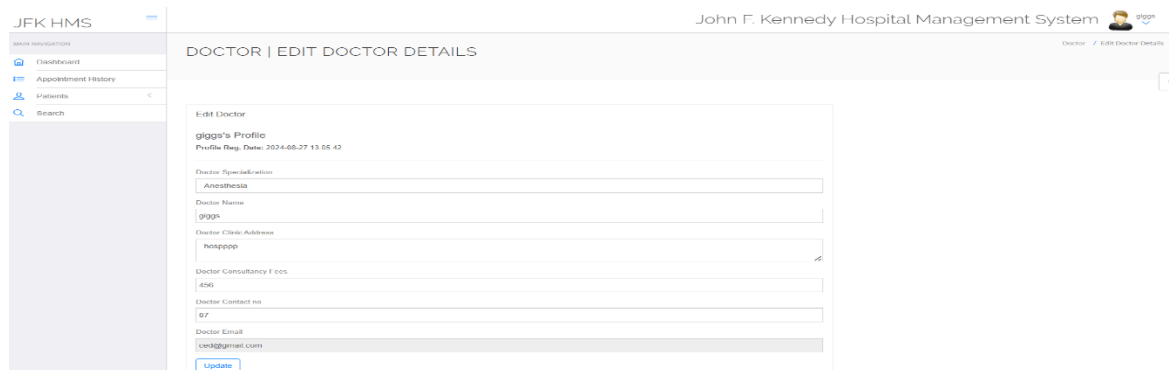


Figure 14 Doctor Profile

## Change Password

The "Change Password" page in the "Hospital Management System" allows users to change their password. The form requires entering the current password, a new password, and confirming it. The user then hits the "Submit Button" to continue.

*Figure 15 Change Password*

## Appointment History

The page title is "Appointment History", with "Hospital Management System" branding at the upper right. The table shows patient information, specialty, consulting charges, appointment creation date, status, and action options.

#	Patient Name	Specialization	Consultancy Fee	Appointment Date / Time	Appointment Creation Date	Current Status	Action
(Table content is empty in the screenshot)							

*Figure 16 Appointment history Doctors*

## Add Patient

The "Add Patient" page on the "Add Patient Page" requires filling out a form with patient information such as name, contact number, email, gender, address, age, and medical history. The "Add Button" is found in the "Hospital Management System".

The screenshot shows the 'Add Patient' form in the JFK HMS system. The form is titled 'PATIENT | ADD PATIENT' and is located in the 'Patient / Add Patient' section. The form fields are as follows:

- Patient Name:** Enter Patient Name
- Patient Contact no:** Enter Patient Contact no
- Patient Email:** Enter Patient Email id
- Gender:** Radio buttons for Female and Male
- Patient Address:** Enter Patient Address
- Patient Age:** Enter Patient Age
- Medical History:** Enter Patient Medical History(if any)

An 'Add' button is located at the bottom left of the form.

Figure 0-17 Add Patient

## Manage Patient

The "Manage Patient" page includes a hospital management system, user information, and a patient table. It enables users to modify, examine, and interact with patient information, including the "Hospital Management System" button.

The screenshot shows the 'Manage Patient' page in the JFK HMS system. The page is titled 'DOCTOR | MANAGE PATIENTS' and is located in the 'Doctor / Manage Patients' section. The page includes a 'Manage Patients' section with a table of patient details and medical history.

**Patient Details**

<b>Patient Name</b>	Peter Kaka	<b>Patient Email</b>	peter1234@gmail.com
<b>Patient Mobile Number</b>	231555738167	<b>Patient Address</b>	NA
<b>Patient Gender</b>	male	<b>Patient Age</b>	32
<b>Patient Medical History(if any)</b>	Fever, Cold	<b>Patient Reg Date</b>	2024-05-16 07:23:35

**Medical History**

#	Blood Pressure	Weight	Blood Sugar	Body Temperature	Medical Prescription	Visit Date

Figure 18 Manage Patient

## Update Patient Details

The Patient Details Page is titled "Update Patient Details" and features the Hospital Management System. Users can update patient information such as name, contact number, email, gender, age, medical background, and creation date. The "Update Button" stores the most recent patient information.

## View Patient Details

The Patient Details Page displays patient information such as name, contact number, email, gender, address, age, medical history, date of creation, date of update, and the Hospital Management System branding, all accessible through a breadcrumb navigation.

The screenshot shows the 'View Patient Details' page. The header includes 'JFK' and 'John F. Kennedy Memorial Hospital' with an 'Admin' user profile. The breadcrumb navigation is 'Doctor / Manage Patients'. The main content area is titled 'Manage Patients' and contains a 'Patient Details' table and a 'Medical History' table.

Patient Details			
Patient Name	Peter Kaka	Patient Email	peter1234@gmail.com
Patient Mobile Number	231555738167	Patient Address	NA
Patient Gender	male	Patient Age	32
Patient Medical History(if any)	Fever, Cold	Patient Reg Date	2024-05-16 07:23:35

Medical History						
#	Blood Pressure	Weight	Blood Sugar	Body Temperature	Medical Prescription	Visit Date

*Figure 19 View Patient Details*

## Search Patient

The "DOCTOR | MANAGE PATIENTS" page allows users to search for doctors and manage patients using a hospital management system. The search functionality includes a search field, breadcrumb navigation, and a table of search results with patient information.

The screenshot shows the 'DOCTOR | MANAGE PATIENTS' interface. On the left is a 'MAIN NAVIGATION' sidebar with options: Dashboard, Appointment History, Patients, and Search. The main content area has a search bar labeled 'Search by Name/Mobile No.' with a 'Search' button. Below the search bar, it displays 'Result against "Peter Kaka" keyword' and a table of results.

#	Patient Name	Patient Contact Number	Patient Gender	Creation Date	Updation Date	Action
1.	Peter Kaka	231555738167	male	2024-05-16 07:23:35	2024-08-27 11:42:15	<a href="#">Edit</a> <a href="#">View Details</a>
2.	Peter Kaka	881526292	male	2024-08-27 13:22:36		<a href="#">Edit</a> <a href="#">View Details</a>

Figure 20 Search Patient

## Admin Panel

### Login Page

The "Admin Login" page on the admin panel's login page displays the "Hospital Management System" system branding. To submit login credentials, use the Login Form.

The 'Admin Login' page features a central login form with the following elements:

- Header:** 'Admin Login' in a large, light grey font.
- Section:** 'Sign in to your account' in blue text.
- Instruction:** 'Please enter your name and password to log in.'
- Username Field:** A text input field with a blue user icon and the label 'Username'.
- Password Field:** A text input field with a blue lock icon and the label 'Password'. Below it, a red error message states 'This field is required.'
- Login Button:** A blue button with the text 'Login' and a right-pointing arrow.
- Link:** A blue link labeled 'Back to Home Page'.
- Footer:** 'JOHN F. KENNEDY HOSPITAL MANAGEMENT SYSTEM' in all caps.

