CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Healthcare is the diagnosis, treatment, and prevention of disease, illness, injury, and other physical and mental impairments in human beings. Practitioners in allied health, dentistry, midwifery (obstetrics), medicine, nursing, optometry, pharmacy, psychology, and other health professions deliver health care. It refers to the work done in providing primary care, secondary care, and tertiary care, as well as in public health (World Health Organization, 2000).

Access to health care varies across countries, groups, and individuals, largely influenced by social and economic conditions as well as the health policies in place. Countries and jurisdictions have different policies and plans in relation to the personal and population-based health care goals within their societies. Health care systems are organizations established to meet the health needs of target populations. Their exact configuration varies between national and sub national entities. In some countries and jurisdictions, health care planning is distributed among market participants, whereas in others, planning occurs more centrally among governments or other coordinating bodies. In all cases, according to the World Health Organization (WHO), a well-functioning health care system requires a robust financing mechanism; a well-trained and adequately paid workforce; reliable information on which to base decisions and policies; and well-maintained health facilities and logistics to deliver quality medicines and technologies (WHO, 2000) .

Health care management is evolving rapidly. There has been constant search for new drugs, effective treatments and an advanced way of diagnosing and administering drugs to patients. Due to increase, in general health literacy levels of the population, it has become essential to disseminate information and address valid concerns. Some of the primary areas where management needs to focus on are disease prevention, health awareness, doctor-patient relations and overall understanding of general health care issues. There continues to be a need for comprehensive health care practices because of increase in population as well as the unending advance in science that have helped to increase the life expectancy of people in most developed

countries. Thus, there is need for continually improvement on the practices involved in health care management to satisfy an ever-increasing population. There is a need to establish system of leadership that has the ability to apply modern organizational techniques to deliver maximum benefits to the population. There is also a corresponding increase in the effectiveness of modern technologies that have made health care very sophisticated today (Adegbenjo, 2012).

This project is chanelled towards designing and implementing the healthcare managment system.

1.2 Statement of the Problem

Inquiries about the patient's record are sometimes difficult to deal with. Patient's information is usually mixed up while carrying files from one point to another. It is some times very difficult to retrieve information for instance, to find out about the patient's history, the user has to go through various registers. The information generated by several transactions takes time and efforts to be stored at the right place, preparation of accurate reports.

The following are the problems stated with the current manual system used in the healthcare environment :

i.   Improper handling of various operations: In the healthcare environment patient records and drug inventory are being taken from one place to another and there is a procedure in which the hospital or healthcare centre operates before final reports is passed down to the management.

ii.   Use of manual method for keeping patients record, medical records and drug inventory: Patient's information is usually mixed up while carrying files from one point to another therefore making it difficult to retrieve.

iii.   Excessive time wastage for booking an appointment with the doctor: It is sometimes difficult to see the doctor or book an appointment with the doctor.

1.3 Aim and Objectives

Aim:

The aim of this project is to design and develop a healthcare management system for Mountain Top University (MTU) Health centre.

Objectives:

i. To improve the operations carried out in the healthcare environment.

ii. To automate patients record and medical record.

iii. To Create an online booking system with the doctor to aid rescheduling of appointment.

1.4 Methodology

Healthcare management system was designed to automate the operations carried out in the healthcare environment using web development tool, which ensued each operation in the healthcare environment.

The healthcare management system was designed to automate the managing of patient's record, medical record that will be stored in the database.

The scheduling and booking of appointment was automated by the healthcare management system using the following tools:

i. Hypertext markup language (HTML)

ii. CSS

1.5 Scope of the Study

This project is directed towards the Mountain Top University (MTU) healthcenter, to improve the operations carried out in the environment, but the study is specifically chanelled towards having a secured online database record system for patients records, patients medical report and drug inventory.

1.6 Significance of the Study

This study is found useful for the Mountain Top University (MTU) Health Center because it will help to address the problem of security, privacy and confidentiality of patient health records. It also helps to check the delay, error, inconsistencies in medical records and timely access to historical records, all of which had a significant impact on the quality of the hospital.

The implementation of the online healthcare system is vital to the provision of quality care, as well as adequate management of scares resources and productivity. With this in mind, the most

significant benefit of implementing a topic is to institute a mechanism for reducing medical efforts and proper record keeping of information.

1.7 Definition of Terms

Healthcare: Healthcare is the diagnosis, treatment, and prevention of disease, illness, injury, and other physical and mental impairments in human beings.

Medical: It is an examination to assess a person's state of physical health or fitness.

Pharmacy: A shop or hospital dispensary where medicinal drugs are prepared or sold.

Laboratory: a room or a building equipped for scientific research, or teaching, or for the manufacture of drugs or chemicals. Is section is responsible for conducting laboratory tests on patients e. g blood and urine test.

Medical records: It is a record of a patient's medical information (as medical history, care or treatments received, test results, diagnoses, and medications taken)

Maintenance: is the process of keeping or preserving something in good condition.

Admin: An abbreviation of the system operator. Hospital administration is the management of the hospital as a business. It is made up of medical and health service managers.

Database is organized collections of interrelated data stored with reduce redundancy to serve one of more application.

Online: It is a connection controlled by a central computer.

Computerization: The act of implementing a computer-based system to enhance business efficiency and productivity.

Software: These are written programs or procedures or rules or instruction and associated documentation pertaining to the operation of a computer system.

Patient Record: A collection of files containing medical information and other related necessary information concerning a hospital's patient.

Login: To enter into a computer software system normally by using the username and password verification.

CHAPTER TWO

LITERATURE REVIEW

2.1 General Overview

Healthcare Management System handles all patients information, information from doctors and medical employees and doctor's appointment. Healthcare Management System helps manage all healthcare center parts, e.g. reception, laboratories etc. This increases the effectiveness of processing (Anastasia, 2019). Online healthcare management systems are intended to supplement present (often paper-based) medical records used by medical professionals. According to Adhithyan (2018), internet healthcare leadership system has a number of benefits, such as enhancing data communication to doctors, general cost decrease, improving access to medical information for patients, decreasing mistakes, managing revenues and ensuring data safety. Global growth in health information technology increases effectiveness of health service delivery, reduces medical errors, improves quality of care and provides better information for patients and doctors (pollak & Lorch, 2007). Over the last few years, healthcare software has gained great popularity among clinics and healthcare organizations. Medical software is crucial to the healthcare industry since it lets healthcare providers monitor and manage healthcare organization and patient data (Anastasia, 2019).

In several nations, the healthcare industry is an area of social and economic interest; therefore, a great deal of effort has been made to use electronic health records. Overall, there is evidence to suggest that these frameworks have not been accepted as expected, and although there are some suggestions to promote their implementation, the suggested assistance is not through information and communication technology that can provide automatic support instruments.

2.2 Conceptual Review

The concepts relevant to this research work will be discussed in this subsection to aid a better understanding of the project. These concepts include healthcare, healthcare management, healthcare management system. This review also provides a guide on the approach to be adopted for the study.

2.2.1 Healthcare

Healthcare is the diagnosis, treatment, and prevention of disease, illness, injury, and other physical and mental impairments in human beings.

2.2.2 Healthcare Management

Healthcare Management is a wide-ranging term that can be defined from various aspects. It is primarily about managing all aspects of healthcare coordinating all elements of a health center. This can range from patient care to record keeping to inventory of medicines and cleanliness (RNpedia, 2016). Healthcare managers have a legal and moral duty to ensure a high quality of patient care and to strive for better care. These managers are primarily responsible for entrusting policies, systems, procedures and organizational climates. Therefore, many have argued that it is clear that managers have an important and obvious role in the quality of care and patient safety and that it is one of the highest priorities of healthcare managers (Parand, Dopson, Renz, & Vincent, 2014).

Healthcare need top-notch management to help them run efficiently, with several departments providing life-saving care, operating complex equipment, and handling business issues such as policy development and compliance. Improving the quality of healthcare services has the potential to enhance hospital performance and increase user demand for services, as well as enhance the overall trust patients have in health institutions (WHO, 2018). Good healthcare management can often be the difference between a well-maintained hospital and a chaotic environment in which the quality of patient care is affected (Healthcare Business and Technology, 2016).Healthcare management plays an important in implementing innovative methodologies, thus having a positive impact on patient experience and ensuring a successful and profitable healthcare institution.

2.2.3 Healthcare Management System

According to Agnes (2011), delivery of health care services, particularly in developing countries like Nigeria, is constantly hindered by very weak information infrastructure to support data collection, collection, analysis and interpretation. This has resulted to numerous issues such as poor and inadequate information for clinical care of patients, education, research, and planning,

budgeting and report generation amongst others. The burdens of poor information infrastructure include missing and misfiled patient's records, which is gradually becoming a norm while data reporting is absent or delayed to the point of uselessness. Hospitals still groan with the burden of manual health records, lack of a good health library, and long waiting time for documentation from patients. The healthcare industry is looking to the IT sector for the best tools and equipment to face and handle several challenges along the way. As demands for better treatment and diagnostic procedures continue to increase, it is best for health care organizations, particularly hospitals, to upgrade their infrastructure and deliver the best results for this purpose, hence the need for a healthcare management system (Rupp, 2018).

Healthcare management system handles all patient data, doctor and medical staff information, booking of appointment with a doctor and hospital billing. Healthcare management system helps manage all sections of hospital: reception, labs, pharmacy amongst others (Anastasia, 2019). According to Rupp (2018), Healthcare management system has several important advantages that help the day-to-day operations of a hospital or nursing home to function smoothly, such as:

i)   It saves costs
ii)   It makes the workload lighter
iii)   It streamlines medical billing
iv)   It enables accurate capture of information
v)   It allows for better competitiveness

2.3 Theoretical Review

Al-Shayea and Qeethara (2015) focused on the use of online healthcare management in the implementation of ehealth in Jordan. The study proposed the implementation of the system using MATLAB server services. Through the system, doctors in Jordan could engage with doctors from the developed nations to analyze a patient and make decisions on the best treatment methods. The system concept used video conferencing such that both groups of physicians can engage on a one to one basis and discuss the patient clinical signs to determine the next course of action. Through the simulation of a practical application of the capabilities of online hospital

management, great insights on how powerful and effective online healthcare management can be in the health sector was provided.

Mittal (2013) conducted a study in Guru Gobind Singh Medical College, Faridkot, India on the functioning of healthcare management system services. It was concluded that lack of motivation and low patient education skills are the key elements that have proved to be a major obstacle to the growth of hospital management system services. This data showed the need for improved quality and awareness among rural people of hospital management services.

Renuka and Praveena (2015) analyzed the current position of Foreign Direct Investment (FDI) in Indian health care sector. Various opportunities and challenges regarding such investment were identified. It has been suggested that FDI should create necessary infrastructure as well enhance awareness level to provide qualitative automated health care services. FDI funds can also be utilized to increase the physical capacity and development of specialty and super-specialty centers, up gradation of new technology like ehealth services.

Gautham, Sriram, Craig and Johnson (2014) developed the clinical guidance system with the use of mobile technology to improve the quality of ehealth care. The system developed provides guidance for the management of various diseases.

Udita (2014) identified critical success factors that influenced the success of ehealth services in India. These critical success factors were data warehousing and mining, decision support system, data access control, biomedical engineering technology, telecommunication infrastructure, government policies, consumer mindset, health care providers mind set, literacy level and health insurance. It has been emphasized that the success of ehealth care depends not only on technological factors but also on psychology factors.

Pal (2014) discussed the scenario of providing health care services to rural population and mentioned various funding agencies that sponsored different projects across the country for providing hospital management services.

Kapoor and Singh (2014) discussed the different issues faced during the implementation of an online healthcare management system. The study revealed that these issues are not linked with technical problems but are linked with funds, behavior and attitude of doctors, lack of awareness amongst others.

Srivastava (2013) reviewed and analyzed online hospital management position for the provision of health care services. The results of the study concluded that healthcare management system might be more beneficial to the elderly, especially those with disabilities and pregnant women who are unable to embark on a long-distance journey for regular hospital check-ups. New platform for disseminating health information on precautions to be taken against life threating diseases such as HIV/AIDS, cancer amongst others has emerged with the introduction of social sites. The focused areas for the study were technological development, security and reliability issues, benefits and challenges involved in providing e-health services, satellite use and other technological equipment.

2.4 Related Works

2.4.1 Clinic Management System

Adebayo, Kanyinsola and David (2014) noticed the problems involved in the manual method of carrying out hospital operations, which were unreliable backup of file, difficulty in accessing information, which would result in waste of time and inaccuracy of reports. They created a patient record management system capable of improving information integrity, reducing transcription errors, reducing duplication of information entries, optimizing reporting time, reducing pilfering chances and maintaining records of indoor and outdoor patients.

The system solved the problems associated with the existing manual system. Security was also enhanced using authentication. The system was built on Java in which a waterfall model was followed for the development of the system.

The system met the minimum expectations that were initially set for it, but it also had some limitations which were the system could not be used in all areas of the health center, the system was not user friendly and the system was vulnerable to attacks.

2.4.2 Automated Booking System

Ahmed and Usman (2017) focused their research on solving the amount of time patients waste before they book their appointments with the doctor. They decided to come up with a system that would manage patients' appointments with the doctor. The system was designed based on the 3-tier architectural pattern, consisting of the presentation tier (user interface or the client

application), business logic tier (application server), and database/storage tier (for storing patients' details).

The system was developed for patients to book and manage their own appointment. They will also be reminded of their appointments via SMS/email, which they will receive promptly before their date of appointment. The system also enabled patients to track and monitor their appointment record.

The software was developed using the waterfall model and Visual basic.NET as the development tool. Due to technical constraints, the display of bio-data such as X-rays and laboratory results were not included in the system.

