SmartQuiz Hub - Web-Based Quiz Creator & Auto-Grading System

1. Title of the Project

SmartQuiz Hub - Web-Based Quiz Creator & Auto-Grading System

2. Introduction / Background / Problem Statement

SmartQuiz Hub is a web-based automated assessment platform developed to address the persistent inefficiencies of traditional educational evaluation systems. Conventional assessment methods suffer from significant drawbacks, including time-consuming manual grading, delayed or absent feedback, limited performance analytics, inconsistent delivery mechanisms, restricted accessibility, and high operational costs. To overcome these limitations, SmartQuiz Hub provides an integrated, scalable, and cost-effective solution that automates quiz creation, grading, and performance tracking while delivering real-time feedback to learners. The platform ensures cross-device compatibility, robust data security, and user privacy, enabling educators to enhance instructional effectiveness and students to engage more meaningfully with assessment outcomes. This system represents a targeted technological intervention aimed at modernizing assessment practices in resource-constrained educational environments.

3. Related Works / Existing Projects

Existing platforms such as Google Forms, Moodle, Kahoot!, Quizizz, and Canvas offer varying levels of quiz functionality. While Google Forms is simple and free, it lacks advanced analytics. Moodle and Canvas are feature-rich but require technical expertise and incur licensing costs. Kahoot! and Quizizz provide engaging, student-paced experiences but limit question types and customization

Common limitations across these systems include high costs, complex setup, restricted assessment design, weak analytics, and poor accessibility on low-bandwidth or mobile devices.

SmartQuiz Hub overcomes these issues by offering a zero-cost, easy-to-use platform with full responsiveness, diverse question support, automated grading, instant feedback, and detailed performance analytics—designed for accessibility and scalability in resource-constrained educational environments.

4. Idea Description

The idea behind SmartQuiz Hub is to create a centralized platform where administrators can manage quizzes and questions, and students can take quizzes and view instant results. The system supports multiple question types, automated grading, detailed reports, and a clean, responsive interface for all users.

5. Methodology

The Agile methodology was followed, with iterative weekly sprints:

Week 1: Setup & Planning

- Environment setup (XAMPP, Database)

- UI design and ERD modeling

Week 2: Development

- User authentication

- Quiz creation and question management

Week 3: Integration

- Quiz-taking module

- Automated grading and results display

Week 4: Testing & Deployment

- Functional and UI testing

- Optimization and documentation

6.System Design

6.1 System Architecture

Frontend (HTML, CSS, JS, Bootstrap)

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Backend (PHP Application Layer)

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Database (MySQL)

6.2 Database Design

Database Name: smartquiz_hub

Tables:

- users
- categories
- quizzes
- questions
- question_options
- quiz_attempts

6.3 Use Case Diagram

Actors:

- Student: Register, Login, Take Quiz, View Results
- Admin: Manage Quizzes, Manage Users, View Analytics

7.Implementation

7.1 Technologies Used

Layer	Technology
Frontend	HTML5, CSS3, JavaScript, Bootstrap 5
Backend	PHP 8.0+

Layer	Technology
Database	MySQL 8.0
Server	Apache (XAMPP)
Security	PHP Sessions, Password Hashing

7.2 Core Features

- User authentication
- Quiz creation & management
- Question bank
- Auto-grading system
- Responsive interface
- Analytics dashboard

8. Workflow of the Project

The project follows a typical client-server model using a three-tier architecture:

1. Presentation Layer – Frontend (HTML, CSS, JavaScript)
2. Application Layer – Backend Logic (PHP)
3. Data Layer – Database (MySQL)

