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ORCA Desktop and Web Assistant

Asadullah Shaikh^{1,*}, Sharada Patil²

Abstract

This paper offerings a software architecture that supports Google Assistant integration which is useful for search engine and further it will be used for in TV application, designed for Android operating system. In order to understand the capability of voice assistant (VA), The task of this research was to assess its responses to PPD questions in terms of accuracy, verbal response. Most systems on the market use a Raspberry Pi or Arduino chipset that is programmed to control a number of devices in a home that are instructed through a mobile app or web-based user interface. Nowadays, Google Assistant is becoming more and more widespread personal assistant and people commonly use it's features in the applications on their, smart' devices such as smartphones, smart digital television receivers, smartwatches, etc. The majority of existing speech recognition tools provides the result of the speech processing in a free form textual output or structured form textual output.

Keywords: Google Assistant, Home automation, Interactive, Artificial Intelligence, google, raspberry pi, voice assistant, virtual assistant, conversational agent.

INTRODUCTION

Artificial intelligence in connection with machines shows us the ability to think like humans. A computer system is designed in such a way that it normally requires human interaction. As we know, Python is an emerging language, so it will be easy to write a voice assistant script in Python. The wizard instructions can be manipulated according to the user's needs. Voice recognition is Alexa, Siri, etc. In Python there is an API called Speech Recognition that allows us to convert speech into text [1].

It was an interesting job doing my own assistant. Now it's easier to send emails without typing a word, Google without opening the browser, and do many other daily tasks like playing music and opening your favorite IDE with the help of a single voice command. In the current scenario, technological advances are such that they can perform any task as effectively or more efficiently than we can. Through this project I realized that the concept of AI reduces human effort and saves time in all areas [2].

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Received Date: September 17, 2021

Accepted Date: October 07, 2021

Published Date: October 30, 2021

Citation: Asadullah. Shaikh, Sharada Patil. ORCA Desktop and Web Assistant. Journal of Software Engineering Tools & Technology Trends. 2021; 8(2): 6–18p.

Since the voice assistant uses artificial intelligence, the result it offers is very accurate and efficient. The assistant can help reduce human effort and waste time performing each task. The assistant is nothing less than a human assistant, but we can say that it is more effective and efficient to perform any task. The libraries and packages used to make this assistant focus on the time complexities and reduce time [3, 4].

The functionalities include, You can send email, read PDF, send text on WhatsApp, open command prompts, your favorite IDE, notepad, etc., play

music, search Wikipedia for you, open websites like Google, YouTube, etc., in a web browser, there may be weather forecasts, It can give desktop reminders of your choice. It can have some basic conversation.

Tools and technologies used are PyCharm IDE for making this project, and I created all py files in PyCharm. I also used the following modules and libraries in my project. pyttsx3, Speech Recognition, Datetime, Wikipedia, Smtplib, pywhatkit, pyjokes, pyPDF2, pyautogui, PyQt etc. I have created a live GUI for interacting with the ORCA as it gives a design and interesting look while having the conversation.

BACKGROUND OR EXISTING SYSTEM

There are many existing voice assistants like Siri, Google Assistant and Cortana which uses concept of language processing and voice recognition. They listen the command given by the user as per their requirements and performs that specific function in a very efficient and effective manner [5, 6].

As these voice assistants are using Artificial Intelligence hence the result that they are providing are highly accurate and efficient. These assistants can help reduce human effort and time consuming each task, have completely eliminated the concept of typing, and act like another person we want to talk to and perform a task with. These assistants are nothing less than a human assistant, but we can say that they are more effective and efficient in carrying out any task. The algorithm used to make these assistant focuses on the time complexities and reduces time [1, 3].

LIMITATIONS OF EXISTING SYSTEM

Using these assistants, one should have an account (like Google account for Google assistant, Microsoft account for Cortana) and can use it with internet connection only because these assistants are going to work with internet connectivity. They are integrated with many devices like, phones, laptops, and speakers etc. [7, 8].

These Existing Voice Assistants can only work if you have an account registered in that system. To use these systems, you can't download it from anywhere, you need to buy a smart phone to use this system, also in PC and Laptops every PC and Laptop doesn't support the Microsoft's PC version Cortana [9, 10].

LITERATURE SURVEY

As we know, Python is an emerging language, so it will be easy to write a voice assistant script in Python. The wizard instructions can be manipulated according to the user's needs. Speech recognition is the process of converting speech to text. This is widely used in voice assistants like Alexa, Siri, etc. In Python there is an API called Speech Recognition that allows us to convert speech into text. It was an interesting job doing my own assistant. Now it's easier to send emails without typing a word, Google without opening the browser, and do many other daily tasks like playing music and opening your favorite IDE with the help of a single voice command. In the current scenario, the technological advance is such that they can carry out any task with the same effectiveness or with greater efficiency than us. Through this project I realized that the concept of AI reduces human effort and saves time in all areas. The Personal Assistant software should act as an interface to the digital world by understanding user requests or commands and then translating them into actions or recommendations based on the agent's understanding of the world [1, 2].

ORCA focuses on relieving the user of entering text input and using voice as primary means of user input. The agent then applies speech recognition algorithms to this entry and records the entry. It then uses this input to call one of the personal information management applications such as task list or calendar to record a new entry or to search about in search engines like Google, Bing or Yahoo, etc. The focus is on capturing user input by voice, acknowledging the input, and then performing tasks when

the agent understands the task. The software takes this input in natural language, which makes it easy for the user to enter what he wants to do. Voice recognition software enables hands-free use of applications and allows users to query or give orders to the agent through the voice interface. This helps users access the agent while performing other tasks, adding value to the system itself. ORCA also has ubiquitous connectivity through a WiFi or LAN connection, allowing distributed applications to be different. Use APIs (application programming interfaces) available on the web without having to save them locally [11].

PROBLEM STATEMENT

We are all aware about Paid and Integrated Assistants Cortana, Siri, Google Assistant, and many other virtual assistants which are designed to aid the tasks of users in Windows, Android and IOS platforms which cannot work without an internet connection and an account registered with them. But for our surprise, there is no such virtual assistant available for free of cost and as well perform some of the tasks without Internet and account.

You may already know that the AI market is booming. In fact, the artificial intelligence market is expected to reach \$300.26 billion by 2026, up from \$15.70 billion in 2017. But what you might not know is that the demand for AI personal assistants it is one of the factors driving this growth. According to Grand View Research, the speech and speech recognition market is a success \$9.12 billion in 2017. It is expected to grow at a compound annual growth rate of 17.2% from 2018 to 2025.

