MEDI-CAPS
UNIVERSITY

DEPARTMENT OF INFORMATION TECHNOLOGY

Project Work - II

Virtual Voice Assistant

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1. Introduction

1.1 Purpose

The aim of this is to develop a voice controlled personal assistant that will run as a desktop application that will aid its users (primarily the elderly and disabled perform various operations) through voice commands, and in so doing simplify basic operations carried out on their personal computer like launching of programs, checking the time, opening websites, playing music etc.

The objective of this study is to develop a system that should:

1. Function as a desktop application to aid visibility, since elderly people find it hard to use smart phone applications due to the size of their screens.

2. Possess a simple Graphical User Interface that will allow users interact easily with the application.

1.2 Document Coventions

The font style which is used for creating this SRS is ‘Cambria’. The size for the headings is 24px and for the normal text is 18px. All the text is left aligned. Red for headings and black color for regular text is used.

1.3 Product Scope

The application will simplify the process of using a computer, by reducing the need for using the mouse or typing in certain cases and since it’s a desktop application.

It makes the process a little more acceptable to most people who are of age, primarily due to the larger display. Furthermore, the whole process of launching programs, playing music, opening websites etc. will go faster thereby saving the user’s time and in turn improve their productivity. The application will also enable disabled use a computer.

Lastly, since the application will contain certain speech synthesis capabilities, it’ll be possible for users to have a level of interaction, no matter how little, with it. Voice Assistant can carry out even more complex tasks like booking tickets, etc.

1.4 References

https://www.researchgate.net/publication/264001644_Virtual_Personal_Assistant

https://ijirt.org/Article?manuscript=152099

https://www.jetir.org/view?paper=JETIR1902381

https://www.academia.edu/Documents/in/Virtual_Assistant

https://github.com/ashutoshkrris/Virtual-Personal-Assistant-using-Python

https://www.academia.edu/40229169/PROJECT_REPORT_ON_VIRTUAL_ASSISTANT_SUBMITTED_BY_NAAZNEEN_JATU?email_work_card=reading-history

2. Overall Description

2.1 Product Perspective

This Software aims at developing a personal assistant for systems. The main purpose of the software is to perform the tasks of the user at certain commands, provided in either of the ways, speech or text. It will ease most of the work of the user as a complete task can be done on a single command. This assistant draws its inspiration from Virtual assistants like Cortana for Windows and Siri for iOS. Users can interact with the assistant either through voice commands or keyboard input.

2. Overall Description

2.2 Product Functions

An AI personal assistant is a piece of software that understands verbal or written commands and completes task assigned by the client. It is an example of weak AI that is it can only execute and perform quest designed by the user. Open Google chrome.It can tell you a joke if you ask Gives answer to casual question. Play a song your choice from desktop. Open directory. Shut down or restart your System. The final output can be one of the various tasks that the personal assistant can execute.

2. Overall Description

2.3 Design and Implementation Constraints

Although we try to build system in the most efficient way, there are always some constraints that can limit the efficiency:

- User must have a microphone to connect with the system.
- For viewing Outputs, the user should have an internet connection.
- The system runs on windows OS 7 and above.
- For getting correct/required output, the user should speak or write properly.

