A Project Report on

# AI Based Healthcare Management System

Submitted in partial fulfillment of the requirements for the award
of the degree of

## Bachelor of Engineering

in

## Information Technology

by

**Pranav Iyer (16104002)**
**Shefali Rane (16104003)**
**Bhaskar Khekale (16104026)**

Under the Guidance of

**Mrs.Rujata Chaudhari**
**Mrs.Geetanjali Kalme**



**Department of Information Technology**
NBA Accredited
A.P. Shah Institute of Technology
G.B.Road,Kasarvadavli, Thane(W), Mumbai-400615
UNIVERSITY OF MUMBAI

**Academic Year 2020-2021**

# Approval Sheet

This Project Report entitled **"AI Based Healthcare Management System"** Submitted by **"Pranav Iyer(16104002),"Shefali Rane(16104003)","Bhaskar Khekale"(16104026)** is approved for the partial fulfillment of the requirement for the award of the degree of **Bachelor of Engineering** in **Information Technology** from **University of Mumbai**.

Mrs.Geetanjali Kalme                                     Mrs.Rujata Chaudhari
Co-Guide                                                            Guide

Prof. Kiran Deshpande
Head Department of Information Technology

Place: A.P. Shah Institute of Technology, Thane
Date:

# CERTIFICATE

This is to certify that the project entitled *"AI Based Healthcare Management System"* submitted by *"Pranav Iyer"(16104002) ,"Shefali Rane" (16104003),"Bhaskar Khekale" (16104026)* for the partial fulfillment of the requirement for award of a degree **Bachelor of Engineering** in **Information Technology**,to the University of Mumbai,is a bonafide work carried out during academic year 2020-2021.

Mrs.Geetanjali Kalme                                    Mrs.Rujata Chaudhari
Co-Guide                                                        Guide

Prof. Kiran Deshpande                                  Dr. Uttam D.Kolekar
Head Department of Information Technology              Principal

External Examiner(s)

1.

2.

Place:A.P.Shah Institute of Technology, Thane
Date:

# Declaration

We declare that this written submission represents our ideas in our own words and where others' ideas or words have been included, We have adequately cited and referenced the original sources. We also declare that We have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in our submission. We understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

_____

(Signature)
(Pranav Iyer 16104002)

_____

(Signature)
(Shefali Rane 16104003)

_____

(Signature)
(Bhaskar Khekale 16104026)

Date:

# Acknowledgement

**Pranav Iyer**
**16104002**

**Shefali Rane**
**16104003**

**Bhaskar Khekale**
**16104026**

**Abstract**

When the patient goes under treatment the schedule or appointment data can be handled by Doctor for the particular patient. Application gives the Doctor the comfort to manage schedules of his/her patients.It is Mainly focused on helping the local medical clinics who still use the traditional way of managing data.This application has an efficient way of accessing the medical records through an online platform. It also eliminates the need of a local database by making use of a centrally accessible cloud server. This system is aimed at developing a set of modules which can facilitate the diagnosis for the doctors through tele-monitoring of patients.This project deals with the management aspect for the local clinics.This project is very helpful to both Medical staff as well as to the public. We have also considered the privacy and security aspects of the system keeping the provision of authority for patients to access the data as well as the possible threats to the system.The purpose of the project entitled as "AI Based Heathcare Management System" is to computerize the Front Office Management of Hospital to develop software which is user friendly simple, fast, and cost – effective. It deals with the collection of patient's information like add patient, update patient, delete patient, search patient, view patient diagnosis, etc. Traditionally, it was done manually. The main function of the system is register and store patient details and doctor details and retrieve these details as and when required

# Contents

# List of Figures

# List of Abbreviations

**DR:** Doctor

**HMS:** Healthcare Management System

**AWS:** Amazon Web Services

**AI:** Artificial Intelligence

# Chapter 1

# Introduction

In the current existing system all the patients details, doctor availability details, details regarding the tests undergone by the patients, the medicines prescribed by the doctor is maintained manually by the receptionist on some random notebook. If a patient has to visit the Dr, they need to check the availability of the doctor by constantly calling their clinic, which consumes lot of time if done manually. If because of some particular reason any damage happens to those notebooks, then the information regarding all those patients will be destroyed either completely or it wont be sustainable due to the damages incurred.

It symbolizes all the needs and the requirements for the clinic to achieve a quality that is desired for the application and it contains information for the development team to design the application. The growing quality demand in the healthcare sector makes it necessary to exploit the whole potential of stored data efficiently, in order to improve the care given to the patients. Our proposed system is aimed at developing a solution where the proposed application will help Doctors running a local clinic in a better way. To provide a better way to store patients medical data can help in better functioning of a clinic.This project deals with the Medical Management. This project is aimed in helping both Doctors as well as to the general public. It is mainly focused on building a platform which can be accessed by the patients with the help of a device which has an internet connection. If any Doctor wants to check the details regarding their patients last visit, then all they have to do is take a quick glance through the patients profile in the application.

The growing quality demand in the medical sector makes it necessary to exploit the whole potential of stored data efficiently, not only the clinical data, in order to improve diagnoses and treatments, but also on management, in order to improve the care given to the patients and manage the data in an efficient manner. The use of Cloud Server in order to store the data efficiently in an organized way is an important aspect of this proposed application.Cloud computing is an innovative technology that gives users with on-demand access to a shared pool of configurable computing resources, like servers, storage, and applications. The topic of cloud servers has attracted a wide range of researchers in the domain of healthcare. Two major streams of existing literature may be ascertained in analysis.The first stream has focused on the data security and/or privacy challenges for the use of cloud servers in healthcare. The AI Based Healthcare Management System can be entered using a username and password.The interface is very user-friendly. The data are well protected for personal use and makes the data processing very fast.AI Based Healthcare Management System is powerful,

flexible, and easy to use and is designed and developed to deliver real conceivable benefits to hospitals.AI Based Healthcare Management System is a software product suite designed to improve the quality and management of hospital management in the areas of clinical process analysis and activity-based costing. AI Based Healthcare Management System enables you to develop your organization and improve its effectiveness and quality of work. Managing the key processes efficiently is critical to the success of the hospital helps you manage your processes.

The AI Based Healthcare Management System feature list is concentrated on providing the smooth experience of patients, staff and hospital authorities. It might seem that their expectations differ, they still are covered by components of the hospital information system. Quality and security still remain the main criteria of the medical industry. It is also known for the constant and rapid changes to improve the efficiency of medical services and satisfaction of the patients. Hospital management has greatly changed over the last decades. Business expertise, modern technologies, connected devices, mobile apps, and knowledge of healthcare are key elements for the implementation of hospital management system project. The number of healthcare providers has increased and the patients have a wide choice of medical specialists. The interactions between the hospital and the patient can be simplified for the convenience of both sides. Each institution has the opportunity to create the efficient, clear and fast delivering healthcare model

The implementation of AI Based Healthcare Management System project provides the institution with different advantages that improve the service quality and efficiency. As mentioned above it is created for three groups of users: patients, doctors and admin. The interaction between them conveys the general performance. The benefits received by a certain group of users also positively influence the work of the others.The hospital database includes all the necessary patient data. The disease history, test results, prescribed treatment can be accessed by doctors without much delay in order to make an accurate diagnosis and monitor the patient's health. It enables lower risks of mistakes.

Also We have used Artificial Intelligence in this portal with the help of a Chatbot which addresses the common queries of the patients resulting in faster resolution.Thus we have tried to include as many as possible technologies in this portal so as to enhance the experience of the user.

## 1.1 Scope

- In the current existing system the patient details, doctor availability details , tests undergone , medicines prescribed by the doctor is maintained manually by the receptionist in some random notebook.

- This particular proposed system is aimed at developing a solution where the platform will help the Doctors to run their clinics in a better way .

## 1.2 Objectives

- To store the patient medical records in a better and organized manner for future references.There won't be a need to store data in the manual form as everything will be stored as electronic records.

- To fetch the data on local database will become very tedious to manage, hence making use of a cloud server.

- To implement the use of Chatbot to make the portal more enhanced.

- Use of multilingual system for better user understanding.

