USER INTERFACE AND DESIGN

EXPERIMENT 3

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 :

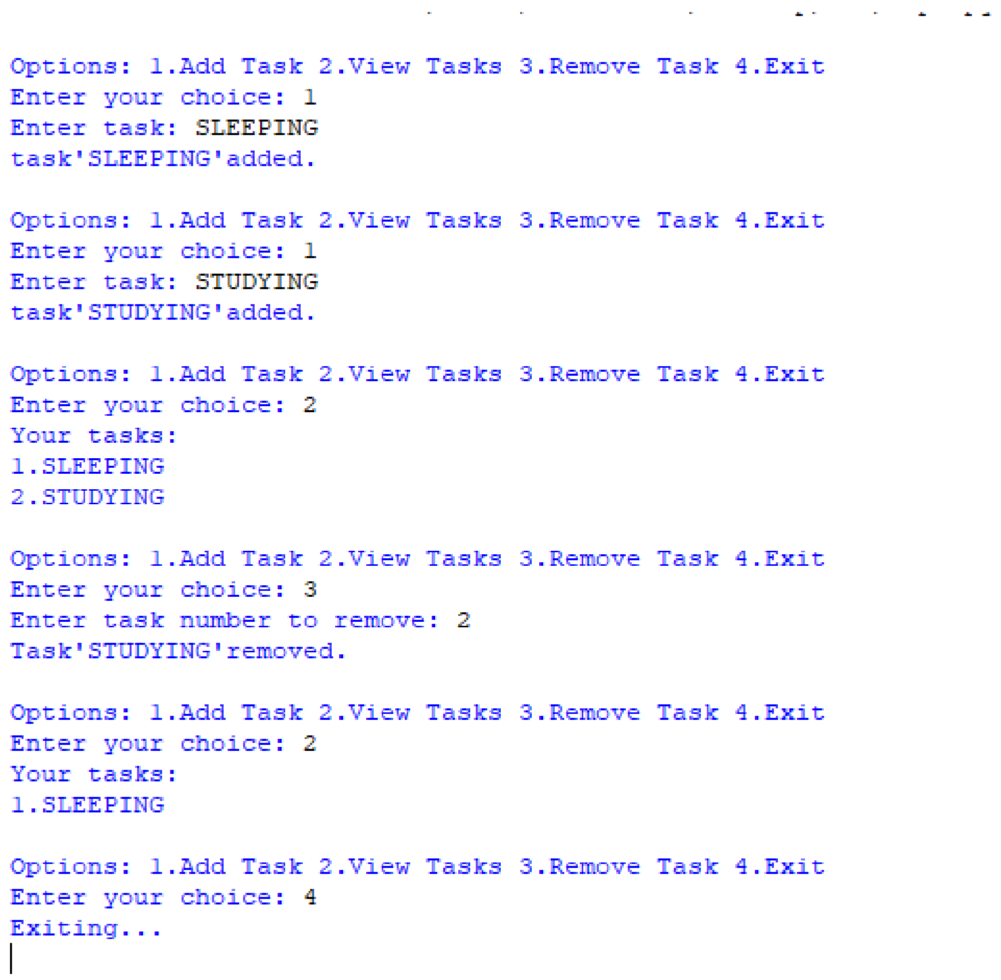
i) CLI (Command Line Interface)

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 :



