

A Project Report on
“VOICE ASSISTANT”

**Submitted in partial fulfillment of the requirement for
Degree in Bachelor of Engineering (Information Technology)**

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CERTIFICATE

This is to certify that the project entitled

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In partial fulfillment of degree of **B.E. in Information Technology** for term work of the project is approved.

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Principal

Date: -

College Seal

Declaration

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

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ABSTRACT

- Voice control is a major growing feature that change the way people can live.
- The voice assistant is commonly being used in smartphones and laptops.
- AI-based Voice assistants are the operating systems that can recognize human voice and respond via integrated voices.
- This voice assistant will gather the audio from the microphone and then convert that into text, later it is sent through GTTS (Google text to speech).
- GTTS engine will convert text into audio file in English language, then that audio is played using play sound package of python programming Language.

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1. INTRODUCTION

A virtual assistant is a technology based on artificial intelligence. The software uses a device's microphone to receive voice requests while the voice output takes place at the speaker.

You can –

- Open various applications, also it can translate sentences into different languages.
- Can search anything and give you the result, also guide to reach a destination.
- Can play any song, tells a joke, also tells you date and time.
- Can set alarm, reminders.
- You can send emails and messages.
- Also, it can perform speed test and tells you the weather report.
- It can also solve maths problems.

1.1. AIM AND OBJECTIVE

Aim – The aim of the software is to perform the tasks of the user at certain commands, provided through speech.

Objectives: -

- To ease most of the works of user through speech.
- To provide hands free experience to the user.
- To develop cross platform software.
- To develop open-source software.
- To understand different aspects of Python programming.

1.2. PROBLEM DEFINITION

- We are all well aware about Cortana, Siri, Google Assistant and many other virtual assistants which are designed to aid the tasks of users in Windows, iOS and Android and their respective platforms. But they are specific to their Operating System only. We can't use them on different systems.
- Also, they are not editable i.e., Open Source, so user can't add their additional functionality into it.

Solution: -

- As our Voice Assistant is a Python Script and we all know Python is a Portable language, so it can run on any platform, just we need is a python interpreter.
- And as it is open source, users can alter and modify the script according to their need.

1.3. PROJECT SCOPE

Functional –

The functional scope of this project is to automate all the tasks of user with just voice command.

Non-functional –

The non-functional scope of this project is to make the user experience hands free for any task to make Human life comfortable.

1.4. LIMITATIONS

- Listening problem –

Voice Assistant sometimes face problem to process wrong pronounced words and miscellaneous words.

- Silent mode support –

Voice Assistant gives response in voice output thus it doesn't work properly in silent mode.

- Navigation languages –

Voice assistant can interpret and understand only Indian English.

- Internet access –

Voice Assistant needs active internet connection to run and give desired output.

2. LITERATURE SURVEY AND ANALYSIS

2.1. RELATED WORK

Sr. No	Title of Paper	Authors	Description	Year
1	Personal Assistant with Voice Recognition Intelligence	Dr. Kshama V. Kulhalli Dr. M.S.Sheshagiri Mr. Abhijit J. Patankar	The Most famous application of iPhone is “SIRI” which helps the end user to communicate end user mobile with voice and it also responds to the voice commands of the user.	2020
2	A Review on Voice Assistance using Python	Subhash Mani Kaushal, Megha Mishra	Artificial Intelligent has been in great use when it comes to day-to-day life. Computer science defines AI research as the study of brilliant agents	2020
3	Smart Voice Based Virtual Personal Assistants with Artificial Intelligence	Ankit Pandey, Vaibhav Vashist, Prateek Tiwari, Sunil Sikka, Priyanka Makkar	Communication and Technology has a long history but still constantly and actively growing and changing. The technology changes so fast that today everybody has an AI Personal assistant.	2020
4	AI Based Voice Assistant Using Python	Deepak Shende, Ria Umahiya, Monika Raghorta, Aishwarya Bhisikar, Anup Bhangre	Artificial intelligence technologies are beginning to be actively used in human life, this is facilitated by the appearance and wide dissemination of the Internet of Things (IOT).	2019

Table No. 1.1 Referred IEEE Research Papers

2.2. EXISTING SYSTEM

We are still far away from understanding the genuine capability of speech recognition technology. This applies both to the refinement of the innovation itself and to its coordination into our lives.

