**CHATBOT FOR “AS COMPLEX”**

**Project submitted to**

**PONDICHERRY UNIVERSITY, PUDUCHERRY**

***In partial fulfilment of the requirement for the award of the degree of***

**BACHELOR OF SCIENCE**

***In***

**COMPUTER SCIENCE**

***By***

**AFARH FATHIMA. M (REGISTER NO: 20CS0105)**

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**DEPARTMENT OF COMPUTER SCIENCE**

**AVVAIYAR GOVERNMENT COLLEGE FOR WOMEN**

**(Accredited with “B” Grade by NACC)**

**KARAIKAL – 609 602**

**MAY - 2023**

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**BONAFIDE CERITIFICATE**

This is to certify that the project work entitled “**CHATBOT FOR “AS COMPLEX”** is a bonafide record of the project work done by

**AFARH FATHIMA. M (REGISTER NO: 20CS0105)**

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In partial fulfillment of the requirement for the award of degree of **BACHELOR OF SCIENCE IN COMPUTER SCIENCE** of Pondicherry University.

This project work has not been submitted elsewhere for the award of any degree to the best of our knowledge.

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Submitted for the University Project Viva – Voce Examination held on …………………

**INTERNAL EXAMINER EXTERNAL EXAMINER**

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This is to certify that this project work entitled **“CHAT FOR “AS COMPLEX””**

**By AFRAH FATHIMA. M (REG NO: 20CS0105), ANURADHA. R (REG NO: 20CS0106), AYESHA FARVEEN. M (REG NO:20CS0109), SOPHIKA. J (REG NO:20CS0144), ANANDHI. A(REG NO:20SL004),** under my supervision and guidance in partial fulfilment for the award of the degree of Bachelor of Science in Computer Science of Pondicherry University.

This project work has not been submitted elsewhere of for the award of any other degree to the best of my knowledge.

**PROJECT GUIDE**

**ACKNOWLEDGEMENT**

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**AFRAH FATHIMA**

**ANURADHA**

**AYESHA FARVEEN**

**SOPHIKA**

**ANANDHI**

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**ABSTRACT**

The main aim of our project is to make common peoples to interact with a computer system. So here we go with a chatbot which is a simple computer program that can communicate as human

A chatbot is a computer program that simulates and processes human conversation, allowing humans to interact with digital devices as if they were communicating with a real person. Chatbots can be as simple as rudimentary programs that answer a simple query with a single-line response, or as sophisticated as digital assistants that learn and evolve to deliver increasing levels of personalization as they gather and process information.

In our project “CHATBOT FOR “AS COMPLEX”” shows how a consumer can interact with a computer system as a human with each other. A consumer can interact with the chatbot.

A consumer can interact with a system so that he/she can receive the required information from the chatbot. The consumer comes to know about the availability of the required product. The location of the required product.

The questions and the answers were fed to the chatbot by the Admin. When the consumer asked the questions the chatbot provides the corresponding answers. With the help of the chatbot the customer comes to know what they need. Hence, the chatbot help us to know about the status, location, cost etc., of the items at the shops. And these chatbots are will be very easy and simple to use.

**CHAPTER 1**

**INTRODUCTION**

* 1. **ABOUT THE PROJECT**

The main aim of our project is to make common peoples to interact with a computer system. So here we go with a chatbot which is a simple computer program that can communicate as human. A chatbot (conversational interface, AI agent) is a program that can communicate with a user. Chatbot can answer the simple questions asked by the user. In our project “CHATBOT FOR “AS COMPLEX”” shows how a consumer can interact with a computer system as a human with each other. A consumer can interact with the chatbot. A consumer can interact with a system so that he/she can receive the required information from the chatbot. The consumer comes to know about the availability of the required product. The location of the required product. The questions and the answers were fed to the chatbot by the Admin. When the consumer asked the questions the chatbot provides the corresponding answers. With the help of the chatbot the customer comes to know what they need. Hence, the chatbot help us to know about the status, location, cost etc., of the items at the shops. And these chatbots are will be very easy and simple to use.

* 1. **MOTIVATION**

The main motive of our project is make a computer to communicate with people. So that our work become easier and efficient. The chatbot is able to answer the questions asked by the people hence the people come to know the required information. Chatbot provide us the all kind of information that can be fed by the admin, and the consumer comes to know about the availability, location, cost of the product.

* 1. **ORGANIZATION OF THE PROJECT**

This report is organized in a structural way in which every chapter explain the various activities that is followed during the development of this project.

**Chapter 1:**

This chapter gives the introduction about the project and the organization of this project report.

**Chapter 2:**

This chapter explains the System study and analysis of the existing system, proposed system, feasibility.

**Chapter 3:**

This chapter explains the software requirements specifications and its purpose, hardware, software such as Python, JavaScript, Flask.

**Chapter 4:**

This chapter includes some reviews of literature and some usage and types of the chatbot.

**Chapter 5:**

This chapter deals with the unit testing and system testing.

**Chapter 6:**

This chapter gives the conclusion and the future enhancements.

This report ends with appendices which consists of the webliography, coding and screenshots.

**CHAPTER 2**

**REVIEWS OF LITERATURE**

**2.1 Literatures**

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1. **Customized learning:**

Personalized attention to students advances their results as the tutors get to knowledge of the domain where the learners are fragile in. The availability of personal educators to individual students of different capacities can conceive larger number of professionals. Students can acquire deeper knowledge of their interests. Technology Mediated Learning (TML) is defined as “an environment in which the learner’s interactions with learning materials (readings, assignments, exercises, etc.), peers, and/or instructors are mediated through advanced information technologies”.

Chatbot mediated learning is also considered as a branch of TML where the study is personalized and students can dynamically use these bots for their learning. (Thomas, 2020). The chatbots assess the discernment of the students and provides the subsequent lecture. For instance, the Summit Learning Project uses chatbots to identify the weak areas of students and adapt to their leaning style and help them manage the modules. The chatbots further conducts quizzes and submits the results to the tutors, who provide immediate feedback to the students. This is accomplished through digital forums.

1. **Assessment of composition skills:**

Currently, educators tend to assess the students through Multiple-choice questionnaires easing their tasks. A student can be assessed better based on their writing and composition skills which can be acquired through essay writing. This has been explored through an automated evaluating system where the researchers have executed unsupervised machine learning on performing robotic assessment and have also done an analysis on the performance of the robot which was analysed using an amalgam of combination of term frequency inverse-document function (tfidf) with cosine Euclidean distance. A real time study was conducted on a set of medical students, where the web tutoring program increased their test scores and cognitive efficacy to three-fold the size which was measured in Cohen’s D effect size (95%) and confidence interval (CI)1.

