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HOSPITAL MANAGEMENT SYSTEM WITH CHATBOT

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Abstract: Through chatbots one can communicate with text or voice interface and get reply through artificial intelligence. Typically, a chat bot will communicate with a real person. Chat bots are used in applications such as ecommerce customer service, call centres and Internet gaming. Chatbots are programs built to automatically engage with received messages. Chatbots can be programmed to respond the same way each time, to respond differently to messages containing certain keywords and even to use machine learning to adapt their responses to fit the situation. A developing number of hospitals, nursing homes, and even private centres, presently utilize online Chatbots for human services on their sites. These bots connect with potential patients visiting the site, helping them discover specialists, booking their appointments, and getting them access to the correct treatment. In any case, the utilization of artificial intelligence in an industry where individuals' lives could be in question, still starts misgivings in individuals. It brings up issues about whether the task mentioned above ought to be assigned to human staff. This healthcare chatbot system will help hospitals to provide healthcare support online 24 x 7, it answers deep as well as general questions. It also helps to generate leads and automatically delivers the information of leads to sales. By asking the questions in series it helps patients by guiding what exactly he/she is looking.

I. INTRODUCTION

Computers give us information; they engage us and help us in a lot of manners. A chatbot is a program intended to counterfeit smart communication on a text or speech. Yet, this project concentrates only on text. These systems can learn themselves and restore their knowledge using human assistance or using web resources. This application is incredibly fundamental since knowledge is stored in advance. The system application uses the question and answer protocol in the form of a chatbot to answer user queries. This system is developed to reduce the healthcare cost and time of the users, as it is not possible for the users to visit the doctors or experts when immediately needed The response to the question will be replied based on the user query and knowledge base. The significant keywords are fetched from the sentence and answer to those sentences. If the match is discovered or the significant, answer will be given or similar answers will be displayed The complex questions and answers present in the database are viewed and answered by an expert. The chatbot would coordinate the input sentence from the user. Keywords are extracted from the given input sentence and the sentence similarity is found. The keyword ranking and sentence similarity are found using the N-gram, TF-IDF, and cosine similarity. The interfaces are standalone built using the PYTHON programming language.

II. LITERATURE SURVEY

Chatbots are automated systems which replicate users behavior on one side of the chatting communication. They aremimic systems which imitate the conversations between two individuals. They provide a simulating platform for effective and smart communications with the user on the other end. They copy marketers, sales person, counsellors and other mediators and work to provide services that the above-mentioned people provide. There are wide ranges of chatbot scattering in many domains some of them are as follows: business, market, stock, customer care, healthcare, counselling, recommendation systems, support system, entertainment, brokering, journalism, online food and accessory shopping, travel chatbots, banking chatbots, recipe guides, etc. The most famous chatbots like Alexa or Google assistant are the best examples that can be given for smart communicating chatbots. These are general purpose chatbots that provide services for all domains and are not restricted to aspecific domain. There are also domain-specific chatbots which provide functionalities to the above-mentioned domains. Some of them are as follows: Botsify is a chatbot which helps developers to create smart Facebook Messenger Chatbots and is used to collect information from Facebook users. Imperson is a chatbot which helps developers to create business chatbots and provide customer care services.

III. DESIGN

The design of the project is structured to seamlessly integrate cutting-edge technologies for optimal facial recognition performance. The initial phase involves image data acquisition from diverse sources, enabling a comprehensive dataset. Subsequently, a sophisticated face detection model, based on the OpenCV deep learning framework, is employed. This model efficiently localizes faces within images, ensuring accurate subsequent processing. The core of the design encompasses a facial embedding model, utilizing OpenFace's NN4 small2 v1 architecture. This model quantifies facial features into a 128-dimensional vector, providing a robust representation for recognition. The dataset is then processed, extracting facial embeddings and associating them with respective identities.

The training phase utilizes the Support Vector Machine (SVM) algorithm from the scikit-learn library. This classifier, configured with a linear kernel, refines the recognition model by learning the patterns within the facial embeddings. The resulting recognizer, along with the Label Encoder, is serialized and stored for future use.

The system architecture extends to real-time recognition through webcam integration. The video stream undergoes the same face detection and embedding processes, allowing instantaneous identification of individuals. The deployment diagram illustrates the seamless interaction between components, ensuring a cohesive and efficient system. Overall, the design prioritizes accuracy, speed, and adaptability, making it a robust solution for facial recognition applications.