2.4 Assumptions & Dependencies

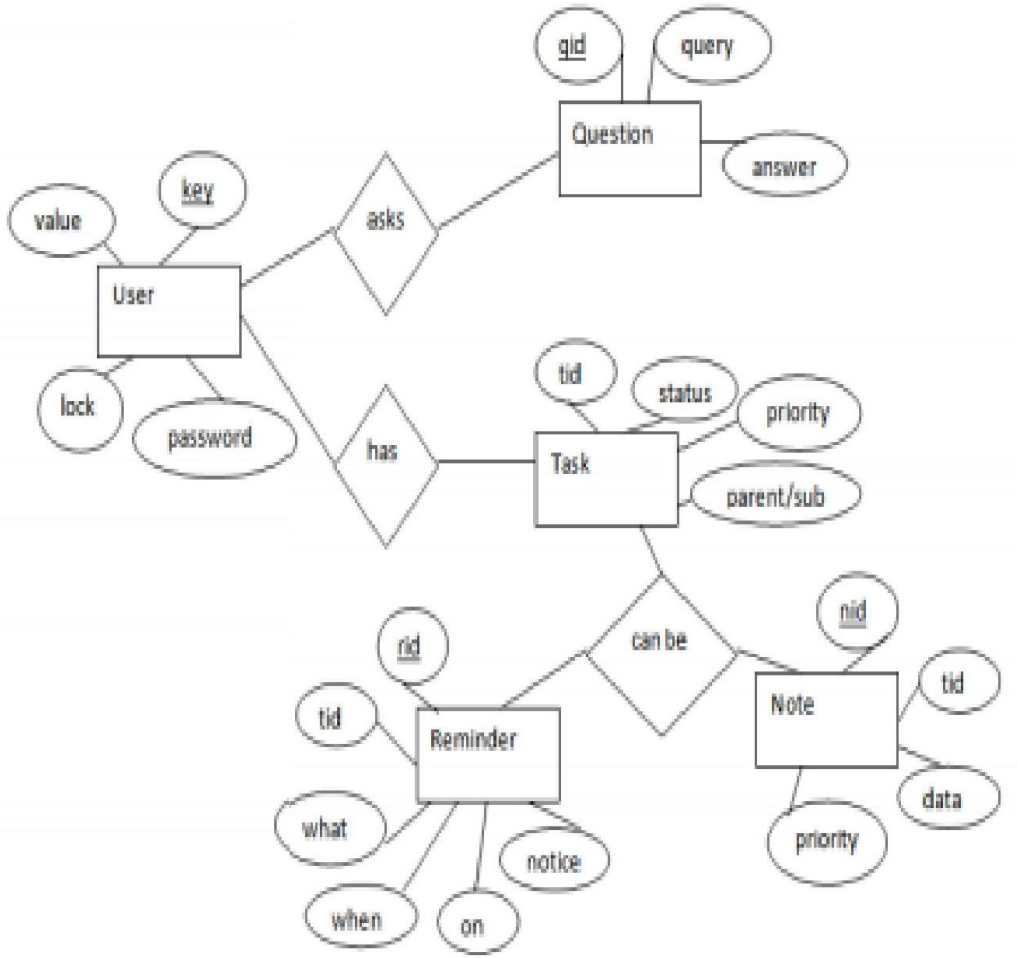
- It is assumed that the user has microphone node installed.
- No other specific assumption or dependencies.