The market for artificial intelligence and AI assistants is growing. You may not even know how personal assistant AI software is merging with products and services. But there is a good chance you have noticed how difficult it is to buy a new smart phone or computer without a built-in AI assistant app.

PROPOSED SYSTEM

It was an interesting job doing my own assistant. Now it's easier to send emails without typing a word, Google without opening the browser, and do many other daily tasks like playing music and opening your favorite IDE with the help of a single voice command. ORCA differs from other traditional voice assistants in that it is desktop specific and the user does not need to create an account to use it. It does not require an internet connection while receiving instructions on how to perform a specific task. The IDE used in this project is PyCharm. All the python files were created in PyCharm and all the necessary packages were easily installable in this IDE. For this project following modules and libraries were used i.e., pyttsx3, Speech Recognition, Date time, Wikipedia, Smtplib, pywhatkit, pyjokes, pyPDF2, pyautogui, PyQt etc.

We have created a live GUI for interacting with the ORCA as it gives a design and interesting look while having the conversation. With further development, ORCA can perform any task just as effectively or can say more effectively than we can. Through this project I realized that the concept of AI reduces human effort and saves time in all areas. The functions of this project include, you can send email, read PDF, send text on WhatsApp, open command prompt, your favorite IDE, notepad, etc., you can play music, you can search Wikipedia for you, you can open websites like Google, YouTube, etc. In a web browser, there may be weather forecasts, there may be desktop reminders of your choice. It can have some basic conversation. Virtual assistants must provide a wide variety of services. These include:

Functionalities of this project include:

1. It can send emails.
2. It can read PDF.
3. It can send text on WhatsApp.
4. It can open command prompt, your favorite IDE, notepad etc.

5. It can play music from streaming services such as Saavn and Gaana.
6. It can do Wikipedia searches for you.
7. It can open websites like Google, YouTube, etc., in a web browser.
8. It can give weather forecast.
9. It can give desktop reminders of your choice like birthdays and meetings.
10. It can have some basic conversation.
11. Set an alarm or make to-do lists and shopping lists.
12. Book tickets for shows, travel and movies.

Now the basic question arises in mind that how it is an AI? The virtual assistant that I have created is like if it is not an A.I, but it is the output of a bundle of the statement. But fundamentally, the main purpose of A.I machines is that it can perform human tasks with the same efficiency or even more efficiently than humans. It is a fact that my virtual assistant is not a particularly good example of A.I., but it is an A.I.

Product Goals and Objectives

Currently, the project aims to provide the PC Users with a Virtual Assistant that would not only aid in their daily routine tasks like searching the web, extracting weather data, Vocabulary help and many others, but also helps in automating various activities. Ultimately we would like to develop a complete server wizard by automating the entire process of server management, provisioning, backups, autoscaling, logging and monitoring and making it smart enough to replace a general administrator of 6 servers.

Functional requirements

The functional requirements are given below.

- a. Windows Active license
- b. Proper Internet Connection
- c. GitHub Credentials
- d. Python 2.7 or latest
- e. Command Prompt
- f. MPlayer for voice support (Text-to-Speech)
- g. Chromium-based browser, like Chrome, Edge
- h. App Engine

Non-functional Requirements

The non-functional requirements are given below.

- i. The system ensures safety, security and usability, which are observable during operation (at run time).
- j. The system is adaptable to different situations.
- k. The project has good and compact UI.
- l. The project is light on resources.

Scope of The System

Presently, ORCA is being developed as an automation tool and virtual assistant.

Among the Various roles played by ORCA are:

- a. Search Engine with voice interactions
- b. Reminder and To-Do application.
- c. Vocabulary App to show meanings and correct spelling errors.

Weather Forecasting Application.

Project Design

This project can be designed using following diagrams

1. Data Flow Diagrams

- **Data Flow Diagram Level 0**

User sends request to AI assistant and receives response from our project AI Voice Assistant accordingly shows Figure 1.

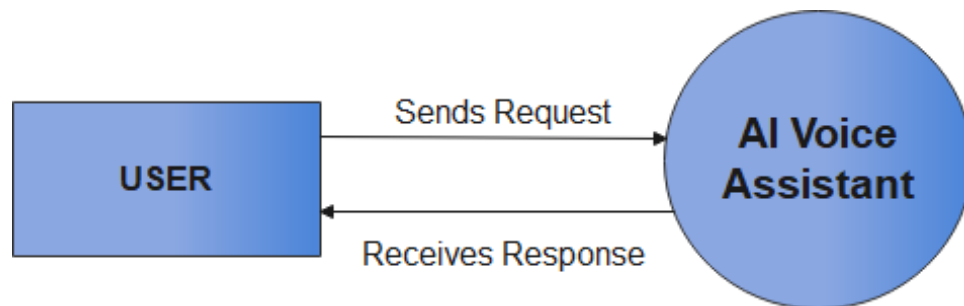


Figure 1. Context level diagram.

- **Data Flow Diagram Level 1**

The Figure 2 explains that the project is divided into four modules and that are Assistance, User Data, Kids Zone, Settings.

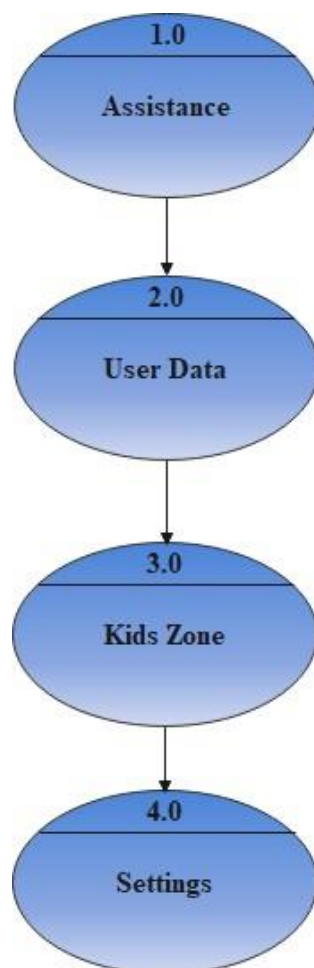


Figure 2. DFD level1 diagram.

2 Use Case Diagram

The Figure 3 shows user can send queries command to the system. System then interprets it and fetches answer. The response is sent back to the user.