Figure 21 Admin Login page

## Dashboard

The "ADMIN DASHBOARD" page features a Hospital Management System, with user information, main navigation menu, and various areas for overseeing and managing hospital system components.

The screenshot shows the Admin Dashboard for JFK HMS. The page features a red header with the text "ADMIN | DASHBOARD" and a breadcrumb "Admin / Dashboard". A grey sidebar on the left contains a "MAIN NAVIGATION" menu with items: Dashboard, Doctors, Users, Patients, Appointment History, Contactus Queries, Doctor Session Logs, User Session Logs, Reports, Pages, and Patient Search. The main content area is white and contains five dashboard cards:

- Manage Users**: Total Users : 3
- Manage Doctors**: Total Doctors : 7
- Appointments**: Total Appointments : 2
- Manage Patients**: Total Patients : 3
- New Queries**: Total New Queries : -1

The footer of the page displays "JOHN F. KENNEDY MEMORIAL HOSPITAL".

Figure 22 Admin Dashboard

## Profile

The "Change Password Page" on the "Admin | CHANGE PASSWORD" page displays the Hospital Management System, with user information displayed under "Admin" and an icon. The password modification form allows users to enter and change their current password, with the "Submit Button" indicating the password change.

The screenshot shows the Admin Profile page for JFK HMS. The page features a grey header with the text "ADMIN | CHANGE PASSWORD" and a breadcrumb "Admin / Change Password". A grey sidebar on the left contains a "MAIN NAVIGATION" menu with items: Dashboard, Doctors, Users, Patients, Appointment History, Contactus Queries, Doctor Session Logs, User Session Logs, Reports, Pages, and Patient Search. The main content area is white and contains a "Change Password" form:

**Change Password**

Current Password

New Password

Confirm Password

Figure 23 Admin Profile

## Doctor Specializations

The Add Doctor Specialization Page in the Hospital Management System is a user-friendly interface for adding new physicians' specializations. It features a breadcrumb navigation link, reports, pages, patient search, appointment history, session logs, and consultation queries. Users can control specializations by entering a field, clicking the submit button, and accessing the "Hospital Management System" feature.

The screenshot displays the 'Doctor Specialization' management interface. On the left is a sidebar with navigation links: Dashboard, Doctors, Users, Patients, Appointment History, Contactus Queries, Doctor Session Logs, User Session Logs, Reports, Pages, and Patient Search. The top header shows 'JFK' and 'John F. Kennedy Memorial Hospital' with an 'Admin' user profile. The main content area includes a 'Doctor Specialization' form with a text input field 'Enter Doctor Specialization' and a 'Submit' button. Below the form is a table titled 'Manage Doctor Specialization' with columns for '#', 'Specialization', 'Creation Date', 'Updation Date', and 'Action'.

#	Specialization	Creation Date	Updation Date	Action
1.	Orthopedics	2024-04-09 20:09:46	2024-05-14 11:26:47	<a href="#">✎</a> <a href="#">✕</a>
2.	Internal Medicine	2024-04-09 20:09:46	2024-05-14 11:26:56	<a href="#">✎</a> <a href="#">✕</a>
3.	Obstetrics and Gynecology	2024-04-09 20:09:46	2024-05-14 11:26:56	<a href="#">✎</a> <a href="#">✕</a>
4.	Dermatology	2024-04-09 20:09:46	2024-05-14 11:26:56	<a href="#">✎</a> <a href="#">✕</a>
5.	Pediatrics	2024-04-09 20:09:46	2024-05-14 11:26:56	<a href="#">✎</a> <a href="#">✕</a>
6.	Radiology	2024-04-09 20:09:46	2024-05-14 11:26:56	<a href="#">✎</a> <a href="#">✕</a>
7.	General Surgery	2024-04-09 20:09:46	2024-05-14 11:26:56	<a href="#">✎</a> <a href="#">✕</a>
8.	Ophthalmology	2024-04-09 20:09:46	2024-05-14 11:26:56	<a href="#">✎</a> <a href="#">✕</a>
9.	Anesthesia	2024-04-09 20:09:46	2024-05-14 11:26:56	<a href="#">✎</a> <a href="#">✕</a>
10.	Pathology	2024-04-09 20:09:46	2024-05-14 11:26:56	<a href="#">✎</a> <a href="#">✕</a>
11.	ENT	2024-04-09 20:09:46	2024-05-14 11:26:56	<a href="#">✎</a> <a href="#">✕</a>
12.	Dental Care	2024-04-09 20:09:46	2024-05-14 11:26:56	<a href="#">✎</a> <a href="#">✕</a>
13.	Dermatologists	2024-04-09 20:09:46	2024-05-14 11:26:56	<a href="#">✎</a> <a href="#">✕</a>
14.	Endocrinologists	2024-04-09 20:09:46	2024-05-14 11:26:56	<a href="#">✎</a> <a href="#">✕</a>
15.	Neurologists	2024-04-09 20:09:46	2024-05-14 11:26:56	<a href="#">✎</a> <a href="#">✕</a>

Figure 24 Doctors Specialization

## Update Specialization

The Specialization Page, titled "ADMIN | EDIT DOCTOR SPECIALISATION", is a crucial tool in the Hospital Management System, offering various features such as dashboard, appointments, consultations, and patient search. It also features a text field for editing specializations.



The screenshot shows the JFK HMS Admin interface. The top header includes the hospital name 'John F. Kennedy Memorial Hospital' and the user 'Admin'. The main navigation menu on the left lists various system components. The central content area is titled 'ADMIN | EDIT DOCTOR SPECIALIZATION' and contains a form with the following fields:

- Form Title: Edit Doctor Specialization
- Input Field: Edit Doctor Specialization (containing the text 'Orthopedics')
- Button: Update

*Figure 25 Doctors Specialization*

## Add Doctor

The Hospital Management System is a user-friendly system that allows users to manage their healthcare, including doctors, patients, appointments, consultations, and more. It features a user-friendly dashboard, a physician form, and a "Hospital Management System" feature for easy access and management.

