DORA- ASSISTANT VIRTUAL

DORA-VIRTUAL ASSISTANT

A

Project report on

"DORA-Virtual Assistant"

Designed by

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Submitted To

K.M.S.P. MANDAL'S

SANT RAWOOL MAHARAJ MAHAVIDYALAYA, KUDAL

(NAAC Accreditation "B+" Grade)

M.Sc. Information Technology (Part II)

Under guidance of

Asst. Prof. Khemraj Kubal

Through

THE HEAD OF THE DEPARTMENT OF INFORMATION

TECHNOLOGY, S.R.M. COLLLEGE, KUDAL

2022-2023

DORA-VIRTUAL ASSISTANT

PROJECT REPORT 2022-2023

"DORA-Virtual Assistant"

Submitted By:

Mr. Drustant Metar

Miss Prajakta Mulik

Guided By

Asst. Prof. K.A. Kubal

Asst. Prof. K.K. Karalkar

M.Sc. Information Technology (Part II)

Department Of Information Technology

K.M.S.P. MANDAL'S

S.R.M. College, Kudal

DECLARATION

To,

The head

Department of Information Technology S.R.M. College, Kudal.

Respected Sir,

I undersigned, hereby declare that the project on **"DORA-Virtual Assistant"** is developed under the guidance of our lecturer. The conclusion in this report is based on the data, which is collected by me. I am declaring that this is my original work. I have not copied any materials, which are useful to my work, or other reports that are submitted to the S. R. M. COLLEGE, KUDAL this year. I do undersign that if my work is found to be copied, then I am liable to punishment as per the university rule.

DATE:

PLACE: KUDAL

(Mr. Drustant G. Metar & Miss. Prajakta C. Mulik)

K.M.S.P.

SANT RAWOOL MAHARAJ MAHAVIDYALAYA KUDAL

(NAAC ACCREDITATION "B+" GRADE)

This is to certify that Mr. Drustant G. Metar & Miss. Prajakta C. Mulik   have satisfactorily carried out her project work entitled.

"DORA-Virtual Assistant"

As per the syllabus prescribed for **M.Sc. Information Technology Part II of Mumbai University, Mumbai.** It is also certifying that this is her own work completed during academic year 2022– 2023. The work done is satisfactory and is presented as per the specifications.

(PROJECT GUIDE)   (EXTERNAL EXAMINER)   (HEAD OFDEPARTMENT)

DATE: (Mr. Drustant G. Metar & Miss. Prajakta C. Mulik)

PLACE: KUDAL

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ACKNOWLEDGEMENT

ACKNOWLEDGEMENT

This work has been done during project period, this present project work method of education is really a good opportunity to put theoretical knowledge into a planned exercise with an aim to solve a real-life business problem and develop confidence to face various situations.

I would like to express my deep sense of gratitude towards **Asst. Prof. Mr. K.A. Kubal and Mr. K.K.Karalkar**, Head of Department (Information Technology) who had been a source of inspiration and for his timely guidance in the conduct of my project work and for all their valuable assistance in the project work.

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SYNOPSIS OF THE

PROJECT

INTRODUCTION

We are now living in the age of technology. Most of our day-to-day activities are made a lot more convenient and effortless with the help of new technology and computer-controlled devices. Technology is developing day by day and more and more software and systems are developed to help humans in any way possible. "Hi, Google, how is the weather?", "Alexa, where is the closest post office? " These questions had been adapted to our daily life. Voice-based artificial intelligence is here to play an important role in our daily life. The application of voice assistants is growing fast in our personal and professional life.

Voice assistants are devices/apps that use voice recognition technology, natural language processing, and AI to respond to humans. Using the technology, the device synthesizes the user's message, breaks it down, evaluates it, and offers a meaningful response in return. Famous applications like Amazon Alexa, Apple Siri and Google Assistant are typically cloud-based for maximum performance and data management. Many behavioral traces, including the users voice activity history with extensive descriptions, can be saved in a voice assistants ecosystem's remote cloud servers during this process. In the 1990s, digital speech recognition was a new feature of the personal computer. The launch of the first smartphone the IBM 8 Simon in 1994 laid a foundation for the smart virtual assistant as we have known of today. Siri and Google home voice assistant were brought to the public in 2018 -2011. As of today, voice assistants are now everywhere. The concept of artificial intelligence, natural language processing and machine learning are applied to develop this system .

MAIN REPORT

OBJECTIVE AND SCOPE

Objective:

- The main objective is building a virtual assistant is using data sources available on the web

- On the desktop platform, the intelligent voice assistant can be used to carry out task through voice commands which otherwise requires input devices

- Trying to reduce effort and time required to perform certain tasks.

Scope:

Voice assistants are the latest technological advance in consumer electronics that are making their way into people's lives. These devices evidence the impressive development and capability of artificial intelligence and present a tangible contrast to the depictions of this technology in iconic films. With every tech behemoth such as Amazon and Apple now having their own voice assistants like Alexa and Siri respectively, the odds are very strong that these devices are here to say and will become more prominent in day life.

<u>PROPOSED SYSTEM</u>

In this modern era, day to day life became smarter and interlinked with technology. We already know some voice assistance like google, Siri. etc. Now in our voice assistance system, it can act as a basic file manager (to open and close files/folder), daily schedule reminder, note writer, calculator and a search tool.

