MINI PROJECT

(2021-22)

“VOICE ASSISTANT APP”

Project Report

Institute of Engineering & Technology

Submitted By -

Shubh Mishra(191500794)

Under the Supervision of

Mr. Mohd. Amir Sir

Technical Trainer

Department of Computer Engineering & Applications

Department of Computer Engineering and Applications

GLA University, 17 km. Stone NH#2, Mathura-Delhi Road,

Chaumuha, Mathura – 281406 U.P (India)

Declaration

I/we hereby declare that the work which is being presented in the Bachelor of technology. Project **“Voice Assistant App”**, in partial fulfillment of the requirements forthe award of the ***Bachelor of Technology*** in Computer Science and Engineering and submitted to the Department of Computer Engineering and Applications of GLA University, Mathura, is an authentic record of my/our own work carried under the supervision of **Mr. Mohd. Amir Sir, Technical Trainer, Dept. of CEA, GLA University.**

The contents of this project report, in full or in parts, have not been submitted to any other Institute or University for the award of any degree.

Sign: *Shubh Mishra*

Name of Candidate: Shubh Mishra

University Roll No.:191500794

Department of Computer Engineering and Applications

GLA University, 17 km. Stone NH#2, Mathura-Delhi Road,

Chaumuha, Mathura – 281406 U.P (India)

Certificate

This is to certify that the project entitled “Voice Assistant App”, carried out in Mini Project – II Lab, is a bonafide work by Shubh Mishra and is submitted in partial fulfillment of the requirements for the award of the degree Bachelor of Technology (ComputerScience & Engineering).

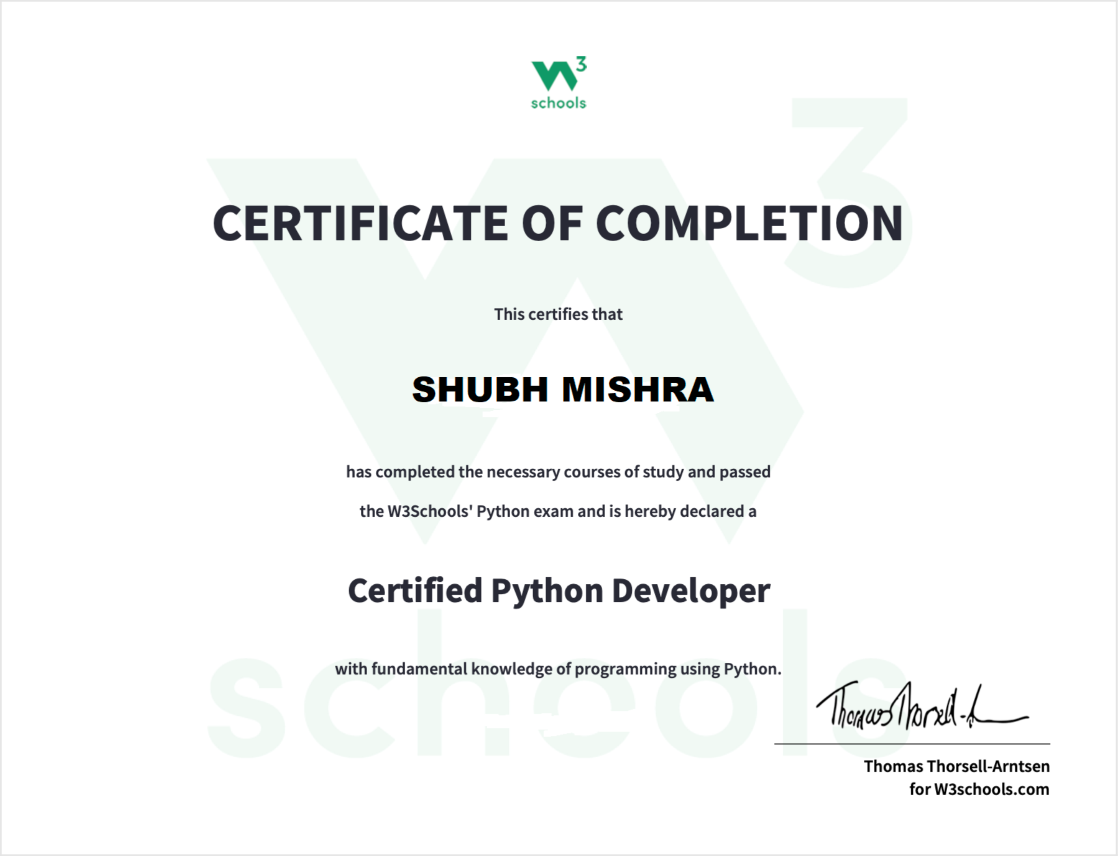
Signature of Supervisor:

Name of Supervisor: Mr. Mohd. Amir Khan

Date:

Training Certificates

- **Shubh Mishra**



CERTIFICATE OF COMPLETION

This certifies that

SHUBH MISHRA

has completed the necessary courses of study and passed the W3Schools' Python exam and is hereby declared a

Certified Python Developer

with fundamental knowledge of programming using Python.

Thomas Thorsell-Arntsen
for W3schools.com

Department of Computer Engineering and Applications

GLA University, 17 km. Stone NH#2, Mathura-Delhi Road,

Chaumuha, Mathura – 281406 U.P (India)

ACKNOWLEDGEMENT

Presenting the ascribed project paper report in this very simple and official form, we would like to place my deep gratitude to GLA University for providing us the instructor Mr. Mohd Amir Khan Sir, our technical trainer and supervisor.

He has been helping us since Day 1 in this project. He provided us with the roadmap, the basic guidelines explaining on how to work on the project. He has been conducting regular meeting to check the progress of the project and providing us with the resources related to the project. Without his help, we wouldn’t have been able to complete this project.

And at last but not the least we would like to thank our dear parents for helping us to grab this opportunity to get trained and also my colleagues who helped me find resources during the training.

Thanking You

Sign: *Shubh Mishra*

Name of Candidate: Shubh Mishra

University Roll No.:191500794

ABSTRACT

As we know Python is an emerging language so it becomes easy to write a script for Voice Assistant in Python. The instructions for the assistant can be handled as per the requirement of user. Speech recognition is the process of converting speech into text. This is commonly used in voice assistants like Alexa, Siri, etc. In Python there is an API called SpeechRecognition which allows us to convert speech into text. It was an interesting task to make my own assistant. It became easier to send emails without typing any word, searching on Google without opening the browser, and performing many other daily tasks like playing music, opening your favorite IDE with the help of a single voice command. In the current scenario, advancement in technologies are such that they can perform any task with same effectiveness or can say more effectively than us. By making this project, I realized that the concept of AI in every field is decreasing human effort and saving time. 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. 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. 10. It can have some basic conversation. 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 mail 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 very good example of A.I., but it is an A.I.

CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER-1

INTRODUCTION

1.1 CONTEXT

This Python Application “JARVIS” has been submitted in partial fulfilment of the requirements for the award of the degree of Bachelor of Technology in Computer Science and Engineering at GLA University, Mathura supervised by Mr. Mohd. Amir Sir. This project has been completed approximately three months and has been executed in modules, meetings have been organized to check the progress of the work and for instructions and guidelines.

1.2 MOTIVATION

In the recent years, we have realized the importance of automation and its learning and how important it is for us to have our work to be done with ease. Voice Assistants have come into play and made our lives easier by solving problems easily.

In the century we are living the world is progressing at a really great pace, a lot number of technologies come up every single day. To keep up with the technology is also important to survive in this world of digitalization and learning. Along with this we need to have a place to keep the technology for areas of our interest so we thought of developing a app which could provide users with go to speak command and get your work done easily. Adding to its features, some of the features added are tracing location, etc.

Moreover, this kind of application can be used in areas/schools where guardians /parents cannot do searches or things on tech easily. This would be an excellent effort to provide assistance without any boundaries to all.

1.3 OBJECTIVE

The main objective of this application Voice Assistant app named “JARVIS” is to provide its users assistance based on their commands. There will be a facility to find all the basic operations that can be done easily.

Like weather, ip address, internet speeds, alarm, playing music and all. After the command is spoken or given via the shell, the system recognizes it and takes action accordingly happening to be.

This application developed can be used at by a nerd to a tech enthusiast who can make changes accordingly and make this application really useful in day to day life's.

1.4 EXISTING SYSTEM

We are familiar with many existing voice assistants like Alexa, Siri, Google Assistant, 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. As these voice assistants are using Artificial Intelligence hence the result that they are providing are highly accurate and efficient. These assistants can help to reduce human effort and consumes time while performing any task, they removed the concept of typing completely and behave as another individual to whom we are talking and asking to perform task. These assistants are no less than a human assistant but we can say that they are more effective and efficient to perform any task. The algorithm used to make these assistant focuses on the time complexities and reduces time. But for 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.

1.5 SOURCES

The source of our project (including all the project work, documentations and presentations) will is available at the following link https://github.com/Mishra-Shubh/Voice-Assistant.

CHAPTER -2

SOFTWARE REQUIREMENT ANALYSIS

2.1 IMPACT OF VOICE ASSISTANT ON DAILY LIFE

A voice assistant (VA), a type of voice-enabled artificial intelligence, is no longer just a character in science fiction movies. Currently, voice is embedded in a variety of products such as smartphones (mobile applications) and smart speakers in consumers' homes. Furthermore, voice assistants are becoming integral to our daily lives. While human personalities shape the way we interact with the world, voice assistant personalities can also impact everyday interactions with our environment. This study identifies seven voice assistant personality traits (VAP) of three commonly used mobile applications: Microsoft's Cortana, Google's Assistant, and Amazon's Alexa. To examine the effect of VAP on consumer experience, this study applies and extends flow theory to uncover why VAP has the effects it has and what facets of VAP drive the voice interaction flow experience that can influence consumers' attitudes and behavioral intentions. study shows that voice interaction with a VA that incorporates functional intelligence, sincerity, and creativity empowers consumers to take control of their voice interactions with the VA, focus on their voice interaction, and engage in exploratory behavior. Consumers' exploratory behavior leads to consumer satisfaction and consumers' willingness to continue using voice assistant.

