**GOVT. POLYTECHNIC FOR WOMEN**

**LOWER SHIV NAGAR , JAMMU-J&K**



**Session-MAY-JUNE 2024**

**VI Semester**

**DEPARTMENT OF COMPUTER ENGINEERING**

**CERTIFICATE**

# This is to verify that student of VI Semester Computer Engineering Department Have successfully completed the minor project work entitled “**Quiz Application with Authentication** ” for the fulfilment of Three years Diploma in Computer Engineering of J&K STATE BOARD OF TECHNICAL EDUCATION.

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**HOD PROJECT GUIDE**

**GOVT. POLYTECHNIC FOR WOMEN**

LOWER SHIV NAGAR JAMMU-J&K

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**Session-NOV\_DEC 2023**

**VI Semester**

**DEPARTMENT OF COMPUTER ENGINEERING**

**MAJOR PROJECT**

**QUIZ APPLICATION WITH AUTHENTICATION**

**PROJECT GUIDE:- SUBMITTED BY:-**

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# Last but not least, I owe my overwhelming gratitude to other supporting staff during the course of this project for giving me the constant support and motivation to continue with this evidence.

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INTRODUCTION

In the modern digital era, web applications and software systems have become integral to various aspects of daily life, providing users with interactive and engaging experiences. This final year project focuses on the development of a robust application utilizing Java, Maven, and MySQL technologies, with additional functionalities encompassing user registration, authentication through OTP (One Time Password), and comprehensive administrative controls.

The application features a login and registration system where users can securely register and authenticate using OTP verification, ensuring a high level of security and reliability. Users are provided with a dynamic and engaging interface, designed using Java Swing and AWT (Abstract Window Toolkit), which allows them to participate in a quiz game. This interactive quiz game not only offers an entertaining user experience but also serves as an educational tool, enhancing users' knowledge in various domains.

On the administrative side, the application offers robust features enabling administrators to manage and monitor user activities efficiently. Admins can access detailed reports of each user's performance, including their quiz scores and participation history. Furthermore, the system supports the exportation of user scores and details into new Excel files, facilitating easy data analysis and record-keeping.

**Purpose of the project**:  
The purpose of the project is to develop a Java-based application with Maven and MySQL integration, offering secure user authentication via OTP, interactive quiz functionality for users, and comprehensive administrative features for monitoring user activity and exporting data for analysis.

**Current and Proposed System:**

**Current System:**  
This our own idea does have any current System like this .

Our approach will involve utilizing Java for backend development, Maven for project management ,MySQL for database management. We will adopt and agile development methodology, breaking down the project into manageable sprints to ensure regular feedback and iteration.

**Proposal System:**

**Glossary:**

|  |  |
| --- | --- |
| **TERM** | **Used for** |
| JAVA | **Frontend of Application with the Swing and AWT** |
| **MAVEN** | Working as a Middleware and Dependency use in the Project |
| **MySQL** | Database |

**Scope of the project:** The scope of this project extends beyond its initial features to incorporate additional functionalities aimed at enhancing user experience and fostering community engagement. In addition to the existing components such as login, registration with OTP, quiz game, and admin dashboard, the project will include features like multi-factor authentication, gamification elements for user engagement, and integration with third-party APIs for expanded functionality. Furthermore, the project will be open-source, hosted on GitHub, inviting contributions from developers worldwide to improve and expand its capabilities. This collaborative approach will not only enrich the project but also cultivate a vibrant community around it, driving continuous innovation and improvement.

**Advantages:**

Here are the detailed advantages of the proposed project:

1. \*\*GitHub Open Source Project:\*\*

- Hosting the project on GitHub as an open-source repository provides numerous benefits:

- Collaboration: Allows developers worldwide to contribute, share ideas, and collaborate on improving the project.

- Transparency: Enhances transparency by providing visibility into the project's codebase, development progress, and discussions.

- Community Engagement: Fosters a vibrant community around the project, facilitating knowledge sharing and fostering innovation.

- Version Control: Utilizes Git for version control, enabling efficient management of project changes and updates.

2. \*\*Innovative Java Implementation:\*\*

- Introduces new ideas and innovative solutions within the Java ecosystem, showcasing the versatility and adaptability of Java technology.

- Demonstrates cutting-edge techniques and best practices in Java programming, contributing to the advancement of the Java development community.

3. \*\*User-Friendly GUI (Graphical User Interface):\*\*

- Prioritizes user experience by designing an intuitive and visually appealing graphical interface using Java Swing and AWT libraries.