# Chapter 2

# Literature Review

| 1. | Title : | The Meaningful Use Of Cloud Computing In Healthcare. |
|---|---|---|
| | **Author and Publisher :** | Fangjian Gao,Scott Thiebes, Prof. Dr. Robert O. Briggs. Journal of Medical Internet Research. 2018. |
| | **Description :** | With its unique IT service paradigm, cloud computing can enhance traditional health IT approaches. Cloud computing provides three service models: infrastructure as a service (IaaS), platform as a service (PaaS), and software as a service (SaaS) (Mell, Grance 2011). Cloud computing can deliver either fundamental IT resources (through IaaS), IT platforms with programming languages, tools, and/or libraries for the software development or deployment (through PaaS), or ready-to-use software applications that run on cloud infrastructure (SaaS) to healthcare organizations. Moreover, cloud computing relies on four deployment models (i.e., public; private; community; hybrid) to provide IT infrastructure that enables service delivery. In a public cloud, the cloud computing service infrastructure is provided for open use by the general public, while the infrastructure of a private or community cloud is provisioned for the exclusive use of either a single organization or a specific group of organizations. A hybrid cloud is a combination of two or more of the aforementioned deployment models. |

Figure 2.1: Paper 1

| 2. | Title : | Cloud-Implementation of E-Healthcare Framework. |
| --- | --- | --- |
| | Author and Publisher : | R. Vignesh, K.Mohana Prasad. International Journal of Recent Technology and Engineering (IJRTE). Year: 2019 |
| | Description : | Healthcare Systems are gaining ground around the world, seeking to provide viable and affordable healthcare to all sections of society. With the recent advancements in the Information and Communication Technology (ICT) around the globe, the Healthcare Frameworks can be made more robust with the use of more novel techniques and modern-day technologies. With the rise of Mobile Cloud Computing resources and easy availability of smartphones and net services, a proposed framework referred to as "Cloud Implementation of E-Healthcare Framework" built upon a Cloud Framework authenticated by personal biometrics would allow the agencies at work to store a patient's credentials and medical history on the Cloud which will then be accessible throughout the network which will be a significant shift from the Paper-Based Record System as well as the new and more modern Electronic-Based Record Systems. Our proposed framework is expected to enhance administrative machinery in Healthcare agencies, a more robust data frame to store patient's credentials and also time-saving procedures to provide the necessary treatment to the patient. |

Figure 2.2: Paper 2

| 3. | Title : | Study of challenges to utilise mobile based health care monitoring systems |
|---|---|---|
| | Author and Publisher : | Seyed Mohammad Ayyoubzadeh<br>Publisher: Journal of Telemedicine and Telecare.<br>Year: 2018 |
| | Description : | Mobile health encompasses remote and wireless applications to provide health services. Despite the advantages of applying mobile-based monitoring systems, there are challenges and limitations; understanding the challenges may assist in identifying available solutions and optimising decision-making to apply mHealth technologies more practically. This study aimed to investigate the main challenges related to mHealth-based systems for health monitoring purposes. This review was carried out through investigation of English evidence from four databases, including Scopus, PubMed, Embase, and Web of Science, using a defined search strategy from 2013 to 2017. Two independent researchers reviewed the results based on PRISMA guidelines, and data was categorised using a bottom-up approach to reach a framework for the most general challenges. Among the 105 papers obtained, eight works were selected. The revealed challenges were categorised into six main branches across a tree (with 55 nodes, four levels) including user related, infrastructure, process, management, resource and training challenges. Identifying the resolvable and preventable challenges, such as those related to training, design might play a crucial role in preventing loss of resources and in growing the success rate of a project, particularly if considered in national level projects. |

Figure 2.3: Paper 3

| 4. | Title : | eHealth Cloud Security Challenges: A Survey. |
|---|---|---|
| | Author and Publisher : | Yazan Al-Issa, Mohammad Ashraf Ottom, Ahmed Tamrawi. Publisher: Journal of Healthcare Engineering. Year: 2019 |
| | Description : | Computer security is a growing field in computer science that focuses on protecting computer systems and electronic data against unauthorized access, hardware theft, data manipulation, and against common threats and exposures such as backdoors, denial-of-service (DoS) attacks, and phishing. The objective of applying computer security measures is to attain protection of valuable data and system resources; securing system resources includes protection of a computer system hardware and software, whereas data security is more concerned with protecting data that are stored or transmitted between computer systems, as well as cloud systems. Privacy on the other hand is considered as one of the main objectives of security; it enforces certain rules and principles that regulate to what extent data about individuals or groups can be accessed, gathered, or transmitted to a second or third party. Data ownership is more related to data privacy rather than data security. Privacy could be claimed as a moral right for individuals and groups when using information systems, whereas computer security is not a moral right in itself. |

Figure 2.4: Paper 4

| 5. | Title : | Security and privacy issues in e-health cloud-based system: A comprehensive content analysis. |
|---|---|---|
| | Author and Publisher : | Nureni Ayofe Azeez, Charles Van Der Vyyer. Publisher: Science Direct. Year: 2018 |
| | Description : | The recent advancement in Information and Communication Technology (ICT) has undoubtedly improved services in all sectors in the world. Specifically, Information Technology (IT) has led to a very vital innovation in health sector called electronic health (e-Health). In order to optimize full and excellent benefits of this innovation, its implementation in a cloud-based environment is important. However, with noticeable and numerous benefits inherent from e-Health in a cloud computing, its full utilization is still being hampered by challenges of security and privacy. In this paper, we focused on extensive review of current and existing literature's of various approaches and mechanisms being used to handle security and privacy related matters in e-Health. Strengths and weaknesses of some of these approaches were enunciated. |

Figure 2.5: Paper 5

# Chapter 3

# Proposed System

## Existing System Architecture

Integration of Medicare facilities on a technological basis is very difficult because they have different branches. In local clinics, the existing systems provide the basic functionalities needed to be handled in a medical clinic management environment. There is no use of software technology in such cases.

In the existing system all the patients details, doctor availability details and regarding the tests done to the patients prescribed by the doctor is maintained manually by the receptionist on some random notebook. If a patient has to visit the Dr, they need to check the availability of the doctor by constantly calling their clinic, which consumes lot of time if done manually.

- Room Reservations, Doctor Appointment Schedules, Operation Schedules, and Medicine indentation information is very difficult to maintain and share among the different Medicare Centers.

- It is very difficult to analyze the usage percentage of hospital resources, Bed occupation Ratio, Administration, Laboratory information even in a single center. Then we can expect the complexity while integrating multi-specialty Medicare Centers.

- In the existing system the data required for the Hospital management is maintained in records. These are to be updated according to the requirements of the customer. It takes time to search for the required data. All the details regarding the hospitals and its timings are hard to maintain.

- **Other difficulties such as:**

    - Time-consuming task.
    - Lots of paper work that can be lost.
    - Data storage requires large office spaces.
    - Lack of security for the records.

    and so on.

9

Existing system refers to the system that is being followed till now. Presently all the hospital functionalities are done manually. There needs to be an upgrade in the healthcare department too as there are technological advancements in other fields.

# Proposed System Architecture

The proposed system that we are going to deploy here is to speed-up the database response by using a Cloud Server platform rather than a local database and to reduce the time complexity by using multi-user environment. Because of this multi user environment we can reduce the burden on single person.

The proposed system is a solution to solve this problem, an internet based platform which will store the patients information in an organized manner. Patients information will be stored in his/her profile, whatever was discussed with the Dr during their appointment can be fetched through their profile, whether or not they were advised to follow certain diet, whether they were supposed to do certain exercises, medicine routine they were told to follow, everything can be tracked using this platform. If any Doctor wants to check the details regarding their patients last visit, then all they have to do is take a quick glance through the patients profile in the application.
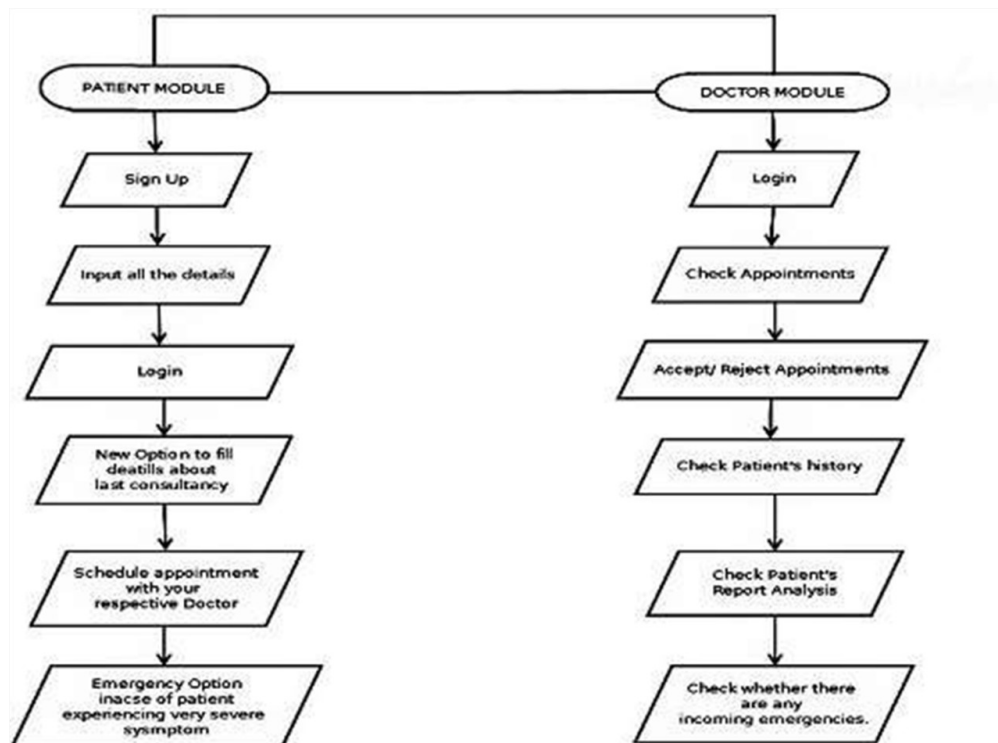


