

# MERN Quiz App - HR Interview Project Explanation

## ***Brief Introduction***

I developed a Quiz Application using the MERN stack as a personal project to improve my full-stack development skills and demonstrate my ability to build a complete web application from scratch.

## ***Project Overview***

The application allows users to:

- Take quizzes with multiple-choice questions.
- Select answers and track progress.
- View their final score.
- Save results in a database for analysis.

## ***Technology Stack***

- MongoDB: Stores questions, answers, and user results.
- Express.js: Handles the backend API routes.
- React.js: Builds the interactive frontend UI.
- Node.js: Runs the server and connects all parts together.

## ***Key Features***

- Fetches quiz questions dynamically from the database.
- Tracks user answers and calculates the score in real time.
- Stores user results in MongoDB.
- Handles errors gracefully with meaningful feedback.
- Uses .env for configuration to keep it secure.

## ***Challenges Faced***

- Managing quiz state efficiently in React (score, timer, current question).
- Handling asynchronous API requests and database operations.
- Designing scalable backend routes.

## ***Future Enhancements***

- User authentication (login/signup).
- Admin panel for managing quizzes.
- Leaderboard for competition.
- Caching (Redis) for faster quiz loading.

## ***What I Learned***

- How to design a full-stack project from scratch.
- Implementing REST APIs with Express.
- Managing state and side effects in React.
- Securely handling database connections and environment variables.