Mini Project 1: [Typing Speed Test Report]

1. Introduction

1.1 Problem Statement

Typing speed is an important skill for students, professionals, and developers. Slow typing can reduce productivity, while faster typing improves efficiency. This project aims to develop a Python-based GUI application that measures a user's typing speed in words per minute (WPM) and accuracy.

1.2 Objectives

- To create an interactive GUI application for measuring typing speed.
- To display real-time results for WPM and accuracy.
- To encourage users to improve their typing skills through practice.

1.3 Scope of the Project

The application is designed for personal and educational use. It supports random sentence selection, real-time calculation, and a user-friendly interface. It is compatible with any system running Python and Tkinter.

2. Technology Stack Used

2.1 Programming Languages

- Python

2.2 Libraries/Frameworks

- Tkinter (GUI development)
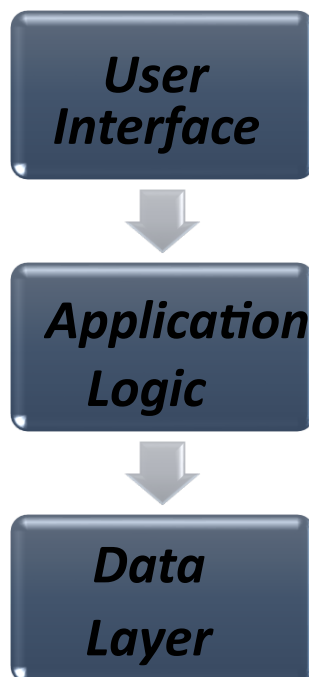- Random (sentence selection)

- *Time (execution time measurement)*

2.3 Tools and Platforms

- *Python 3.x*
- *VS Code / PyCharm*
- *Windows OS*

3. System Architecture

3.1 Architecture Diagram

```
┌──────────────┐
│     User     │
│  Interface   │
└──────────────┘
        │
        ▼
┌──────────────┐
│ Application  │
│    Logic     │
└──────────────┘
        │
        ▼
┌──────────────┐
│     Data     │
│    Layer     │
└──────────────┘
```

3.2 Module Description

4. Dataset Description (if applicable)

4.1 Source of Data

Sentences are predefined and stored in a Python list.

4.2 Data Preprocessing Steps

- *Randomly select one sentence from the dataset.*
- *Remove unnecessary spaces and ensure sentence clarity.*

5. Implementation

5.1 Code Flow Description

- *Start application → Click "Start Test" button.*
- *Display a random sentence for typing.*
- *Start timer when typing begins.*
- *End timer when the user submits input.*
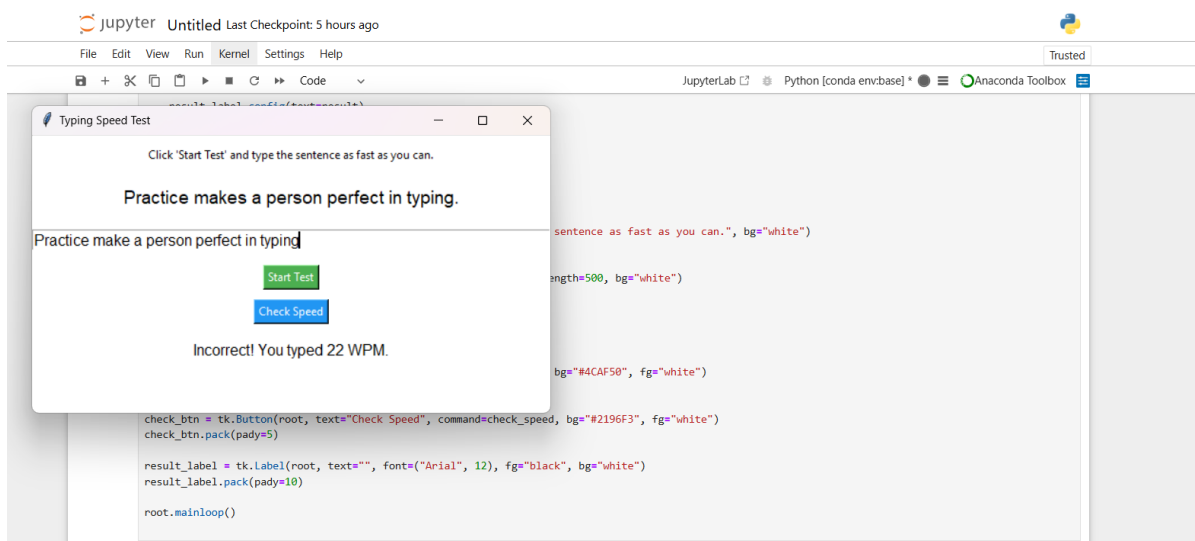- *Calculate WPM and accuracy.*
- *Display results.*