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

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

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

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

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

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

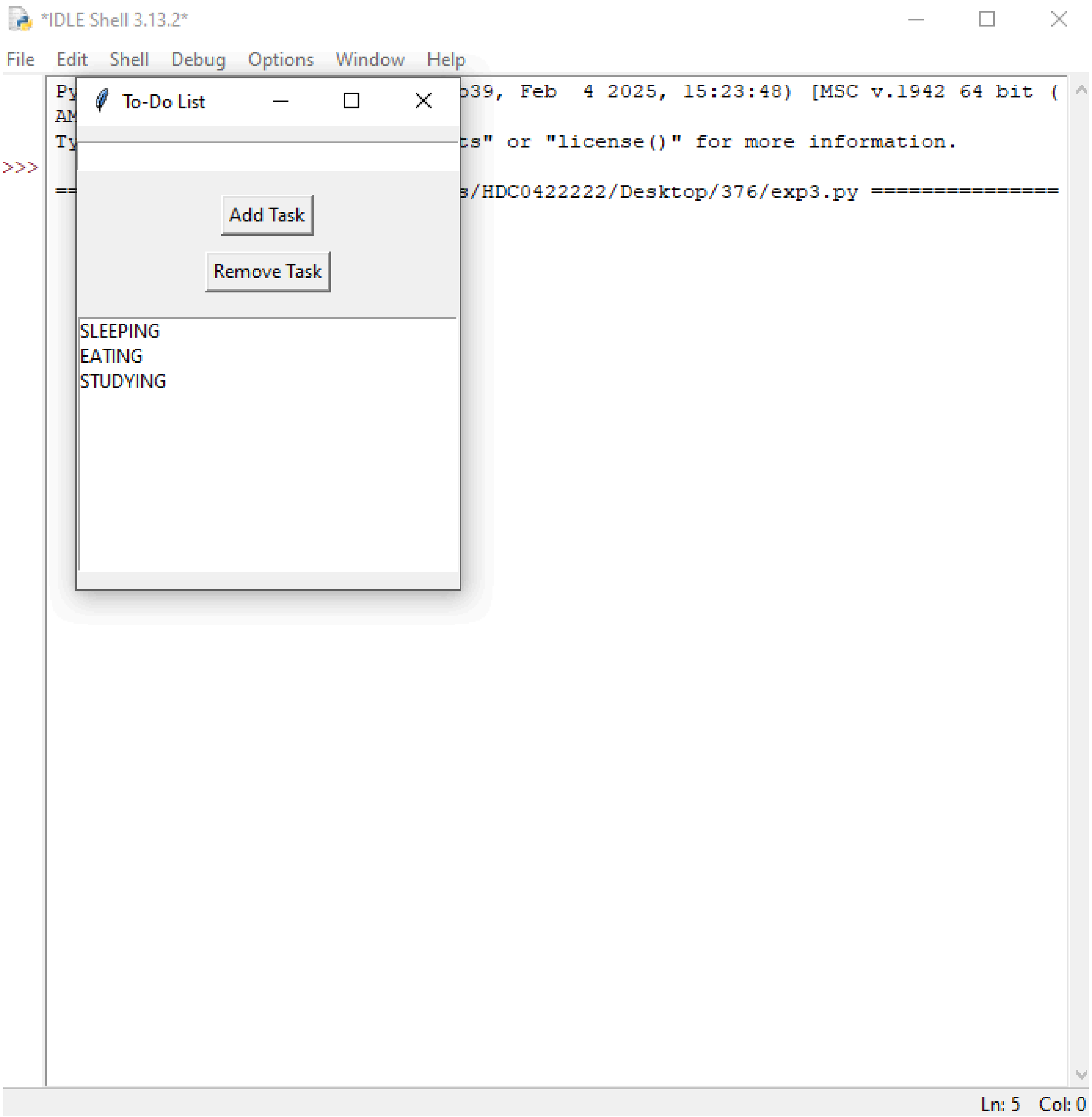
ii) GUI (Graphical User Interface)

