RAJALAKSHMI ENGINEERING COLLEGE

RAJALAKSHMI NAGAR, THANDALAM – 602 105

RAJALAKSHMI
ENGINEERING COLLEGE

CS23A34 **USER INTERFACE AND DESIGN LAB**
Laboratory Observation Notebook

Name : AL UMA

Year/Branch/Section : II/CSE/D

Register No. : 230701368

Semester : IV

Academic Year: 2024-25

Ex. No.: 2

Register No.: 230701368 **Name: AL UMA**

Develop and compare CLI, GUI, and Voice User Interfaces (VUI) for the same task and assess user satisfaction using Python (Tkinter for GUI, Speech Recognition for VUI), Terminal

Aim:

The aim is to develop and compare Command Line Interface (CLI), Graphical User Interface (GUI), and Voice User Interface (VUI) for the same task, and assess user satisfaction using Python (with Tkinter for GUI and Speech Recognition for VUI) and Terminal.

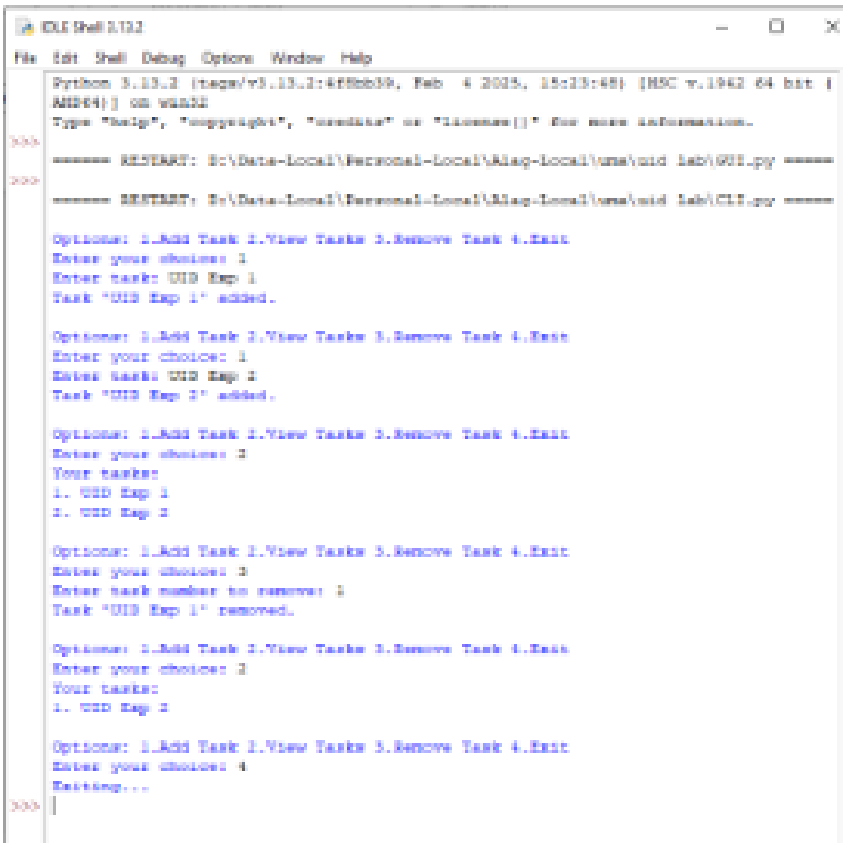
Procedure:

i) CLI (Command Line Interface) CLI implementation where users can add, view, and remove tasks using the terminal.

```
tasks = []
def add_task(task):
    tasks.append(task)
    print(f"Task '{task}' added.")
def view_tasks():
    if tasks:
        print("Your tasks:")
        for idx, task in enumerate(tasks, 1):
```

```
                print(f"{idx}. {task}")
        else:
                print("No tasks to show.")

def remove_task(task_number):
        if 0 < task_number <= len(tasks):
                removed_task = tasks.pop(task_number - 1)
                print(f"Task '{removed_task}' removed.")
        else: print("Invalid task number.")
def main():
        while True:
                print("\nOptions: 1.Add Task 2.View Tasks 3.Remove Task 4.Exit")
                choice = input("Enter your choice: ")
                if choice == '1.':
                        task = input("Enter task: ")
                        add_task(task)
                elif choice == '2.':
                        view_tasks()
                elif choice == '3':
                        task_number = int(input("Enter task number to remove: "))
                        remove_task(task_number)
                elif choice == '4':
                        print("Exiting...")
                        break
                else:
                        print("Invalid choice. Please try again.")

if __name__== "__main__":
        main()
```

Output:



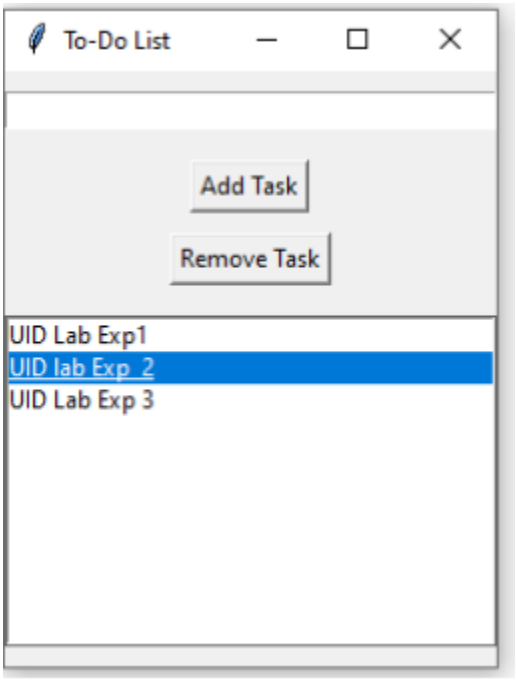
ii) GUI (Graphical User Interface)

Tkinter to create a simple GUI for our To-Do List application.

```
import tkinter as tk
from tkinter import messagebox
tasks = []
def add_task():
        task = task_entry.get()
        if task:
                tasks.append(task)
```

```
                task_entry.delete(0, tk.END)
                update_task_list()
        else: messagebox.showwarning("Warning", "Task cannot be empty")
def update_task_list():
        task_list.delete(0, tk.END)
        for task in tasks:
                task_list.insert(tk.END, task)
def remove_task():
        selected_task_index = task_list.curselection()
        if selected_task_index:
                task_list.delete(selected_task_index)
                tasks.pop(selected_task_index[0])
app = tk.Tk()
app.title("To-Do List")

task_entry = tk.Entry(app, width=40)
task_entry.pack(pady=10)



add_button = tk.Button(app, text="Add Task", command=add_task)
add_button.pack(pady=5)

remove_button = tk.Button(app, text="Remove Task", command=remove_task)
remove_button.pack(pady=5)

task_list = tk.Listbox(app, width=40, height=10)
task_list.pack(pady=10)
app.mainloop()
```

Output:



iii) VUI (Voice User Interface)

speech_recognition library for voice input and the pyttsx3 library for text-to-speech output. Make sure you have these libraries installed (pip install SpeechRecognition pyttsx3).

```
import speech_recognition as sr
import pyttsx3


tasks = []
recognizer = sr.Recognizer()
engine = pyttsx3.init()

def add_task(task):
        tasks.append(task)
        engine.say(f"Task {task} added")
        engine.runAndWait()
```

```
def view_tasks():
    if tasks:
        engine.say("Your tasks are")
        for task in tasks:
            engine.say(task)
    else:
        engine.say("No tasks to show")
    engine.runAndWait()
def remove_task(task_number):
    if 0 < task_number <= len(tasks):
        removed_task = tasks.pop(task_number - 1)
        engine.say(f"Task {removed_task} removed")
    else:
        engine.say("Invalid task number")
        engine.runAndWait()
def recognize_speech():
    with sr.Microphone() as source:
        print("Listening...")
        audio = recognizer.listen(source)
        try:
            command = recognizer.recognize_google(audio)
            return command
        except sr.UnknownValueError:
            engine.say("Sorry, I did not understand that")
            engine.runAndWait()
            return None
def main():
    while True:
        engine.say("Options: add task, view tasks, remove task, or exit")
            engine.runAndWait()
        command = recognize_speech()
        if not command:
            continue
        if "add task" in command:
            engine.say("What is the task?")
            engine.runAndWait()
            task = recognize_speech()
            if task:
                add_task(task)
        elif "view tasks" in command:
```

```
                view_tasks()
            elif "remove task" in command:
                engine.say("Which task number to remove?")
                engine.runAndWait()
                task_number = recognize_speech()
                if task_number:
                    remove_task(int(task_number))
            elif "exit" in command:
                engine.say("Exiting...")
                engine.runAndWait()
                break
            else:
                engine.say("Invalid option. Please try again.")
                engine.runAndWait()
if __name__ == "__main__":
    main ()
```

Output:

The program initializes the speech recognizer and text-to-speech engine. It then enters a loop where it announces the available options ("add task, view tasks, remove task, or exit").

```
= RESTART: C:/Users/sudha/AppData/Local/Programs/Python/Python313/print task.py
Listening...
Task Buy stationaries added.
Listening...
Task Finish UID observation added.
Listening...
Task Take printout of OS manual added.
Listening...
Task Complete UID project added.
Listening...
Task Take Bath added.
Listening...
Your tasks are: Buy stationaries, Finish UID observation, Take printout of OS manual, Complete UID project, Take Bath.
Listening...
Task Take Bath removed.
Listening...
Task Buy stationaries removed.
Listening...
Your tasks are: Finish UID observation, Take printout of OS manual, Complete UID project.
Listening...
Exiting
```

Result:

CLI, GUI, and Voice User Interfaces (VUI) have been developed and compared for the given

task and the user satisfaction has been assessed using Python (Tkinter for GUI, Speech Recognition for VUI).