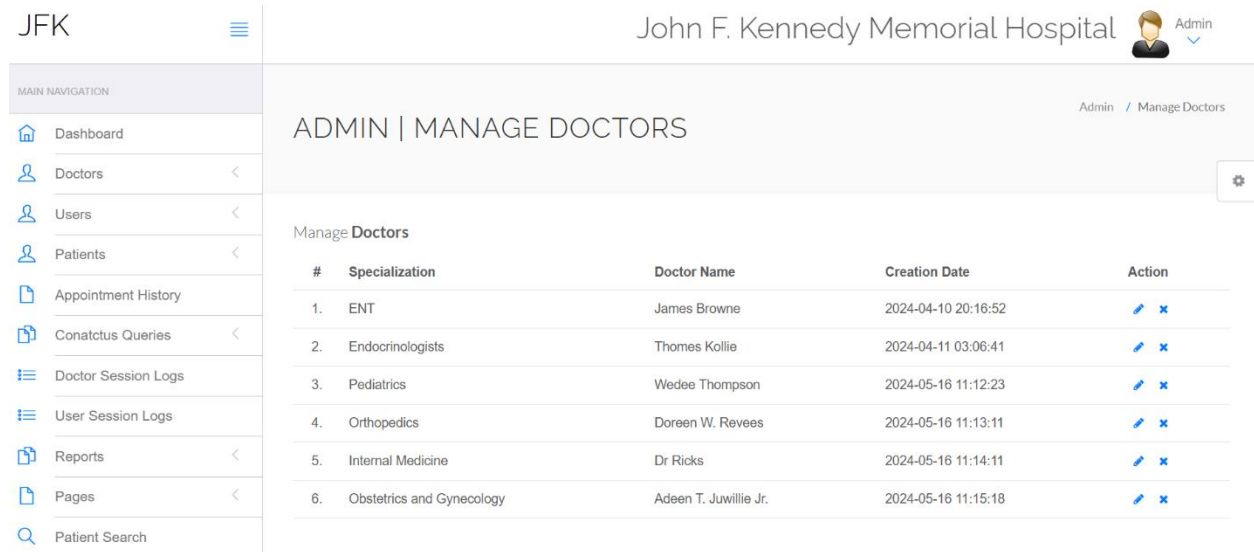
The screenshot shows the JFK HMS Admin interface for adding a new doctor. The top header includes the hospital name 'John F. Kennedy Memorial Hospital' and the user 'Admin'. The main navigation menu on the left lists various system components. The central content area is titled 'ADMIN | ADD DOCTOR' and contains a form with the following fields:

- Form Title: Add Doctor
- Field: Doctor Specialization (with a dropdown menu showing 'Select Specialization')
- Field: Doctor Name (with a sub-label 'Enter Doctor Name')
- Field: Doctor Clinic Address (with a sub-label 'Enter Doctor Clinic Address')
- Field: Doctor Consultancy Fees (with a sub-label 'Enter Doctor Consultancy Fees')
- Field: Doctor Contact no (with a sub-label 'Enter Doctor Contact no')
- Field: Doctor Email (with a sub-label 'Enter Doctor Email id')
- Field: Password (with a sub-label 'New Password')
- Field: Confirm Password (with a sub-label 'Confirm Password')
- Button: Submit

*Figure 26 Add Doctors*

## Manage Doctor

The "Admin Manage Doctors" page features a hospital management system, user information, and a breadcrumb navigation. The "Doctors Table" includes columns for specialty, doctor name, creation date, and action icons. The "Hospital Management System" is also available.



JFK | John F. Kennedy Memorial Hospital | Admin

ADMIN | MANAGE DOCTORS

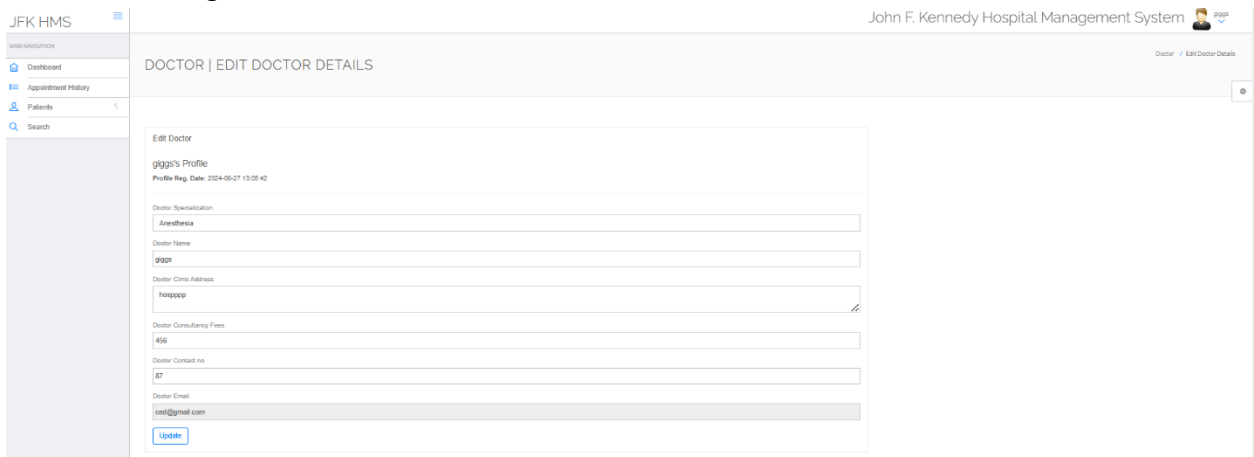
Manage Doctors

#	Specialization	Doctor Name	Creation Date	Action
1.	ENT	James Browne	2024-04-10 20:16:52	<a href="#">✎</a> <a href="#">✕</a>
2.	Endocrinologists	Thomes Kollie	2024-04-11 03:06:41	<a href="#">✎</a> <a href="#">✕</a>
3.	Pediatrics	Wedee Thompson	2024-05-16 11:12:23	<a href="#">✎</a> <a href="#">✕</a>
4.	Orthopedics	Doreen W. Revees	2024-05-16 11:13:11	<a href="#">✎</a> <a href="#">✕</a>
5.	Internal Medicine	Dr Ricks	2024-05-16 11:14:11	<a href="#">✎</a> <a href="#">✕</a>
6.	Obstetrics and Gynecology	Adeen T. Juwillie Jr.	2024-05-16 11:15:18	<a href="#">✎</a> <a href="#">✕</a>

Figure 27 Manage Doctors

## Update Doctor Details

The Physician Details Page is a crucial tool for managing patient information in a hospital setting. It features a "Admin Edit Doctor Details" section with editable fields like doctor name, clinic address, consultation fees, contact number, and email. The page also includes an "Update Button" for storing the revised information.



