Titles

A report submitted in partial fulfillment of the requirement for the award of the degree
Of

Bachelor of Technology in Computer Science & Engineering
in
Faculty of Engineering

Submitted by

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DECLARATION

We, **MD AMIT HASAN ROBI** bearing Roll No. **ADTU/0/2023-27/BTCS/210**, **MD SAMIUR RAHMAN TANIM** bearing Roll No. **ADTU/0/2023-27/BTCS/212** hereby declare that the thesis entitled **"Online Quiz App"** is an original work carried out in the Department of Computer Technology, Assam down town University, Guwahati with exception of guidance and suggestions received from our supervisor, **Dr. Prasenjit Kr. Das, Assistant Professor, Department of Computer Technology, Assam down town University, Guwahati**. The data and the findings discussed in the thesis are the outcome of our research work. This report is being submitted to Assam down town University for the degree of **Bachelor of Technology**.

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ACKNOWLEDGMENT

We would like to extend our heartfelt appreciation to everyone who contributed to the successful completion of this project. Our sincere thanks go to our project team members for their dedication and collaboration throughout the project. Each member played a significant role in shaping the outcome.

Special thanks to our supervisor, **Dr. Prasenjit Kr. Das**, Assistant Professor, Department of Computer Technology, Assam down town University, Guwahati, for his valuable guidance and continuous support which enriched our work.

Lastly, we want to thank our friends and family for their patience and encouragement during this project. Their belief helped us to stay motivated and to persevere through difficult times.

ABSTRACT

The project titled **“Online Quiz App”** is developed to provide an efficient and interactive platform for conducting quizzes digitally. It allows users to participate in quizzes and evaluate their performance in real-time. The system is designed with simplicity, scalability, and usability in mind, making it suitable for both educational institutions and individual trainers.

The application is built using **PHP** for the server-side logic, **CSS** and **Bootstrap** for the styling and responsiveness, **JavaScript** for interactive client-side behavior, and **MySQL** for backend database management. Together, these technologies enable a seamless user experience, efficient data handling, and secure quiz management.

The project offers essential features such as user login, quiz selection, timed assessments, score calculation, and result display. It ensures data integrity and security throughout the process. This project not only demonstrates a practical application of full-stack development skills but also emphasizes the importance of digital transformation in education through web-based assessment systems.

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1. INTRODUCTION

1.1 Overview of the project

The Online Quiz App is a web-based platform developed to conduct quizzes digitally in an interactive and efficient manner. It allows users to register, take quizzes, and view results instantly. Administrators can create and manage quiz questions through a secured backend system. The project is developed using **PHP**, **JavaScript**, **CSS**, **Bootstrap**, and **MySQL**, ensuring a responsive interface and secure data handling. The system supports features like time-based quizzes, randomized questions, automatic scoring, and real-time result display. This project demonstrates the practical use of full-stack web technologies in building an educational tool that simplifies assessments and enhances user experience.

1.2 Motivation

The impetus behind this project originates from the growing need for flexible and accessible digital assessment platforms in the educational sector. With institutions increasingly shifting toward online learning and evaluation methods, the necessity for a reliable, scalable, and interactive quiz system has become more critical than ever. This project aims to address these challenges by developing an **Online Quiz App** that leverages modern web technologies to facilitate secure, efficient, and user-friendly quiz administration. Driven by the opportunity to explore innovative solutions for digital education, this project seeks to enhance the assessment process, reduce manual effort, and provide real-time feedback for improved learning outcomes. Motivated by the potential to support educators and learners with a comprehensive digital tool, this project aspires to contribute meaningfully to the advancement of tech-driven education while promoting accessibility, accuracy, and ease of use in academic evaluations.

1.3 Scope and Objective

The scope of this project involves developing an **Online Quiz App** to efficiently manage quiz creation, user participation, scoring, and result generation. It uses modern web

technologies such as **PHP, CSS, JavaScript, Bootstrap**, and **MySQL** for data storage and dynamic content rendering. The system focuses on providing a user-friendly interface, secure login, time-based quizzes, and automated result processing. The objective is to create a fully functional, responsive, and secure platform that simplifies digital assessments, enhances user experience, and ensures accuracy and reliability in performance evaluation.

1.4 Existing system

The existing systems for conducting quizzes often rely on manual methods or basic software with limited functionality. These traditional approaches face challenges such as lack of scalability, minimal automation, and poor user experience. Manual grading, limited question randomization, and absence of real-time result tracking reduce overall efficiency.

Additionally, many existing quiz systems lack responsive design, making them unsuitable for various devices, and offer minimal security features, which may compromise user data. These limitations emphasize the need for a modern, secure, and automated solution that enhances the digital assessment experience for both users and administrators.

1.5 Problem Definition

This project addresses the inefficiencies and limitations of traditional quiz systems, such as manual question handling, lack of automation, poor scalability, and limited user engagement. These issues often result in errors, time delays, and unsatisfactory user experiences.

Existing systems struggle with outdated interfaces, limited functionality, and weak data security, making them unreliable for modern educational needs. This project aims to develop a secure, scalable, and user-friendly **Online Quiz App** that enhances performance, simplifies quiz management, and provides a seamless experience for both users and administrators.