Below is the Database-Level ER Diagram representing relationships among tables like users, categories, quizzes, questions, and quiz attempts.
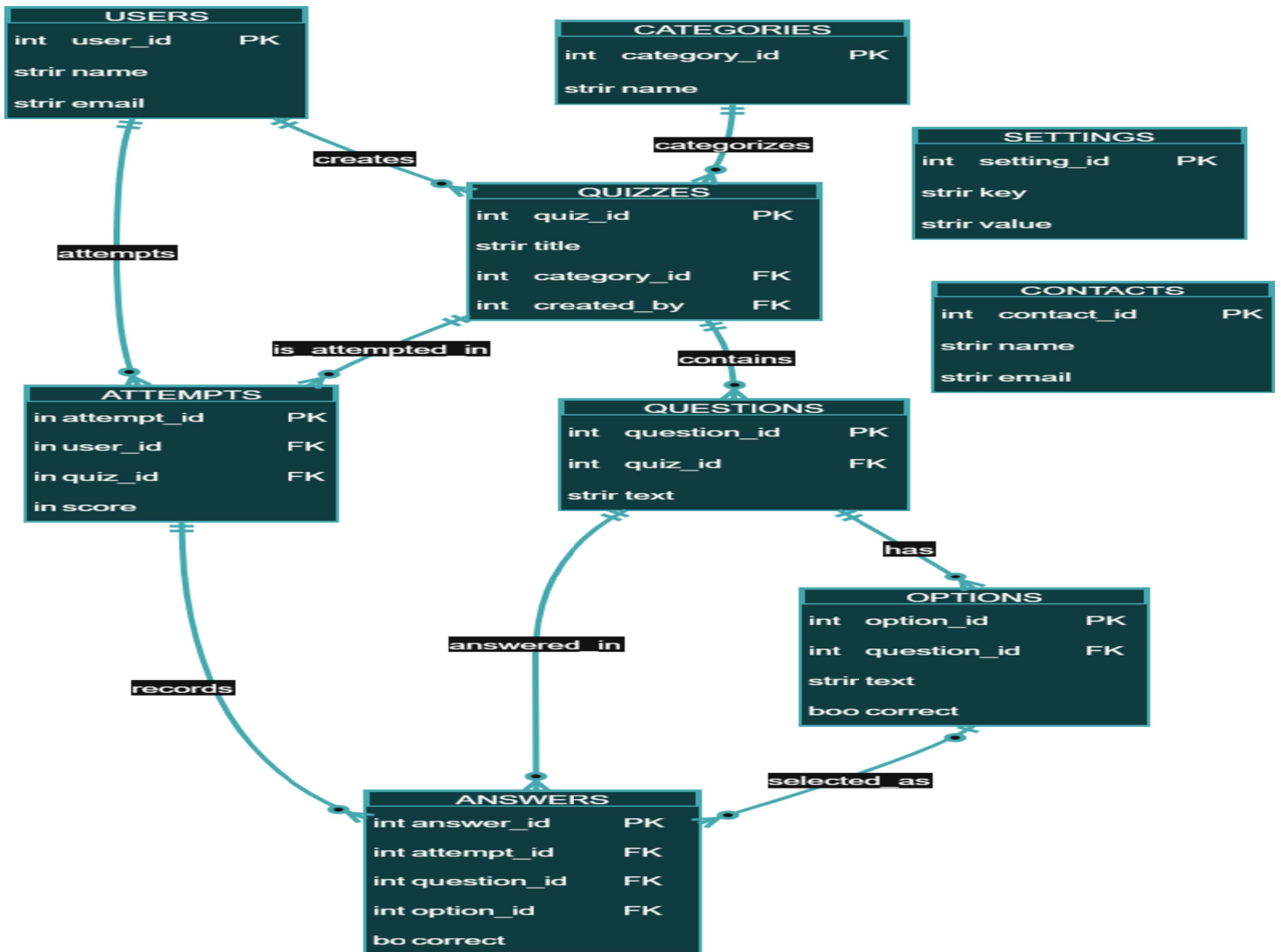
9. Target Population

This system is primarily targeted toward educational institutions, teachers, and students. It can also be adapted for corporate training and online assessments.