Following were the Limitations of Voice Assistant –

- Usage statistics and user data are sent to the developer
- Installation required
- User cannot edit or change the modules
- Not a free Software

2.3. PROPOSED SYSTEM

Following Features added to Voice Assistant –

- Does not collect any user data
- Installation required
- User can edit and add new modules
- Free Software
- lightweight
- Simple User interface

3. SYSTEM DESIGN

3.1. USE CASE DIAGRAM

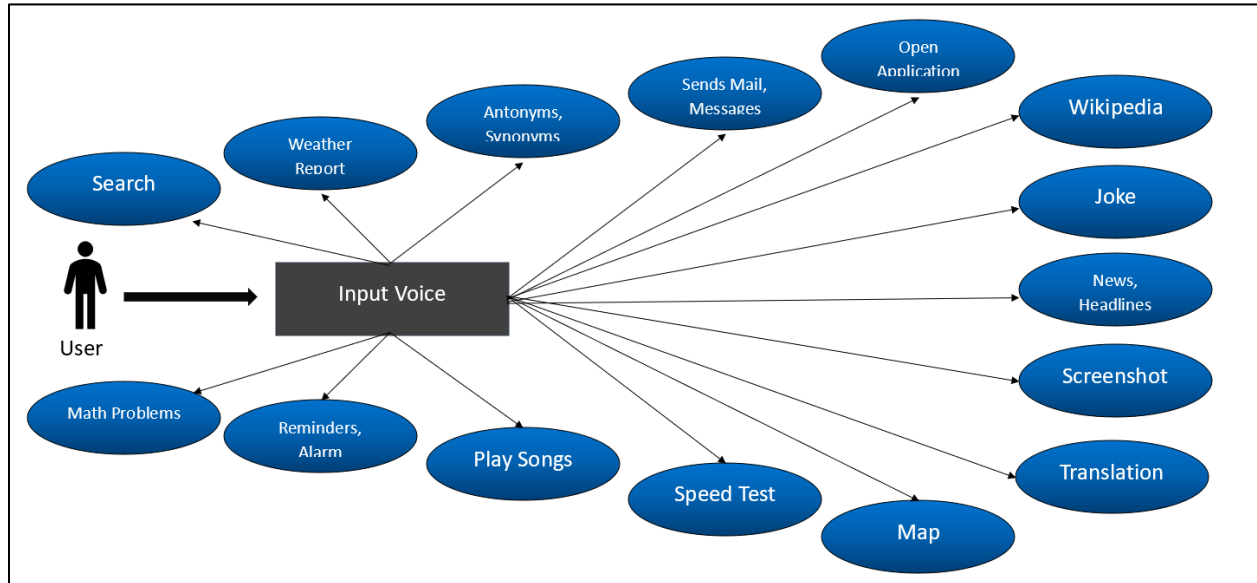


Fig. 1.1. Use Case Diagram

3.2. FLOWCHART

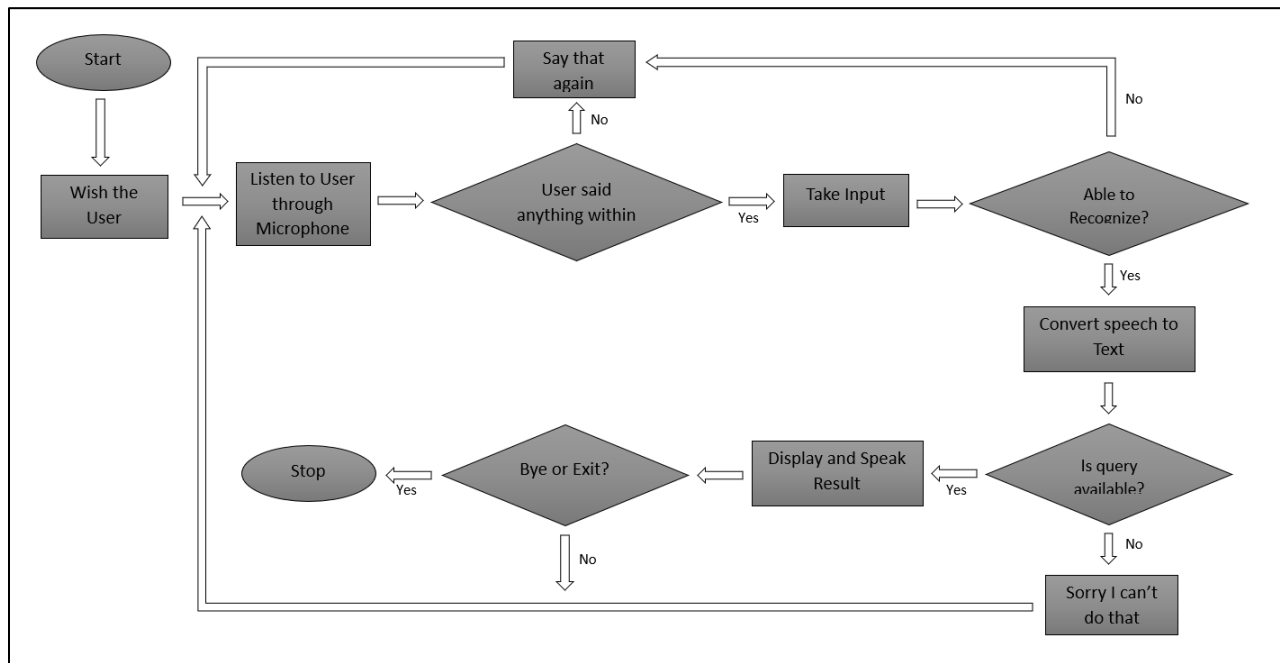


Fig. 1.2. Flowchart

4. IMPLEMENTATION DETAILS

4.1. SYSTEM REQUIREMENTS

Software Requirement –

- Operating System: Windows 7/8/8.1/10 64 bits
Linux Ubuntu/Debian/Kali Linux/Fedora
Mac OS X 10.11/10.12/10.13/10.14/10.15/11
- Python 3.7 or higher
- IDE: PyCharm/Visual Studio Code

Hardware Requirement –

- Memory (RAM): 1 GB or higher
- Processor: Pentium IV or higher
- Hard Disk: 500 MB required
- Microphone

5. EXPERIMENTAL RESULTS

5.1. VOICE ASSISTANT SNAPSHOTS

```
Good Morning!  
I am Grey. How may I help you?  
  
Listening...  
Recognizing...  
You said: tell me about yourself  
  
Hello, myself Grey!! I am your voice assistant. I can perform several task. How may I help you?
```

Fig. 3.1 Introduction

```
Listening...  
Recognizing...  
You said: Narendra Modi search it on Wikipedia  
  
Searching Wikipedia...  
According to Wikipedia...  
Narendra Damodardas Modi ( (listen) na-RAIN-dra DAA-moh-dar-dahss MO-dee ; born 17 September 1950) is an Indian politician serving as the 14th and current prime minister of India since 2014. He was the chief minister of Gujarat from 2001 to 2014 and is the member of Parliament for Varanasi.
```

Fig. 3.2 Wikipedia Search

```
Listening...  
Recognizing...  
You said: meaning of assistant  
  
A person who contributes to the fulfillment of a need or furtherance of an effort or purpose
```

Fig. 3.3 Meaning

```
Listening...  
Recognizing...  
You said: drinking water translate this in Japanese  
  
水を飲んでいる
```