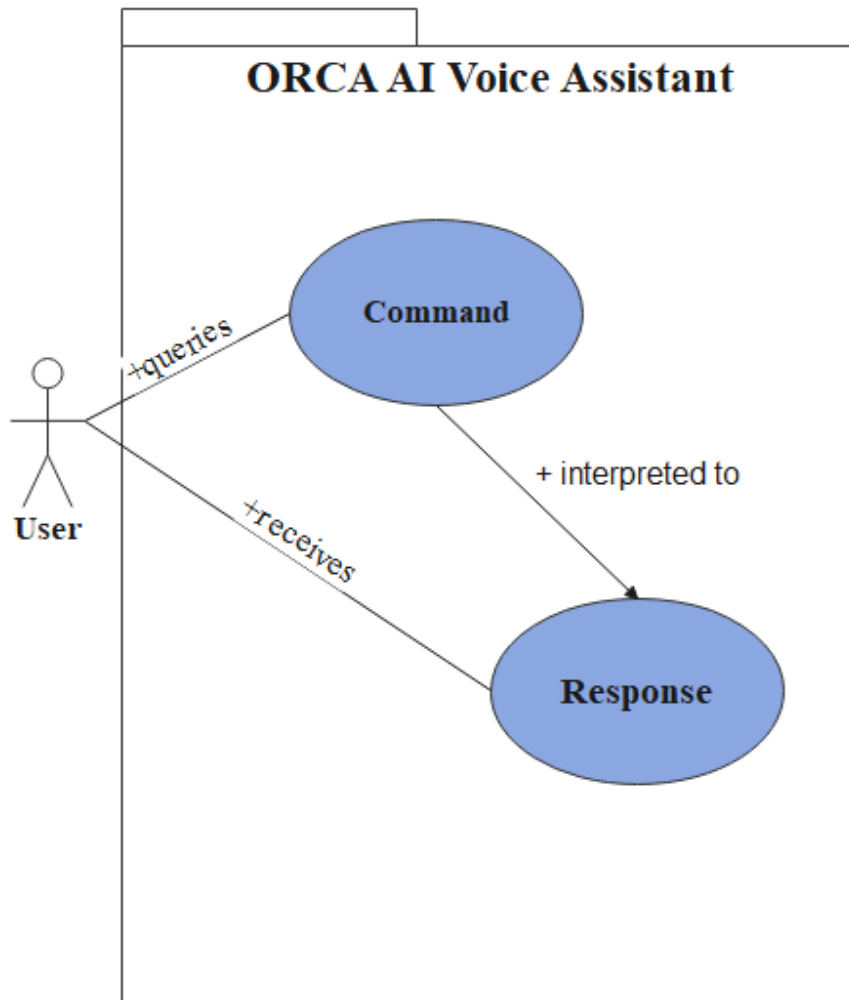


Figure 3. Use case diagram.

3 Sequence Diagram and Activity Diagram

Sequence diagrams can be divided in to query response and task execution.

1. Sequence Diagram for query response

The below sequence Figure 4 shows how an answer asked by the user is being fetched from internet. The audio request is interpreted and sent to the web scraper. The web scraper searches and finds the answer. It is then sent back to speaker, where it speaks the answer to user.

2. Sequence Diagram for Task Execution

The user sends an audio command to the virtual assistant. The command is passed to the interpreter. It identifies what the user requested and forwards it to the executor of the task. If the task is missing information, the virtual assistant prompts the user for it. The information received is sent back to the task and it is executed. After execution, the feedback is sent back to the user as shown in Figure 5.

3. Activity Diagram

The system is initially in sleep mode. When you get a wake-up call, it starts running. The command received identifies whether it is a questionnaire or a task to be performed. Consequently, concrete

measures will be taken as shown in Figure 6. After answering the question or completing the task, the system waits for another command. This loop continues until it is commanded to exit. At that moment she falls asleep again.

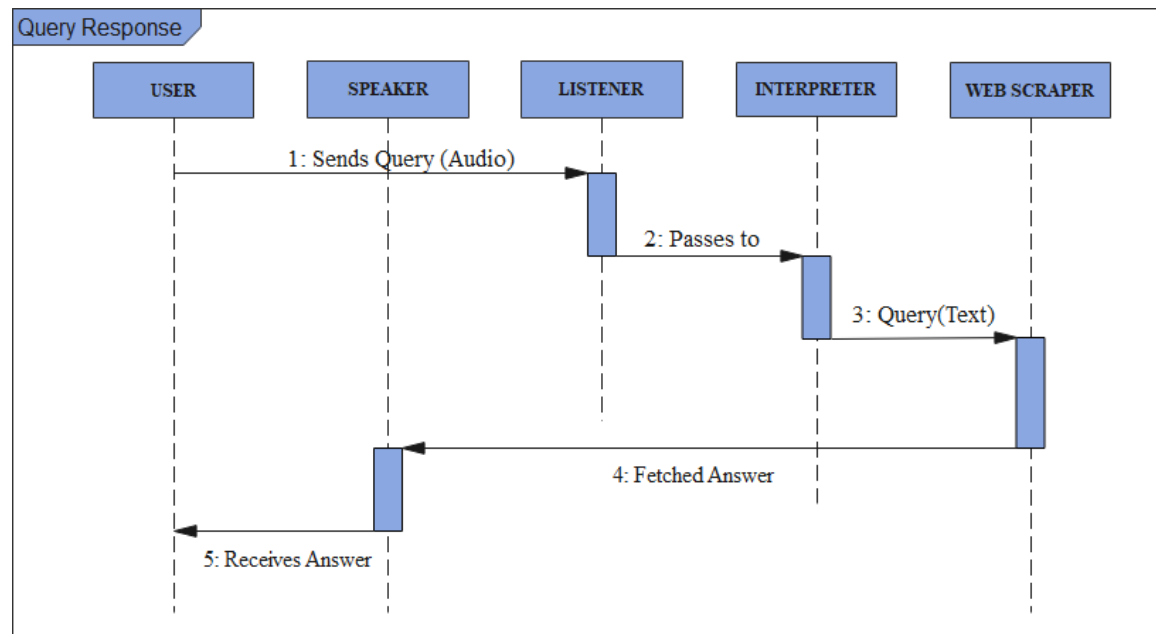


Figure 4. Sequence diagram for query response.

