ITM SKILLS UNIVERSITY

School of Future Tech

Case Study Report

on

Interactive Quiz Master

By

GROUP 1

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1. Introduction to the Case Study

With the increasing use of digital platforms in education, Computer Based Tests (CBT) have become an essential tool for conducting assessments efficiently and fairly. Traditional paper-based examinations are time-consuming, error-prone, and difficult to manage at scale. To overcome these challenges, web-based quiz systems provide automated evaluation, instant feedback, and better user experience.

This mini project, **Interactive Quiz Master**, is a web-based CBT application developed using **HTML, CSS, and Vanilla JavaScript**. The system allows quiz creation, quiz participation with a timer, automatic scoring, and result analysis, making it suitable for educational institutions and training environments.

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2. Problem Statement / Case Background (Abstract)

The major problem addressed in this project is the lack of a simple, lightweight, and interactive quiz system that can operate entirely on the client side without server dependency.

Most online quiz platforms require backend setup, databases, and authentication, which may not be feasible for small institutions or academic demonstrations. There is a need for a **user-friendly CBT system** that supports quiz creation, time-bound assessments, automatic result generation, and attempt history tracking.

The **Interactive Quiz Master** solves this problem by providing a fully functional quiz platform that runs in a browser using local storage for data persistence.

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3. Problem Statement / Case Study Design

The system is designed with a **modular, view-based structure** to separate functionalities clearly. The application consists of the following main modules:

- **Quiz Creator Module**

  Allows users to create quizzes by adding questions, multiple-choice options, and selecting correct answers.

- **Dashboard Module**

  Displays all available quizzes and provides access to start assessments.

- **Quiz Setup Module**

  Enables users to configure the time limit before starting the quiz.

- **Quiz Attempt Module**

  Presents questions one by one with a countdown timer and answer selection.

- **Result & Review Module**

  Automatically calculates scores, shows percentage, displays correct/incorrect answers, and stores previous attempts.

The design focuses on simplicity, usability, and smooth navigation between different views.

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4. Methods & Algorithms Technology Applied

Technologies Used

- **HTML5** – Structure and layout of the application
- **CSS3** – Styling, animations, and responsive UI
- **JavaScript (Vanilla JS)** – Application logic, state management, and interactivity
- **Local Storage API** – Data persistence for quizzes and results

Algorithms & Logic Applied

- **Array-based Data Storage** for quizzes, questions, and user answers
- **Timer Algorithm** using setInterval() for countdown functionality
- **Score Calculation Algorithm** by comparing user-selected answers with correct options
- **State Management Logic** to switch between views dynamically
- **Input Validation Algorithms** to ensure no empty questions or options