JFK HMS | John F. Kennedy Hospital Management System | Admin

DOCTOR | EDIT DOCTOR DETAILS

Edit Doctor

gigg's Profile  
Profile Reg. Date: 2024-09-27 13:05:42

Doctor Specialization  
Anesthesia

Doctor Name  
gigg

Doctor Clinic Address  
hosp

Doctor Consultancy Fees  
456

Doctor Contact no  
87

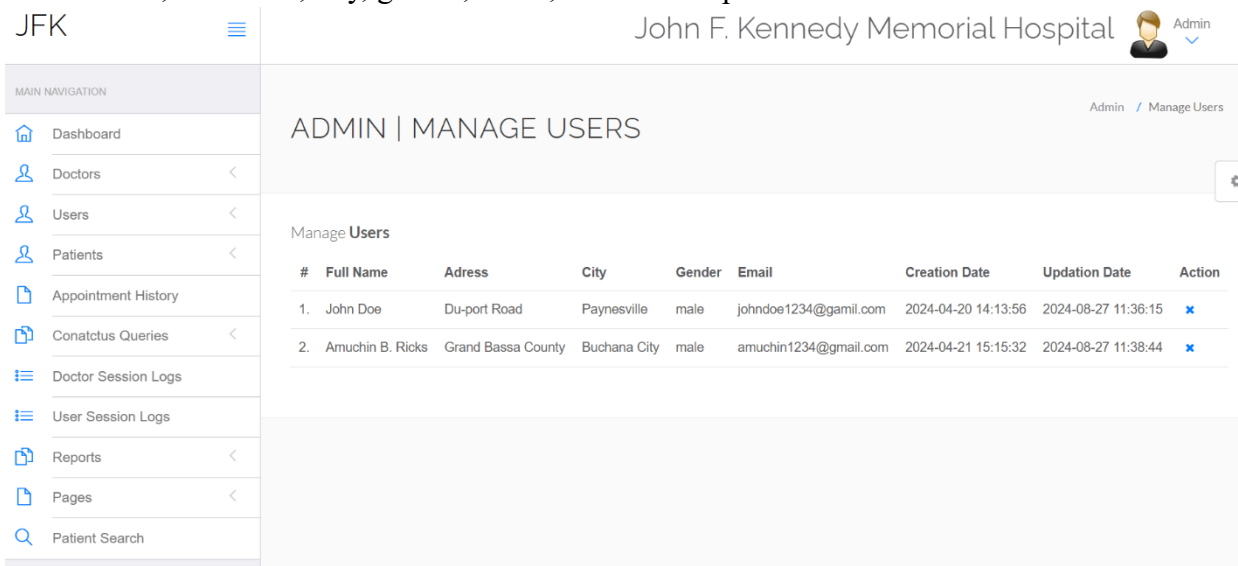
Doctor Email  
lax@gmail.com


[Update](#)

Figure 28 Update Doctors

## Manage Users

The Users Page, titled "ADMIN | MANAGE USERS," features the Hospital Management System branding and user information. It offers various navigation options, including reports, pages, patient searches, appointment history, and consultation queries. The Users Table includes full names, addresses, city, gender, email, and action options.



JFK ☰ John F. Kennedy Memorial Hospital  Admin ▼

ADMIN | MANAGE USERS Admin / Manage Users

Manage Users



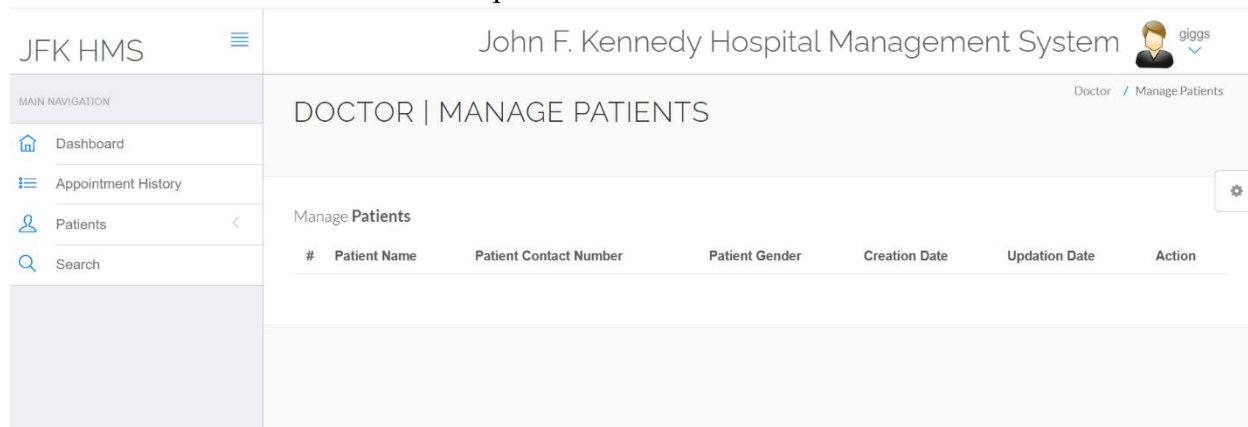

#	Full Name	Adress	City	Gender	Email	Creation Date	Updation Date	Action
1.	John Doe	Du-port Road	Paynesville	male	johndoe1234@gamil.com	2024-04-20 14:13:56	2024-08-27 11:36:15	
2.	Amuchin B. Ricks	Grand Bassa County	Buchana City	male	amuchin1234@gmail.com	2024-04-21 15:15:32	2024-08-27 11:38:44	

Figure 29 Manage Users

## Manage Patient

The Patient Page is titled "ADMIN | VIEW PATIENTS" and features the Hospital Management System branding. It allows users to view patients, appointments, appointments, consultations, and more. The Patient Table includes patient information.



JFK HMS ☰ John F. Kennedy Hospital Management System  giggs ▼

DOCTOR | MANAGE PATIENTS Doctor / Manage Patients

Manage Patients

#	Patient Name	Patient Contact Number	Patient Gender	Creation Date	Updation Date	Action
---	--------------	------------------------	----------------	---------------	---------------	--------

Figure 30 Manage Patient

## View Patient Details

The Hospital Management System is a user-friendly platform for managing patients. It features a Patient Details Page with fields for patient information such as name, gender, medical history, email, address, age, and registration date. Users can also add new entries to their medical history by clicking the Add Medical History button.

The screenshot shows the 'View Patient Details' page for Peter Kaka. The page is part of the 'DOCTOR | MANAGE PATIENTS' section. The patient details are as follows:

Patient Details			
Patient Name	Peter Kaka	Patient Email	peter1234@gmail.com
Patient Mobile Number	231555738167	Patient Address	NA
Patient Gender	male	Patient Age	32
Patient Medical History(if any)	Fever, Cold	Patient Reg Date	2024-05-16 07:23:35

Below the patient details is a 'Medical History' table with the following columns: #, Blood Pressure, Weight, Blood Sugar, Body Temperature, Medical Prescription, and Visit Date.

Figure 31 View Patient Details

## Patient Appointment History

The Patient Appointment History page is accessible to users, featuring the Hospital Management System branding. It offers functions like Reports, Pages, Doctor Session Logs, User Session Logs, Appointment History, Consultation Queries, and Patient Search. The page lists the doctor's name, patient's name, specialization, consultancy fee, appointment date/time, creation date, and current status.

The screenshot shows the 'PATIENTS | APPOINTMENT HISTORY' page. The table lists the following appointments:

#	Doctor Name	Patient Name	Specialization	Consultancy Fee	Appointment Date / Time	Appointment Creation Date	Current Status	Action
1.	James Browne	John Doe	ENT	500	2024-05-30 / 9:15 AM	2024-05-15 05:42:11	Active	No Action yet
2.	Thomas Kollin	Amuchin B. Ricks	Endocrinologists	800	2024-05-31 / 2:45 PM	2024-05-16 11:08:54	Active	No Action yet

Figure 32 Patient Appointments

## Manage Read Queries

This tab enables administrators to monitor and manage user read requests in the Hospital Management System. It features a user information section, a main navigation menu, and a read table of queries with columns for user name, email, contact number, message, query date, and available actions.

