Exercise 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:

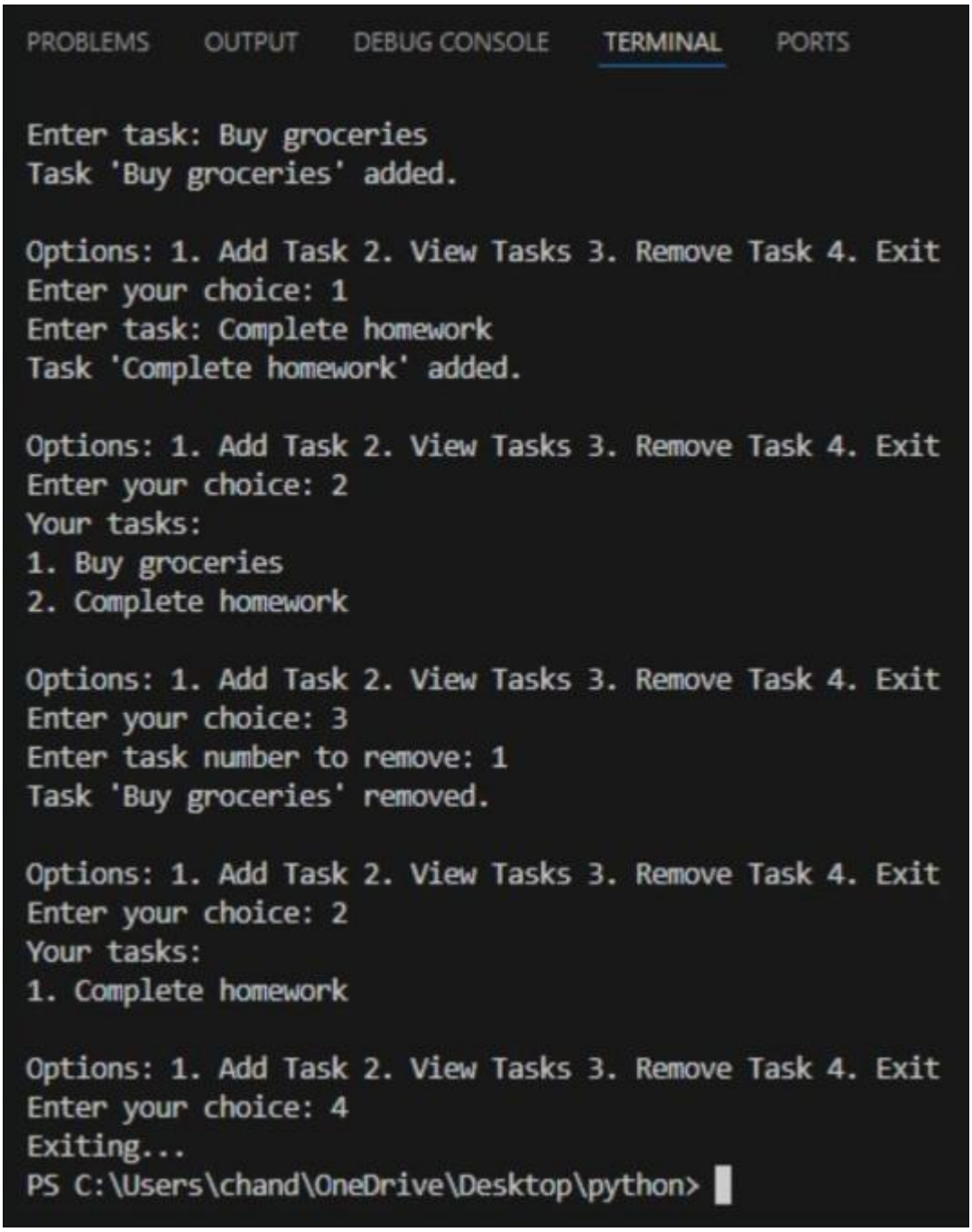
i) CLI (Command Line Interface)

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:


PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
Enter task: Buy groceries
Task 'Buy groceries' added.
Options: 1. Add Task 2. View Tasks 3. Remove Task 4. Exit
Enter your choice: 1
Enter task: Complete homework
Task 'Complete homework' added.
Options: 1. Add Task 2. View Tasks 3. Remove Task 4. Exit
Enter your choice: 2
Your tasks:
1. Buy groceries
2. Complete homework
Options: 1. Add Task 2. View Tasks 3. Remove Task 4. Exit
Enter your choice: 3
Enter task number to remove: 1
Task 'Buy groceries' removed.
Options: 1. Add Task 2. View Tasks 3. Remove Task 4. Exit
Enter your choice: 2
Your tasks:
1. Complete homework
Options: 1. Add Task 2. View Tasks 3. Remove Task 4. Exit
Enter your choice: 4
Exiting...
PS C:\Users\chand\OneDrive\Desktop\python>