2.4.3 MOUAC Healthcare Management System

Ilo Igbajar and Acholonu (2015) implemented a web-based healthcare management system for MOUAC clinic. Their aim was to increase the efficiency and interactivity in any area of specialization in the hospital.

Increasing efficiency and interactivity in any area of specialization in the hospital

The system was able to generate test reports, provide prescription details including various tests, and medicines prescribed to patients by doctors. It also provided injection details based on patient's status for both indoor and outdoor patients.

The spiral software development model was adopted and used in this system. The system was developed using C# programming language and Visual Studio 2013 as its development environment with MySQL as its database. The system is able to perform the following functions:

i)   The system can authenticate the users of the system.

ii)   Only the administrator can make changes to the database

iii)   The system was able to generate test reports, provide prescription details including various tests, and medicines prescribed to patients by doctors.

Due to inadequate facilities used, the system was unable to provide an online payment functionality.

2.4.4 Bayanno Hospital Management System

This is one of the several products created by the software developers at Codecanyon. It is complete software for hospital, clinic and medical institutes. It supports laptop, smartphone,

desktop and tablet devices. It integrates and facilitates seven types of user area of a hospital, namely Administrator, Patient, Physician, Nurse, Pharmacist, Lab, and Accountant.

The software also includes a security feature claimed to be invulnerable to threats such as SQL-injection, XSS attacks and CSRF (Codecanyon, n.d.). Improvements made to Bayanno Hospital Management System by the proposed system include reduced data redundancy possibilities and cost efficiency. Due to limited time, the design of the system was not responsive on mobile devices.

2.4.5 Calorisplanitia Hospital Management System

It has the following features: Registration, Patient Check In / Check Out, Outpatient, Patient Record Maintenance, and Billing.

Staff are able to register, add, update and delete the records from the system with username and password protected proper privileges, according to organizational hierarchy; Patient Check In / Check Out: (IPD): new patient gets admitted with unique records, along with room reservation, case papers, check out, billing, and other details, generated for every patient. Outpatient (OPD): the system creates a unique record for each outpatient. Including, case papers, billing and other details. Patient Record Maintenance: the system maintains a detailed record of each patient. Billing: the entire detailed bill for each patient is automatically created (Calorisplanitia, n.d.). The system had a poor user interface design implemented that needs to be re-designed.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This section reviewed the current system assessment and design. This project includes many characteristics that guide the entire goal for this project to be completed with sensible evaluation of why and how this project will benefit others in the region being implied. This project's methodology outlines the measures used to create this project in the Software Development Life Cycle (SDLC) phase that includes planning, analyzing, designing, implementing and supporting system maintenance. It also involves functional and non-functional requirements defined by the system's characteristics, scope and constraints discussed as well as modeling tools, techniques and different diagrams displaying the logical representation of the proposed system with the Use Case Diagram (USD).

3.1.1 Software Development Life Cycle (SDLC)

SDLC is a method that is followed within a software organization for a software project. It comprises of a comprehensive plan describing how particular software can be developed, maintained, replaced and modified or enhanced. The life cycle describes a methodology for enhancing software quality and the general development process.

Figure 3.1: Waterfall Model (Rupp, 2018)**.**

3.1.1.1 Phase 1: Requirement Analysis

This incorporates the two necessities, which are the useful and non-functional necessities, required to guarantee that client desires are fulfilled by making the framework functionalities to be compelling and productive. Desires from the proposed framework incorporate:

   i.   Data Collection
   ii.   User Validation and Verification
   iii. Medical record keeping
   iv.   Booking Processing and scheduling Appointments.

3.1.1.2 Phase 2: System Design

Framework plan is the necessity details to begin with stages and in this stage the framework plan is arranged. Framework plan makes a difference in indicating the equipment and framework necessities and contribution to the rate of the framework design. The next stage is where the computer program codes are composed and created.

3.1.1.3 Phase 3: Implementation

This stage depicts the arrangement and influences programs/to code and planning the code for the following stage. With the contributions from the past stage (Framework plan), the structures is in any case made little projects called unit, which are organized in the following stage. There are no sources in the current document.

3.1.1.4 Phase 4: Integration and Testing

This stage includes framework integration and testing of program methods and ordinarily carried out by Quality Confirmation experts to decide in the event that it meets the starting objective of the framework (Inventive Planner). All units created in the usage stage are coordinates into a framework after testing of each unit. The whole framework is tried for any flaws and disappointment.

3.1.1.5 Phase 5: Deployment of system

Once the utilitarian and non-practical testing is done, the yield result is sent into the customer condition and released to the market.

3.1.1.6 Phase 6: Maintenance

Amid this phase after the course of action has been executed, issues as for the customer condition will begin to settle those issues. In addition to redesign the thing, a couple of way better updates are associated and released. Upkeep is done to convey changes and offer courses of action to specific actions in the customer's condition.

3.2 Analysis of the Existing System

Lot of paperwork is involved in Healthcare Management System. The system includes using a white and black technique to keep patients record, drug prescriptions, booking of an appointment with the doctor and other basic operations in the healthcare environment.

3.2.1 Problems of Existing System

Having the existing system's overview understanding, the following are its issue.

1)   Data loss: A lot of paperwork is required to keep the information of patients, doctors and drug prescriptions.

2)   Time Wasting: Medical personnel takes time in sorting out patients file or record.

3)   Error Prone: The current operating scheme is prone to error.

4)   Tedious: It is tedious because it has to take a routine.

5)   Processing velocity: very low processing speed resulting in low production.

6)   Late Attendance: It usually takes a while to see a doctor or a nurse because of the population.

3.3 Proposed system

The Healthcare Management System is a web-based application system that an administrator uses as an alternative means of keeping the doctors record, patient's medical record and patient's appointment with the doctor. The characteristics are as follows.

i. The administrator records the applicant with their first and last name, matriculation number, department etc. the matric number along with a login password will be used by the registered user to log in.

ii. An applicant is permitted to log in with his/her username and password produced at the stage of registering.

iii. To view a specific patient's information, the administrator is responsible to carry out such actions.

3.3.1 Advantages of the Proposed System

The suggested system has been associated with certain merits that enhance the system design some are described below:

i. It is bias-free (every user is served equally).

ii. It offers every user with an instant response form.

iii. It makes learning easy

3.4 Design and Implementation

The design methodology used in the suggested scheme is parallel because of the fact that parallel methods help the use of the suggested system side by side with the present scheme to test for system efficiency. As it allows the system to be analyzed one by one, the top-down approach is also used in design. At this stage, task analysis will determine the first objective. Then testing will be done with some design theories on its usability and design. The system prototype will then be analyzed. The prototype will be looked at accordingly. Potential users will then test a fuller prototype to gather feedback.

3.4.1 Software Requirement

Operating system- Windows 8 is a stable operating system that supports more features and is more user-friendly.

Database MYSQL-MYSQL is used as a database because simple queries that are easy to comprehend and easy to write are used to keep and collect documents.

Development tools and programming language- HTML is used to write the entire code and create web pages for severe side scripting with cascading style sheet, java design script and hypertext pre-processor (PHP).

3.4.2 Software Tools

i. **Text Editors:** A word processor is a PC program that allows a customer to enter, change, store and normally print content (characters and numbers, each encoded by the PC and its data and yield contraptions, sorted out to have significance to customers or to various tasks.) A word processor gives a void show screen or scrollable page with a settled line length and unmistakable line numbers; you would then have the capacity to fill the lines in with content, line by line. Content supervisors can be used to enter program vernacular source decrees or to make records, for instance, specific manuals (whatis.target, 2005). The text editors will be used to create the front end of this project with the use of implementing HTML AND CSS to create each page and design. Examples of text editors are: notepad, sublime text, brackets etc.

ii. **Adobe Dreamweaver:** Dreamweaver is a product program for outlining site pages, an even more completely included html web and programming editorial manager. The program gives a "what you see is the thing that you get" interface for clients to make and alter site pages in an easier way to use condition (computerhope, 2017). This specific programming will be utilized to build up the front-end and contributing a responsive element utilizing bootstrap. Additionally, this product makes the working procedure of this task less demanding and quicker.

iii. **PHPMYADMIN:** It is a free programming instrument written in PHP, proposed to manage the association of MySQL over the web. It reinforces a broad assortment of exercises on MySQL and Maria DB. As regularly as conceivable used assignments administering databases, tables, fragments and relations that can be performed by methods for the user interface while regardless of all that you can direct execute any SQL explanation (phpmyadmin, 2017). This software will

be used to create a back-end environment for this project applying the logic to each page created and also creates and stores the database information.

iv. JavaScript: It is a cross-arrange, question arranged scripting language. It is a little and lightweight tongue. Inside a host circumstance. JavaScript can be related with the objects of its condition to give programmed control over them. It contains a standard library of articles, for instance, Arrays, Date, and Math's and a middle course of action of vernacular segments, for instance, executives, control structures and clarifications. JavaScript will be used to make and incorporate more natural features between the customer and the item. (Developer. Mozilla, 2017).

v. **Wamp Server (Windows-Apache-MySQL-Php):** It is an open source application, joined with Microsoft Windows, which is typically used as a piece of Web Server Environments. The wamp stack gives architects the four key parts of a Web server: a working system, database, web server, web-scripting programming. The combined utilization of these activities is known as a server stack. In this stack, Microsoft Windows is the working structure (Operating System), Apache is the web server, and MySQL handles the database parts, while PHP addresses the dynamic scripting vernacular.

3.4.3 Hardware Requirement

i. The 2nd generation Intel core i5 is used as a processor because it is quick compared to other processors and it is very reliable and with the Intel core i5, we can operate our pc for a long time. We can continue to develop our project without any worries by using this processor.

ii. RAM 4 is used as it provides the ability to read and write quickly and processing in turn.

3.4.4 Architectural Design

It is also possible to refer to the design stage of computer architecture and software architecture as high-level design. The basis for choosing the architecture is to understand everything typically consisting of the list of modules, short functionality of each module, interface interactions, dependencies, database tables, architecture diagrams, technology information, etc. The design of integration testing is performed in the specific stage. It is possible to determine the necessary hardware, software, people, and data resources specifications after the requirements have been determined and the information products that will satisfy the functional requirement of the

proposed system. Before these mistakes or issues are incorporated into the scheme, the structure will serve as a blueprint for the scheme.

3.4.5 Module

The module's design phase may also be called a low-level design. The built system is broken up into smaller units or modules and clarified to each of them so that the programmer can start coding directly. The low-level design document or program specifications will include a detailed functional logic of the pseudo code module:

    i.   Database tables, including the type and size of all components.

    ii.   All the details of the interface with full API references.

    iii.   Lists of error messages.

    iv.   Complete module input and output. At this point, the unit test design is being created.

3.5 Data Flow Diagrams
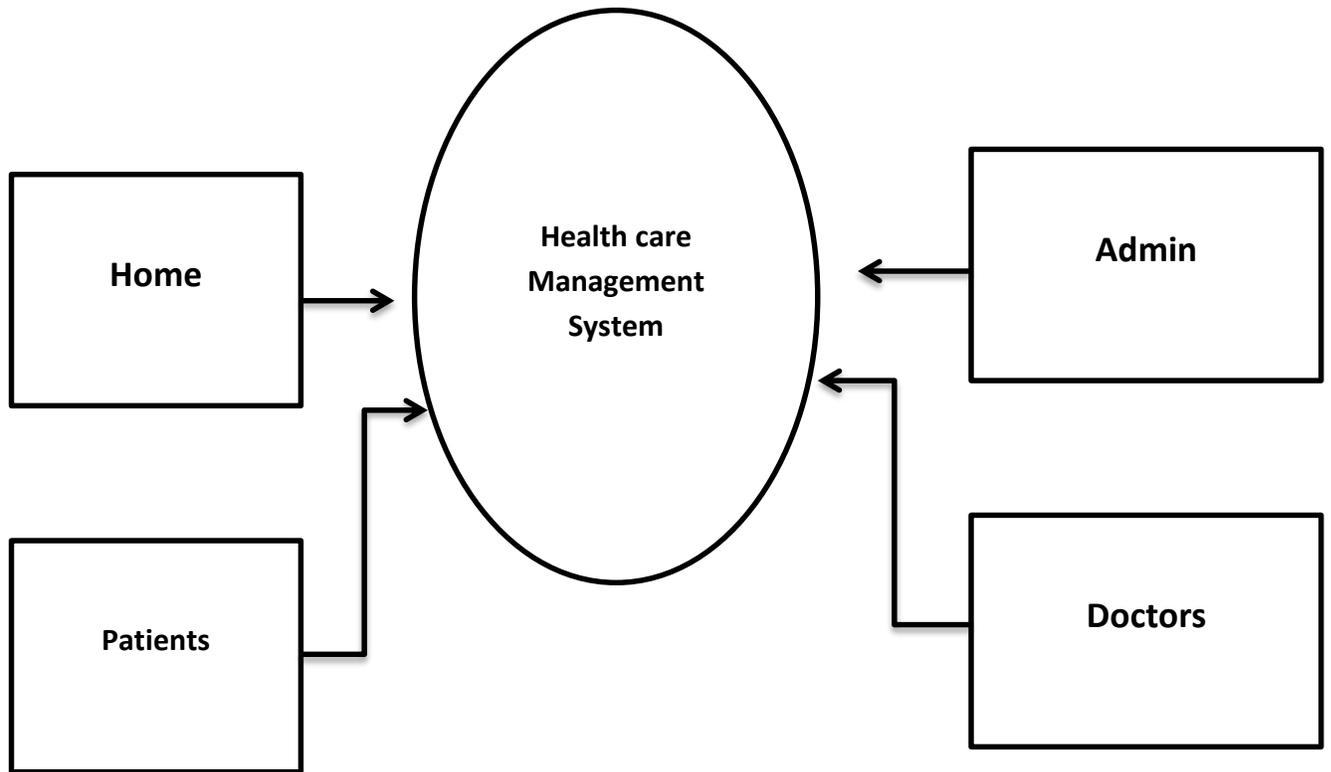
Figure 3.2: Data Flow Diagram.

3.5.1 Admin Login

After joining the home page of the website, the admin may select the ADMIN LOGIN option where they are asked to enter username and password, and if he/she are a valid user then a login page will appear.