Fig. 3.4 Translation

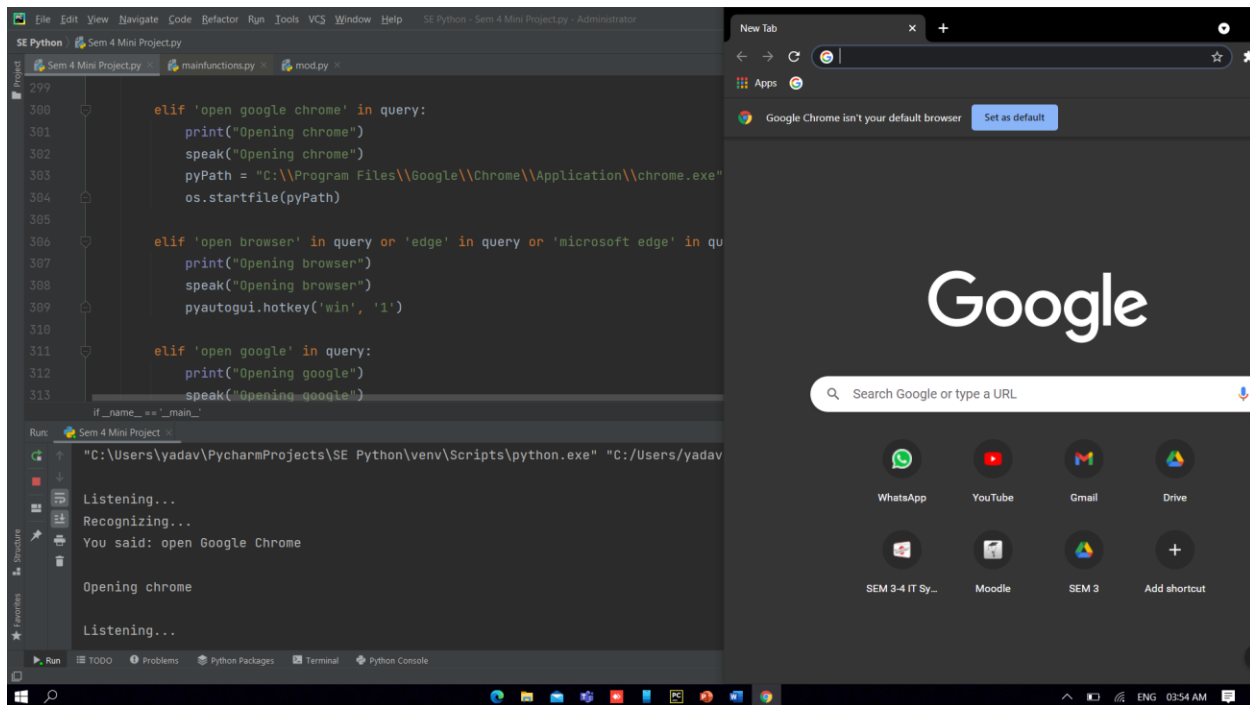


Fig. 3.5 Opening Google Chrome