1.6 Proposed System

The proposed system for this project focuses on developing a scalable, secure, and user-friendly **Online Quiz App**. Using technologies like **PHP, CSS, JavaScript, and Bootstrap** for the front-end and **MySQL** for the back-end, the system will automate quiz creation, user management, and result processing.

It will include features such as user authentication, randomized questions, timed quizzes, and instant result display. The application will ensure efficient data handling, responsiveness across devices, and protection of user data. This system is designed to overcome the limitations of traditional quiz platforms by offering enhanced functionality, performance, and usability.

2. PROJECT ANALYSIS

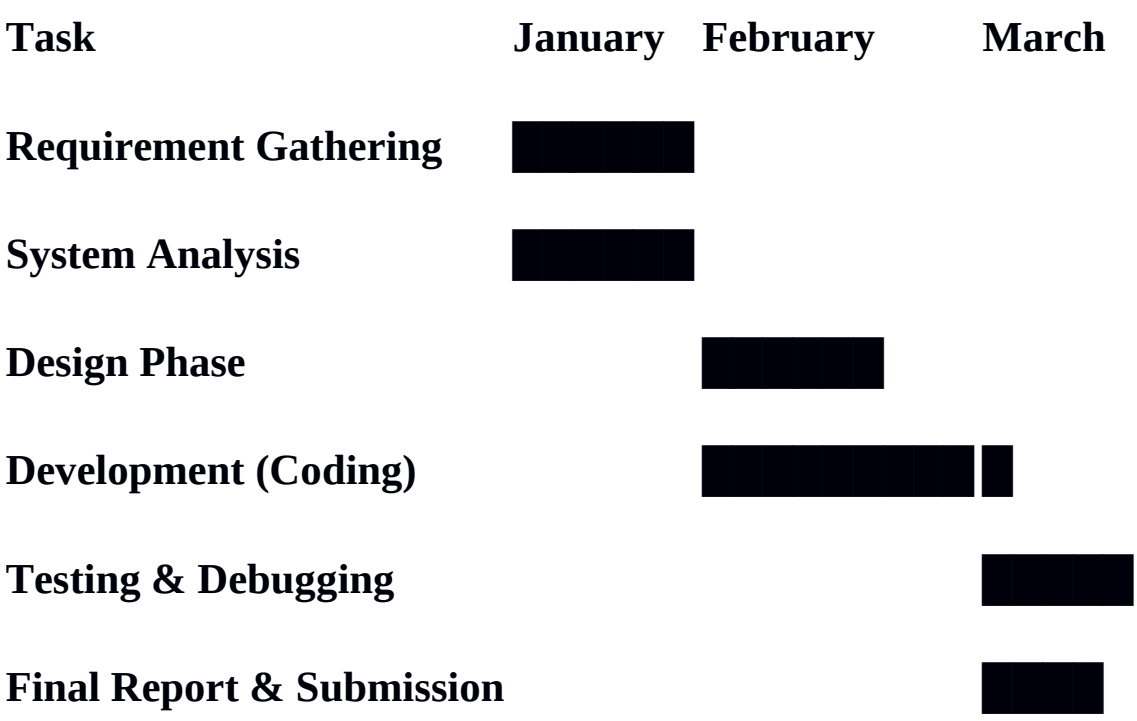
2.1 Project Requirement Analysis

The project comprises the development of an **Online Quiz App**, requiring a thorough analysis of both functional and non-functional requirements. This phase includes gathering inputs from potential users and educators through discussions and observations to determine the key features of the system, such as user registration, quiz creation, question randomization, scoring, and result display.

Functional requirements are identified, prioritized, and documented to guide the system's design and development. Non-functional requirements like performance, scalability, data security, and ease of use are also defined to ensure the application meets user expectations and quality standards.

Validation techniques such as prototyping and feedback collection will be employed to confirm and refine the requirements. This analytical phase forms the foundation for developing a secure, responsive, and user-centric quiz system suitable for digital education.

2.2 Gantt Chart



2.3 Advantage and Disadvantage

Advantage:

1. **Automated Evaluation:** Instantly calculates quiz scores and displays results, reducing manual grading.

2. **User-Friendly Interface:** Easy navigation for both quiz creators and participants.

3. **Time Efficiency:** Timed quizzes help manage and standardize assessment durations.

4. **Randomized Questions:** Enhances fairness by presenting randomized questions from the database.

5. **Data Storage & Analysis:** Stores user performance data for future review and analytics.

Disadvantages:

1. **High Initial Setup Time:** Developing a functional quiz system requires time and effort, especially in design and backend configuration.

2. **Security Risks:** User data and quiz content may be exposed to threats if not properly secured.

3. **Internet Dependency:** Users must have a stable internet connection to access the app, which may be a limitation in remote areas.

4. **Limited Customization (for non-technical users):** Admins may need technical knowledge to update or customize content.

5. **Device Compatibility:** Some older browsers or devices may not fully support modern web technologies used in the app.