The screenshot shows the 'ADMIN | MANAGE READ QUERIES' page. The main navigation menu on the left includes: Dashboard, Doctors, Users, Patients, Appointment History, Contactus Queries, Doctor Session Logs, User Session Logs, Reports, Pages, and Patient Search. The main content area displays a table titled 'Manage Read Queries' with the following data:

#	Name	Email	Contact No.	Message	Query Date	Action
1.	Cyrus D.Dahnquonn	cyrus1234@gmail.com	231779026215	This is for testing	2024-04-23 15:13:41	

Figure 33 Manage Read Queries

## View Queries Details

This page provides administrators with comprehensive information about a particular inquiry, including the user information, main navigation menu options, and the user's email, contact number, message, and query date. It also includes reports, pages, doctor session logs, appointment history, consultation queries, and patient search. The website is labeled as "Hospital Management System."

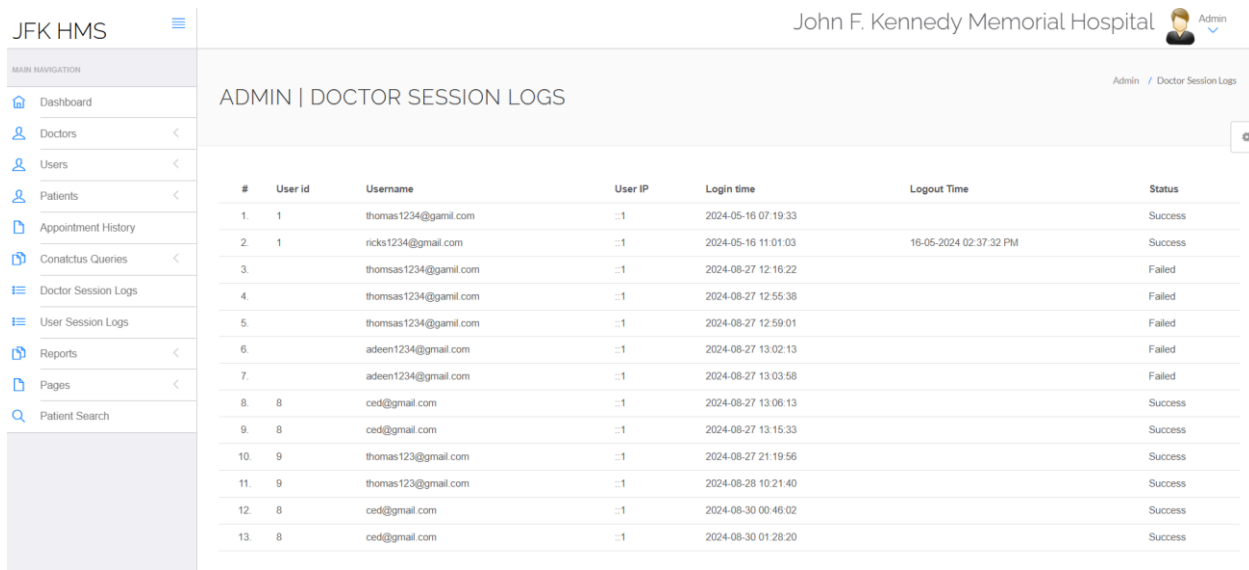
The screenshot shows the 'ADMIN | QUERY DETAILS' page. The main navigation menu on the left is the same as in Figure 33. The main content area displays a form titled 'Manage Query Details' with the following information:

Full Name	Cyrus D.Dahnquonn
Email Id	cyrus1234@gmail.com
Contact Number	231779026215
Message	This is for testing
Query Date	2024-04-23 15:13:41
Admin Remark	Contact the patient
Last Updation Date	2024-08-27 11:53:08

Figure 34 Query Details

## Doctor Session Log

This page provides administrators with comprehensive information about a user query. It features the "Admin | Query Details" page, a "Hospital Management System" branding, user information, and a Main Navigation Menu. The page includes fields like full name, email, contact number, message, and query date.




#	User id	Username	User IP	Login time	Logout Time	Status
1.	1	thomas1234@gamil.com	::1	2024-05-16 07:19:33		Success
2.	1	ricks1234@gmail.com	::1	2024-05-16 11:01:03	16-05-2024 02:37:32 PM	Success
3.		thomas1234@gamil.com	::1	2024-08-27 12:16:22		Failed
4.		thomas1234@gamil.com	::1	2024-08-27 12:55:38		Failed
5.		thomas1234@gamil.com	::1	2024-08-27 12:59:01		Failed
6.		adeen1234@gmail.com	::1	2024-08-27 13:02:13		Failed
7.		adeen1234@gmail.com	::1	2024-08-27 13:03:58		Failed
8.	8	ced@gmail.com	::1	2024-08-27 13:06:13		Success
9.	8	ced@gmail.com	::1	2024-08-27 13:15:33		Success
10.	9	thomas123@gmail.com	::1	2024-08-27 21:19:56		Success
11.	9	thomas123@gmail.com	::1	2024-08-28 10:21:40		Success
12.	8	ced@gmail.com	::1	2024-08-30 00:46:02		Success
13.	8	ced@gmail.com	::1	2024-08-30 01:28:20		Success

*Figure 35 Doctor's Session Log*

## User Session Log

The page for Doctor's Session Administrators provides access to doctors' session logs, login and logout times, and user information. It features a breadcrumb navigation, a main navigation menu, and a table of doctor session logs with serial number, user ID, username, IP, login time, and logout time.

JFK John F. Kennedy Memorial Hospital  Admin

MAIN NAVIGATION

- Dashboard
- Doctors <
- Users <
- Patients <
- Appointment History
- Contactus Queries <
- Doctor Session Logs
- User Session Logs
- Reports <
- Pages <
- Patient Search

ADMIN | USER SESSION LOGS Admin / User Session Logs


#	User id	Username	User IP	Login time	Logout Time	Status
1.	1	johndoe1234@gmail.com	::1	2024-05-15 05:41:48		Success
2.	2	amit1234@gmail.com	::1	2024-05-16 11:08:06	16-05-2024 02:41:06 PM	Success

JOHN F. KENNEDY MEMORIAL HOSPITAL

*Figure 36 User Patient Log*

## Between Dates Report

The Between Dates Report provides information on patients using a given date range. It features a page title, system branding, user information, and a main navigation menu. The report includes the patient's name, contact number, gender, creation date, and update date.

JFK John F. Kennedy Memorial Hospital  Admin

MAIN NAVIGATION

- Dashboard
- Doctors <
- Users <
- Patients <
- Appointment History
- Contactus Queries <
- Doctor Session Logs
- User Session Logs
- Reports <
- Pages <
- Patient Search

BETWEEN DATES | REPORTS Between Dates / Reports

**Between Dates Reports**

From Date:

To Date::

*Figure 37 Reports*

## Between Dates Report Details

The Between Dates Report provides information on patients using a given date range. It features a page title, system branding, user information, and a main navigation menu. The report contains the patient's name, contact number, gender, creation date, and update date. The report also includes a summary of the patient's medical record.