Figure 3.1: Proposed System Architecture

The modules of this architecture are as follows:

- **Doctor's Module**
  This will hold the details of the patient problem . He has to follow the schedules given by head of the department. He can take a look at his patients record and decide the course of the next treatment. In this module he can display whether the clinic is empty or crowded in order to keep the clinic less crowded and avoid transmission of diseases.He can also see the upcoming or last appointments. He can prescribe medicines to the patients and get the PDF copy of the same.

- **Patient's Module:**
  Consultation holds the details of the patient's history. Details of the physical examination, the diagnosis, medication details the details of the diet / exercise the patients have to follow. This gives the records in detail of patient medical history visit wise. This helps to go through easily the patient medical records. In this module user can register and edit his/her profiles. Patients could keep a track of the medicine routine which they were advised to follow by the Doctor on their previous scheduled appointment visits.He can see the upcoming or last appointments. He can also see the prescribed medicines, bill amount and get the PDF copy of the same.

- **Admin Module:**
  In this module admin maintains the Patient records and Doctors schedule and only has the permission to delete or modify the patient or doctors records, to deal with password resetting, etc.

User can search about the doctor whether they are available or not and the details of a patient. The AI Based Healthcare Management System can be entered using a username and password. If any Doctor wants to check the details regarding their patients last visit, then all they have to do is take a quick glance through the patients profile in the application. The use of Cloud Server in order to store the data efficiently in an organized way is an important aspect of this proposed application.

We have also used a chatbot in this portal to enhance the User Interface and to solve the common queries of the users.Thus making the use of Artificial Intelligence in this project.

To implement our system, we are using a basic technological stack of:

1.Languages: PHP, Java Script, HTML,CSS,Bootstrap.These languages will be used to develop the necessary modules which are required in order to build the proposed application system.

2. Chatbot : Python.It is used to build a AI enabled chatbot for UI enhancement.

3. Cloud : AWS Cloud server, NGrok.

Aws is a web service that provides secure, resizable compute capacity in the cloud.Aws uses server chipsets and storage servers to offer tailor-made data centre in order to provide secure storage facilities. With the help of Cloud Drive, the information which will be fetched through the Dr and patient module will be uploaded and organized via a user friendly interface. The data from Dr, patient modules will be uploaded to this server which can be organized in an efficient manner.

4. Multilingualism : NLP Through this we can make use of multiple languages for better user understanding.

While using AI we have implemented chatbot by using Rasa a NLU oriented bot.It was coded by using Pycharm.
Chatbots need to have a basic foundation of natural language processing, learning and understanding. This extends to interpreting user intent, developing domain-specific language and improving their functionality to adapt and change based on the specifics of any conversation. As the chatbot novelty wears off and users become more demanding of operational ability, adaptability will become increasingly important. Following are the Snapshots of AI chatbot which was coded in Pycharm and the chatbot was built with Rasa X which is a NLU i.e (Natural Language Understanding) oriented chatbot platform.
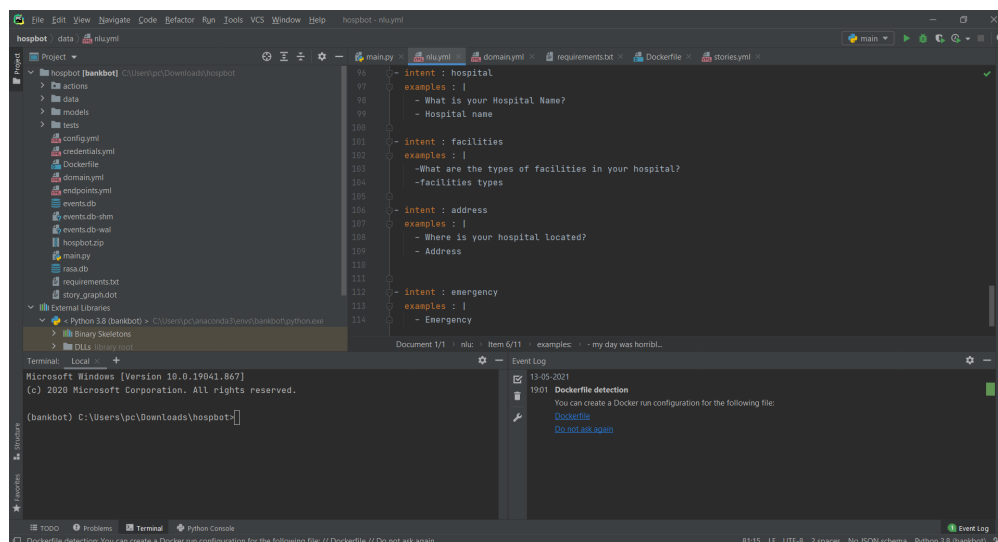


Figure 3.2: Natural Language Understanding File
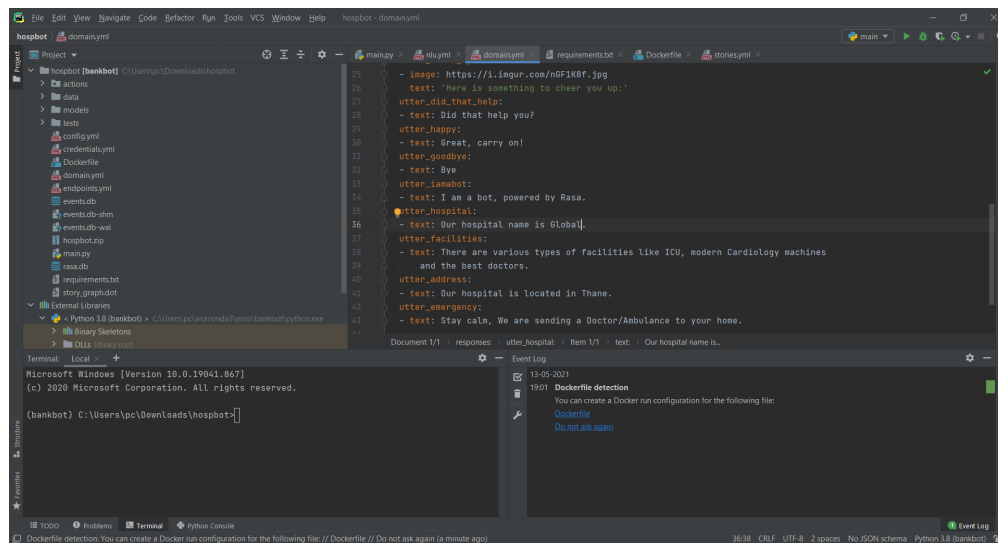
Figure 3.3: Domain File
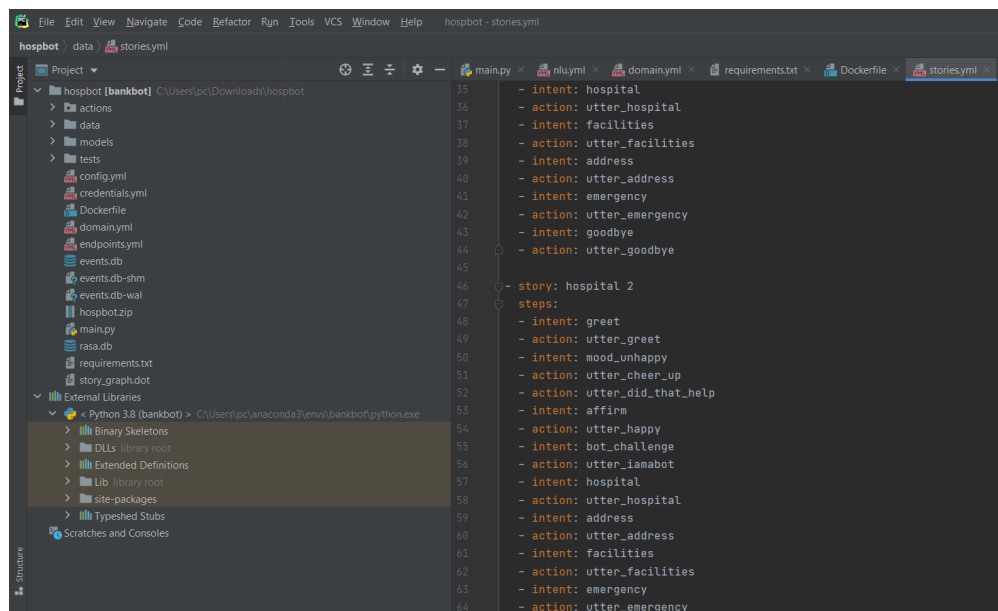


