USER INTERFACE DESIGN EX-3

Difference between CLI(Command line interface) and GUI(Graphical user interface) and VUI(voice user interface)

Command line Interface(CLI)

- A Text-based Interface (Command line interface) enables users to communicate with a computer using the command line, as opposed to using a graphical interface.
- Compact and Powerful – CLI is usually faster and more powerful than a GUI, particularly for expert users who know the correct commands.
- Automation & Scripting – The command-line interface is there to allow users to automate tasks with scripts, making the repetitive tasks easier.
- Lightweight and Resource Friendly – Compared to GUI application, CLI uses very little system resources which is why they are most suited for use on remote servers

example: Windows command prompt

IMPLEMENTATION

command.py > ...

```python
import os
import sys

def  rename_file(old_name, new_name):
    try:
        os.rename(old_name, new_name)
        print(f"File renamed from {old_name} to {new_name}")
    except FileNotFoundError:
        print(f"Error: {old_name} not found.")
    except Exception as e:
        print(f"An error occurred: {e}")

if __name__ == "__main__":
    if len(sys.argv) != 3:
        print("Usage: python rename_file_cli.py <old_filename> <new_filenam
    else:
        rename_file(sys.argv[1], sys.argv[2])
```

Output

```
Usage: python rename_file_cli.py <old_filename> <new_filename>
PS C:\Ridhan\UID\Lab_3> python command.py ridhu.txt jaya.txt
File renamed from ridhu.txt to jaya.txt
PS C:\Ridhan\UID\Lab_3>
```

Graphical user interface(GUI)

- A GUI uses visual elements including icons, buttons, and windows which makes it more user-friendly for users to work with the system.
- More Resource Intensive – GUI applications use more system resources (CPU, RAM, and GPU) in contrast to a Command Line Interface (CLI) that can degrade performance in low-end devices.

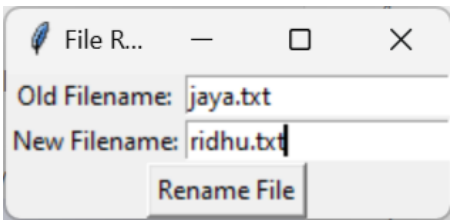
- Limited Automation: GUI does not have automation and scripting abilities like the CLI and is thus more tedious for repetitive jobs.

