Typing Master (OOP Project in C++ with Raylib)

Overview

This project is a feature-rich application developed using **C++** and **Raylib** that combines object-oriented programming (OOP) principles with an interactive user interface. The project provides a seamless experience with multiple functionalities, including a login and registration system, typing tests, a mini word-cloud game, and detailed statistics tracking. It comprises 5 specification files, 5 implementation files, and a main driver file (`main.cpp`).

Key Features:

1. **Login System**
2. **Main Menu with Multiple Options**
3. **Typing Test with Real-Time Feedback**
4. **Word-Cloud Game with Scoring and Combo Mechanics**
5. **Detailed Statistics Tracking**

Features & Modules

1. Login System (`LoginSystem.h` and `LoginSystem.cpp`)

The **Login System** is designed to provide secure access to users with options for registration and login. Key features include:

- **Username and Password:** Allows users to register or log in using a username and password.
- **Password Visibility Toggle:** A button enables the user to show or hide the entered password (using * for hidden input).
- **Tab and Enter Operations:** Users can navigate between fields using the **Tab** key and confirm actions using the **Enter** key.
- **Input Validation:**
  - Prevents usernames with spaces.
  - Ensures passwords are masked while typing.
  - Checks if a username already exists during registration.
- **Error Handling:** Displays relevant error messages for invalid input or existing usernames.

2. Main Menu (`MainMenu.h` and `MainMenu.cpp`)

After a successful login, users are greeted with a **Welcome Screen** that displays their username and a menu with four options:

1. **Typing Test**
2. **Word-Cloud Game**

3. **Statistics**
4. **Logout**

3. Typing Test (`TypingTest.h` and `TypingTest.cpp`)

The **Typing Test** module challenges users with customizable typing tests to improve their speed and accuracy.

Features:

- **Duration Options:** Users can select from:
  - 30 seconds
  - 1 minute (default)
  - 3 minutes
- **Difficulty Levels:** Users can choose between **Easy**, **Medium**, and **Hard**.
- **Passage Types:**
  - **Random:** Automatically selects passages from text files (`easy.txt`, `medium.txt`, `hard.txt`).
  - **Custom:** Users can input their own passage (up to 1000 characters).
- **Typing Test Interface:**
  - A timer displays the remaining time.
  - Real-time **Words Per Minute (WPM)** calculation, updated every second.
  - Visual keyboard feedback:
    - Highlights keys pressed.
    - Marks characters as **green** for correct inputs and **red** for incorrect inputs.
  - Typing ends when the timer runs out.
- **Post-Test Results:**
  - Displays detailed statistics, including:
    - **WPM**
    - **Accuracy**
    - **Correct Characters**
    - **Total Characters**
  - Users can:
    - Restart the test.
    - Exit to the main menu.
- **Data Persistence:** Test scores and statistics are stored in the `typing_history`.

4. Word-Cloud Game (`Games.h` and `Games.cpp`)

The **Word-Cloud Game** challenges users to type falling words to pop clouds and earn points.

Features:

- **Dynamic Gameplay:**
  - Words from `words.txt` fall from the top of the screen in clouds.
  - Typing the word correctly pops the cloud and earns points.
- **Score System:**
  - **Running Score:** Updates after each completed word.

- o **Combo Multipliers:** Increases (e.g., 1x, 2x, 3x) for consecutive successful entries.
- **Lives System:** Users have three lives, which decrease for missed words.
- **Pause Functionality:** Users can pause the game with a button.
- **End Screen:**
  - o Displays:
    - Player's name
    - Final Score
    - **Personal Best**
    - **Global Best** (highest score among all users)
  - o Options to:
    - Play Again
    - Exit to the Main Menu

5. Statistics Module (`stats.h` and `stats.cpp`)

The **Statistics Module** provides users with a detailed history of their performance across all tests.

Features:

- **Overall Summary:**
  - o Total number of typing tests completed.
  - o **Average WPM.**
  - o **Best WPM.**
  - o **Average Accuracy.**
- **Test History:**
  - o A slider allows users to browse their past tests.
  - o Each test displays:
    - Date and time of the test.
    - WPM.
    - Accuracy.
    - Test duration.
    - Difficulty level.

6. Logout Functionality

The **Logout** option securely logs the user out and redirects them to the **Login Screen**

Tools & Technologies

- **Programming Language:** C++
- **Graphics Library:** Raylib for rendering the user interface and game mechanics.
- **File Handling:** Used for storing and retrieving user data and test history.
- **OOP Principles:** The project is designed using modular and reusable code with proper encapsulation.