Figure 3.4: Stories File

# Chapter 4

# Project Design

## 4.1   Use-Case Diagram

Here,in the diagram, We have shown the 3 modules which are present in our project i.e Doctor, Patient and Admin. We have shown the relations between their functions in this Use-case diagram.
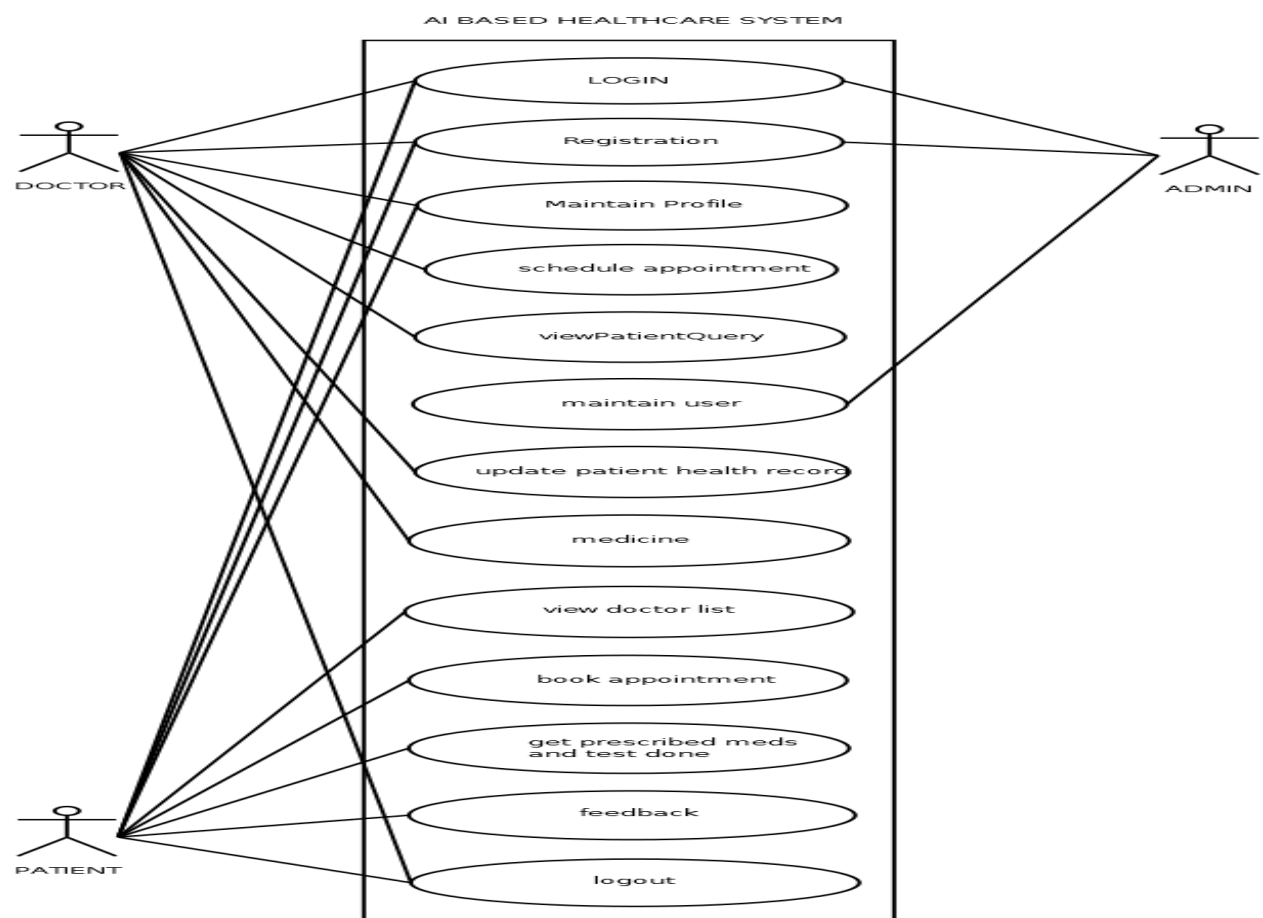


Figure 4.1: Use-Case Diagram

## 4.2 Activity Diagram

Here,in the Activity diagram, We have shown the step wise activity which users are able to perform from start to end. Starting from registration, logging in, booking an appointment till the end everything is represented in this Activity Diagram.
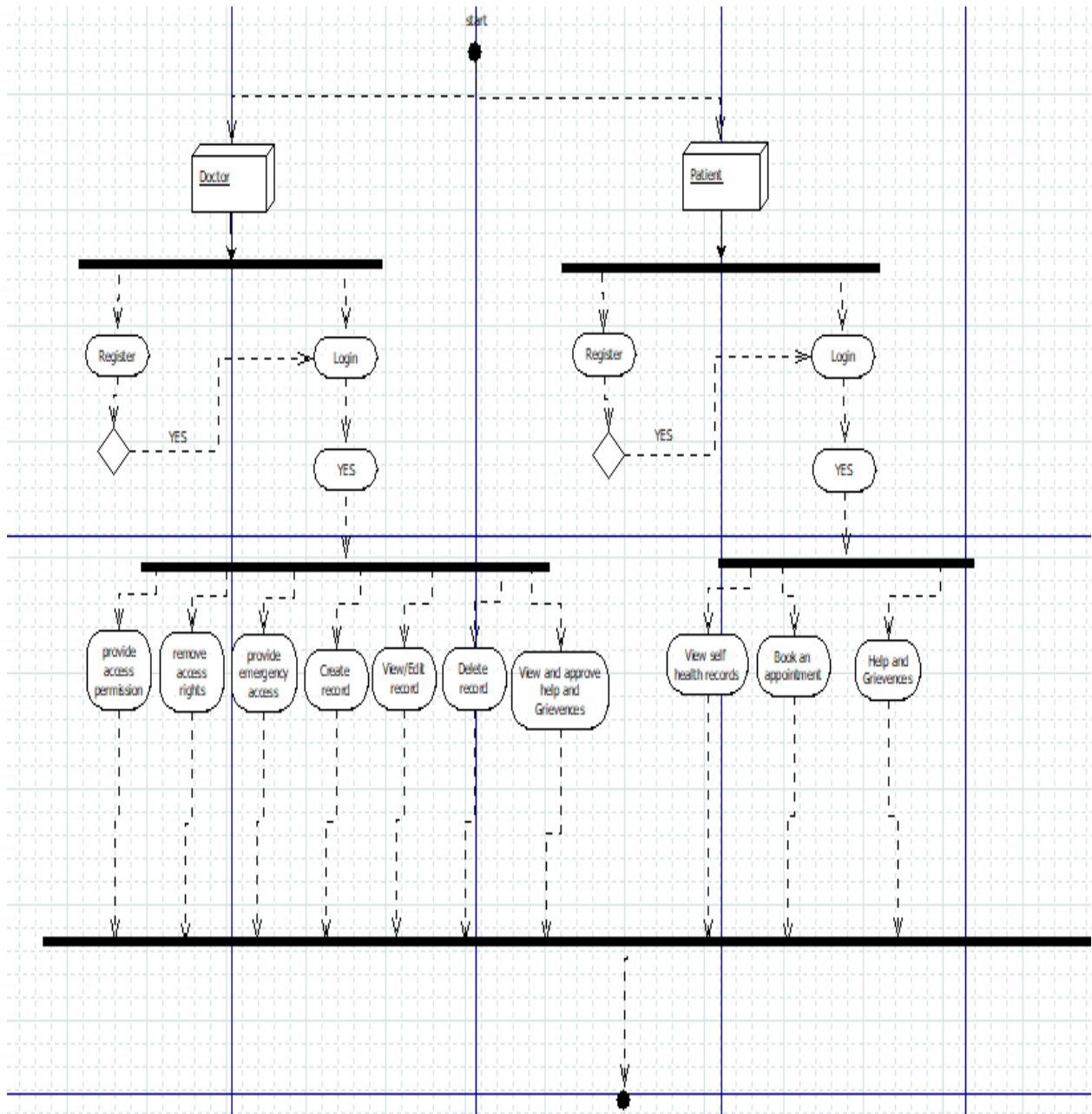