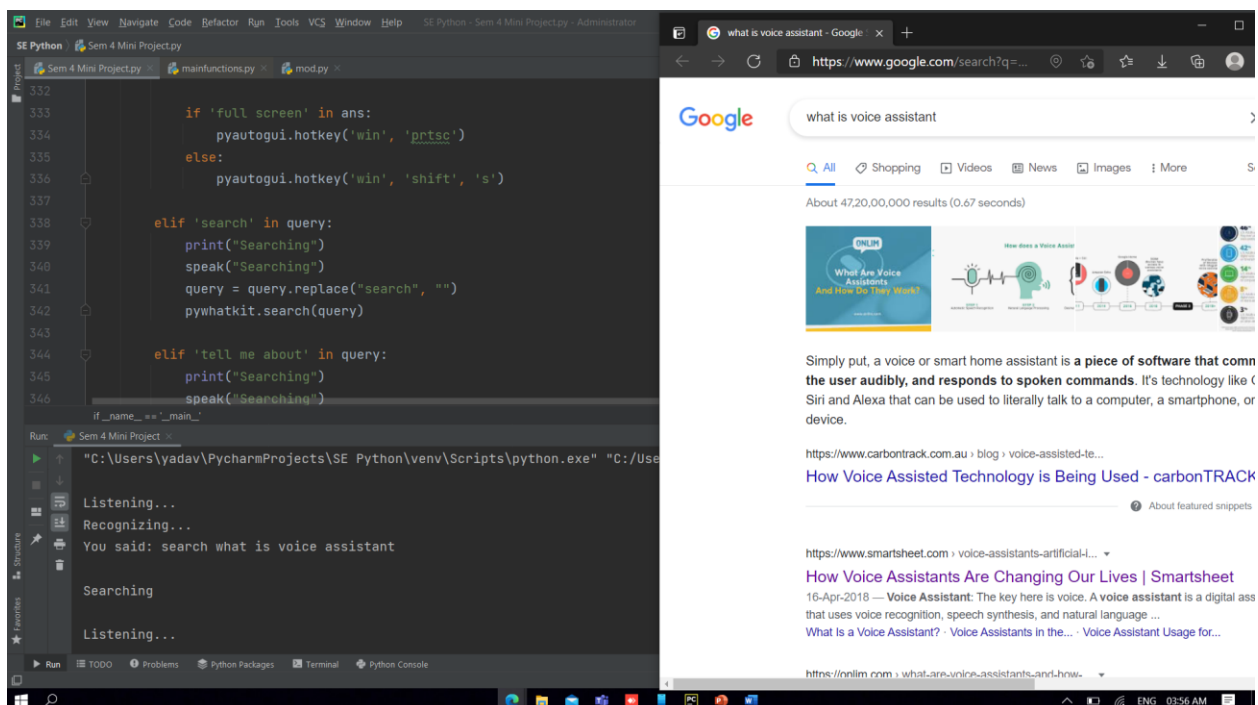


Fig. 3.6 Searching on Web

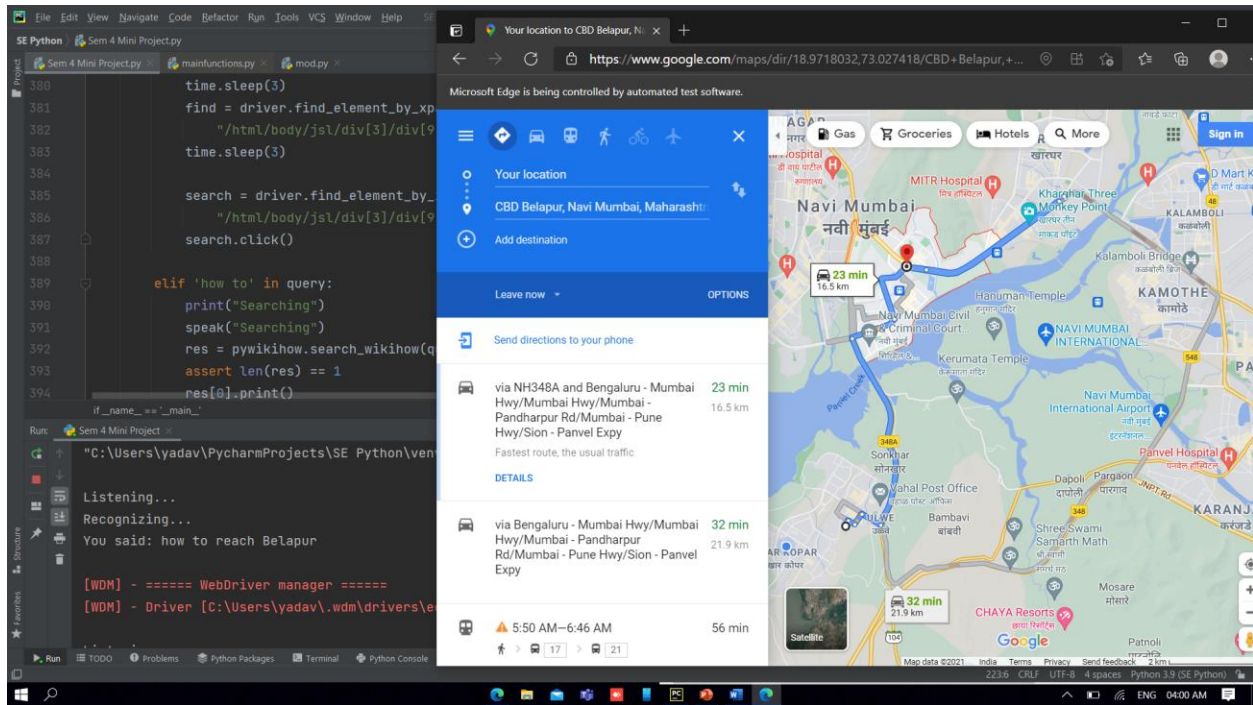