The screenshot displays the 'ADMIN | VIEW PATIENTS' interface. On the left is a 'MAIN NAVIGATION' menu with items: Dashboard, Doctors, Users, Patients, Appointment History, Contactus Queries, Doctor Session Logs, User Session Logs, Reports, Pages, and Patient Search. The top right shows 'John F. Kennedy Memorial Hospital' and 'Admin' user information. The main content area has a search bar with the text 'Search by Name/Mobile No.' and a 'Search' button. Below the search bar, it says 'Result against "Peter Kaka" keyword'. A table lists the search results:

#	Patient Name	Patient Contact Number	Patient Gender	Creation Date	Update Date	Action
1.	Peter Kaka	231555738167	male	2024-05-16 07:23:35	2024-08-27 11:42:15	<a href="#">View</a>

*Figure 38 Reports*

## About Us

This page allows Hospital Management System administrators to update the "About Us" section. It features a breadcrumb navigation, a main navigation menu, and a content update section. Administrators can enter information to change the page's title, use a rich text editor, and submit a save button.



JFK HMS

John F. Kennedy Memorial Hospital Admin

ADMIN | UPDATE THE ABOUT US CONTENT

Admin / Update the About us Content

Page Title  
About Us

Page Description

**B I U** [Rich Text Editor Icons] Font Size... Font Family... Font Format... [Rich Text Editor Icons]

The JFK Medical Center was built at the request of Liberian President William V.S. Tubman, whose 1961 visit with U.S. President John F. Kennedy laid the groundwork for USAID funding for a national medical center in Liberia. The project was funded with a \$6.8 million loan and \$9.2 million in grants from USAID and a \$1 million contribution from the Liberian Government. Construction began in 1965 and the facility opened on July 27, 1971. When dedicated, the Medical Center was composed of four institutions: John F. Kennedy Memorial Hospital Maternity Hospital Tubman National Institute of Medical Arts (a paramedical and nursing school) Catherine Mills Rehabilitation Hospital (a psychiatric care facility) The maternity hospital was rebuilt in 1981 with funding from the Japanese government and named the Liberian-Japanese Friendship Maternity Hospital. The Catherine Mills Rehabilitation Hospital was completely destroyed during the Liberian civil conflict. JFK now is affiliated with the E. S. Grant Mental Health Hospital, located in Paynesville, Monrovia.

Submit

JOHN F. KENNEDY MEMORIAL HOSPITAL

*Figure 39 About Us*

## Contact Us Page

This page allows Hospital Management System administrators to update the "Contact Us" section of the system. It features a breadcrumb navigation, a main navigation menu, and a content update section. Administrators can enter information to change the page's title, use a rich text editor, and apply a button.

JFK

John F. Kennedy Memorial Hospital Admin

ADMIN | UPDATE THE CONTACT US CONTENT

Admin / Update the Contact us Content

Page Title  
Contact Details

Page Description

**B I U** [Rich Text Editor Icons] Font Size... Font Family... Font Format... [Rich Text Editor Icons]

Monrovia - Liberia

Email Address  
info1234@gmail.com

Mobile Number  
231886812026

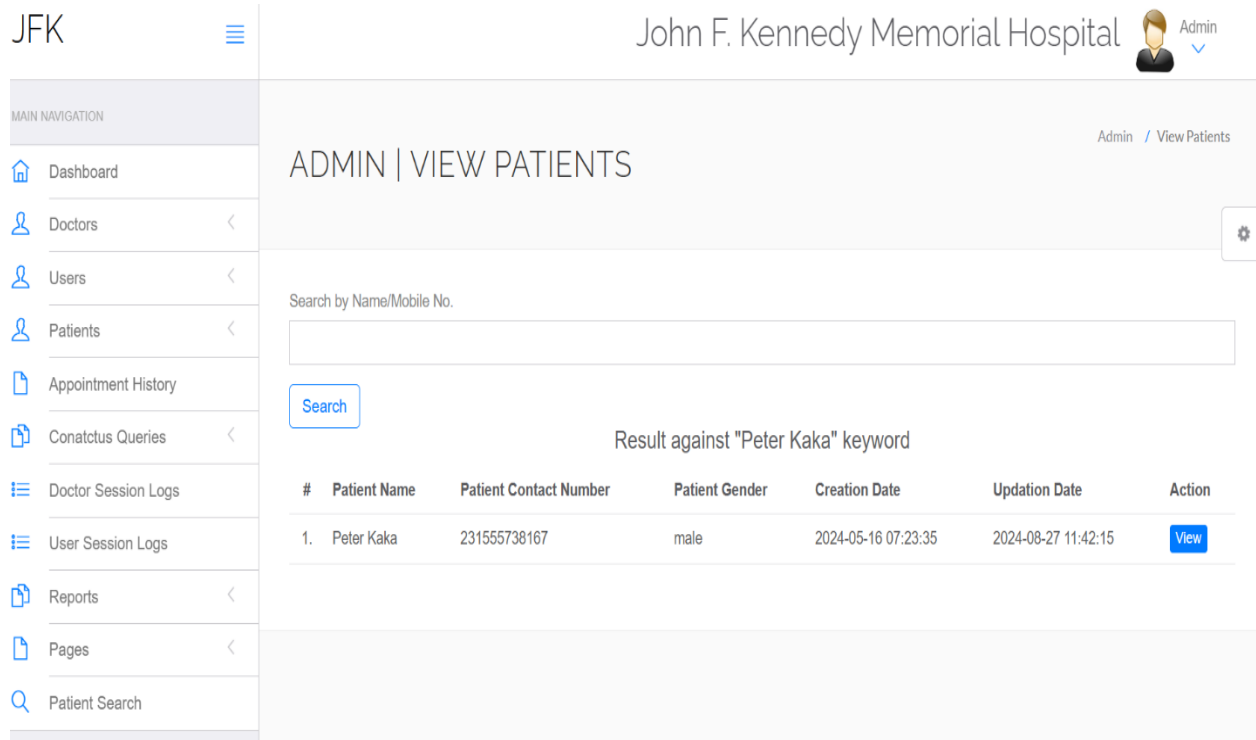
Update


JOHN F. KENNEDY MEMORIAL HOSPITAL

*Figure 0-40 Contact Us*

## Patient Search

This portal allows Patient Lookup Administrators and medical staff to view patients in the Hospital Management System. It features a user interface with an icon and a main navigation menu for functions like reports, pages, doctor session logs, appointment history, consultation queries, and patient search. The portal also allows input for patient names and contact numbers.



JFK John F. Kennedy Memorial Hospital  Admin

MAIN NAVIGATION

ADMIN | VIEW PATIENTS Admin / View Patients

Search by Name/Mobile No.