.

2.2 PROBLEM STATEMENT

The Voice Assistant App “JARVIS” is a Python Application which will allow the users to do/search any basic commands using either the keyword trigger or the subject line or the query. The query falls into a particular set of words creates a series of events to be executed. Actually this app is made with help of various packages and every time the user searches, the defined trigger is activated and the result is printed or action is performed out.

Not too long ago, building an AI assistant was a small component of developers’ capacities; however, nowadays, it is quite a realistic objective even for novice programmers. To create a simple personal AI assistant, one simply needs dedicated software and around an hour of working time. It would take much more time, though, to create something more advanced and conceptually innovative. Nonetheless, well thought-out concepts can result in a great base for a profitable startup. Let us consider the six most renowned applications based on artificial intelligence concepts that can help create your virtual AI assistant app.

This app is a complete all in one solution to the voice assistant market and has capability to be built more further.

2.3 HARDWARE AND SOFTWARE REQUIREMENTS

Hardware Requirement

- Processor: intel i5

- Operating System: Windows 7 and Above
- RAM: 8 GB (or higher)
- Hard disk: 256GB(min.)

Software Requirement

- Software used: PyCharm IDE, VS Code
- Language used: Python
- User Interface Design: Python QT Designer

2.4 MODULES AND FUNCTIONALITIES

- **Speak Functionality**: This functionality in the project is used to speak out or to respond to the user in the audio format. This is done with the help of Pythons inbuilt Text to speech package(Pyttsx3).

- **Take Command Functionality:** This functionality in the project is used to take the input from the user in the audio format and convert into text so as to process and give the output. We have used the recognizer instance and the microphone as the input source to do so.

- **Wish Me Functionality:** This functionality in the project is used to wish the user based on the time of the day. To do so I have used the date time function which is inbuilt with the python.

- **Send Email Module**: This module is used for automatically sending out emails to the desired user. This is made possible with the help of the Simple Mail Transfer Protocol (SMTP) and its methods.

- **News Module:** This module is used for fetching the news into the project when requested by the user. This is done with the help of News API

- **PDF Reading Module**: This module in the project is used for Reading out the PDF formatted file making it look like an audiobook. The Limitation is that the PDF has to pure purely textual in format without any encoding just the simple text. Done with the help of Py2PDF Package.

2.5 JARVIS AS WINDOWS APPLICATION

Jarvis is actually an innovative voice assistant. Artificial Intelligence personal assistants have become plentiful over the last few years. Applications such as Siri, Bixby, Ok Google and Cortana make mobile device users' daily routines that much easier. You may be asking yourself how these functions. Well, the assistants receive external data (such as movement, voice, light, GPS readings, visually defined markers, etc.) via the hardware's sensors for further processing - and take it from there to function accordingly. These Voice Assistant are well established yet mine built is nevertheless bad at all. It can handle all your basic task the users want from it.

CHAPTER- 3

SOFTWARE DESIGN

3.1 USE-CASE DIAGRAM:

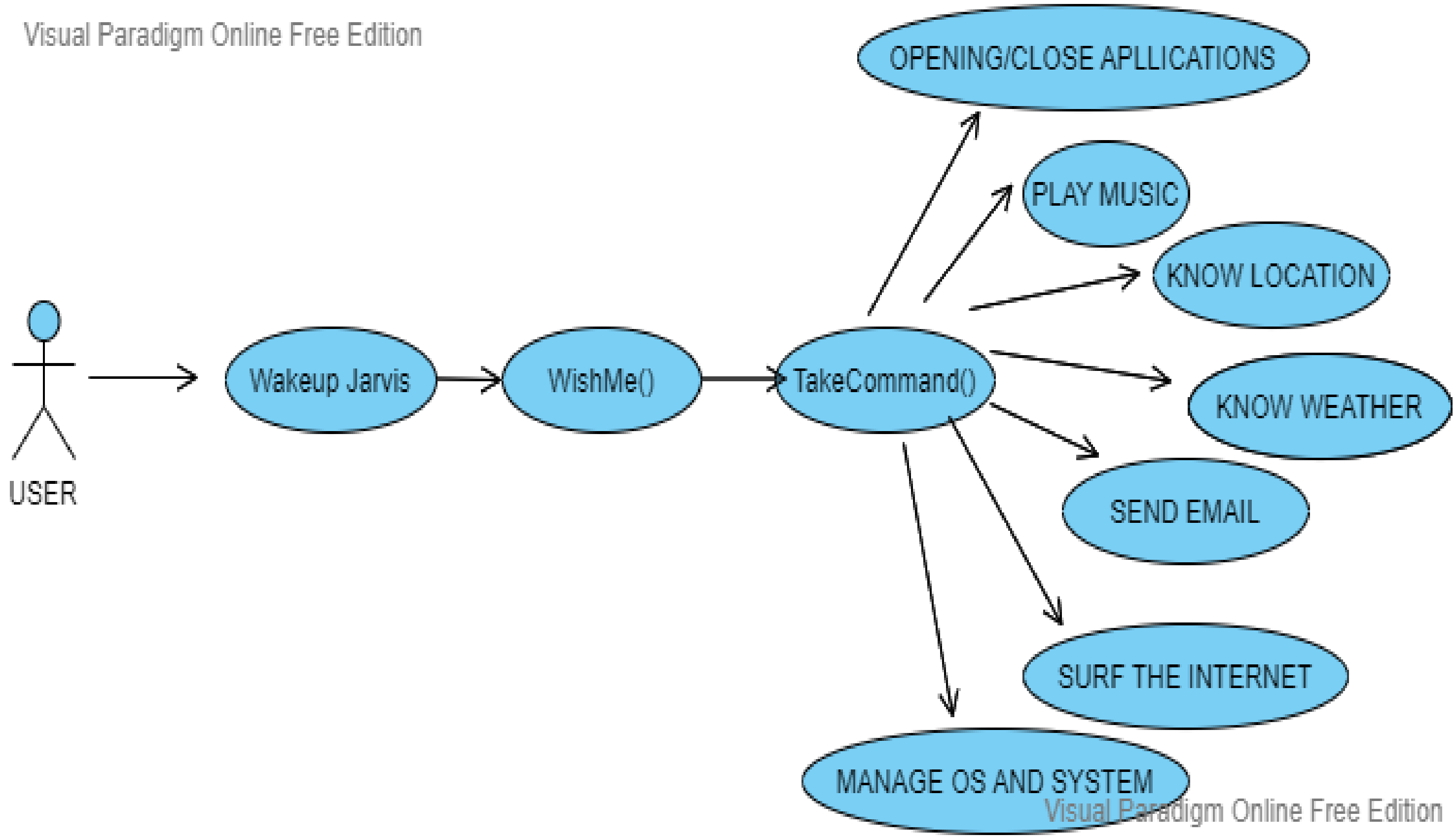


Figure-2: Use–Case Diagram

So the above diagram represents the point of view of the user, and the developer and the arrows to each module show the interactivity of the person.

The user will first be required to open the executable file of the application whereupon. He/she will get into the take command mode so to enter into Jarvis I have created a hot word called “WAKEUP’ or” WAKEUP JARVIS”. This will run the Jarvis taking it to the Wish Me module whereupon it will come into a listening mode to take the input such as opening or closing applications, playing music, getting your geolocation, checking weather, controlling volumes and, system applications like command prompt. Also helps in surfing the internet as you can command it open google and search for something, play something on the YouTube, debug things using Stack Overflow online.

3.2 DATA FOW DIAGRAM

The DFD contains the overall flow of data from a component to all others one. Since JARVIS is just a simple user centric project with no complex flows all the data originates from the take Command () Function and after execution return back to the same. If not available, then the input from user function keeps on calling itself.

As soon as the functions encounters with set of keywords from the query, it executes the defined instruction for its completion and return back to user for taking the next Command. Until the user says No thank or Sleep it keeps on to be in the same loop of executing the commands. Through Several modules, we can interact with the sections of our program like the news activity. Or the PDF Reading activity and so on.

The DFD for the JARVIS is shown below:

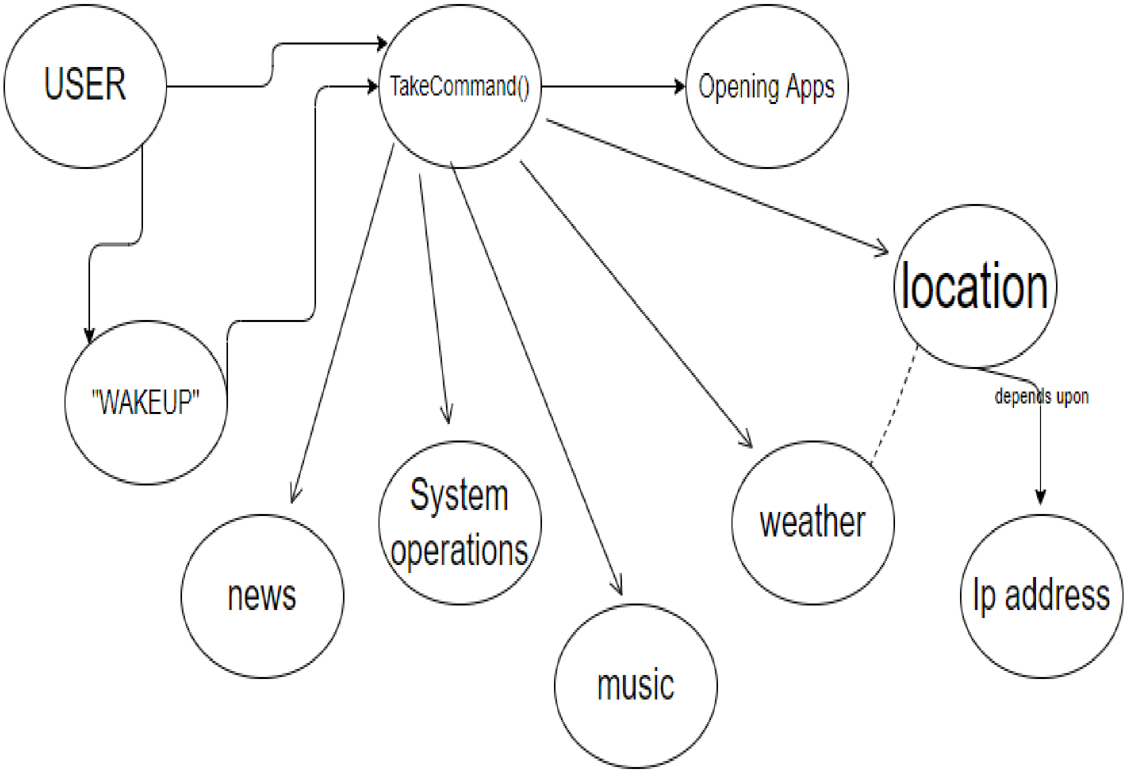


Figure-3: Data Flow Diagram

3.3 SEQUENCE DIAGRAM

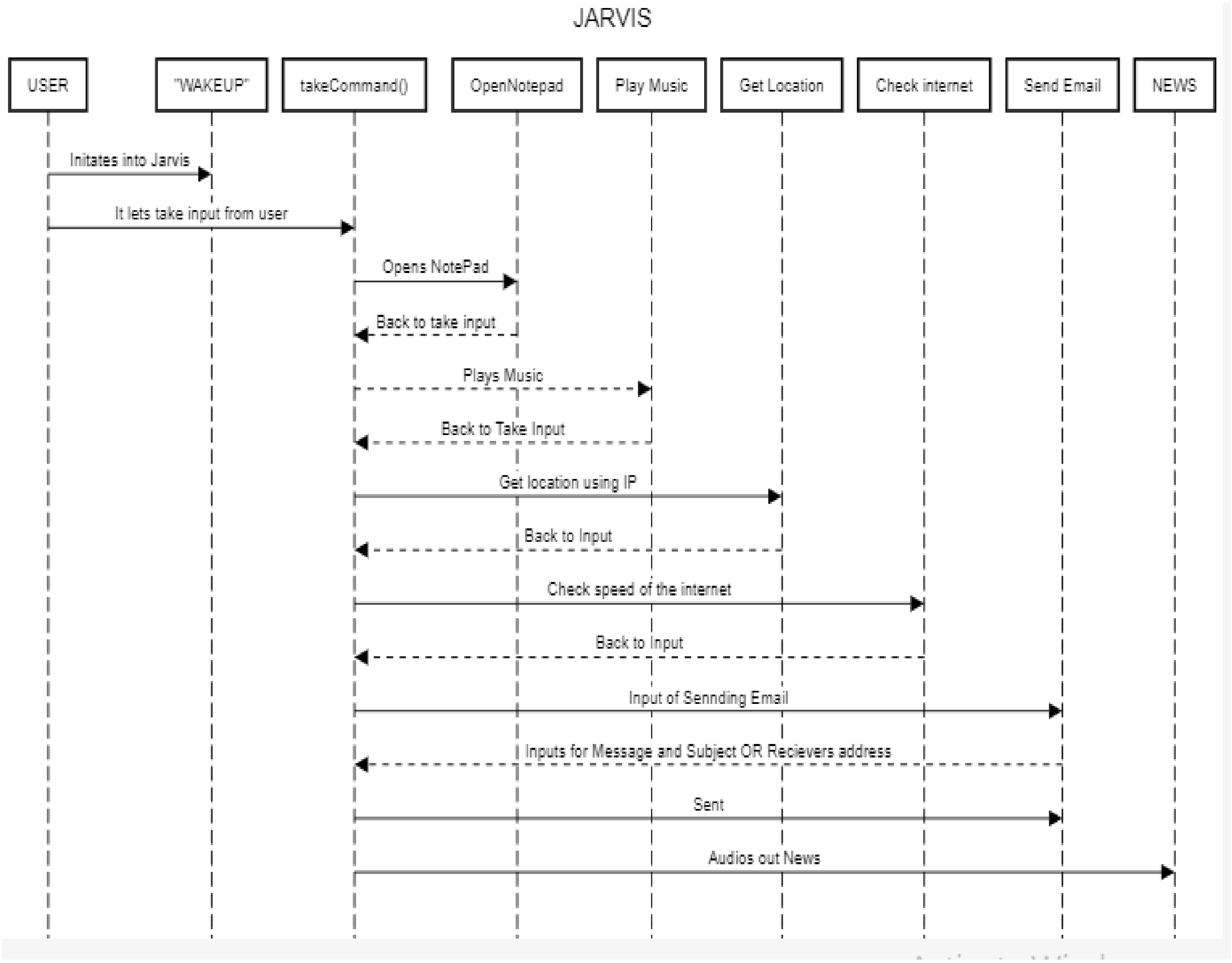


Figure-4: Sequence Diagram

CHAPTER-4
TECHNOLOGY USED

4.1 PYTHON

Python is a popular programming language. It was created by Guido van Rossum, and released in 1991.

It is used for:

- web development (server-side),
- software development,
- mathematics,
- system scripting.

What can Python do?

- Python can be used on a server to create web applications.
- Python can be used alongside software to create workflows.
- Python can connect to database systems. It can also read and modify files.
- Python can be used to handle big data and perform complex mathematics.
- Python can be used for rapid prototyping, or for production-ready software development.

Why Python?

- Python works on different platforms (Windows, Mac, Linux, Raspberry Pi, etc.).
- Python has a simple syntax similar to the English language.
- Python has syntax that allows developers to write programs with fewer lines than some other programming languages.
- Python runs on an interpreter system, meaning that code can be executed as soon as it is written. This means that prototyping can be very quick.
- Python can be treated in a procedural way, an object-oriented way or a functional way.

Good to know

- The most recent major version of Python is Python 3, which we shall be using in this tutorial. However, Python 2, although not being updated with anything other than security updates, is still quite popular.

- In this tutorial Python will be written in a text editor. It is possible to write Python in an Integrated Development Environment, such as Thonny, Pycharm, Netbeans or Eclipse which are particularly useful when managing larger collections of Python files.

Python Syntax compared to other programming languages

- Python was designed for readability, and has some similarities to the English language with influence from mathematics.
- Python uses new lines to complete a command, as opposed to other programming languages which often use semicolons or parentheses.
- Python relies on indentation, using whitespace, to define scope; such as the scope of loops, functions and classes. Other programming languages often use curly-brackets for this purpose.

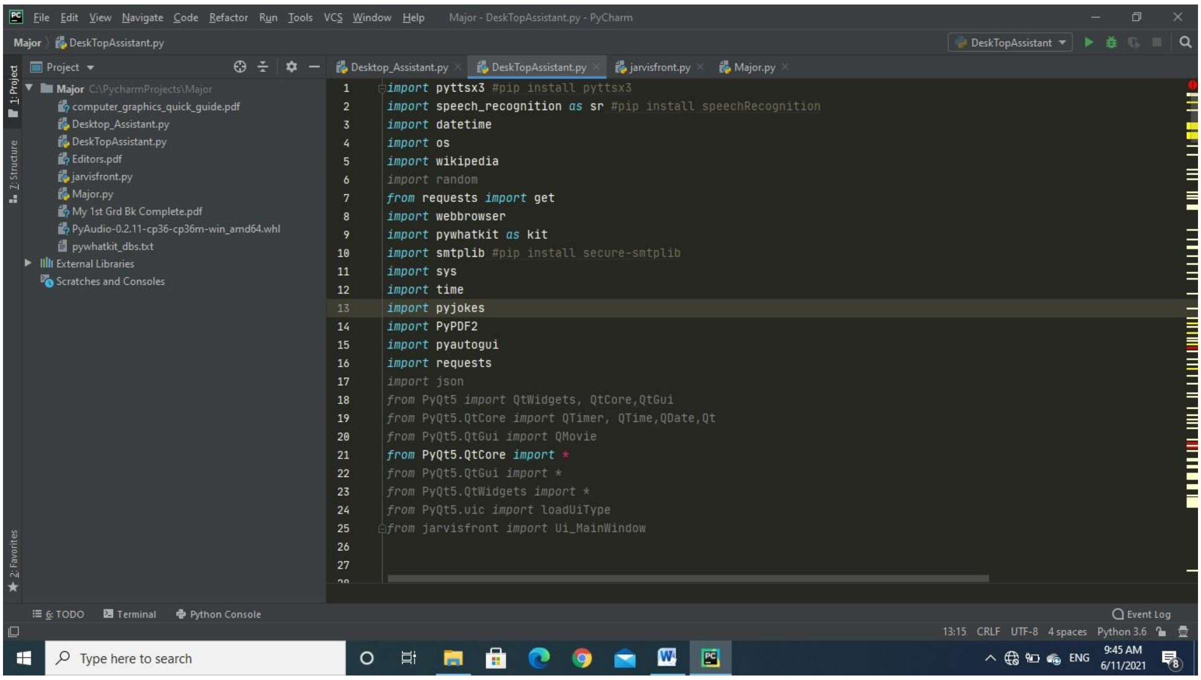
Figure-5: **PYTHON LOGO**

4.2 TOOLS AND LANGUAGES

Tools used to build the App are: -

- **PYCHARM IDE**: It is an IDE i.e. Integrated Development Environment which has many features like it supports scientific tools (like matplotlib, numpy, scipy etc) web frameworks (example Django, web2py and Flask) refactoring in Python, integrated python debugger, code completion, code and project navigation etc. It also provides Data Science when used with Anaconda.

