



Department of Computer Science & Engineering
Shri Shankaracharya Institute of Professional Management & Technology
Raipur (C.G.)

A Major Project Report Phase-I On
**AI BASED PLATFORM FOR STUDENTS VIA CHATBOT WITH
REGISTRATION**
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The Partial Fulfillment of Degree of
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AI BASED PLATFORM FOR STUDENTS VIA CHATBOTS WITH REGISTRATION



DECLARATION BY THE CANDIDATE

We the undersigned solemnly declare that the report of the SEPM Project work entitled **AI Based platform for students via chatbots with registration**, is based on my own work carried out during the course of my study under the supervision of Mr. Dheeraj Kumar Ghaghre.

We assert that the statements made, and conclusions drawn are an outcome of the project work. We further declare that to the best of my knowledge and belief that the report does not contain any part of any work which has been submitted for the award of any other degree/diploma/certificate in this University/deemed University of India or any other country.

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ABSTRACT

The main purpose of the project is to develop an AI based platform for student to answer their instant queries via chatbots. Artificial Intelligence (AI) is the theory and development of computer system to learn, understand, and cater to new situation. A chatbot may be a typical example of an AI system and one of the most elementary and widespread examples of intelligent Human-Computer Interaction. Nowadays the utilization of chatbots is popular in large of applications, in fact, to make it fast, system is provided up with chatbots that can interpret the user questions and provide right answer.

We are using flask framework. it is small and lightweight python web framework that gives specific Tools and feature that make creating web application in python easier. For frontend and backend, we are using HTML, JavaScript, and python. for database MySQL, also we are using chatterbot API.

Keywords - Artificial intelligence (AI), Chatbot, query resolution, Natural language processing NLP

LIST OF SYMBOLS

,	Comma
.	Full Stop
,	Inverted comma
()	Parenthesis
:	Colon
-	Hyphen
“ ”	Double inverted comma
[]	Angle Bracket



LIST OF ABBREVIATIONS

SRS	System Requirement Specification
DFD	Data Flow Diagram
HTML	Hyper Text Markup Language
JS	Java Script
VS	Visual Studio
SDLC	Software Development Life Cycle
UI	User Interface
AI	Artificial Intelligence
NLP	Natural Language Process
ER-D	Entity Relationship Diagram

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CHAPTER-I

INTRODUCTION



1.1 Project Overview

Artificial Intelligence (AI) is the theory and development of computer system to learn, understand, and deal with new situation. A chatbots is a typical example of an AI system and one of the most elementary and widespread examples of intelligent Human- Computer Interaction. Now days the use of chatbots is popular in large of applications, in fact, to speed up, system is equipped up with chatbots that can interpret the user questions and provide right answer.

We are using flask framework. It is small and lightweight python web framework that provides specific tools and feature that make creating web application in python easier. For frontend and backend, we are using HTML, JavaScript and python. for database MySQL, also we are using chatterbot API.

Chatbots is part of natural language processing (NLP), wherein it requires machine to learn as in line with human language, just so it can satisfy the wishes of person. Chatbots behaviour conversations with human beings, and developers usually hope that customers may not recognise they are speaking to a robot. AI chatbots are also known by way of many different names: Talbot, bot, IM bot, sensible chatbot, conversation bot, AI conversation bot, speaking bot.

interactive agent, artificial conversation entity, or digital talk chatbot. It is far one of the software or applications which takes the user queries and tries to reply those queries based totally on its expertise. it has been not possible for any institution to connect with their leads in actual time, specifically after operating hours or on vacations. So right here, may be a conversational AI-based totally education Chatbot which helps intelligently engage with candidates during their admission adventure.

Chatbots have developed with the modern growth in computational competencies and advances in human language Processing equipment and techniques. The accelerated blessings of chatbots caused their extensive adoption by many industries to offer digital help to customers. A chatbot can method user input and convey an output. commonly, chatbots take natural language text as enter, and consequently the output must be the most applicable output to the person enter sentence. they are currently implemented to a spread of various fields and programs, spanning from education to e-commerce, encompassing healthcare and leisure. consequently, chatbots can provide each guide in several fields in addition to entertainment to customers. it can simultaneously help more than one user,

accordingly ensuing more efficient and less highly-priced in comparison to human consumer supports offerings.

similarly, to guide and assistance to customers, chatbots are frequently used for imparting entertainment and companionship for a person. If the consumer wishes to understand whatever related to time table, class time table, or to fill registration form, he/she will be able to get the moment answer to their queries inside a minute, which also solves their hassle. The main purpose of the project is to develop an AI based platform for student to answer their instant queries via chatbots. Artificial Intelligence (AI) is the theory and development of computer system to learn, understand, and cater to new situation. A chatbot may be a typical example of an AI system and one of the most elementary and widespread examples of intelligent Human-Computer Interaction. Nowadays the utilization of chatbots is popular in large of applications, in fact, to make it fast, system is provided up with chatbots that can interpret the user questions and provide right answer.

We are using flask framework. it is small and lightweight python web framework that gives specific tools and feature that make creating web application in python easier. For frontend and backend, we are using HTML, JavaScript, and python. for database MySQL, also we are using chatterbot API.

1.2 Objective

The main purpose of the project is to develop an AI based platform for student to answer their instant queries via chatbots, and also implement the registration process.

The Chatbots can provide specified topics to students through standard text messaging or multimedia such as images, videos, audio, and document files. Just like any classroom, the chatbots hands them out all the learning material required.

It performs following tasks-

1. . Student engagement.
2. . Student support.
3. . Getting a quick answer in the emergency.
4. . Resolving a complaint or problem.
5. . Getting detailed answer or explanation.



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CHAPTER-II

LITERATURE REVIEW & PROBLEM IDENTIFICATION

2.1 Literature Review

Chatbots is a part of natural language processing (NLP), where it requires system to be trained as per human language, so that it can satisfy the needs of user.

Chatbots conduct conversations with people, and developers typically hope that users will not realize they're actually talking to a robot.

The term chatbot comes from “chatterbot,” a name coined by inventor Michael Mauldin in 1994. He created Julia, the first chatbots made with Verbot, a popular software program and development kit. Today, AI chatbots are also known by many other names: Talbot, bot, IM bot, intelligent chatbots, conversation bot, AI conversation bot, talking bot, interactive agent, artificial conversation entity, or virtual talk chatbots.

It is one of the application or programs which takes the user queries and tries to answer those queries based on its knowledge.

It was not possible for any Institution to connect with their leads in Real time, especially after working hours or on holidays. So here, is a conversational AI- based education Chatbot which helps intelligently engage with candidates throughout their admission journey.

Chatbots have evolved with the progressive increase in computational capabilities and advances in Natural Language Processing tools and techniques.

The increased benefits of chatbots led to their wide adoption by many industries in order to provide virtual assistance to customers.

A chatbots can process user input and produce an output. Usually, chatbots take natural language text as input, and the output should be the most relevant output to the user input sentence.

They are currently applied to a variety of different fields and applications, spanning from education to e-commerce, encompassing healthcare and entertainment. Therefore, chatbots can provide both support in different fields as well as entertainment to users.

It can simultaneously assist multiple users, thus resulting more productive and less expensive compared to human customer supports services. In addition to support and assistance to

customers, chatbots can be used for providing entertainment and companionship for the end user.

Nowadays, many people are using smartphone with many new applications i.e., technology is growing day by day. Today Artificial Intelligence is playing a major role in a variety of fields ranging from industries in product manufacturing, to customer care in public relations. As there are many online Artificial Intelligence (AI) systems or chat bots which are in existence that help people solve their problems. So, we are going to implement a virtual assistant based on AI that can solve any college related query. This will work as a College Oriented Intelligence machine. This virtual machine will respond to the queries of students on college related issues. A chat bot has information stored in its database to identify the sentences and making a decision itself as response to answer a given question. The college enquiry chat bot will be built using algorithm that analyses queries and understand user's message.