3.5.2 User Login

Users can select the USER LOGIN option after joining the website home page where they are requested to enter username and password, and if they are a valid client then a user login page will appear.

3.5.3 Doctor's Login

Doctors can select the DOCTOR LOGIN option after joining the website home page where they are asked to enter username and password, if he/she is a valid user then login page will appear.

3.6 Final Testing

Once the product is finalized, it will run on an environment in the real world and test its performance. If the system performance is satisfactory, it will be applied, other modifications will be made to correct the problems. After running the system for daily operation, any system mistakes and safety problems should be handled by ongoing maintenance and administration. This will involve pre-testing, testing for validity, pilot and testing for reliability and information survey.

3.6.1 Use Case Diagram

Use case is a list of steps for achieving a goal in software and system engineering, typically defining interactions between a role (actor) and a system. Below is the healthcare management system use case diagram.
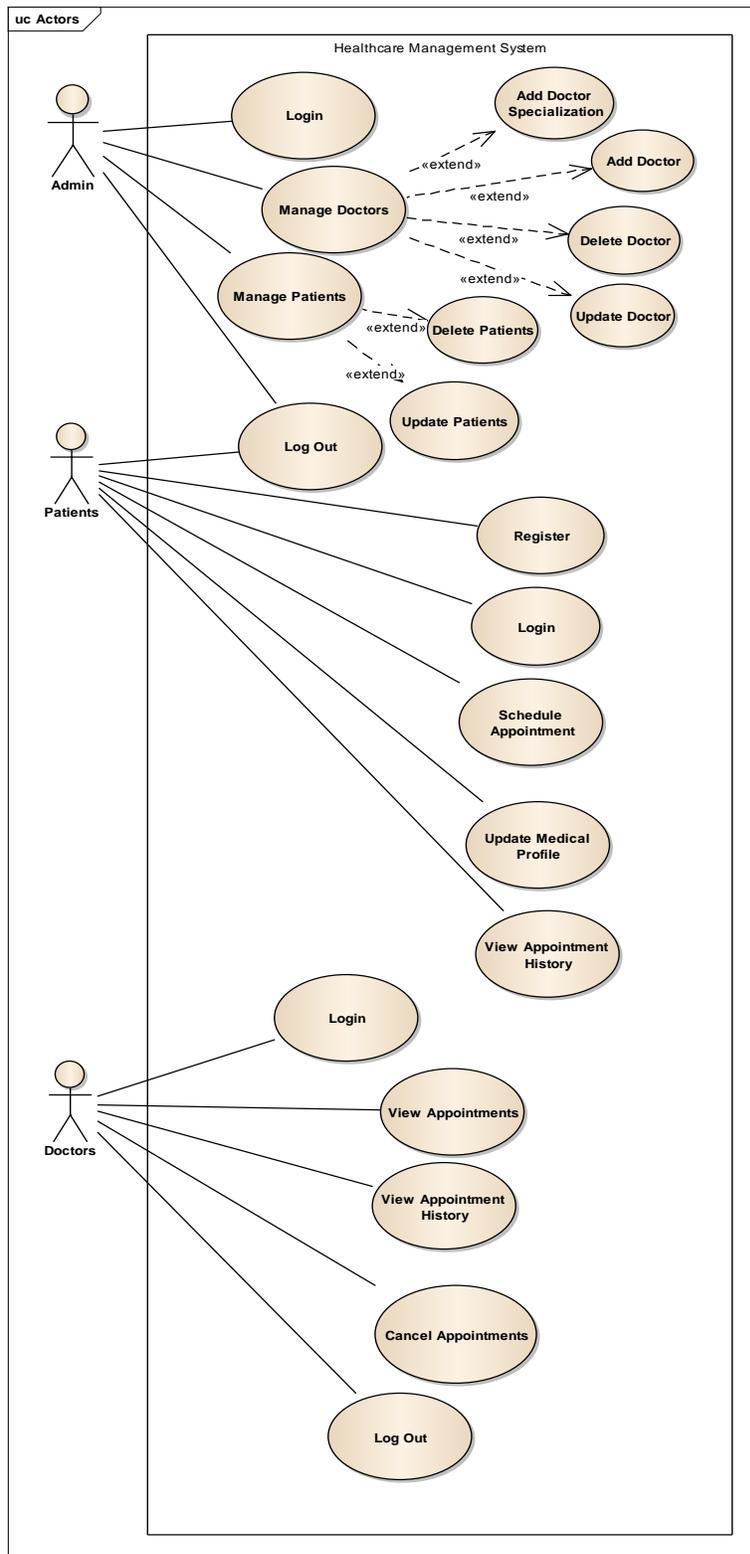
Figure 3.3: Use case diagram.

3.6.2 ENTITY RELATIONSHIP DIAGRAM (ERD) DIAGRAM

Figure 3.4: Entity relationship diagram (ERD).

CHAPTER FOUR

SYSTEM IMPLEMENTATION AND DOCUMENTATION

4.1 Introduction

This describes how the system works and how best decision-making tools can be applied in combination with other information storage, management and retrieval resources. The necessity of this research work needs a language of web programming.

This section considers and focuses the use of the utilitarian application and the test for absconds and other sensitive properties, such as execution and unwavering quality, these tests include the execution of the application with accessible test information to ensure that the total sum of what preconditions has been accurately met, taking into account the ultimate goal of ensuring excellence.

4.2 System Implementation

As part of user experience and usability, the healthcare management system offers a user-friendly, intuitive Graphical User Interface (GUI). The various tests for this project to be finished are as follows:

4.2.1 Component and System Testing

Component Testing is a method of testing the foremost decreased or the smallest unit of any application. Component testing at times is moreover implied as Program or Module Testing An application can be thought of a mix and combination of various small person modules. Before we test the full framework, it is imperative that each final section or unit of the application is tried at once.

4.2.2 Database Testing

A database is an aggregation and recuperation of intellectuals' related data. Database testing performs information realness, information uprightness testing, execution check related to database and testing of method, triggers and limits within the database. This information contains energetic data required by the system, and each table within the database holds input areas that are guided by a course of activities with statutes and limitations restricting the kind of information set absent in them. The Database Administration Framework (DBMS) remains absent from abuse and mishandle by ensuring that these checks are not ignored. The healthcare

administration system database comprises of seven tables and each table comprises of the areas, data composes sizes and distinctive objectives that characterizes the table. The taking after are few screenshots of each table nearby a brief clarification of their portion in this undertaking.
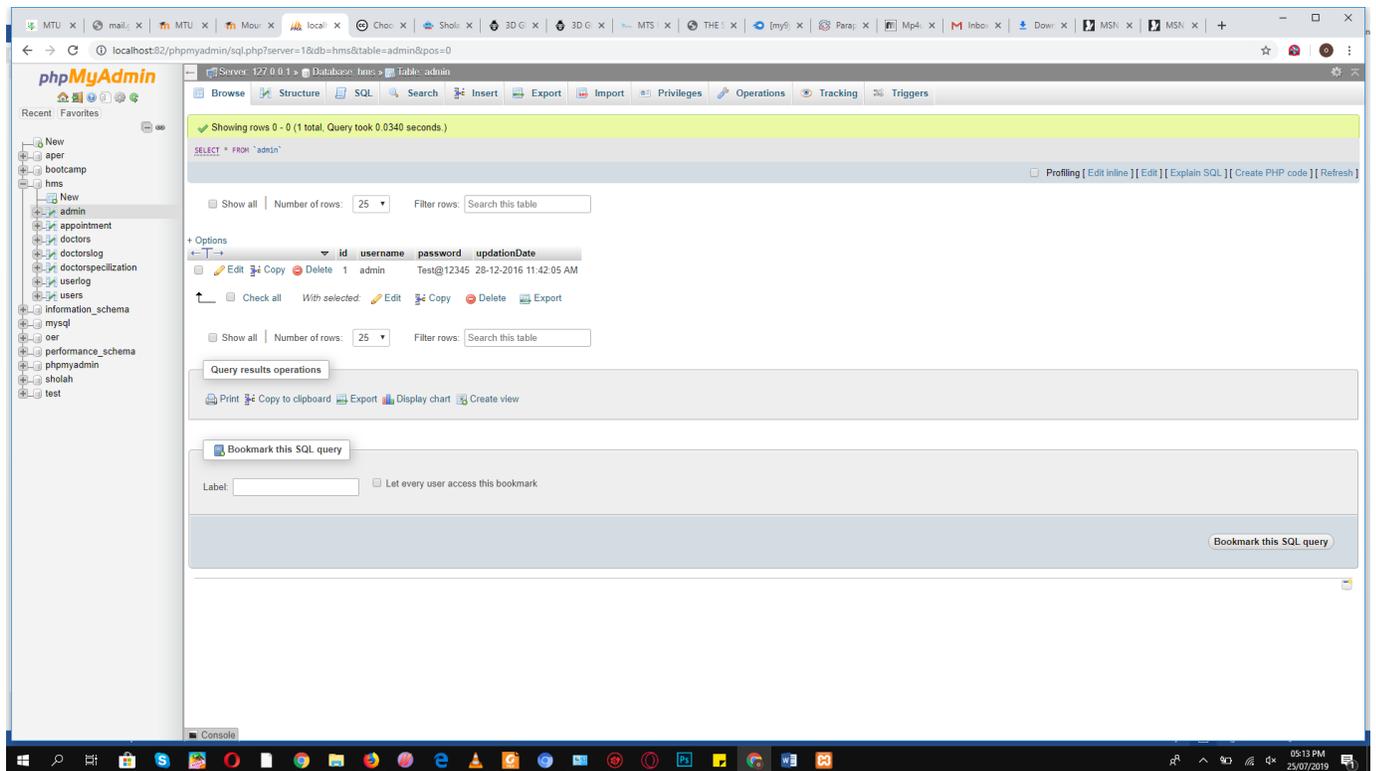
Figure 4.1 Admin Table

Figure 4.1 describes the structure and the contents of the admin table who is the super user of this system, the admin manages all activities in the system and the admin table stores the id, username, and password.
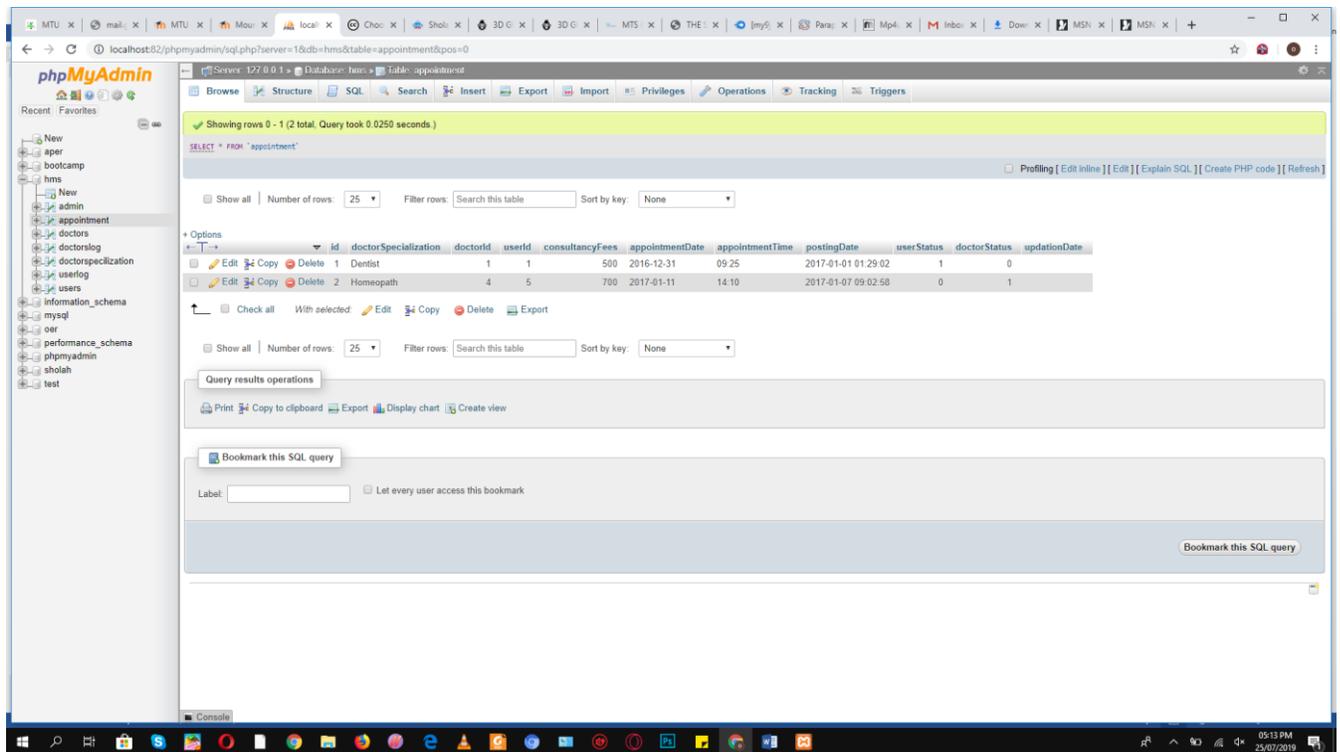
Figure 4.2 Users' appointment table