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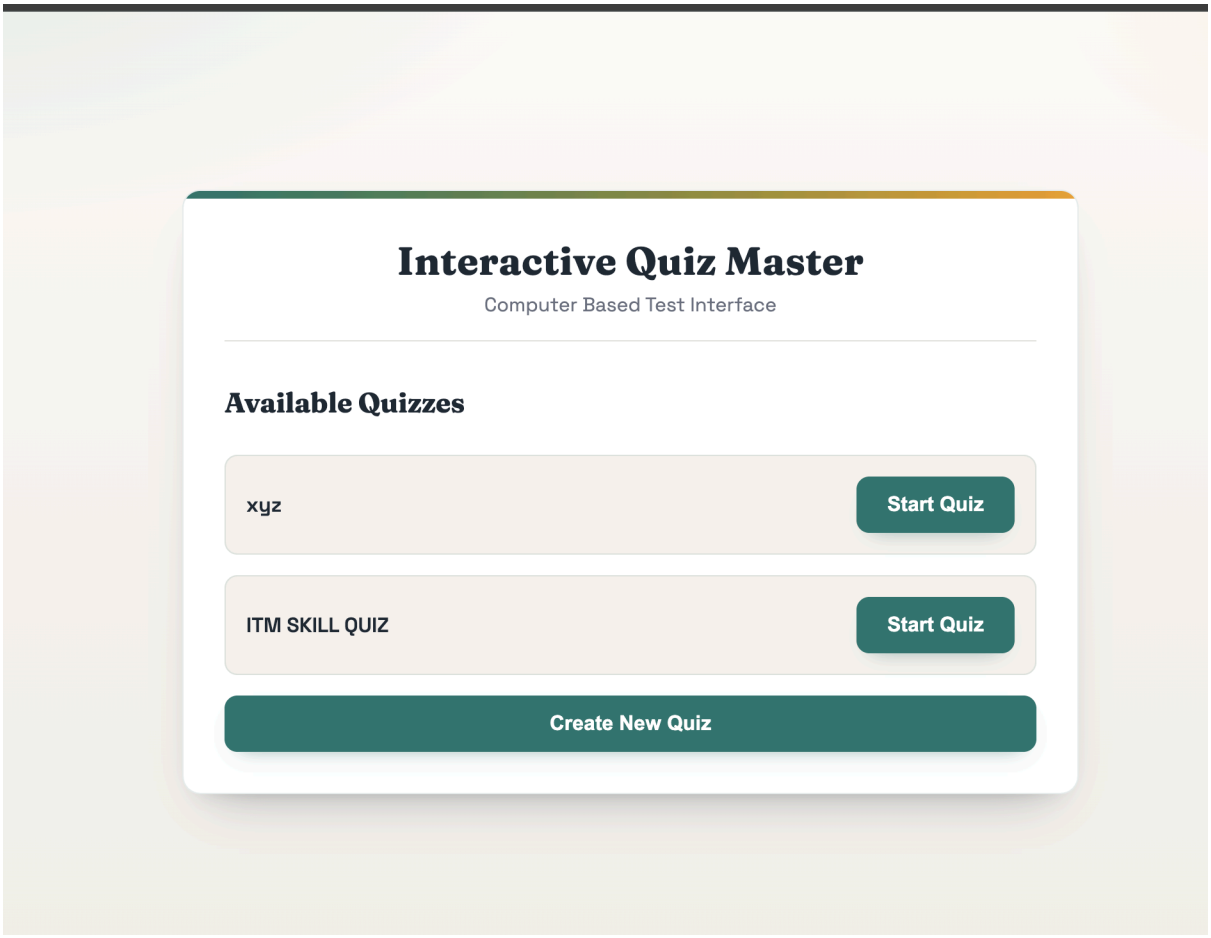
5. Problem Statement / Case Study Implementation Details and Snapshots

