RAJALAKSHMI ENGINEERING COLLEGE

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CS23A34 USER INTERFACE AND DESIGN LAB
Laboratory Observation NoteBook

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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.

(i) COMMAND LINE INTERFACE (CLI):

PROCEDURE:

Step 1: Install Python (if not installed). Ensure you have Python installed on your system. You can check by running: python --version .

Step 2: Open Python IDLE. Open a new file "cli.py".

Step 3: Type the Python script for Command Line Interaface.

Step 4: Save and Run the file.

Step 5: Manage the required task.

CODE:

CLI implementation where users can add, view, and remove tasks using the terminal.

```python
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:

```
================== RESTART: C:/Users/HDC0422042/Desktop/CLI.py ==================

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

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

Options: 1.Add Task 2.View Tasks 3.Remove Task 4.Exit
Enter your choice: 2
Your tasks:
1.UI
2.UX

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

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

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

(ii) GRAPHICAL USER INTERFACE (GUI):

PROCEDURE:

Step 1: Install Required Libraries(Tkinter).

Step 2: Open Python IDLE. Open a new file "gui.py".

Step 3: Type the Python script for Graphical User Interface.

Step 4: Save and Run the file.

Step 5: Manage the required task.

CODE:

 Tkinter to create a simple GUI for our To-Do List application.

```python
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()
```
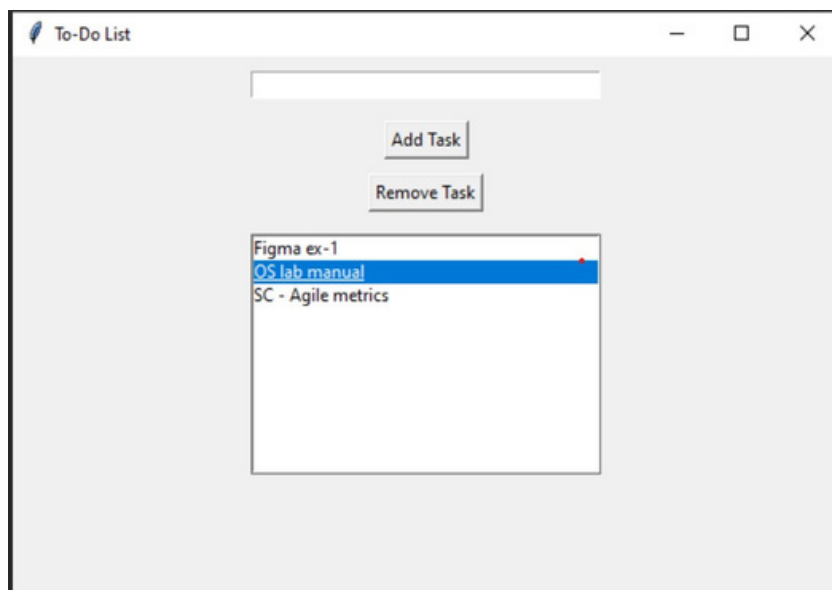
OUTPUT:

(ii) VOICE USER INTERFACE (VUI):

PROCEDURE:

Step 1: Install Required Libraries(speech_recognition).

Step 2: Open Python IDLE. Open a new file "vui.py".

Step 3: Type the Python script for Voice User Interface.

Step 4: Save and Run the file.

Step 5: Manage the required task.

CODE:

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):
```

```python
            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 Finish homework added.
Listening...
Task Call mom added.
Listening...
Task Complete project added.
Listening...
Task Walk the dog added.
Listening...
Your tasks are: Buy groceries, Finish homework, Call mom, Complete project, Walk
 the dog.
Listening...
Task Call mom removed.
Listening...
Task Walk the dog removed.
Listening...
Your tasks are: Buy groceries, Finish homework, Complete project.
Listening...
Exiting...
```

RESULT:

Thus the implementation and comparison of CLI, GUI, and VUI-based To-Do List applications using Python IDLE was successfully executed.