If the user wants to know anything related to time table, class schedule, or to fill registration form, he/she will get the instant answer to their queries within a minute, which also solves their problem.

AI-powered chatbots are motivated by the need of traditional websites to provide a chat facility where a bot is required to be able to chat with user and solve queries. When live agent can handle only two to three operations at a time, chatbots can operate without an upper limit which really scales up the operations. Also, if any school or business is receiving lots of queries, having a chatbot on a website takes off the load from support team. Having a chatbot clearly improves the response rate compared to human support team. In addition, since millennials prefer live chats over a phone call, they find a chatbot, which provide a highly interactive marketing platform, very attractive. Furthermore, a chatbot can automate the repetitive tasks. There can be some scenarios where a business or school receives same queries in a day for many times and support team must respond to each query repetitively. Lastly, the most important advantage of having a chatbot is that it is available 24/7. No matter what time it is, a user can get a query solved.

Chatbots are intelligent conversational systems that can process human language. A Chatbot can process the user input using the NLP tool, and then associate the input with intent, in order to produce an output. There are two types of Chatbots, which are:

Rule-based Chatbots: They are programmed to reply to specific questions that are predefined at the beginning. In this type of Chatbots, users are restricted to limited input options.

AI Chatbots: They are programmed to interact with users as a real human, and they have the ability to keep track of context and word dictionary. In addition, this type of Chatbots requires many logic implementations. Moreover, they can be classified into three different categories, which are deep learning Chatbots, end-to-end systems and sequence-to-sequence models.

2.2 Breakdown of Artificial Intelligence in Chatbots

At a more granular level, machine learning incorporates a number of different approaches.

- **Supervised Machine Learning Algorithms:** These are most like the technique detailed above. They involve the use of a training dataset with inputs and outputs for which a machine creates an inferred predictive function that allows it to turn inputs into desired outputs after sufficient training. This type of algorithm also enables a machine to learn from mistakes — that is, when an input isn't converted into the desired output.
- **Unsupervised Machine Learning Algorithms:** These are similar, but use training data that is not classified or labelled. The idea here is not to generate outputs, but to describe hidden structures that might be present in unlabelled data, so the machine's goal is to infer a function that can describe these hidden structures.
- **Reinforcement Machine Learning Algorithms:** These use a behaviour-reward learning method by which a machine learns which “behaviours” will earn it rewards — including delayed rewards — through trial and error. The goal is for a machine to be able to determine the most suitable behaviour in a given context.

2.3 Methodology

Our approach for conducting this literature survey study consists of two stages. Each stage involves several activities. In the first stage, we identify relevant search terms to literature work on the topic, and then we identify appropriate databases of research articles. Then, we collect research articles on chatbots from the selected databases. These activities are focused on information gathering about the topic. The second stage of our study involves the analysis

of the retrieved articles. We focus on classifying the articles to different groups based on four aspects of chatbots: design, implementation, application and evaluation methods reported in the literature. In the following subsections, we give details of those activities. Considering the advantages, the review of a handful of research done by scholars in the use of Chabot for tutoring is summarized below:

A. 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.

B. Spaced Interval Learning:

Spaced Interval learning helps students polish up what they have studied until then. The students can recall what they have memorized. Super Memo is an application that reminds students when they are about to forget. It uses an algorithm to monitor the frequency mode in which the learning happens and repeats subjects already covered.

C. 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).

D. Easing tasks of tutors:

It is a false assumption for teachers who think the chatbots may take up their job and they will be laid off. It only simplifies tasks for them by helping students with frequent queries and assessing them personally. Teachers can equip themselves with the latest research during the supplementary time they get. Ashok Goel, is one among the initial educators who used this method and developed his own chatbots and named it Jill Watson. Jill attempted to answer the students through an online forum dispensing all available information including technical doubts.

E. 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).

F. 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 talk Bot 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.

2.4 Problem Identification

This project is focusing on creating a chatbot to be used by students to get their queries

responded easily from the college website. Before implementing College Enquiry Chatbot, various existing chatbots were reviewed such as Amazon Shopping App, Alexa, Bank of America (Erica bot) and CNN news bot. In order to understand the requirement of a chatbot, consider an example of Amazon Shopping App.

In this app, when a customer buys an item, he/she does not have any information about how to return the item. To get this information, the customer must call and wait to talk to customer representative for a long time. However, this whole process is tedious for a customer. Hence, Amazon created a chatbot to answer simple queries of customers.

Another downside which was found during research on chatbot is that bots are created in such way that they follow a specific route and mostly all of them fails to satisfy anything outside of the previously defined scripts. This means that if they are not part of a predefined script, a significant number of the bots will fail in understanding even the most fundamental kind of queries, which results in a repeating and horrendous experience.

To resolve this issue, active learning can be introduced to the system to make probabilistic assessments and provide autonomous responses to the users. Active learning is an algorithm which interactively queries user to obtain the desired output. Whenever a user asks anything which is outside of the script the chatbot will ask questions to the user by giving two to three options and based on the user's input, the bot returns the answer to that query. This whole learning process is called as active learning.

Chatbots on messenger platforms are still relatively new, and there are still things that are hindering chatbots from reaching mainstream user adoption. Discovering bots is still an issue for potential users

Most people using messaging platforms such as Facebook messenger are still not aware that chatbots exist. The discovery of chatbots on many messaging platforms is still very limited at the moment. Without massive marketing efforts, it is very difficult for bot developers to get in front of massive audiences on messaging platforms, which can be quite frustrating for developers.

1. No established business models

A monetisation strategy for developers who create chatbots for messenger currently does not exist. In other words, chatbot developers have no way to make money from their chatbots, unless they develop these bots for a third party. That is not to say that one of the major platforms will not deploy a compelling monetisation method in the coming years. Perhaps in

a few years users will have to pay a small fee to use the best Facebook messenger chatbots. This will be similar to how users currently have to pay a small fee for premium apps on the app store. Chatbots may not provide direct value to developers, but may be useful for large companies who hope to engage with more users and hence get more sales.

2. Most chatbots aren't that great at having normal conversations

The relatively low barrier to entry for chatbot makers, means a lot of chatbots have been published since messenger had announced that it was allowing chatbots on its messenger platform. This has caused an influx of bots in a relatively short amount of time, with a lot of these bots being subpar or not of the highest quality. A lot of the chatbots on messenger are frustrating to use and not helpful at all. It is important to note, however, that chatbots on these messenger platforms are still relatively new, so as natural language processing technologies improve the ability for chatbots to hold longer deeper and more meaningful interactions will also significantly improve with time. Infact, with the sheer amount of time and money that is going into developing chatbots, Kursweil (a Google engineer) claims that chatbots will be able to have human level language abilities by 2029.

To summarize, there has been a lot of investigations on the use of the artificial conversational entity over ages and the research still continues for enhanced results and switch over to a digital era. While there are limitations to its usage that includes lack of funds and qualified teachers, this paper reviews previous literatures where chatbots benefitted the students and teachers simultaneously which outweighs the limitations and promises a better education. The review ends with the conclusion which looks at the research questions and the aim, and summarizes the found answers and the key points of the discussion. The aim of the research was to further the development of educational chatbots by reviewing what had been done and summarize this knowledge. This would be done by finding out what capabilities the chatbots might have in an educational context and if it could stand on its own or if it required additional technology to add pedagogical value in education.