Figure 4.2 describes the appointment table which stores each user doctor's appointment and the table consists of id, doctor specialization, doctor ID, user ID, consultancy Fees, appointment time, posting date, user status, doctor status, update.
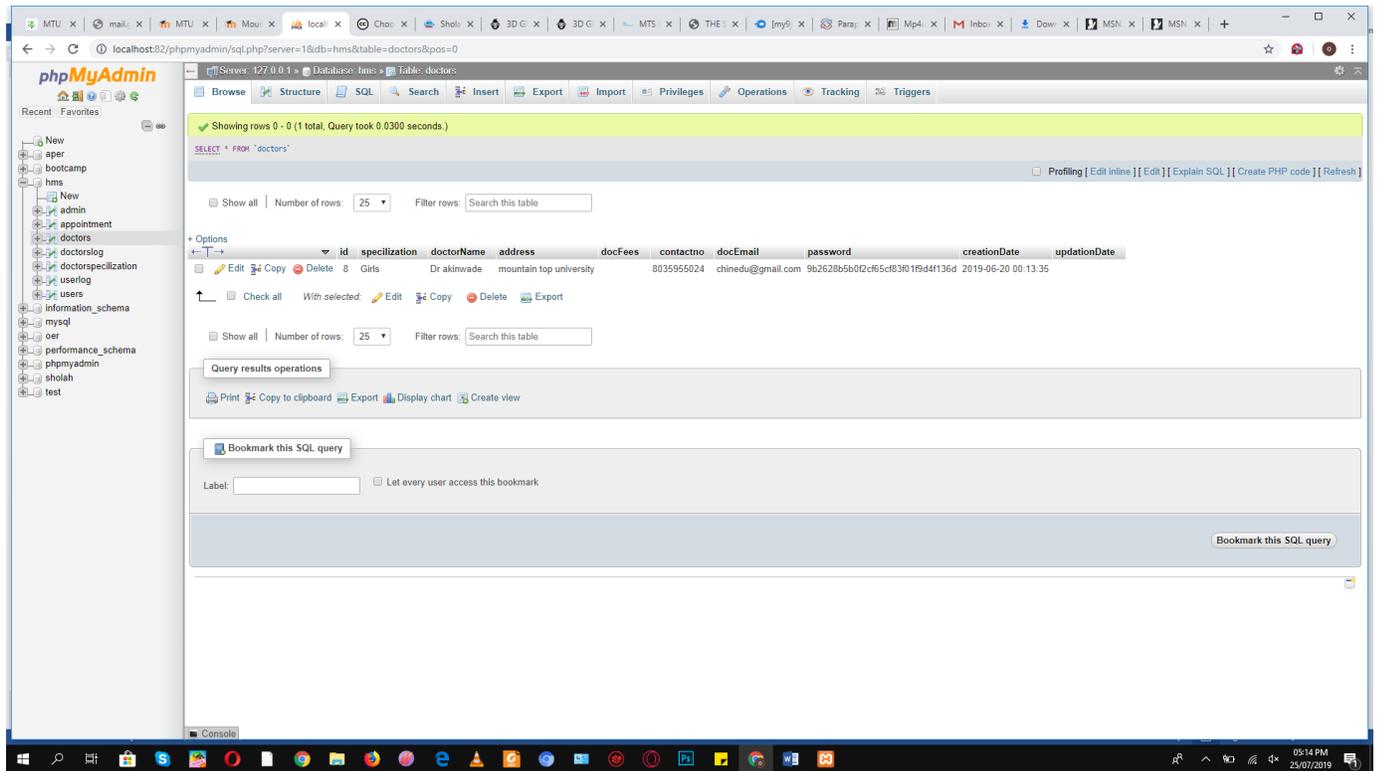
Figure 4.3 Doctors table

Figure 4.3 describes the doctors table which stores id, doctor name, address, doc Fees, contact no, doc Email, password, creation date, updating Date.
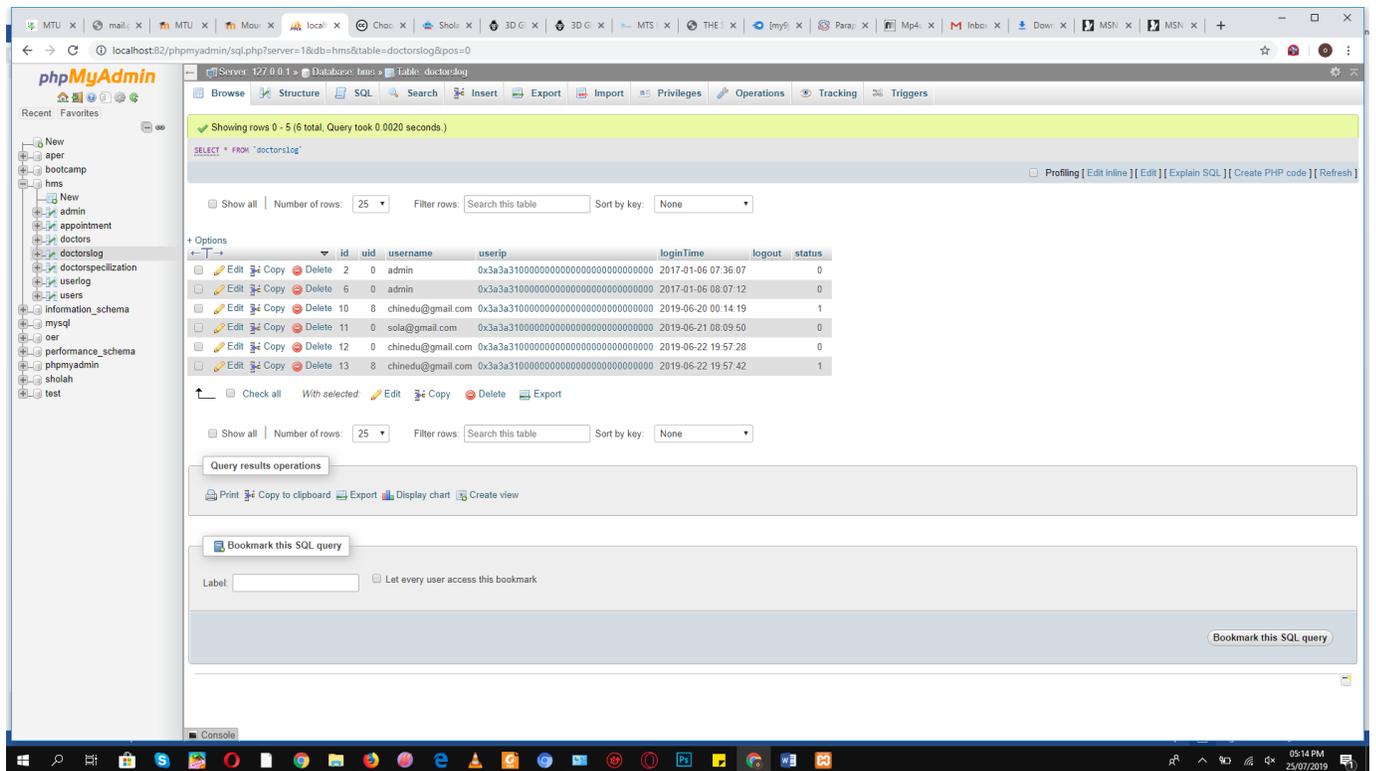
Figure 4.4 Doctors log table

Figure 4.4 describes the doctor's log table, which stores the doctor log in, and log out activities such as id, uid, username, userip, login time, logout, status.
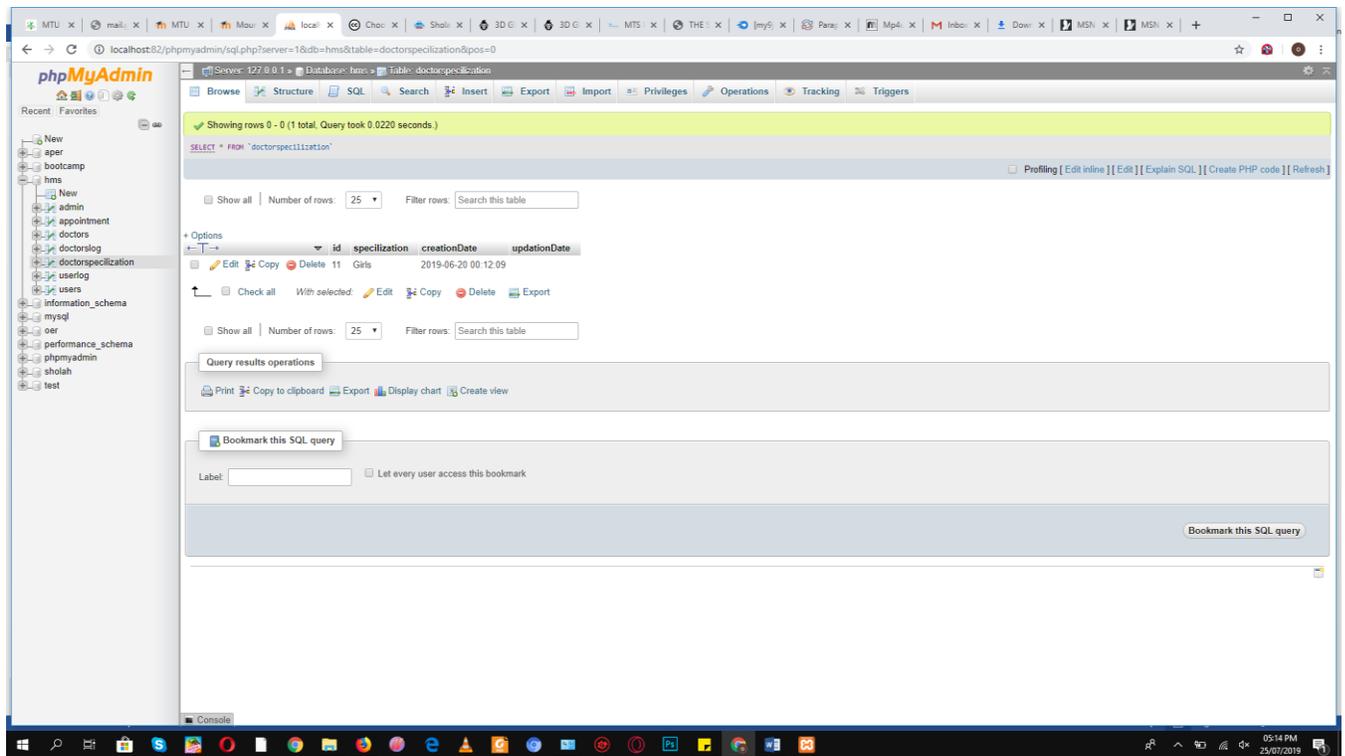
Figure 4.5 Doctors specialization table

Figure 4.5 describes the doctor's specialization which stores what part of the medical field is the doctor specialized in, the table consists of id, specialization, creation date, updating Date.
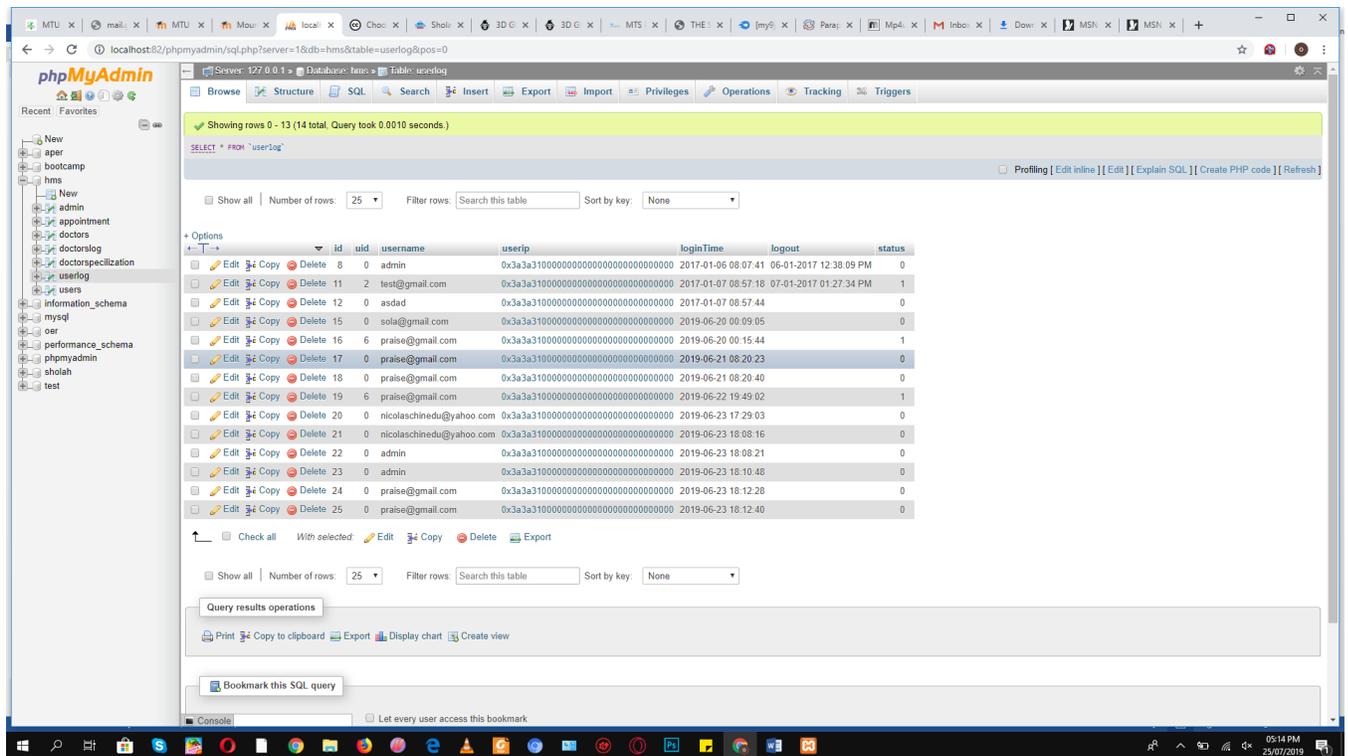
Figure 4.6 Users log table

