**Project Report: Typing Speed Application**

**Project Overview**

The Typing Speed Application is designed to measure a user's typing speed and accuracy through a simple graphical user interface (GUI). Developed using Python and Tkinter, the application generates random passages for users to type and calculates their typing speed in words per minute (WPM) and accuracy percentage based on the typed input.

**Group Members**

* **Adan Fatima (Leader)**
* **Muhammad Ali Shafique**

**Project Timeline**

**Day 1: Project Setup and Basic GUI Design**

**Objective**: Establish the foundation of the project, including setting up the project structure and designing the basic layout of the application.

* **Tasks Completed**:
  + **Project Repository Setup**: Adan Fatima created the project repository and organized the file structure, ensuring a systematic approach to development.
  + **GUI Design**:
    - Adan Fatima designed the initial layout of the GUI using Tkinter. The layout includes labels, entry fields, and buttons necessary for the typing test.
    - Muhammad Ali implemented the main window, labels, and entry fields in the Tkinter interface. He also created the "Start Test" and "Stop Test" buttons, assisting in the testing of the basic layout to ensure correct display and functionality.

**Day 2: Passage Generation and Typing Test Functionality**

**Objective**: Implement core functionalities such as generating a random passage and handling the start and stop of the typing test.

* **Tasks Completed**:
  + **Passage Generation**:
    - Adan Fatima implemented the generate\_passage function, which creates a random passage from a predefined set of words. This passage is then displayed in the GUI.
  + **Typing Test Functionality**:
    - Muhammad Ali implemented the start and stop test functionalities using the start\_test and stop\_test methods. He added event handling for these buttons and managed the timing mechanisms to calculate elapsed time during the test.
    - Both members collaborated to ensure that the generated passage was correctly displayed in the GUI and that the start/stop functionality worked seamlessly.

**Day 3: Calculation of Typing Speed and Accuracy**

**Objective**: Develop the logic to calculate the user’s typing speed and accuracy based on their input.

* **Tasks Completed**:
  + **Typing Speed Calculation**:
    - Adan Fatima implemented the logic for calculating typing speed in words per minute (WPM) based on the elapsed time and the number of correctly typed words.
  + **Typing Accuracy Calculation**:
    - Muhammad Ali developed the functionality to calculate typing accuracy. This involved comparing the user’s input to the original passage and calculating the percentage of correctly typed words.
    - The GUI was updated to display the results, including both typing speed and accuracy, once the test was stopped. Both members tested and debugged the application to ensure accurate calculations.

**Day 4: Final Testing and Refinements**

**Objective**: Conduct comprehensive testing of the application, refine the GUI, and prepare the project documentation.

* **Tasks Completed**:
  + **Comprehensive Testing**:
    - Adan Fatima performed extensive testing, covering a range of scenarios and edge cases. This testing ensured that all features worked as intended and that the application handled errors gracefully.
  + **GUI Refinements**:
    - Muhammad Ali adjusted the GUI to improve usability and aesthetics. He also added comments and documentation within the code to enhance clarity and facilitate future maintenance.
  + **Final Documentation**:
    - Both members collaborated to prepare the final project report, summarizing the development process, challenges faced, and lessons learned.

**Code Overview**

The project’s code is organized into a single Python script, primarily using the Tkinter library for GUI development. Key functions include:

* generate\_passage: Generates a random passage for the user to type.
* start\_test: Initiates the typing test and records the start time.
* stop\_test: Stops the test, calculates typing speed and accuracy, and displays the results.
* create\_widgets: Sets up the GUI components.

**Conclusion**

The Typing Speed Application successfully meets its objectives by providing an interactive and user-friendly way to measure typing speed and accuracy. The collaborative efforts of Adan Fatima and Muhammad Ali Shafique resulted in a well-structured project, with each member contributing significantly to different aspects of the development process. The project is now ready for deployment and further enhancements.