Result against "Peter Kaka" keyword

#	Patient Name	Patient Contact Number	Patient Gender	Creation Date	Updation Date	Action
1.	Peter Kaka	231555738167	male	2024-05-16 07:23:35	2024-08-27 11:42:15	<input type="button" value="View"/>

*Figure 41 Search Patient*

## TESTING

### Introduction to system

The goal of testing is to identify mistakes. Testing is the practice of attempting to identify every possible flaw or vulnerability in a work product. It allows you to examine the functionality of components, sub-assemblies, assemblies, and/or a final product. Software testing ensures that the system satisfies user expectations and does not break unexpectedly. There are several sorts of tests. Each test type focuses on a distinct testing need.

#### **4.2.2. Unit testing**

Unit testing involves the design of test cases that validate that the internal program logic is functioning properly, and that program inputs produce valid outputs all decision branches and internal code flow must be checked. It is the testing of individual software elements inside the application. It occurs after an individual unit has been completed but before to integration. This is intrusive structural testing that requires understanding of its structure. Unit tests perform basic tests at component level and test a specific business process, application, and/or system configuration. Unit tests ensure that each unique path of a business process performs accurately to the documented specifications and contains clearly defined inputs and expected results.

#### **4.2.3. Validation testing output**

Validation testing is crucial for Hospital Management Systems (HMS) to ensure precision and dependability. The test case, checks if users are authenticated correctly using valid and incorrect credentials. The procedure involves opening the login screen, entering a working password and username, and selecting "Login" from the menu.

#### **4.2.4. Integration testing:**

Integration tests are used to assess whether integrated software components function as a single program. Testing is event-driven and focuses on the basic consequence of screens or fields. Integration tests verify that, while the individual components were satisfied, as seen by successful unit testing, the combination of components is proper and consistent. Integration testing is primarily designed to expose issues that occur from the integration of components.

#### **4.2.5. Functional test**

Functional tests give systematic demonstrations that the functions evaluated are available in accordance with the business and technical requirements, system documentation, and user manuals.

Functional testing focuses on the following items: acceptable Input: The specified classifications of acceptable input must be accepted.

Invalid Input: The detected classifications of invalid input must be discarded.

Functions: The indicated functions must be exercised.

Output: Identify and exercise certain application output classes.

Systems/processes: Interfacing systems or processes must be used.

Functional tests are organized and prepared with a focus on requirements, important functions, and particular test cases. Furthermore, thorough coverage of identifying business process flows, data fields, established procedures, and subsequent processes must be considered for testing. Before functional testing is finished, new tests are found, and the effective value

#### **4.2.6 Acceptance Testing Report**

User Acceptance Testing is an important component of any project that demands active engagement from the end user. It also guarantees that the system satisfies its functional specifications.

## **CONCLUSION AND RECOMMENDATION**

In conclusion, the study found that Hospital Management Systems are critical for improving hospital efficiency, patient care, and resource management. The integration of electronic medical records and predictive analytics into the HMS leads to improved patient outcomes and more efficient operations. Additionally, patient portals have been shown to increase patient involvement and satisfaction. However, data interoperability issues continue to be a substantial obstacle, demanding more research and development to fully exploit HMS's promise in a connected healthcare environment. These findings are based on a mix of quantitative data analysis, case studies, and user input, which provide strong evidence for the success and areas for development in HMS implementation.

Data will be protected since we are electronically inputting patient information into the "Hospital Management System". With this program, we may access the patient's history with a single click. This will allow for speedier information processing. It ensures the accuracy of patient information. It quickly lowers the bookkeeping process, reducing human labor while increasing accuracy speed.

The study found that Hospital Management Systems have an important role in improving hospital efficiency, patient care, and resource allocation. The integration of electronic medical records and predictive analytics into the HMS leads to improved patient outcomes and more efficient operations. Additionally, patient portals have been shown to increase patient involvement and satisfaction. However, difficulties linked to data interoperability remain a substantial barrier, needing additional

## **RECOMMENDATION**

The study's findings suggest that the support of a Hospital Management System can be a valuable tool in addressing the challenge of patients and healthcare provider with in resource-limited settings, such as the John F. Kennedy Medical Center in Liberia.

In order to improve the support Hospital Management System model's performance even more, Prioritize data interoperability by implementing standardized protocols for smooth data transfer between hospital systems and medical providers. Integrate predictive analytics and AI into HMS

for improved decision-making and resource management. Improve user experience with patient portals for easy access to health information, including telemedicine features.

Future research should also explore the integration of the use of IoT, Unsupervised, and Reinforcement into the clinical decision-making process at the John F. Kennedy Medical Center, ensuring that the benefits of this technology are realized in the provision of quality healthcare to patients.

### **5.3 Future work**

The future work of the Hospital Management System (HMS) using a Support includes several key enhancements and innovations. Hospital Management Systems (HMS) will evolve to meet patient demands for efficient care and technological advancements. Future development will focus on integrating intelligent, scalable, and patient-centered solutions, including AI and machine learning for predictive analytics, clinical decision support systems, and automated diagnostics, aiming to minimize human error and improve patient outcomes.

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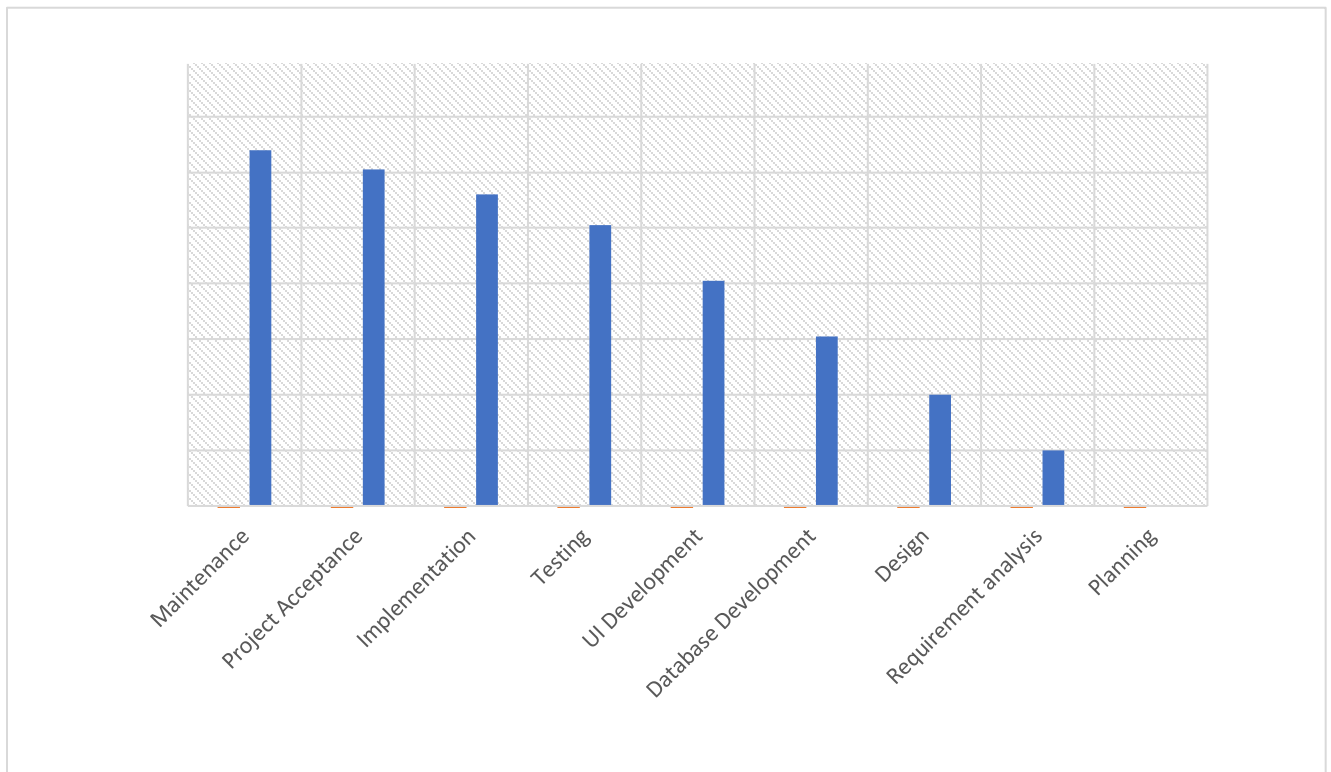