Figure 4.6 describes the user log table which stores the user log in and log out activities such as id, uid, username, userip, login time, logout, status.
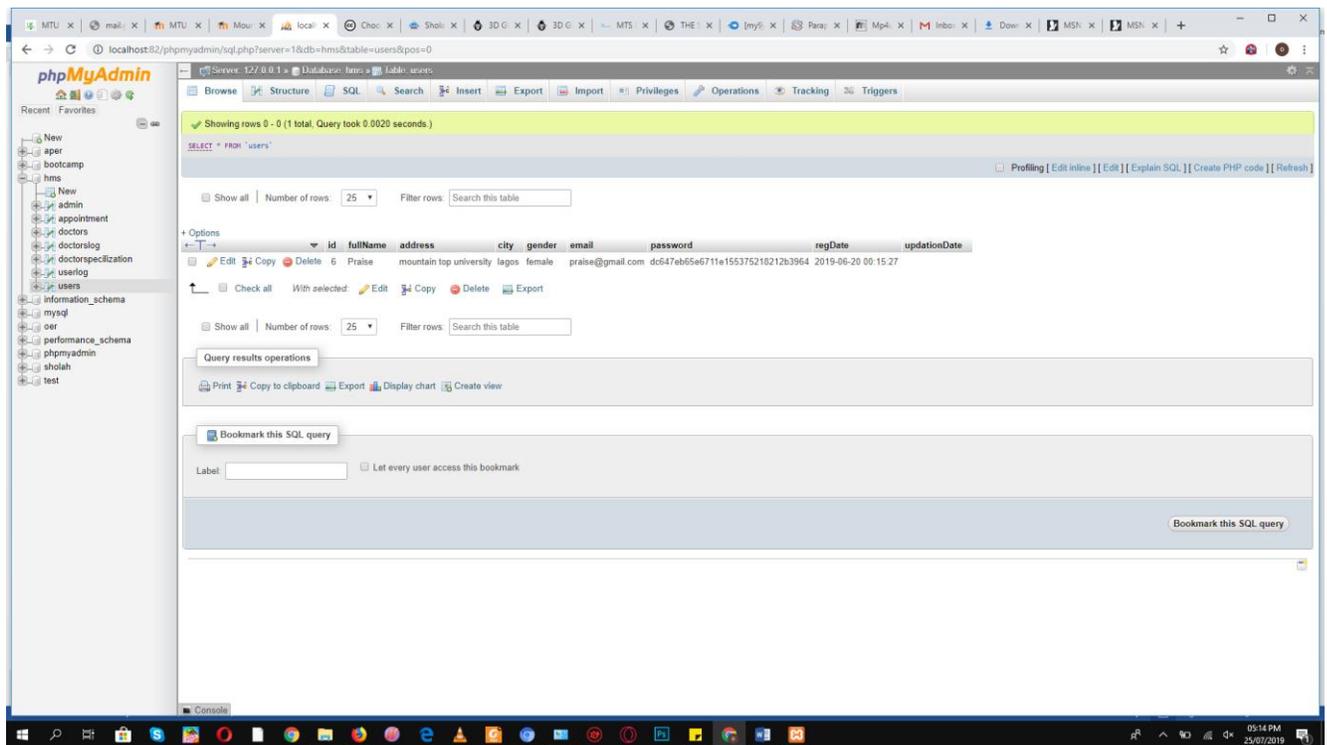
Figure 4.7 Users table

Figure 4.7 describes the user's table which stores user information for their login process such as id, full name, address, city, gender, email, password, reg date, and date created.

4.2.3 Interface Testing

Interface Testing is the path toward testing our health care management system graphical user interface to promise it meets its created particulars. Interface testing was in like manner done to check whether the constituent modules are given suitably. The Black box testing framework is used for the proposed system and it is generally called the Functional and Behavioral Testing and is penniless and in light of an examination of the points of interest of the structure without a reference to its internal workings. The interface testing is done to guarantee that end clients ought not experience any issues when utilizing the project, to recognize which application zones are typically gotten to by the clients, to check its ease of use also, to confirm security necessities while correspondence engenders between the system, and to check if the arrangement is fit to deal with disappointment's between the application server and the website.
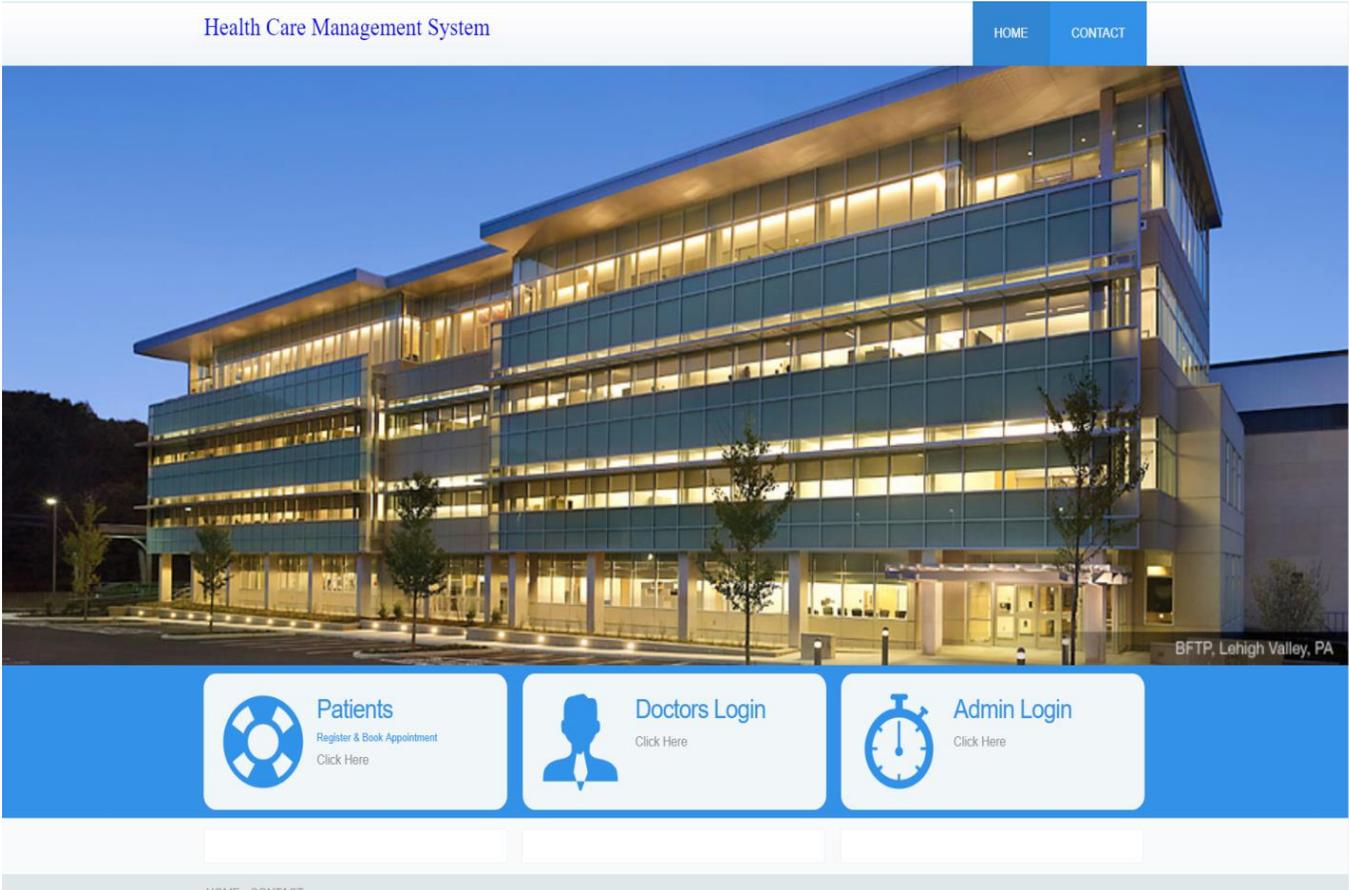
Home page

Figure 4.8 Home page

Figure 4.8 is the first page displayed to the user and it contains the Patients' Registration & Booking Appointments, the Doctors' Login/Signup, and the Admin Login.
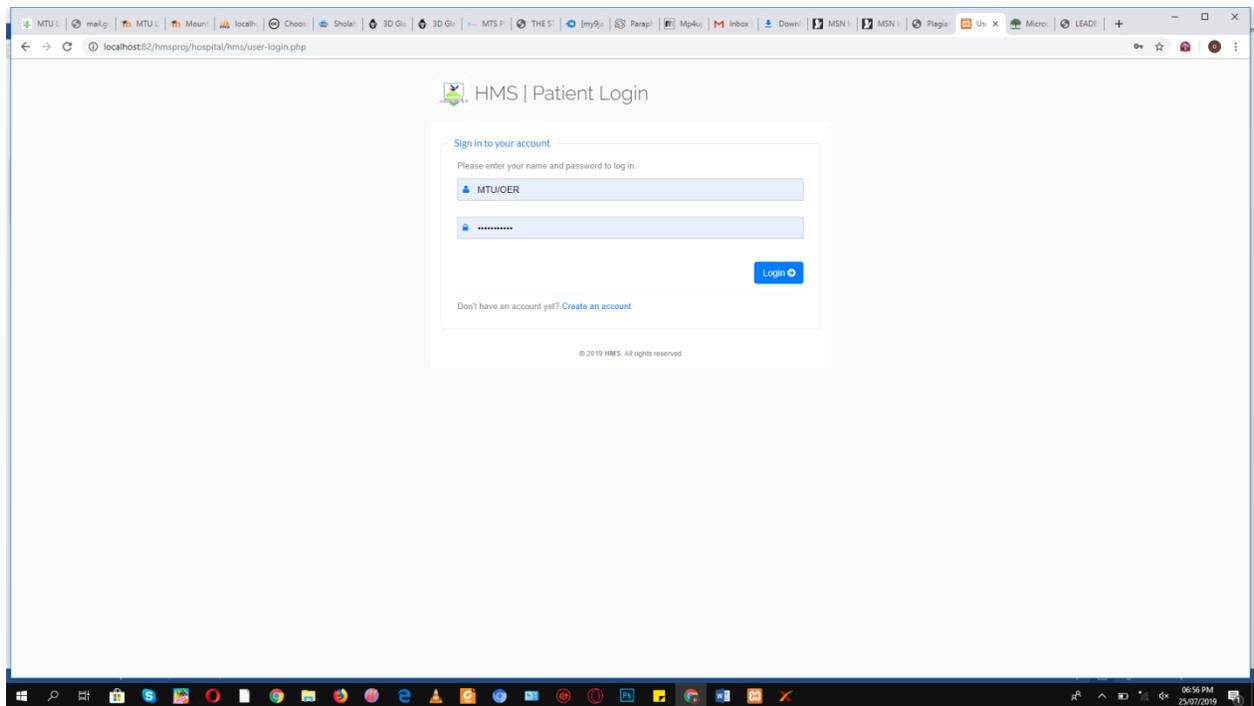
Figure 4.9 Patients log in page.