Figure 4.2: Activity Diagram

## 4.3   Class Diagram

This depicts the class diagram for this project which consists of various scripts, their attributes and their methods.
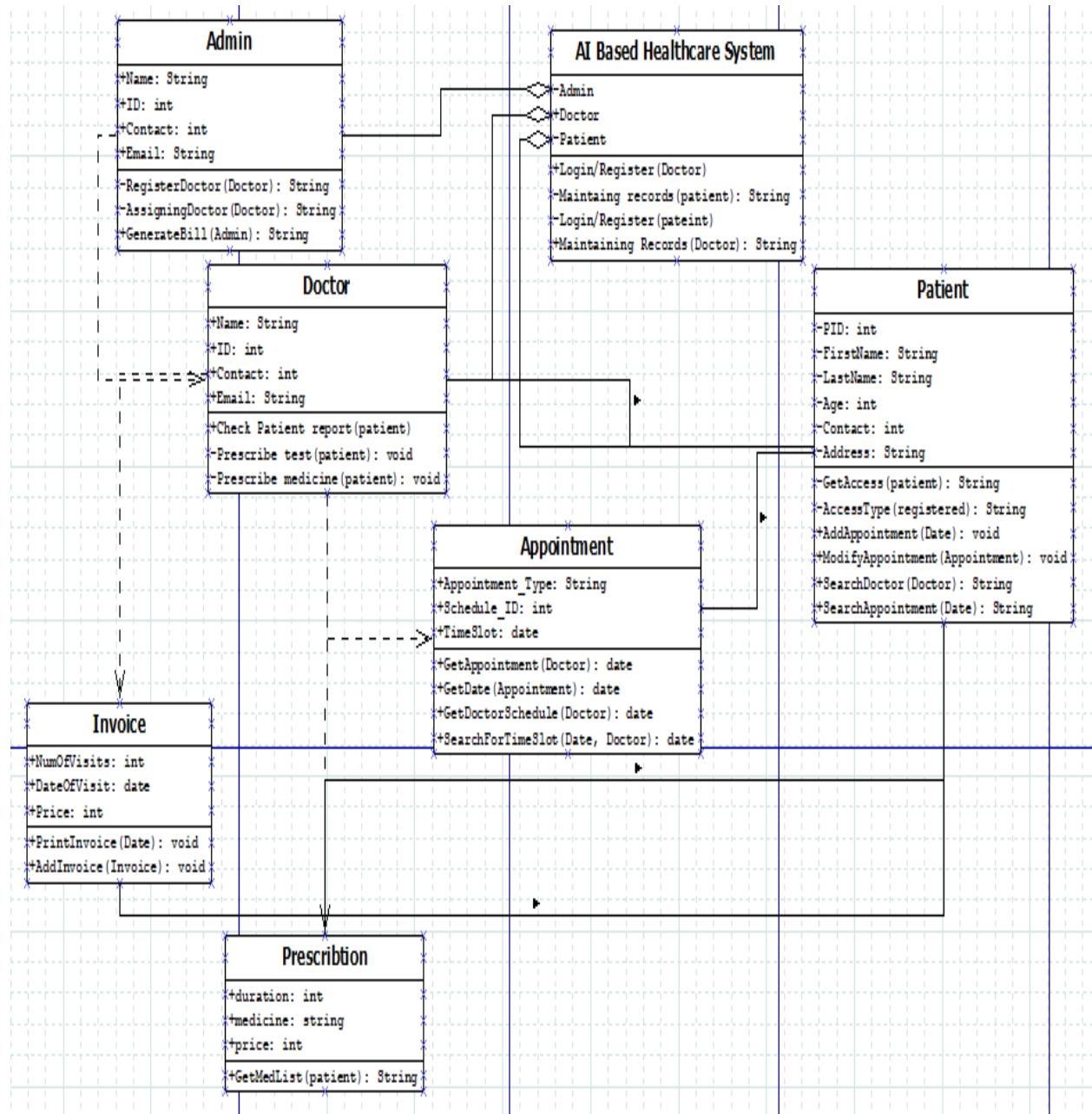


Figure 4.3: Class Diagram

# Chapter 5

# Project Implementation

To implement our system, we are using a basic technological stack of:

- Languages: PHP, Java Script, HTML,CSS,Bootstrap.
  These languages will be used to develop the necessary modules which are required in order to build the proposed application system.

- Testing Devices: Ubuntu, Windows and any supported Browsers.
  These are the devices which can be used to access the application which will be developed.

- Chatbot : Python.
  It is used to build a AI enabled chatbot for UI enhancement.

- Cloud : AWS Cloud server, NGrok.
  Aws is a web service that provides secure, resizable compute capacity in the cloud. Aws uses server chipsets and storage servers to offer tailor-made data centre in order to provide secure storage facilities. With the help of Cloud Drive, the information which will be fetched through the Dr and patient module will be uploaded and organized via a user friendly interface. The data from Dr, patient modules will be uploaded to this server which can be organized in an efficient manner.

- Multilingualism : NLP
  Through this we can make use of multiple languages for better user understanding.

Figure 5.1: Main Code of the Index Page



Figure 5.2: Coding of the Admin Page.

In the above figures, the main code snippet of the home page i.e. the index page is given. It has all the options to register a patient, log in to the existing account of a patient or a Doctor. The second is of the Admin page code which is responsible for creating or deleting doctor records, patient records and password recoveries.

Below is the code snippets given of Doctor module and Prescription Module respectively.This will hold the details of the patient problem.He can prescribe medicines to the patients and get the PDF copy of the same



Figure 5.3: Code snippet of The Doctor Module



Figure 5.4: Prescription Page Code Snippet

# Chapter 6

# Testing

For our testing, we have tested our website on localhost using Xampp. We ran it on Google Chrome browser. The website was running properly with the homepage popping up first. On it there is a chatbot in the bottom right corner which when tested is working properly too.The registration of new patients and login of existing patients and doctors are running.

All the patient, doctor and admin module are running effectively. Appointment booking and generation of PDF in which prescription and bill is given are working properly. The database is also connected to the AWS cloud server.

| Test Number | Test Case | Result Expected | Result Obtained |
|---|---|---|---|
| 1 | Patient Registration | Registration Should be Successful. | Registration is Successful. |
| 2 | Patient Login | Login Should be Successful. | Login is Successful. |
| 3 | Patient Appointment Booking | Patients should be able to book appointment with the desired Doctor. | Patients should is able to book appointment with the desired Doctor. |
| 4 | Generating PDF of bill and Prescription | PDF should be generated and downloadable. | PDF is generated and downloadable. |

Figure 6.1: Testing Of Patient's Module

| Test Number | Test Case | Result Expected | Result Obtained |
|:---:|---|---|---|
| 1 | Doctor Login | Login should be Successful. | Login is Successful. |
| 2 | View Appointment History | Appointment history should be viewed. | Appointment history is seen. |
| 3 | View Active Appointments | Active and upcoming appointments should be viewed. | Active and upcoming appointments is seen. |
| 4 | Prescribe Medicines | Doctor should be able to prescribe medicines. | Doctor is able to prescribe medicines. |

Figure 6.2: Testing Of Doctor's Module

| Test Number | Test Case | Result Expected | Result Obtained |
|:---:|---|---|---|
| 1 | Admin Login | Login should be Successful. | Login is Successful. |
| 2 | View all Appointments. | Admin should be able to see all appointments. | Admin is able to see all appointments. |
| 3 | View all Doctors and Patients. | Admin should be able to see all Doctors and Patients. | Admin is able to see all Doctors and Patients. |
| 4 | Adding and Deleting Doctor. | Admin should be able to add and delete doctor. | Admin is able to add and delete doctor. |

Figure 6.3: Testing Of Admin's Module

21

# Chapter 7

# Result

Patients information will be stored in his/her profile, whatever was discussed with the doctor during their appointment can be fetched through their profile, whether or not they were advised to follow certain diet, whether they were supposed to do certain exercises, medicine routine they were told to follow, everything can be tracked using this platform . If any Doctor wants to check the details regarding their patients last visit, then all they have to do is take a quick glance through the patients profile in the application.