**C. Integration of chatbots to classrooms:**

Apart from standalone chatbots, there has been an increase in the integration of these chatbots in social platforms such as Facebook, Google classroom and so on. Based on the category, language and development platform chatbots used for education in Facebook has been studied in and the efficacy has been evaluated. Quality allocation was tabulated using Analytic Hierarchy Process (AHP).

**D. Appealing methods of online education:**

How effective can chatbots be in education, also relies on its attractive design. Reeves, B. & Nass, C. (1996) exemplified in their investigation that most of the humans consider social platforms such as televisions, computers and internet as their fellow beings and treat them with more respect. This finding led few researchers to think with ingenuity to impart knowledge as a dignitary or an influential person from the past. To elaborate, in the research conducted in 2014, a talkbot labelled Freudbot was built using non-proprietary software called AIML (Artificial Intelligence Markup Language) and ELIZA kind of control features.

The highlighting feature of Freudbot was that it communed with the learners as a famous personality from history. Though it provided neutral results, it was assumed to be more promising for the future online education.

**2.2 Common uses of Chatbot:**

Chatbots allow businesses to connect with customers in a personal way without the expense of human representatives. For example, many of the questions or issues customers have common and easily answered. That’s why companies create FAQs and troubleshooting guides. Chatbots provide a personal alternative to a written FAQ or guide and can even triage questions, including handing off a customer issue to a live person if the issue becomes too complex for the chatbot to resolve. Chatbots have become popular as a time and money saver for businesses and an added convenience for customers.

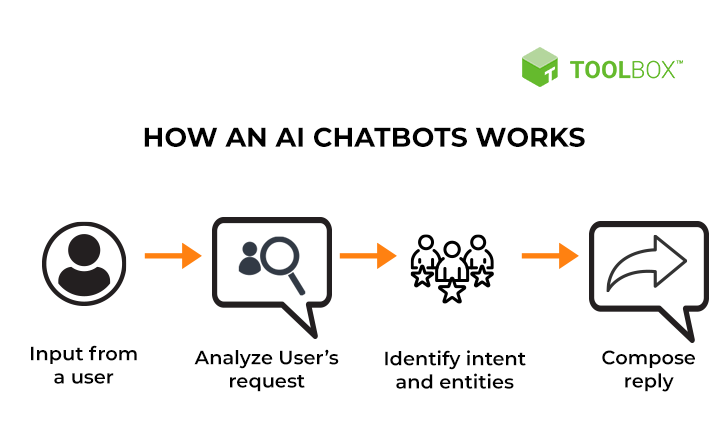
Chatbots are frequently used to improve the IT service management experience, which delves towards self-service and automating processes offered to internal staff. With an intelligent chatbot, common tasks such as password updates, system status, outage alerts, and knowledge management can be readily automated and made available 24/7, while broadening access to commonly used voice and text based conversational interfaces.

On the business side, chatbots are mostly used in customer contact centres to manage incoming communications and direct customers to the appropriate resource. They’re also frequently used for internal purposes, such as onboarding new employees and helping all employees with routine activities including vacation scheduling, training, ordering computers and business supplies, and other self-service activities that don’t require human intervention.

On the consumer side, chatbots are performing a variety of customer services, ranging from ordering event tickets to booking and checking into hotels to comparing products and services. Chatbots are also commonly used to perform routine customer activities within the banking, retail, and food and beverage sectors. In addition, many public sector functions are enabled by chatbots, such as submitting requests for city services, handling utility-related inquiries, and resolving billing issues.

Chatbot can ask questions throughout the buyer’s journey and provide information that may persuade the user and create a lead. Chatbot can then provide potential customer information to the sales team, who can engage with the leads.

**2.3 Working of Chatbot:**



Chatbots are computer programs that replicate and analyse human dialogue (spoken or written), enabling humans to communicate with electronic devices as if they were conversing with a live agent. Chatbots can range from simple programs that respond to a single instance to advanced virtual assistants that can learn and improve as they collect and process data to provide superior levels of personalization.

Chatbots are seamlessly integrated into several of our daily workflows. For instance, you could be browsing an e-commerce platform to purchase an item on your computer when a window appears on your monitor asking whether you require assistance. Alternatively, a person may use voice input to order a beverage from a nearby retail outlet and receive an alert indicating when the order would be ready and how much it would cost. These are some of the customer experience scenarios where one may encounter a chatbot.

The rise of chatbots in recent years is rooted in the accelerating pace of digital transformation. Businesses are increasingly migrating from traditional modes of communication to digital channels to interact and transact with their customers. Businesses use Artificial Intelligence to unlock new efficiencies in various customer-facing functions, and chatbots are among the top applications of AI in an enterprise.

**2.4 Types of chatbots:**

1. Menu/button-based chatbots
2. Linguistic Based (Rule-Based Chatbots)
3. Keyword recognition-based chatbots
4. Machine Learning chatbots
5. The hybrid model
6. Voice bots

**1.Menu/button-based chatbots:**

Menu/button-based chatbots are the most basic type of chatbots currently implemented in the market today. In most cases, these chatbots are glorified decision tree hierarchies presented to the user in the form of buttons. Similar to the automated phone menus we all interact with on almost a daily basis, these chatbots require the user to make several selections to dig deeper towards the ultimate answer.

While these chatbots are sufficient for answering FAQs that makeup 80% of support queries; they fall short in more advanced scenarios in which there are too many variables or too much knowledge at play to predict how users should get to specific answers with confidence. It’s also worth noting that menu/button-based chatbots are the slowest in terms of getting the user to their desired value.

2.**Linguistic Based (Rule-Based Chatbots):**

If you can predict the types of questions your customers may ask, a linguistic chatbot might be the solution for you. Linguistic or rules-based chatbots create conversational automation flows using if/then logic. First, you have to define the language conditions of your chatbots. Conditions can be created to assess the words, the order of the words, synonyms, and more. If the incoming query matches the conditions defined by your chatbot, your customers can receive the appropriate help in no time.