3. Behavior Requirements

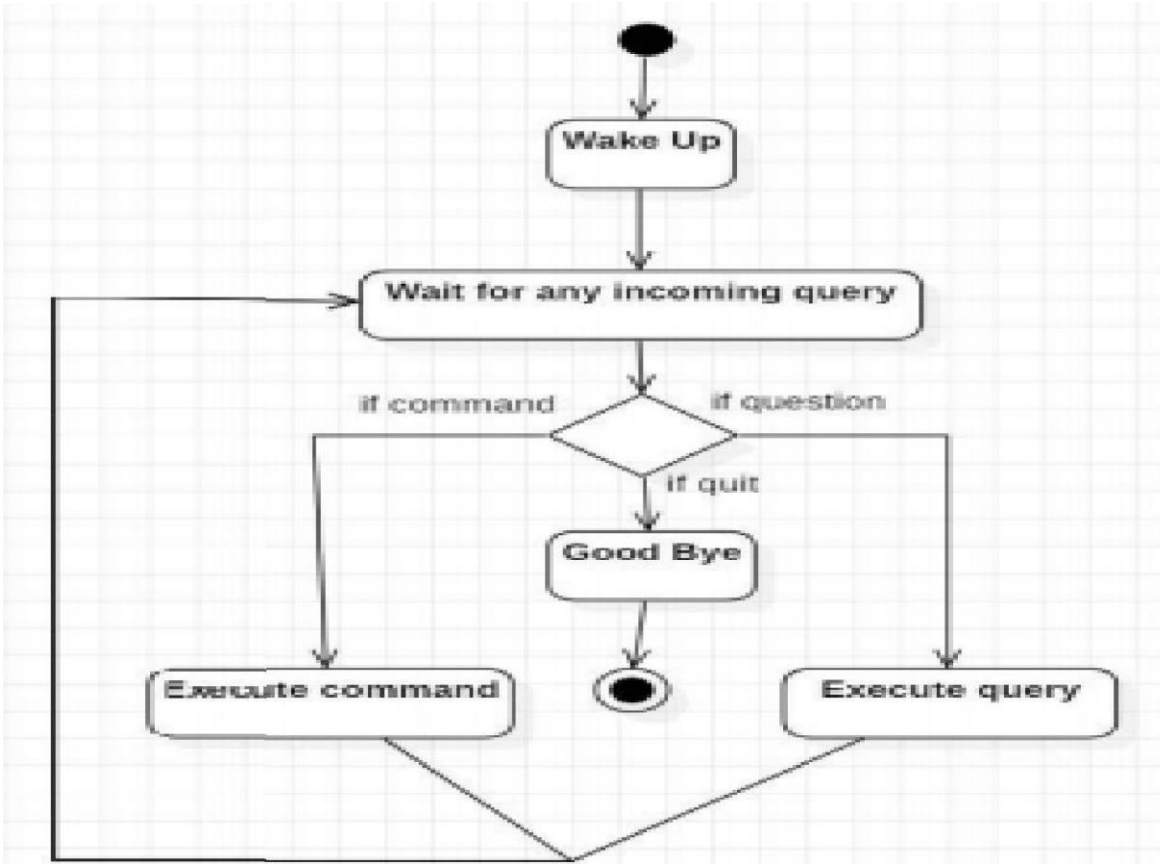
All the below mentioned diagrams are used for better understanding and clear Vision of the project. These diagrams show the behavior of the system under Various circumstances .

1. ER Diagram
2. Activity Diagram
3. Class Diagram
4. Use Case Diagram
5. Sequence Diagram
6. Data Flow Diagram
7. Component Diagram