The features and uses of AIML-based chatbots are many, and they seem only to be limited by what we humans might imagine it doing. It is a flexible and diverse tool, simultaneously simple and complex, limited only by the inventiveness of its creator. It can work well on its own and provide educational value, but may reach even better results when combined with other technology. A more specific answer might be that a chatbots can be used as a tutor, a student evaluator, for questions and answers, to communicate with a teacher or simply for

natural conversation. The chatbots capabilities can be expanded by including it in other systems such as e-learning systems, virtual environment or library system (or other database heavy systems) or by adding augmenting technology like text-to-speech technology, linguistic tools or animation.

A real case has been investigated developing a Chatbots for the students of Fundamentals of Computer Science and Computer Networks courses. The results obtained by the experimental campaign are satisfying and show the good perspective of this kind of approach. Further developments involve the application of the proposed approach in various contexts and an improvement of e-learning platform and these findings provide further evidence to suggest that chatbots programming (especially on the Facebook Messenger) is still in its early stages. The future research can be divided into two more fields. The first is to focus on the developers support to create and offer tools that allow any teacher to integrate chatbots into their classes without difficulty, and provide educational chatbots guidelines to successfully support coaching methods and students learning. The second field is a content analysis of the actual conversations with students. It is technically possible to store, collect and analyze conversations from both macro and micro angles. I hope this review will promote further research among other stakeholders in using chatbots on educational process.

2.5 SDLC Model

AI project would have a high level of uncertainty and would also have a need for a significant level of creativity and innovation. Those factors would normally lean towards an Agile model. In this model, a software product is divided into small parts, and the development and testing process are carried concurrently, in a continuous iteration. The Agile methodology derives from a namesake declaration, which advanced ideas that were developed to counter the more convoluted methods that pervaded the software development world despite being notoriously inefficient and counterproductive. Promoting similar methods to Lean, the key principles of Agile are as follows:

- Satisfying customers is of foremost importance
- Reflect and adapt on an ongoing basis
- Responding to change over following a plan

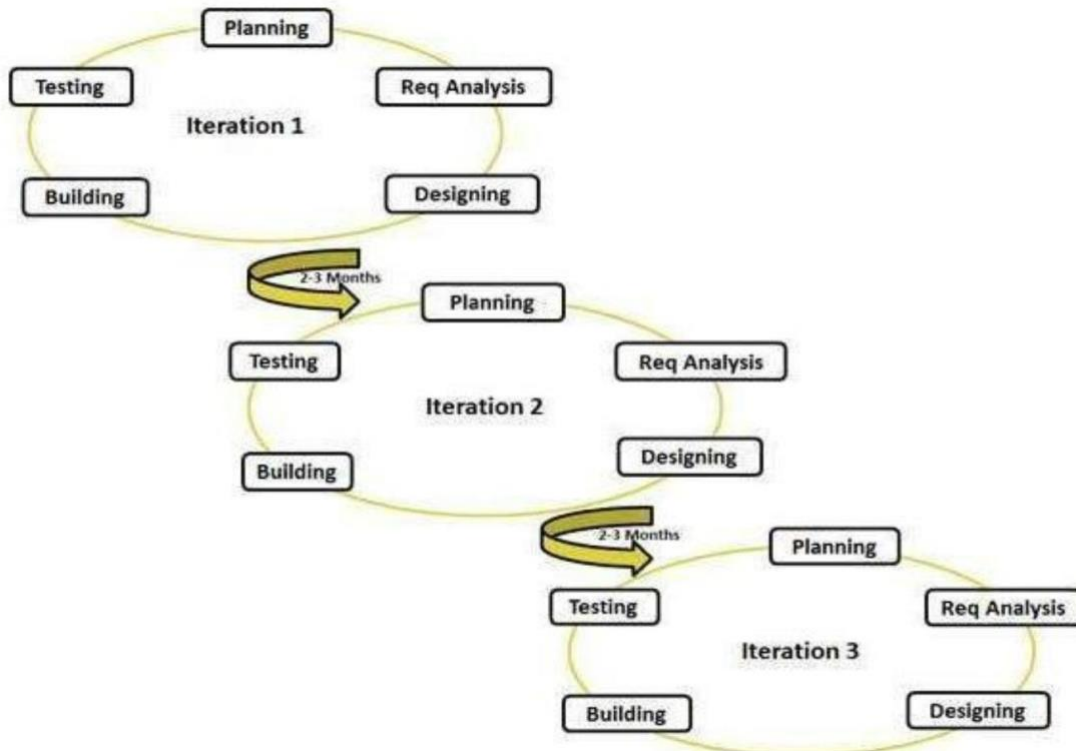


Fig 2.5 Agile Model Diagram

Adopting an agile approach is key to optimize chatbots for automation.

2.6 Data Flow Diagram

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It can be manual, automated, or a combination of both. It shows how data enters and leaves the system, what changes the information, and where data is stored.

The objective of a DFD is to show the scope and boundaries of a system as a whole. It may be used as a communication tool between a system analyst and any person who plays a part in the order that acts as a starting point for redesigning a system. The

DFD is also called as a data flow graph or bubble chart.

The Data Flow Diagram has 4 components:

- Process:

Input to output transformation in a system takes place because of process function. The symbols of a process are rectangular with rounded corners, oval, rectangle or a circle.

- Data Flow:

Data flow describes the information transferring between different parts of the systems. The arrow symbol is the symbol of data flow. A relatable name should be given to the flow to determine the information which is being moved. Data flow also represents material along with information that is being moved.

- Warehouse:

The data is stored in the warehouse for later use. Two horizontal lines represent the symbol of the store. The warehouse is simply not restricted to being a data file rather it can be anything like a folder with documents, an optical disc, a filing cabinet.

- Terminator:

The Terminator is an external entity that stands outside of the system and communicates with the system.

A data flow diagram can dive into progressively more detail by using levels and layers, zeroing in on a particular piece. DFD levels are numbered 0, 1 or 2, and occasionally go to even Level 3 or beyond. The necessary level of detail depends on the scope of what you are trying to accomplish.

- **DFD level 0** is also known as fundamental system model, or context diagram represents the entire software requirement as a single bubble with input and output data denoted by incoming and outgoing arrows. Then the system is

- decomposed and described as a DFD with multiple bubbles. Parts of the system represented by each of these bubbles are then decomposed and documented as more and more detailed DFDs. This process may be repeated at as many levels as necessary until the program at hand is well understood. It is essential to preserve the number of inputs and outputs between levels, this concept is called leveling by DeMacro. Thus, if bubble "A" has two inputs x 1 and x2 and one output y, then the expanded DFD, that represents "A" should have exactly two external inputs and one external output.
- DFD Level 1** provides a more detailed breakout of pieces of the Context Level Diagram. You will highlight the main functions carried out by the system, as you break down the high-level process of the Context Diagram into its subprocesses.
- DFD Level 2** then goes one step deeper into parts of Level 1. It may require more text to reach the necessary level of detail about the system's functioning.