Figure 4.9 describes the patient's login page where the user provides their username and password to access their dashboard, the user is also able to sign up from this page.
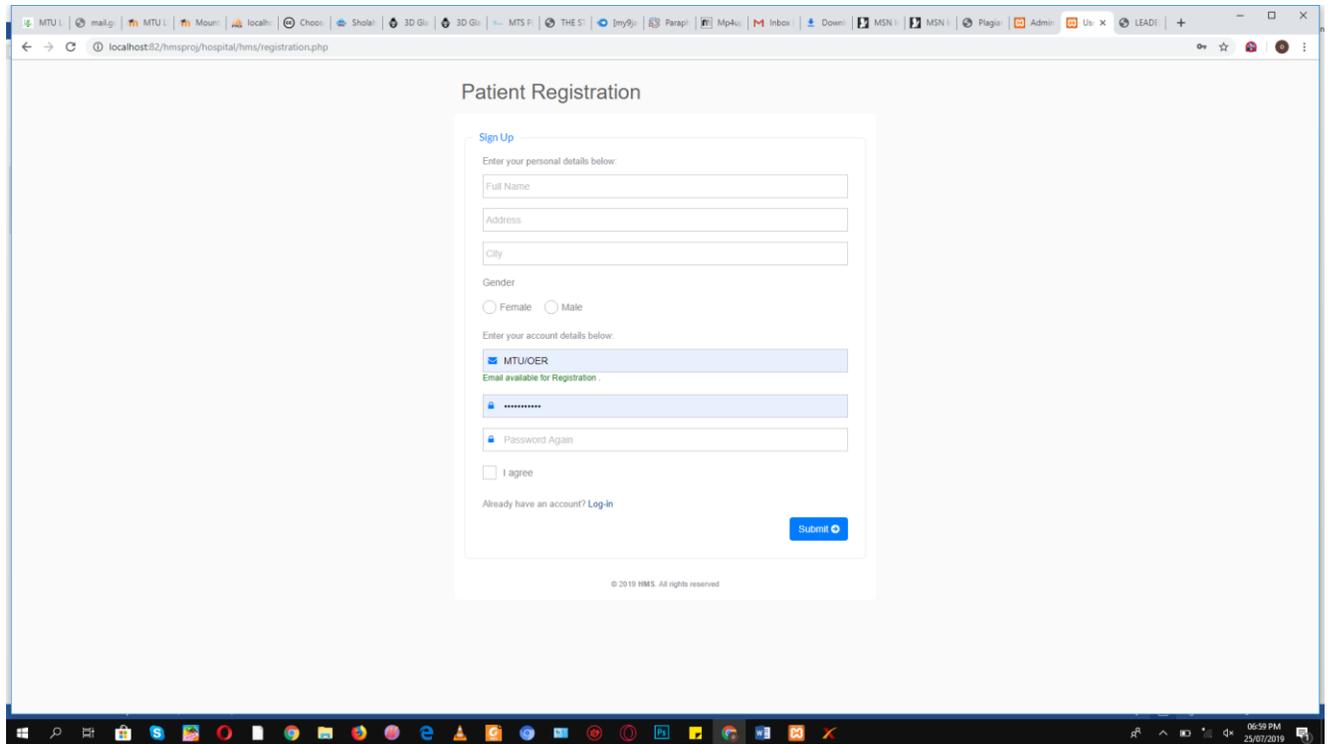
Figure 4.10 Patient's registration page

Figure 4.10 describes the sign up process of the user where input fields are provided for the user to fill their correct information such as their full name, address, city, gender, username, password after submitting the form the user will be a registered member.
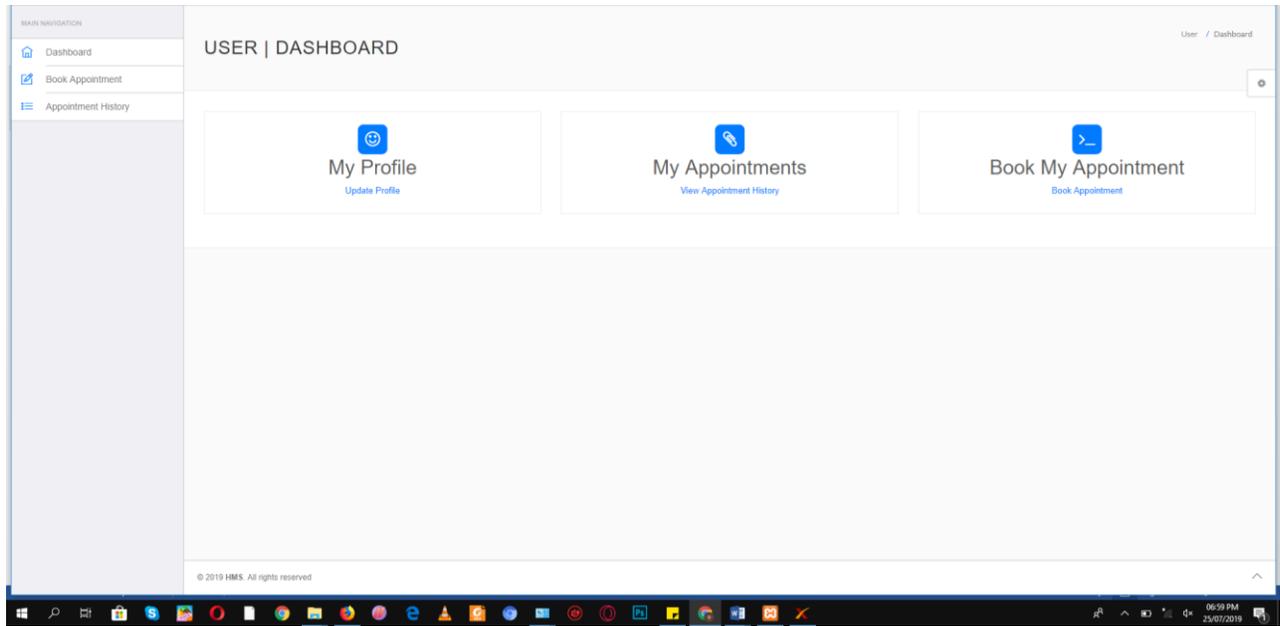
Figure 4.11 User dashboard

Figure 4.11 talks about what is shown on the screen of the user after the login process where the user can book appointments, view and update profile, view appointment history.
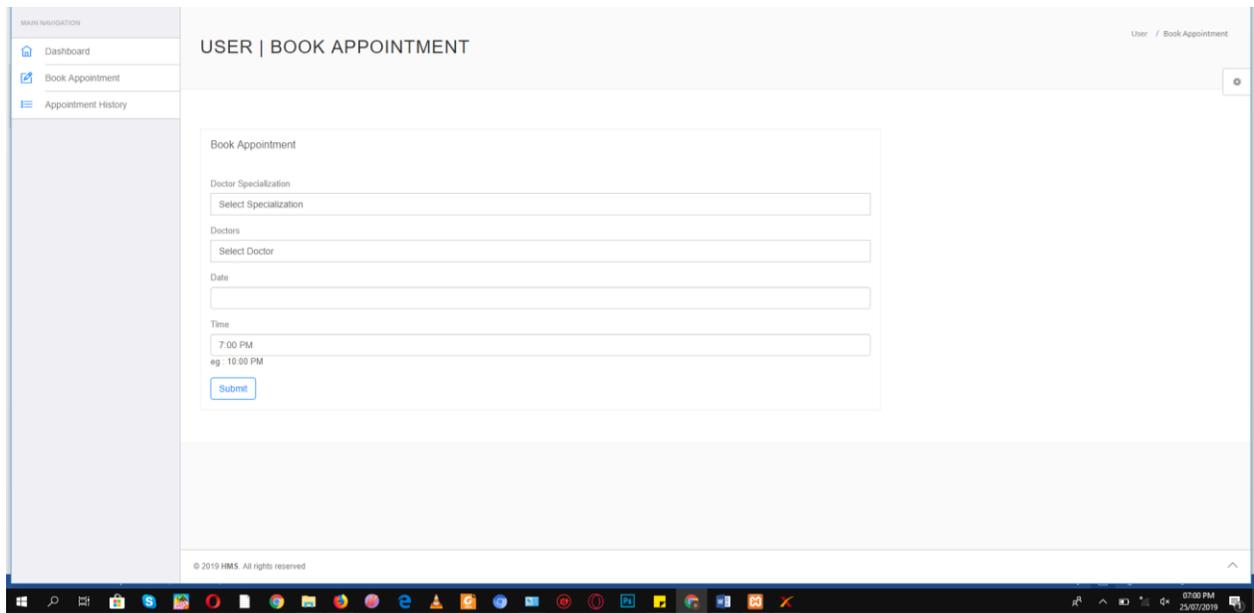
Figure 4.12 User book appointment page

Figure 4.12 describes the user booking appointment page where they provide the necessary information and select doctor specialization, the doctor, the date of the appointment, time of the appointment which is sent to the designated doctor selected.
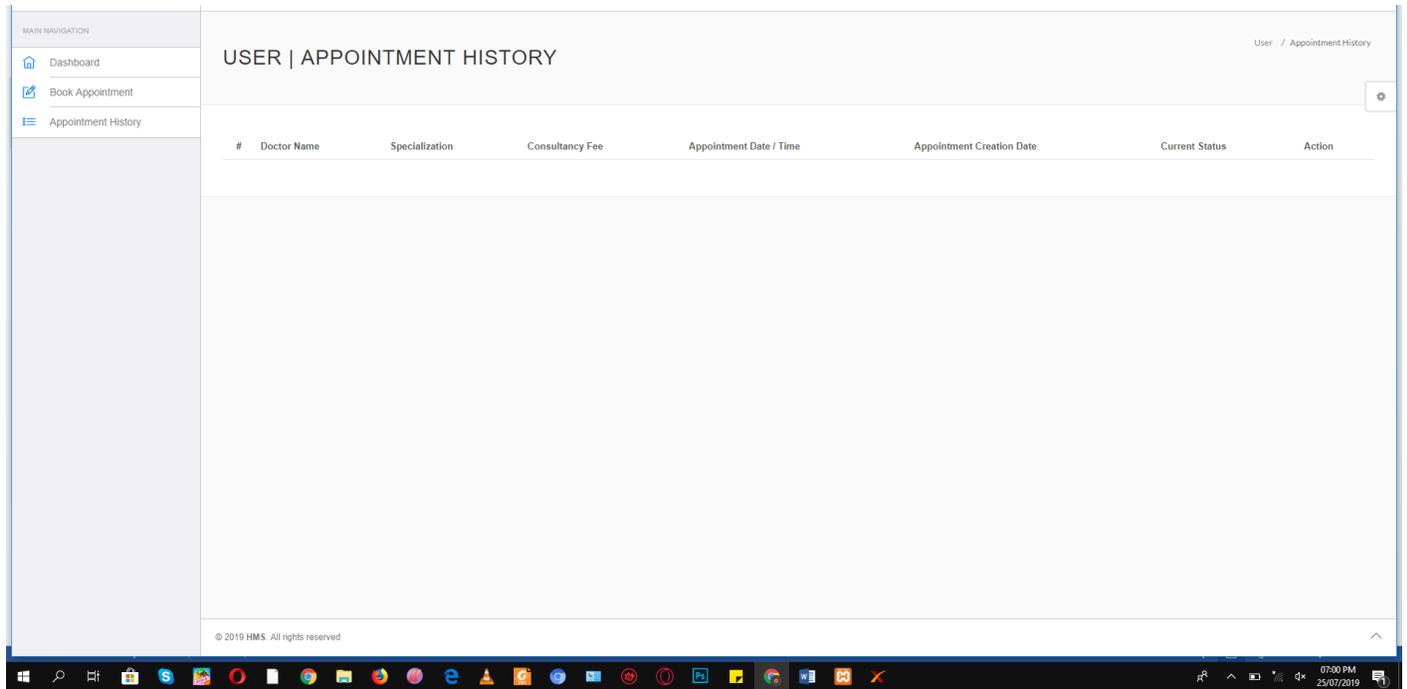
Figure 4.13 Users appointment history

Figure 4.13 describes where the user is able to view history of appointments with the doctor name, specialization, date, time, status.
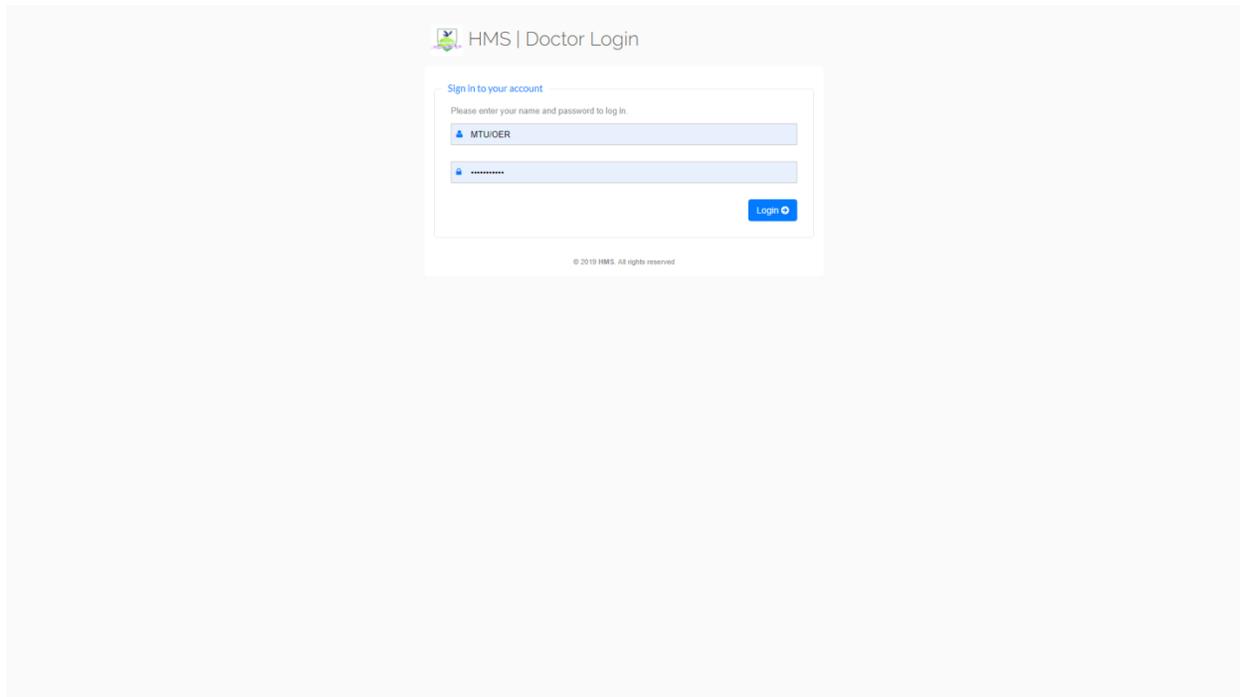
Figure 4.14 Doctors' login page