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)
```

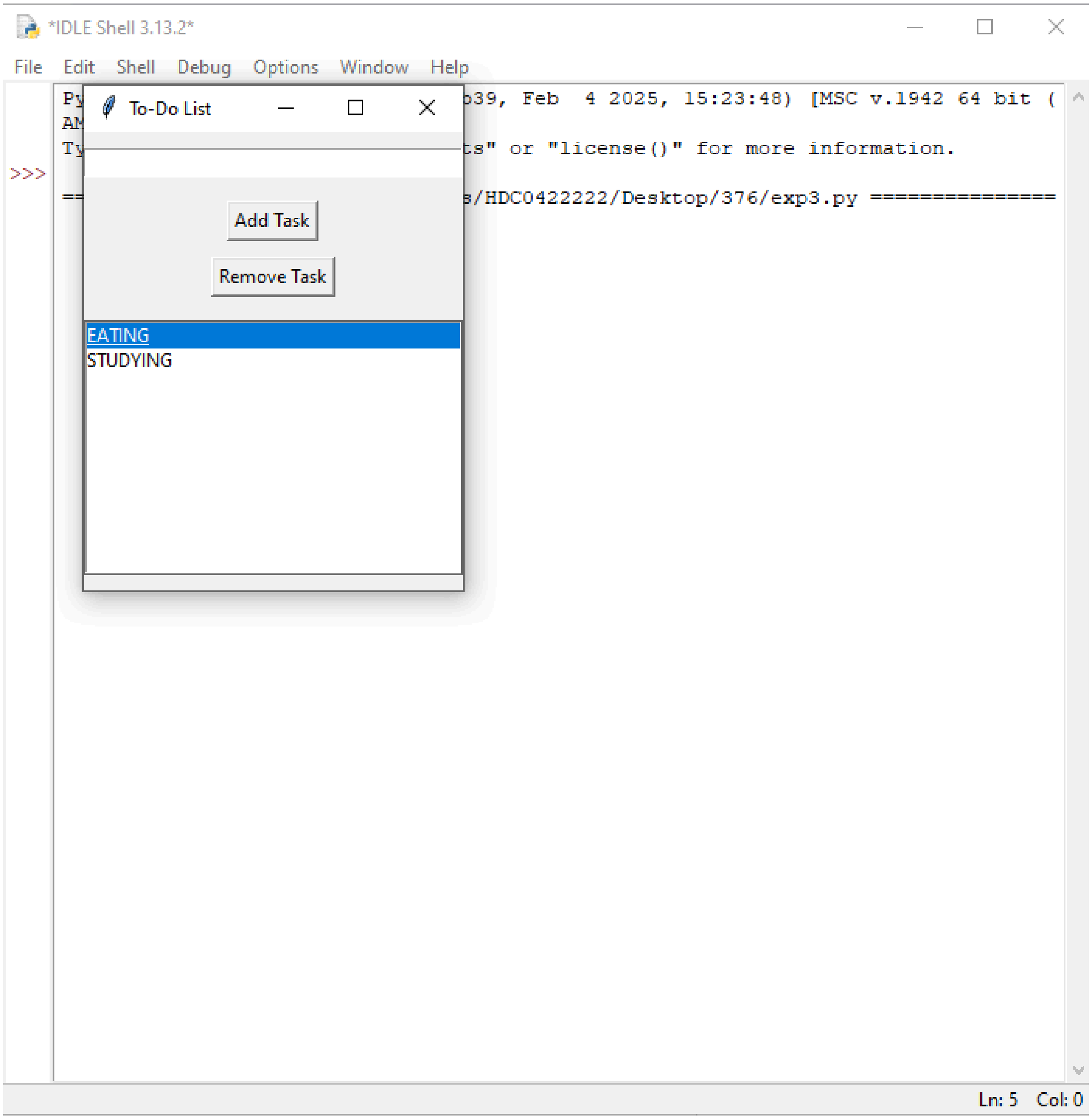
```
task_list = tk.Listbox(app, width=40, height=10)
task_list.pack(pady=10)

app.mainloop()
```

OUTPUT:



```
Py                                      b39, Feb  4 2025, 15:23:48) [MSC v.1942 64 bit (
AM
Ty                                      ts" or "license()" for more information.
>>>
==                                      s/HDC0422222/Desktop/376/exp3.py ===============
```

```
SLEEPING
EATING
STUDYING
```



```
Py                                b39, Feb  4 2025, 15:23:48) [MSC v.1942 64 bit (
AM
Ty                                ts" or "license()" for more information.
>>>
==                                s/HDC0422222/Desktop/376/exp3.py ===============
```

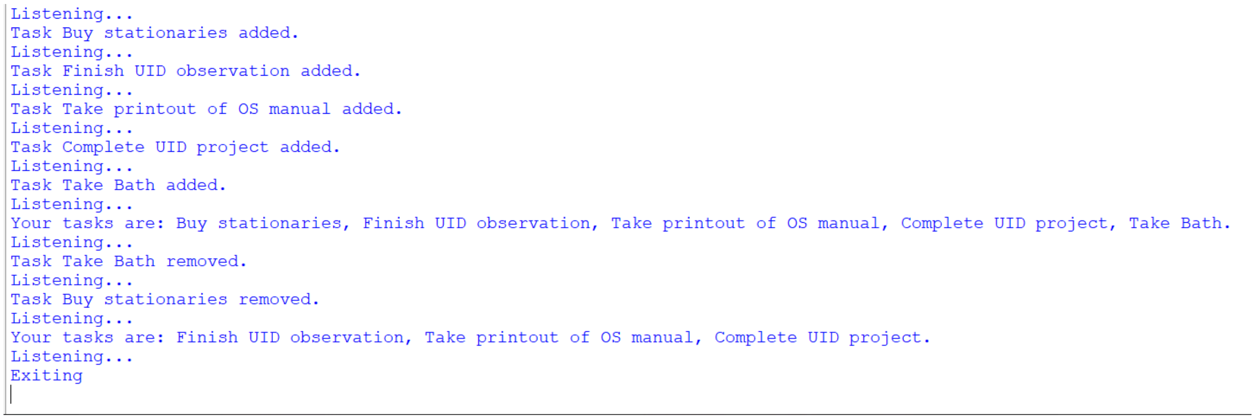
```
EATING
STUDYING
```

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:



```
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: Thus the VUI , CLI, GUI were all observed, studied and executed successfully.