UML

DATA FLOW DIAGRAM

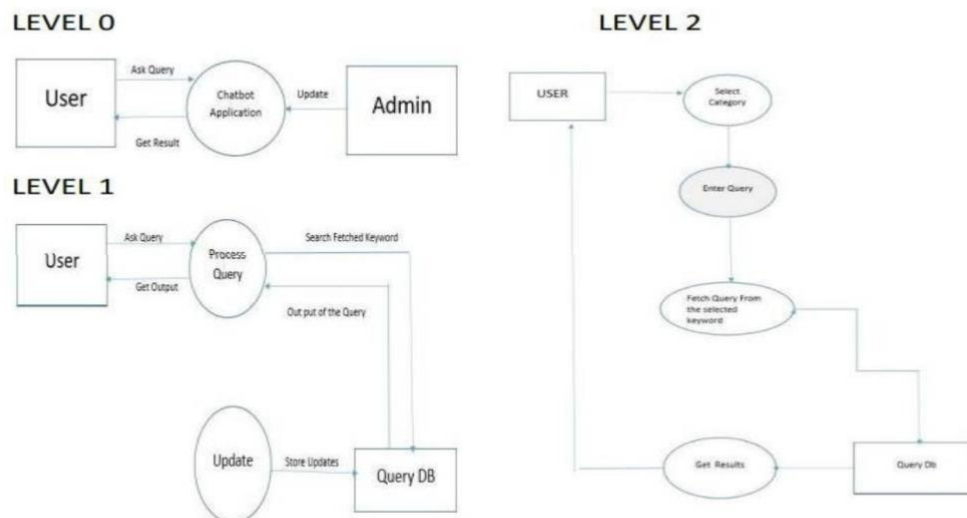


Fig 2.6 Data Flow Diagram



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CHAPTER-III

SYSTEM ANALYSIS

3.1 Workflow Diagram

A workflow diagram (also known as a workflow) provides a graphic overview of the business process. Using standardized symbols and shapes, the workflow shows step by step how your work is completed from start to finish. It also shows who is responsible for work at what point in the process.

Designing a workflow involves first conducting a thorough workflow analysis, which can expose potential weaknesses. A workflow analysis can help you define, standardize and identify critical areas of your process.

A workflow chart is commonly used for documentation and implementation purposes since it provides a general overview of a business process. It's often the foundation for other documentation including flowcharts, data flow diagram, projects and more.

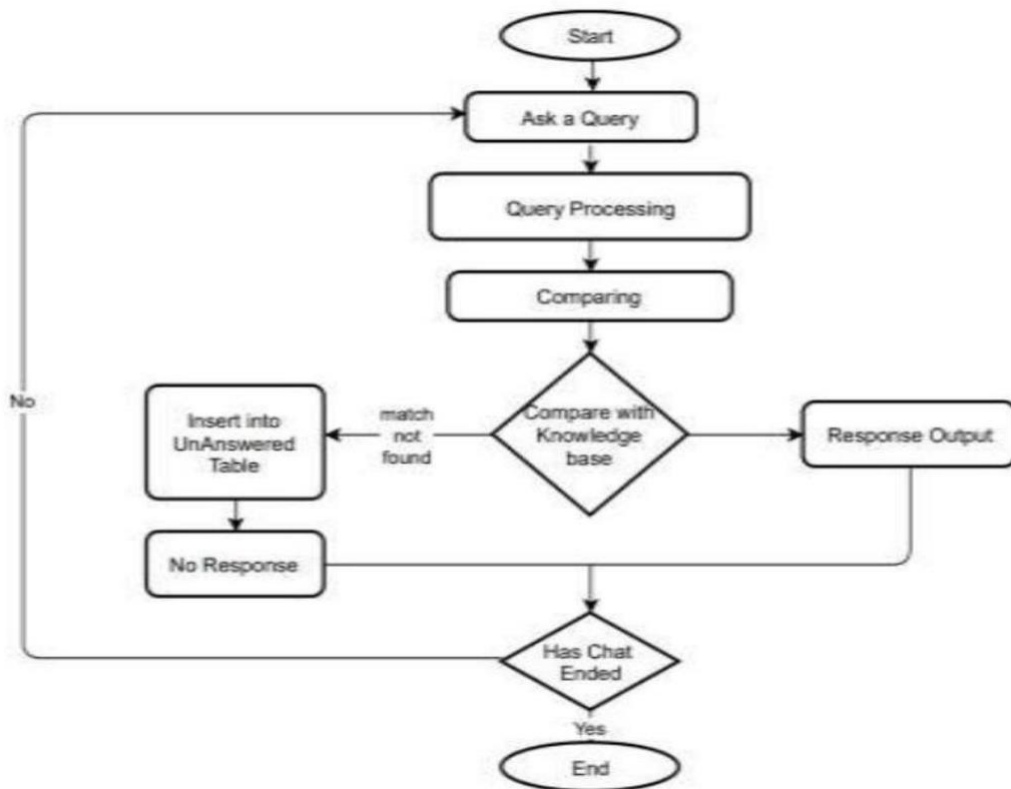


Fig. 3.1 Workflow Diagram

3.2 E-R Diagram

ERD stands for entity relationship diagram. People also call these types of diagrams ER diagrams and Entity Relationship Models. An ERD visualizes the relationships between entities like people, things, or concepts in a database. An ERD will also often visualize the attributes of these entities.

By defining the entities, their attributes, and showing the relationships between them, an ER diagram can illustrate the logical structure of databases. This is useful for engineers hoping to either document a database as it exists or sketch out a design of a new database.

An ER diagram can help businesses document existing databases and thereby troubleshoot logic or deployment problems or spot inefficiencies and help improve processes when a business wants to undertake business process re-engineering. ERDs can also be used to design and model new databases and make sure that engineers can identify any logic or design flaws before they're implemented in production.

- Document an existing database structure
- Debug, troubleshoot, and analyze
- Design a new database
- Gather design requirements
- Business process re-engineering (**BPR**)

When documenting a system or process, looking at the system in multiple ways increases the understanding of that system. ERD diagrams are commonly used in conjunction with a data flow diagram to display the contents of a data store. They help us to visualize how data is connected in a general way, and are particularly useful for constructing a relational database.