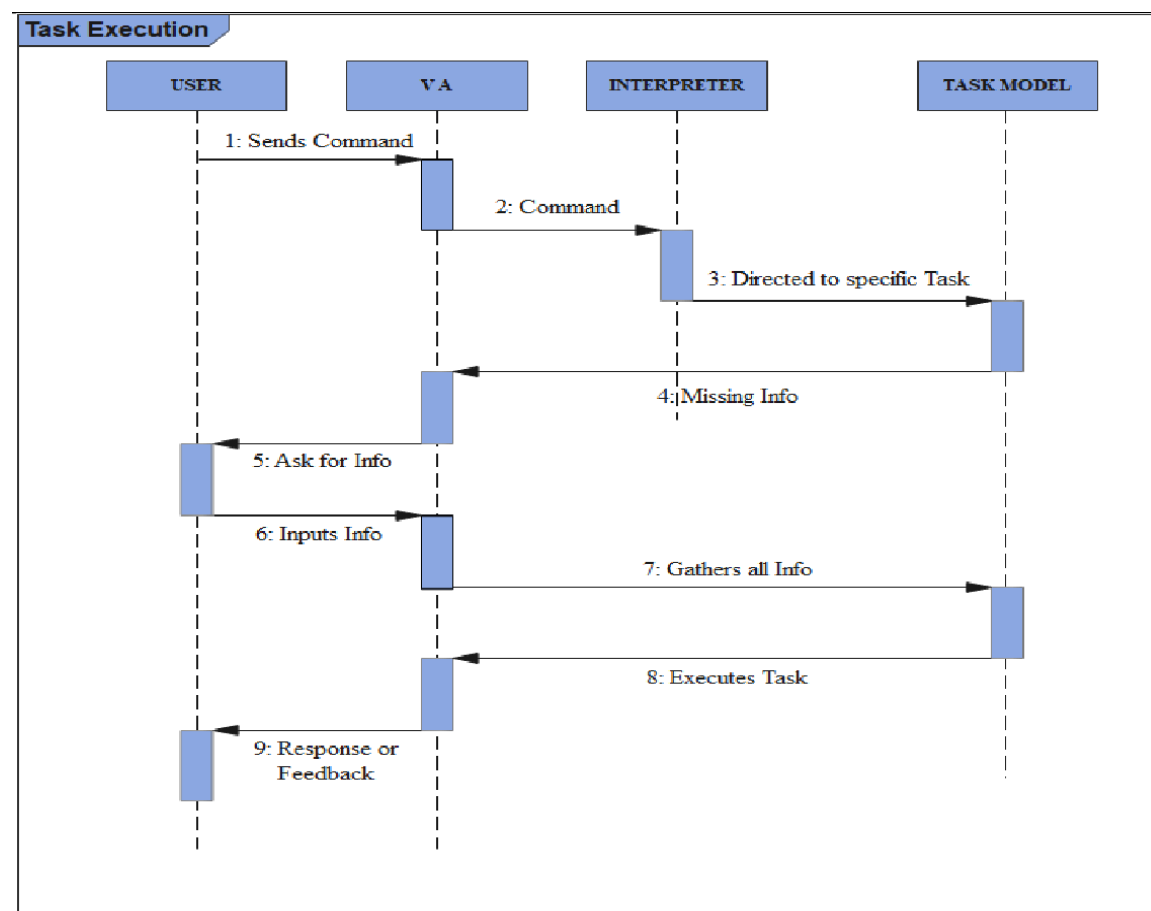


Figure 5. Sequence diagram for task execution.

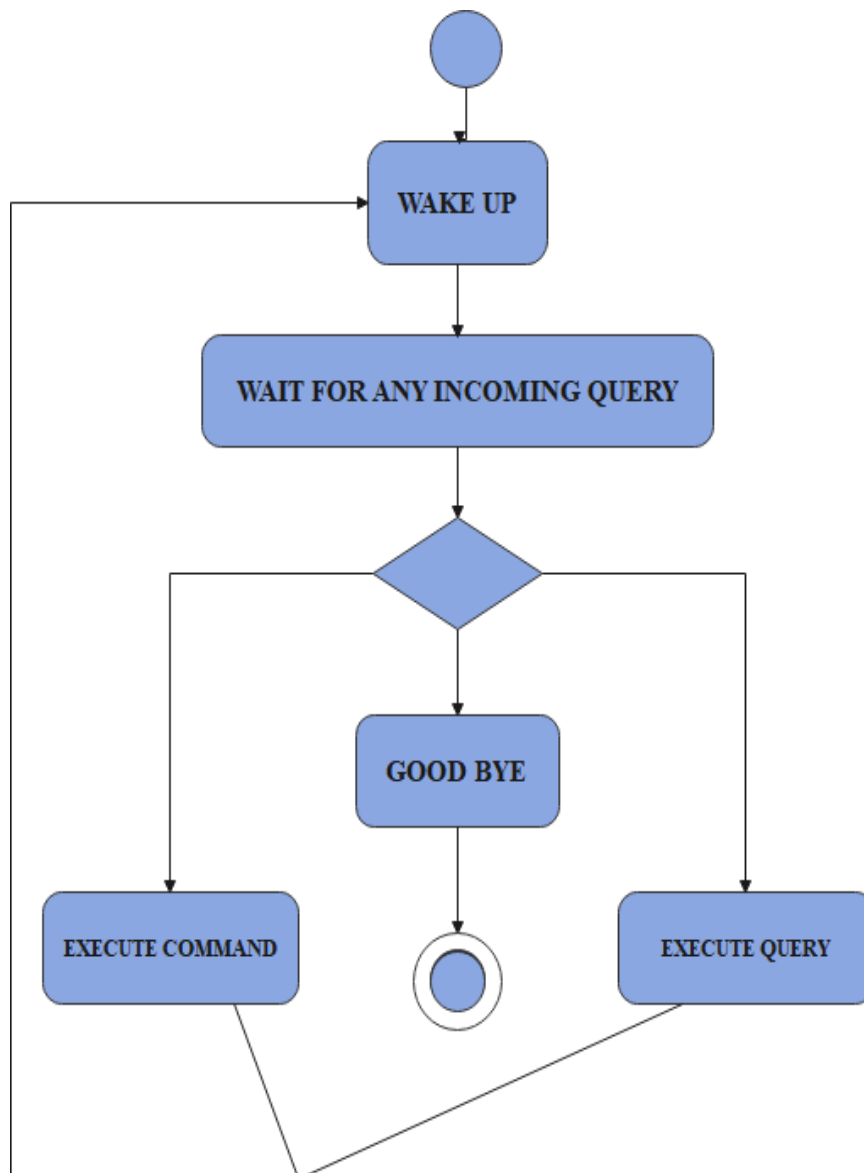


Figure 6. Activity diagram.

4 Class Diagram

The class user has 2 attribute commands that it sends in audio and the response it receives, which is also audio. Performs a function to eavesdrop on the user's command. Interpret and then reply or submit the answer accordingly. The question class has the command in string form as interpreted by the interpret class. It sends it to general or via or search function based on its identification. The Task class also has a command interpreted in string format. It has different functions like reminder, note, facial expression, inquiry, and reader see Figure 7.