FIGURE – PYCHARM IDE



```python
import pyttsx3 #pip install pyttsx3
import speech_recognition as sr #pip install speechRecognition
import datetime
import os
import wikipedia
import random
from requests import get
import webbrowser
import pywhatkit as kit
import smtplib #pip install secure-smtplib
import sys
import time
import pyjokes
import PyPDF2
import pyautogui
import requests
import json
from PyQt5 import QtWidgets, QtCore,QtGui
from PyQt5.QtCore import QTimer, QTime,QDate,Qt
from PyQt5.QtGui import QMovie
from PyQt5.QtCore import *
from PyQt5.QtGui import *
from PyQt5.QtWidgets import *
from PyQt5.uic import loadUiType
from jarvisfront import Ui_MainWindow
```

- **PYQT5 for LIVE GUI: PyQt**5 is the most important python binding. It contains set of GUI widgets. PyQt5 has some important python modules like QTWidgets, QtCore, QtGui, and **QtDesigner** etc.

Qt is set of cross-platform C++ libraries that implement high-level APIs for accessing many aspects of modern desktop and mobile systems. These include location and positioning services, multimedia, NFC and Bluetooth connectivity, a Chromium based web browser, as well as traditional UI development.

PyQt5 is a comprehensive set of Python bindings for Qt v5. It is implemented as more than 35 extension modules and enables Python to be used as an alternative application development language to C++ on all supported platforms including iOS and Android.

PyQt5 may also be embedded in C++ based applications to allow users of those applications to configure or enhance the functionality of those applications.

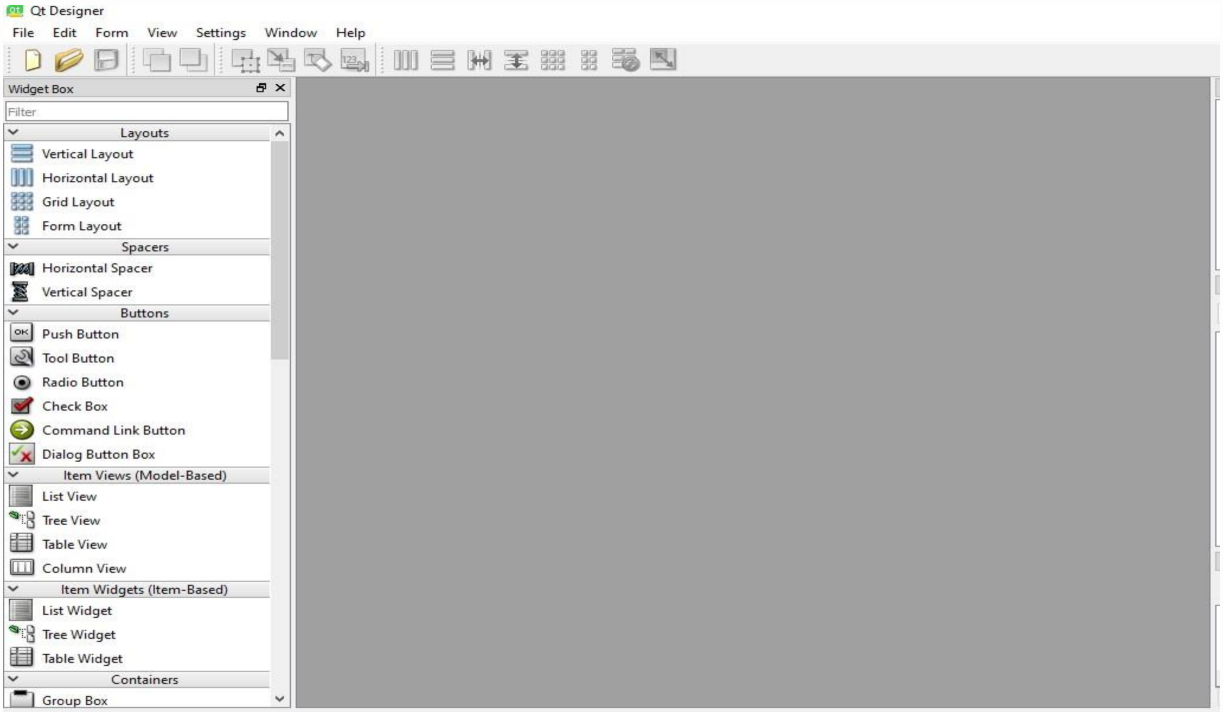


FIGURE –QT DESIGNER IDE

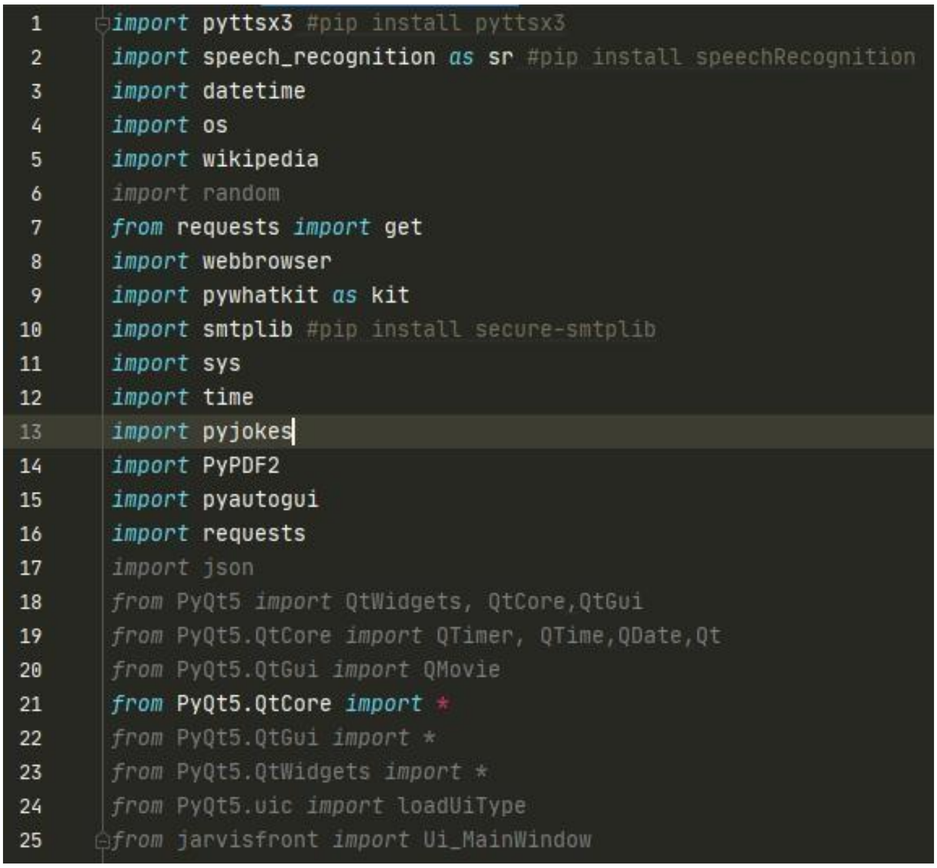
- **VISUAL STUDIO CODE:** Working with Python in Visual Studio Code, using the Microsoft Python extension, is simple, fun, and productive. The extension makes VS Code an excellent Python editor, and works on any operating system with a variety of Python interpreters. It leverages all of VS Code's power to provide auto complete and IntelliSense, linting, debugging, and unit testing, along with the ability to easily switch between Python environments, including virtual and conda environments.

4.3 BASIC TERMINOLOGIES & MODULES

In JARVIS following python libraries were used:

- **pyttsx3:** It is a python library which converts text to speech.
- **Speech Recognition:** It is a python module which converts speech totext.
- **pywhatkit:** It is python library to send WhatsApp message at aparticular time with some additional features.
- **Datetime:** This library provides us the actual date and time.
- **Wikipedia:** It is a python module for searching anything onWikipedia.
- **Smtplib:** Simple mail transfer protocol that allows us to send mailsand to route mails between mail servers.
- **pyPDF2:** It is a python module which can read, split, merge any PDF.
- **Pyjokes**: It is a python libararies which contains lots of interestingjokes in it.
- **Webbrowser:** It provides interface for displaying web-baseddocuments to users.

- **Pyautogui:** It is a python library for graphical user interface.
- **os:** It represents Operating System related functionality.
- **sys:** It allows operating on the interpreter as it provides access to thevariables and functions that usually interact strongly with the interpreter.



```python
import pyttsx3 #pip install pyttsx3
import speech_recognition as sr #pip install speechRecognition
import datetime
import os
import wikipedia
import random
from requests import get
import webbrowser
import pywhatkit as kit
import smtplib #pip install secure-smtplib
import sys
import time
import pyjokes
import PyPDF2
import pyautogui
import requests
import json
from PyQt5 import QtWidgets, QtCore,QtGui
from PyQt5.QtCore import QTimer, QTime,QDate,Qt
from PyQt5.QtGui import QMovie
from PyQt5.QtCore import *
from PyQt5.QtGui import *
from PyQt5.QtWidgets import *
from PyQt5.uic import loadUiType
from jarvisfront import Ui_MainWindow
```

- **File Object**

  A file object, in Python, is an object that exposes a file-oriented API to an underlying resource. Such an API has methods such as read() and write(). We also call them file-like objects or streams, and have three categories:

  Raw binary files

  Buffered binary files

  Text files

- **Python Function**

  A function is a sequence of statements that may return a value to the caller. It may take zero or more arguments. For more on functions, read up **Functions in Python**.

Function Annotation

An annotation to a function is an arbitrary metadata value associated with a parameter or return value. We can access a function's annotations using the __annotations__ attribute. And while Python itself does not assign a meaning to an annotation, third-party libraries or tools make use of them.

- **Docstring**

  A docstring is a string literal that we use to explain the functionality of a class, function, or module. It is the first statement in any of these constructs, and while the interpreter ignores them, it retains them at runtime. We can access it using the __doc__ attribute of such an object.

- Methods

  Python Methods are **functions associated** with an **object**. Methods of an **object operate** on the **data** of that **object**. We **call a method** on an **object** using the **dot operator**.
  For example, if **obj** is an **object** and **med ()** is its **method**, we call it as **obj.med ()**.

