TYPING PERFORMANCE ANALYZER

(A Java-based typing speed tracker)

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Certificate

This is to certify that the project report titled *"Typing Performance Analyzer"* submitted by
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of the Department of Computer Science and Engineering, LBS College of Engineering, Kasaragod, is a bonafide record of the project work carried out under our supervision.

The project has been completed in partial fulfillment of the requirements for the award of the degree of **Bachelor of Technology in Computer Science and Engineering**.

Supervisor: Prof. Nayana Murali
Guide: Prof. Prathima
Head of Department: Dr. Manoj

Acknowledgment

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We also thank **Dr. Manoj**, Head of the Department of Computer Science and Engineering, for providing us with the necessary facilities and encouragement.

Finally, we thank all our teachers, friends, and family members who have supported us during the course of this project.

Abstract

The **Typing Performance Analyzer** is a Java-based desktop application designed to help users monitor and enhance their typing skills. This system offers an interactive platform for users to practice typing and analyze their performance through key metrics such as Words Per Minute (WPM), accuracy, and error count.

The main objective is to enable users to improve their typing proficiency through repeated practice and visual feedback. The system provides detailed performance statistics and history tracking over time. Built using **Java Swing** for the user interface and **Maven** for project management, the application demonstrates efficient use of object-oriented principles and modular design.

The project emphasizes both usability and performance, providing a valuable tool for individuals aiming to boost their typing efficiency.

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Introduction

Typing skills are an essential part of digital communication in today's world. From students to professionals, typing speed and accuracy play a key role in productivity. However, many individuals lack tools to assess and improve these skills effectively.

The Typing Performance Analyzer was developed to address this gap by providing a real-time, user-friendly application to measure, analyze, and improve typing performance.

Problem Definition

Existing typing tools are often web-based, lack personalization, and provide limited analytics. Users cannot track their progress or store detailed statistics over time.

There is a need for a lightweight, offline, Java-based system that allows users to practice typing and view comprehensive performance analytics.

Objectives

- To design a Java application that measures typing speed and accuracy.

- To provide real-time feedback during typing tests.
- To store and visualize user performance history.
- To support customizable typing tests of various difficulty levels.
- To create an intuitive and responsive GUI for easy use.

Scope of the Project

The system is intended for:

- Individuals who wish to improve typing skills.
- Educational institutions to help students practice typing.
- Trainers who want to track multiple students' progress.

Exclusions:
The current version does not include online leaderboards or advanced AI text recommendations

Literature Review / Existing System

Existing online typing platforms like *10FastFingers* or *TypingTest.com* provide good speed tracking but require internet access and offer limited personalization.

Offline tools exist but lack detailed analytics or progress tracking.
Our system overcomes these limitations by providing:

- A standalone Java desktop app
- Offline accessibility
- Detailed performance analysis
- Simple and user-friendly design

Proposed System

The proposed system is a desktop application developed using Java Swing.

It allows users to log in, select typing exercises, and receive instant feedback on speed and accuracy.

Key Features:

- Real-time speed and error tracking
- Session summary with WPM and accuracy
- Graphical representation of performance (future enhancement)

Advantages:

- Works offline
- Lightweight and fast
- Easy to use and extend

System Design

Architecture Diagram:

- **User → GUI (Java Swing) → Logic Layer (Typing Analysis) → Data Layer (History/Stats)**

Modules:

- User Module: Handles login and user profiles.
- Typing Test Module: Displays text, captures user input, and calculates metrics.
- Analytics Module: Shows WPM and accuracy after each test.
- Storage Module (future): Maintains history of tests.

Data Flow (Simplified):

- User Input → Timer Start → Compare with Sample Text → Compute Accuracy → Display Results

Implementation Details

Frontend: Java Swing
Backend: Java Core (OOP principles)
Build Tool: Maven
IDE: IntelliJ IDEA / VS Code
Language: Java 17

Hardware Requirements:

- Intel i3 Processor or higher
- 4 GB RAM
- 100 MB disk space

Software Requirements:

- Windows / Linux / macOS
- JDK 17 or above
- Maven installed

Sample Screenshots Placeholder:

- Main Menu Screen
- Typing Test Screen
- Result Summary Screen

Testing

Testing Types Used:

- Unit Testing: Verified individual modules (typing logic, timer).
- Integration Testing: Ensured modules interact correctly.
- System Testing: Checked functionality and UI.
- User Testing: Verified usability and performance.