However, it’s your job to ensure that each permutation and combination of each question is defined, otherwise, the chatbot will not understand your customer’s input. This is why a linguistic model, while incredibly common, can be slow to develop. These chatbots demand rigidity and specificity.

**3.Keyword recognition-based chatbots:**

Unlike menu-based chatbots, keyword recognition-based chatbots can listen to what users type and respond appropriately. These chatbots utilize customizable keywords and an AI application – Natural Language Processing (NLP) to determine how to serve an appropriate response to the user.

These types of chatbots fall short when they must answer a lot of similar questions. The NLP chatbots will start to slip when there are keyword redundancies between several related questions.

It is quite popular to see chatbot examples that are a hybrid of keyword recognition-based and menu/button-based. These chatbots provide users with the choice to try to ask their questions directly or use the chatbot’s menu buttons if the keyword recognition functionality is yielding poor results or the user requires some guidance to find their answer.

**4.Machine Learning chatbots:**

Ever wondered what is a contextual chatbot? A contextual chatbot is far more advanced than the three bots discussed previously. These types of chatbots utilize Machine Learning (ML) and Artificial Intelligence (AI) to remember conversations with specific users to learn and grow over time. Unlike keyword recognition-based bots, chatbots that have contextual awareness are smart enough to self-improve based on what users are asking for and how they are asking it.

For example, a contextual chatbot that allows users to order food; the chatbot will store the data from each conversation and learn what the user likes to order. The result is that eventually when a user chats with this chatbot, it will remember their most common order, their delivery address, and their payment information and merely ask if they’d like to repeat this order. Instead of having to respond to several questions the user just has to answer with ‘Yes’ and the food is ready!

While this food ordering example is elementary, it is easy to see just how powerful conversation context can be when harnessed with AI and ML. The ultimate goal of any chatbot should be to provide an improved user experience over the alternative of the status quo. Leveraging conversation context is one of the best ways to shorten processes like these via a chatbot.

5. **The hybrid model:**

Businesses love the sophistication of AI-chatbots, but don’t always have the talents or the large volumes of data to support them. So, they opt for the hybrid model. The hybrid chatbot model offers the best of both worlds- the simplicity of the rules-based chatbots, with the complexity of the AI-bots.

6.**Voice bots:**

To make conversational interfaces even more vernacular, businesses are now beginning to use voice-based chatbots or voice bots. Voice bots have been on the rise for the last couple of years, with virtual assistants like Apple’s Siri, to Amazon’s Alexa, and why? Because of the convenience they bring. It’s much easier for a customer to speak rather than type. A voice-activated chatbot brings frictionless experiences directly to the end customer.

**2.5 Older version of Chatbot:**

Chatbots have been around for a while now, but it’s only in recent years that they have gained real popularity among users and businesses alike.

Mostly, this change of awareness for chatbots and conversational interfaces came with developments in artificial intelligence and machine learning, as well as with the increasing popularity of messaging apps.

Today, chatbots are used in various industries and for different use cases. In this article, we will have a look at the history of chatbots, what chatbots are exactly and where they are coming from.

In essence, a chatbot is an Artificial Intelligence program that chats with you. It can chat with you, provide information and support, book things for you and much more.

They are used to reproduce powerful interactions with users, to aid business processes, to gain information from large groups, as a personal assistant among others. Chatbots are also used by search engines to lag the web and archive new pages for future search. Sometimes bots are used for malicious purposes as well, like transmitting computer viruses or artificially increasing views on YouTube videos or web articles.

A chatbot is digital with text and messaging or voice-based applications. They help different groups of people or individuals to put their inquiries via text or voice.

Chatbot development over the course of time. The first chatbot ever was developed by MIT professor Joseph Weizenbaum in the 1960s. It was called ELIZA. You’ll read more about ELIZA and other popular chatbots that were developed in the second half of the 20th century later on.

In the year 2009, a company called WeChat in China created a more advanced Chatbot. Since its launch, WeChat has conquered the hearts of many users who demonstrate an unwavering loyalty to it. It is a highly thriving social media platform.

Through its platform, it has made it easy to create very simple chatbots. It has grown to be an example of the most favoured ways for marketers and employers to reduce the work they do as they interact with customers online.

Though it has implications and is less performant than today’s messaging apps such as Facebook Messenger, Slack, and Telegram, it doesn’t mean that you cannot construct a very smart bot on WeChat. Chumen Wenwen Company, founded in 2012 by a former Google employee, has built a very sophisticated bot running on WeChat.

Early in 2016, we saw the intro of the first wave of artificial data technology in the design of chatbots. Social media platforms like Facebook enabled developers to build a chatbot for their trademark or service so that customers could carry out some of their daily actions from inside their messaging platform.

The introduction of chatbots into a community has brought us to the time of the conversational interface. It’s an interface that soon won’t demand a screen or a mouse. The interface will be entirely conversational, and those communications will be indistinguishable from the conversations that we have with our friends and relatives.

To fully explain the massiveness of this soon-to-be reality, we’d have to go back to the earliest days of the computer, when the desire for artificial intelligence technology and a conversational interface first began.

ELIZA was the very first chatbot as mentioned above. It was created by Joseph Weizenbaum in 1966 and it uses pattern matching and substitution methodology to simulate conversation.

The program was designed in a way that it mimics human conversation. The Chatbot ELIZA worked by passing the words that users entered into a computer and then pairing them to a list of possible scripted responses. It uses a script that simulated a psychotherapist. The script proved to be a significant impact on natural language processing and unnatural intelligence, with copies and variants protruding up at academies around the country.

However, Weizenbaum was troubled by the reaction of users. He intended ELIZA to be a mere caricature of human conversation, yet suddenly users were confiding their most profound thoughts in ELIZA. Experts were declaring that chatbots would be indistinguishable from humans within a few number of years.

**CHAPTER 3**

**SYSTEM STUDY AND ANALYSIS**

**3.1 Existing System**

ELIZA was the very first chatbot. It was created by Joseph Weizenbaum in 1966 and it uses pattern matching and substitution methodology to simulate conversation.

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**3.2 Proposed System**

In our project, we fed our chatbot with the required questions. Those questions were fed to the chatbot in the YAML type files. YAML stands for **Y**et **A**nother **M**arkup **L**anguage.

YAML is a human-readable data serialization language, just like XML. YAML files are stored with the file extension .yml and the content in those files are fed to the chatbot. With the help of YAML files we are able to customize our own questions and answer.