DFD OR UML DIAGRAMS

Use Case Diagram

UML is a standard language for specifying, visualizing, constructing, and documenting the artifacts of software systems.

UML was created by Object Management Group (OMG) and UML 1.0 specification draft was proposed to the OMG in January 1997.

OMG is continuously putting effort to make a truly industry standard.UML stands for Unified Modeling Language.UML is a pictorial language used to make software blue prints.

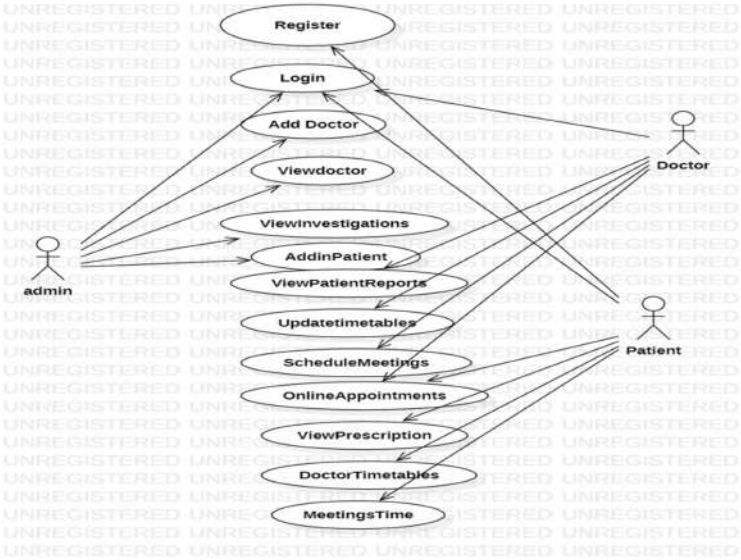

Fig: Use Case Diagram

Class Diagram

The class diagram is the main building block of object-oriented modeling. It is used for general conceptual modeling of the systematics of the application, and for detailed modeling translating the models into programming code. Class diagrams can also be used for data modeling. The classes in a class diagram represent both the main elements, interactions in the application, and the classes to be programmed.

In the diagram, classes are represented with boxes that contain four compartments:

The top compartment contains the name of the class. It is printed in bold and centered, and the first letter is capitalized.The middle compartment contains the attributes of the class. They are left-aligned and the first letter is lowercase.The bottom compartment contains the operations the class can execute. They are also left-aligned and the first letter is lowercase.