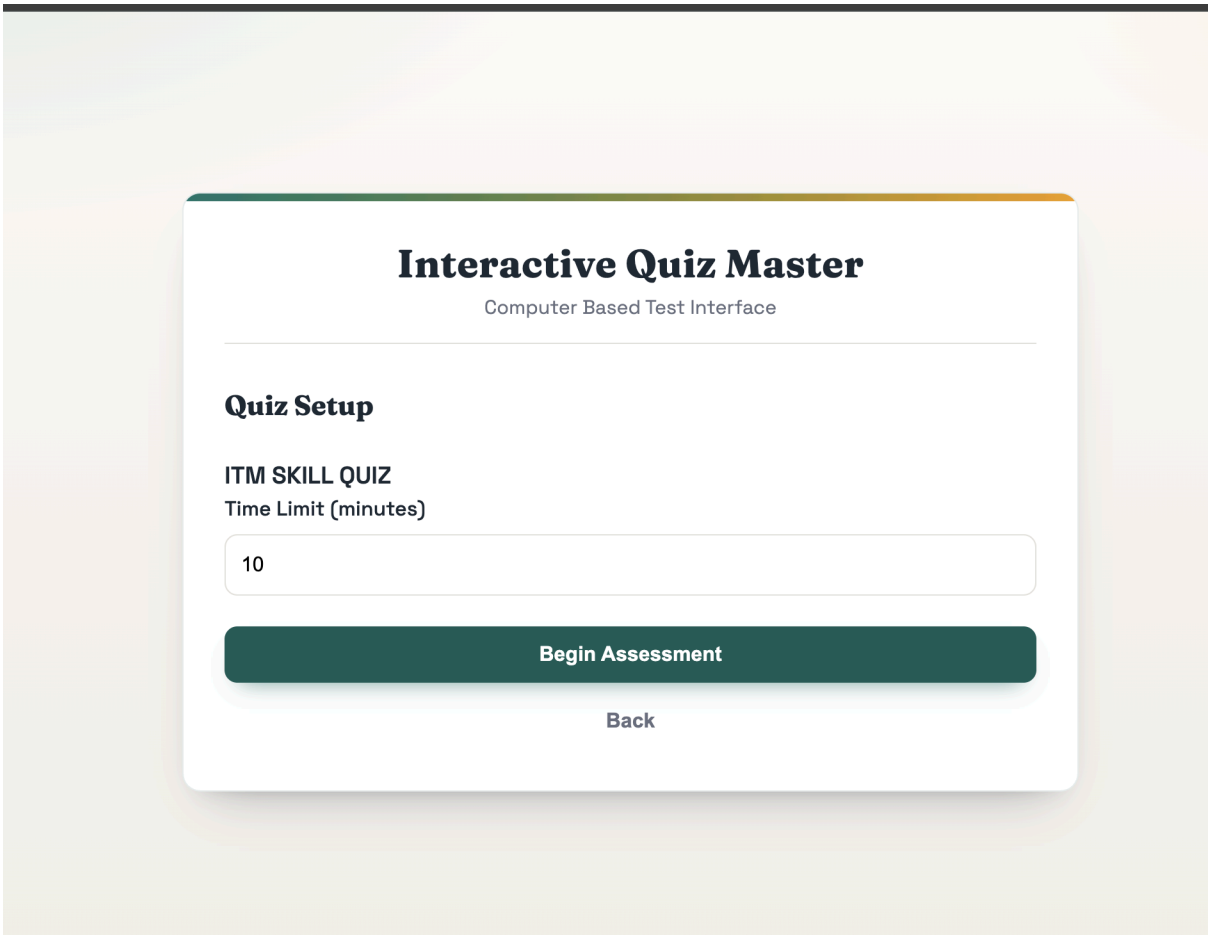
The implementation follows a **single-page application (SPA)** approach.