In this project we have tried to implement a website which is platform independent and makes use of a particular Cloud Server which can help in virtualization. It can provide better security for the data which we're about to fetch from the patient's and doctor's profile.
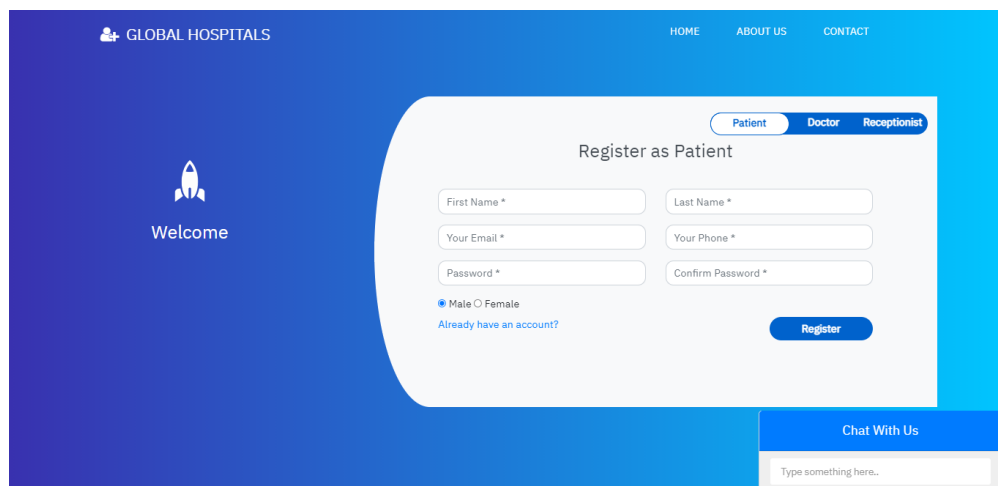


Figure 7.1: Home Page

This is the Home Page of the website from which we can go to all three modules.

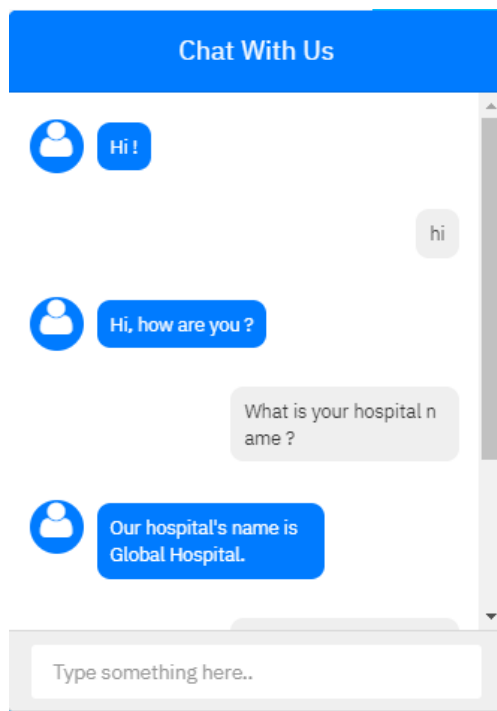In the figure given below we can see the chatbot implementation.



Figure 7.2: Chatbot.

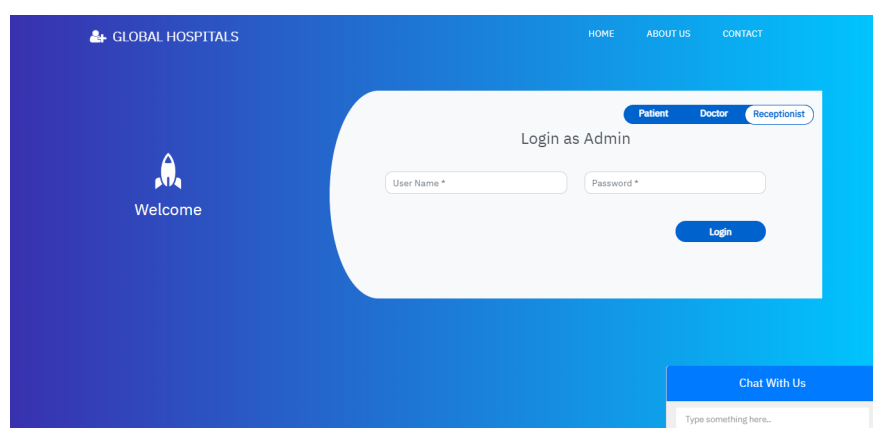In the figure given below we can see the Admin Page from where we can add and delete records



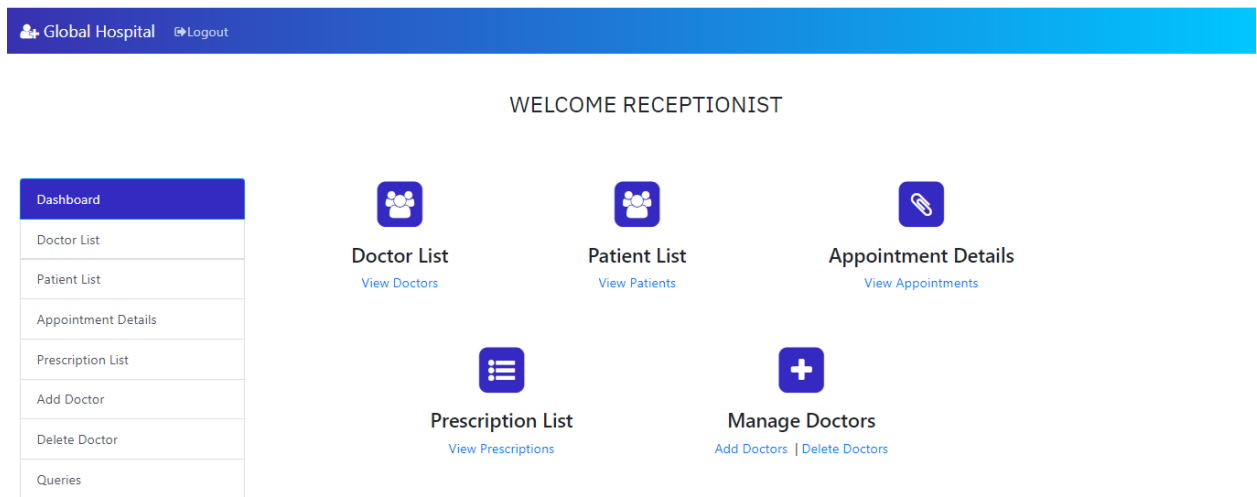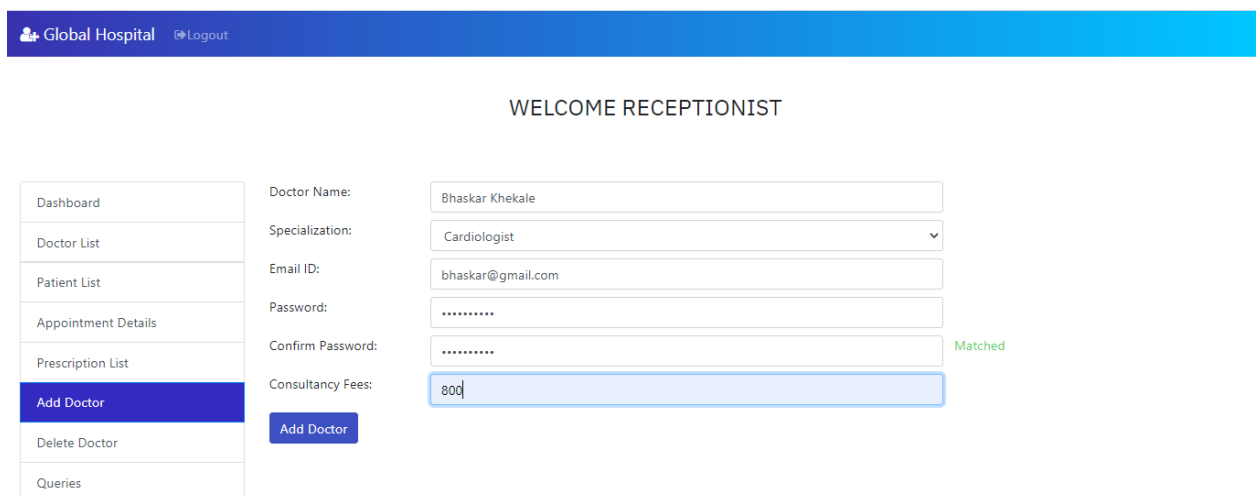Figure 7.3: Admin Sign Up Page.