- Module

  A module is a **file consisting** of **Python code**. This module can be **imported** and the **code within** can be **reused** in another **Python program**.

CHAPTER -5

IMPLEMENTATION AND USER INTERFACE

JARVIS, a desktop assistant is a voice assistant that can perform many daily tasks of desktop like playing music, opening your favorite IDE with the help of a single voice command. Jarvis is different from other traditional voice assistants in terms that it isspecific to desktop and user does not need to make account to use this, it does not require any internet connection while getting the instructions to perform any specific task.

REAL LIFE APPLICATIONS

- **Saves time:** JARVIS is a desktop voice assistant which works on the voice command offered to it, it can do voice searching, voice-activated device control and can let us complete a set of tasks.
- **Conversational interaction** It makes it easier to complete any task as it automatically does it by using the essential module or libraries of Python, in a conversational interaction way. Hence any user when instruct any task to it, they feel like giving task to a human assistant because of the conversational interaction for giving input and getting the desired output in the form of task done.
- **Reactive nature:** The desktop assistant is reactive which means it know human language very well and understand the context that is provided by the user and gives response in the same way, i.e. human understandable language, English. So user finds its reaction in an informed and smart way.
- **Multitasking:** The main application of it can be its multitasking ability. It can ask for continuous instruction one after other until the user “QUIT” it.
- **No Trigger phase:** It asks for the instruction and listen the response that is given by user without needing any trigger phase and then only executes the task.

DATA IMPLEMENTATION AND PROGRAM EXECUTION

As the first step install all the packages and libraries. The command used to install them is “*pip install*” and then import them into the project. The necessary packages imported are as follows: -

- **Pyttsx3**: It is a python library that converts text to speech
- **Speech Recognition:** It is the python library that converts speech to text
- **Date time:** This library provides us the actual date and time.
- **Wikipedia:** It is a python module for searching anything onWikipedia.
- **Smtplib:** Simple mail transfer protocol that allows us to send mailsand to route mails between mail servers.
- **pyPDF2:** It is a python module which can read, split, merge anyPDF.
- **Pyjokes**: It is a python library which contains lots of interesting jokes in it.
- **Pywhatkit**: It is python library to send WhatsApp message at aparticular time with some additional features.
- **Webbrowser:** It provides interface for displaying web-based documents to users.
- **Pyautogui:** It is a python library for graphical user interface.
- **os:** It represents Operating System related functionality.
- **sys:** It allows operating on the interpreter as it provides access to the variables and functions that usually interact strongly with the interpreter.

FUNCTIONS

- **takeCommand():** The function is used to take the command as inputthrough microphone of user and returns the output as string.

- **wishMe():** This function greets the user according to the time like Good Morning, Good Afternoon and Good Evening.
- **taskExecution ():** This is the function which contains all the necessary task execution definition like sendEmail(), pdf_reader(), news() and many conditions in if condition like “open google”, “open notepad”, “search on Wikipedia” ,”play music” and “open command prompt” etc.

5.1 Implementation of the JARVIS:

Implementation of Jarvis is taken place in various phases. Firstly we build the speak and take Command functions i.e. the program could speak and take input which is the basic for any program that is to be made for a voice assistant. After which the functions were added so that the project looks to be somewhat working, and finally we make use of the GUI and combine it with our python code.

5.1.1 Step to be followed to develop the app:

1. Firstly, we create the python file with speak and take command function
2. After that we import required packages that help us to work upon the project

3. Now, we are going to create the logic of the program by adding query based upon the user input given like if query contains keywords like-
    - Open notepad – “Opens up the notepad”
    - Send Email to my Man – “Send an Email”
    - Internet Speed – “Check whether internet is working and returns the speeds”
    - Instagram Profile – “Checks Instagram of any user and can download its profile pic for you”
    - Weather – “Checks or returns weather of the location you want it for

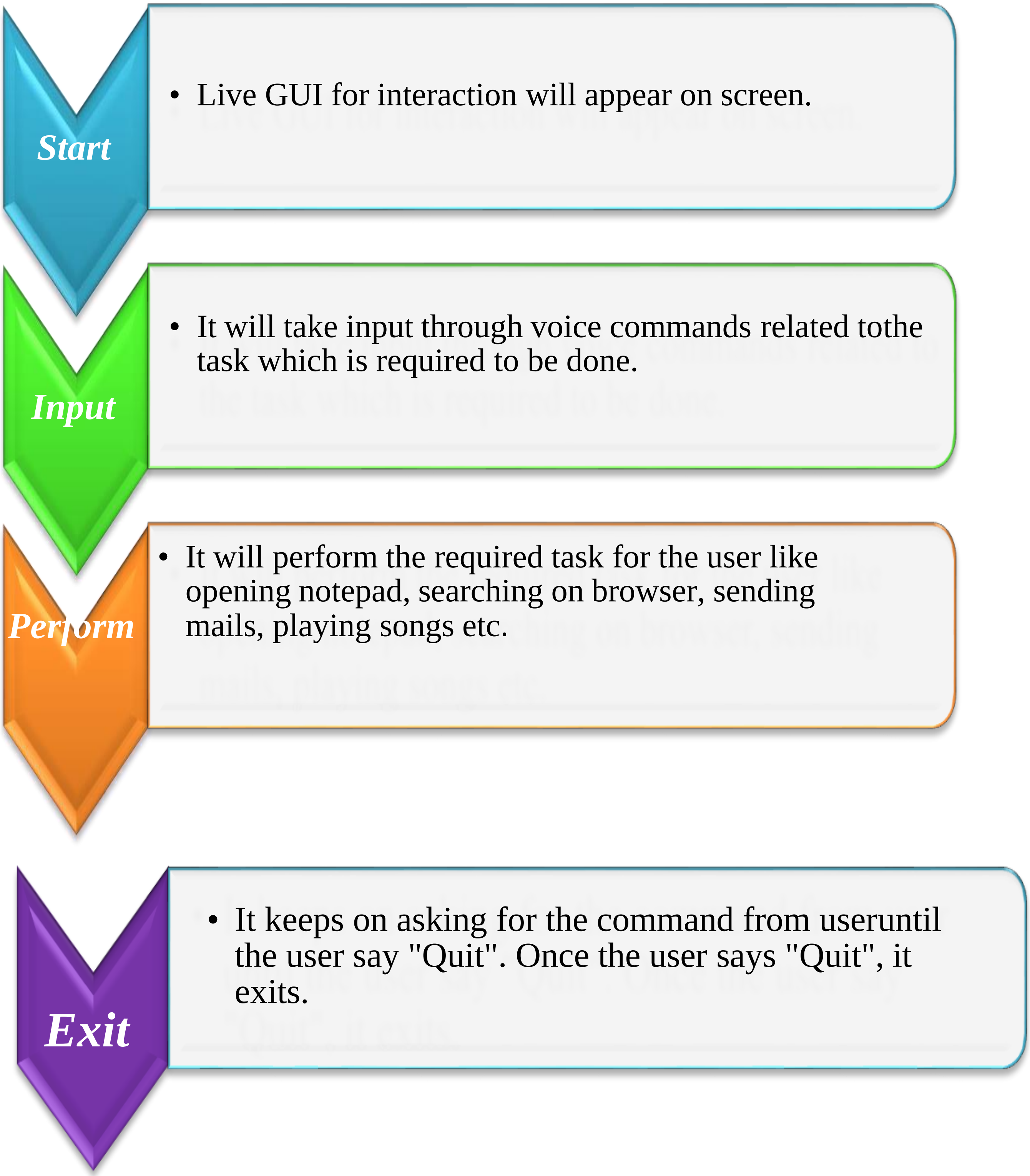
4. . Creating the GUI with the help of QT Designer which includes:
    - Main Window
    - Parent Label (Covering the whole body of the GUI)
    - Image Assets (probably .gif format)
    - Dialog Boxes for Dynamic content
    - Other Resources
5. Now we have created the GUI we convert it into the python file.

6. We import the QT5 modules and implement the code in the “main” of python

7. we tweak the code into Task Execution function and initially built take command function while implementing GUI

8. After completion the project is ready.

Flow Chart for the User is given below:



Start

- Live GUI for interaction will appear on screen.

Input

- It will take input through voice commands related tothe task which is required to be done.

Perform

- It will perform the required task for the user like opening notepad, searching on browser, sending mails, playing songs etc.

Exit

- It keeps on asking for the command from useruntil the user say "Quit". Once the user says "Quit", it exits.

