Exercise 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.

Materials required: Python IDLE

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()
```

ii) GUI (Graphical User Interface)

```
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:
        tasks.pop(selected_task_index[0])
        update_task_list()

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()
```

iii) VUI (Voice User Interface)

```
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()
```

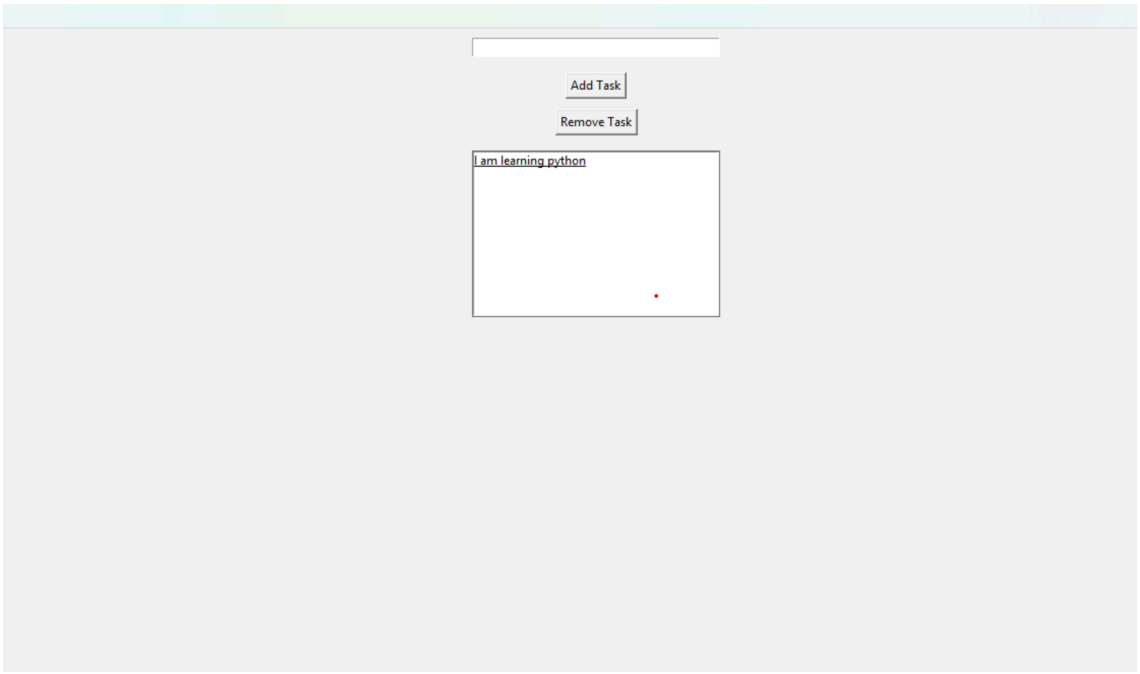
```
        elif "remove task" in command:
            engine.say("Which task number to remove?")
            engine.runAndWait()
            task_number = recognize_speech()
            if task_number and task_number.isdigit():
                remove_task(int(task_number))
        elif "exit" in command: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

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

Output:

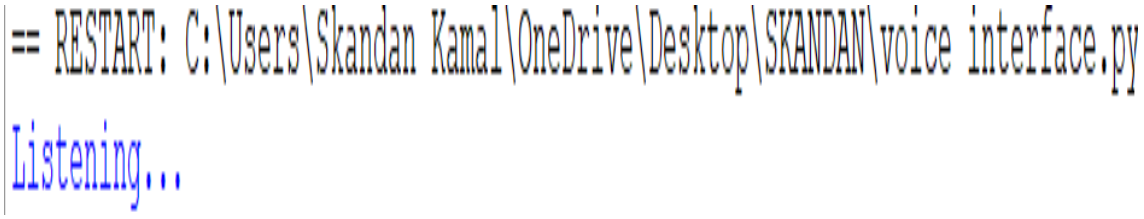
i)

```
File  Edit  Shell  Debug  Options  Window  Help
Python 3.13.2 (tags/v3.13.2:4f8bb39, Feb  4 2025, 15:23:48) [MSC v.1942 64 bit (
AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
======== RESTART: C:\Users\Skandan Kamal\OneDrive\Desktop\SKANDAN\CLI.py =======

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

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

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

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

ii)



iii)



Result:

The development to compare the Command Line Interface (CLI), Graphical User

Interface (GUI), and Voice User Interface (VUI) for the same is successfully executed.