

RAJALAKSHMI ENGINEERING COLLEGE

RAJALAKSHMI NAGAR, THANDALAM - 602 105



RAJALAKSHMI
ENGINEERING COLLEGE

CS23A34

USER INTERFACE AND DESIGN LAB

Laboratory Observation Notebook

Name : R Sarvesh

Year/Branch/Section : II/CSE/D

Register No. : 230701295

Semester : IV

Academic Year: 2024-25

Ex. No.: 2

Register No.: 230701295

Name: Sarvesh R

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:

- **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_t
asks() 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()

```

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

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

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

Options: 1.Add Task 2.View Tasks 3.Remove Task 4.Exit
Enter your choice: 2.
Your tasks:
1. play badminton
2. visit rahul
3. complete assignments

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

Options: 1.Add Task 2.View Tasks 3.Remove Task 4.Exit
Enter your choice: 2.
Your tasks:
1. play badminton
2. complete assignments
```

Output:

- **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():

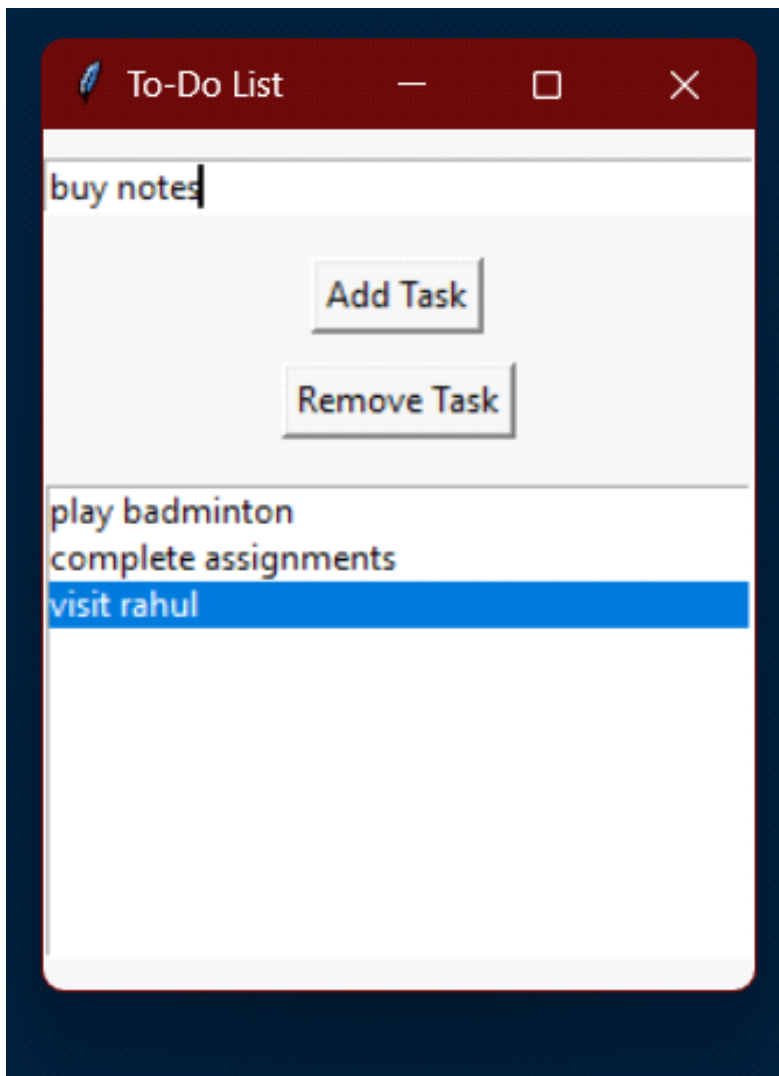
    task =
    task_entry.get()
    if task:
        tasks.append(task)
        task_entry.delete(0,
        tk.END)
        update_task_list()
    else: messagebox.showwarning("Warning", "Task cannot be
empty") def update_task_list():
    task_list.delete(0,
    tk.END) for task in
    tasks:
        task_list.insert(tk.EN
D, 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:

- **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.runAnd
Wait() def
remove_task(task_num
ber):
    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:

def main():

        command = recognizer.recognize_google(audio) return
        command
except sr.UnknownValueError:
    engine.say("Sorry, I did not understand that")
    engine.runAndWait()
    return None

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_n
umber)) elif "exit" in command:
    engine.say("Exiti
ng...")
    engine.runAndW
ait() break
else:
    engine.say("Invalid option. Please try again.")
    engine.runAndWait()

if __name__ == "
    main_":
    main ()

```

Output:

The program initializes the speech recognizer and text-to-speech engine. It then enters a loop where it announces the available options ("add task, view tasks, remove task, or exit").

```

= RESTART: C:/Users/sudha/AppData/Local/Programs/Python/Python313/print task.py
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
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:

CLI, GUI, and Voice User Interfaces (VUI) have been developed and compared for the given

task and the user satisfaction has been assessed using Python (Tkinter for GUI, Speech Recognition for VUI).