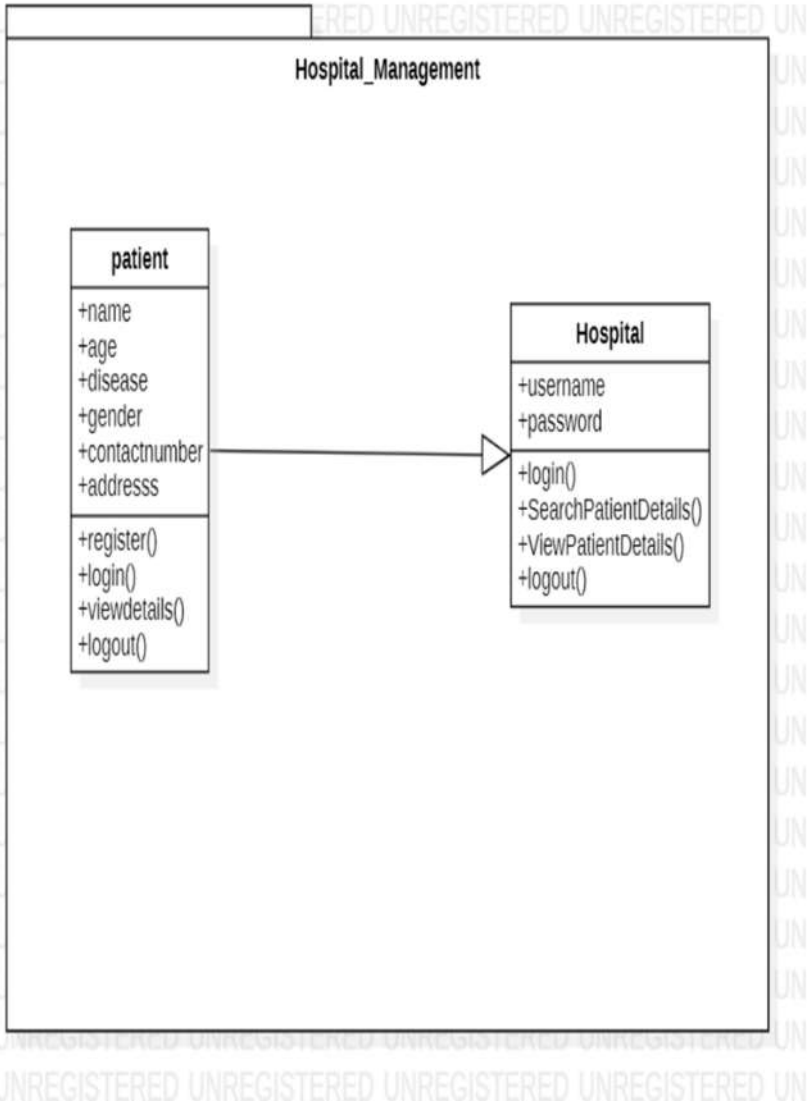

Fig: Class Diagram

Sequence Diagram

Sequence Diagrams Represent the objects participating the interaction horizontally and time vertically. A Use Case is a kind of behavioral classifier that represents a declaration of an offered behavior. Each use case specifies some behavior, possibly including variants that the subject can perform in collaboration with one or more actors. Use cases define the offered behavior of the subject without reference to its internal structure. These behaviors, involving interactions between the actor and the subject, may result in changes to the state of the subject and communications with its environment. A use case can include possible variations of its basic behavior, including exceptional behavior and error handling.