5.1.2 Step to be followed by the user

1. Firstly, run the exe file in the distribution folder of the project directory.

2. You will see the GUI pop up on the screen

3. Press on RUN button to start the program

4. Once started Jarvis comes into semi-active mode from where You need to say “WAKE UP” to enter into take Command mode

5. Else Jarvis will be active in the background for your future use

6. After that you have activated it, you will get greeting s from Jarvis and it will inform you when it can take command

7. ASK JARVIS and get ANSWERS

8. Once done either say “close ” or click on the exit button on the GUI.

5.2 User Interface

- **MAIN WINDOW Screen**

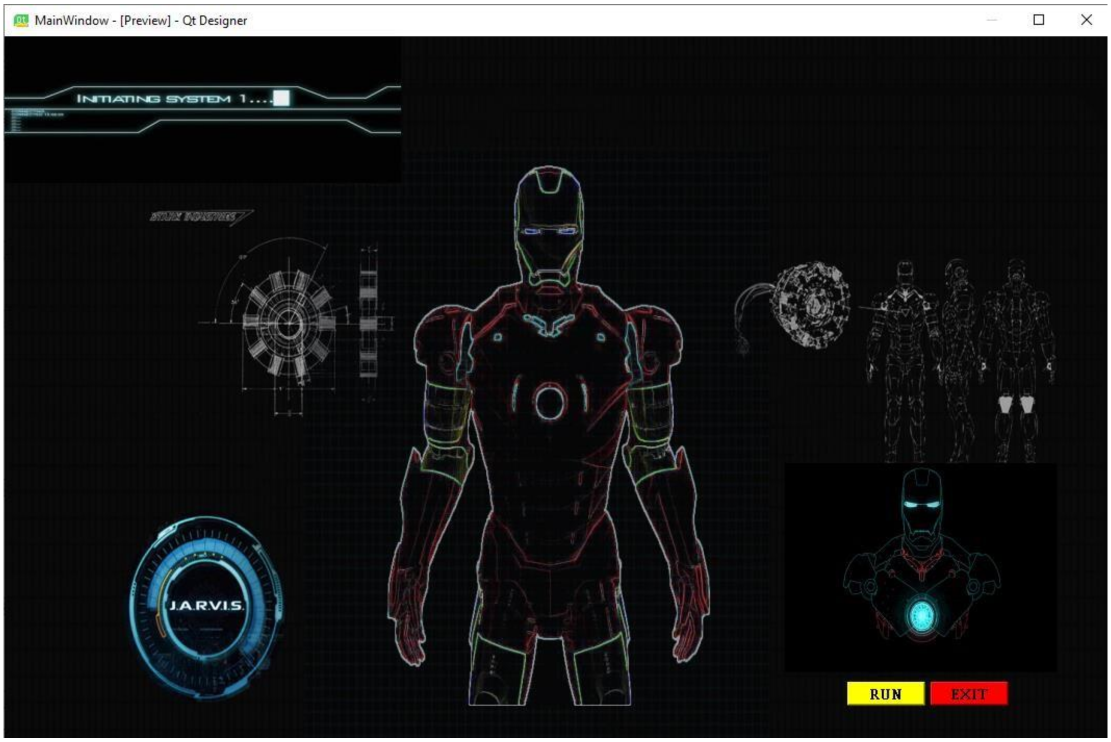
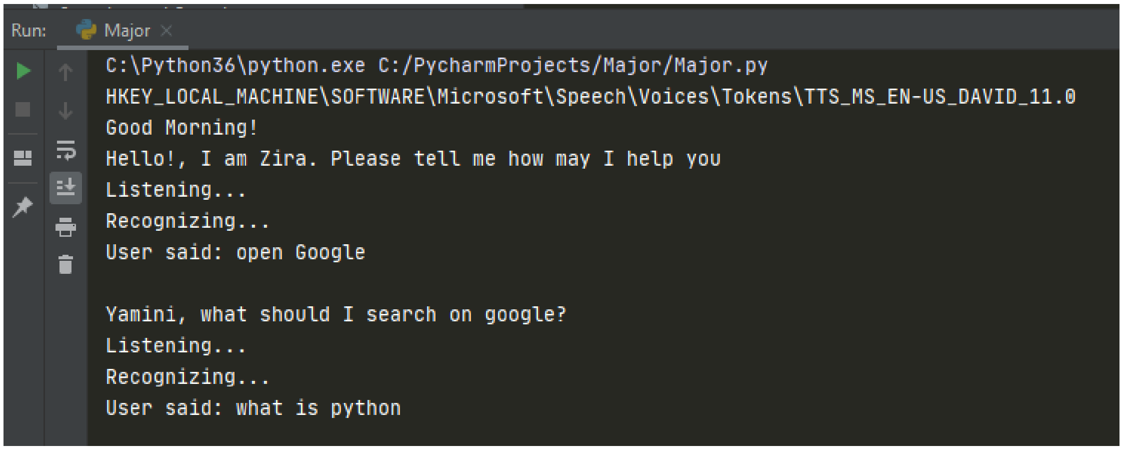


Figure-7: LIVE GUI

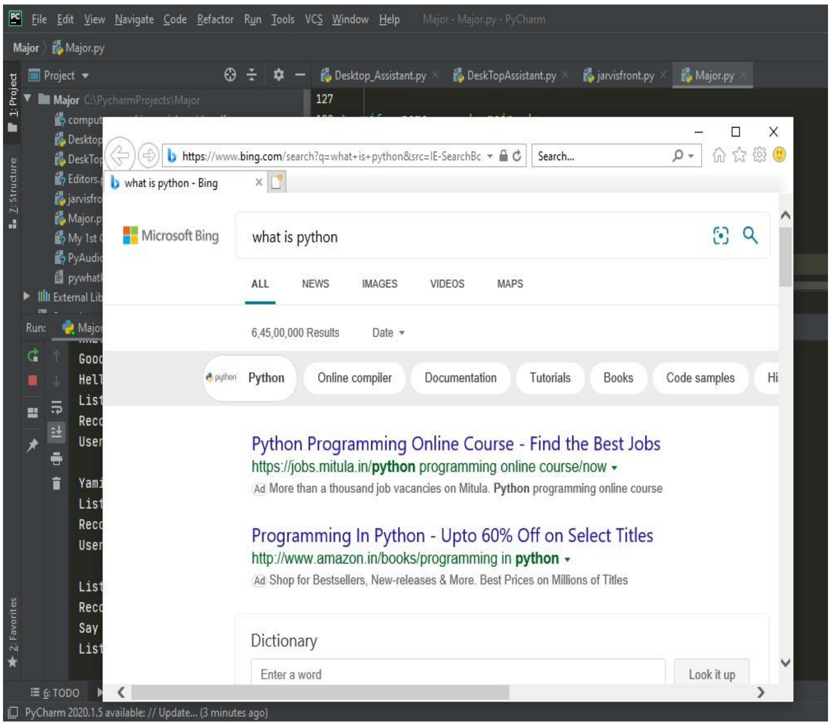
- **INPUT**



```
C:\Python36\python.exe C:/PycharmProjects/Major/Major.py
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Speech\Voices\Tokens\TTS_MS_EN-US_DAVID_11.0
Good Morning!
Hello!, I am Zira. Please tell me how may I help you
Listening...
Recognizing...
User said: open Google

Yamini, what should I search on google?
Listening...
Recognizing...
User said: what is python
```

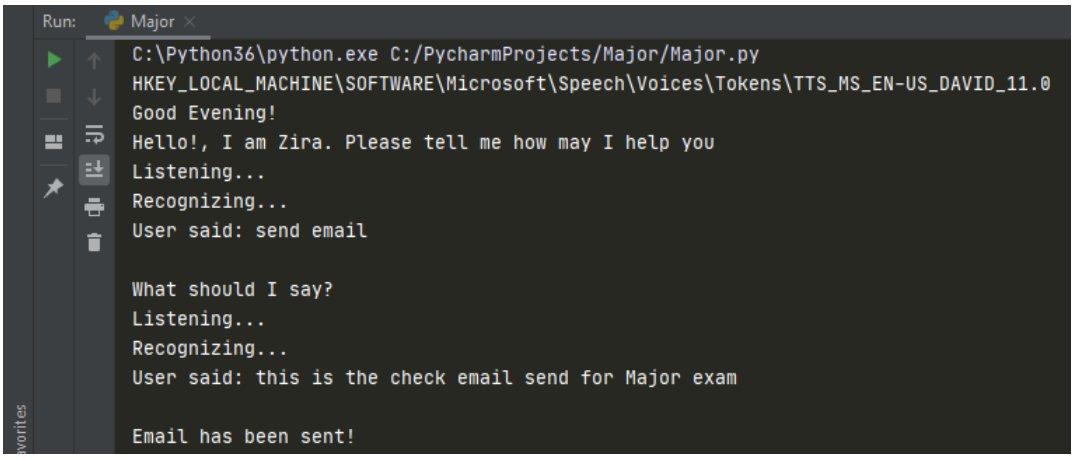
Figure-8: Input for Google Search



Python Programming Online Course - Find the Best Jobs
https://jobs.mitula.in/python programming online course/now
Ad More than a thousand job vacancies on Mitula. Python programming online course

Programming In Python - Upto 60% Off on Select Titles
http://www.amazon.in/books/programming in python
Ad Shop for Bestsellers, New-releases & More. Best Prices on Millions of Titles

Figure 6.3 Output for Google search

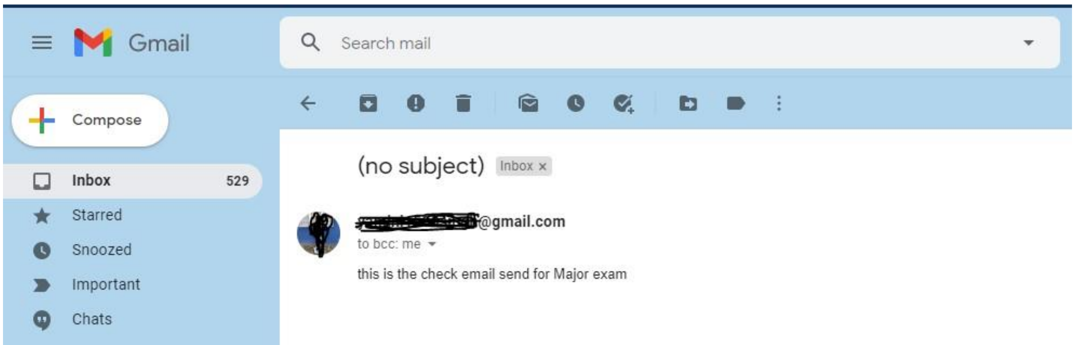


```
C:\Python36\python.exe C:/PycharmProjects/Major/Major.py
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Speech\Voices\Tokens\TTS_MS_EN-US_DAVID_11.0
Good Evening!
Hello!, I am Zira. Please tell me how may I help you
Listening...
Recognizing...
User said: send email

What should I say?
Listening...
Recognizing...
User said: this is the check email send for Major exam

Email has been sent!
```