PRODUCT OVERVIEW

As a personal assistant, ORCA assists the end-user with day-to-day activities like general human conversation, searching queries in various search engines like Google, Bing or Yahoo, searching for videos, Retrieve images, live weather conditions, word meanings, search for medication details, symptom-based health recommendations, and remind user of scheduled events and tasks. User instructions / commands are analyzed with the help of machine learning to find an optimal solution.

The screen shots of our code is given (Figures 8-18).

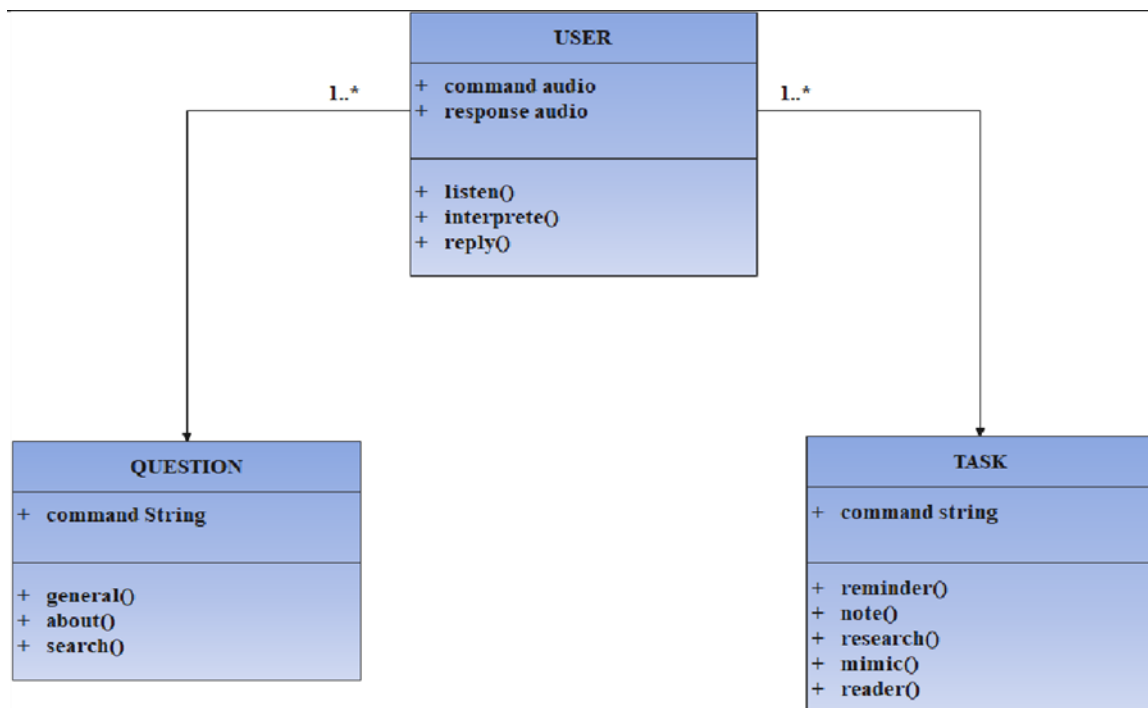


Figure 7. Class diagram.

Input/Output Screenshot

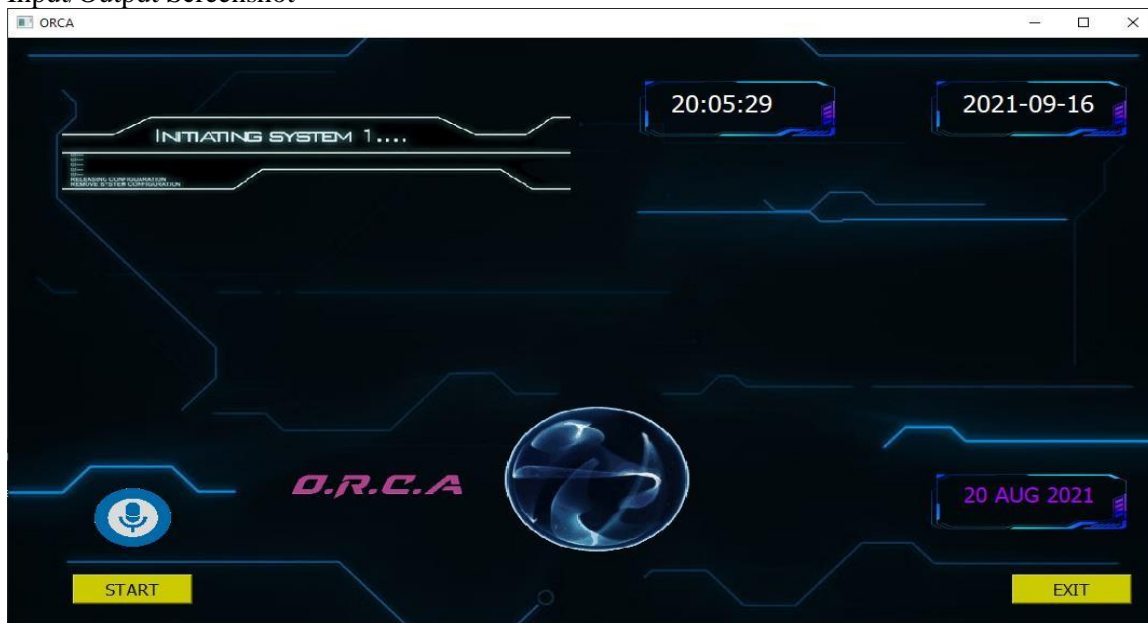


Figure 8. Live GUI of ORCA.

```

elif 'search on google' in self.query:
    print("What should i search on google")
    speak("What should i search on google")
    cm = self.takeCommand()
    webbrowser.open(f"{cm}")
    
```

Figure 9. Code for Google Search.