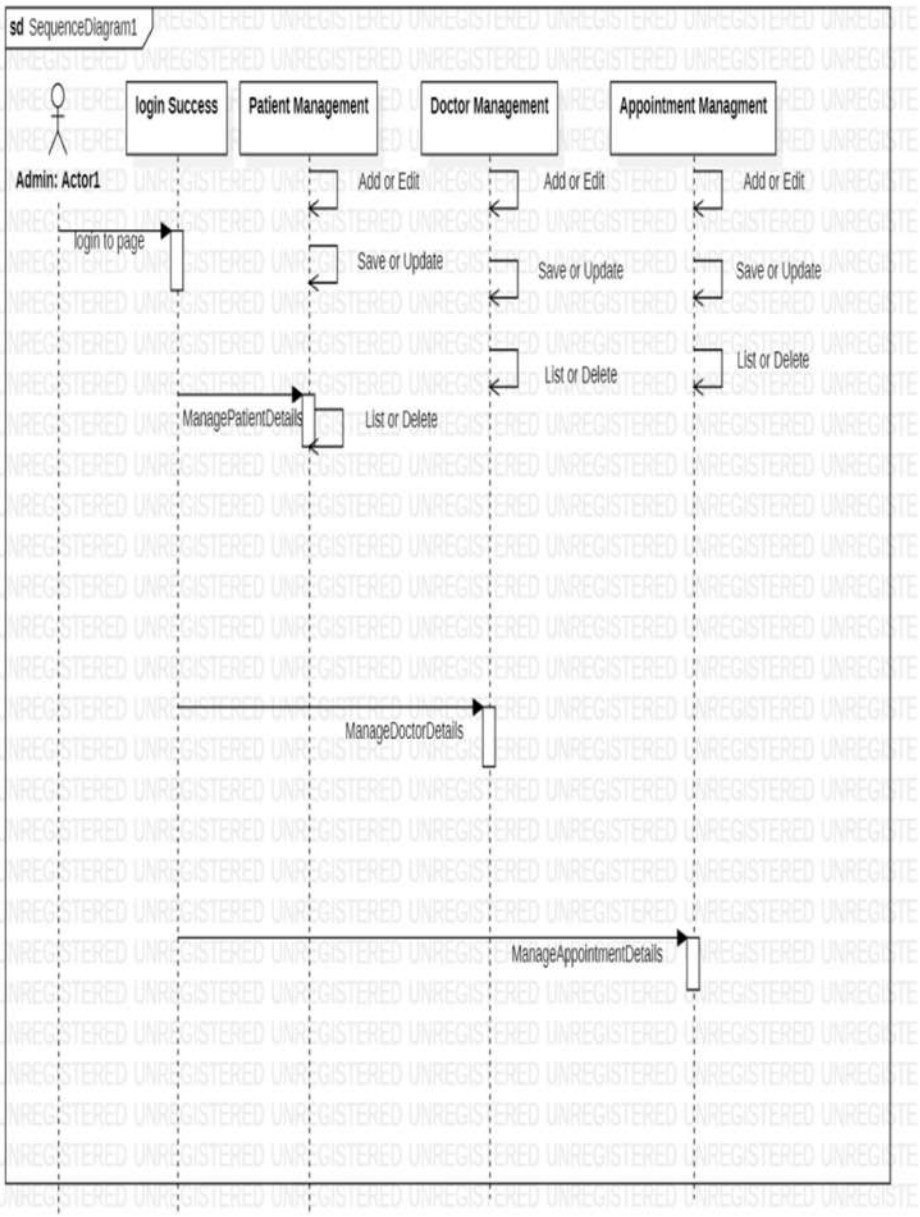

Fig: Sequence Diagram

Activity Diagram

Activity diagrams are graphical representations of the Workflow of stepwise activities and actions with support for choice, iteration, and concurrency. In the Unified Modeling Language, activity diagrams can be used to describe the business and operational step-by-step workflows of components in a system. An activity diagram shows the overall flow of control.

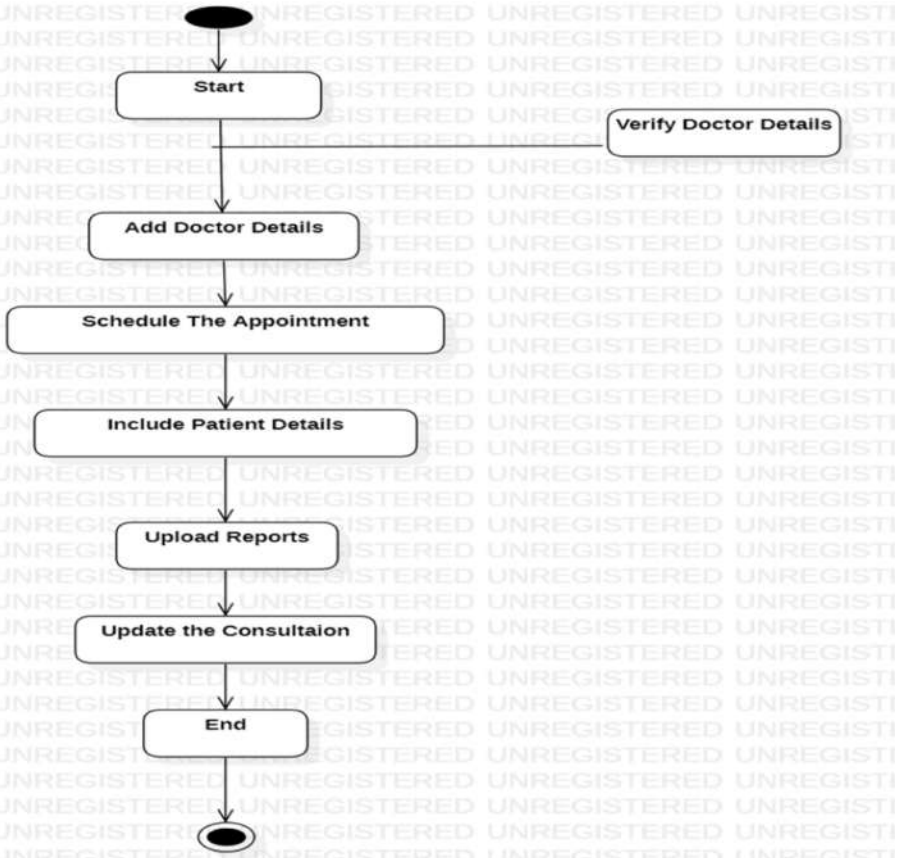

Fig: Activity Diagram

Dataflow Diagram

A Data Flow Diagram (DFD) in a project is a visual representation illustrating the flow of data within a system. It showcases processes, data stores, data sources, and destinations, offering a comprehensive overview of how data moves and transforms throughout the system. DFDs are essential for understanding the system's architecture, identifying data dependencies, and facilitating effective communication among project stakeholders. They help in analyzing, designing, and documenting complex systems, providing a clear and structured representation of data interactions and processes.

