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RAJALAKSHMI NAGAR, THANDALAM – 602 105

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ENGINEERING COLLEGE

CS23A34
USER INTERFACE AND DESIGN LAB

Laboratory Observation NoteBook

Name : SREYA G
Year/Branch/Section : II/CSE/D
Register No. : 230701334
Semester : IV
Academic Year: 2024-25

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

Register No. : 230701334 **Name : SREYA G**

Excercise 3 :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:

```
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.
```

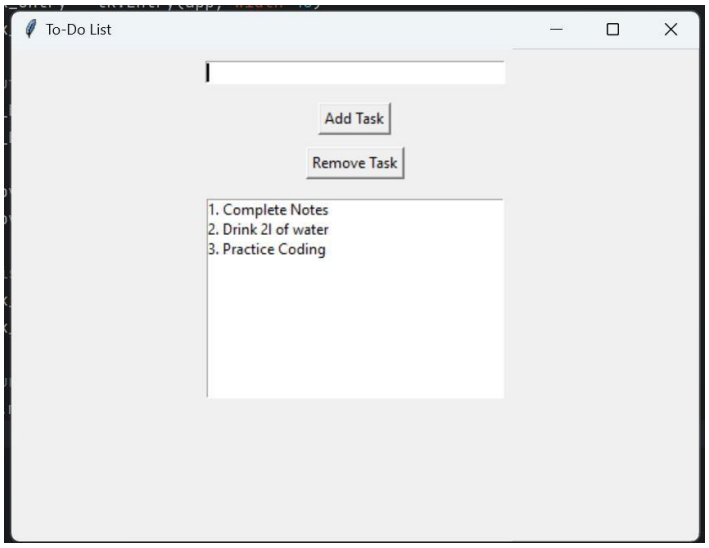
```
Options: 1. Add Task  2. View Tasks  3. Remove Task  4. Exit
Enter your choice: 2
Your tasks:
1. Complete Notes
2. Drink 2l of Water
3. Practice Coding

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
```

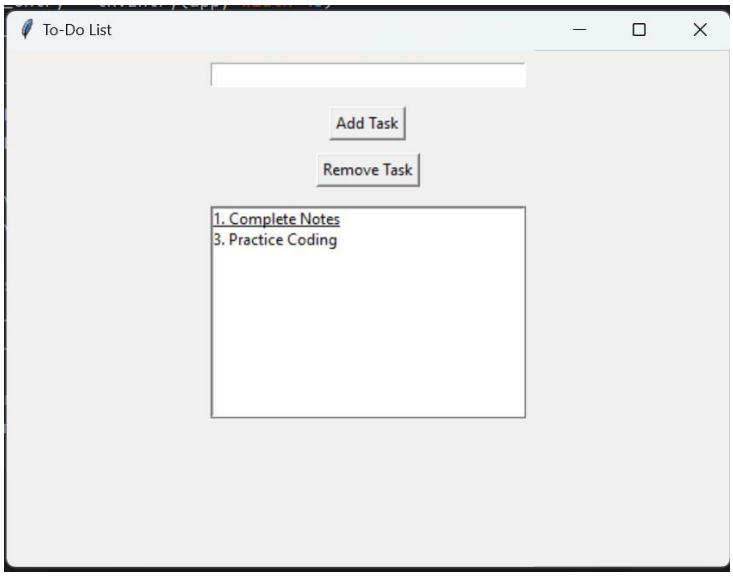
ii) GUI (Graphical User Interface)

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
1. Complete Notes
2. Drink 2l of water
3. Practice Coding


To-Do List
Add Task
Remove Task
1. Complete Notes
3. Practice Coding

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:

```
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:

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.