- Enhances usability and accessibility, making the application more engaging and easier to navigate for users of all skill levels.

4. \*\*Auto-Generated Excel Sheets:\*\*

- Implements functionality to automatically generate Excel sheets containing user data, scores, and other relevant information.

- Streamlines data management and reporting processes, saving time and effort for administrators and users alike.

- Enables seamless integration with external tools and systems for further analysis and processing of data.

5. \*\*OTP Authentication:\*\*

- Incorporates OTP (One Time Password) authentication for user registration and login, enhancing security and mitigating the risk of unauthorized access.

- Provides an additional layer of protection against password-related vulnerabilities, ensuring robust user authentication mechanisms.

6. \*\*Quiz System:\*\*

- Introduces a dynamic and engaging quiz system for users to participate in, offering entertainment and educational value.

- Enhances user interaction and retention, driving user engagement and promoting active participation within the application.

7. \*\*Database Support (MySQL):\*\*

- Utilizes MySQL database management system to store and manage user data, quiz questions, scores, and other application-related information.

- Ensures data integrity, scalability, and reliability, providing a robust foundation for the application's backend functionality.

8. \*\*Maven Dependencies:\*\*

- Manages project dependencies and build processes efficiently using Maven, simplifying project configuration and management.

- Facilitates collaboration and ensures consistency across development environments, enhancing project scalability and maintainability.

In summary, the proposed project offers a multitude of advantages, ranging from its open-source nature on GitHub to its innovative Java implementation, user-friendly GUI, auto-generated Excel sheets, OTP authentication, quiz system, database support, and Maven-based project management. These advantages collectively contribute to the project's success, fostering collaboration, innovation, and user satisfaction.

**REQUIREMENTS**  
 **Software Requirements:**

* Java Development Kit JDK-18 or later.
* Maven should be installed.
* MySQL should be installed.
* Operating system: Any Windows version.

**Hardware Requirements:**

* Processor: Intel Pentium IV or above
* Ram: 512G or more
* Hard Disk: 40 GB or more

SYSTEM DESIGN

\*\*System Design:\*\*

The system design phase is integral to the development of a new system, encompassing both logical and physical design aspects. During the logical design phase, the analyst delineates inputs, outputs, databases, and procedures in a format aligned with user requirements. This phase employs data flow diagrams and database design to map out the information flow and data resources within the system. Following logical design, the physical design phase focuses on coding, translating design specifications into performance specifications. Programmers write necessary programs based on these specifications to create a working system that accepts user input, processes data, and generates reports.

TESTING

\*\*System Testing:\*\*

System testing is a systematic activity that commences at the module level and progresses towards the integration of the entire computer-based system. It is an essential process for ensuring the success of the system.

\*\*Testing Objectives:\*\*

The objectives of testing include executing a program to identify errors, crafting test cases with a high probability of uncovering undiscovered errors, and achieving successful tests that unearth undiscovered errors while ensuring the software functions according to specifications.

\*\*Types of Testing:\*\*

1. \*\*Correctness Testing:\*\* Verifies that the program performs precisely as designed.

2. \*\*Implementation Efficiency Testing:\*\* Seeks to optimize the program's performance and resource usage.

3. \*\*Computational Complexity Testing:\*\* Evaluates the program's efficiency in handling complex computations.

\*\*Testing Strategies:\*\*

Effective testing strategies encompass preventive measures, spot checks, comprehensive coverage of program components, meticulous selection of test data, proactive identification of potential issues, allocation of adequate time for testing, and retesting as needed.

\*\*Unit Testing:\*\*

Unit testing of the GUI-based Windows application involved testing each file, as well as the functionality of back and next buttons.

\*\*Integration Testing:\*\*

Integration testing focused on preparing meticulous test data to evaluate the efficiency and accuracy of the system. Every program underwent rigorous input validation to ensure data integrity.

\*\*Validation Testing:\*\*

Validation testing involved testing each code module individually, employing techniques such as loop testing, boundary value analysis, and equivalence partitioning testing to ensure robustness and reliability.

**GitHub Link :-** [Kiranjeet28/Quiz-application-with-Authentication-: The project is a Quiz Application with Authentication developed using Java, Maven, and MySQL technologies. It provides users with a platform to participate in quizzes after secure authentication. Key features include user registration, login with OTP authentication, quiz participation, score tracking, and admin functionalities for managing quizzes (github.com)](https://github.com/Kiranjeet28/Quiz-application-with-Authentication-)