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**Project Report: QuizWizHub (QuizWebsite2023)**

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1. Introduction

1.1 Project Overview

Project Name: QuizWizHub

Version: 1.0

Release Date: 27-11-2023

1.2 Project Description

QuizWizHub is a web-based quiz application developed using HTML, CSS, JSP, Servlets, and Java classes. The project follows the MVC (Model-View-Controller) pattern to maintain a clear separation of concerns. The application has two main modules: Admin and Student. The admin module facilitates the management of courses, quizzes, questions, students, notifications, and feedback. On the other hand, the student module enables users to edit their profiles, view notifications, enroll in courses, attempt quizzes, and provide feedback.

2. Technologies Used

**Frontend:**

HTML

CSS

**Backend:**

Java Servlets

Java Server Pages (JSP)

Java Classes (MVC pattern)

**Database:**

Oracle Database

JDBC Connection

**IDE:**

IntelliJ IDEA Ultimate

3. System Architecture

3.1 Overview

QuizWizHub adheres to the MVC architecture:

Model (Java Classes): Manages data logic, interacts with the database, and performs business operations.

View (JSP): Generates the user interface and handles user input.

Controller (Servlets): Manages flow control, processes user requests, and communicates between the model and view.

4. Features

4.1 Admin Module

**User Authentication:**

Secure login for administrators.

Session management for user authentication.

**Course Management:**

Add, edit, delete, and view courses.

**Quiz Management:**

Add, edit, delete, and view quizzes.

**Question Management:**

Edit and view questions associated with quizzes.

**Student Management:**

Add and delete students.

View student details.

**Result Management:**

View quiz results.

**Notification Management:**

Add and delete notifications.

View notifications.

**Feedback Management:**

View student feedback.

4.2 Student Module

**User Authentication:**

Secure login for students.

cookies for session managment.

**Profile Management:**

Edit user profiles.

**Course Enrollment:**

Enroll and unenroll in courses.

View enrolled courses.

**Quiz Participation:**

Attempt quizzes.

View available quizzes with status (attempted/not attempted).

**Result Viewing:**

View quiz results.

**Notification Viewing:**

View notifications.

**Feedback Submission:**

Provide feedback.

5. Implementation Details

5.1 Development Environment

IDE: IntelliJ IDEA Ultimate

Database: Oracle Database

Backend: Java Servlets, JSP, Java Classes (MVC pattern)

Frontend: HTML, CSS

5.2 Database Design

The database schema includes tables for courses, quizzes, questions, students, results, notifications, and feedback. Relationships are established to maintain data integrity and support complex queries.

5.3 MVC Implementation

The MVC pattern is implemented to ensure a modular and maintainable codebase. Java classes act as models, JSP pages as views, and Servlets as controllers to manage the flow of information.

6. Challenges and Solutions

Challenge: Ensuring proper communication between the model, view, and controller components.

Solution: Careful design of interfaces and use of MVC principles to maintain separation of concerns.

Challenge: Implementing secure and efficient data transactions with the database.

Solution: Utilization of JDBC transactions and prepared statements for secure and optimized database interactions.

7. Future Enhancements

Advanced Analytics: Implement analytics features for administrators to gain insights into student performance.

Interactive Quizzes: Incorporate multimedia elements in quiz questions.

8. Conclusion

QuizWizHub is a robust quiz application designed with a focus on modularity and user experience. The use of the MVC pattern ensures a clear separation of concerns, making the application scalable and maintainable. The project serves as a foundation for future enhancements and improvements.

9. References

Oracle Documentation

Java Documentation

IntelliJ IDEA Documentation

10. Appendices

10.1 Screenshots of admin and student panel



