USER INTERFACE DESIGN EX-3

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

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.

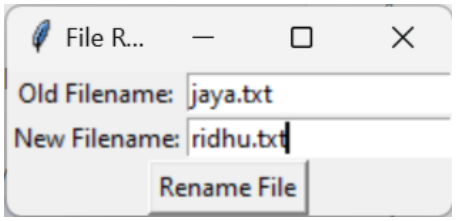
Limited Automation: GUI does not have automation and scripting abilities like the CLI and is thus more tedious for repetitive jobs.

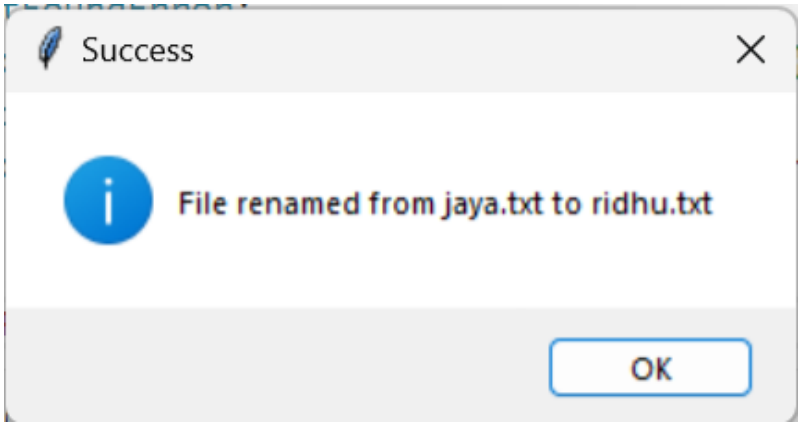
example:Windows,Android,ios

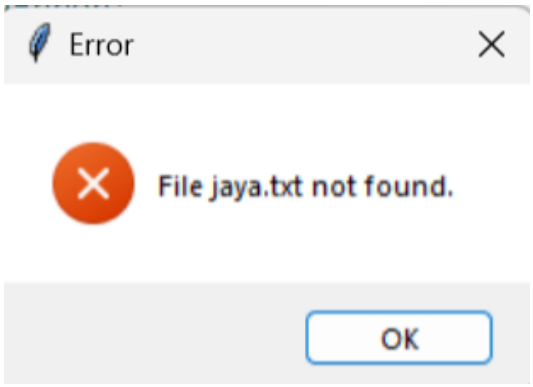
IMPLEMENTATION

```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







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

```python
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
```

```python
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>
```