This project works on voice input and give output through voice and displays the text on the screen. The main agenda of our voice assistance makes people smart and give instant and computed results. The voice assistance takes the voice input through our microphone (system microphone) and it converts our voice into computer understandable language gives the required solutions and answers which are asked by the user. This assistance connects with your system / world wide web to provide results that the user has questioned. Natural Language Processing algorithm helps computer machines to engage in communication using natural human language in many forms.

Advantages of Proposed System

- This enables them to interact with users in a more intelligent, personalized, and conversational manner.

- It minimize human physical interaction machine.

- User can give voice command to perform required task.

  - Command for web search (Wikipedia, open YouTube, google etc.)

  - Operate local machine software (Play music/movie player)

  - Operate File Manager (Open file/folder, code, browser)

  - Operate MS Office (MS Word/Excel/PowerPoint)

  - Ask Time

  - Ask Help

  - To terminate – "Hey Dora Thank You"

THEORETICAL BACKGROUND

Application Domain: where the project can be used in real time.

Data analytical:

The system will help users to operate the computer system by voice commands.

- Voice Commands

- Automate repetitive tasks

- By setting reminders and timers with just one command

- Increase Efficiency with Data Entry.

- Minimize human physical interaction

- Help with Time Management

SURVEY OF THE LITERATURE

SURVEY OF THE LITERATURE

Many researchers had done research on voice commands recognition, also they had given some advises to improve that, to get an idea I study the following research papers.

1. Sutar Shekhar, Pophali Sameer, Kamad Neha, Deokate Laxman, intelligent voice assistant using Android platform. International Journal of Advance research in computer Science and Management Studies. Volume 3, Issue 3, march 2015

2. Mhamunkar, M. p. v., Bansode, M. k. S., & Naik, L.S. (2013). Android application to get word meaning through voice. International journal of Advance Research in Computer Engineering & Technology (IJARCET). 2(2), pp-572.

3. Apte, T. V., Ghosalkar, S., pandey, S., & Padhra, S. (2014). Android app for blind using speech technology. International Journal of Research in Computer and Communication Technology (IJRCCT), #(3), 391-394.

4. Anwani, R., Santuramani, U., Raina, D., & RL, P. Vmail: voice Based Email Application. International Journal of Computer Science and Information Technologies, Vol. 6(3), 2015

5. Deepak shende, Ria Umahiya, Monika Raghorte, Aishwarya Bhisikar, Anup Bhange.AI based voice assistant using python. JETIR, feburary 2019, vol 6, issue 2.

SYSTEM PLANNING

SYSTEM PLANNING

The project planning phase is the most important part of the project life cycle because it shows everyone involved where you want to go and how to get there. The project schedule is created, the project deliverables and requirements are defined, and the project plans are documented during the planning phase. It involves coming up with a set of plans that will help you get the project done and finish it. This phase's plans will help you manage time, money, quality, changes, risk, and other issues related to them. In addition, they will assist you in controlling external suppliers to guarantee project completion on time, within budget, and on schedule. You might also need to contract any third-party suppliers and plan your communication and procurement

activities.

The planning phase of a project aim to:

• Determine the requirements of the business

• Disease prevention and risk monitoring

• Establish cost, schedule, list of deliverables, and delivery dates

• Determine the cost, schedule, list of deliverables, and delivery dates

• Obtain approval from management and move on to the next phase

DETAILS OF HARDWARE AND SOFTWARE USE

HARDWARE AND SOFTWARE

Software Requirements:

- **Operating system:** windows 7/8/10/11

- **Language:** python

- **Editor:** Visual Studio Code

- **Model training platform:** pyttsx3, Speech Recognition and OS

Hardware Requirement:

- **RAM:** 2GB (min)

- **Processor:** any processor with base speed

- **Speed:** 1.0 GHz

DETAILED LIFE CYCLE OF THE PROJECT

PROCESS MODEL

This iterative and incremental SDLC model essentially brings together an iterative design with an incremental development model which makes it amongst the best SDLC methodology for business.

The process of development in such a model begins with the simple implementation of basic requirements. As and when the product keeps building, the product is worked on and enhanced to a more complete various of itself.

One of the most prominent features of this model is the fact that one can begin the development process without really knowing the requirements. The iterative and incremental SDLC model, in other words, looks like a set of Mini

Waterfall/ V shaped models.

Benefits:

- Produces quick value for the business

- Need limited resources

- Flexible model

- Facilitates early bug detection

- Easy

# PROCESS FLOW

Use Case Diagram

Use case describes the behaviour of a system from a user's standpoint by using actions & reactions. They allow the definition of the system's boundary & the relationships between the system & the environment.

Use cases associated with object-oriented technique provide a complete approach for project lifecycle, from specification to implementation. A use case corresponds to a specific king of system use. It is an image of a system's functionally, which is triggered in response to the simulation of an external actor.