All tests confirmed the application works as expected with accurate WPM and error results.

Cost Estimation / Budget

Item	Cost (INR)	Description
Hardware (Laptops)	0	Existing college systems
Software	0	Open-source (Java, IntelliJ)
Miscellaneous	50	Printing, documentation
Total Estimated Cost	₹50	Minimal student project

Project Schedule

Phase	Duration	Tasks
Planning & Research	1 week	Problem definition, objectives
Design	1 week	Architecture, UI mockups
Development	2 weeks	Coding modules
Testing	1 week	Validation & debugging
Documentation	1 week	Report & presentation

Outcome / Results

- Developed a functional Java-based typing analyzer prototype.
- Achieved accurate measurement of WPM and accuracy.
- Designed a clean and responsive Swing-based GUI.
- Demonstrated the application successfully during testing.

Conclusion and Future Scope

The Typing Performance Analyzer successfully meets its objectives of measuring typing performance and providing feedback. It is an effective tool for students and professionals to enhance typing skills.

Future Enhancements:

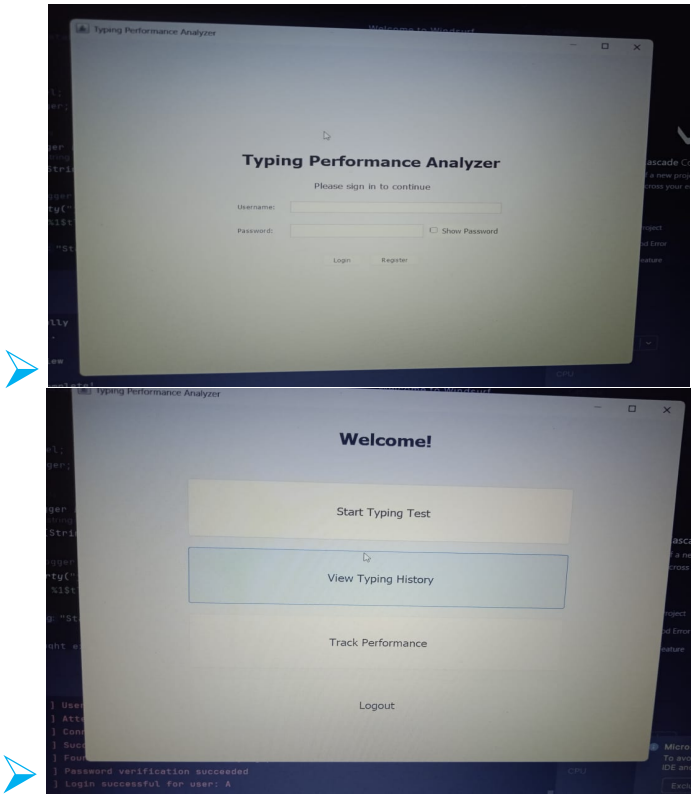
- User login and profile tracking
- Historical data storage
- Graph-based analytics