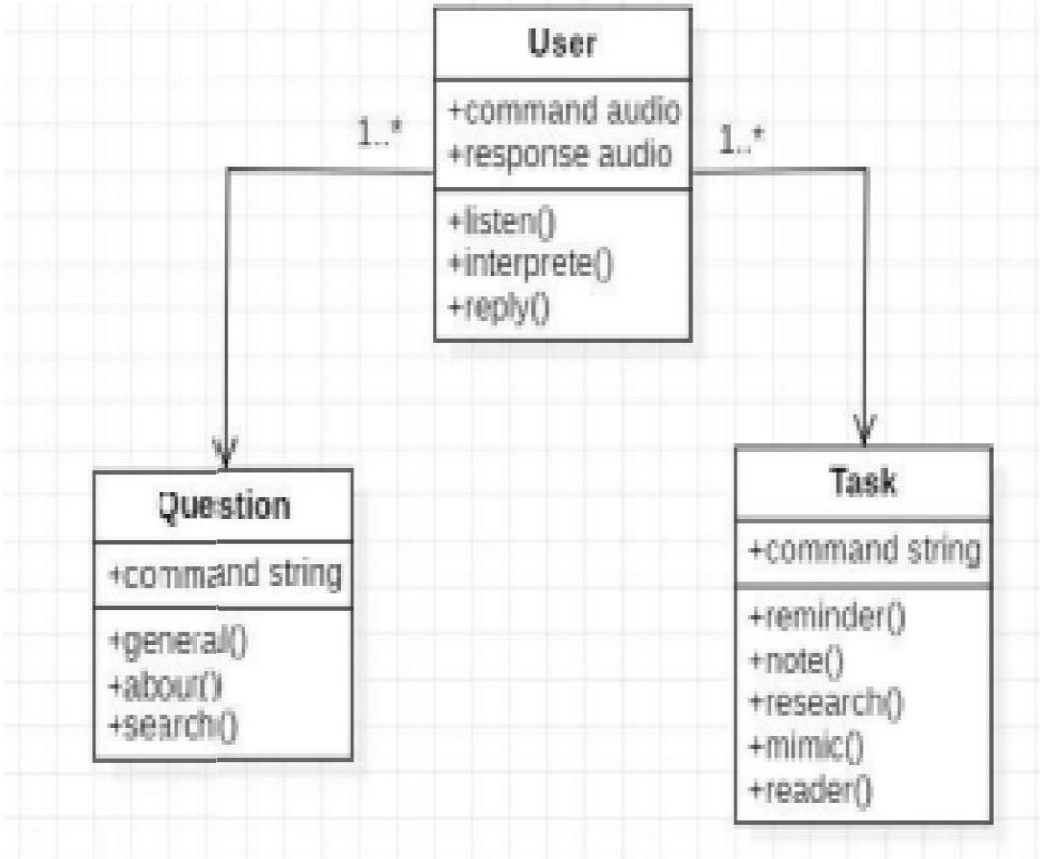
3.1 ER Diagram



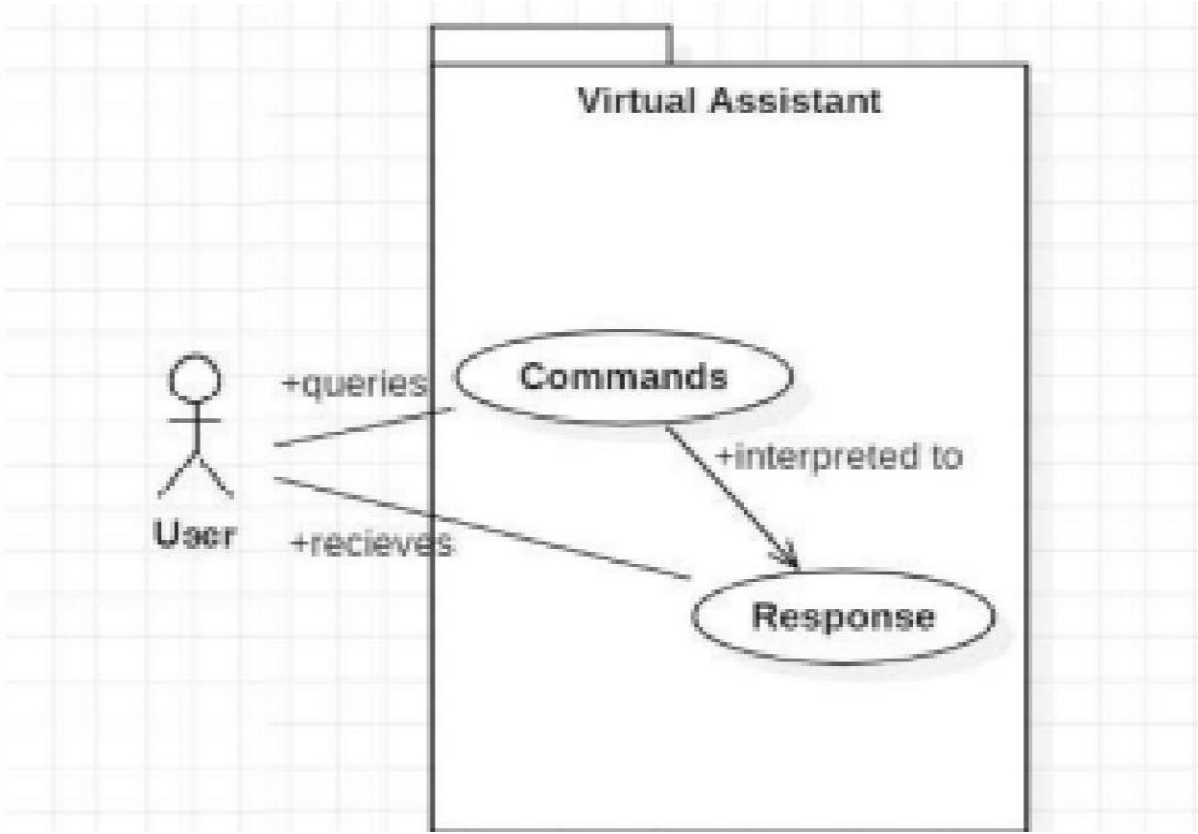
3.2 Activity Diagram



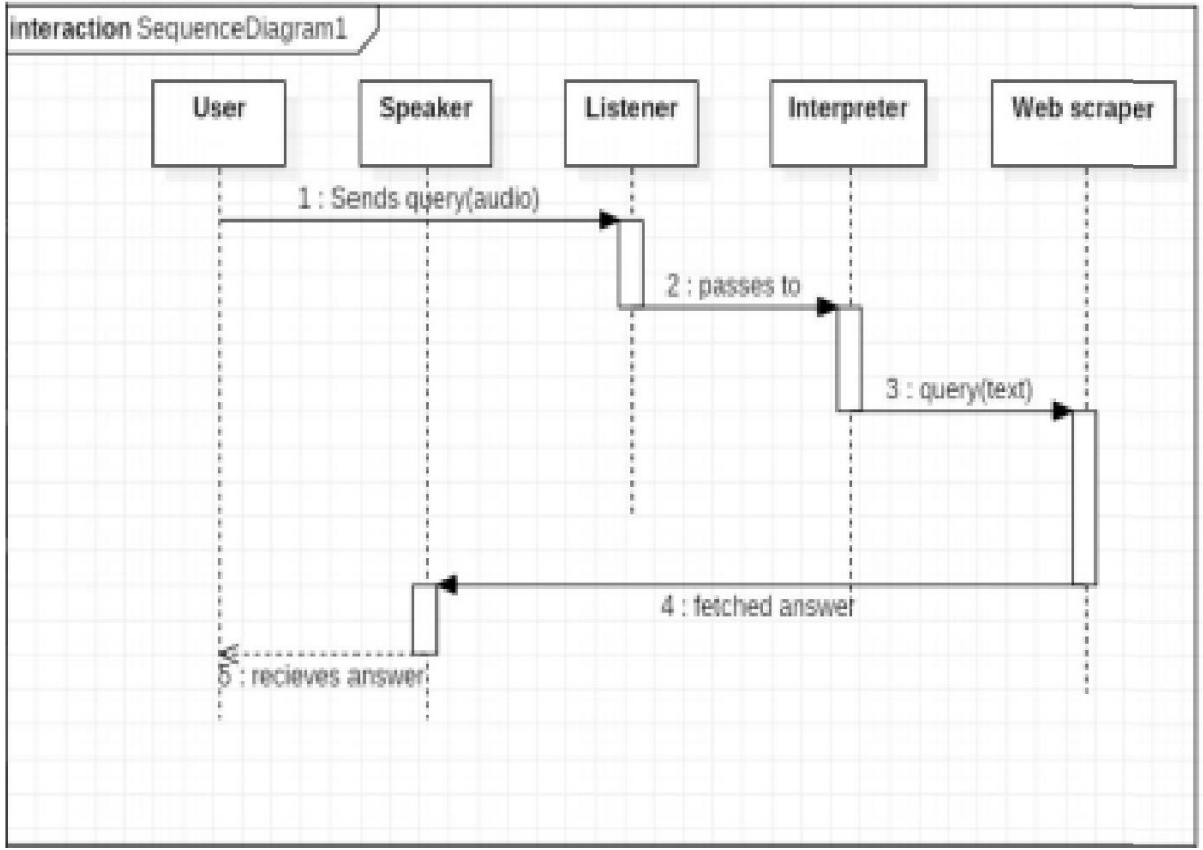
3.3 Class Diagram



3.4 Use Case Diagram

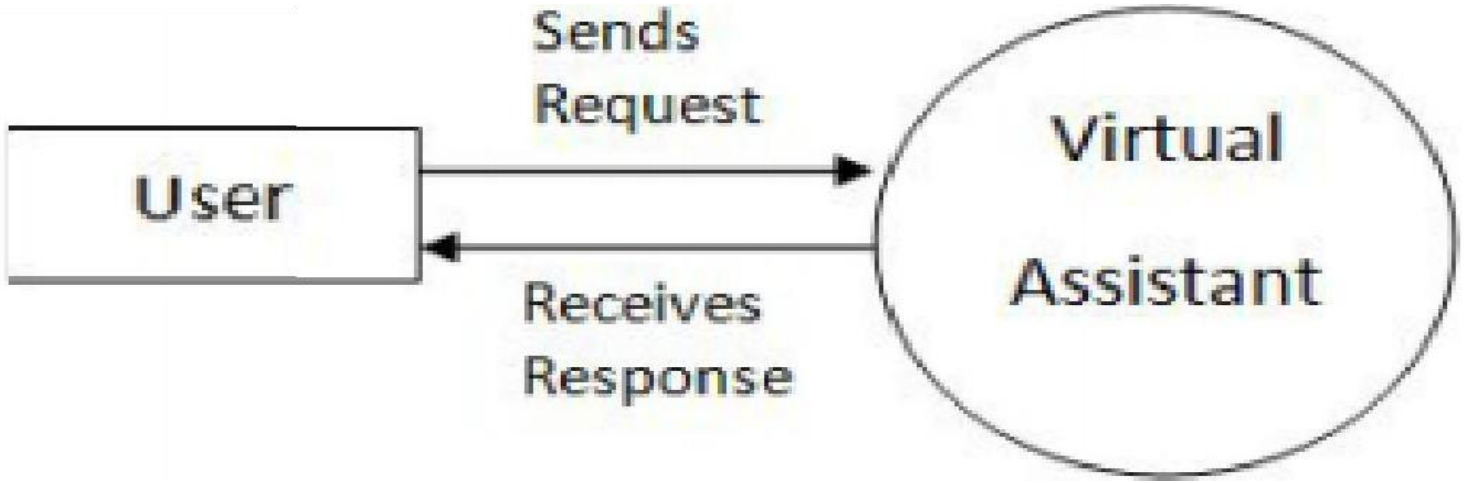


3.5 Sequence Diagram



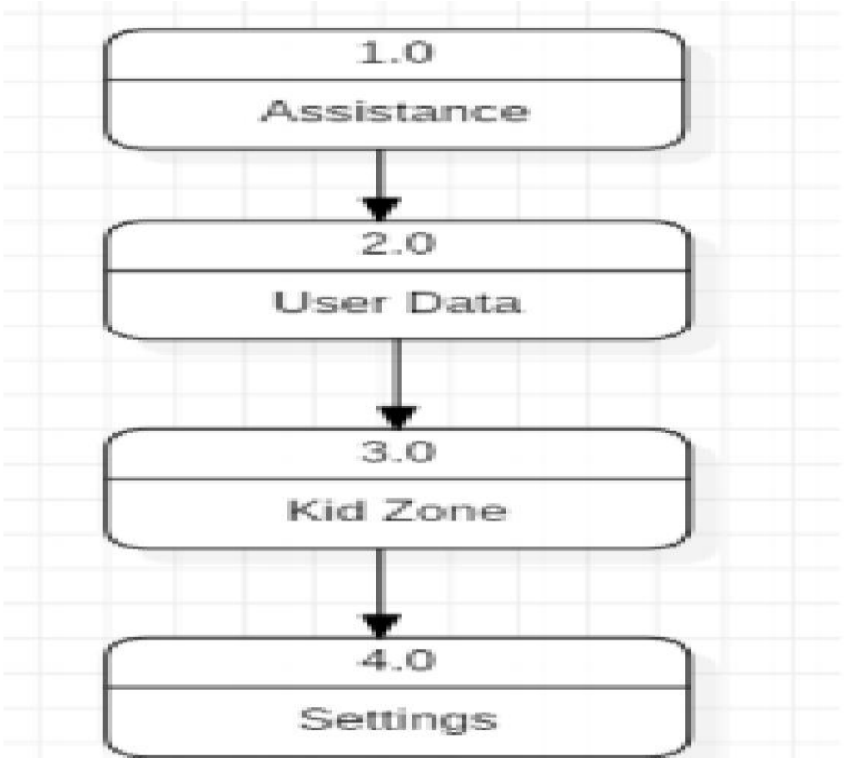
3.6 Data Flow Diagram

3.6.1 Zero Level DFD:-



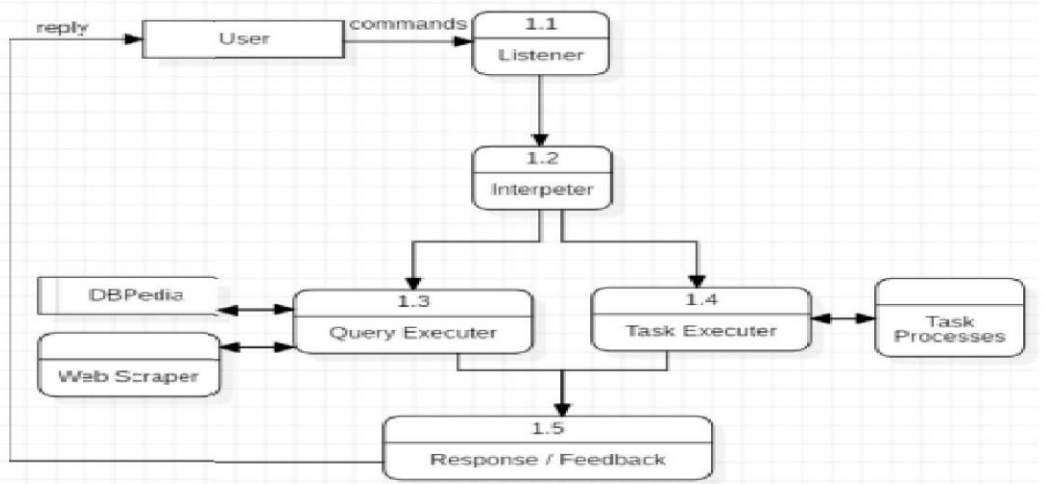
3.6 Data Flow Diagram

3.6.2 First Level DFD:-

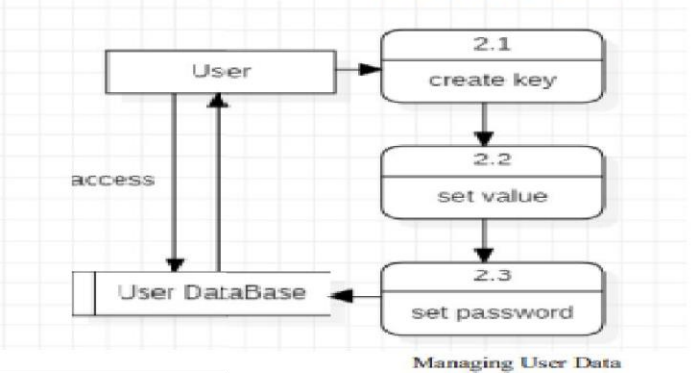


3.6 Data Flow Diagram

3.6.3 Second Level DFD:-

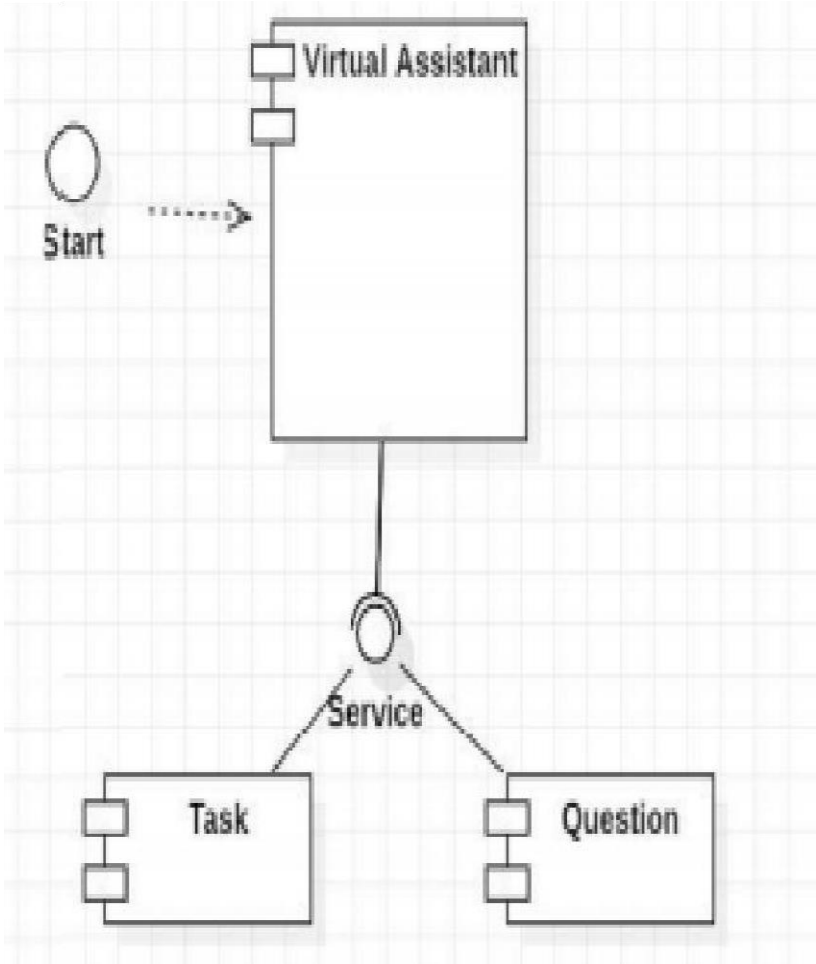


Data Flow in Assistance



Managing User Data

3.7 Component Diagram



4. External Interface Requirements

