

**RAJALAKSHMI ENGINEERING COLLEGE**

**RAJALAKSHMI NAGAR, THANDALAM – 602 105**



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| <p><b>CS23A34</b><br/><b>USER INTERFACE AND DESIGN LAB</b></p> |
| <p><b>Laboratory Observation Notebook</b></p>                  |

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## **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:

```
Output Clear

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

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

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

Options: 1.Add Task 2.View Tasks 3.Remove Task 4.Exit
Enter your choice: 2.
Your tasks:
1. Take notes
2. complete assingment
3. complete linkedin course
```

## 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)

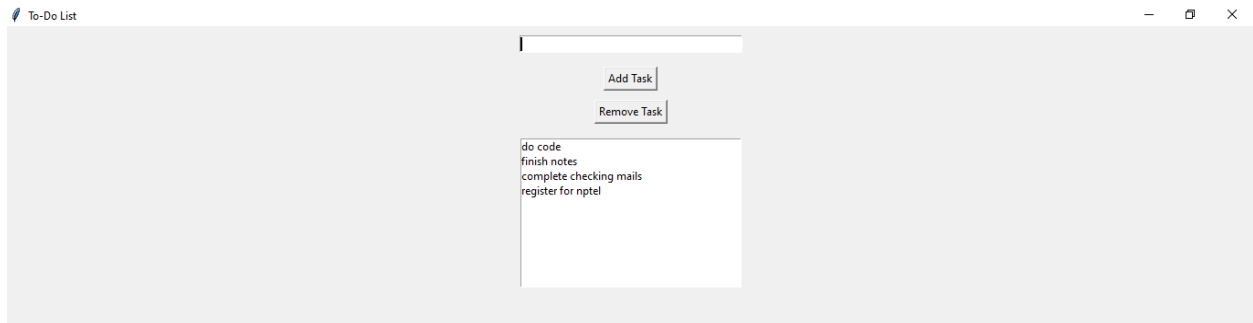
add_button = tk.Button(app, text="Add Task", command=add_task)
add_button.pack(pady=5)

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:

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 UID project, Take Bath.
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).