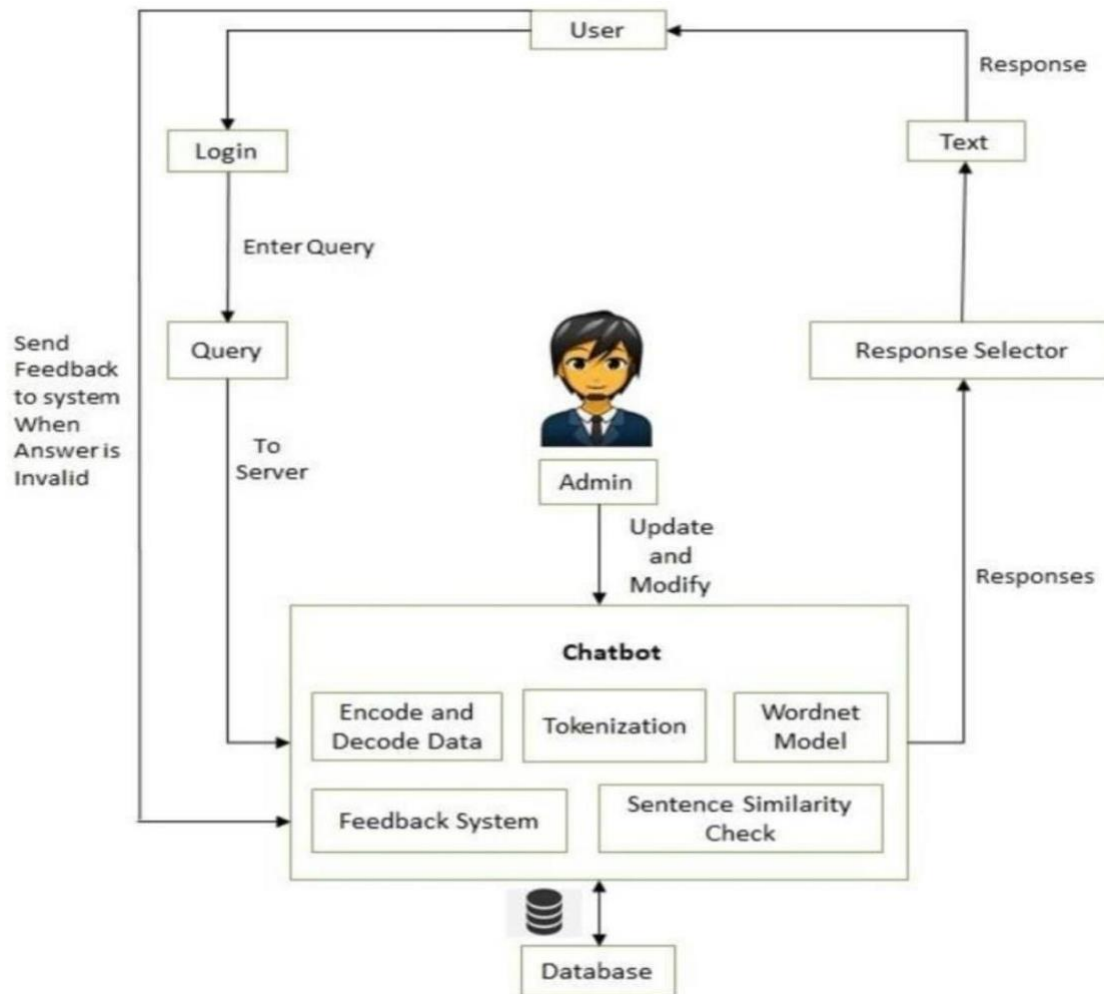


Fig. 3.2 E-R Diagram

3.3 Use Case Diagram

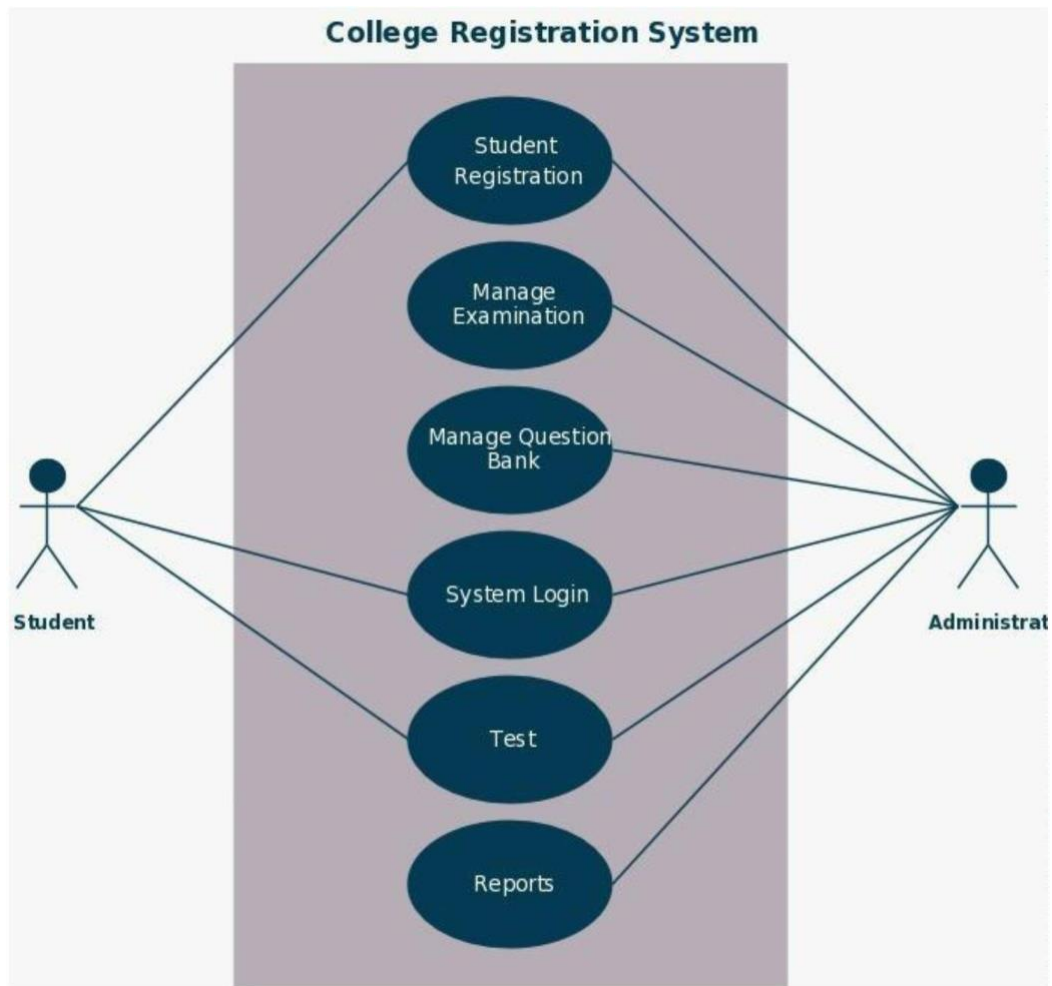


Fig. 3.3 Use Case Diagram

Use case diagram for chatbots - showing how a message chatbots functions. A Use Case (UC) is an action that can be modelled, handled, and accomplished through a conversational interaction between the bot and the user.

3.4 Sequence & Activity Diagram

A sequence diagram is a type of interaction diagram because it describes how and in what order group of objects works together. These diagrams are used by software developers and business professionals to understand requirements for a new system or to document an existing process. Sequence diagrams are sometimes known as event diagrams or event scenarios.

Sequence diagrams can be useful references for businesses and other organizations. Try drawing a sequence diagram to:

- Represent the details of a UML use case.
- Model the logic of a sophisticated procedure, function, or operation.
- See how objects and components interact with each other to complete a process.
- Plan and understand the detailed functionality of an existing or future scenario

The following scenarios are ideal for using a sequence diagram:

- Usage scenario: A usage scenario is a diagram of how your system could potentially be used. It's a great way to make sure that you have worked through the logic of every usage scenario for the system.
- Method logic: Just as you might use a UML sequence diagram to explore the logic of a use case, you can use it to explore the logic of any function, procedure, or complex process.
- Service logic: If you consider a service to be a high-level method used by different clients, a sequence diagram is an ideal way to map that out.

chatbot is utilizing Python because the programming language. The chatbot is developed in such how that we can input a query to the program and it will generate the related output to the user as the response.

The chatbot can store the knowledge provided and learn from its experience as well. the primary and the foremost part of the software is its environment and the libraries used for creation of the bot. the event of the chatbot requires its related libraries. the the foremost significant library used here is chatterbot which is a library provided by python to provide responses to the user.

The importing of required package and modules is that the next step of implementing the chatbot. the subsequent step requires import of required classes such as Chatbot and List Trainer.

The implementation utilizes these classes to make instances of them and to create and train the bot. we have trained the chatbot using corpus and used get response function to urge the response of the query. we have imported chatbot corpus trainer class from chatterbot.

Trainers' module to coach the chatbot for automated responses of a query .The main Flask framework is employed which is a web framework provided by python module for creating web applications. It contains libraries and modules for implementing the appliance.

The frontend is made using HTML, CSS and JavaScript and Backend is made using Python as the programming language along with its libraries and modules for the Implementation of chatbot. The queries initiated by the user is managed with the database MySQL which manages the queries, provides the related responses, and stores the info for future reference.