How to draw use case diagram-

1) Identify actors of the system.
2) After identifying the role of the actors next developed the list of flow of activities as the starting point for identifying various
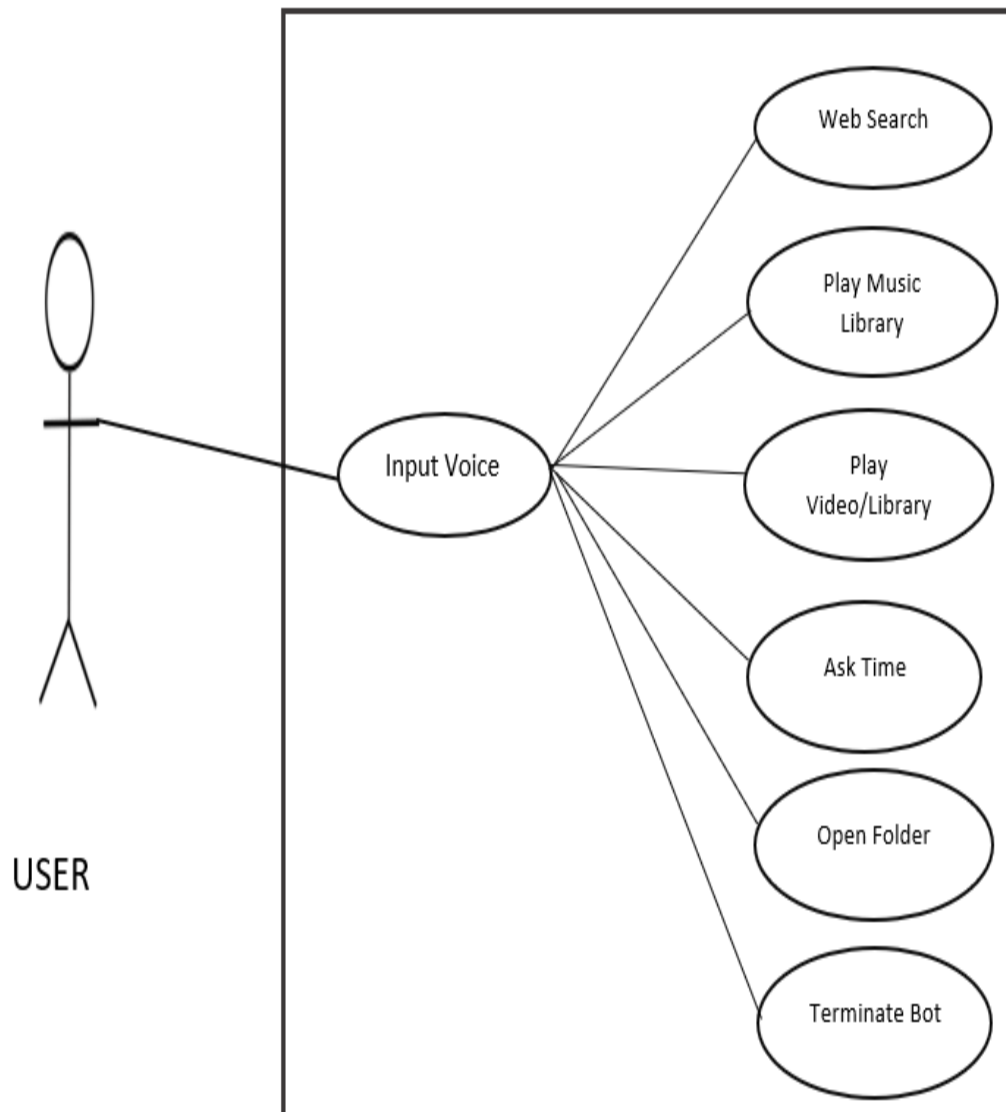   scenarios.

Symbols used for use case diagram-

- Stick Person

- Use Case

-Connection Line

-Automation Boundary
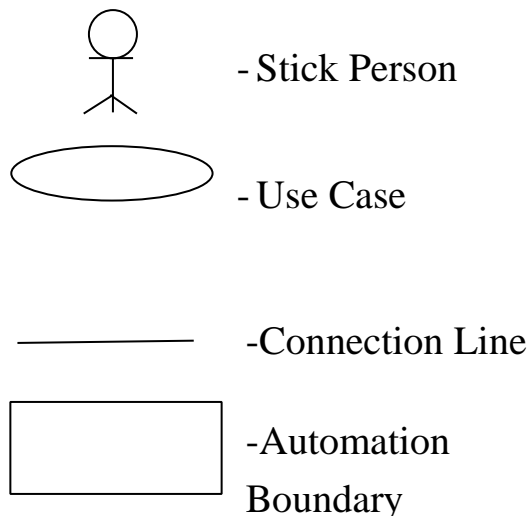
Use case Diagram-

Virtual Voice Assistant System


USER

Entity Relationship Diagram (ERD)

