**ABSTRACT**

**Title: The Typing Matrix**

**Description of the project:** The Typing Speed Test and Accuracy Analyzer is an engaging application designed to evaluate and enhance a user’s typing skills. The program presents users with randomly selected sentences, challenging them to type them as accurately and quickly as possible. Once the user completes typing, the program measures their typing speed in Words Per Minute (WPM) and evaluates their accuracy by comparing their input to the original sentence. This application serves as an excellent tool for individuals looking to improve their typing efficiency, be it for professional, academic, or personal use.

Under the hood, the project leverages fundamental concepts of C programming, including dynamic memory allocation, string manipulation, and timer-based performance evaluation. The application dynamically calculates word count, measures the time taken by the user, and determines the percentage of correctly typed characters. With features like randomized sentence selection and a clean, user-friendly interface, the project provides an engaging and educational experience. This tool can also serve as a stepping stone for beginners in programming to understand real-world applications of basic algorithms and data handling techniques.

**Data Structures used:**

The project utilizes fundamental data structures to manage and process the data efficiently. Here’s an overview of the key data structures employed:

1. Strings:  
   Strings are used to store the sentences displayed to the user and their corresponding inputs. They allow for easy manipulation, such as comparison for accuracy evaluation, word counting, and handling user input dynamically. The use of strings makes it convenient to work with text data throughout the program.
2. Arrays:  
   An array is used to store a predefined list of sentences from which a random sentence is selected for the typing test. Arrays offer a simple and efficient way to organize and access multiple sentences, ensuring a seamless experience when fetching sentences for the user.
3. Counters:  
   Basic counters are employed for counting words in the sentences and keeping track of the number of correct characters typed. These counters play a crucial role in calculating Words Per Minute (WPM) and accuracy percentages.
4. Timer (Time Data Structure):  
   The program leverages time-related functions from the time.h library to measure the duration taken by the user to type a sentence. This enables the calculation of typing speed and provides insights into the user’s performance.

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