Figure 6.4 Input to send Email

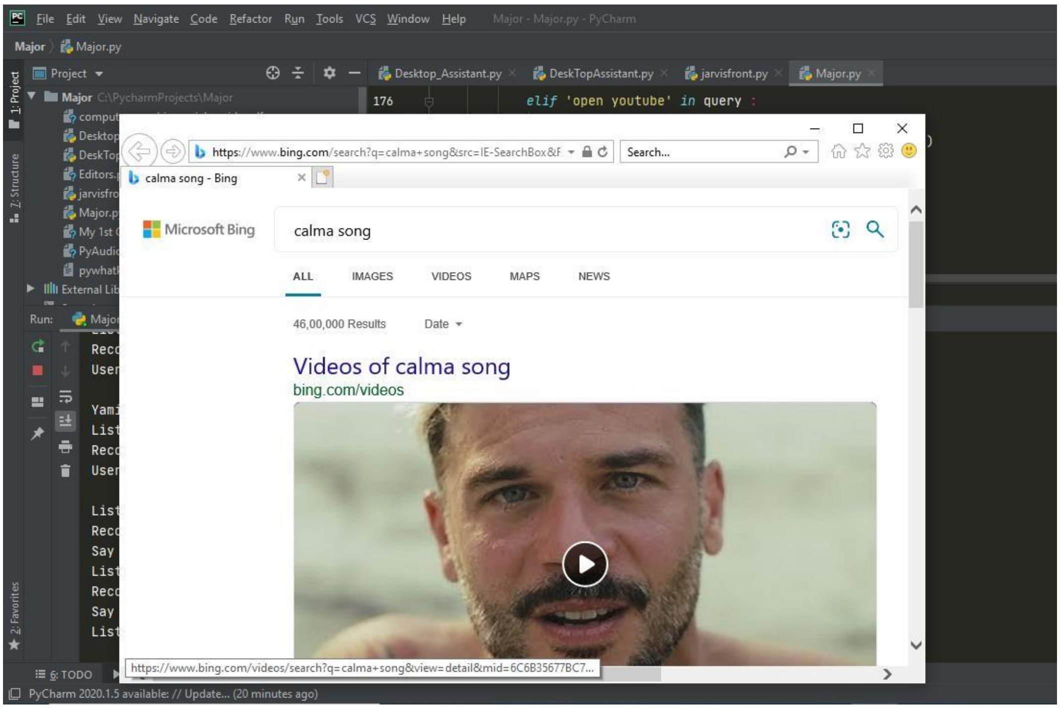


(no subject)

[redacted]@gmail.com

to bcc: me

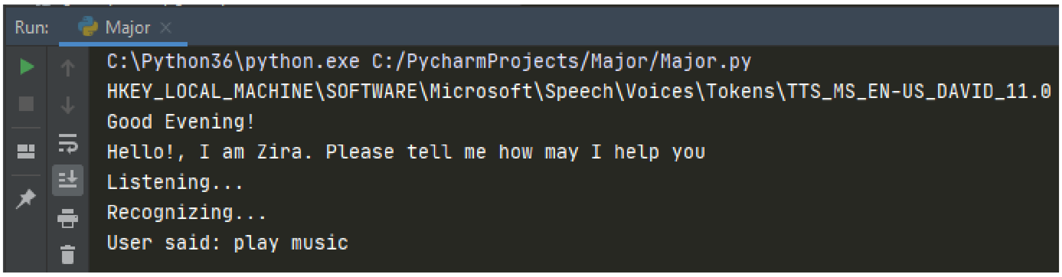
this is the check email send for Major exam



File Edit View Navigate Code Refactor Run Tools VCS Window Help Major - Major.py - PyCharm
Major 〉 Major.py
Project
Desktop_Assistant.py
DeskTopAssistant.py
jarvisfront.py
Major.py
Major C:\PycharmProjects\Major
External Lib
Run: Major
https://www.bing.com/search?q=calma+song&src=IE-SearchBox&F
Search...
calma song - Bing
Microsoft Bing
calma song
ALL
IMAGES
VIDEOS
MAPS
NEWS
46,00,000 Results
Date
Videos of calma song
bing.com/videos
https://www.bing.com/videos/search?q=calma+song&view=detail&mid=6C6B35677BC7...
6: TODO
PyCharm 2020.1.5 available: // Update... (20 minutes ago)

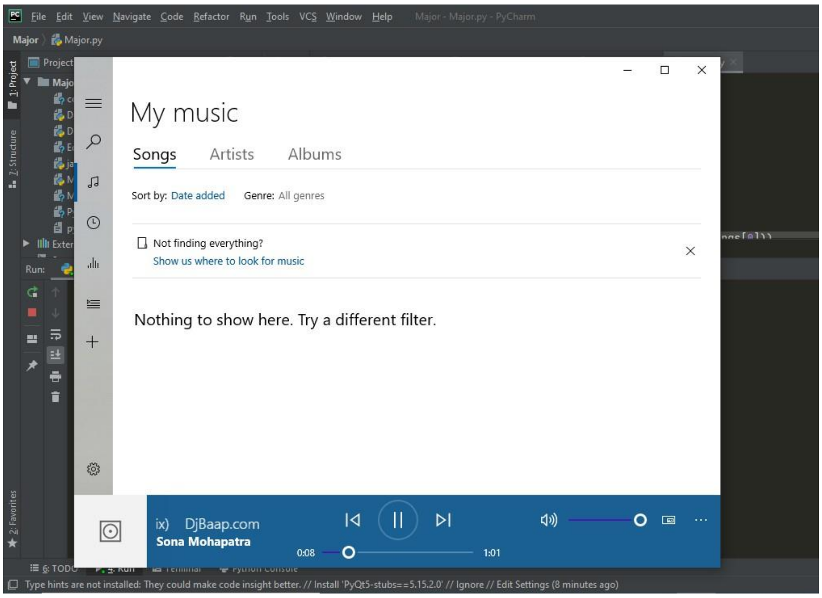
```
176        elif 'open youtube' in query :
```

Figure 6.7 Output for YouTube search



```
C:\Python36\python.exe C:/PycharmProjects/Major/Major.py
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Speech\Voices\Tokens\TTS_MS_EN-US_DAVID_11.0
Good Evening!
Hello!, I am Zira. Please tell me how may I help you
Listening...
Recognizing...
User said: play music
```

Figure 6.8 Input to play music


File Edit View Navigate Code Refactor Run Tools VCS Window Help
Major - Major.py - PyCharm
Major
Major.py
Project
Run:
6: TODO
4: Run
Terminal
Python Console

My music

Songs Artists Albums

Sort by: Date added Genre: All genres

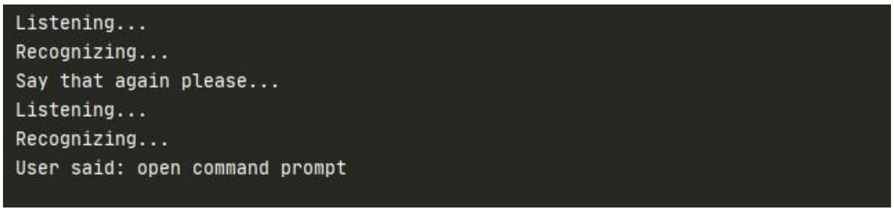
□ Not finding everything?
Show us where to look for music

Nothing to show here. Try a different filter.

ix) DjBaap.com
Sona Mohapatra
0:08 1:01

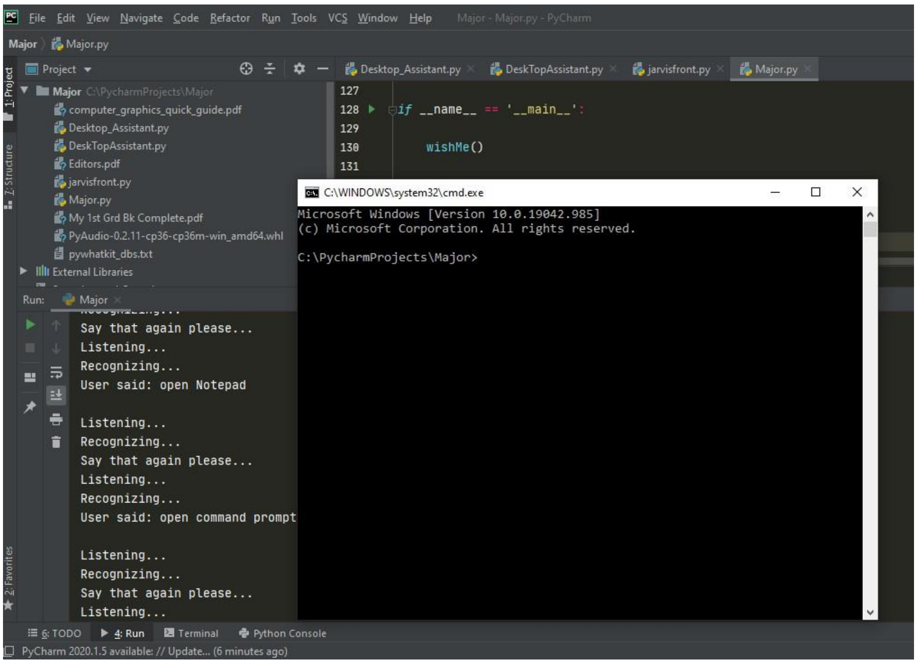
Type hints are not installed: They could make code insight better. // Install 'PyQt5-stubs==5.15.2.0' // Ignore // Edit Settings (8 minutes ago)

Figure 6.9 Output to play music



```
Listening...
Recognizing...
Say that again please...
Listening...
Recognizing...
User said: open command prompt
```

Figure 6.10 Input to open cod



```
if __name__ == '__main__':

    wishMe()
```

C:\WINDOWS\system32\cmd.exe

```
Microsoft Windows [Version 10.0.19042.985]
(c) Microsoft Corporation. All rights reserved.

C:\PycharmProjects\Major>
```