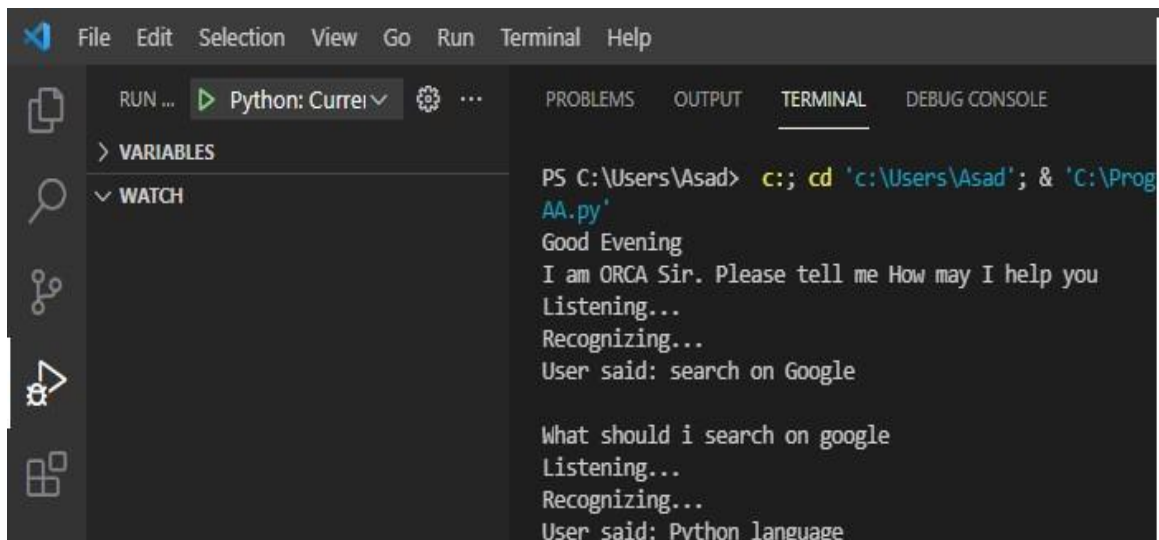


Figure 10. Input for Google Search.

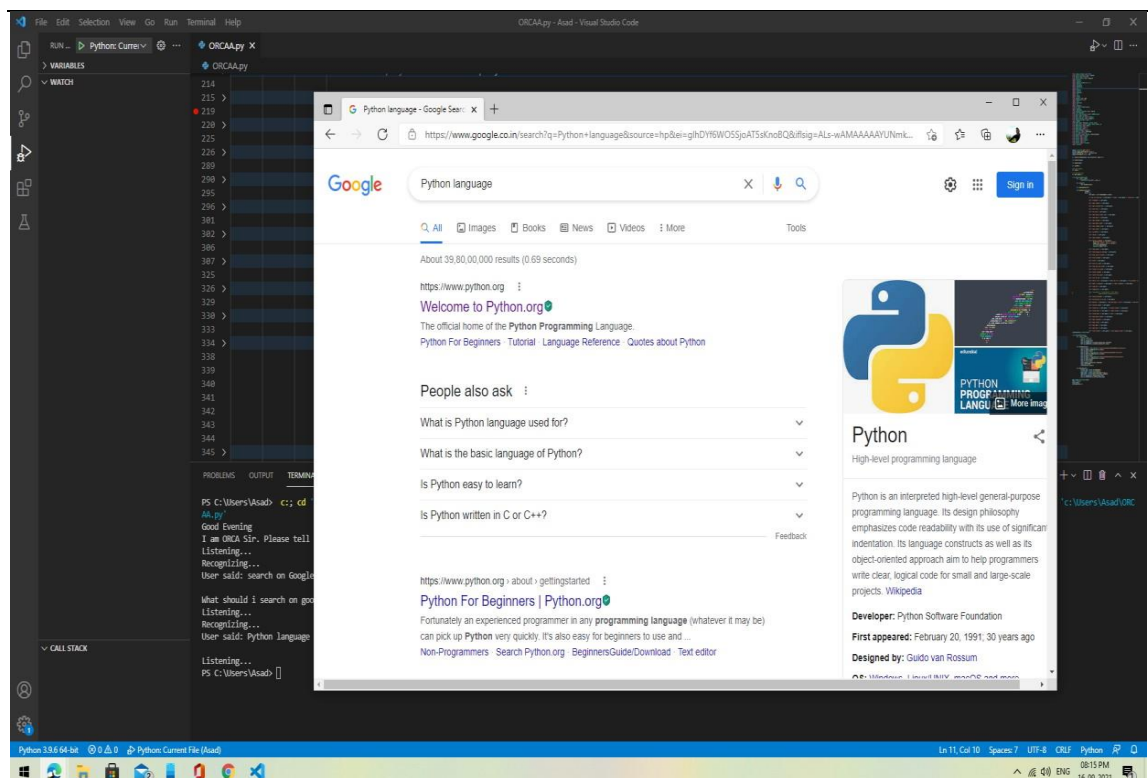


Figure 11. Output for Google Search.

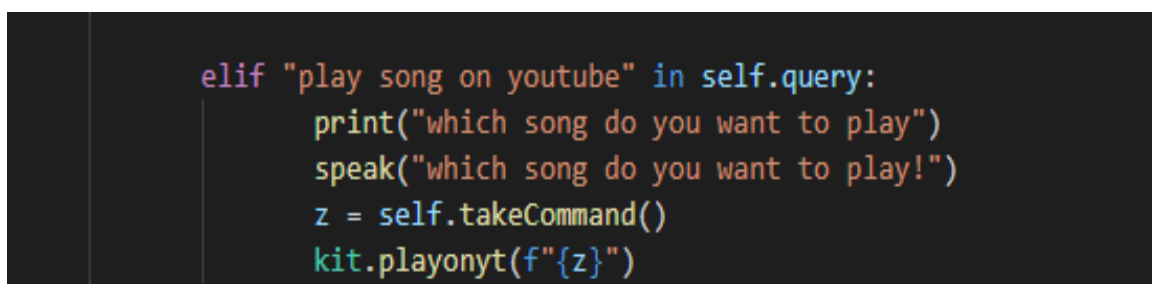


Figure 12. Code to search song on YouTube.

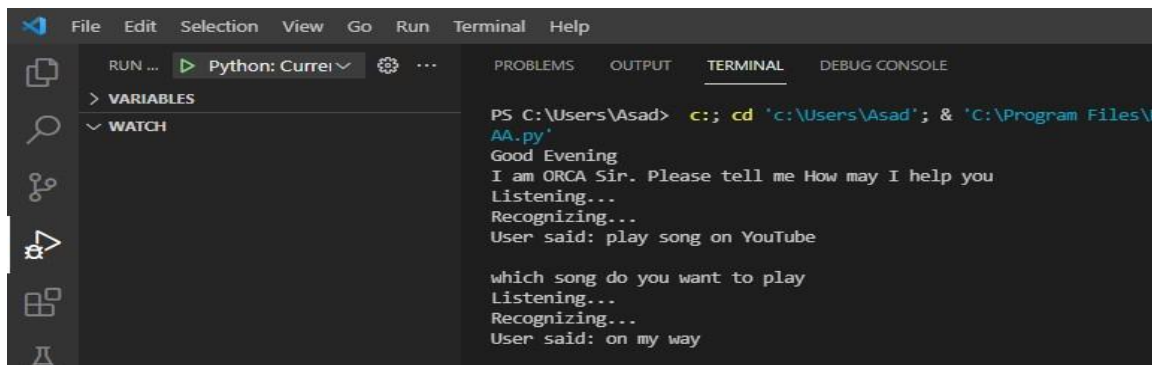


Figure 13. Input to search song on YouTube.

