**Galgotias University**

**Project name :- online mcq quiz system**

**Team name :- visionary**

**Team members name**

* **Ayush Yadav (team leader)**
* **Happy saini**
* **Manvendra singh**
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**1. Title of the Project**

**Development of an Online MCQ (Multiple Choice Questions) Examination System**

# 2. Tools and Technologies Used

* **NetBeans IDE: Java-based development environment (for UI, logic)**
* **IntelliJ IDEA: Backend coding, debugging, and application logic**
* **MySQL: Database to store users, questions, and results**
* **MySQL Workbench: GUI tool for database modeling and query testing**

# 3. Introduction

**This project is a web-based Online MCQ System that facilitates the creation and execution of multiple-choice tests. The system is aimed at educational institutions, recruitment firms, and training departments to automate assessments and provide instant results**.

# 4. Objectives

* **Develop a secure, scalable online exam system.**
* **Automate the question evaluation process.**
* **Create a system that is easy to use by both administrators and students.**
* **Store and manage questions, results, and user data in a structured database.**

# 5. System Architecture

**Backend (Java):**

* **Developed using Java in IntelliJ IDEA**
* **JDBC used to connect to MySQL database**
* **Business logic includes user authentication, question randomization, and result calculation**

**Frontend:**

* **Developed using Java Swing (via NetBeans) for UI**

**Database (MySQL):**

* **Modeled using MySQL Workbench**
* **Tables: users, questions, tests, results**

# 6. Features

**Admin Panel:**

* **Secure login**
* **Add/update/delete questions**
* **View student results- Create test sessions**

**Student Panel:**

* **Register/Login**
* **Join test**
* **Answer MCQs within time limit**
* **Submit answers and view results**

# 8. Database Design (ER Diagram Overview)

**Entities:**

* **User: ID, Name, Email, Password, Role**
* **Question: ID, Subject, QuestionText, OptionA-D, CorrectAnswer**
* **Result: ID, UserID, TestID, Score, Timestamp**

**Relationships:**

* **One user can attempt multiple tests**
* **Each test consists of multiple questions**

# 9. Testing & Evaluation

* **Unit Testing: Each module tested separately**
* **Integration Testing: Checked data flow between modules**
* **Database Testing: Verified queries using Workbench**
* **Performance Testing: Tested concurrent user sessions**

# 10. Challenges Faced

* **JDBC connection stability across IDEs**
* **UI layout management in Java Swing**
* **Ensuring SQL injection protection**
* **Handling simultaneous test submissions**

# 11. Future Scope

* **Integration with web technologies (Spring Boot, Angular)**
* **AI-based cheating detection**
* **Mobile compatibility (Android/iOS)**
* **Adaptive difficulty level based on user performance**
* **Export result data to Excel or PDF**

# 12. Conclusion

**The Online MCQ System built using Java (NetBeans & IntelliJ), and MySQL successfully meets the goal of automating objective-type examinations.**

**The system provides secure login, test-taking, real-time scoring, and database management.**

**It is ideal for educational institutions and can be further scaled with modern frameworks.**