The codes are written in python, and the chatterbot library is imported. And with the help of the imported library we are able to create our YAML files. The JavaScript codes are written to run our chatbot in the browser. A virtual environment is created and the flask was imported, and our chatbot is embedded in the flask environment.

When we run our chatbot code in the command prompt all the questions and the answers from the YAML files are trained to the chatbot. And a URL is produced, when the URL is pasted in the browser our chatbot get started to execute. A textbox is placed where are questions are posted and the corresponding answer will be given by the chatbot. If the customer wants to stop the conversation, then He / She should type “bye” in the textbox. After that, a alert box will get pop-up with the message “Thank you… Visit again..” and a with a OK button. When the customer clicks ok button then the textbox will disappear. And the customer will no longer will be able to continue the conversation.

And thus our chatbot works, which will be helpful for peoples to interact with the computer system. In our project, we created a chatbot for a complex which has 5 shops. The name of the complex is AS Complex. The shops are sports shop, flowers shop, ice cream shop, grocery shop and a food court.

**3.3 Feasibility Study**

The objective of feasibility study is to determine whether or not the proposed system is feasible. The feasibility is determined in terms of three aspects. They are:-

1. Technical Feasibility
2. Behavioural Feasibility
3. Economical Feasibility

**3.3.1 Technical Feasibility**

In this, one has to test whether the system can be developed using existing technology or not. We have created our YAML files to feed the chatbot. YAML files are very We feed our own questions and answers to the chatbot. Even we can alter the question that we fed. The questions and the answers can be customized as per our requirement. YAML files can be either created newly or we update or add the new questions in the built-in YAML files. Hence chatbots are technically feasible.

**3.3.2 Behavioural Feasibility**

The chatbots are not only suitable for the complex but also can be used in various places like shops, malls, parks, etc., And since it can be acceptable by both Admin and the customer, it is proven to be operationally feasible.

**3.3.3 Economical Feasibility**

Chatbots are easy and efficient to maintain, so the maintenance cost is very low. The software and the hardware requirements are lesser than the existing system. This system also reduces the work-load for human, that is the work done by the multiple people is done by a single software. So chatbots are economically feasible.

**CHAPTER 4**

**SOFTWARE REQUIREMENTS SPECIFICATION**

**4.1 SOFTWARE REQUIREMENTS**

These are the software configurations that are required.

1. Operating System : Windows 11
2. Front End : Python, Java script
3. Browser : Google Chrome

**4.2 HARDWARE REQUIREMENTS**

These are the hardware configurations that are required.

1. Processor : Intel(R) Pentium(R) CPU
2. RAM : 2GB
3. Hard Disk : 1GB
4. Resolution : 1368 X 768 pixels

**4.3 Python:**

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Python is a very popular general-purpose interpreted, interactive, object-oriented, and high-level programming language. Python is dynamically typed and garbage-collected programming language. It was created by Guido van Rossum during 1985- 1990. Like Perl, Python source code is also available under the GNU General Public License (GPL).

Python supports multiple programming paradigms, including Procedural, Object Oriented and Functional programming language. Python design philosophy emphasizes code readability with the use of significant indentation.

* Python is Open Source which means its available free of cost.
* Python is simple and so easy to learn.
* Python is versatile and can be used to create many different things.
* Python has powerful development libraries include AI, ML etc.
* Python is consistently rated as one of the world's most popular programming languages.

The most popular IDEs for experienced Python developers are PyCharm and Visual Studio Code. PyCharm is a full – featured IDE that offers many features, including code completion, code navigation, refactoring, and debugging.

Python has a simple syntax like the English language. Python has syntax that allows developers to write programs with fewer lines than the other programming languages. Python runs on an interpreted system, meaning that code can be executed as soon as it is written. This mean that prototyping can be very quick.

## 4.3.1 History of Python:

Python was developed by Guido van Rossum in the late eighties and early nineties at the National Research Institute for Mathematics and Computer Science in the Netherlands.

Python is derived from many other languages, including ABC, Modula-3, C, C++, Algol-68, SmallTalk, and Unix shell and other scripting languages.

Python is copyrighted. Like Perl, Python source code is now available under the GNU General Public License (GPL).

Python is now maintained by a core development team at the institute, although Guido van Rossum still holds a vital role in directing its progress.

**4.3.2 Python Versions:**

* Python laid its foundation in the late 1980s.
* The implementation of Python was started in December 1989 by **Guido Van Rossum** at CWI in Netherland.
* In February 1991, **Guido Van Rossum** published the code (labeled version 0.9.0) to alt.sources.
* In 1994, Python 1.0 was released with new features like lambda, map, filter, and reduce.
* Python 2.0 added new features such as list comprehensions, garbage collection systems.
* On December 3, 2008, Python 3.0 (also called "Py3K") was released. It was designed to rectify the fundamental flaw of the language.
* ABC programming language is said to be the predecessor of Python language, which was capable of Exception Handling and interfacing with the Amoeba Operating System.
* The following programming languages influence Python:
  + ABC language.
  + Modula-3

**4.3.3 Characteristics of Python:**

* It supports functional and structured programming methods as well as OOP.
* It can be used as a scripting language or can be compiled to byte - code for building large applications.
* It provides very high-level dynamic data types and supports dynamic type checking.
* It supports automatic garbage collection.
* It can be easily integrated with C, C++, COM, ActiveX, CORBA, and Java.

**4.3.4 Applications of Python:**

* **Easy-to-learn**: Python has few keywords, simple structure, and a clearly defined syntax. This allows the student to pick up the language quickly.
* **Easy-to-read**: Python code is more clearly defined and visible to the eyes.
* **Easy-to-maintain**: Python's source code is fairly easy-to-maintain.
* **A broad standard library:** Python's bulk of the library is very portable and cross-platform compatible on UNIX, Windows, and Macintosh.
* **Interactive Mode**: Python has support for an interactive mode which allows interactive testing and debugging of snippets of code.
* **Portable**: Python can run on a wide variety of hardware platforms and has the same interface on all platforms.
* **Extendable:** You can add low-level modules to the Python interpreter. These modules enable programmers to add to or customize their tools to be more efficient.
* **Databases**: Python provides interfaces to all major commercial databases.
* **GUI Programming**: Python supports GUI applications that can be created and ported to many system calls, libraries, and windows systems, such as Windows MFC, Macintosh, and the X Window system of Unix.
* **Scalable**: Python provides a better structure and support for large programs than shell scripting.