ERD –

   The traditional approach places a great deal of emphasis on data storage requirements for the new system. The model used to define the data storage requirements is called the entity-relationship diagram (ERD).
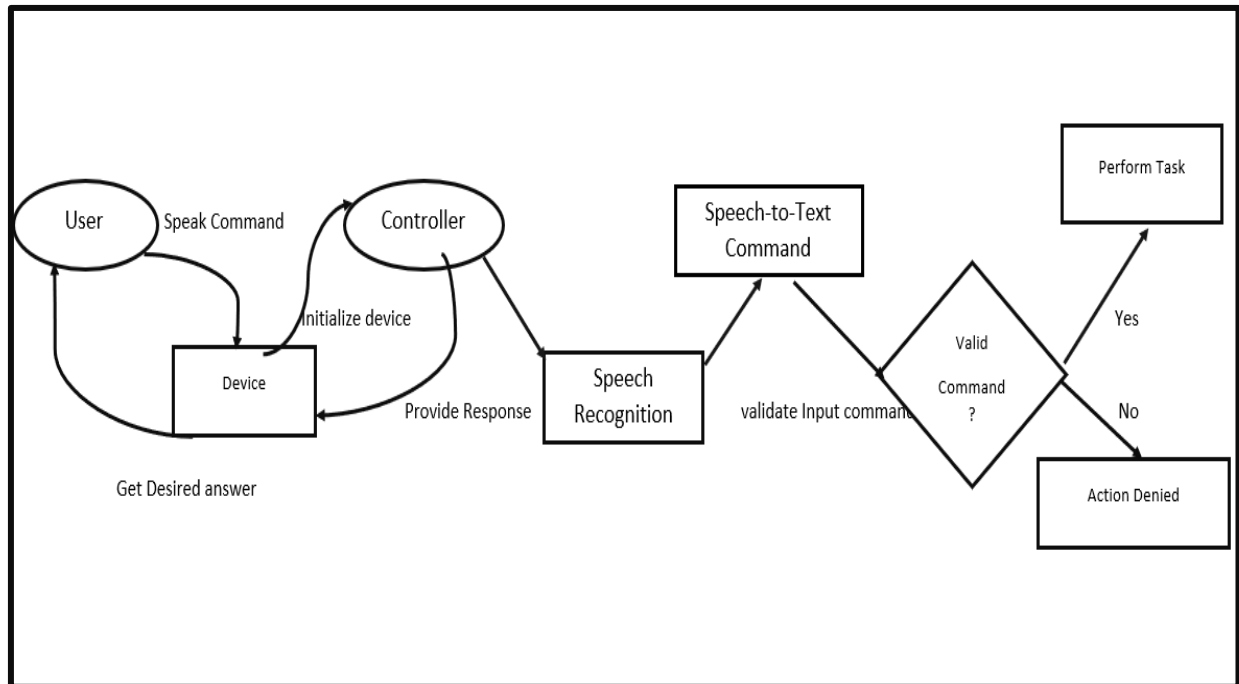
      -Rectangles represent the data entities.

      -Lines connecting the rectangles show relationships among the data entities.

Symbols used to draw ERD-

-        Automation Boundary
   -        Relationships

   -        Connection line

   - Weak Entity

   - Generalization
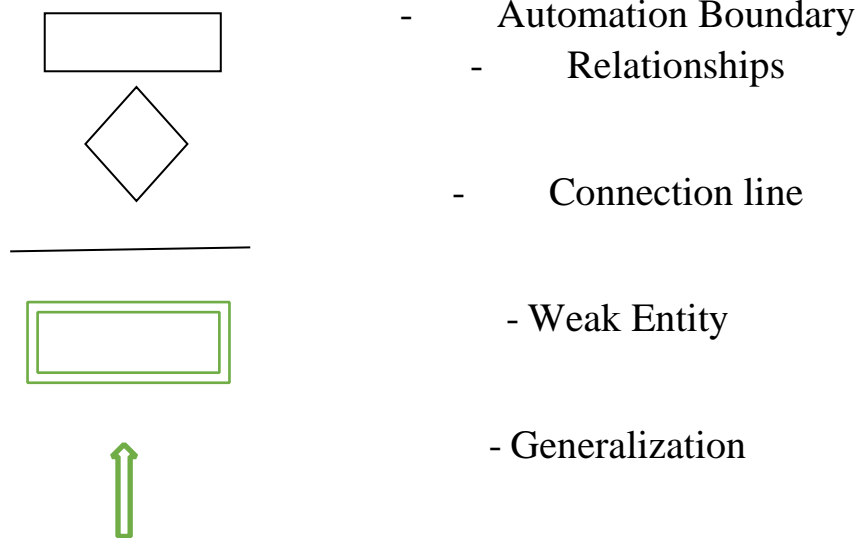
ER Diagram: -

Flow Diagram

Flow diagrams are an easy way to visualize a process or procedure. They can be used in many different areas such as teaching, business, or even in science experiments. Flowchart is a very intuitive method to describe processes. As such, in most cases, you don't need to worry too much about the standards and rules of all the flowchart symbols. In fact, a simple flowchart, constructed with just rectangular blocks and flowlines.

This diagrammatic representation illustrates a solution model to a given problem. Flowcharts are used in analysing, designing, documenting or managing a process or program in various fields.
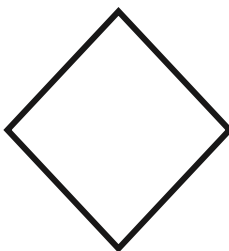
Symbols used to draw Flow diagram –