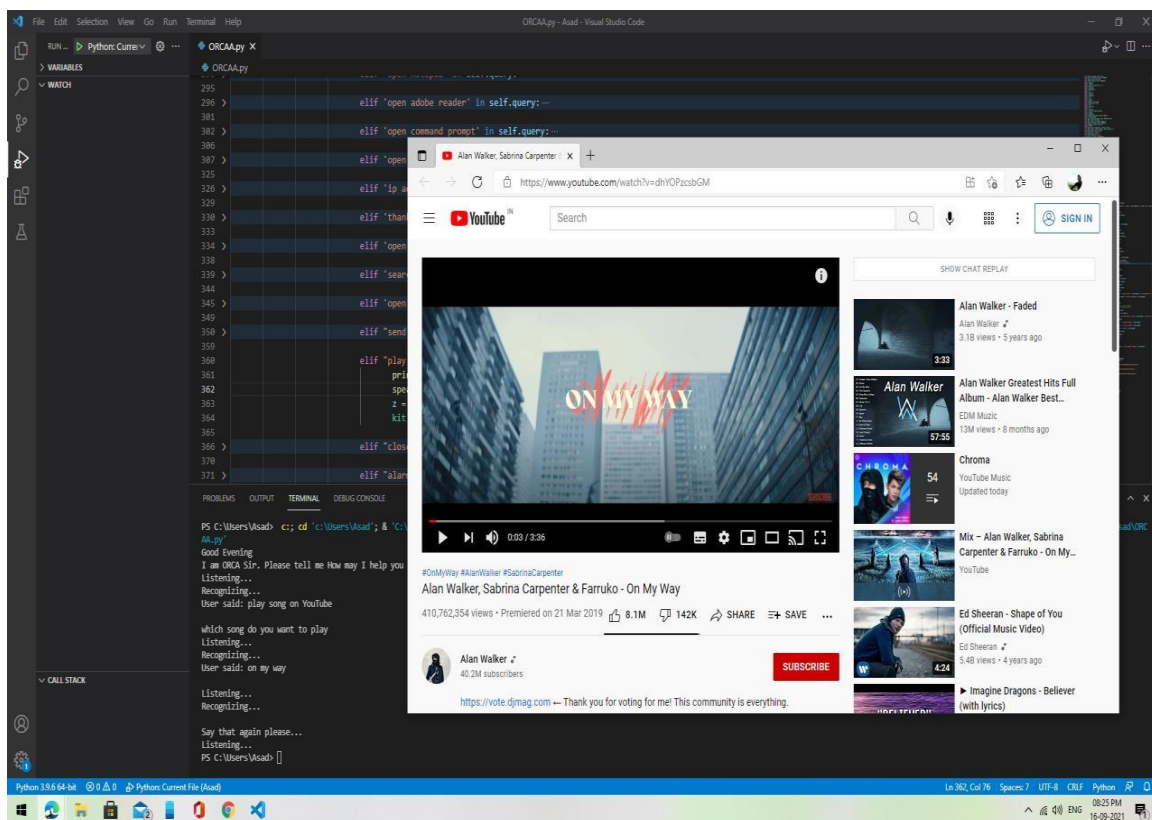


Figure 14. Output to search song on YouTube.

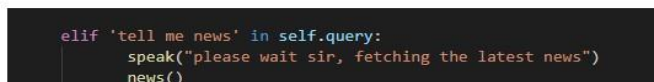
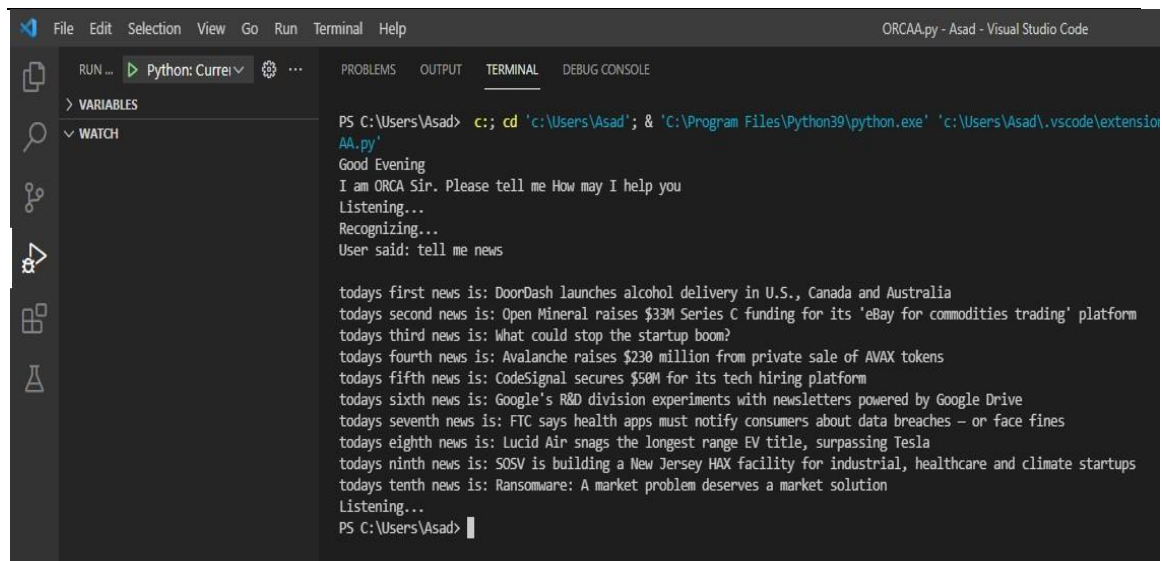