**4.3.5 Usage of python:**

Python is a general purpose, open source, high-level programming language and provides number of libraries and frameworks. Python has gained popularity because of its simplicity, easy syntax, and user-friendly environment. Python used in many fields as follows:

* Desktop Applications
* Web Applications
* Data Science
* Artificial Intelligence
* Scientific Computing
* Robotics
* Internet of Things (IOT)
* Gaming
* Mobile Apps
* Data Analysis and Pre-processing

**4.4 JavaScript:**

****

JavaScript (js) is a light-weight object-oriented programming language which is used by several websites for scripting the webpages. It is an interpreted, full-fledged programming language that enables dynamic interactivity on websites when applied to an HTML document. It was introduced in the year 1995 for adding programs to the webpages in the Netscape Navigator browser.

Since then, it has been adopted by all other graphical web browsers. With JavaScript, users can build modern web applications to interact directly without reloading the page every time. The traditional website uses js to provide several forms of interactivity and simplicity.

Although, JavaScript has no connectivity with Java programming language. The name was suggested and provided in the times when Java was gaining popularity in the market. In addition to web browsers, databases such as CouchDB and MongoDB uses JavaScript as their scripting and query language.

**4.4.1 History of JavaScript:**

In 1993, **Mosaic**, the first popular web browser, came into existence. In the **year 1994**, **Netscape** was founded by **Marc Andreessen**. He realized that the web needed to become more dynamic. Thus, a 'glue language' was believed to be provided to HTML to make web designing easy for designers and part-time programmers. Consequently, in 1995, the company recruited **Brendan Eich** intending to implement and embed Scheme programming language to the browser.

But, before Brendan could start, the company merged with **Sun Microsystems** for adding Java into its Navigator so that it could compete with Microsoft over the web technologies and platforms. Now, two languages were there: Java and the scripting language. Further, Netscape decided to give a similar name to the scripting language as Java's. It led to 'JavaScript'. Finally, in May 1995, Marc Andreessen coined the first code of JavaScript named '**Mocha**'. Later, the marketing team replaced the name with '**LiveScript**'. But, due to trademark reasons and certain other reasons, in December 1995, the language was finally renamed to 'JavaScript'. From then, JavaScript came into existence.

**4.4.2 Features of JavaScript:**

1. All popular web browsers support JavaScript as they provide built-in execution environments.
2. JavaScript follows the syntax and structure of the C programming language. Thus, it is a structured programming language.
3. JavaScript is a weakly typed language, where certain types are implicitly cast (depending on the operation).
4. JavaScript is an object-oriented programming language that uses prototypes rather than using classes for inheritance.
5. It is a light-weighted and interpreted language.
6. It is a case-sensitive language.
7. JavaScript is supportable in several operating systems including, Windows, macOS, etc.
8. It provides good control to the users over the web browsers.
9. JavaScript is a scripting language that enables you to create dynamically updating content, control multimedia, animate images.

**4.4.3 Applications of JavaScript:**

JavaScript is used to create interactive websites. It is mainly used for:

* Client-side validation,
* Dynamic drop-down menus,
* Displaying date and time,
* Displaying pop-up windows and dialog boxes (like an alert dialog box, confirm dialog box and prompt dialog box),
* Displaying clocks etc.

**4.5 Flask:**

****

Flask is a micro [web framework](https://en.m.wikipedia.org/wiki/Web_framework) written in [Python](https://en.m.wikipedia.org/wiki/Python_(programming_language)). It is classified as a [microframework](https://en.m.wikipedia.org/wiki/Microframework) because it does not require particular tools or libraries. It has no [database](https://en.m.wikipedia.org/wiki/Database) abstraction layer, form validation, or any other components where pre-existing third-party libraries provide common functions. However, Flask supports extensions that can add application features as if they were implemented in Flask itself. Extensions exist for [object-relational mappers](https://en.m.wikipedia.org/wiki/Object%E2%80%93relational_mapping), form validation, upload handling, various open authentication technologies and several common framework related tools.

**4.5.1 History of Flask:**

Flask was created by [Armin Ronacher](https://en.m.wikipedia.org/wiki/Armin_Ronacher) of Pocoo, an international group of Python enthusiasts formed in 2004.[[6]](https://en.m.wikipedia.org/wiki/Flask_(web_framework)#cite_note-6) According to Ronacher, the idea was originally an [April Fool's](https://en.m.wikipedia.org/wiki/April_Fool%27s) joke that was popular enough to make into a serious application. The name is a play on the earlier Bottle framework.

When Ronacher and Georg Brandl created a bulletin board system written in Python in 2004, the Pocoo projects Werkzeug and [Jinja](https://en.m.wikipedia.org/wiki/Jinja_(template_engine)) were developed.[[10]](https://en.m.wikipedia.org/wiki/Flask_(web_framework)#cite_note-10)

In April 2016, the Pocoo team was disbanded and development of Flask and related libraries passed to the newly formed Pallets project.[[11]](https://en.m.wikipedia.org/wiki/Flask_(web_framework)#cite_note-11)[[12]](https://en.m.wikipedia.org/wiki/Flask_(web_framework)#cite_note-12) Since 2018, Flask-related data and objects can be rendered with [Bootstrap](https://en.m.wikipedia.org/wiki/Bootstrap_(front-end_framework)).[[13]](https://en.m.wikipedia.org/wiki/Flask_(web_framework)#cite_note-13)

Flask has become popular among Python enthusiasts. As of October 2020, it has second most stars on [GitHub](https://en.m.wikipedia.org/wiki/GitHub) among Python web-development frameworks, only slightly behind [Django](https://en.m.wikipedia.org/wiki/Django_(web_framework)),[[14]](https://en.m.wikipedia.org/wiki/Flask_(web_framework)#cite_note-14) and was voted the most popular web framework in the Python Developers Survey 2018, 2019, 2020 and 2021.[[1](https://en.m.wikipedia.org/wiki/Flask_(web_framework)#cite_note-15)

**4.5.2 Components of Flask:**

### 1. Werkzeug:

Werkzeug ([German](https://en.m.wikipedia.org/wiki/German_language) for "tool") is a utility library for the Python programming language for [Web Server Gateway Interface](https://en.m.wikipedia.org/wiki/Web_Server_Gateway_Interface) (WSGI) applications. Werkzeug can instantiate objects for request, response, and utility functions. It can be used as the basis for a custom [software framework](https://en.m.wikipedia.org/wiki/Software_framework) and supports Python 2.7 and 3.5 and later.[[](https://en.m.wikipedia.org/wiki/Flask_(web_framework)#cite_note-AR-Werkzeug-19)

### 2.Jinja:

Jinja, also by Ronacher, is a [template engine](https://en.m.wikipedia.org/wiki/Template_engine_(web)) for the Python programming language. Similar to the Django web framework, it handles templates in a [sandbox](https://en.m.wikipedia.org/wiki/Sandbox_(computer_security)).

