EXPERIMENT 3 : DEVELOP AND COMPARE CLI,GUI AND VUI FOR THE SAME TASK AND ACCESS USER SATISFACTION USING PYTHON(Tkinter FOR GUI,SPEECH RECOGNITION FOR VUI),TERMINAL

Aim :

To develop and compare Command Line Interface (CLI), Graphical User Interface (GUI), and Voice User Interface (VUI) for a task management system using Python and evaluate their usability.

Procedure :

1. COMMAND LINE INTERFACE (CLI) :
   A CLI is a text-based interface where users interact with the system by typing commands in a 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 :

```
C:\Users\Gopinath_A\Documents\pythonProject\pythonProject1\venv\Scripts\python.exe

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

Options: 1. Add Task  2. View Tasks  3. Remove Task  4. Exit
Enter your choice: 1
Enter task: Drink 2l of Water
Task 'Drink 2l of Water' added.

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

```
Options: 1. Add Task  2. View Tasks  3. Remove Task  4. Exit
Enter your choice: 2
Your tasks:
1. Complete Notes
2. Drink 2l of Water
3. Practice Coding

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

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

Process finished with exit code 0
```

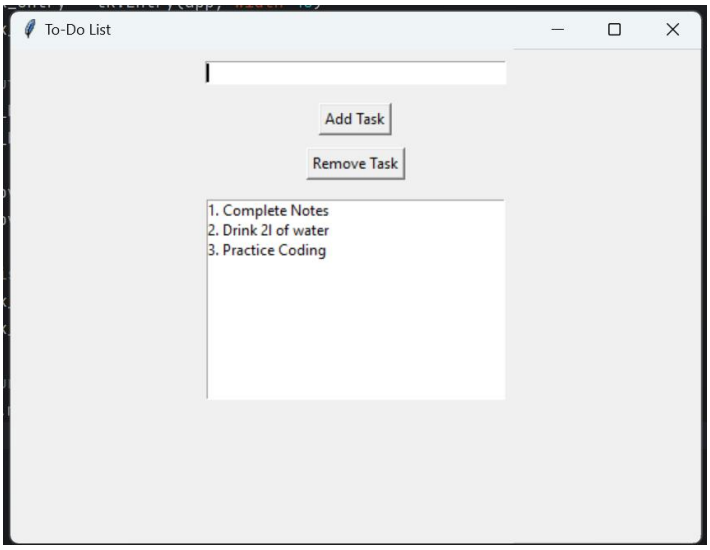
2. GRAPHICAL USER INTERFACE (GUI):

A GUI is a visual-based interface where users interact with the system using buttons, input fields, and other graphical elements.

```
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:



3. VOICE USER INTERFACE (VUI) :

A VUI allows users to interact with a system using voice commands, making it a hands-free alternative.

```
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:

```
Recognized: add task
Listening...
Recognized: Buy groceries
Task 'Buy groceries' added.

Listening...
Recognized: add task
Listening...
Recognized: Complete homework
Task 'Complete homework' added.

Listening...
Recognized: view tasks
Your tasks are:

1. Buy groceries
2. Complete homework

Listening...
Recognized: remove task
Listening...
Recognized: 1
Task 'Buy groceries' removed.

Listening...
Recognized: view tasks
Your tasks are:

1. Complete homework

Listening...
Recognized: exit
```

Result :

CLI is efficient and fast but requires users to remember commands. GUI is user-friendly and visually appealing but consumes more resources. VUI enables hands-free operation but may misinterpret speech in noisy environments. Each interface has its strengths, and the choice depends on user preference and application requirements.