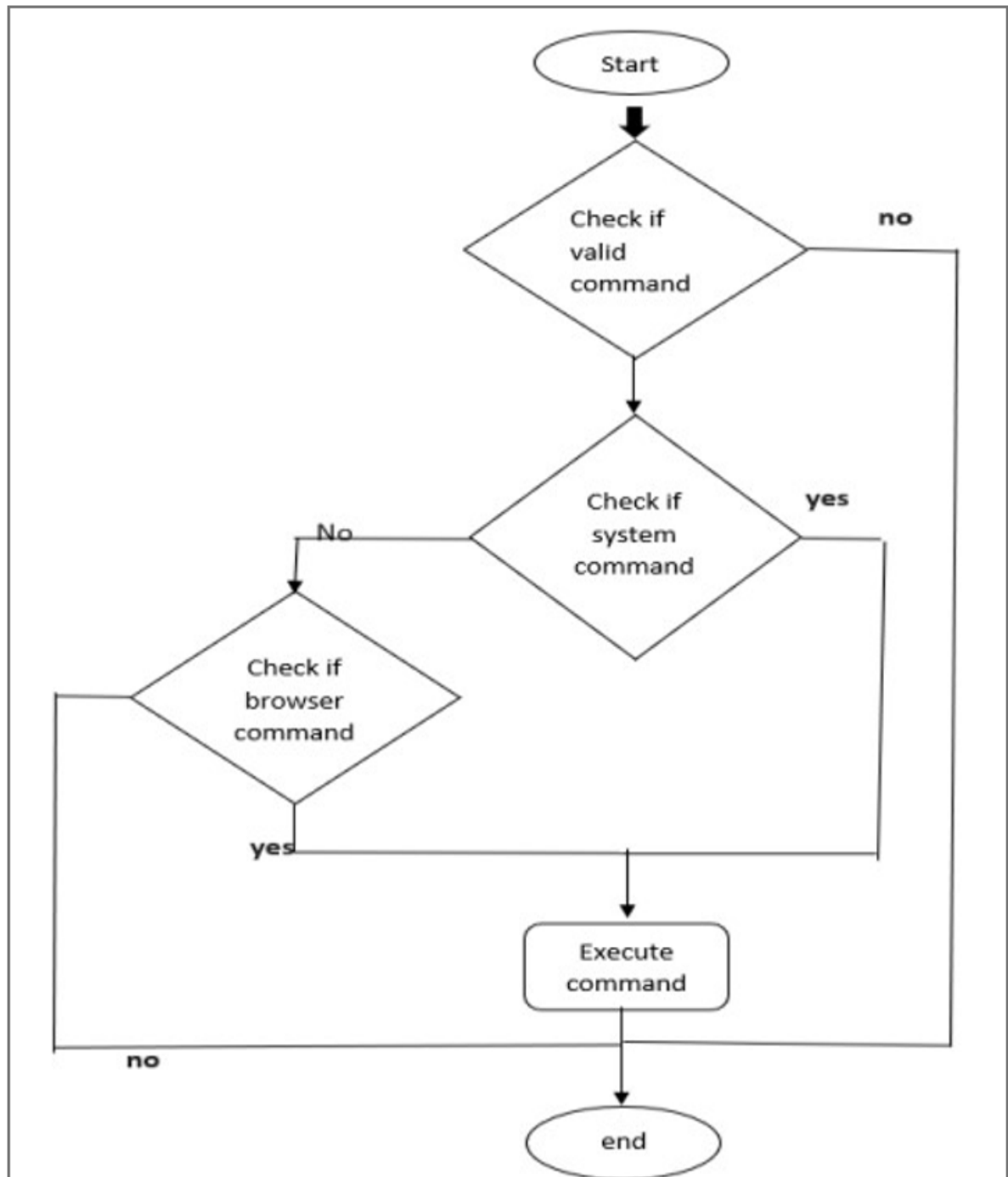- Process Symbol (to represents a step in a process)

- Flowline (Flow lines indicate the process' direction. Each flowline usually connects two blocks)

- Decision (Decision Symbol indicates a step that decides the next step in a process. This is a Yes/No type question)

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Class Diagram

Class diagrams express, in a general way, the static structure of a system, in terms of classes and relationships between those classes. A class describes a set of objects, an association describes a set of links; objects are class instances, and links are association instances.

A class diagram does not express anything specific about the links of a given object, but it describes, in an abstract way, the potential links from an object to other objects.
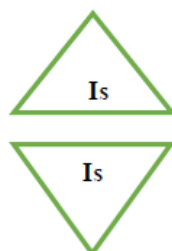
Symbols used to draw Class diagram -

Class Name
Member Variables
Member Functions
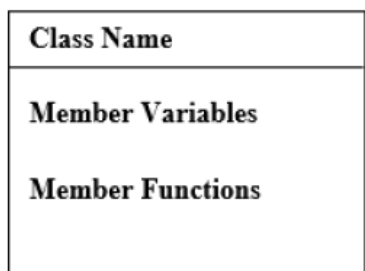
Rectangular box
(To represent class)|

- Connection line

- Triangle (used in specialization of class)

- Triangle (used in generalization of class)

Class Diagram:

User

+Command audio
+Response audio

+Listen()
+Interpret
+replay()