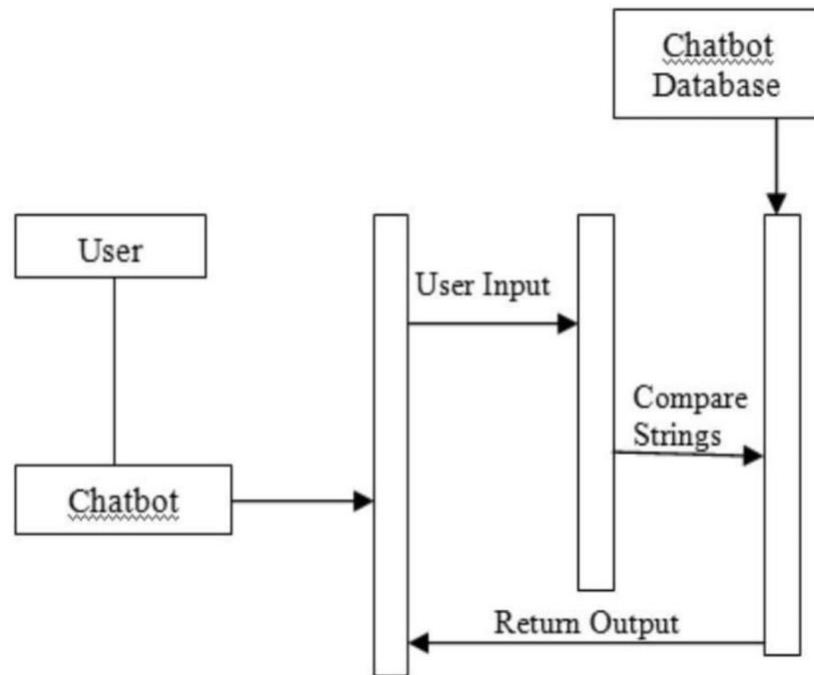


Fig. 3.4 Sequence & Activity Diagram

3.5 Collaboration & Class Diagram

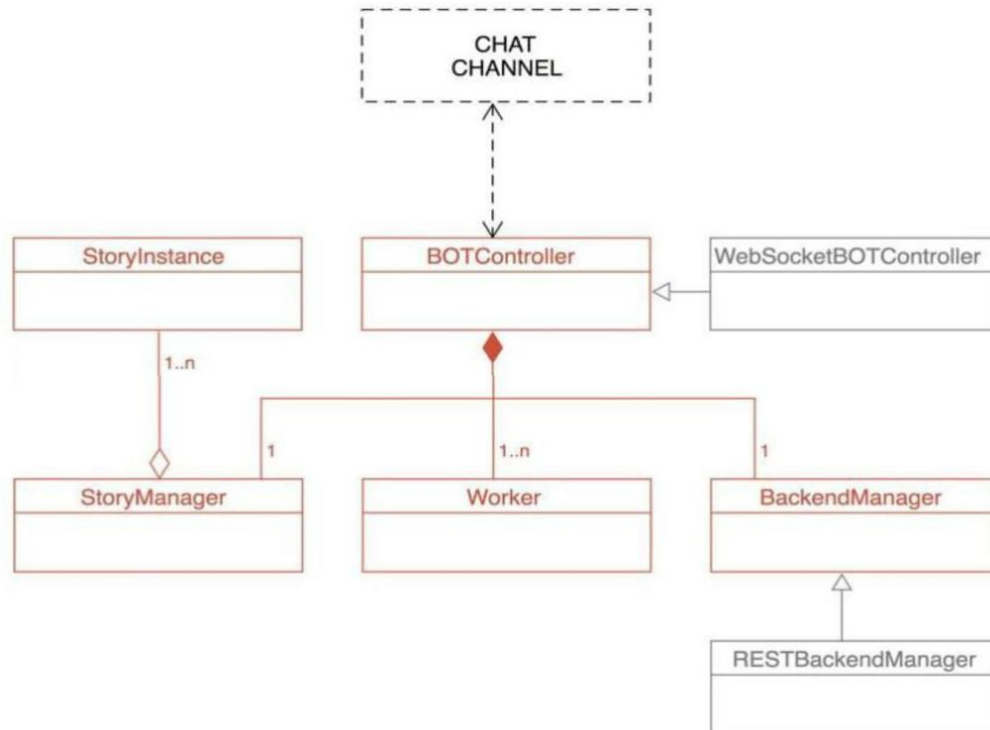


Fig. 3.5 Collaboration & Class Diagram



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CHAPTER-IV

SNAPSHOT

3. Snapshots

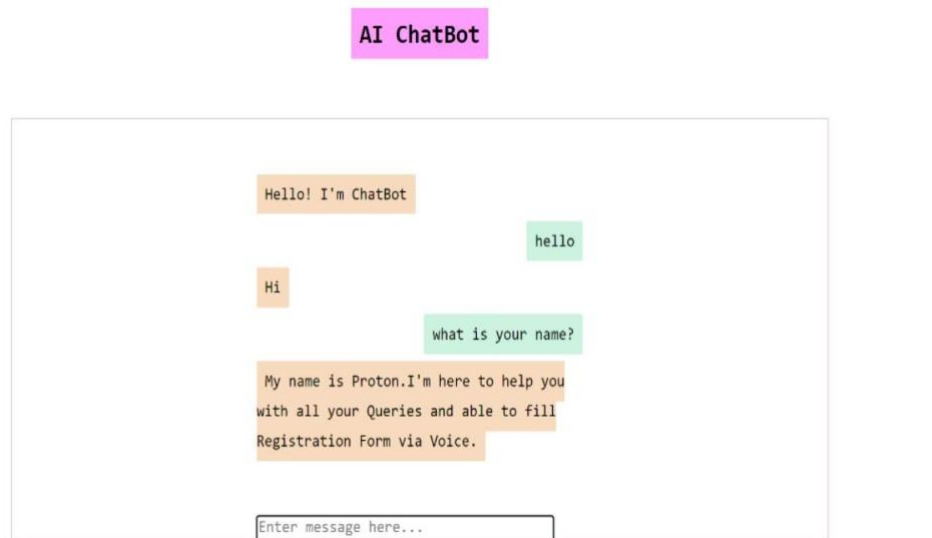


Fig. 4.1 UI of chatbots

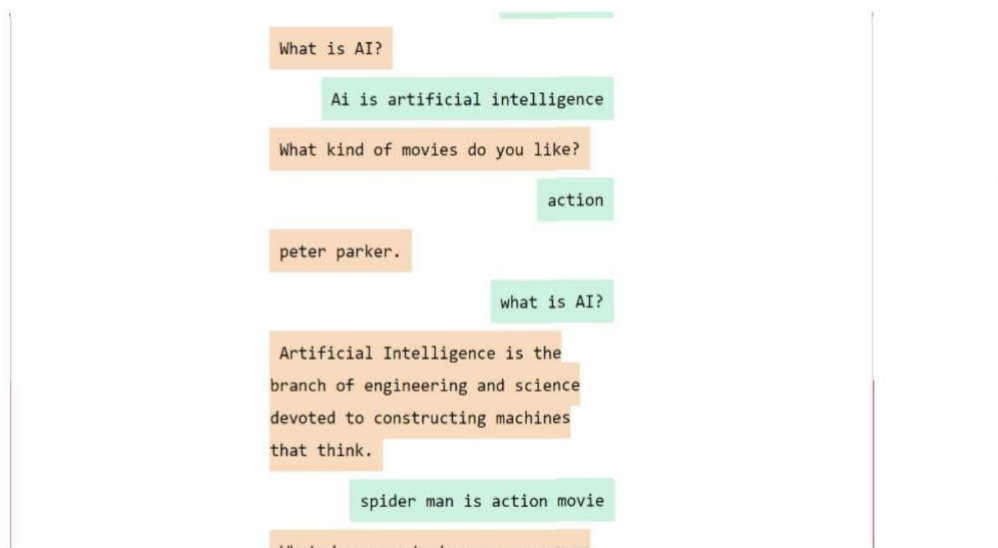
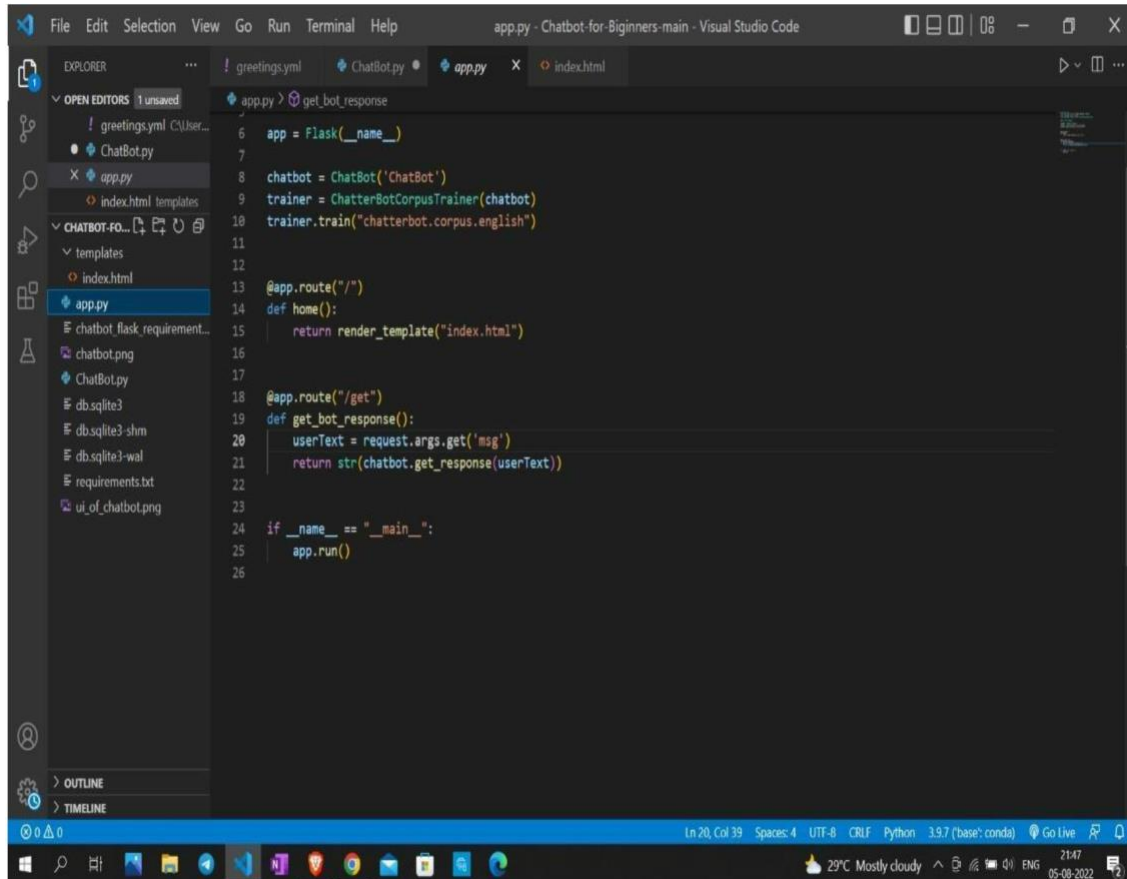


Fig. 4.2 Final Output



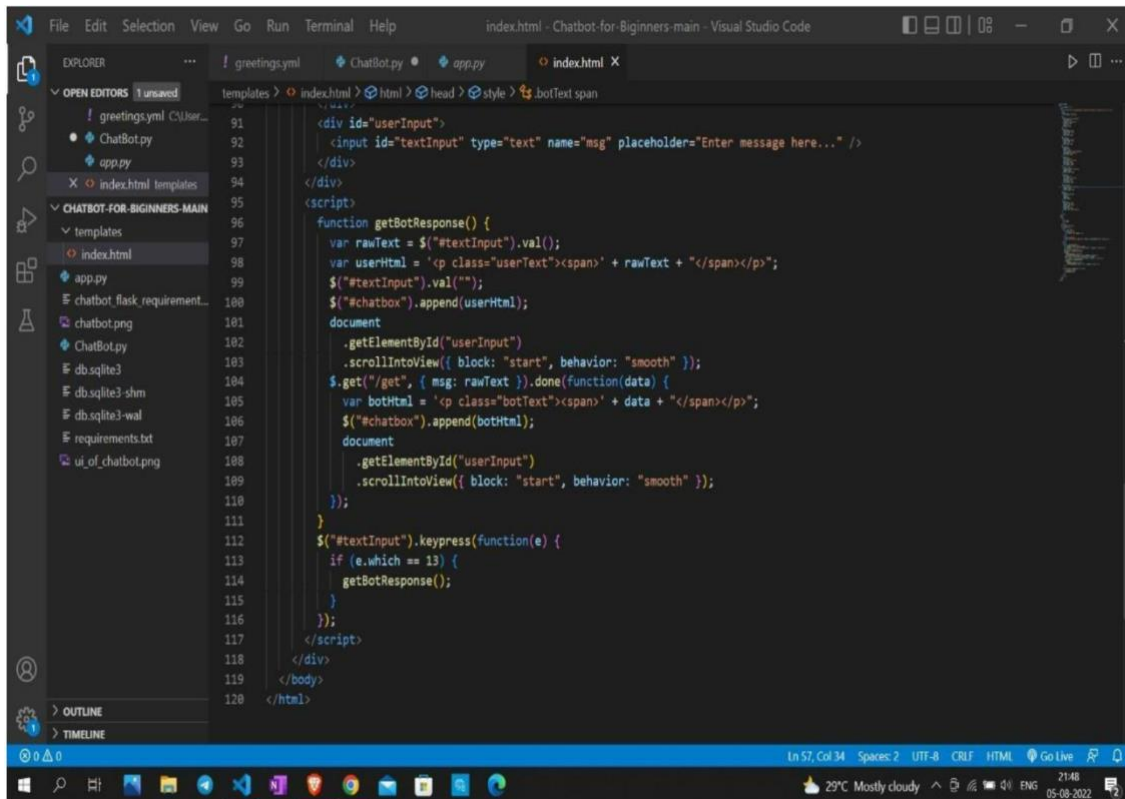
The screenshot shows the Visual Studio Code interface with the following details:

- File Explorer (Left):** Shows the project structure with files like `greetings.yml`, `ChatBot.py`, `app.py`, `index.html`, `templates`, `chatbot_flask_requirements.txt`, `chatbot.png`, `ChatBot.py`, `db.sqlite3`, `db.sqlite3-shm`, `db.sqlite3-wal`, `requirements.txt`, and `ui_of_chatbot.png`.
- Editor (Center):** Displays the `app.py` file with the following code:


```

1  from flask import Flask, request, render_template
2
3  app = Flask(__name__)
4
5  chatbot = ChatBot('ChatBot')
6  trainer = ChatterBotCorpusTrainer(chatbot)
7  trainer.train("chatterbot.corpus.english")
8
9  @app.route("/")
10 def home():
11     return render_template("index.html")
12
13 @app.route("/get")
14 def get_bot_response():
15     userText = request.args.get('msg')
16     return str(chatbot.get_response(userText))
17
18 if __name__ == "__main__":
19     app.run()
      
```
- Terminal (Bottom):** Shows the command prompt with the current directory set to `C:\Users\...\.vscode\workspace\chatbot-for-beginners-main`.
- Status Bar (Bottom):** Indicates the file is `app.py` in the `Chatbot-for-Beginners-main` workspace, using Python 3.9.7 (base: conda) with UTF-8 encoding and CRLF line endings.