2.4 Project Lifecycle

The project lifecycle consists of multiple structured phases that guide the development of the **Online Quiz App** from initiation to completion:

1. **Initiation:** Defining the project objectives, target users, and expected outcomes.
2. **Planning:** Outlining the project timeline, resources, technology stack, and task allocation.
3. **Design:** Creating system architecture, database schema, and user interface layouts.
4. **Development:** Coding the front-end and back-end components using PHP, JavaScript, CSS, and MySQL.
5. **Testing:** Conducting unit tests, integration tests, and end-to-end testing to ensure functionality and reliability.
6. **Deployment:** Launching the application on a web server and ensuring accessibility for users.

7. **Maintenance:** Monitoring performance, fixing bugs, and updating features based on user feedback.

2.5 Project feasibility

The feasibility study for the **Online Quiz App** evaluates key factors to ensure the project's success and sustainability:

1. **Technical Feasibility:** The project is technically feasible using widely supported technologies like PHP, JavaScript, CSS, Bootstrap, and MySQL. These tools are well-suited for building scalable and responsive web applications.

2. **Operational Feasibility:** The system is user-friendly and easy to maintain. It simplifies the quiz process for both users and administrators, ensuring smooth day-to-day operations.

3. **Economic Feasibility:** The development and maintenance cost is low due to the use of open-source technologies. Hosting requirements are minimal, making it cost-effective.

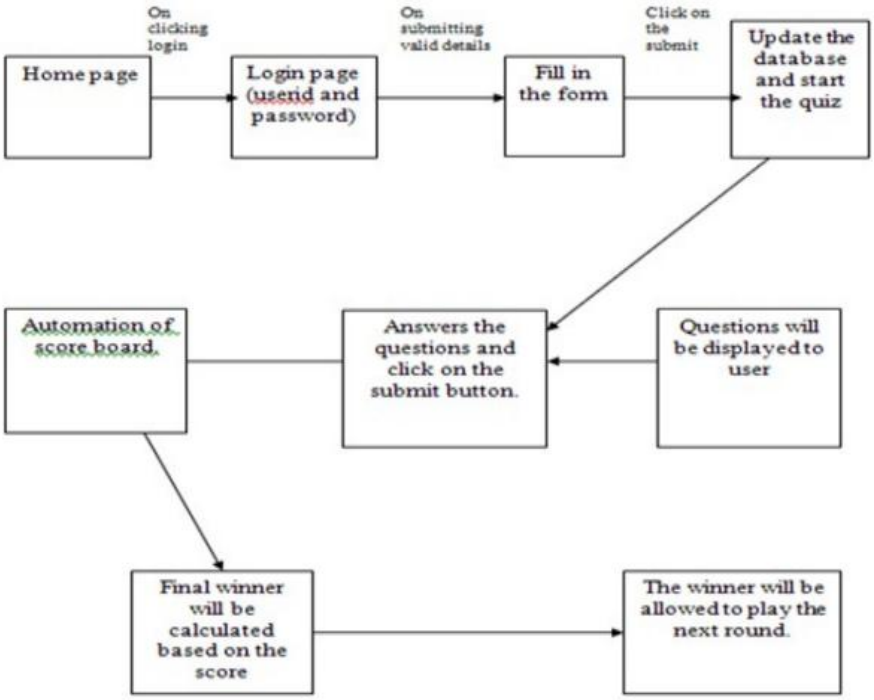
4. **Legal Feasibility:** The project complies with standard web development policies and does not violate any licensing regulations, ensuring smooth deployment and usage.

5. **Schedule Feasibility:** The project is manageable within a short timeline. Each phase—planning, development, testing, and deployment—can be completed in a structured schedule.

6. **Risk Analysis:** Possible risks include data breaches, system downtime, or misuse of quiz content. These can be mitigated through secure coding practices, regular backups, and user access control.