Figure 7.4: Admin Panel.



Figure 7.5: Adding Doctor as an Admin

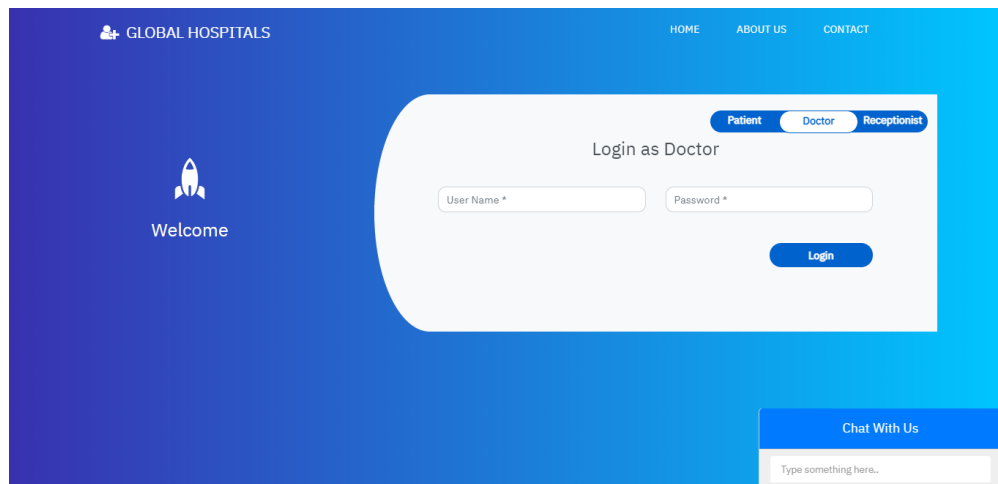Given below is the Doctor module which can see the upcoming and last appointments.
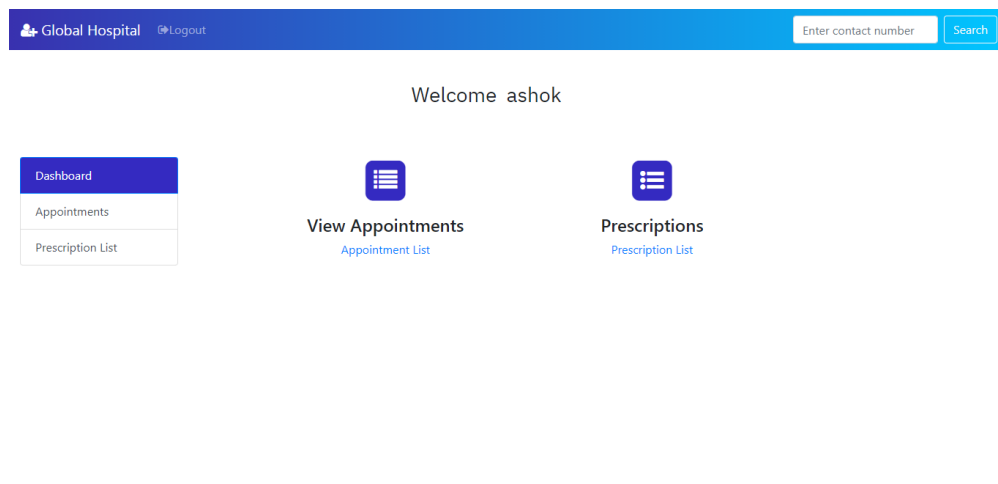


Figure 7.6: Doctor Login Page



Figure 7.7: Doctor's Page

Given below is the Patient module which can book appointments and see the history. Also he can see the Prescription list.
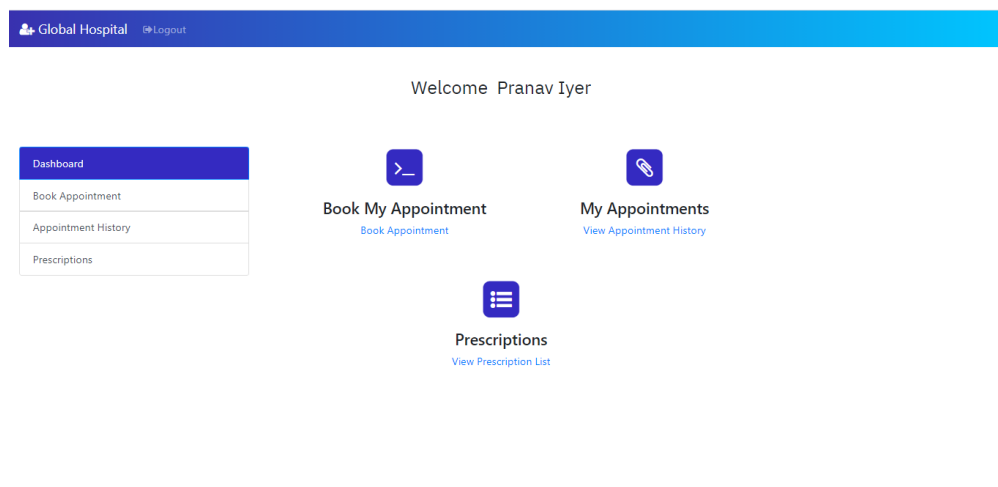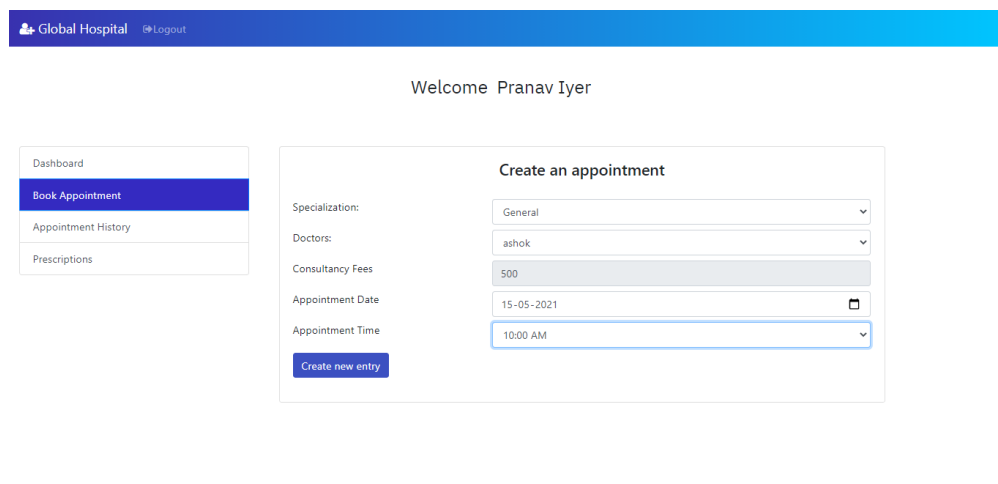


Figure 7.8: Patient Dashboard



Figure 7.9: Booking an appointment

In the below snapshots we can see the appointment history and prescription tab in the Patient's module.



Figure 7.10: Appointment History



Figure 7.11: Prescription By Doctor in Patients Page

Thus we have shown the full working of all the three modules with its functions.