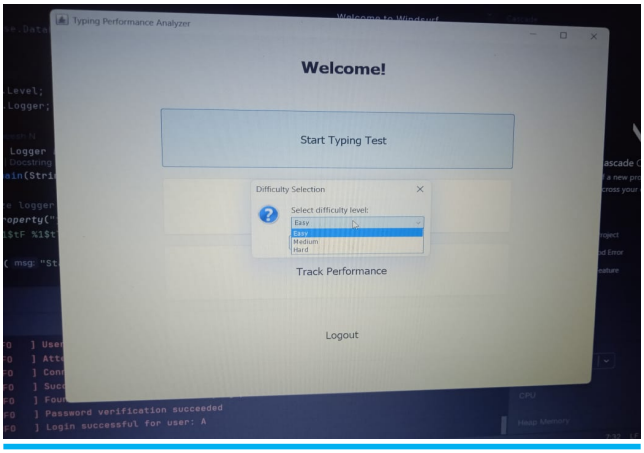
- Online leaderboard integration

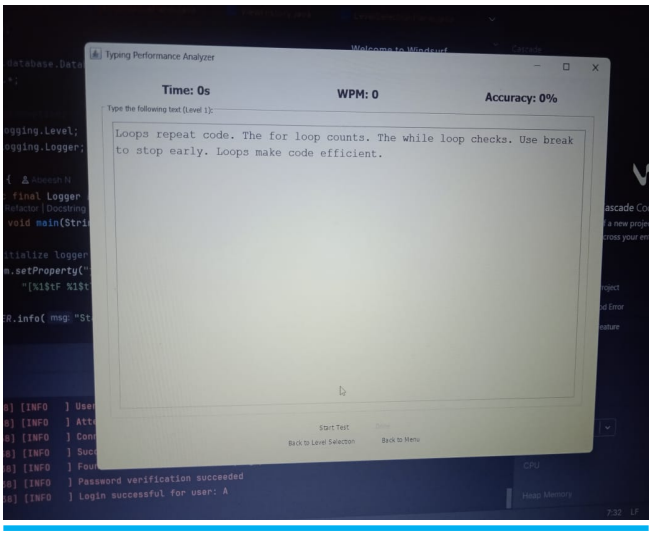
References

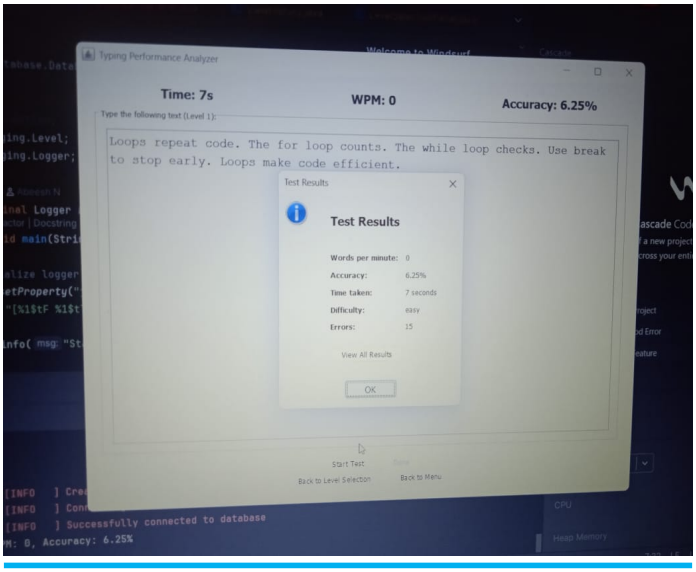
- Java Swing Documentation – Oracle
- Maven Official Guide – Apache
- TutorialsPoint – Java GUI Programming
- GeeksforGeeks – Typing Test Implementation Concepts

Appendices




Typing Performance Analyzer
Welcome!
Start Typing Test
Difficulty Selection
Select difficulty level:
Easy
Medium
Hard
Track Performance
Logout
Password verification succeeded
Login successful for user: A


Typing Performance Analyzer
Time: 0s
WPM: 0
Accuracy: 0%
Type the following text (Level 1):
Loops repeat code. The for loop counts. The while loop checks. Use break to stop early. Loops make code efficient.
Start Test
Back to Level Selection
Back to Menu
Password verification succeeded
Login successful for user: A


Typing Performance Analyzer
Time: 7s
WPM: 0
Accuracy: 6.25%
Type the following text (Level 1):
Loops repeat code. The for loop counts. The while loop checks. Use break to stop early. Loops make code efficient.
Test Results
Test Results
Words per minute: 0
Accuracy: 6.25%
Time taken: 7 seconds
Difficulty: easy
Errors: 15
View All Results
OK
Start Test
Back to Level Selection
Back to Menu
Successfully connected to database

Project Interface Description

The Typing Performance Analyzer project interface consists of several user-friendly screens designed to evaluate and track a user's typing speed and accuracy. The key interface components are:

1. Login Screen:

The first window welcomes the user and provides fields for Username and Password with buttons for Login and Register.

This ensures that each user's progress and performance history are stored individually.

2. Main Menu / Welcome Page:

After logging in, the user is directed to a main menu with three options:

- Start Typing Test – begins a new typing speed test.
- View Typing History – displays the user’s past performance data.
- Track Performance – shows detailed performance statistics.

There’s also a Logout button to safely exit the session.

3. Typing Test Window:

Displays a random paragraph or text for the user to type.

Includes a Timer, WPM (Words Per Minute), and Accuracy indicators at the top.

As the user types, these values are updated in real time to show their ongoing performance.

4. Result Window:

After completing the test, a summary window appears showing:

- Typing Speed (WPM)
- Accuracy Percentage
- Time Taken
- Number of Errors

The results are also stored in the database for later review.