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CS23A34
USER INTERFACE AND DESIGN LAB

Laboratory Observation NoteBook

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Semester : IV
Academic Year: 2024-25

Ex. No. : 2 **Date : 08.02.2025**

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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 :

```
================== RESTART: C:/Users/HDC0422042/Desktop/CLI.py ==================

Options: 1.Add Task 2.View Tasks 3.Remove Task 4.Exit
Enter your choice: 1
Enter task: UI
task'UI'added.

Options: 1.Add Task 2.View Tasks 3.Remove Task 4.Exit
Enter your choice: 1
Enter task: UX
task'UX'added.

Options: 1.Add Task 2.View Tasks 3.Remove Task 4.Exit
Enter your choice: 2
Your tasks:
1.UI
2.UX

Options: 1.Add Task 2.View Tasks 3.Remove Task 4.Exit
Enter your choice: 3
Enter task number to remove: 1
Task'UI'removed.

Options: 1.Add Task 2.View Tasks 3.Remove Task 4.Exit
Enter your choice: 2
Your tasks:
1.UX

Options: 1.Add Task 2.View Tasks 3.Remove Task 4.Exit
Enter your choice: 4
Exiting...
```

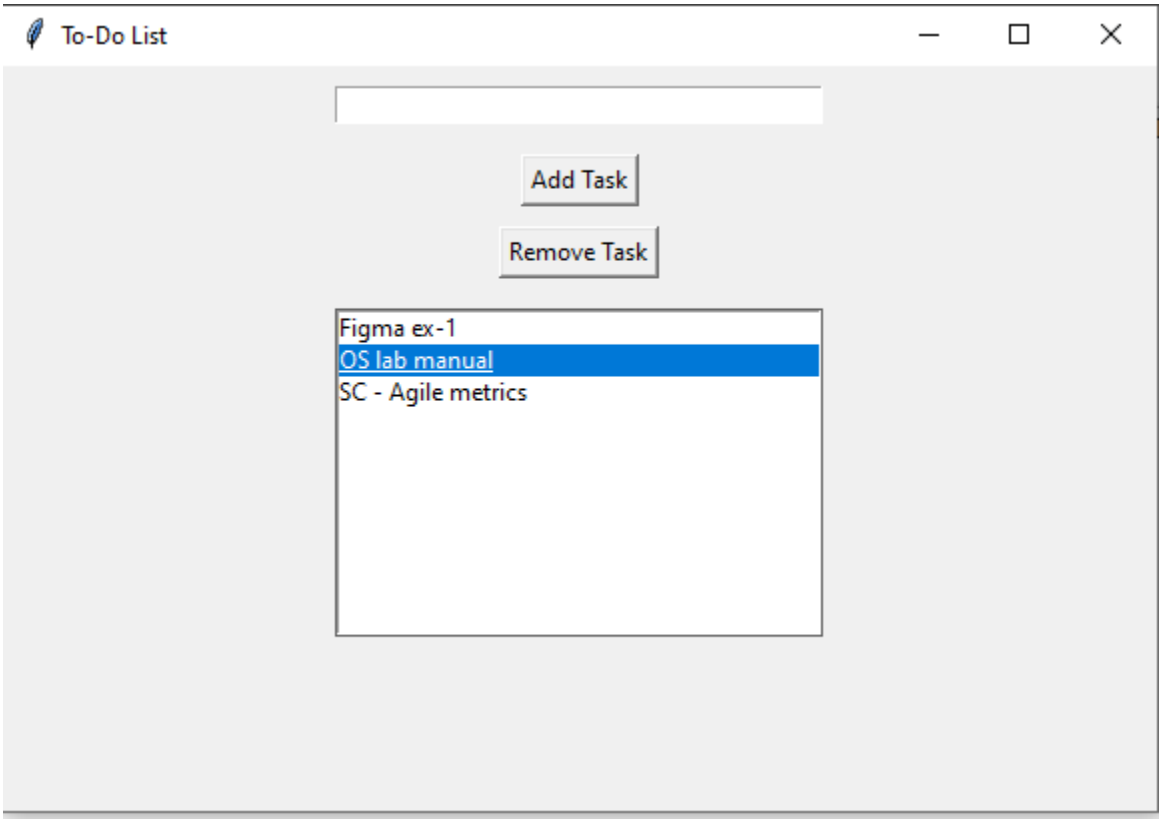
ii) GUI (Graphical User Interface)

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 :


To-Do List
Add Task
Remove Task
Figma ex-1
OS lab manual
SC - Agile metrics

iii) VUI (Voice User Interface)

speech_recognition library for voice input and the pyttsx3 library for text-to-speech output.

```
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 :

```
= 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 :

Hence the CLI, GUI, and Voice User Interfaces (VUI) for the same task using Python (Tkinter for GUI, Speech Recognition for VUI), Terminal has been developed and executed