10. Social and Economic Impact

SmartQuiz Hub promotes digital learning and reduces the dependency on paper-based exams, contributing to environmental sustainability. Economically, it reduces administrative costs and can be scaled for mass testing at minimal expense.

11. Project Screenshots
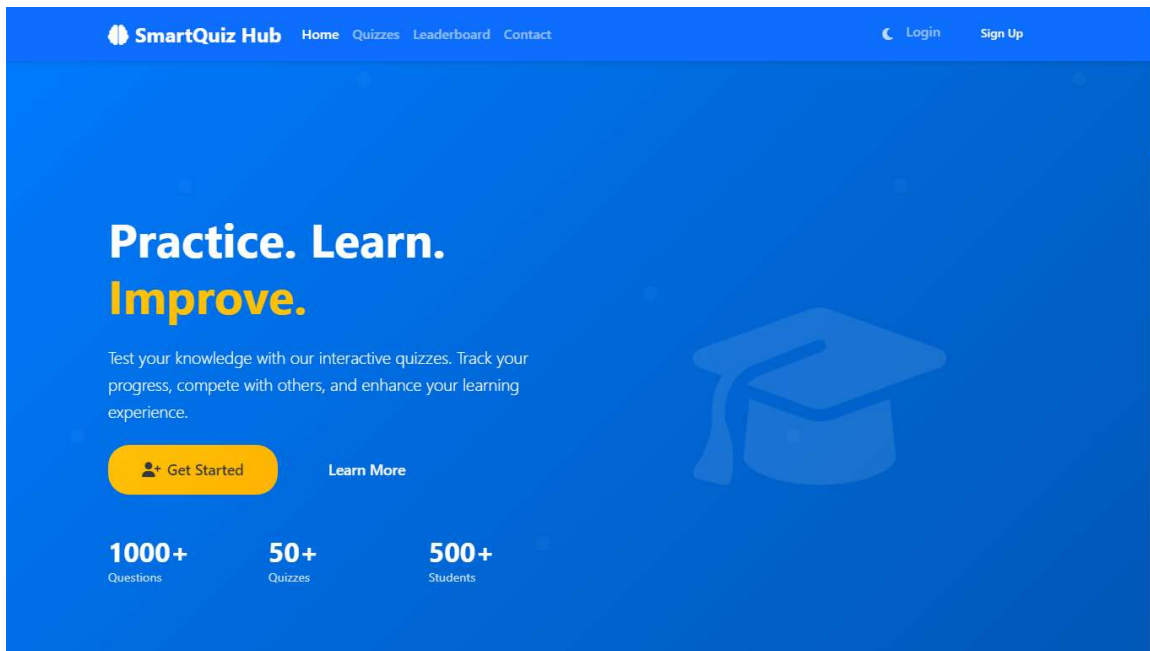
Figure: Index or Homepage
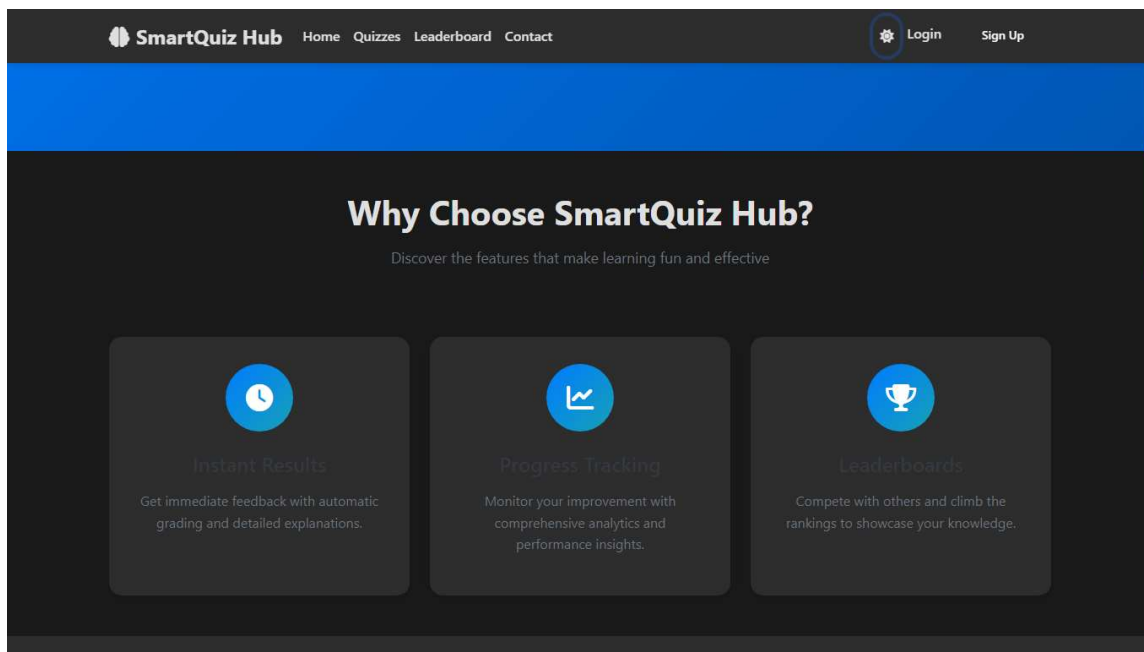