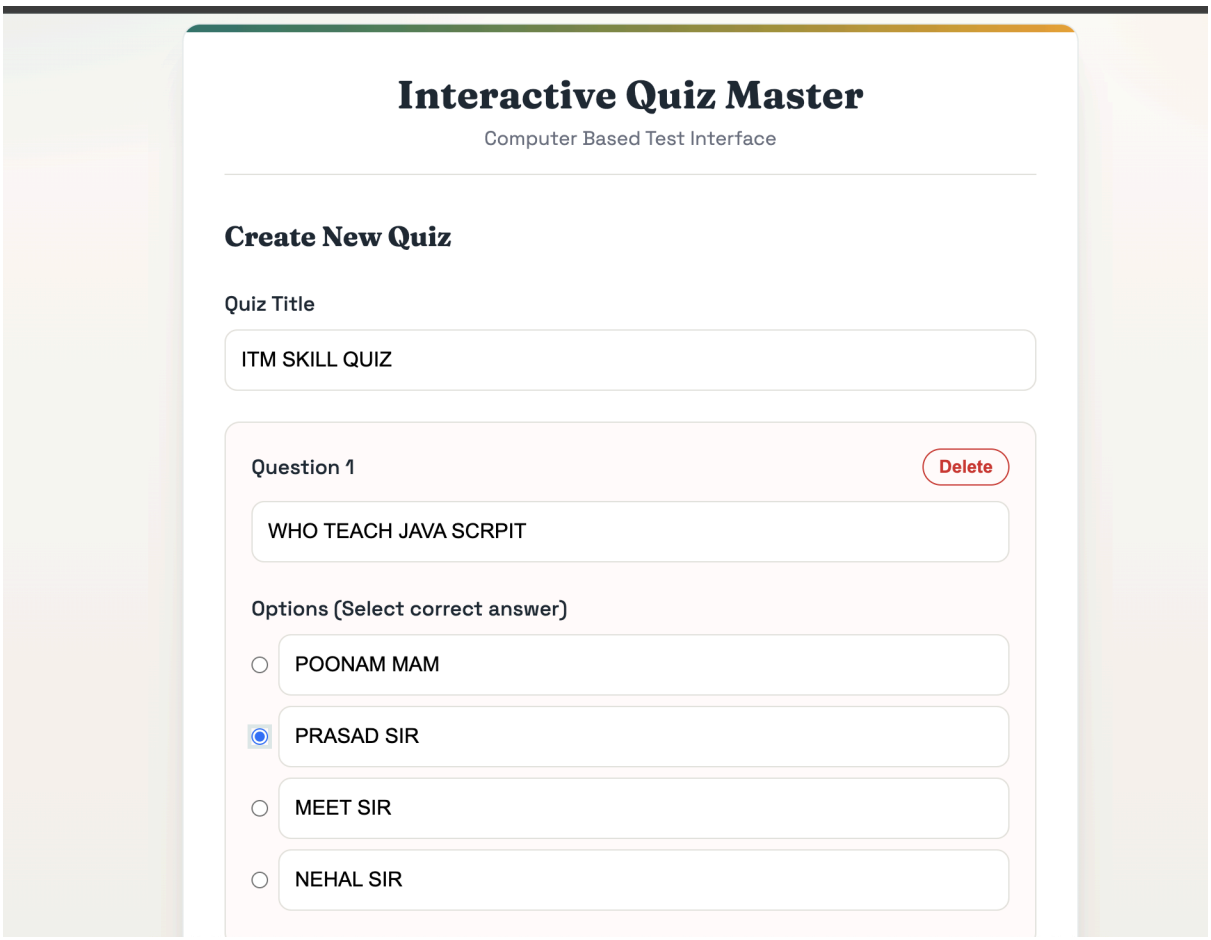
- Quizzes are stored as JavaScript objects inside arrays.
- Each quiz contains:
    - Quiz ID
    - Quiz Title
    - Questions (with options and correct answer index)
- During quiz execution:
    - User answers are stored in an array.
    - Timer continuously updates the remaining time.
- On submission:
    - The system evaluates each answer.
    - Results are displayed instantly.
    - Attempt history is saved in local storage.