Questions

+Command String

+General
+Search

Task

+Command String

+reminder()
+note()
+research()
+mimic()
+reader()
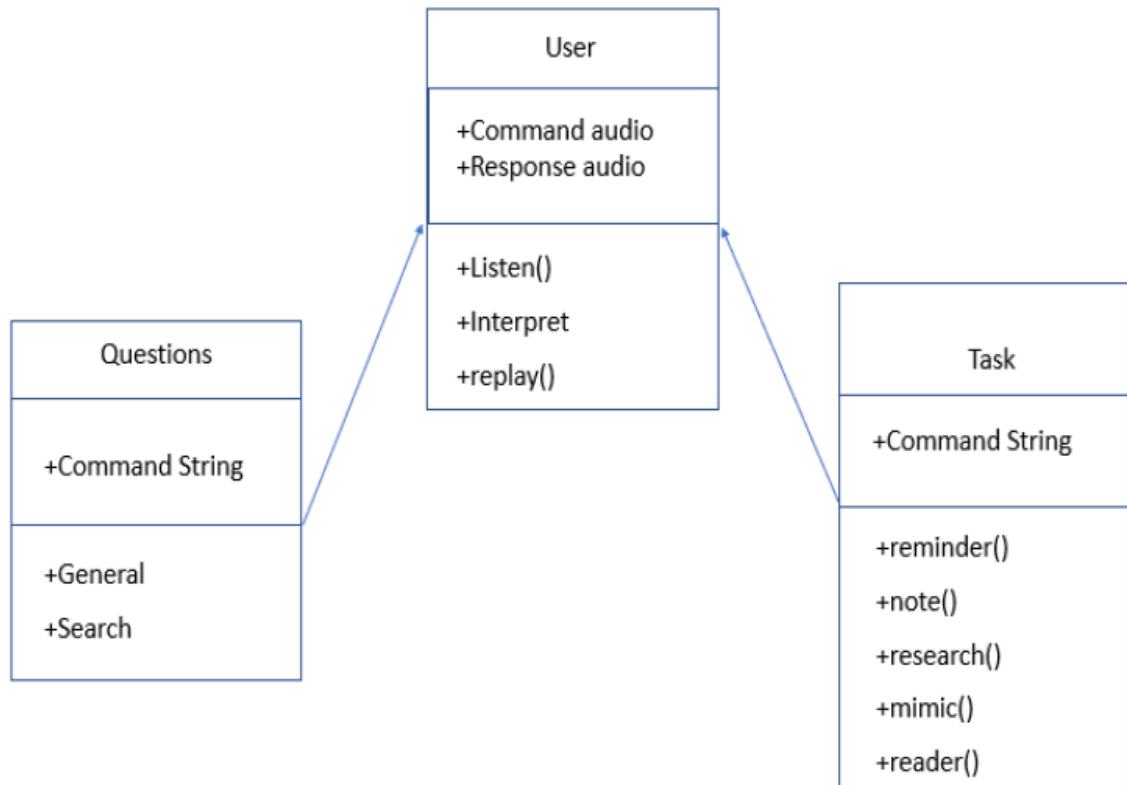
Activity Diagram

An activity diagram is a variant of state chart diagram organized according to actions, and mainly targeted towards representing the internal behaviour of a

method or a use case. An activity is represented by a rounded rectangle.

How to develop activity diagram:

1] Identify swim length.

2] Identify input message.

3] Describe message from external actor to system using message notation.

4] Identify and add any special condition on the input messages including iteration

and true or false condition.
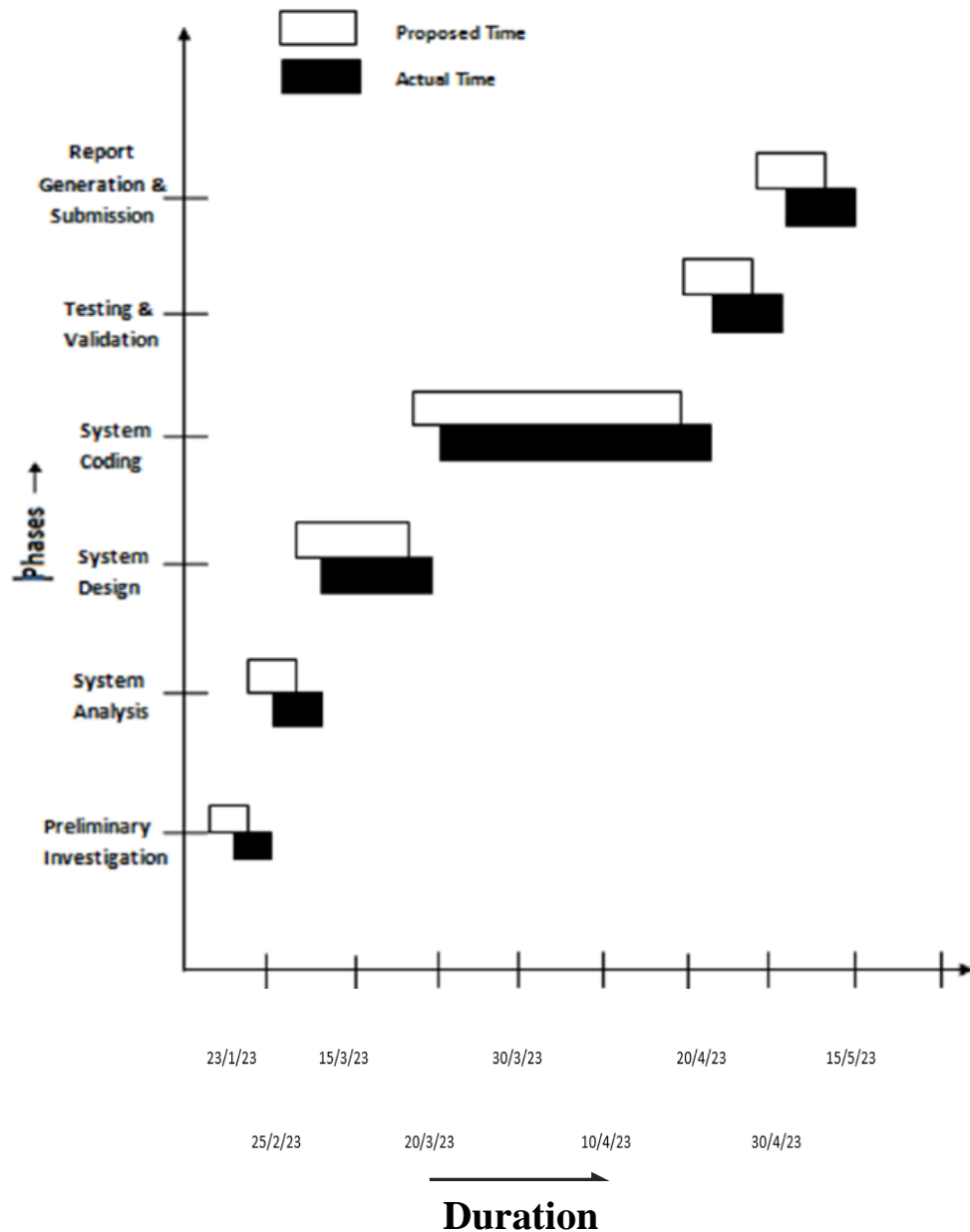
5] Identify and add the output return