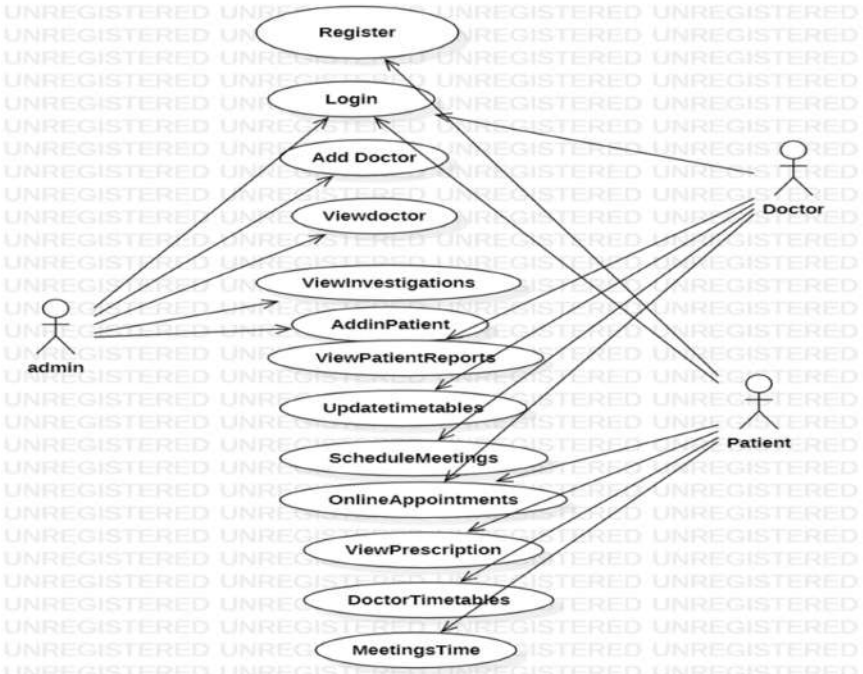

Fig: Dataflow Diagram

System Architecture:

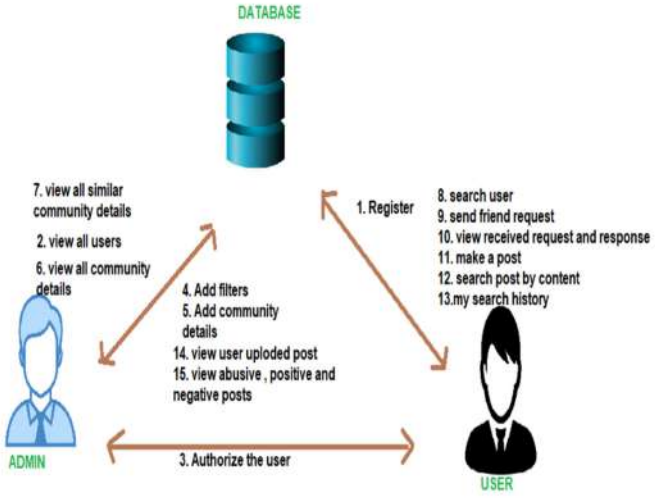

Fig: System Architecture

IV. IMPLEMENTATION

To implement this project we have designed following modules: 1) Admin: Admin can login to application by using username and password as 'admin' and then add new doctor details and give login details to all doctors. Admin will record all in-patient details and give ID to each patient. Admin will view all investigations and prescription given by doctor and can give details on insurance. 2) Doctor: Doctor can login to application and then view in-patient details and then generate prescription and then update time table, online appointments and scheduled meetings. 3) Patient: patient can login to application by using patient ID and can view own prescription and can view doctor time table, meeting time and online appointment time and can chat with chatbot.

TESTING

The purpose of testing is to discover errors. Testing is the process of trying to discover every conceivable fault or weakness in a work product. It provides a way to check the functionality of components, sub assemblies, assemblies and/or a finished product. It is the process of exercising software with the intent of ensuring that the Software system meets its requirements and user expectations and does not fail in an unacceptable manner. There are various types of test. Each test type addresses a specific testing requirement.