5.2 Screenshots of Execution

```python
import tkinter as tk
import random
import time
sentences = [
    "Typing speed is measured in words per minute.",
    "Python is a simpl programming language.",
    "Practice makes a person perfect in typing.",
    "Tkinter makes GUI development simple and fast.",
    "Artificial Intelligence is shaping the future."
]
start_time = 0
selected_sentence = ""
def start_test():
    global start_time, selected_sentence
    selected_sentence = random.choice(sentences)
    sentence_label.config(text=selected_sentence)
    entry.delete(0, tk.END)
    result_label.config(text="")
    start_time = time.time()
def check_speed():
    end_time = time.time()
    typed_text = entry.get()
    time_taken = end_time - start_time
    if typed_text.strip() == "":
        result_label.config(text="Please type something!")
        return
    word_count = len(typed_text.strip().split())
    wpm = round((word_count / time_taken) * 60)
    if typed_text.strip() == selected_sentence:
        result = f"Correct! Your typing speed is {wpm} WPM."
    else:
        result = f"Incorrect! You typed {wpm} WPM."
    result_label.config(text=result)
root = tk.Tk()
root.title("Typing Speed Test")
root.geometry("600x300")
root.config(bg="white")
instruction = tk.Label(root, text="Click 'Start Test' and type the sentence as fast as you can.", bg="white")
instruction.pack(pady=10)
sentence_label = tk.Label(root, text="", font=("Arial", 14), wraplength=500, bg="white")
sentence_label.pack(pady=10)
entry = tk.Entry(root, font=("Arial", 12), width=70)
entry.pack(pady=10)
start_btn = tk.Button(root, text="Start Test", command=start_test, bg="#4CAF50", fg="white")
start_btn.pack(pady=5)
check_btn = tk.Button(root, text="Check Speed", command=check_speed, bg="#2196F3", fg="white")
check_btn.pack(pady=5)
result_label = tk.Label(root, text="", font=("Arial", 12), fg="black", bg="white")
result_label.pack(pady=10)
root.mainloop()
```

6. Results and Analysis

6.1 Output Samples

Typing Speed Test

Click 'Start Test' and type the sentence as fast as you can.

Practice makes a person perfect in typing.

Practice make a person perfect in typing

Start Test

Check Speed

Incorrect! You typed 22 WPM.

```python
check_btn = tk.Button(root, text="Check Speed", command=check_speed, bg="#2196F3", fg="white")
check_btn.pack(pady=5)

result_label = tk.Label(root, text="", font=("Arial", 12), fg="black", bg="white")
result_label.pack(pady=10)

root.mainloop()
```

6.2 Performance Evaluation

The program accurately calculates typing speed and accuracy. Testing showed consistent results across different input lengths.

7. Challenges Faced and Solutions

- *Challenge: Handling extra spaces and incorrect words.*
- *Solution: Used string stripping and splitting for accurate word count.*
- *Challenge: Measuring real-time speed.*
- *Solution: Used time.time() to capture precise typing duration.*

8. Conclusion

The Typing Speed Test application successfully measures typing speed and accuracy. It is a lightweight, user-friendly tool that can help improve typing performance with regular use.

9. References

https://docs.python.org/3/

https://docs.python.org/3/library/tkinter.html

https://docs.python.org/3/library/random.html

https://docs.python.org/3/library/time.html