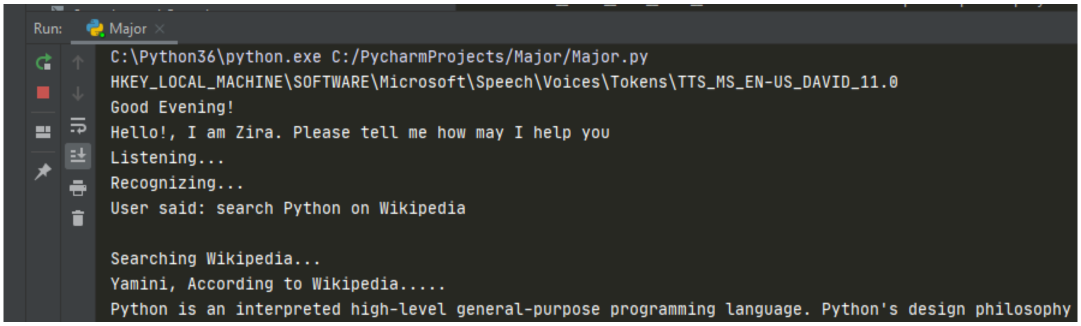
```
Say that again please...
Listening...
Recognizing...
User said: open Notepad

Listening...
Recognizing...
Say that again please...
Listening...
Recognizing...
User said: open command prompt

Listening...
Recognizing...
Say that again please...
Listening...
```

PyCharm 2020.1.5 available: // Update... (6 minutes ago)

Figure 6.11 Output to open cmd



```
C:\Python36\python.exe C:/PycharmProjects/Major/Major.py
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Speech\Voices\Tokens\TTS_MS_EN-US_DAVID_11.0
Good Evening!
Hello!, I am Zira. Please tell me how may I help you
Listening...
Recognizing...
User said: search Python on Wikipedia

Searching Wikipedia...
Yamini, According to Wikipedia.....
Python is an interpreted high-level general-purpose programming language. Python's design philosophy
```

Figure 6.12 Input and output for Wikipedia search

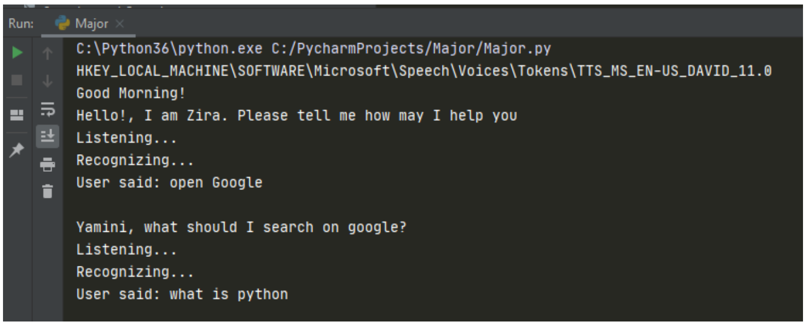
CHAPTER – 6

TESTING

The system testing is done on fully integrated system to check whether the requirements are matching or not. The system testing for JARVIS desktop assistant focuses on the following four parameters:

FUNCTIONALITY

In this we check the functionality of the system whether the system performs the task which it was intended to do. To check the functionality each function was checked and run, if it is able to execute the required task correctly then the system passes in that particular functionality test. For example, to check whether JARVIS can search on Google or not, as we can see in the figure 7.1, user said “Open Google”, then Jarvis asked,” What should I search on Google?” then user said, “What is Python”, Jarvis open Google and searched for the required input.

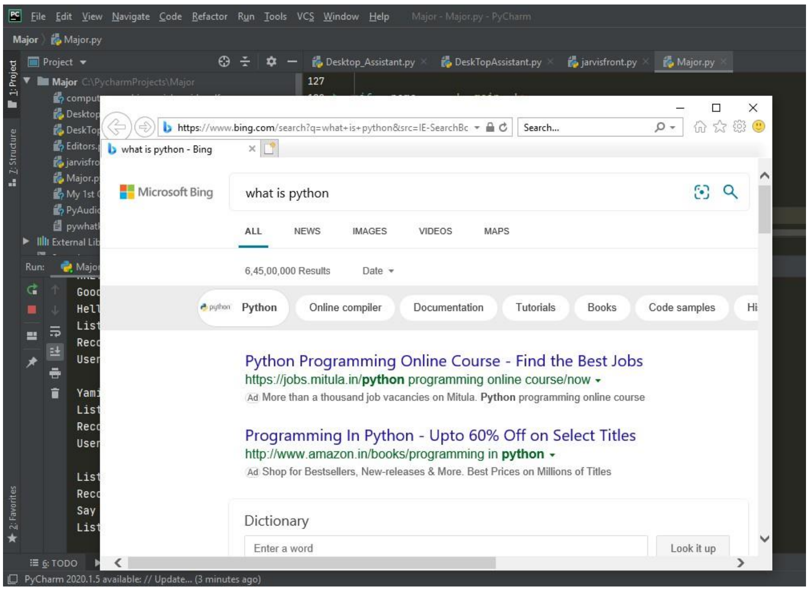


```
C:\Python36\python.exe C:/PycharmProjects/Major/Major.py
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Speech\Voices\Tokens\TTS_MS_EN-US_DAVID_11.0
Good Morning!
Hello!, I am Zira. Please tell me how may I help you
Listening...
Recognizing...
User said: open Google

Yamini, what should I search on google?
Listening...
Recognizing...
User said: what is python
```

Figure 7.1 Input through voice commands

Figure 7.2 Output



6,45,00,000 Results Date

Python Programming Online Course - Find the Best Jobs
https://jobs.mitula.in/python programming online course/now
Ad More than a thousand job vacancies on Mitula. Python programming online course

Programming In Python - Upto 60% Off on Select Titles
http://www.amazon.in/books/programming in python
Ad Shop for Bestsellers, New-releases & More. Best Prices on Millions of Titles

Dictionary

USABILITY

Usability of a system is checked by measuring the easiness of the software and how user friendly it is for the user to use, how it responses to each query that is being asked by the user.

It makes it easier to complete any task as it automatically does it by using the essential module or libraries of Python, in a conversational interaction way. Hence any user when instruct any task to it, they feel like giving task to a human assistant because of the **conversational interaction** for giving inputand getting the desired output in the form of task done.

The desktop assistant is **reactive** which means it know human language very well and understand the context that is provided by the user and gives response in the same way, i.e. human understandable language, English. So user finds its reaction in an informed and smart way.

The main application of it can be its **multitasking** ability. It can ask forcontinuous instruction one after other until the user "QUIT" it. It asks for the instruction and listen the response that is given by user without needing any **trigger phase** and then only executes the task.

SECURITY

The security testing mainly focuses on vulnerabilities and risks. As JARVIS is a local desktop application, hence there is no risk of data breaching through remote access. The software is dedicated to a specific system so when the user logs in, it will be activated.

STABILITY

Stability of a system depends upon the output of the system, if the output is bounded and specific to the bounded input then the system is said tobe stable. If the system works on all the poles of functionality, then it is stable.

Unit Testing of the app:

Test cases	**Description**	**Expected Outcome**	**Result**
1	GUI	Should display pop up gui	Pass
2	Ask for wakeup	Should ask for Jarvis to wakeup or to come into live mode	Pass

3	Listening	Should listen to users input	Pass
4	Recognize	Should convert the listened voice into text for its execution	Pass
5	Open command prompt	Should display CMD	Pass
6	Search Wikipedia	Should display and speak about the information from Wikipedia	Pass

7	Play music	Should play music	Pass
8	Facebook	Open Facebook	Pass
9	Close Music	Should close the playing music	Pass
10	Alarm	Should set and trigger alarm on time	Pass

11	IP Address	Should get the IP address	Pass
12	Weather	Should tell the temperature, humidity, air pressure of the input region	Pass
13	Where am I	Should display the approximate location from the ip address	Pass
14	Close	Stops Execution	Pass

Table 1: Unit Testing of JARVIS

6.1 User Testing

User testing is the process through which the interface and functions of a website, app, product, or service are tested by real users who perform specific tasks in realistic conditions. The purpose of this process is to evaluate the usability of that website or app and to decide whether the product is ready to be launched for real users.

This app was tested by our team mates and friends who are using different laptop (and having different windows version) also tested on different emulator to check its performance and it seems to be working fine and users of this app are satisfied with the facilities and performance of the app and like the way how the app is worked.

6.2 Performance Testing

In this type of testing we have checked the performances of our application under some peculiar conditions are checked. Those conditions include:

- Low memory in the device.
- The battery in extremely at a low level.
- Poor/Bad network reception.

Performance is basically tested from 2 ends, application end, and the application server end. Our app is also performing well in this phase of testing as well. And we are getting positive feedback from user of our app.

6.3 Comp ability Testing

This application was tested and used on different devices like acer nitro, HP 245 G7 Notebook. The application worked fine and is stable. The application worked fine in portrait mode and there isn't any problem with compatibility.

On all types of testing (that we have performed above) our performing well on our app i.e. JARVIS.

CHAPTER -7

CONCLUSION

JARVIS is a very helpful voice assistant without any doubt as it saves time of the userby conversational interactions, its effectiveness and efficiency. But while working on this project, there were some limitations encountered and also realized some scope of enhancement in the future which are mentioned below:

LIMITATIONS

- Security is somewhere an issue, there is no voice command encryption in thisproject.
- Background voice can interfere
- Misinterpretation because of accents and may cause inaccurate results.
- JARVIS cannot be called externally anytime like other traditional assistantslike Google Assistant can be called just by saying, “Ok Google!”

SCOPE FOR FUTURE WORK

- Make JARVIS to learn more on its own and develop a new skill in it.
- JARVIS android app can also be developed.
- Make more Jarvis voice terminals.
- Voice commands can be encrypted to maintain security.

REFERENCES

1. **Introduction to Python:**

   https://www.w3schools.com/python/.

2. ***Python Packages:***

   https://pypi.org/

3. ***Live GUI Layout:***

   https://doc.qt.io/qt-5/qtdesigner-manual.html

4. **For rectifying the error :**

   https://stackoverflow.com/