COLLEGE CODE : 9623

COLLEGE NAME : Amrita College of Engineering and Technology

DEPARTMENT : Computer Science and Engineering

STUDENT NM-ID :2526D227B55A46A95504A5BA2B8B3583

ROLL NO : 962323104004

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Completed the project named as

Phase 5: PROJECT DEMONSTRATION AND DOCUMENTATION
NAME : Interactive Quiz App

SUBMITTED BY,

NAME : DEVATHARSHAN.M
MOBILE NO : 6374827044

Phase 5 – Project Submission Report

1. Project Overview

The Interactive Quiz App is a dynamic web-based platform designed to make knowledge assessment engaging, efficient, and user-friendly. The primary objective of this application is to allow users to participate in quizzes across multiple categories, obtain instant feedback, and monitor their progress over time. The system is designed with scalability and usability in mind, providing both users and administrators with an interactive interface. The frontend of the project has been developed using React.js with Tailwind CSS, ensuring a responsive and intuitive user experience. The backend is powered by Node.js and Express.js, while MongoDB serves as the primary database for storing user details, quiz questions, and results. Hosting and deployment have been managed through platforms such as Vercel and Render. The Interactive Quiz App effectively bridges the gap between learning and evaluation by incorporating gamified elements that enhance user engagement.

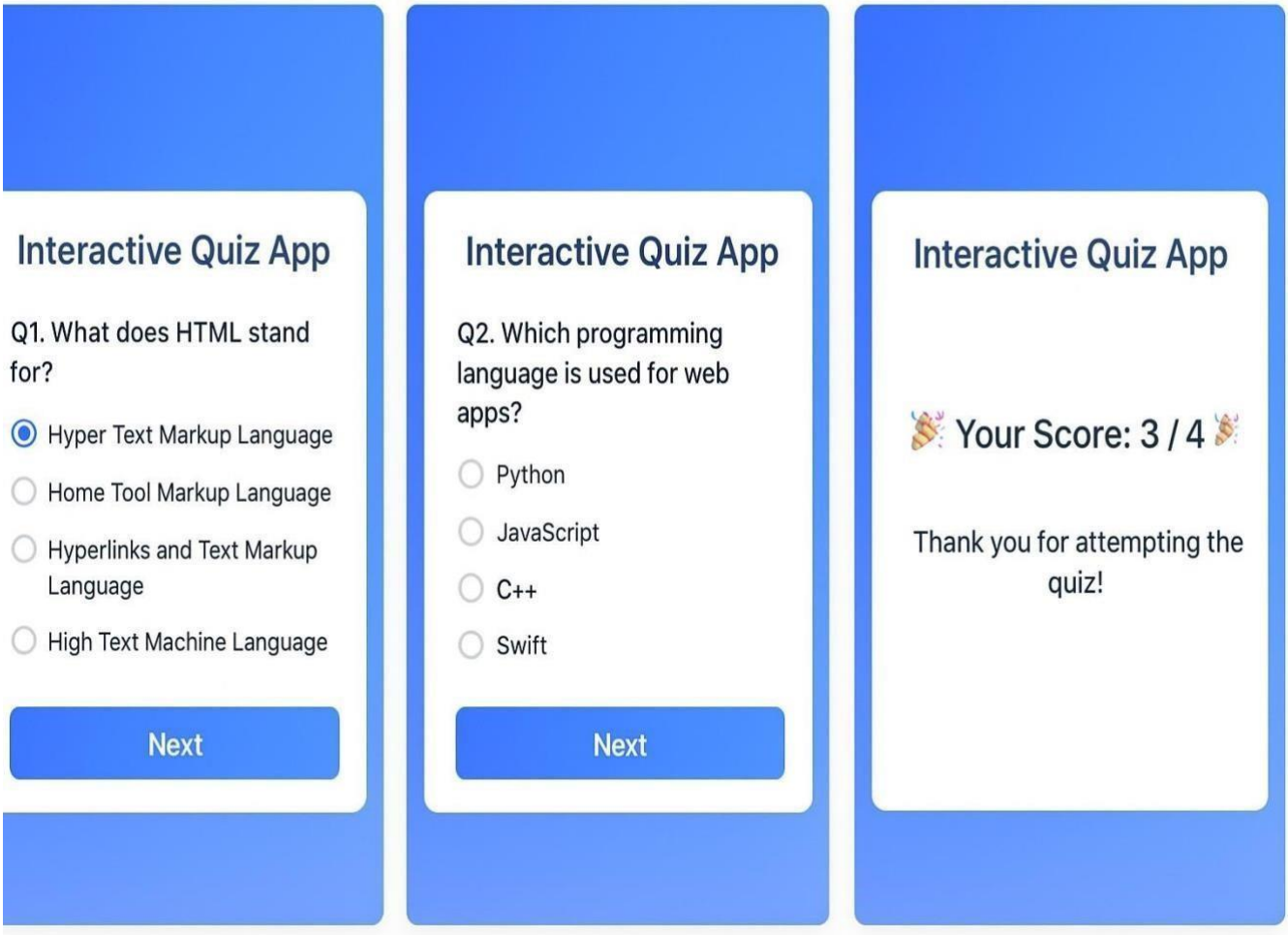
2. Project Report

The project was initiated with a clear objective: to design and implement a quiz-based learning application that offers an adaptive, real-time user experience. The development followed a systematic approach beginning with requirement gathering, system design, and architecture planning, leading to implementation and final testing. Key phases included: - Requirement Analysis: Identification of user needs and project goals. - Solution Design: Selection of appropriate technology stack and database schema. -

Implementation: Development of frontend and backend components with integrated APIs. - Testing: Verification of features, user interface, and system performance. The final outcome is a fully functional web application where users can register, log in, attempt quizzes, view their scores, and review correct answers. Administrators can manage quiz content, view performance metrics, and ensure smooth operation.

3. Screenshots

The following screenshot demonstrates the interface and output of the Interactive Quiz App, including question view, active quiz, and the final score page.



4. Challenges and Solutions

During the development process, several challenges were encountered: 1. **Challenge:** Ensuring real-time synchronization between the frontend and backend components. **Solution:** Implemented RESTful API endpoints and efficient state management using

React hooks and Axios for data handling. 2. **Challenge:** Maintaining performance and responsiveness across devices. **Solution:** Utilized Tailwind CSS and optimized React rendering with reusable components. 3. **Challenge:** Managing quiz data consistency and security. **Solution:** Applied MongoDB schema validation and JWT-based authentication for secure access control. These solutions enhanced the robustness, usability, and scalability of the Interactive Quiz App.

5. GitHub and Vercel Links

GitHub Repository: https://github.com/jaideva2007-arch/Intractive-quiz-app/tree/main

Vercel Deployment Link: https://interactive-quiz-app-3t9w.vercel.app

Conclusion: The Interactive Quiz App has successfully demonstrated the integration of modern web technologies to create an engaging, interactive learning experience. The system fulfills its objective of simplifying quiz creation, participation, and result management while maintaining efficiency and user satisfaction.