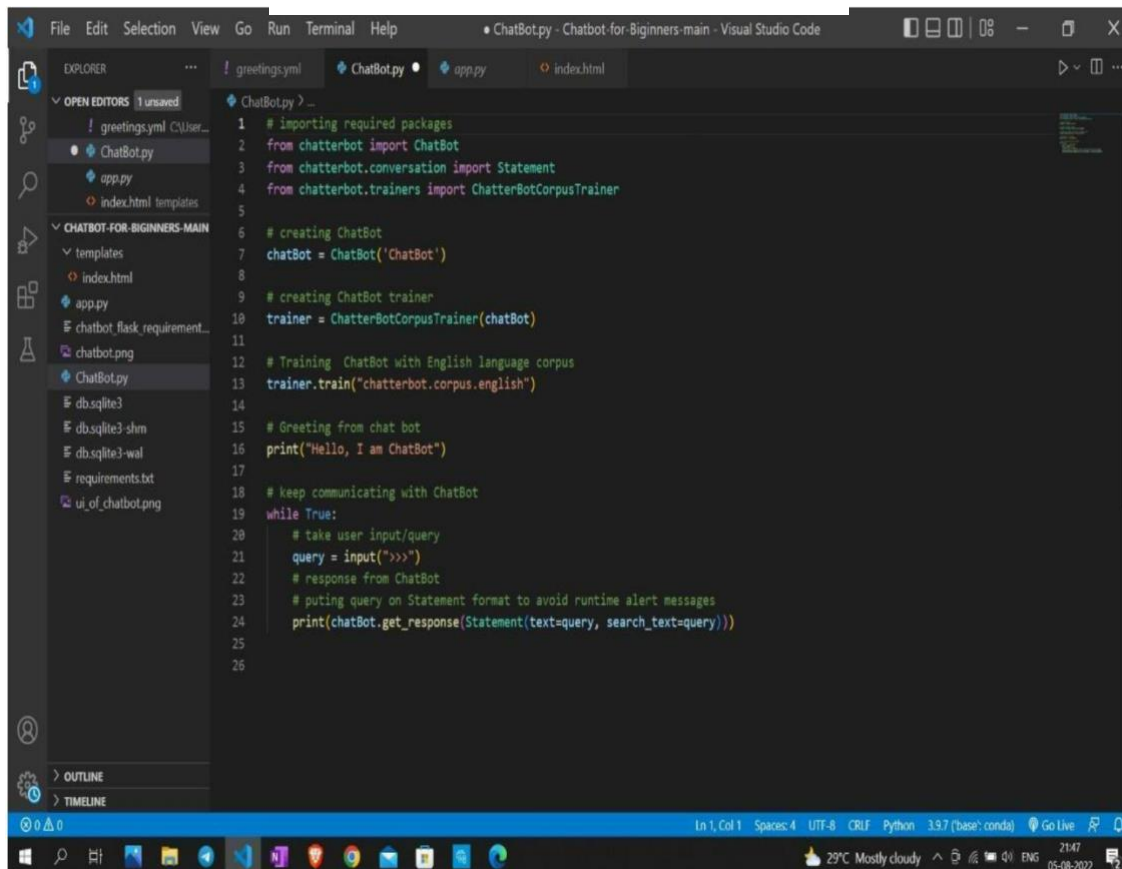
Fig. 4.3 VS Code(app.py)



```

1  <div id="userInput">
2    <input id="textInput" type="text" name="msg" placeholder="Enter message here..." />
3  </div>
4  </div>
5  <script>
6    function getBotResponse() {
7      var rawText = $("#textInput").val();
8      var userHtml = '<p class="userText"><span>' + rawText + "</span></p>";
9      $("#textInput").val("");
10     $("#chatbox").append(userHtml);
11     document
12       .getElementById("userInput")
13       .scrollIntoView({ block: "start", behavior: "smooth" });
14     $.get("/get", { msg: rawText }).done(function(data) {
15       var botHtml = '<p class="botText"><span>' + data + "</span></p>";
16       $("#chatbox").append(botHtml);
17       document
18         .getElementById("userInput")
19         .scrollIntoView({ block: "start", behavior: "smooth" });
20     });
21   }
22   $("#textInput").keypress(function(e) {
23     if (e.which == 13) {
24       getBotResponse();
25     }
26   });
27 </script>
28 </div>
29 </body>
30 </html>
  
```

Fig. 4.4 VS Code(index.html)



```

1  # importing required packages
2  from chatterbot import ChatBot
3  from chatterbot.conversation import Statement
4  from chatterbot.trainers import ChatterBotCorpusTrainer
5
6  # creating ChatBot
7  chatBot = ChatBot('ChatBot')
8
9  # creating ChatBot trainer
10 trainer = ChatterBotCorpusTrainer(chatBot)
11
12 # Training ChatBot with English language corpus
13 trainer.train("chatterbot.corpus.english")
14
15 # Greeting from chat bot
16 print("Hello, I am ChatBot")
17
18 # keep communicating with ChatBot
19 while True:
20   # take user input/query
21   query = input(">>>")
22   # response from ChatBot
23   # putting query on Statement format to avoid runtime alert messages
24   print(chatBot.get_response(Statement(text=query, search_text=query)))
25
26
  
```

Fig. 4.5 VS Code(ChatBot.py)



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CHAPTER -V

CONCLUSION

4. Conclusion

A chatbot is an ecosystem, a virtual human being that has been integrated with various industrial applications.

- The main objective of the project is to develop a chatbot application that will be
- used to identify answers related to user submitted questions/queries.
- The need is to develop a database where all the related data will be stored and to develop a web interface.
- This can give up to 90% accuracy and helps the user to get the response in shorter time and with appropriate results.
- They are exceptionally useful when the nature of customer enquiries are simple and repetitive.

To conclude, it is helpful in guiding students with correct and most up to date sources of information. It is advantageous for international applicants for queries such as fee payment and academic matters. Students can get the information at their fingertips rather than visiting college office. It improves efficiency by taking over tasks for which humans are not essential. Sentiment analysis implemented is correctly recognizes the user's query such as positive, negative, and neutral by storing all the conversations in the database.



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CHAPTER-VI

FUTURE SCOPE

5. Future Scope

To improve the current functionalities of College Enquiry Chatbots, in the future, the scope of the chatbots can be increased by inserting data for all the departments, training the bot with varied data, testing it on live website, and based on that feedback inserting more training data to the bot. Some of the new features which can be added to the bot are

1. Speech recognition feature through which students can ask their queries verbally and get the answers from the bot.
2. Handling context aware and interactive queries in which both will be aware of the context of an ongoing conversation with a student.
3. Integration with services such as password reset and course enrollment, and
4. Adding a capability for the bot to perform analytics based on user's sentiment based on which the bot can be re-trained on human emotions so that more empathy can be added to the bot.
5. The surge in on-demand messaging has shifted customers' preferences for communication. With the emerging chatbots trends more industries are integrating chatbots into their business processes to deliver continuous customer engagement.
6. [Business chatbots](#) are a critical resource for enhancing the consumer experience and providing excellent customer service. Chatbots are transforming the ways businesses connect with current and prospective customers.
7. As per Gartner, "Artificial Intelligence (AI) will be a mainstream customer experience investment in the next couple of years". [47% of organizations](#) will use chatbots for customer care and 40% will deploy virtual assistants.
8. AI has been revamping the ways of communication ways for businesses both with customers and internally. AI is vital for enabling machine learning and the flexible interpretation of automated business communications.
9. Going further, chatbots are predicted to move from simple user-based queries to more advanced predictive analytics-based real time conversations.

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