## Appendices

### Time frame

A project time frame is the predetermined period of time allocated to the planned execution and completion of a project. It is also commonly referred to as the project's timeline or schedule. It includes a schedule of all project tasks, due times, and deliverables. The sequence and duration of the tasks required to meet the goals of the project. The project timeframe provides a well-structured timetable for project management, execution, and planning. This makes it possible for project participants to keep an eye on progress, manage resources, and ensure that the project is completed within the set parameters—such as the budget, scope, and quality standards.

#### Planning of the Project



<b>Activities/Period</b>	<b>March – April 2024</b>	<b>May – June 2024</b>	<b>July – August 2024</b>	<b>September – October 2024</b>	<b>November – December 2024</b>
Research Proposal					
<b>CHAPTER 1</b> General Introduction					
<b>CHAPTER 2</b> Literature review					
<b>CHAPTER 3</b> System analysis and design					
<b>CHAPTER 4</b> System implementation					
<b>CHAPTER 5</b> Conclusion and suggestion					

## Appendices B

### Source Code

Computer program developed in a programming language that can be read by humans. It is the collection of guidelines written by a programmer to direct a computer's actions. Source code outlines a computer's actions step-by-step, much like a cookbook. It serves as the guide for software development since it is written in a language that is comprehensible to both people and machines.

Home Page

```
<?php
include_once('hms/include/config.php');
if(isset($_POST['submit']))
{
$name=$_POST['fullname'];
$email=$_POST['emailid'];
$mobileno=$_POST['mobileno'];
$dscrption=$_POST['description'];
$query=mysqli_query($con,"insert into tblcontactus(fullname,email,contactno,message)
value('$name','$email','$mobileno','$dscrption)");
echo "<script>alert('Your information succesfully submitted');</script>";
echo "<script>>window.location.href ='index.php'</script>";
} ?>
<!doctype html>
<html lang="en">
<head>
<meta charset="utf-8">
<meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no">
<title> John F. Kennedy Hospital management System </title>
<link rel="shortcut icon" href="assets/images/fav.jpg">
```

```

<link rel="stylesheet" href="assets/css/bootstrap.min.css">
<link rel="stylesheet" href="assets/css/fontawsom-all.min.css">
<link rel="stylesheet" href="assets/css/animate.css">
<link rel="stylesheet" type="text/css" href="assets/css/style.css" />
</head>
<body>
<!-- ##### Header Starts Here#####-->
<header id="menu-jk">
  <div id="nav-head" class="header-nav">
    <div class="container">
      <div class="row">
        <div class="col-lg-2 col-md-3 col-sm-12" style="color:#000;font-weight:bold; font-size:42px; margin-top: 1% !important;">JFK HMS
          <a data-toggle="collapse" data-target="#menu" href="#menu" ><i class="fas d-block d-md-none small-menu fa-bars"></i></a>
        </div>
        <div id="menu" class="col-lg-8 col-md-9 d-none d-md-block nav-item">
          <ul>
            <li><a href="#">Home</a></li>
            <li><a href="#services">Services</a></li>
            <li><a href="#about_us">About Us</a></li>
            <li><a href="#gallery">Gallery</a></li>
            <li><a href="#contact_us">Contact Us</a></li>
            <li><a href="#logins">Logins</a></li>
          </ul>
        </div>
        <div class="col-sm-2 d-none d-lg-block appoint">
          <a class="btn btn-success" href="hms/user-login.php">Book an Appointment</a>
        </div>

```

```

        </div>
    </div>
</div>
</header>
Slider Starts Here
<div class="slider-detail">
    <div id="carouselExampleIndicators" class="carousel slide" data-ride="carousel">
        <ol class="carousel-indicators">
            <li data-target="#carouselExampleIndicators" data-slide-to="0" class="active"></li>
            <li data-target="#carouselExampleIndicators" data-slide-to="1"></li>
        </ol>
        <div class="carousel-inner">
            <div class="carousel-item ">
                
                <div class="carousel-cover"></div>
                <div class="carousel-caption vdg-cur d-none d-md-block">
                    <h5 class="animated bounceInDown">John F. Kennedy Hospital Management
System</h5>
                </div>
            </div>
            <div class="carousel-item active">
                
                <div class="carousel-cover"></div>
                <div class="carousel-caption vdg-cur d-none d-md-block">
                    <h5 class="animated bounceInDown">John F. Kennedy Hospital Management
System</h5>
                </div>
            </div>
        </div>
    </div>

```

```

</div>
<a class="carousel-control-prev" href="#carouselExampleIndicators" role="button" data-
slide="prev">
  <span class="carousel-control-prev-icon" aria-hidden="true"></span>
  <span class="sr-only">Previous</span>
</a>
<a class="carousel-control-next" href="#carouselExampleIndicators" role="button" data-
slide="next">
  <span class="carousel-control-next-icon" aria-hidden="true"></span>
  <span class="sr-only">Next</span>
</a>
</div>
</div>

```

## Logins

```

<section id="logins" class="our-blog container-fluid">
  <div class="container">
    <div class="inner-title">
      <h2>Logins</h2>
    </div>
    <div class="col-sm-12 blog-cont">
      <div class="row no-margin">
        <div class="col-sm-4 blog-smk">
          <div class="blog-single">
            
            <div class="blog-single-det">
              <h6>Patient Login</h6>
              <a href="hms/user-login.php" target="_blank">
                <button class="btn btn-success btn-sm">Click Here</button>
              </a>
            </div>
          </div>
        </div>
      </div>
    </div>
  </div>

```