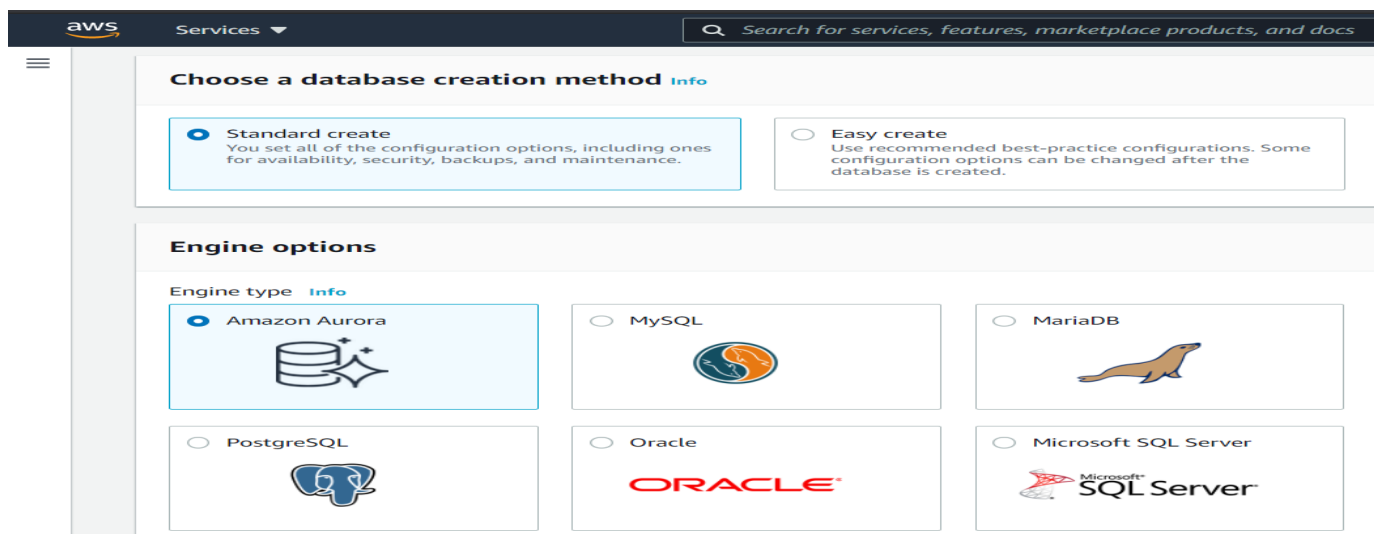Given below is the snapshot of the AWS Cloud Database Creation.



Figure 7.12: AWS Cloud Database Creation

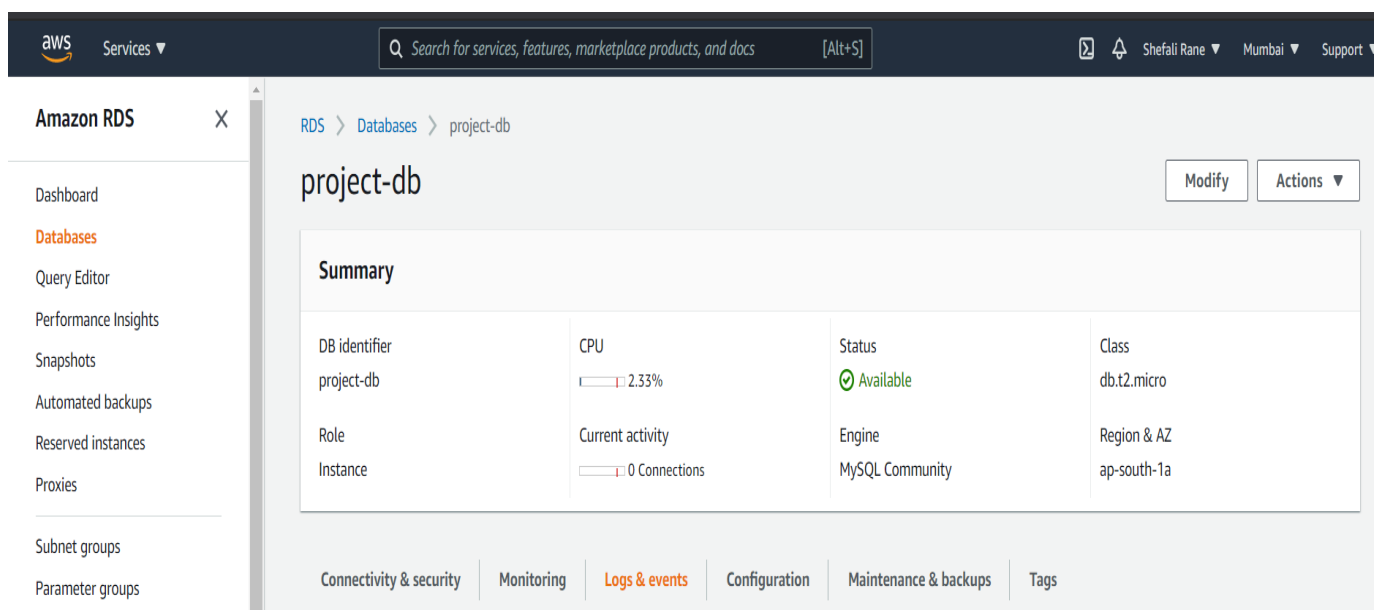Given below is the snapshot of the AWS Cloud Database.



Figure 7.13: AWS Cloud Database

# Chapter 8

# Conclusions and Future Scope

An internet based platform which will store the patients information in an organized manner. As this platform will be centrally accessible, there wont be any need of worrying about storing the information in random notebooks. Making use of cloud server instead of a local database is an important aspect in modern day application build up. Patients information will be stored in his/her profile, whatever was discussed with their Doctor during their appointment can be fetched through their profile, whether or not they were advised to follow certain diet, whether they were supposed to do certain exercises, medicine routine they were told to follow, everything can be tracked using this platform.

Thus to summarize, our project is aimed in helping both Medical frontline workers as well as to the public. Our proposed system is aimed at developing a solution where the proposed system will help Doctors running a local clinic in a better way. It is a very efficient way to store patients medical data that can help in better functioning of a clinic. This concludes the importance and indispensable nature of the computer and its application in the hospital. The database aimed at reducing paper work in the reception area to reduce the time wasted by patients in the course of waiting for their files to be retrieved. This has also reduced the spaced occupied by the files and provide adequate security for patients medical record

# Bibliography

[1] Fangjian Gao,Scott Thiebes, Prof. Dr. Robert O. Briggs On ,"The Meaningful Use of Cloud Computing in Healthcare",Journal of Medical Internet Research(2018).

[2] R. Vignesh, K.Mohana Prasad On, "Cloud-Implementation of E-Healthcare Framework", International Journal of Recent Technology and Engineering (IJRTE),(2019).

[3] Seyed Mohammad Ayyoubzadeh On. "Study of challenges to utilise mobilebased health care monitoring systems: A descriptive literature review", Journal of Telemedicine and Telecare(2018).

[4] Yazan Al-Issa, Mohammad Ashraf Ottom, Ahmed Tamrawi On, "eHealth Cloud Security Challenges: A Survey",Journal of Healthcare Engineering(2019).

[5] Nureni Ayofe Azeez, Charles Van Der Vyyer On, "Security and privacy issues in e-health cloud based system: A comprehensive content analysis", Science Direct(2018).

[6] E –Hospital Management  Hospital Information Systems – Changing Trends Premkumar Balaraman, Kalpana Kosalram School of Management, SRM University, vadapalani, Chennai 600026, INDIA. I.J. Information Engineering and Electronic Business, 2013, 1, 50-58 Published Online May 2013 in MECS (http://www.mecs-press.org/).

[7] Secured Electronic Hospital Database Management System K.K. Bharath, Ankit Kumar, Adithya Varma, R. Rajyashree. International Journal of Recent Technology and Engineering (IJRTE) ISSN: 2277-3878, Volume-8, Issue-1S4, June 2019.

# Appendices

## Appendix-I: Website And Chatbot Implementation

We need to build an efficient Website first for the front end.Also we need to create a chatbot widget. We will be using PHP, Javascript and Python for coding. For styling we'll be using CSS and Bootstrap.
Following are the steps:

1.User login interface i.e the Home Page. This is the first point of entry into the software.

2.Patient registration page.

3.We need to book the appointment for the patient in this step, this portal has various doctors as per the requirement.

4.We need to add the option for the patient to check his last appointment history and generate a PDF copy of the same.

5.Similarly We need to create Doctors module in which he can see the upcoming appointments, prescribe medicines to the patients and view the list of the same.

6.Now we move on to the Admins module, this module is responsible for controlling all the records including that of patients and doctors.It is also responsible for Password recovery.

7.At last we need to create an AI enabled Chatbot by using python with the intents specified for the user.

# Appendix-II: Database And Cloud Server

Database and the table Design inside the database are very essential to the development of this software because the tables hold the information or records that needed to be stored in the database. Therefore, the script is in Localhost Xampp server in Mysql Database as well as in the AWS Cloud Server.The records are generated automatically as the script runs successfully.
Following are the steps:

1. Database connection to Xampp MySQL Server.

2. Creating a table in Xampp MySQL Server.

3.Creating an account in AWS CLoud Server.

4.After creating an account in AWS CLoud Server we need to create a database in it to dump the data into.

5.Now we need to connect the Xampp database to AWS Cloud by connecting the MySQL query.

6.Now all the records will be going into the AWS CLoud Database.

# Publication

Paper Draft on AI Based Healthcare Management System is ready.