Figure 4.14 shows the doctors' login where the user (doctor) is required to input the username and password.
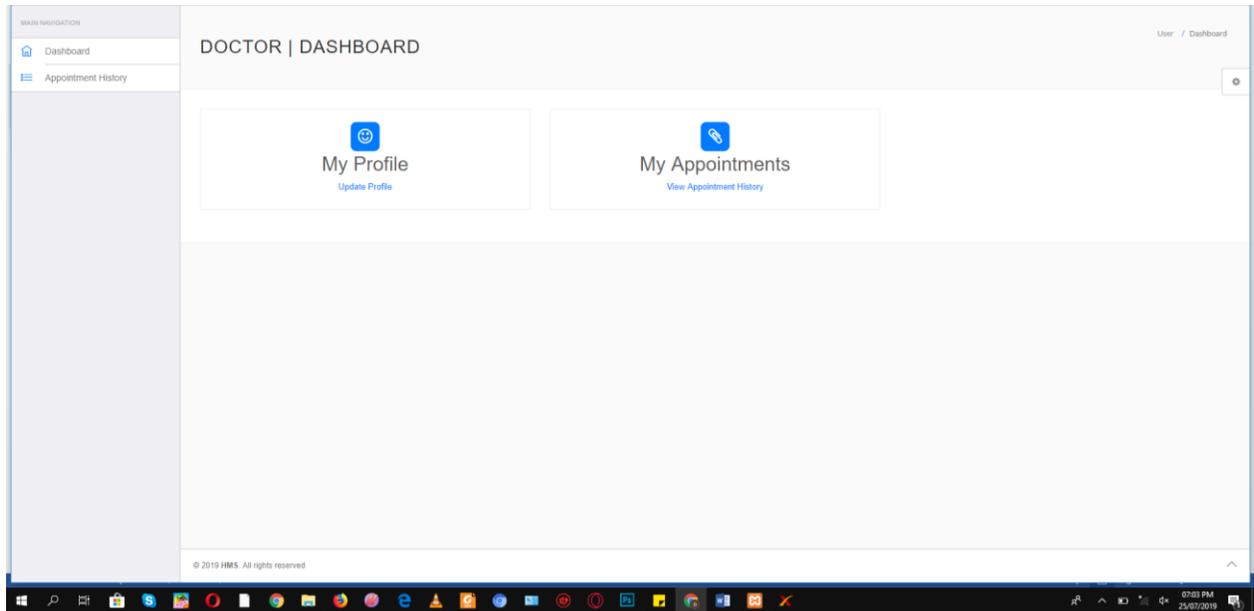
Figure 4.15 Doctor Dashboard

Figure 4.15 displays the medical staff dashboard where the doctor can view profile and view patient's appointments.
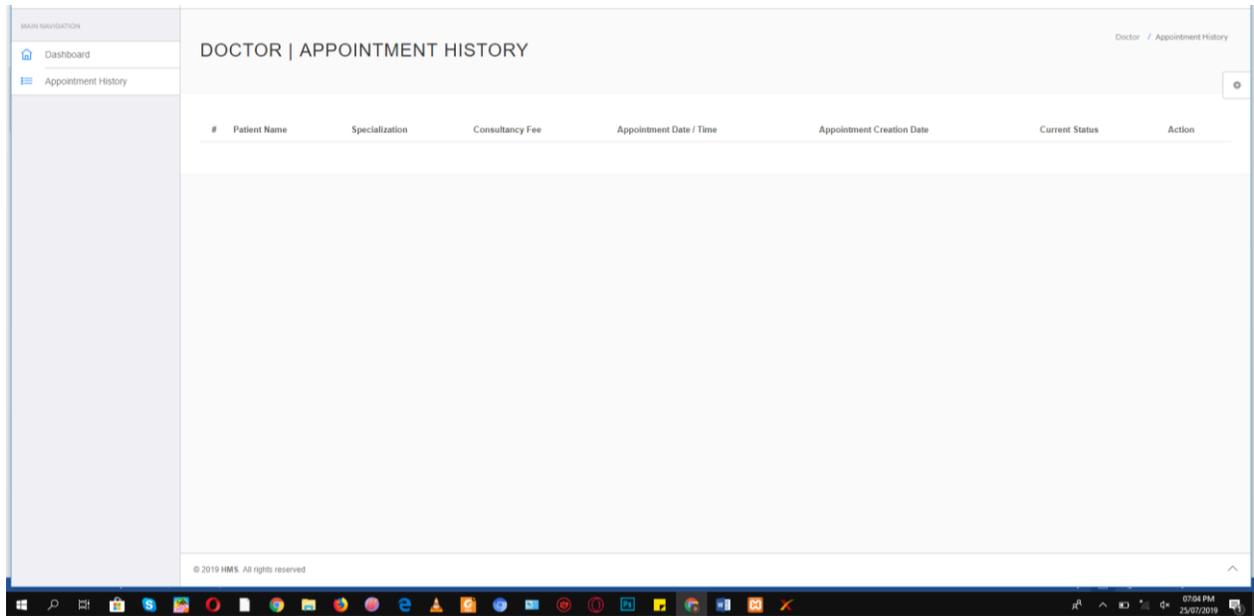
Figure 4.16 View patient's appointments

Figure 4.16 shows the viewing of patients' appointment which provides the patient name, specialization, date, and the action to perform on each patient.
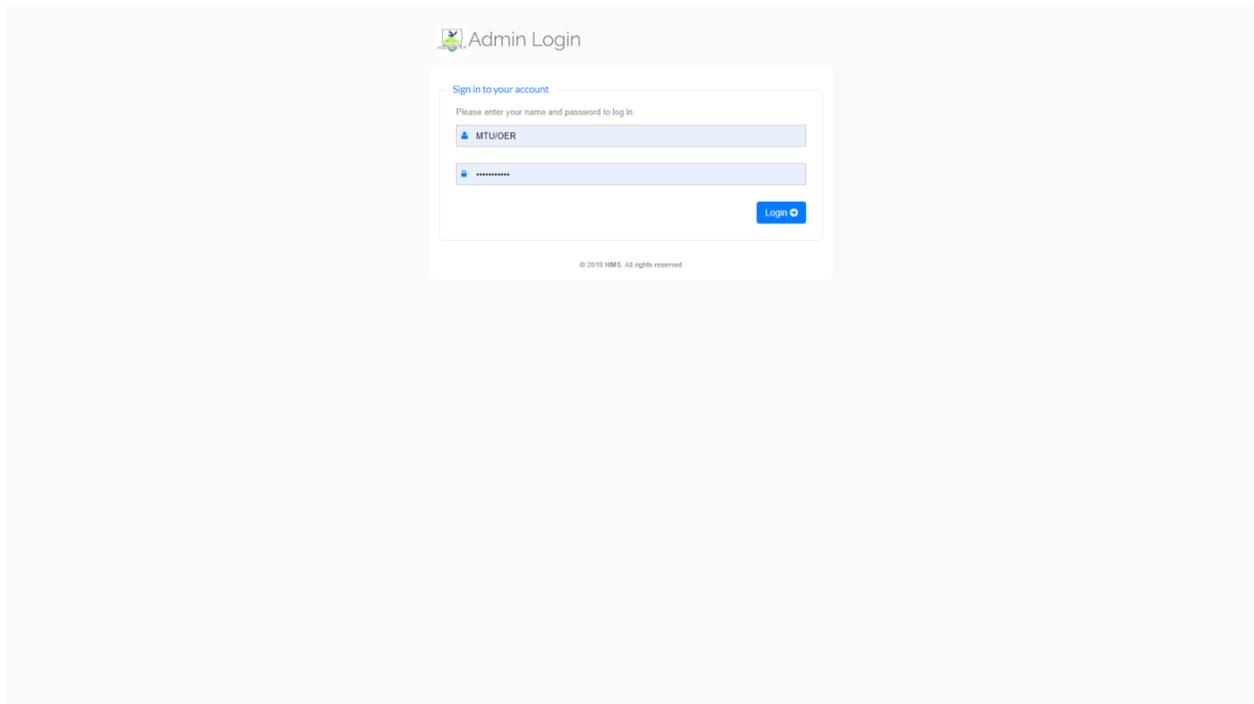
Figure 4.17 Admin login

Figure 4.17 shows the admin login page where the super user of the system who is also known as the Admin can have access to the admin dashboard.

CHAPTER FIVE

SUMMARY, RECOMMENDATION AND CONCLUSION

5.1 Summary

Having checked on the challenges experienced through the manual utilization of records keeping within the health center, this proposed system is accepted to assist kill the issues related with the manual strategy by the presentation of a web administration framework. This can make documentation more proficient and viable for serving the patient's way better and to have a more created way of carrying out healthcare operations. The healthcare administration framework includes astonishing values to the lives of both staff and patients because it helps in lessening of workload and decrease of information mistake. It can capture information, store, and see, include and erase records into the database when required. On the long run amid the advancement of this framework, a few challenges where experienced, a few of them incorporates it not being responsive on versatile and tablet gadgets, and the research facility and drug store highlights were not implemented.

5.2 Contribution to Knowledge

The main contribution of knowledge was the ability to implement an online hospital management system using the Laravel Framework. With the help of Laravel, the system is protected from serious security risks like cross-site request forgery, SQL injection, and cross-site scripting.

5.3 Limitation

  i.   The system is not user friendly on tablet and mobile devices
  ii.   Due to limited data, the laboratory, pharmacy, prescription and disease features of the system could not be implemented.

5.4 Recommendation for Further Study

It is suggested that health centres right now are still practicing the manual framework, they ought to switch to the electronic framework since it is more effective and less demanding to utilize. In addition, since the utilization of computers is developing quick all-inclusive, presenting the electronic framework will empower clinics fit into the current worldwide slant. The taking after are moreover recommended.

i. Other sorts of confirmation strategies (Single-factor, 2-factor, Multi-factor verification) can be utilized for securing healthcare administration systems.

ii. Other sorts of systems (AngularJS, Symfony, and ASP.NET) can be utilized in building online healthcare administration systems.

iii. Other sorts of database administration frameworks can be utilized by healthcare administration systems.

5.5 Conclusion

This project looks at the various problems associated with the existing system, which are improper documentation, loss and mismatch of patient's data, time wastage amongst others. With all these problems being critically analyzed, a solution was embarked on, to eliminate these problems. With the design of an online healthcare management system, such problems are considered to be eradicated. In conclusion, an online healthcare management system not only provides an opportunity to the health center enhance their patient care, but also can increase the profitability of the organization. Healthcare administrators would be able to significantly improve the operational control and thus streamline operations. This would improve the response time to the demands of patient care because it automates the process of collecting, collating and retrieving patient information.

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APPENDIX

```html
<!DOCTYPE HTML>
<html>
    <head>
            <title>Hospital Management System</title>
            <link href="css/style.css" rel="stylesheet" type="text/css"  media="all" />
            <link                 href='http://fonts.googleapis.com/css?family=Ropa+Sans'
    rel='stylesheet' type='text/css'>
            <link rel="stylesheet" href="css/responsiveslides.css">
            <script
    src="http://ajax.googleapis.com/ajax/libs/jquery/1.8.3/jquery.min.js"></script>
            <script src="js/responsiveslides.min.js"></script>
             <script>
               // You can also use "$(window).load(function() {"
                  $(function () {


                   // Slideshow 1
                   $("#slider1").responsiveSlides({
                    maxwidth: 1600,
                    speed: 600
                   });
                  });
               </script>
    </head>
    <body>
            <!--start-wrap-->

                <!--start-header-->
```

```html
<div class="header">
    <div class="wrap">
    <!--start-logo-->
    <div class="logo">
        <!-- <img src="images/crest.jpg" height="50px" width="50px"> -->

        <a href="index.html" style="font-size: 30px;">Hospital Management system</a>
    </div>
    <!--end-logo-->
    <!--start-top-nav-->
    <div class="top-nav">
        <ul>
            <li class="active"><a href="index.html">Home</a></li>
            <li><a href="contact.php">contact</a></li>
        </ul>
    </div>
    <div class="clear"> </div>
    <!--end-top-nav-->
</div>
<!--end-header-->
</div>
<div class="clear"> </div>
<!--start-image-slider---->
    <div class="image-slider">
        <!-- Slideshow 1 -->
        <ul class="rslides" id="slider1">
```

```html
            <li><img src="images/froont.jpg" alt=""></li>
            <li><img src="images/logo.jpg" alt=""></li>
            <li><img src="images/slider-image1.jpg" alt=""></li>
        </ul>

            <!-- Slideshow 2 -->

    </div>
```

-- Database: `hms`

-- Table structure for table `admin`

```sql
CREATE TABLE `admin` (
  `id` int(11) NOT NULL,
  `username` varchar(255) NOT NULL,
  `password` varchar(255) NOT NULL,
  `updationDate` varchar(255) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=latin1;
```

-- Dumping data for table `admin`

```sql
INSERT INTO `admin` (`id`, `username`, `password`, `updationDate`) VALUES

(1, 'admin', 'Test@12345', '28-12-2016 11:42:05 AM');
```

-- Table structure for table `appointment`

```sql
CREATE TABLE `appointment` (
  `id` int(11) NOT NULL,
  `doctorSpecialization` varchar(255) NOT NULL,
  `doctorId` int(11) NOT NULL,
  `userId` int(11) NOT NULL,
  `consultancyFees` int(11) NOT NULL,
  `appointmentDate` varchar(255) NOT NULL,
  `appointmentTime` varchar(255) NOT NULL,
  `postingDate` timestamp NOT NULL DEFAULT CURRENT_TIMESTAMP,
```

`userStatus` int(11) NOT NULL,

`doctorStatus` int(11) NOT NULL,

`updationDate` varchar(255) NOT NULL

) ENGINE=InnoDB DEFAULT CHARSET=latin1;

INSERT INTO `appointment` (`id`, `doctorSpecialization`, `doctorId`, `userId`, `consultancyFees`, `appointmentDate`, `appointmentTime`, `postingDate`, `userStatus`, `doctorStatus`, `updationDate`) VALUES

(1, 'Dentist', 1, 1, 500, '2016-12-31', '09:25', '2017-01-01 00:29:02', 1, 0, ''),

(2, 'Homeopath', 4, 5, 700, '2017-01-11', '14:10', '2017-01-07 08:02:58', 0, 1, '');