### 3.MarkupSafe:

MarkupSafe is a [string](https://en.m.wikipedia.org/wiki/String_(computer_science)) handling library for the Python programming language. The eponymous MarkupSafe [type](https://en.m.wikipedia.org/wiki/Class_(computer_programming)) extends the Python string type and marks its contents as "safe"; combining MarkupSafe with regular strings automatically escapes the unmarked strings, while avoiding double escaping of already marked strings.

### 4.ItsDangerous:

ItsDangerous is a safe [data serialization](https://en.m.wikipedia.org/wiki/Serialization) library for the Python programming language. It is used to store the [session](https://en.m.wikipedia.org/wiki/Session_(computer_science)) of a Flask application in a [cookie](https://en.m.wikipedia.org/wiki/HTTP_cookie) without allowing users to tamper with the session contents.

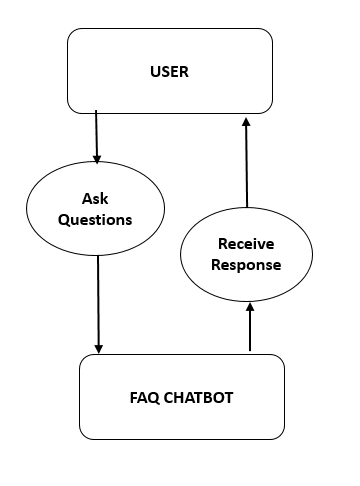
**4.5.3 Features of Flask:**

* Development server and [debugger](https://en.m.wikipedia.org/wiki/Debugger)
* Integrated support for [unit testing](https://en.m.wikipedia.org/wiki/Unit_testing)
* [RESTful](https://en.m.wikipedia.org/wiki/Representational_state_transfer) request dispatching
* Uses Jinja templating
* Support for secure cookies (client-side sessions)
* 100% [WSGI](https://en.m.wikipedia.org/wiki/Web_Server_Gateway_Interface) 1.0 compliant
* [Unicode](https://en.m.wikipedia.org/wiki/Unicode)-based
* Complete documentation
* [Google App Engine](https://en.m.wikipedia.org/wiki/Google_App_Engine) compatibility
* Extensions available to extend functionality.

**CHAPTER 5**

**SYSTEM DESIGN AND DEVELOPMENT**

**5.1 System Architecture:**



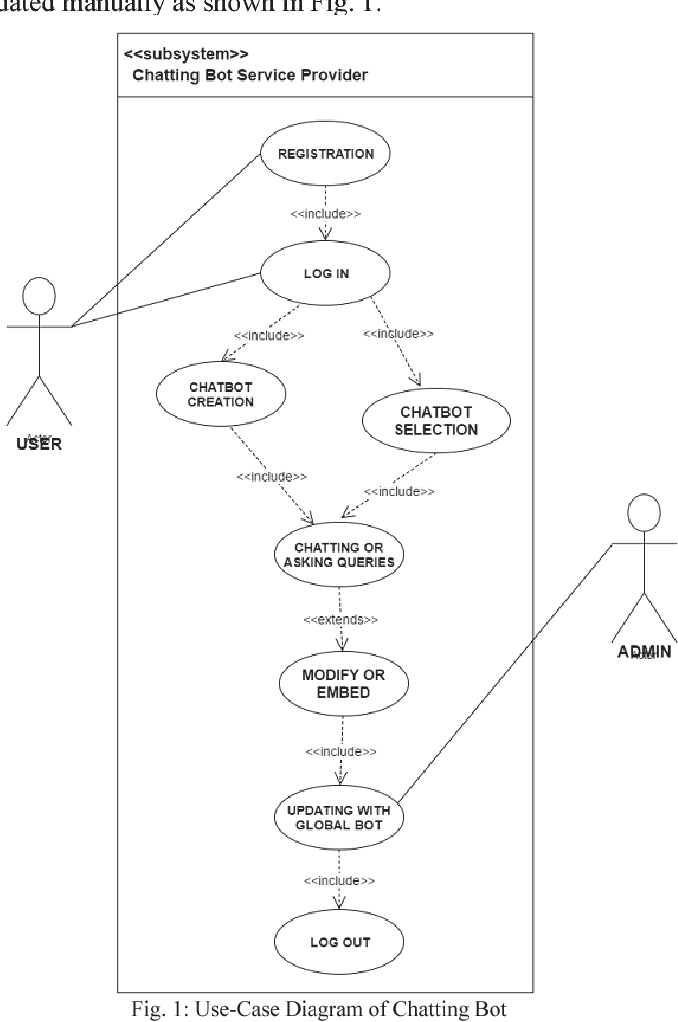
A chatbot communicates similarly to instant messaging. A chatbot is a software that simulates human conversations. It enables the communication between a human and a machine, which can take the form of messages or voice commands. A chatbot is designed to work without the assistance of a human operator.

AI chatbot responds to questions posed to it in natural language as if it were a real person. It responds using a combination of pre-programmed scripts and machine learning algorithms. When asked a question, the chatbot will answer using the knowledge database that is currently available to it.

A chatbot is mainly used to make the conversation easier and simple for the user. The chatbot plays a vital role in today’s trend. The user can post any question to the chatbot. The chatbot process with asked question, that is in -built already or fed by the admin. After finding the suitable answer for the question, the chatbot sends the response to the user. The user gets benefited in this way through the chatbot with whatever he/she requires. The chatbot’s questions are of two types. Either it is in – built default or it can be fed by the admins. It consists of the following elements:

* **Manual Training**: Manual training entails the domain specialist compiling a list of commonly asked user questions and mapping out the answers. It enables the chatbot to identify the most relevant questions’ answers rapidly.
* **Automated Training**: Automated training entails sending business documents to the chatbot, such as policy documents and other Q&A type documents, and instructing it to train itself. From these documents, the engine generates a list of questions and responses. The chatbot would then be able to respond with confidence.