Fig. 3.7 Map

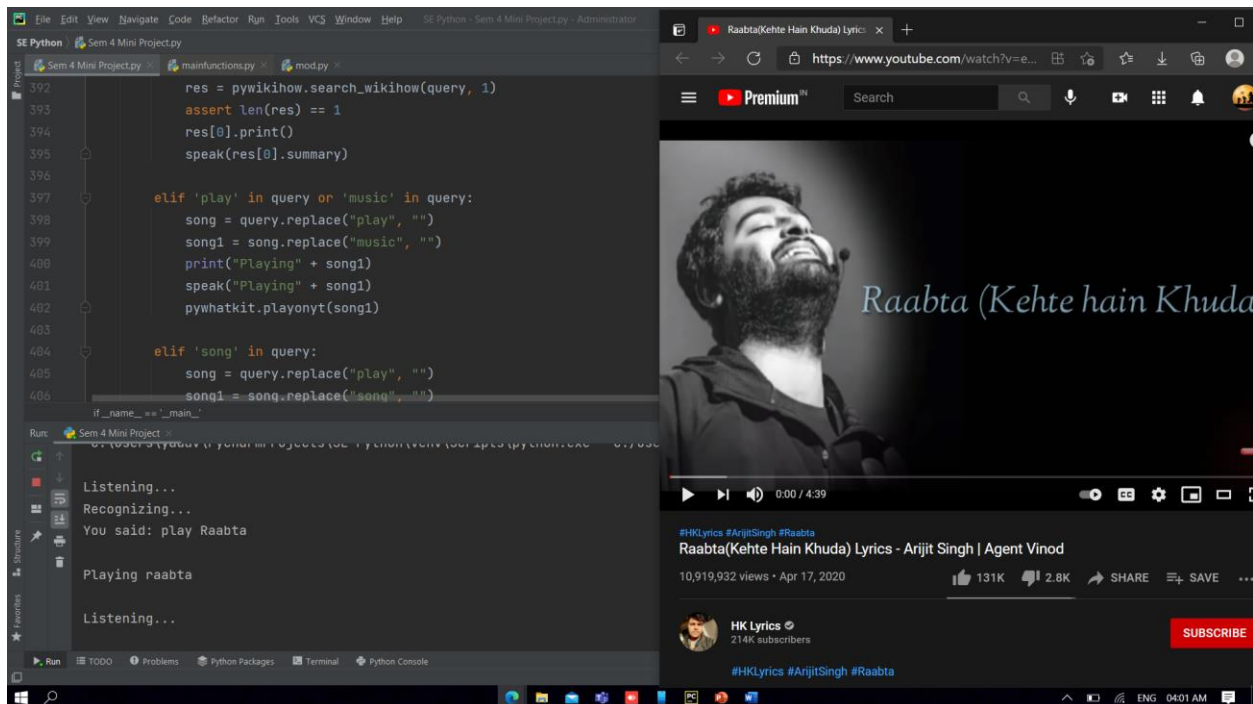


Fig. 3.8 Playing song on YouTube

Listening...