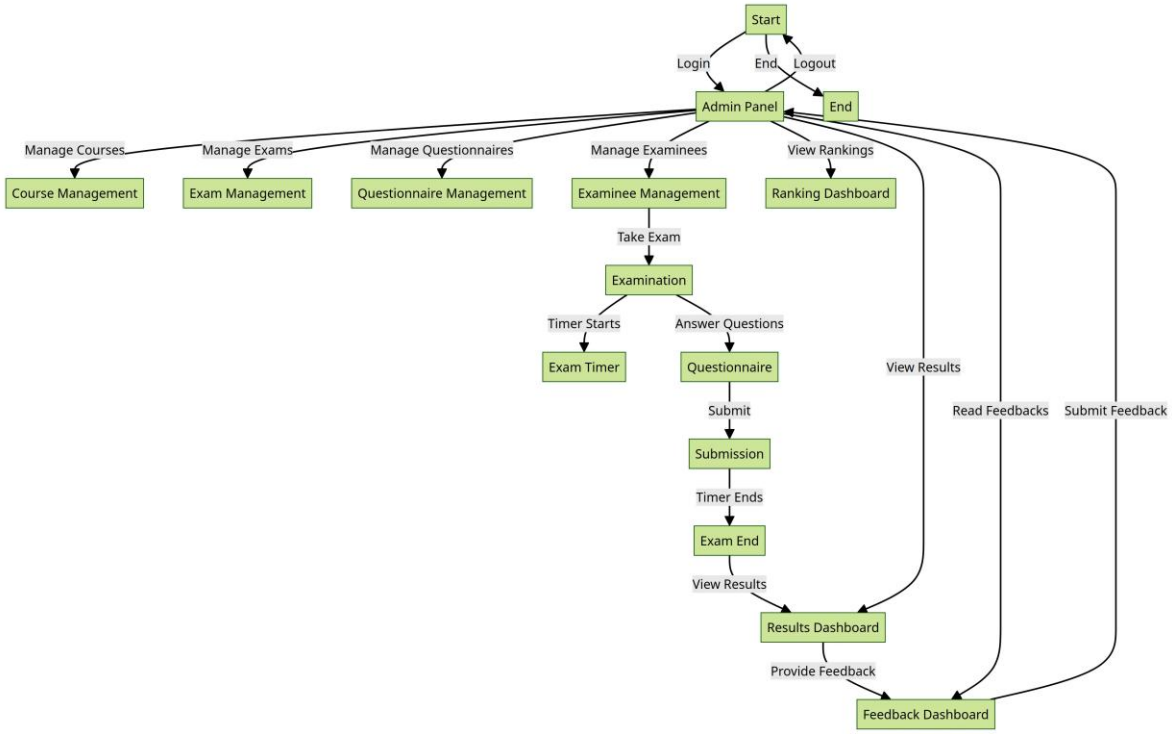
3. PROJECT DESIGN

3.1 System Architecture

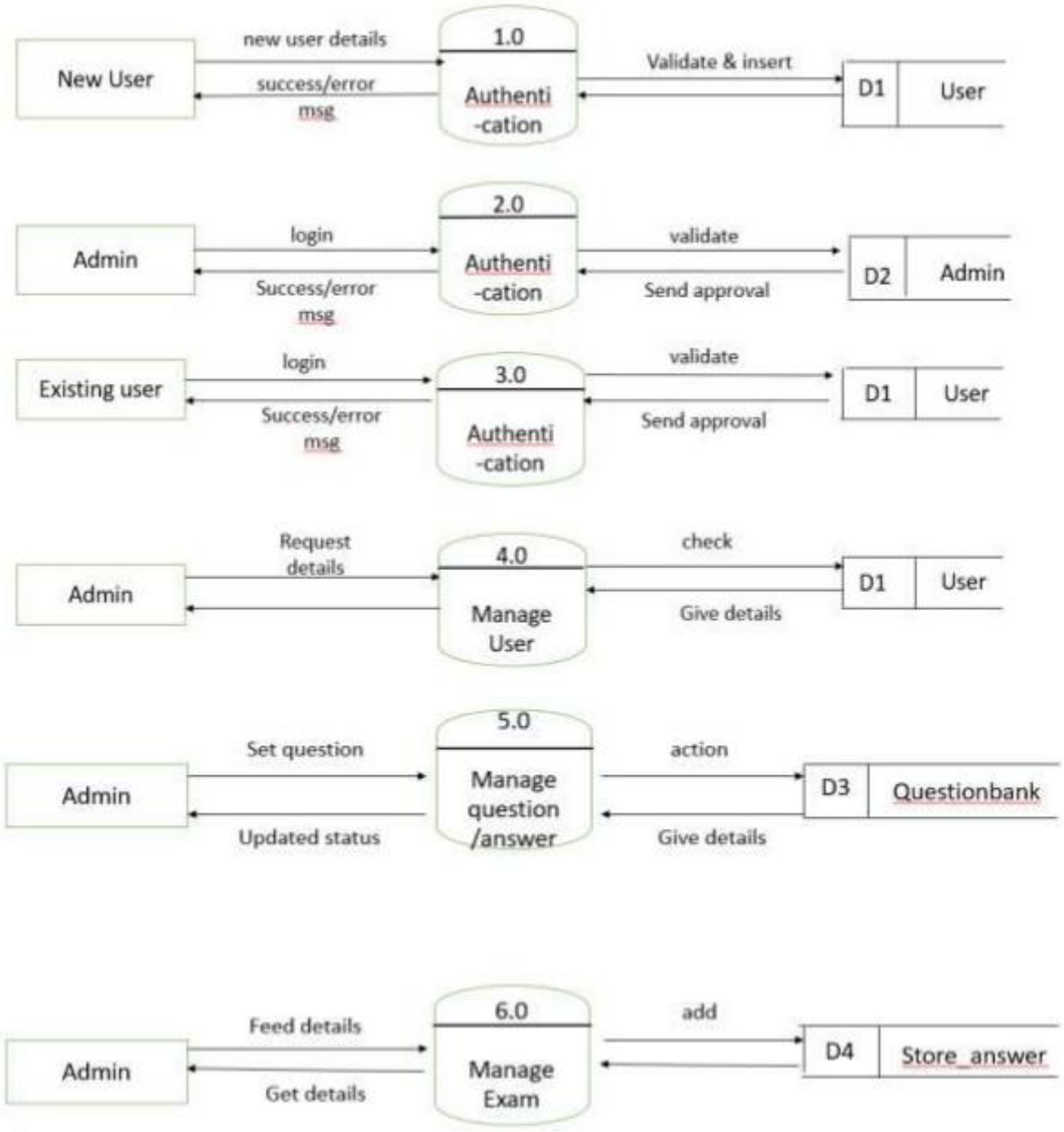


3.2 Data Flow Diagram

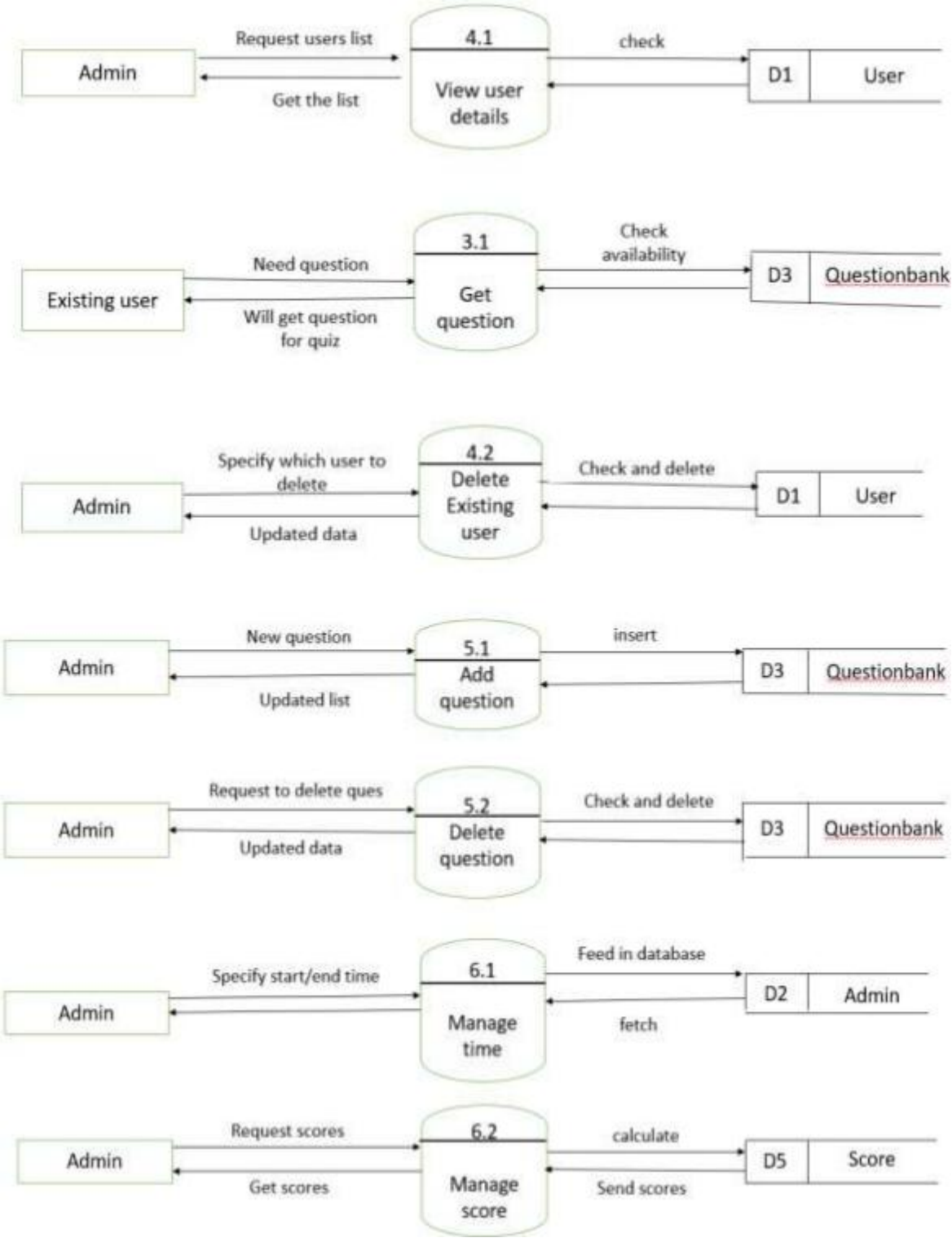
3.2.1 Context Diagram



3.2.2 DFD level 1

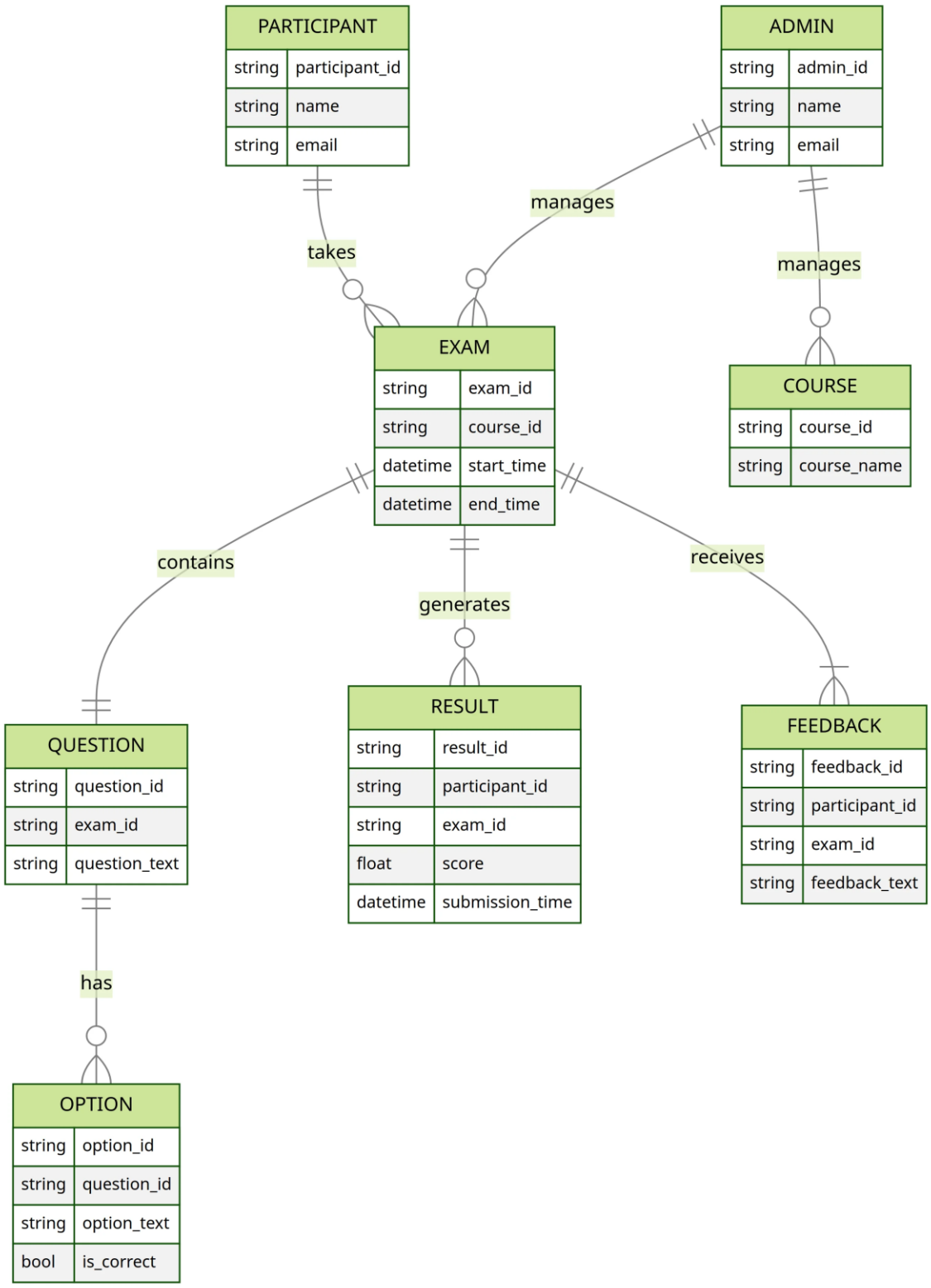


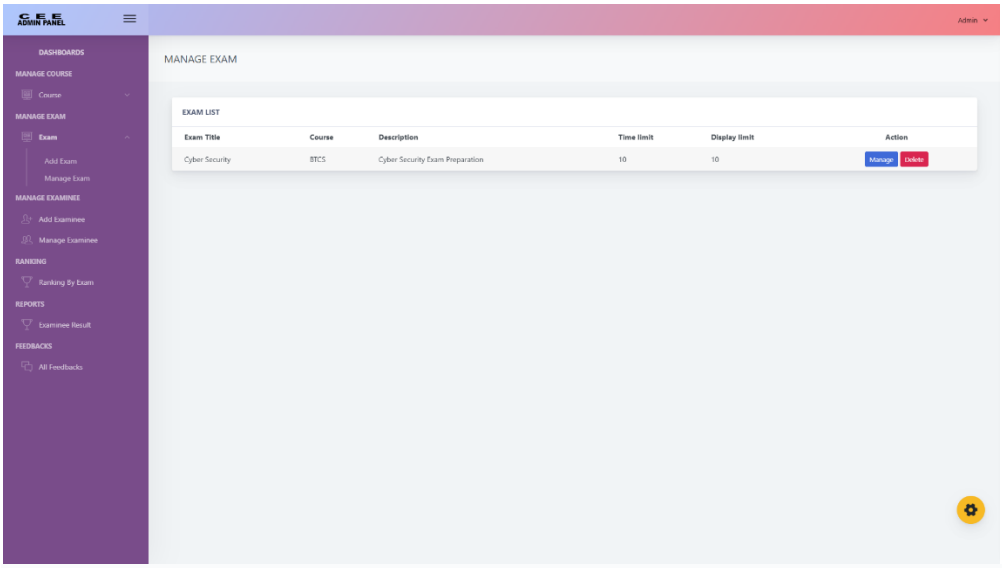
Level 1 DFD – Admin Side



Level 1 DFD – User Side

3.3 ER Diagram