V. RESULTS & SCREENSHOTS

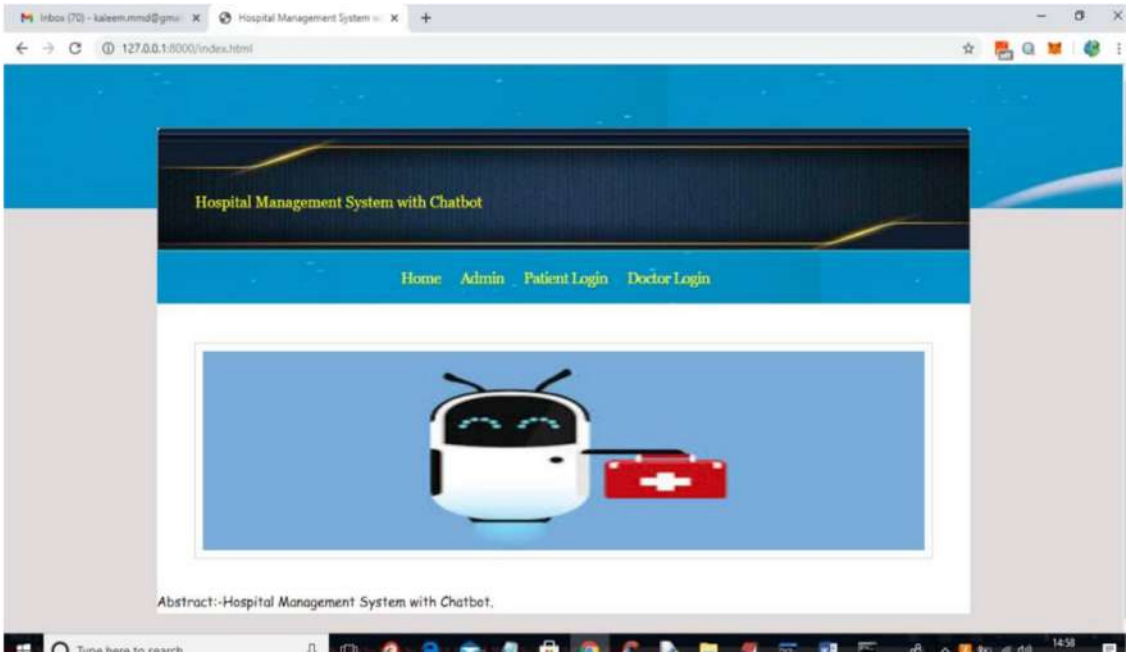

Fig Admin Page

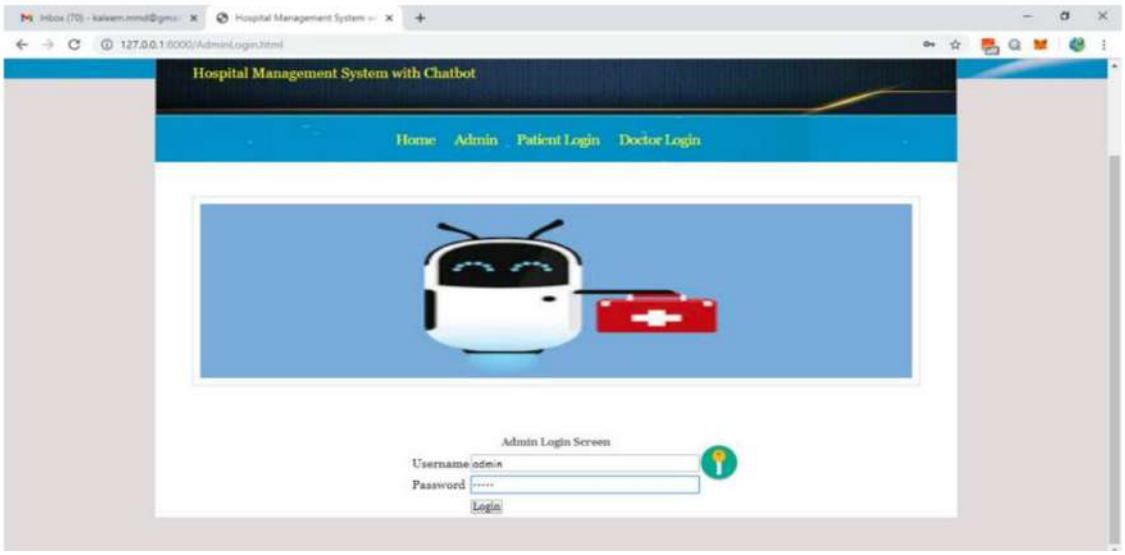

Fig : Admin Login Page

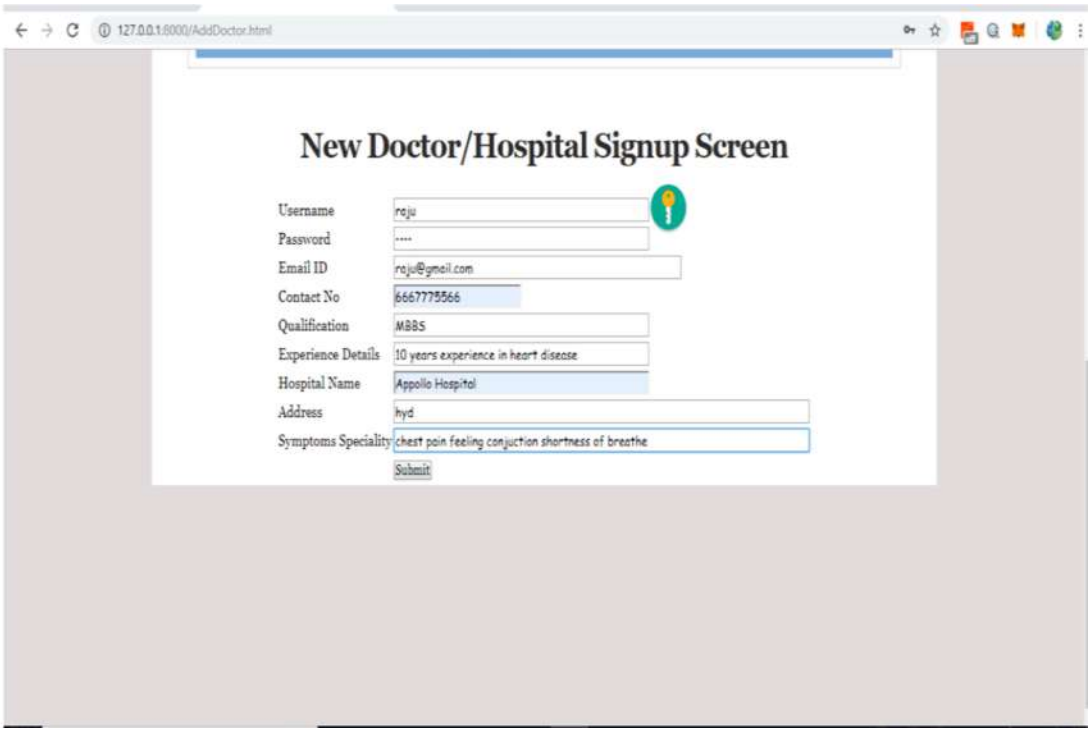

Fig : Doctors signup

Fig : Patient Signup Page

VI. CONCLUSION AND ENHANCEMENT

Medical chatbots have the advantage of being around whenever required. This means one does not have to compromise their busy schedules to treat some minor illness. Chatbots have proven to be user-friendly and anyone with basic skills in language and technology can avail of its use. It is one of the best alternatives in a world where messages dominate person-to-person interaction.A Chatbot is a great tool for conversation. Here the application is developed to provide quality of answers in a short period of time. It removes the burden from the answer provider by directly delivering the answer to the user using an expert system. The project is developed for the user to save the user their time in consulting the doctors or experts for the healthcare solution. Each keyword is weighed down to obtain the proper answer for the query. The Webinterface is developed for the users, to the input query. The application is improved with the security and effectiveness upgrades by ensuring user protection and characters and retrieving answers consequently for the questions.

FUTURE ENHANCEMENT

Despite the initial chatbot hype dwindling down, medical chatbots still have the potential to improve the healthcare industry. The chatbots can be further improved by adding speech to text recognisation.While the adoption of chatbots in the healthcare sector is rather slow, its adaptability is much faster! Interactive chatbots have a new role in improving the efficiency of healthcare experts. Hence, the benefits of using them in clinical settings are undeniable. They can reduce costs dramatically, lessen the burden on medical professionals and improve patient experiences.In today's digital healthcare landscape, an AIbased bot has become a must-have. It

keeps your facility accessible round-theclock, without you having to spend heavily on recruiting customer service reps.

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