Recognizing...

You said: me a joke

My friend's in a band called '1023 Megabytes'... They haven't got a gig yet!

Ha Ha Ha. I hope you find it funny

Fig. 3.9 Jokes

Listening...

Recognizing...

You said: the time

04:05:32

Listening...

Recognizing...

You said: what's the date

14/05/2021

Fig. 3.10 Date and Time

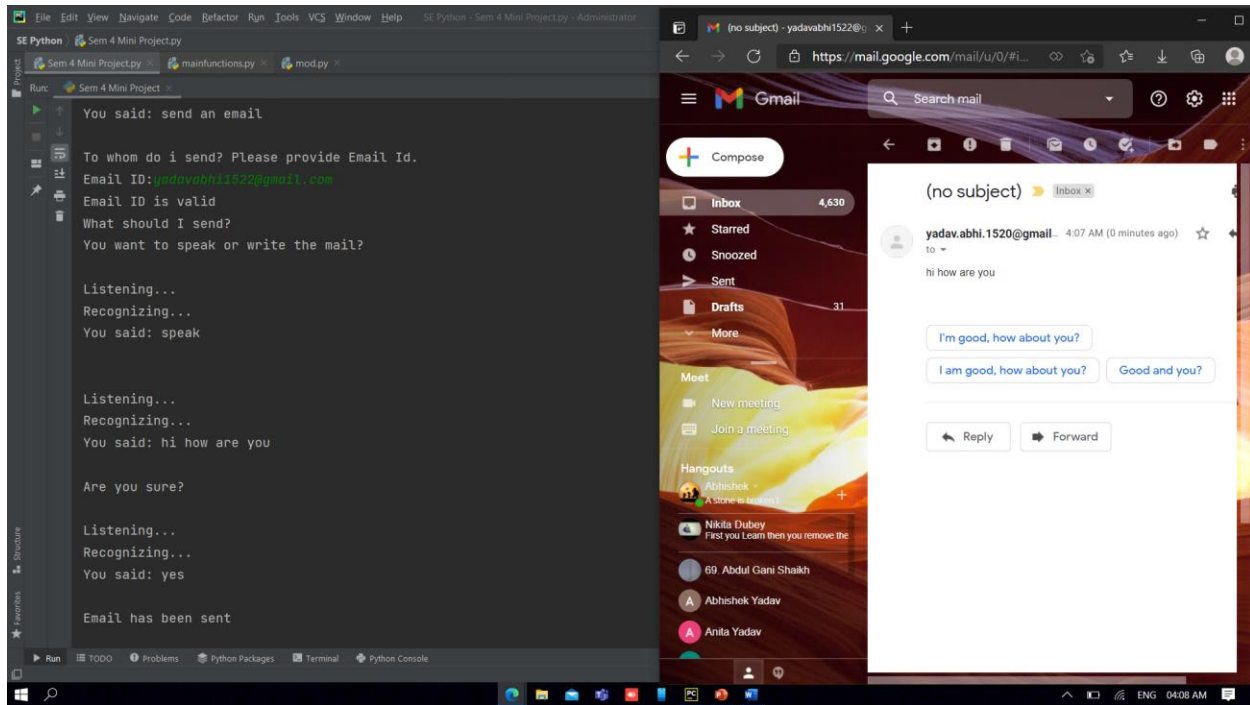


Fig. 3.11 Sending an Email

```

Listening...
Recognizing...
You said: what are the headlines

Getting Headlines:
News 1 : Fully Vaccinated People In US Don't Need To Wear Mask: Medical Body - NDTV
News 2 : CONFIRMED lineups: Granada vs Real Madrid, 2021 La Liga - Managing Madrid
News 3 : Emotional immunity also key to recovery - Deccan Chronicle
News 4 : Covid virus has a right to live, says ex-CM Trivendra Singh Rawat. Barbs follow - Hindustan Times
News 5 : Elon Musk Decries 'Insane' Bitcoin Energy Use After Tesla Payment U-Turn - NDTV
News 6 : Weight loss story: "I had a special drink made of garlic, turmeric, honey, lemon juice with a sprig of tulsi leaves every morning" | The Times of India - Times of India
News 7 : 'Should we hang ourselves if Covid vaccines not manufactured': Union Minister Sadananda Gowda - The Indian Express
News 8 : Xiaomi launches Redmi Note 10S, Smart Watch in India: Price, specs and more - Business Standard
News 9 : BTS Butter teaser photos: J-Hope, Jimin and V stun with their looks, fans spot ARMY logo behind Jimin - Hindustan Times
News 10 : Peak will come, virus can again emerge: Government - Economic Times

```

Fig. 3.12 News, Headlines

```
Listening...
Recognizing...
You said: perform speed test

Testing please wait....
Download speed is 22.62 Mbps
Upload speed is 15.29 Mbps
```

Fig. 3.13 Speedtest

```
Listening...
Recognizing...
You said: weather today

Which city do you want?

Listening...
Recognizing...
You said: Mumbai

Mumbai's Temperature is 29°C
Wind speed is 2.06 m/s
Weather is Haze
Humidity is 74
Description is haze
```

Fig 3.14 Weather Report

```
Listening...
Recognizing...
You said: derivative of x square + 3 x

Answer is  $d/dx(x^2 + 3 x) = 2 x + 3$ 

Listening...
Recognizing...
You said: integration of 5 x + 3

Answer is  $\text{integral}(5 x + 3) dx = (5 x^2)/2 + 3 x + \text{constant}$ 
```

Fig 3.15 Maths Problems

```
Listening...
Recognizing...
You said: bye bye

Bye Bye!! Have a nice day
```

Fig 3.16 Bye, Exit

6. CONCLUSION AND FUTURE SCOPE

6.1. CONCLUSION