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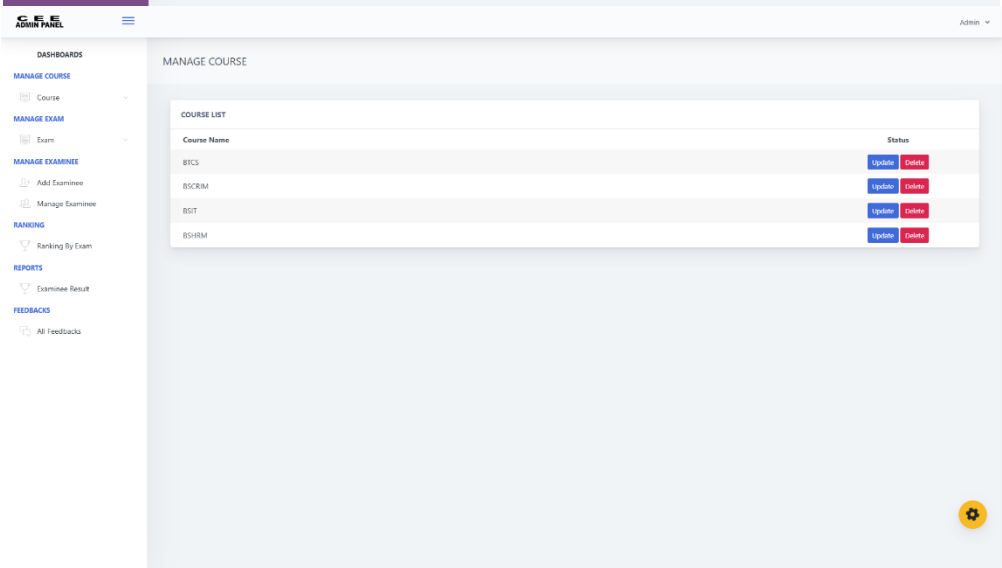
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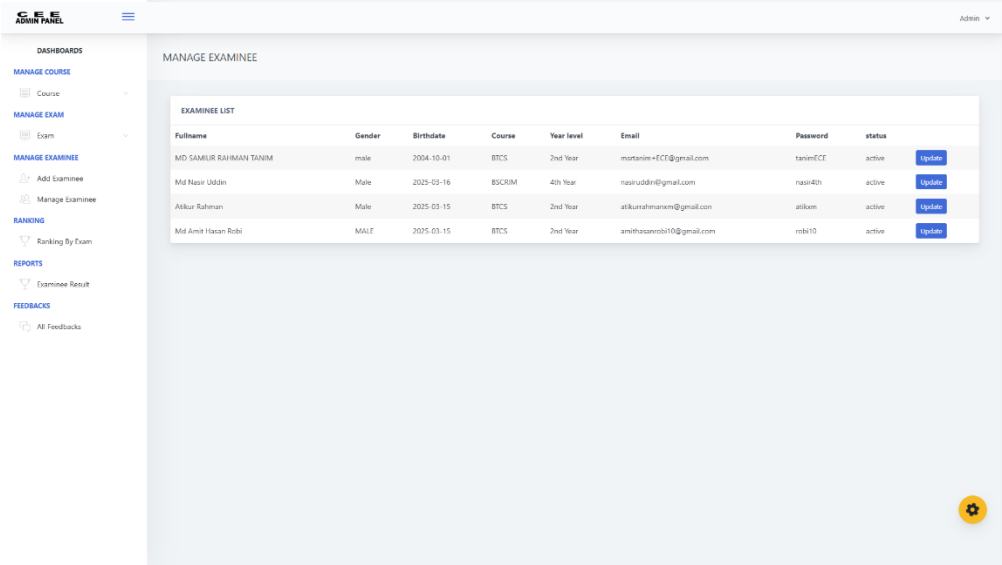
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4. PROJECT IMPLEMENTATION

4.1 Description of the software used

We have used a variety of tools and technologies to build the **Online Quiz App**:

i) Front-end (PHP, CSS, JavaScript, Bootstrap):

• The user interface is built using **HTML**, styled with **CSS**, and made interactive with **JavaScript**.

• **Bootstrap** is used to ensure the UI is responsive and mobile-friendly, providing a smooth experience across different devices.

• **PHP** also handles dynamic rendering of content and integration with the back-end.

ii) Back-end (PHP):

• **PHP** is used for all server-side logic including user authentication, quiz processing, and result generation.

• It manages communication between the front-end and the database effectively.

iii) Database (MySQL):

• **MySQL** is used to store user information, quiz questions, answers, and scores.

• It provides reliable, scalable, and secure data storage and retrieval.

iv) Authentication:

• The system includes a login mechanism using PHP session management to ensure only registered users can access quiz content.

