Exercise: 3

Date:5.2.2025

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:

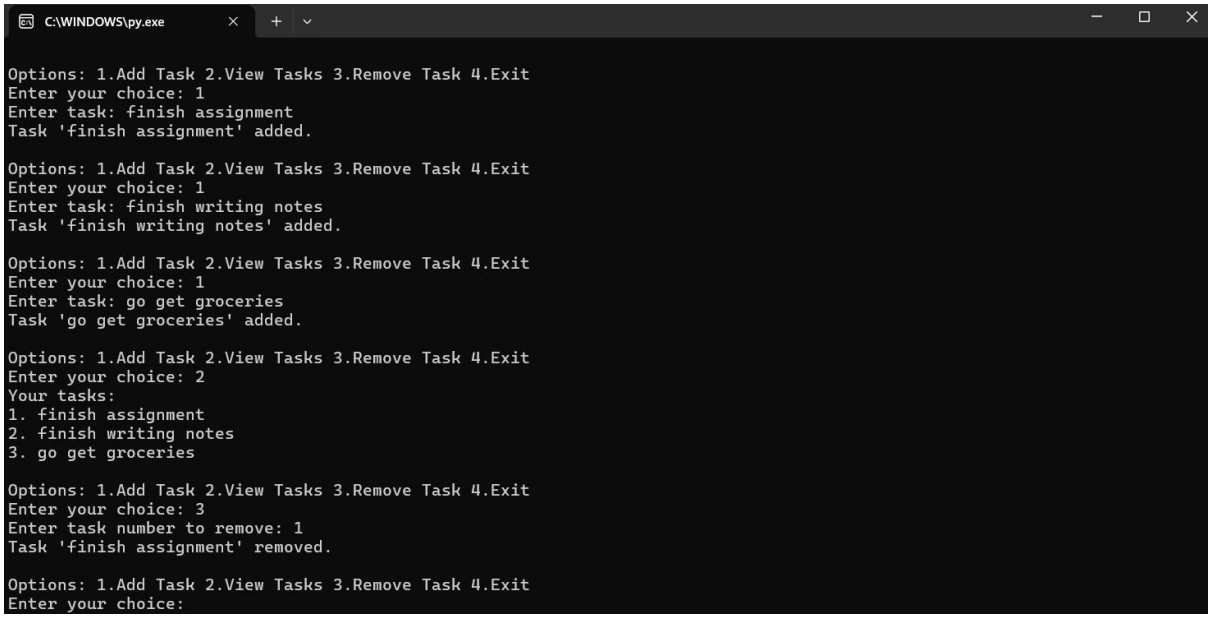
i) CLI (Command Line Interface)

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:



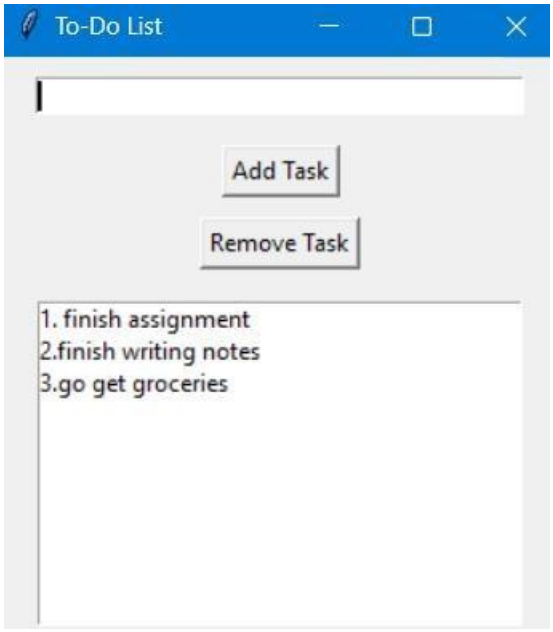
ii) GUI (Graphical User Interface)

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:

```
Listening...
Task Take printout of UID
Listening...
Task Finish observation
Listening...
Your tasks are: Take printout of UID Finish observation
Listening...
Task Finish observation removed.
Listening...
Exiting
```

RESULT:

Thus the codes to 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 have been executed successfully.