**5.2 Use – case diagram of chatbot:**

****

In the use case diagram of the chatbot we can know the things that are maintained by the admin. Generally, the chatbot are used by the users. Meanwhile it is built maintained by the admins. The admins have the authority to create, update, maintain the chatbot as shown in the above diagram. the conversation easier and simple for the user. The chatbot plays a vital role in today’s trend.

The user can post any question to the chatbot. The chatbot process with asked question, that is in -built already or fed by the admin. After finding the suitable answer for the question, the chatbot sends the response to the user. The user gets benefited in this way through the chatbot with whatever the user requires.

Chatbots are computer programs that replicate and analyse human dialogue (spoken or written), enabling humans to communicate with electronic devices as if they were conversing with a live agent. Chatbots can range from simple programs that respond to a single instance to advanced virtual assistants that can learn and improve as they collect and process data to provide superior levels of personalization.

The rise of chatbots in recent years is rooted in the accelerating pace of digital transformation. Businesses are increasingly migrating from traditional modes of communication to digital channels to interact and transact with their customers. Businesses use Artificial Intelligence to unlock new efficiencies in various customer-facing functions, and chatbots are among the top applications of AI in an enterprise.

**CHAPTER 6**

**TESTING AND IMPLEMENTATION**

**6.1 Introduction**

Testing is a process for executing program with indent of finding an error. A good test case is one that has a high probability of finding an undiscovered error. A test case should be as good that they would uncover all possible error in the system. All the possibilities of error are exhausted while testing is done.

Testing is necessary for the success of the system. Compiling the program ensures that the program syntax is correct it is the program testing which ensures that the program is correct. Various type of testing and testing reviews to be done. Software testing is the process of evaluating and verifying that a software product or application does what it is supposed to do. The benefits of the testing include preventing bugs, reducing development cost and improving performance.

**6.2 Unit Testing**

Unit testing is a software testing method by which individual units of source code, sets of one or more computer program modules together with associated control data, usage procedures, and operating procedures are tested to determine whether they are fit for use. Unit testing is a software development process in which the smallest testable parts of an application, called units, are individually scrutinized for proper operation.

The python program code for chatbot is written on the pycharm platform. And the coding is executed with the built-in chatterbot library and the existing YAML files first. In this testing both syntax and the logical errors rectified. Also this testing is to be done to avoid dangerous situation where the system procedures appealing but incorrect results. The testing is basically done with the objectives to force the system into an error. After finding an error, they have to be corrected and tested again. This is done for the perfection.

**6.3 System Testing**

System testing is the most important phase. The program which were developed earlier were linked properly and put into operation with testing questions.

This testing concludes with the maintenance of the resource necessary, both hardware and software. To prepare for smooth and error free running of the application. Here the manual system is converted to a computerized system, which means the designed system, is coded and put into operation.

A virtual environment is created and the flask was imported, and our chatbot is embedded in the flask environment. With the help of the JavaScript code the chatbot will be able to run on the browser.

**CHAPTER 7**

**CONCLUSION AND FUTURE ENHANCEMENT**

**7.1 Conclusion**

While developing this project we have learnt a lot about chatbots. Chatbot will be very much helpful to the people in today’s world. The older versions of chatbot may not serve the people in the better way. The proposed system will be simple, efficient to handle, and easy to maintain. We have also learnt how to develop a user friendly system and a error – free software. We came to know how to make a software with low cost and with small amount of memory. We also realized the importance of maintaining a minimal margin for error. The testing are done to make the project more accurate and error - free.

**7.2 Future Enhancement**

The project has very vast scope in future. And now - a - days chatbots are the grooming system. In the up - coming days, we planned to create chatbot with voice recognition that is a voice bot which will be more efficient and easily used by all the peoples.

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**APPENDIX A**

**(QUESTIONS FED THROUGH YAML FILES)**

**myques.yml**

- - can you please repeat?

- sorry I can't get you..

- - where is the sports shop?

- KING'S sports 3rd shop of the complex

- - where is the Ice Cream shop?

- IBACO ice creams 4th shop of the complex

- - what is the name of the complex?

- Welcome to AS complex

- - who are you?

- I am a ChatBot of AS Complex

- - where is the paneer?

- at dairy day shop

- - where is the curd?

- 2nd row refrigerator

- - where is the fast food shop?

- FOOD WORLD 1st shop of AS Complex

- - what are the fastfood brands available?

- mc donalds, starbucks, dominos

- - how much types of pizzas are there?

- veg pizza and non veg pizza and many varieties available

- - what is the signature dish in your shop?

- cafe mocha, vanilla latte

- - is tacos available in your shop?

- yeah, its 230/pic

- - is it possible to customise our own pizza here?

- yeah possible

- - what are the special combo available here?

- 1st combo chicken burger, french fries, mojito

- 2nd combo paneer pizza, shawarma, milkshake

- - what is the cost of your signature dish?

- cafe mocha is 160rs

- vanilla latte is 150rs without toppings

- - do you have any special discount?

- yeah above 599 10% discount

- above 699 13% discount

- above 799 15% discount

- - is door delivery available?

- yeah above 499rs

- - can we order food through online?

- use our website www.ascomplexfastfood.com

- - do you have any other branches?

- yeah we have it at Duabi , Singapore and India

- - where is the football?

- you can get it from the sports shop

- - what are the items you have in this shop?

- we have all types of balls, bats and swim suits available in our shop

- - which brands is good in sports wear?

- nike provides the best sports wear for both men and women

- - what are the famous sports brands available?

- sports brands like nike, adidas, puma, asics, fila, reebot, brooks, ariat, umbro.

- - what is the cost of a badminton shoes?

- price starting from 500

- - where can i get swim suits for kids medium size?

- you can get it from the sports shop all types of swim suits are available here

- - what will be the cost of 5 cricket ball?

- it is rs.1000

- - do you have any discount in your shop?

- yeah we have 25% off for 2 foot wears

- - do you have badminton bags which carry a lot of space?

- yeah we have them in the top right corner

- - do you have some gym clothes?

- yeah we have a lot of brands in our shop

- - what can we get in the sports shop?

- we can get a different types of bats, balls, footwear like shoes, slippers, clothes gym clothes etc

- - can i get your shops visiting card?