• Admin features are protected using role-based access control within the code.

v) Testing:

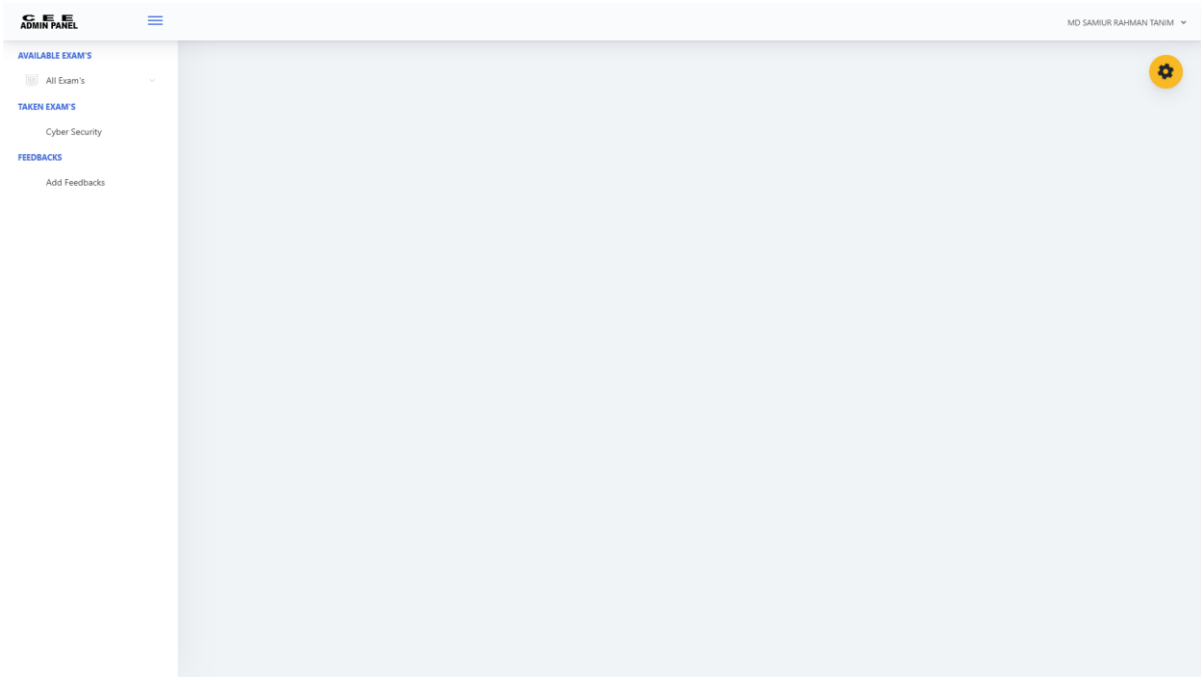
• Manual testing is performed to ensure all components like login, quiz functionality, and scoring work correctly across different scenarios.

vi) Deployment:

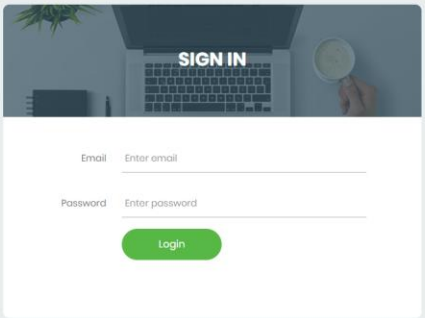
• The application is designed to be hosted on any standard **LAMP (Linux, Apache, MySQL, PHP)** server, making deployment simple and cost-effective.

4.2 Wireframes/ Ui

Home Page



Login page



5. Testing / Result Analysis

5.1 Types of Testing

The following types of testing were performed for the **Online Quiz App**:

1. **Unit Testing:** Each module (login, quiz, result) was tested individually to ensure correct functionality.
2. **Integration Testing:** Verified that front-end, back-end, and database components work together smoothly.
3. **System Testing:** Checked the complete system to ensure it meets all functional requirements.
4. **UI Testing:** Ensured the app is responsive and user-friendly across different devices.
5. **Security Testing:** Tested user authentication and session handling to prevent unauthorized access.
6. **Performance Testing:** Measured page load times and system behavior under normal usage.

5.2 Test Cases

1. **Login Test**
   - **Test Case:** Enter correct username and password.
   - **Expected Result:** User successfully logs in.
2. **Invalid Login Test**
   - **Test Case:** Enter incorrect credentials.
   - **Expected Result:** Display error message.
3. **Start Quiz Test**
   - **Test Case:** User starts a quiz after login.
   - **Expected Result:** Quiz begins with a timer and questions displayed.
4. **Submit Quiz Test**
   - **Test Case:** Submit quiz after answering questions.
   - **Expected Result:** Score is calculated and shown to the user.
5. **Result Page Test**
   - **Test Case:** View result after quiz submission.
   - **Expected Result:** Display correct score and performance summary.
6. **Logout Test**
   - **Test Case:** Click on logout button.
   - **Expected Result:** User is logged out and redirected to login page.

6.1 Conclusion

The **Online Quiz App** provides an effective and user-friendly platform for conducting digital assessments. By utilizing technologies like PHP, JavaScript, CSS, Bootstrap, and MySQL, the system ensures a responsive design, secure data handling, and efficient performance.

Key features such as user login, quiz management, timed assessments, and automatic scoring contribute to a smooth experience for both users and administrators. The system enhances the traditional quiz process by offering automation, accuracy, and accessibility.

The implementation of various testing methods, including unit, integration, and performance testing, ensures the application's reliability and stability. These practices helped identify and resolve potential issues during development.

This project highlights the capability of modern web technologies in building scalable and interactive educational tools, offering a strong foundation for future enhancements and broader application in digital learning environments.

6.2 References:

https://www.campcodes.com/projects/php/online-examination-system-with-timer/

https://youtu.be/W47wIRkC1js?si=Corn7gm6XtrUkLgo