4.1 User Interface:-

- Front-end software : Python Tkinter
- Back-end software : Python Programming

4.2 Hardware Interface:-

- Processor : INTEL CORE I3 OR ABOVE
- Motherboard : Genuine Intel
- RAM : Min 1 GB
- Hard Disk : 80 GB

4.3 Software Interface:-

- OPERATING SYSTEM- WINDOWS (all version)
- Python 3.X VERSION

4. External Interface Requirements

4.4 Communication Interface:-

Speech Recognition:-

Speech recognition, or speech-to-text, is the ability for a machine or program to identify Words spoken aloud and convert them into readable text. Rudimentary speech recognition software has a limited vocabulary of words and phrases, and it may only identify these if they are spoken very clearly. More sophisticated software has the ability to accept natural speech, different accents and languages.

5. System Features

- The assistant will listen to your command and will perform the task you ask.
- You can speak as well as write the commands you want to get performed.
- It will assist you to perform the task smoothly.

6. Other Non-Functional Requirements

6.1 Performance requirement:

- The software must support microphone.
- The software shall support use of internet connectivity.
- There are no other specific performance requirements that will affect development.

6. Other Non-Functional Requirements

6.2 Safety requirement:

The server may get crashed at any certain time due to virus or operating system failure. Therefore, it is required to take the database backup.

6.3 Security Requirement:

Application will allow only valid users to access the system. Access to any application resource will depend upon user's designation. There are two types of users namely Clients and Servers. Security is based upon the individual user ID and Password.

6.4 Implementation Requirement:

This means installing the software on user machines. At times, software needs post- installation configurations at user end. Software is tested for portability and adaptability and integration related issues are solved during implementation.

6. Other Non-Functional Requirements

6.5 Delivery Requirement:

The whole system is expected to be delivered in five months of time with a weekly evaluation by the project guide.

7. Conclusion

A Virtual Voice Personal Assistant developed using python. This assistant currently works online and performs basic tasks like weather updates, stream music, search Wikipedia, open desktop applications, etc. The functionality of the current system is limited to working online only. The upcoming updates of this assistant will have machine learning incorporated in the system which will result in better suggestions with IoT to control the nearby devices similar to what Amazon's Alexa does.

Thank you !

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