messages.

Symbols used for Activity Diagram :

-Start

-Activity

-Connection line

-End

DORA-VIRTUAL ASSISTANT
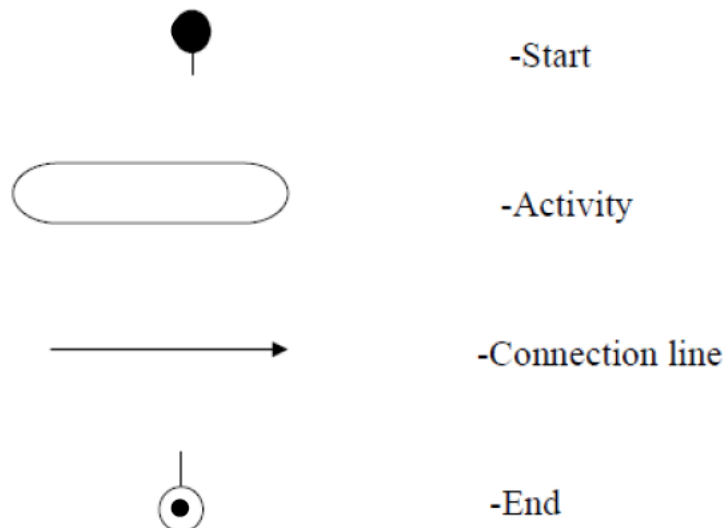
Activity Diagram:

Gantt Chart
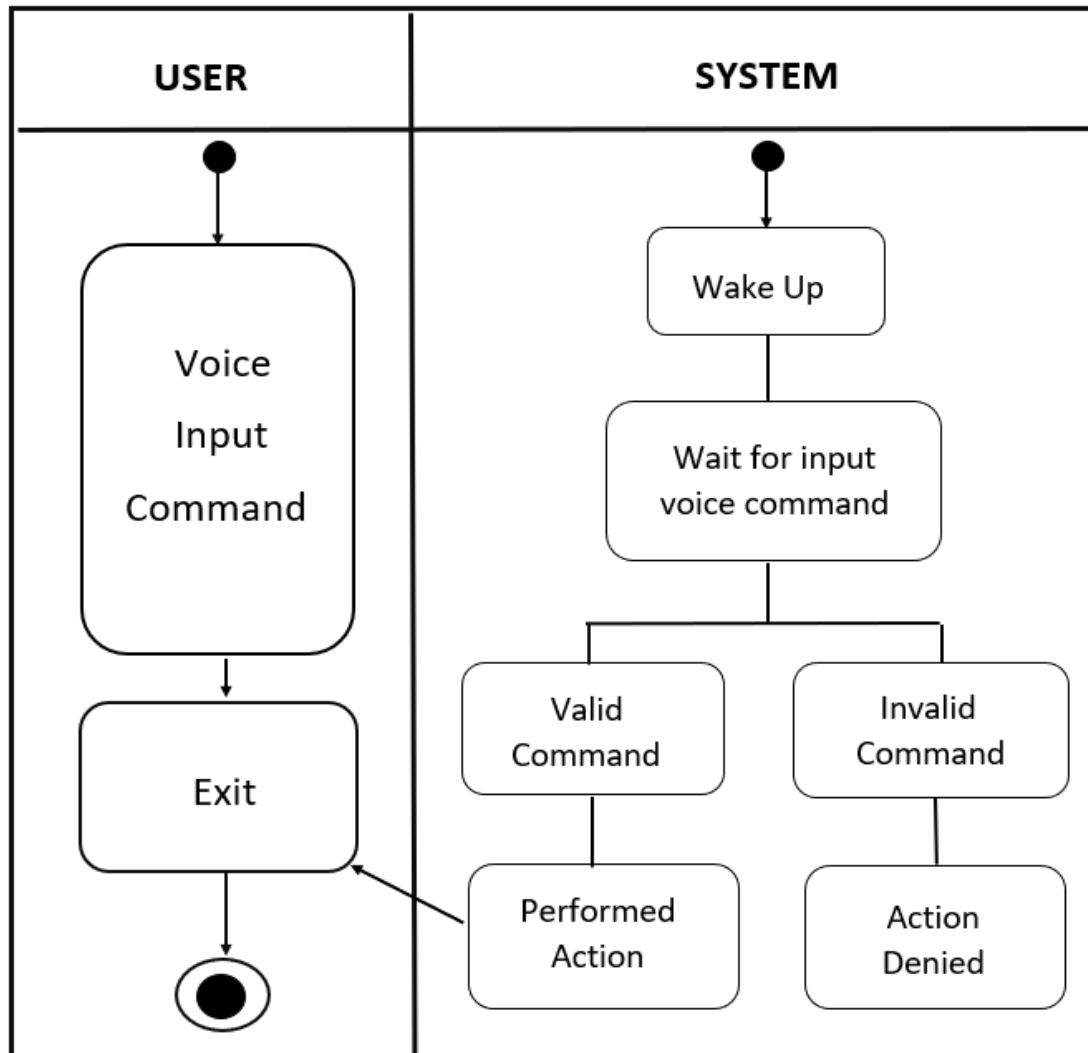
DORA-VIRTUAL ASSISTANT

CODE

➤ Main function which invokes all event of Dora-virtual assistant

```python
if __name__=="__main__":
    wishMe()
    while True:
    #if 1:

        query=takeCommand().lower()
        if('wikipedia' in query):
            Speak("Searching wikipedia...")
            query=query.replace("wikipedia","")
            results=wikipedia.summary(query,sentences=2)
            Speak('According to wikipedia')
            Speak(results)
        elif("open youtube" in query):
            Speak("please wait youtube is opening ....")
            webbrowser.open('Youtube.com')
        elif("open google" in query):
            Speak("please wait google is opening ...")
            webbrowser.open("Google.com")
```

➤ On wakeup call Dora-assistant greet user according to the system time

```python
def wishMe():
    hour=int(datetime.datetime.now().hour)
    if(hour>=0 and hour<12):
        Speak('Good Morning!')
    elif(hour>=12 and hour<18):
        Speak("Good Afternoon")
    else:
        Speak("Good Evening")
    Speak("Hey I am Dora, How may I help you?")
```

DORA-VIRTUAL ASSISTANT

➢ Using Speak function assistant give audio response.

```python
def Speak(audio):
    engine.say(audio)
    engine.runAndWait()
```

➢ To open social media sites

```python
elif("open instagram" in query):
    Speak("please wait instagram is opening ...")
    webbrowser.open("https://instagram.com/")
elif("open facebook" in query):
    Speak("please wait facebook is opening")
    webbrowser.open("https://www.facebook.com/")
elif("open linkedin" in query):
    Speak("please wait linkedin is opening")
    webbrowser.open("https://www.linkedin.com/")
elif("open whattsapp" in query):
    Speak("please wait whattsapp is opening")
    webbrowser.open("https://web.whatsapp.com/")
elif("open twitter" in query):
    Speak("please wait twitter is opening")
    webbrowser.open("https://twitter.com/")
```

➢ To do web search by user

```python
elif("open chrome browser" in query):
    path="C:\\Program Files\\Google\\Chrome\\Application\\chrome.exe"
    os.startfile(path)
```

CONCLUSION

CONCLUSION

Throughout the history of computing, user interfaces have become progressively natural to use. The screen and keyboard were one step to this direction. The mouse and graphical user interface were another. The next step will most likely consist of a mix augmented reality, gestures and voice commands. After all, it is often easier to ask a question or have a conversation than it is to type something or enter multiple details in an online form. As of our model is capable of taking audio input from the user, process/analyse it and it can perform the requested task or can respond back with audio output. It can perform various task like telling date, the day, searching for something in google and it can even perform certain task related to the operating system. The project was a success even though it has limitation.

FUTURE ENHANCEMENT

FUTURE ENHANCEMENT

The voice recognition isn't perfect as such. One of disadvantages of this voice is that users should be loud and clear while they are interacting with voice assistant because it may happen that if your voice is not clear your voice assistant may not be able to intercept you properly. In such cases voice recognition might be difficult. The system can be further developed to improve voice recognition, accuracy and response rate of model.

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BIBILIOGRAPHY

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2. **Human** voice recognition **depends on language ability**

    TK Perrachione, SN Del Tufo, JDE Gabrieli - Science, 2011 - science.org

3 **Neural mechanisms for** voice recognition

   A Andics, JM McQueen, KM Petersson, V Gál, G Rudas… - Neuroimage, 2010 – Elsevier

4. **Development of** voice recognition**: Parallels with face** recognition

   VA Mann, R Diamond, S Carey - Journal of experimental child psychology, 1979 – Elsevier

5. https://link.springer.com/chapter/10.1007/978-1-4757-3651-9_11

6. https://www.sciencedirect.com/science/article/abs/pii/S0028393211002272

7. We have published my own research paper in "The International Research Journal of Modernization in Engineering Technology and Science". My research paper topic name is "THE VOICE ASSISTANT'S SYSTEMETIC LITERATURE REVIEW". Author; Drustant G. Metar and Manasi D. Dhuri.