- yeah of course its our pleasure thank you

- - is return option is possible here?

- yeah only for damages not for colour changes

- - what time do the shop closes?

- the shop is open for 24 hours

- - do we get any discount if we purchases for bulk products?

- yeah you can get 50% if you purchase above rs.2000

- - do you have jerseys in your shop with players names?

- yeah we have every players names printed in the jersey.

- - where are the vegetables?

- vegetables are in the 3rd row.

- - do you sell watches?

- no, we don’t have watches.

- - where is the mushroom?

- it is in the 2nd row.

- - do you have fish and meat?

- yeah, we have fish and meat near the refrigerator.

- - what is the cost of dairy milk?

- starting from Rs.10/-

- - which time the grocery shops open?

- time - 9.am to 7.pm

- - where are the fruits?

- the fruits are in the basket at last row

- - do you sell shoes?

- sorry, we don’t have shoes

- - where are the bottles?

- it is in the plastic section

- - what is name of the grocery shop?

- welcome to Xpress Mart

- - what are the items available in grocery shop?

- we have fruits, vegetables, grocery items and house utilities.

- - what is the name of the flower shop?

- welcome to Blossom Bud Flower Shop

- - what is the name of the sports shop?

- welcome to King's sports

- - what is the name of the ice cream shop?

- welcome to Ibaco ice creams

- - where is the flower shop?

- blossoms flower shop is the 5th shop of the complex

- - what are the varieties available in the flower shop?

- lily, rose, chrysanthemum, sunflowers, jasmine, tulip, daisy and so on

- - what is cost of 200 grams of jasmine?

- it is rs.100

- - will you prepare bouquets?

- we will prepare all types of bouquets

- - can we design our own bouquet?

- yeah of course you can

- - is any discount available for marriage orders?

- yeah we have 20% discount

- - can we get any imported flower from any other countries?

- yeah of course you can get them

- - what is the price of 5 roses?

- it is rs.150

- - do you sell garlands?

- no, we don’t sell them

- - what is the starting rate of the flowers?

- we have all types of flowers at low price

- - what is the name of flower shop?

- blossoms flower shop

- - do you have any other branches?

- no, we have only at as complex

- - from where you are importing the flowers?

- from all Asian countries

- - what is the costliest flower in this shop?

- lavender, iris, magnolia, lilac, primrose

- - will you decorate for events?

- yes, but the cost will differ

- - hi

- hello welcome to as complex

- - how many shop is in this as complex?

- there are 5 shops in our complex

- - when did you opened this shop?

- since 2000

- - at which time the shop the shop will open?

- at 10am

- - do you have drinking water?

- yes you can get it from the grocery shop

- - where is the washroom?

- at the left corner of the kings sports shop

- - do you sell environment friendly bags?

- yes of course.....

- - where is this complex located?

- AS Complex located at Karaikal...

**Note:**

- - denotes the questions fed to the chatbot

- denotes the answers fed to the chatbot

**APPENDIX B**

**(SOURCE CODE)**

**app.py**

# import files

import sys

from flask import Flask, render\_template, request

from chatterbot import ChatBot

from chatterbot.trainers import ChatterBotCorpusTrainer

app = Flask(\_\_name\_\_)

chatbot = ChatBot('ChatBot')

trainer = ChatterBotCorpusTrainer(chatbot)

trainer.train("chatterbot.corpus.english")

@app.route("/")

def home():

return render\_template("index.html")

@app.route("/get")

def get\_bot\_response():

userText = request.args.get('msg')

if userText == "bye" :

return("bye")

else :

return str(chatbot.get\_response(userText))

if \_\_name\_\_ == "\_\_main\_\_":

app.run()

**index.html**

<!DOCTYPE html>

<html>

<title>ChatBot</title>

<head>

<script src="https://ajax.googleapis.com/ajax/libs/jquery/3.2.1/jquery.min.js"></script>

<style>

body {

font-family: monospace;

}

h1 {

background-color: #8080ff;

color: black;

display: inline-block;

font-size: 2em;

margin: 0;

padding: 10px;

}

#chatbox {

margin-left: auto;

margin-right: auto;

width: 40%;

margin-top: 60px;

}

#userInput {

margin-left: auto;

margin-right: auto;

width: 40%;

margin-top: 60px;

}

#textInput {

width: 90%;

border: none;

border-bottom: 3px solid black;

font-family: monospace;

font-size: 17px;

}

.userText {

color: black;

font-family: monospace;

font-size: 17px;

text-align: right;

line-height: 30px;

}

.userText span {

background-color: #e699ff;

padding: 10px;

border-radius: 2px;

}

.botText {

color: black;

font-family: monospace;

font-size: 17px;

text-align: left;

line-height: 30px;

}

.botText span {

background-color: #ffdd99;

padding: 10px;

border-radius: 2px;

}

#tidbit {

position: absolute;

bottom: 0;

right: 0;

width: 300px;

}

.boxed {

margin-left: auto;

margin-right: auto;

width: 78%;

margin-top: 60px;

border: 1px solid green;

}

.box {

border: 2px solid black;

}

</style>

</head>

<body>

<center>

<h1>

AI ChatBot

</h1>

</center>

<div class="box"></div>

<div class="boxed">

<div>

<div id="chatbox">

<p class="botText">

<span>Hi! I'm ChatBot</span>

</p>

</div>

<div id="userInput">

<input id="textInput" type="text" name="msg" placeholder="Enter message here..." />

</div>

</div>

<script>

function getBotResponse() {

var rawText = $("#textInput").val();

if (rawText == "bye")

{ alert("thank you.. visit again..")

document.getElementById("textInput").style.visibility = 'hidden';

}

var userHtml = '<p class="userText"><span>' + rawText + "</span></p>";

$("#textInput").val("");

$("#chatbox").append(userHtml);

document

.getElementById("userInput")

.scrollIntoView({ block: "start", behavior: "smooth" });

$.get("/get", { msg: rawText }).done(function(data) {

var botHtml = '<p class="botText"><span>' + data + "</span></p>";

$("#chatbox").append(botHtml);

document

.getElementById("userInput")

.scrollIntoView({ block: "start", behavior: "smooth" });

});

}

$("#textInput").keypress(function(e) {

if (e.which == 13) {

getBotResponse();

}

});

</script>

</div>

</body>

</html>

**APPENDIX C**

**( SCREEN SHOTS )**