Figure 15. Code to fetch top 10 latest news.



```

File Edit Selection View Go Run Terminal Help
ORCAA.py - Asad - Visual Studio Code

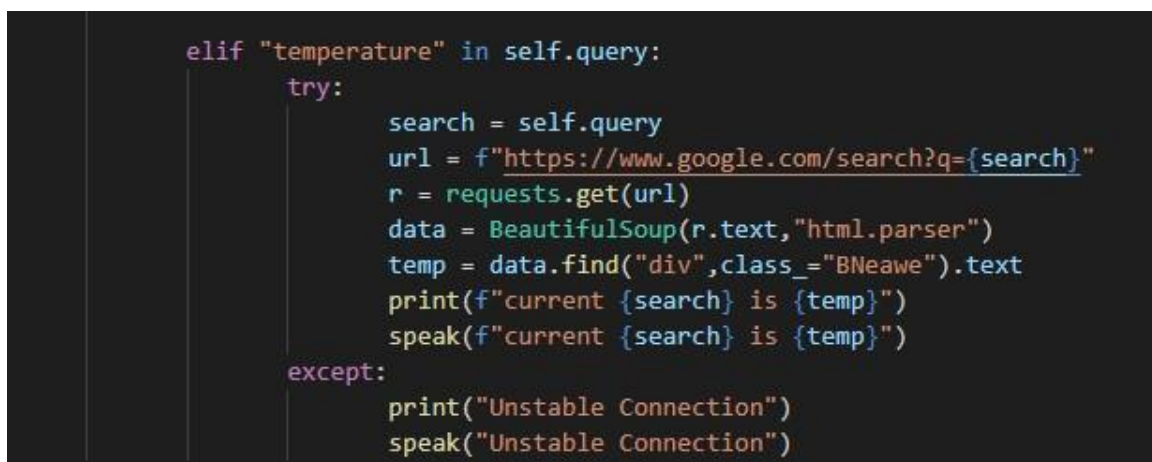
> VARIABLES
WATCH

PS C:\Users\Asad> c:: cd 'c:\Users\Asad'; & 'C:\Program Files\Python39\python.exe' 'c:\Users\Asad\.vscode\extension
AA.py'
Good Evening
I am ORCA Sir. Please tell me How may I help you
Listening...
Recognizing...
User said: tell me news

todays first news is: DoorDash launches alcohol delivery in U.S., Canada and Australia
todays second news is: Open Mineral raises $33M Series C funding for its 'eBay for commodities trading' platform
todays third news is: What could stop the startup boom?
todays fourth news is: Avalanche raises $230 million from private sale of AVAX tokens
todays fifth news is: CodeSignal secures $50M for its tech hiring platform
todays sixth news is: Google's R&D division experiments with newsletters powered by Google Drive
todays seventh news is: FTC says health apps must notify consumers about data breaches - or face fines
todays eighth news is: Lucid Air snags the longest range EV title, surpassing Tesla
todays ninth news is: SOSV is building a New Jersey HAX facility for industrial, healthcare and climate startups
todays tenth news is: Ransomware: A market problem deserves a market solution
Listening...
PS C:\Users\Asad>

```

Figure 16. Input and Output to fetch top 10 latest news.

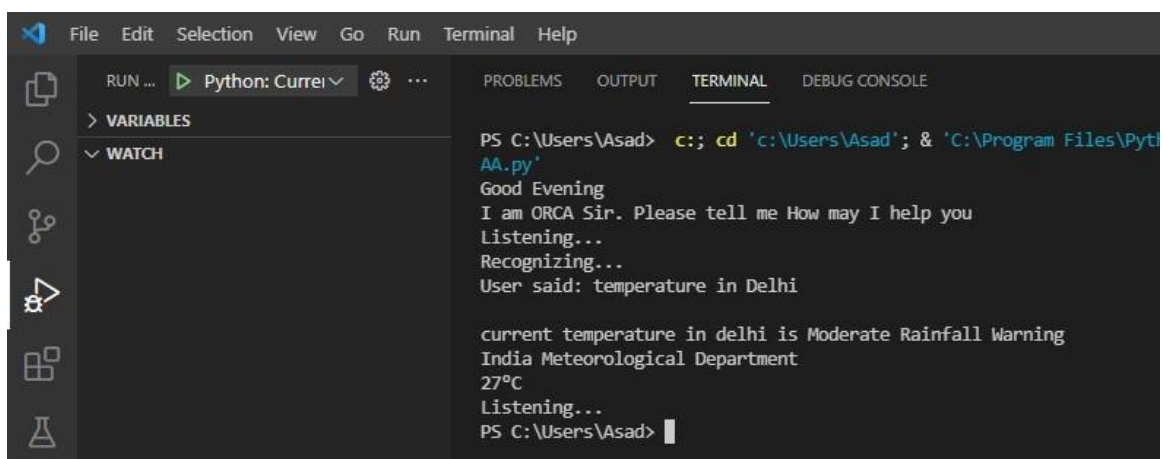


```

elif "temperature" in self.query:
    try:
        search = self.query
        url = f"https://www.google.com/search?q={search}"
        r = requests.get(url)
        data = BeautifulSoup(r.text, "html.parser")
        temp = data.find("div", class_="BNeawe").text
        print(f"current {search} is {temp}")
        speak(f"current {search} is {temp}")
    except:
        print("Unstable Connection")
        speak("Unstable Connection")

```

Figure 17. Code to get temperature of any location in the world.



```

File Edit Selection View Go Run Terminal Help
ORCAA.py - Asad - Visual Studio Code

> VARIABLES
WATCH

PS C:\Users\Asad> c:: cd 'c:\Users\Asad'; & 'C:\Program Files\Pyt
AA.py'
Good Evening
I am ORCA Sir. Please tell me How may I help you
Listening...
Recognizing...
User said: temperature in Delhi

current temperature in delhi is Moderate Rainfall Warning
India Meteorological Department
27°C
Listening...
PS C:\Users\Asad>

```

Figure 18. Input and Output to get temperature of any location in the world.

SUMMARY OF CAPABILITIES

AI wizards are designed to perform simple tasks for the end user, such as: B. Quick search and supply of information; Add tasks to a calendar.

AI virtual assistants can also perform other tasks, such as: For example, you can create text messages, get directions, read news and weather reports, check flight reservations, search for hotels or restaurants, play music, and much more.

ASSUMPTIONS AND DEPENDENCIES

It assumes that the users who will use would have an ORCA assistant and calendar, also the additional functionality requires the Gmail. Each Task is depended on the Voice commands of the user, without the Voice commands ORCA will not work.

CONCLUSION

This software aims to develop a personal assistant. The main purpose of the software is to perform user tasks with specific commands provided in the form of voice or text. It will make most of the work easier for the user because a complete task can be accomplished with a single command. ORCA is inspired by virtual assistants like Cortana for Windows and Siri for iOS. Users can interact with the assistant using voice commands or keyboard input.

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