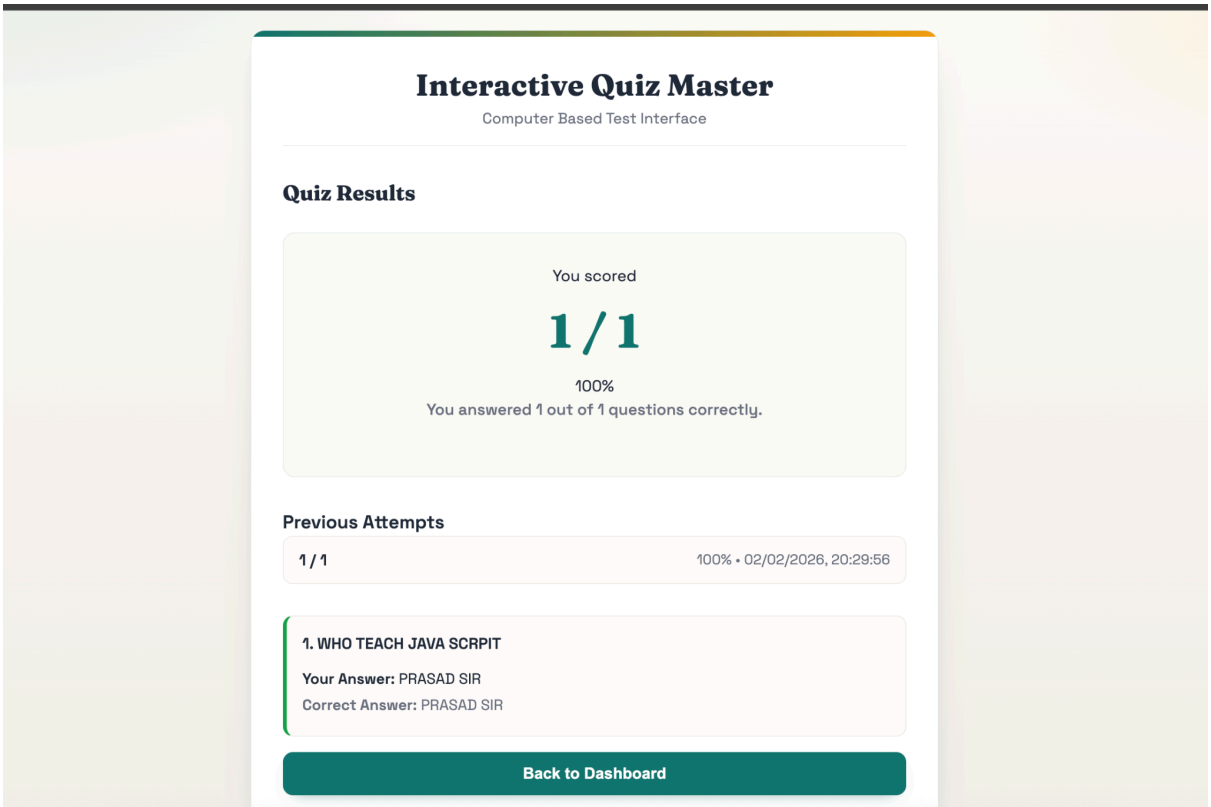
The UI uses smooth animations, color indicators for correct/wrong answers, and responsive layouts to improve user experience.

(Snapshots include: Quiz Creation Screen, Quiz Dashboard, Timer-Based Quiz Screen, Result & Review Screen.)


Interactive Quiz Master
Computer Based Test Interface
Available Quizzes
xyz
Start Quiz
ITM SKILL QUIZ
Start Quiz
Create New Quiz


Interactive Quiz Master
Computer Based Test Interface
Quiz Setup
ITM SKILL QUIZ
Time Limit (minutes)
10
Begin Assessment
Back


Interactive Quiz Master
Computer Based Test Interface
Create New Quiz
Quiz Title
ITM SKILL QUIZ
Question 1
Delete
WHO TEACH JAVA SCRPIT
Options (Select correct answer)
POONAM MAM
PRASAD SIR
MEET SIR
NEHAL SIR


Interactive Quiz Master
Computer Based Test Interface
Quiz Results
You scored
1 / 1
100%
You answered 1 out of 1 questions correctly.
Previous Attempts
1 / 1
100% • 02/02/2026, 20:29:56
1. WHO TEACH JAVA SCRPIT
Your Answer: PRASAD SIR
Correct Answer: PRASAD SIR
Back to Dashboard

6. Problem Statement / Case Study Results and Conclusion

Results

- Successfully implemented a fully functional CBT system.
- Quiz creation and participation work without page reloads.
- Automatic scoring and result review reduce manual effort.
- Attempt history tracking improves assessment analysis.
- The system performs efficiently on modern web browsers.

Conclusion

The **Interactive Quiz Master** demonstrates how a robust CBT application can be developed using basic web technologies without relying on backend infrastructure. This project fulfills the objectives of automation, accuracy, and usability in online assessments. It is suitable for academic demonstrations, internal tests, and small-scale educational use.

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7. References

1. MDN Web Docs – HTML, CSS, JavaScript Documentation
2. W3Schools – Web Development Tutorials
3. JavaScript Local Storage API – Mozilla Developer Network
4. Online resources on Computer Based Testing systems