CREATE TABLE `doctors` (

`id` int(11) NOT NULL,

`specilization` varchar(255) NOT NULL,

`doctorName` varchar(255) NOT NULL,

`address` longtext NOT NULL,

`docFees` varchar(255) NOT NULL,

`contactno` bigint(11) NOT NULL,

`docEmail` varchar(255) NOT NULL,

`password` varchar(255) NOT NULL,

`creationDate` timestamp NOT NULL DEFAULT CURRENT_TIMESTAMP,

`updationDate` varchar(255) NOT NULL

) ENGINE=InnoDB DEFAULT CHARSET=latin1;

-- Dumping data for table `doctors`

INSERT INTO `doctors` (`id`, `specilization`, `doctorName`, `address`, `docFees`, `contactno`, `docEmail`, `password`, `creationDate`, `updationDate`) VALUES

(8, 'Girls', 'Dr akinwade', 'mountain top university', '', 8035955024, 'chinedu@gmail.com', '9b2628b5b0f2cf65cf83f01f9d4f136d', '2019-06-19 23:13:35', '');

-- Table structure for table `doctorslog`

--

```
CREATE TABLE `doctorslog` (

 `id` int(11) NOT NULL,

 `uid` int(11) NOT NULL,

 `username` varchar(255) NOT NULL,

 `userip` binary(16) NOT NULL,

 `loginTime` timestamp NOT NULL DEFAULT CURRENT_TIMESTAMP,

 `logout` varchar(255) NOT NULL,

 `status` int(11) NOT NULL

) ENGINE=InnoDB DEFAULT CHARSET=latin1;

INSERT INTO `doctorslog` (`id`, `uid`, `username`, `userip`, `loginTime`, `logout`, `status`)
       VALUES

(2, 0, 'admin', 0x3a3a310000000000000000000000000000, '2017-01-06 06:36:07', '', 0),

(6, 0, 'admin', 0x3a3a310000000000000000000000000000, '2017-01-06 07:07:12', '', 0),

(10, 8, 'chinedu@gmail.com', 0x3a3a310000000000000000000000000000, '2019-06-19 23:14:19',
       '', 1),

(11, 0, 'sola@gmail.com', 0x3a3a310000000000000000000000000000, '2019-06-21 07:09:50', '', 0),

(12, 0, 'chinedu@gmail.com', 0x3a3a310000000000000000000000000000, '2019-06-22 18:57:28',
       '', 0),

(13, 8, 'chinedu@gmail.com', 0x3a3a310000000000000000000000000000, '2019-06-22 18:57:42',
       '', 1);

-- Table structure for table `doctorspecilization`

CREATE TABLE `doctorspecilization` (

 `id` int(11) NOT NULL,

 `specilization` varchar(255) NOT NULL,

 `creationDate` timestamp NOT NULL DEFAULT CURRENT_TIMESTAMP,

 `updationDate` varchar(255) NOT NULL

) ENGINE=InnoDB DEFAULT CHARSET=latin1;

-- Dumping data for table `doctorspecilization`
```

INSERT INTO `doctorspecilization` (`id`, `specilization`, `creationDate`, `updationDate`) VALUES

(11, 'Girls', '2019-06-19 23:12:09', '');

-- Table structure for table `userlog`

CREATE TABLE `userlog` (

 `id` int(11) NOT NULL,

 `uid` int(11) NOT NULL,

 `username` varchar(255) NOT NULL,

 `userip` binary(16) NOT NULL,

 `loginTime` timestamp NOT NULL DEFAULT CURRENT_TIMESTAMP,

 `logout` varchar(255) NOT NULL,

 `status` int(11) NOT NULL

) ENGINE=InnoDB DEFAULT CHARSET=latin1;

-- Dumping data for table `userlog`

INSERT INTO `userlog` (`id`, `uid`, `username`, `userip`, `loginTime`, `logout`, `status`) VALUES

(8, 0, 'admin', 0x3a3a3100000000000000000000000000, '2017-01-06 07:07:41', '06-01-2017 12:38:09 PM', 0),

(11, 2, 'test@gmail.com', 0x3a3a3100000000000000000000000000, '2017-01-07 07:57:18', '07-01-2017 01:27:34 PM', 1),

(12, 0, 'asdad', 0x3a3a3100000000000000000000000000, '2017-01-07 07:57:44', '', 0),

(15, 0, 'sola@gmail.com', 0x3a3a3100000000000000000000000000, '2019-06-19 23:09:05', '', 0),

(16, 6, 'praise@gmail.com', 0x3a3a3100000000000000000000000000, '2019-06-19 23:15:44', '', 1),

(17, 0, 'praise@gmail.com', 0x3a3a3100000000000000000000000000, '2019-06-21 07:20:23', '', 0),

(18, 0, 'praise@gmail.com', 0x3a3a3100000000000000000000000000, '2019-06-21 07:20:40', '', 0),

(19, 6, 'praise@gmail.com', 0x3a3a3100000000000000000000000000, '2019-06-22 18:49:02', '', 1),

(20, 0, 'nicolaschinedu@yahoo.com', 0x3a3a310000000000000000000000000000, '2019-06-23 16:29:03', '', 0),

(21, 0, 'nicolaschinedu@yahoo.com', 0x3a3a310000000000000000000000000000, '2019-06-23 17:08:16', '', 0),

(22, 0, 'admin', 0x3a3a310000000000000000000000000000, '2019-06-23 17:08:21', '', 0),

(23, 0, 'admin', 0x3a3a310000000000000000000000000000, '2019-06-23 17:10:48', '', 0),

(24, 0, 'praise@gmail.com', 0x3a3a310000000000000000000000000000, '2019-06-23 17:12:28', '', 0),

(25, 0, 'praise@gmail.com', 0x3a3a310000000000000000000000000000, '2019-06-23 17:12:40', '', 0);

CREATE TABLE `users` (

 `id` int(11) NOT NULL,

 `fullName` varchar(255) NOT NULL,

 `address` longtext NOT NULL,

 `city` varchar(255) NOT NULL,

 `gender` varchar(255) NOT NULL,

 `email` varchar(255) NOT NULL,

 `password` varchar(255) NOT NULL,

 `regDate` timestamp NOT NULL DEFAULT CURRENT_TIMESTAMP,

 `updationDate` varchar(255) NOT NULL

) ENGINE=InnoDB DEFAULT CHARSET=latin1;

INSERT INTO `users` (`id`, `fullName`, `address`, `city`, `gender`, `email`, `password`, `regDate`, `updationDate`) VALUES

(6, 'Praise', 'mountain top university', 'lagos', 'female', 'praise@gmail.com', 'dc647eb65e6711e155375218212b3964', '2019-06-19 23:15:27', '');

-- AUTO_INCREMENT for table `admin`

ALTER TABLE `admin`

 MODIFY `id` int(11) NOT NULL AUTO_INCREMENT, AUTO_INCREMENT=2;

-- AUTO_INCREMENT for table `appointment`

```
ALTER TABLE `appointment`

  MODIFY `id` int(11) NOT NULL AUTO_INCREMENT, AUTO_INCREMENT=3;

AUTO_INCREMENT for table `doctors`

ALTER TABLE `doctors`

  MODIFY `id` int(11) NOT NULL AUTO_INCREMENT, AUTO_INCREMENT=9;

-- AUTO_INCREMENT for table `doctorslog`

ALTER TABLE `doctorslog`

  MODIFY `id` int(11) NOT NULL AUTO_INCREMENT, AUTO_INCREMENT=14;

-- AUTO_INCREMENT for table `doctorspecilization`

ALTER TABLE `doctorspecilization`

  MODIFY `id` int(11) NOT NULL AUTO_INCREMENT, AUTO_INCREMENT=12;

-- AUTO_INCREMENT for table `userlog`

ALTER TABLE `userlog`

  MODIFY `id` int(11) NOT NULL AUTO_INCREMENT, AUTO_INCREMENT=26;

-- AUTO_INCREMENT for table `users`

ALTER TABLE `users`

  MODIFY `id` int(11) NOT NULL AUTO_INCREMENT, AUTO_INCREMENT=7;

/*!40101 SET CHARACTER_SET_CLIENT=@OLD_CHARACTER_SET_CLIENT */;

/*!40101 SET CHARACTER_SET_RESULTS=@OLD_CHARACTER_SET_RESULTS */;

/*!40101 SET COLLATION_CONNECTION=@OLD_COLLATION_CONNECTION */;

<?php

session_start();

error_reporting(0);

include("include/config.php");

if(isset($_POST['submit']))

{

$ret=mysqli_query($con,"SELECT * FROM users WHERE email='".$_POST['username']."' and
        password='".md5($_POST['password'])."'");
```

```php
$num=mysqli_fetch_array($ret);

if($num>0)

{

$extra="dashboard.php";//

$_SESSION['login']=$_POST['username'];

$_SESSION['id']=$num['id'];

$host=$_SERVER['HTTP_HOST'];

$uip=$_SERVER['REMOTE_ADDR'];

$status=1;

// For stroing log if user login successfull

$log=mysqli_query($con,"insert                into                userlog(uid,username,userip,status)
        values('".$_SESSION['id']."','".$_SESSION['login']."','$uip','$status')");

$uri=rtrim(dirname($_SERVER['PHP_SELF']),'/\\');

header("location:http://$host$uri/$extra");

exit();

}

else

{

        // For stroing log if user login unsuccessfull

$_SESSION['login']=$_POST['username'];

$uip=$_SERVER['REMOTE_ADDR'];

$status=0;

mysqli_query($con,"insert                     into                     userlog(username,userip,status)
        values('".$_SESSION['login']."','$uip','$status')");

$_SESSION['errmsg']="Invalid username or password";

$extra="user-login.php";

$host  = $_SERVER['HTTP_HOST'];

$uri  = rtrim(dirname($_SERVER['PHP_SELF']),'/\\');
```

```php
header("location:http://$host$uri/$extra");

exit();

}

}

?>
```

```html
<!DOCTYPE html>

<html lang="en">

        <head>

                <title>User-Login</title>

                <meta charset="utf-8" />

                <meta name="viewport" content="width=device-width, initial-scale=1.0, user-scalable=0, minimum-scale=1.0, maximum-scale=1.0">

                <meta name="apple-mobile-web-app-capable" content="yes">

                <meta name="apple-mobile-web-app-status-bar-style" content="black">

                <meta content="" name="description" />

                <meta content="" name="author" />

                <link href="http://fonts.googleapis.com/css?family=Lato:300,400,400italic,600,700|Raleway:300,400,500,600,700|Crete+Round:400italic" rel="stylesheet" type="text/css" />

                <link rel="stylesheet" href="vendor/bootstrap/css/bootstrap.min.css">

                <link rel="stylesheet" href="vendor/fontawesome/css/font-awesome.min.css">

                <link rel="stylesheet" href="vendor/themify-icons/themify-icons.min.css">

                <link href="vendor/animate.css/animate.min.css" rel="stylesheet" media="screen">

                <link href="vendor/perfect-scrollbar/perfect-scrollbar.min.css" rel="stylesheet" media="screen">

                <link href="vendor/switchery/switchery.min.css" rel="stylesheet" media="screen">

                <link rel="stylesheet" href="assets/css/styles.css">
```

```html
<link rel="stylesheet" href="assets/css/plugins.css">

<link rel="stylesheet" href="assets/css/themes/theme-1.css" id="skin_color" />

</head>

<body class="login">

        <div class="row">

            <div class="main-login col-xs-10 col-xs-offset-1 col-sm-8 col-sm-offset-2 col-md-4 col-md-offset-4">

                <div class="logo margin-top-30">

                    <a href="../index.html"> <h2> <img src="../images/crest.jpg" height="50px" width="50px"> HMS | Patient Login</h2></a>

                </div>


                <div class="box-login">

                    <form class="form-login" method="post">

                        <fieldset>

                            <legend>

                                Sign in to your account

                            </legend>

                            <p>

                                Please enter your name and password to log in.<br />

                                <span style="color:red;"><?php echo $_SESSION['errmsg']; ?><?php echo $_SESSION['errmsg']="";?></span>

                            </p>

                            <div class="form-group">

                                <span class="input-icon">

                                    <input type="text" class="form-control" name="username" placeholder="Username">
```

```
                                                            <i    class="fa    fa-user"></i>
</span>
                                        </div>
                                        <div class="form-group form-actions">
                                            <span class="input-icon">
                                                <input          type="password"
class="form-control password" name="password" placeholder="Password">
                                                <i class="fa fa-lock"></i>
                                            </span>
                                        </div>
                                        <div class="form-actions">


                                            <button   type="submit"   class="btn
btn-primary pull-right" name="submit">
                                                Login <i class="fa fa-arrow-
circle-right"></i>

                                            </button>
                                        </div>
                                        <div class="new-account">
                                            Don't have an account yet?
                                            <a href="registration.php">
                                                Create an account
                                            </a>
                                        </div>
                                    </fieldset>
                                </form>


                            <div class="copyright">
```

© HMS. All rights reserved

</div>

</div>

</div>

</div>

```html
<script src="vendor/jquery/jquery.min.js"></script>

<script src="vendor/bootstrap/js/bootstrap.min.js"></script>

<script src="vendor/modernizr/modernizr.js"></script>

<script src="vendor/jquery-cookie/jquery.cookie.js"></script>

<script src="vendor/perfect-scrollbar/perfect-scrollbar.min.js"></script>

<script src="vendor/switchery/switchery.min.js"></script>

<script src="vendor/jquery-validation/jquery.validate.min.js"></script>


<script src="assets/js/main.js"></script>


<script src="assets/js/login.js"></script>
<script>

    jQuery(document).ready(function() {

            Main.init();

            Login.init();

    });

</script>
</body><!-- end: BODY --></html>
```