

## **Defining the problem**

Mr. X approached me regarding a significant challenge with his students' poor typing skills, which were negatively impacting their classwork.<sup>1</sup> As digital assignments play a vital role in education today. The ability to type quickly and accurately has become an essential skill in life. However, Mr. X's attempts to teach typing through conventional methods were met with disinterest from the students, and there was little to no improvement in their typing abilities. This lack of engagement stems from the traditional teaching methods not aligning with students' preferences for interactive and competitive activities. The problem is further emphasized by the fact that the students are naturally competitive, yet this trait was not taken advantage of in Mr X's attempts to teach typing.

The students' poor typing skills hold back their academic performance as well as their ability to participate effectively in a technology-driven environment. Mr. X was looking for an approach that could take advantage of his students' competitiveness and make learning to type an engaging experience. Thus, there is a need for a solution which combines fun, interactive elements with skill development. This is to ensure students stay motivated while improving their typing speed and accuracy. A solution that makes typing practice enjoyable and competitive is essential to address this problem effectively.

Word count: 212

## **Rationale for the proposed product**

The proposed solution is a web-based typing game designed to combine skill development with fun and competition. The rationale behind making this a website, rather than a desktop or mobile application, stems from the need for accessibility and ease of use. A website ensures that students can access the game from any device with an internet connection, whether they are using a computer in class or a tablet at home. This eliminates the need for students to install any software, reducing potential technical barriers and ensuring a seamless experience. A web-based platform also allows for easier updates and maintenance, ensuring the product can be improved and adjusted over time without requiring users to download new versions.

To develop this site, I chose Next.js as the framework, utilizing React and Tailwind CSS. Next.js offers server-side rendering and static site generation, allowing for enhanced performance and quick load times. React's component based architecture allows for modular development, making it easier to create interactive features. Tailwind CSS will streamline styling, ensuring a clean and responsive design across the website. Compared to other frameworks, Next.js provides a balance between speed, scalability, and

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<sup>1</sup> See Appendix 1

maintainability that makes it an ideal choice for this project. This balance ensures that the site will be engaging, visually appealing, and accessible to many students.

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### **Criteria for Success**

- There will be a login page to log-in to a teacher or student account.
- If a user does not have an account, they may press the “Register” button.
- When pressing the “Register” button, the user will be prompted to enter a username and password.
- Inputted Usernames must be between 4 and 16 alphanumeric characters.
- Inputted password must be between 8 and 32 alphanumeric or special characters, including at least 1 number and 1 special character.
- If username criteria are not met, an accompanying error message will be displayed. Fewer than 4 characters: “Must contain at least 4 characters”, Greater than 16 characters: “Must contain at most 16 characters”, contains non-alphanumeric characters: “Must contain only alphanumeric characters”.
- If password criteria are not met, an accompanying error message will be displayed. Fewer than 8 characters: “Must contain at least 8 characters”, Greater than 32 characters: “Must contain at most 32 characters”, does not include at least 1 number: “Must contain at least 1 number”, does not include at least 1 special character: “Must contain at least 1 special character”
- The user will have the option to select whether they will be creating a teacher or student account.
- If the user already has an account, they will be prompted to log-in with their username and password.
- If the inputted username is not registered, an error message will be displayed reading “Invalid username”.
- If the username is registered, but the accompanying password is incorrect, an error message will be displayed reading “Incorrect password.”
- Users with a teacher account will be able to create classes.
- Classes will each be assigned a unique code as an identifier.
- Users with a student account will have a “Join Class” button available
- Upon pressing the “Join Class” button, students will be able to input a class code to join a class.
- If the entered code does not exist, an error message will be displayed reading “Invalid code”

- Teachers have access to an assign button, which will allow them to assign tasks to the students enrolled in the class.
  - Teachers can select which type of task to assign.
  - Tasks options will include length of passage(s), time restraints, and error percentage thresholds.
  - The students will have these tasks added to their to-do list.
  - Upon completion of a task, it will be checked off the students' to-do list.
  - If a student does not complete a task by the assigned deadline, it will be marked incomplete.
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- Students will have a "Practice" button available to them. Upon pressing the "Practice" button, students will be brought to a page with a selection of typing practice
  - The students will be able to select from numerous activities, such as Speed Test, Sprint, and Endless.
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- Upon selecting an activity, students will be redirected to the activity screen.
  - The student will have access to a "Start" button for the purpose of beginning the activity.
  - Once the chosen activity is completed, the student's statistics will be displayed to them.
  - These statistics include typing speed (Words Per Minute | WPM), accuracy percentage, and total amount of time taken to complete the activity.
  - Students will have access to a "Return" button, which will return them to the activity screen.
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- On the home screen, Students will have access to a button "Statistics", which will redirect them to the statistics page.
  - On the statistics page, student's statistics such as average typing speed (WPM), and average accuracy will be displayed.
  - The results of the student's previous practices will also be displayed.