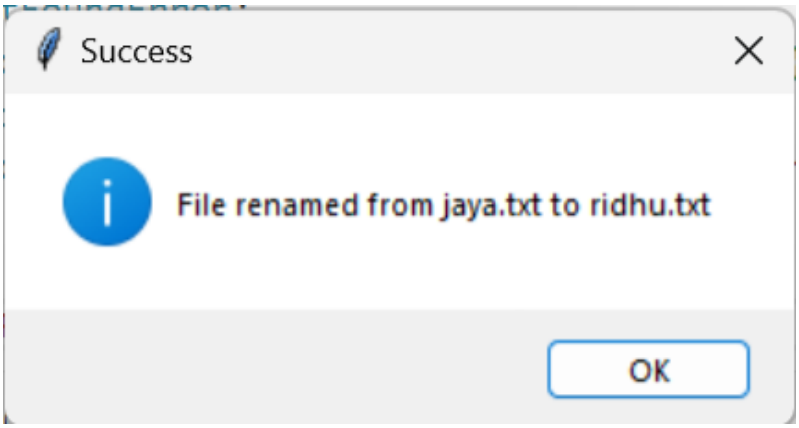
example: Windows, Android, iOS

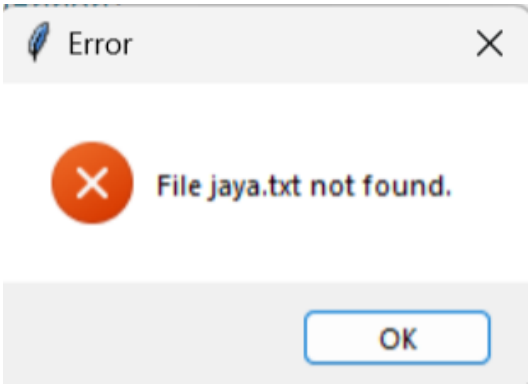
IMPLEMENTATION

```python
import tkinter as tk
from tkinter import messagebox
import os

def rename_file():
    old_name = old_filename_entry.get()
    new_name = new_filename_entry.get()

    try:
        os.rename(old_name, new_name)
        messagebox.showinfo("Success", f"File renamed from {old_name} to {new_name}")
    except FileNotFoundError:
        messagebox.showerror("Error", f"File {old_name} not found.")
    except Exception as e:
        messagebox.showerror("Error", f"An error occurred: {e}")

root = tk.Tk()
root.title("File Renamer")
tk.Label(root, text="Old Filename:").grid(row=0, column=0)
tk.Label(root, text="New Filename:").grid(row=1, column=0)

old_filename_entry = tk.Entry(root)
old_filename_entry.grid(row=0, column=1)

new_filename_entry = tk.Entry(root)
new_filename_entry.grid(row=1, column=1)

rename_button = tk.Button(root, text="Rename File", command=rename_file)
rename_button.grid(row=2, columnspan=2)

root.mainloop()
```

Output







Voice user interface(VUI)

- No Hands – VUI allows me to talk to a system and in some cases this is much more convenient than having to type.
- Natural Communication– VUI allows for more natural and fluid communication, as it can process users' speech and verbal commands, eliminating typing or clicking.
- Accuracy Challenges – Speech recognition can occasionally have difficulty with accents, background noise, and complex commands, sometimes resulting in misinterpretation.

example: Amazon, Alexa, Google Assistant

IMPLEMENTATION

```
_3 > vui1.py > ...
import speech_recognition as sr
import os
def rename_file_from_voice_command(old_name, new_name):
    """Renames a file using the provided old and new names."""
    try:
        old_name += ".txt"
        new_name += ".txt"
        if not os.path.exists(old_name):
            print(f"❌ Error: '{old_name}' not found.")
            return
        os.rename(old_name, new_name)
        print(f"✅ File successfully renamed from '{old_name}' to '{new_name}'")
    except Exception as e:
        print(f"❌ Error: {e}")
def listen_for_filename(prompt):
    """Listens for a single filename input via voice command."""
    recognizer = sr.Recognizer()
    mic = sr.Microphone()
    with mic as source:
        recognizer.adjust_for_ambient_noise(source, duration=3)  # Increase noise adaptation
        print(f"🎤 {prompt}")
        try:
            audio = recognizer.listen(source, timeout=10, phrase_time_limit=5)  # Increased timeout
            command = recognizer.recognize_google(audio, language="en-US")
            print(f"📝 You said: {command}")
            return command.strip().replace(" ", "_")  # Replace spaces with underscores
        except sr.UnknownValueError:
            print("❌ Could not understand. Please try again.")
            return None
        except sr.WaitTimeoutError:
            print("⏳ Timeout: No speech detected. Try speaking louder and clearly.")
            return None
```

Ln 43, Col 87 Spaces: 4 UTF-8 CRLF {} Pyt

```
if __name__ == "__main__":
    print("🔊 Welcome to the Voice-Controlled File Renamer!")
    old_name = None
    while old_name is None:
        old_name = listen_for_filename("Say the name of the file you want to rename (without .txt)")
    new_name = None
    while new_name is None:
        new_name = listen_for_filename("Say the new name for the file (without .txt)")
    rename_file_from_voice_command(old_name, new_name)
```

Output

```
🔊 Welcome to the Voice-Controlled File Renamer!
🎤 Say the name of the file you want to rename (without .txt)
📝 You said: old
🎤 Say the new name for the file (without .txt)
📝 You said: new
✅ File successfully renamed from 'old.txt' to 'new.txt'
PS C:\Ridhan\UID\Lab_3>
```