Figure: Dark Mode
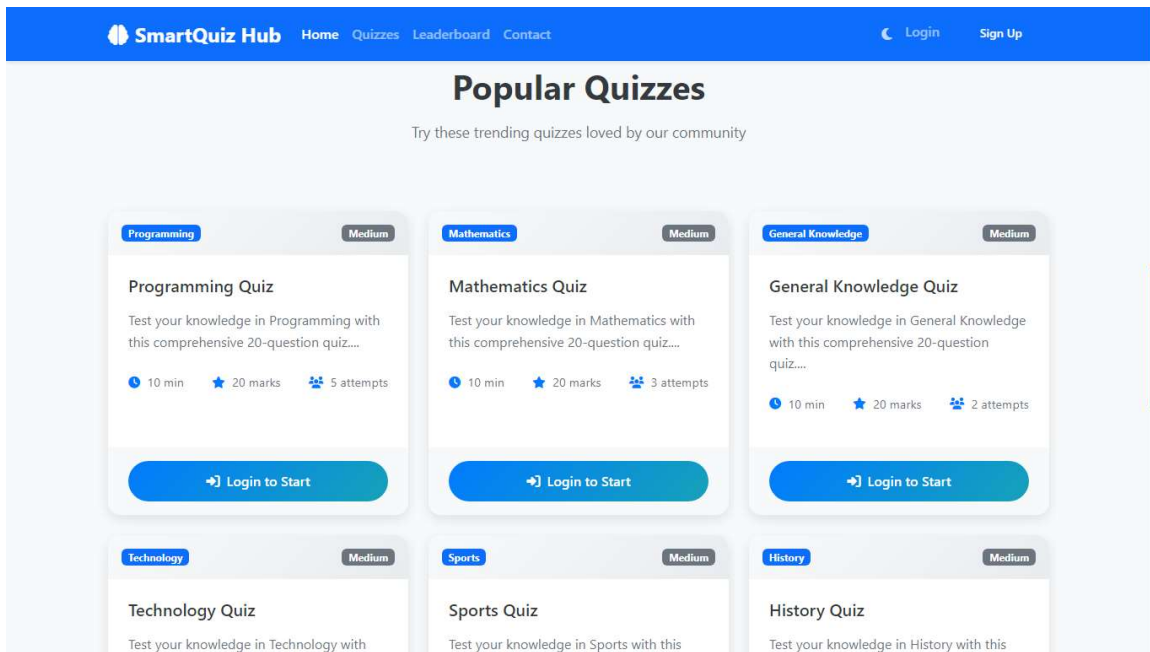
Figure: Popular Quizzes
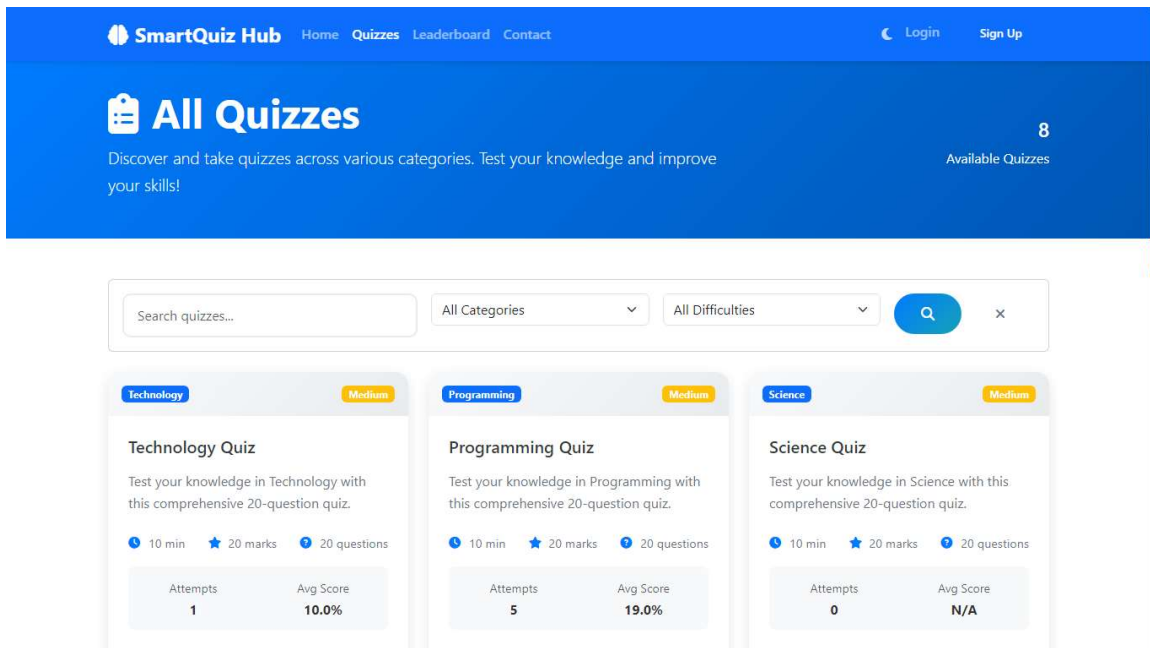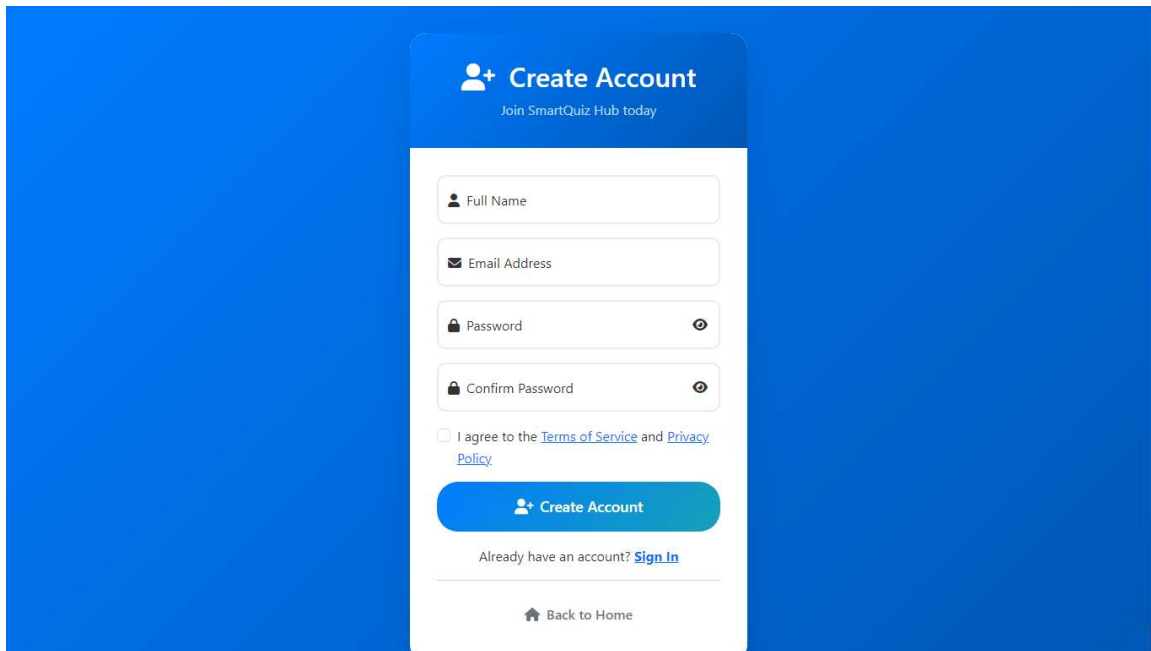
Figure: Quizzes Categories