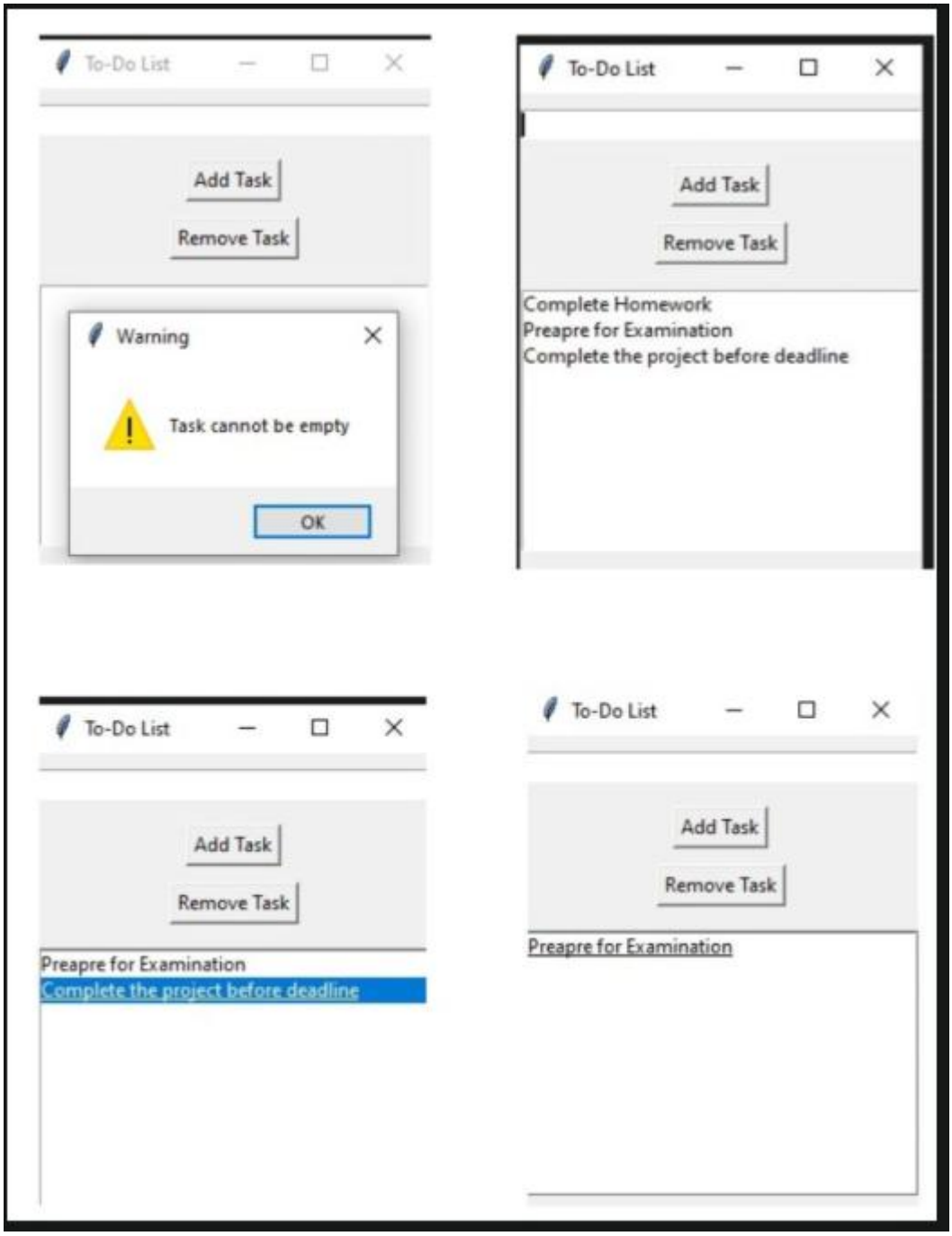
ii) GUI (Graphical User Interface)

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).

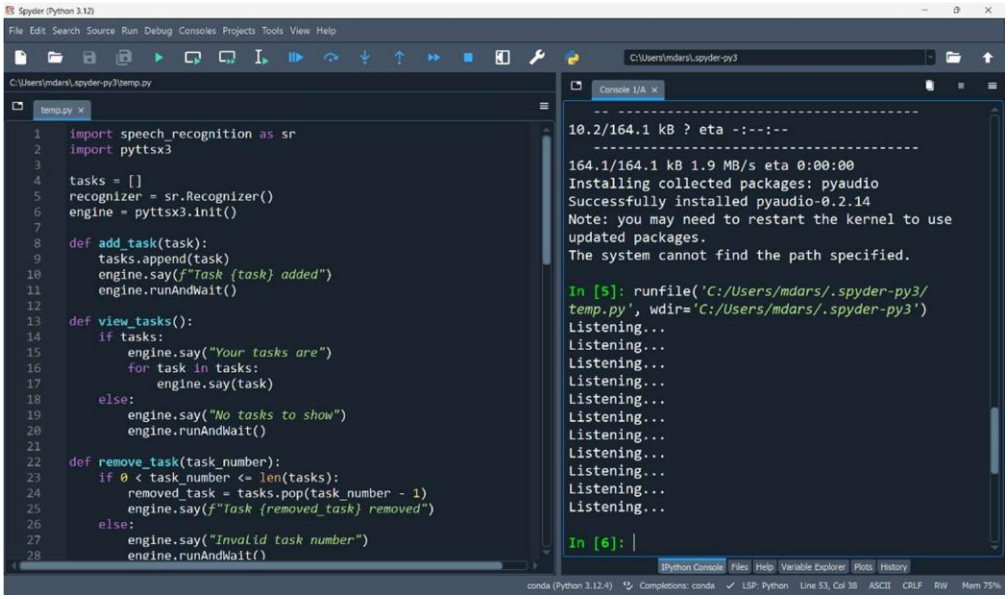
```
import speech_recognition as sr
import pyttsx3

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:



RESULT:

The output was verified successfully.