Voice Controlled Personal Assistant System will use the Natural language processing and can be integrated with artificial intelligence techniques to achieve a smart assistant that can control the computer and applications and even solve user queries using web searches.

It can be designed to minimize the human efforts to interact with many other subsystems, which would otherwise have to be performed manually. By achieving this, the system will make human life comfortable.

This project helped us to understand different aspects of Python Programming through different packages, modules and APIs.

6.2. FUTURE SCOPE

- Controlling Smart Home appliances.
- Chatbot, talking to user.
- GUI based interface.
- Play Games.
- Controlling Device.
- Read notification or messages for you.
- Calling a person.
- AI based Knowledgebase.
- Storing queries for future references.

REFERENCES

Books Referred:

E Balagurusamy, “Introduction to computing and problem-solving using python”, McGraw Hill Publication.

Dr. R. Nageswara Rao,” Core Python Programming” , Dreamtech Press, Wiley Publication

Learning Python, 5th Edition, Marks Lutz.

Websites Referred:

- <https://ieeexplore.ieee.org/document/9210344/figures#figures>
- <https://ieeexplore.ieee.org/document/8993344>
- <https://pypi.org/>
- <https://docs.python.org/>
- <https://www.geeksforgeeks.org/>

CODE SAMPLE

Modules –

- **pyttsx3:** pyttsx3 is a text-to-speech conversion library in Python.
- **speech_recognition:** Library for performing speech recognition, with support for several engines and APIs, online and offline.
- **pywhatkit:** PyWhatKit is a Python library for Sending WhatsApp message at certain time, it has several other features too.
- **googletrans:** Google Translate API for Python.

Packages –

- **smtplib:** The smtplib module defines an SMTP client session object that can be used to send mail to any Internet machine with an SMTP or ESMTP listener daemon.
- **selenium:** The selenium package is used to automate web browser interaction from Python.

APIs –

- **Wolframalpha API:** Python Client built against the Wolfram|Alpha v2.0 API.
- **News API:** News API is a simple JSON-based REST API for searching and retrieving news articles
- **OpenWeatherMap API:** openweathermap is a service that provides weather data.

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With sincere regards,

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