Figure: Sign Up page
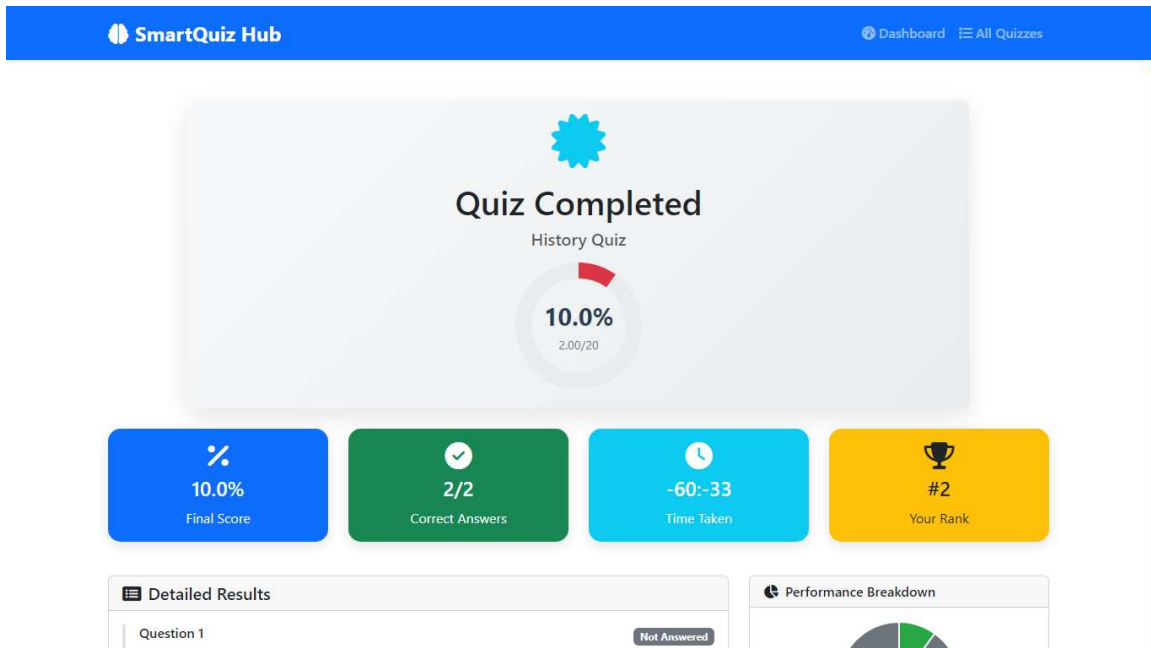

Figure: Multiple Choice Question
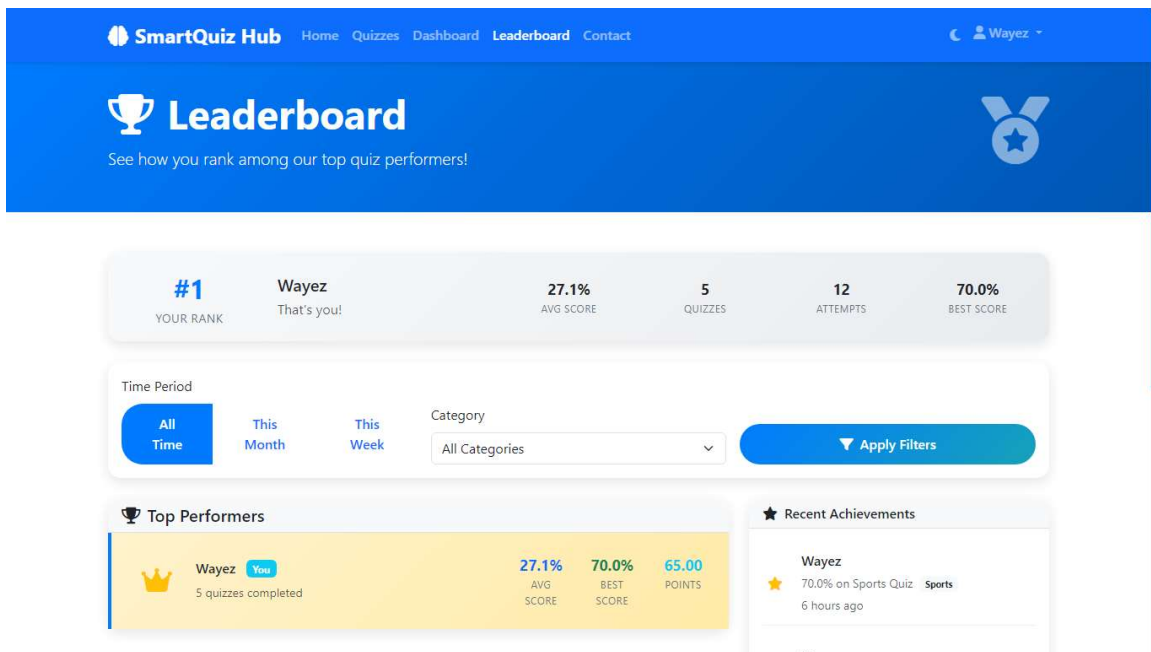
Figure: Result Window

Figure: Leaderboard

12.Source Code

Includes all essential backend (PHP) and frontend files, such as:

- config.php
- auth.php
- create_quiz.php
- grade_quiz.php
- styles.css
- script.js

13. Conclusion

SmartQuiz Hub is a fully functional, web-based quiz management system developed using PHP, MySQL, and frontend technologies, delivered within a four-week timeline at zero cost. It enables secure role-based access, automated grading for objective questions, responsive design, and real-time analytics—successfully addressing core educational needs for small to medium institutions.

Limitations include the absence of a mobile app, support only for multiple-choice and true/false questions, no offline mode, limited LMS integration, and basic analytics without AI. Manual grading is required for essays, and multi-language support is not yet implemented.

Future enhancements are planned in three phases: short-term (3–6 months) includes CSV import, email alerts, and improved reporting; medium-term (6–12 months) targets a mobile app, LMS

integration, and multi-language support; long-term goals (1+ years) involve AI-driven recommendations, virtual proctoring, blockchain-based certification, and gamification.

In conclusion, SmartQuiz Hub proves that an effective, affordable, and scalable digital assessment tool can be built with open-source technologies. Its modular design ensures easy expansion, making it a practical solution for institutions seeking to modernize evaluation processes without high investment.

13. References

1. PHP Documentation - https://www.php.net/
2. MySQL Reference Manual - https://dev.mysql.com/doc/
3. Bootstrap 5 - https://getbootstrap.com/
4. MDN Web Docs (JavaScript) - https://developer.mozilla.org/en-US/docs/Web/JavaScript