A PROJECT REPORT ON

QUIZ-BASED EXAM MANAGEMENT SYSTEM

SUBMITTED TO VISHWAKARMA INSTITUTE OF INFORMATION TECHNOLOGY, PUNE IN THE PARTIAL FULFUILLMENT OF FOR THE AWARD OF THE DEGREE

BACHELOR OF TECHNOLOGY IN

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Title:

Quiz based exam management system

Aim:

To Make a Quiz based exam management system which is able to host quizzes for the students. The admin should be able to add one's own questions.

Objective:

With the rising need for online studies and exams, an Exam management system is undeniably a necessity in almost all major Institutes and colleges. Hence we decided to make a simple version of the said system. The objective of this system is that the students should be able to login, or sign up in the system and successfully be able to appear for an exam. The results should be processed by the Faculty and show them to the students after the exam ends. The Faculty should be able to add their own quizzes after logging in.

Theory:

1. Database Management System:

Database Management System or **DBMS** in short refers to the technology of storing and retrieving users data with utmost efficiency along with appropriate security measures. This tutorial explains the basics of DBMS such as its architecture, data models, data schemas, data independence, E-R model, relation model, relational database design, and storage and file structure etc.

2. Applications of DBMS

Database is a collection of related data and data is a collection of facts and figures that can be processed to produce information.

Mostly data represents recordable facts. Data aids in producing information, which is based on facts. For example, if we have data about marks obtained by all students, we can then conclude about toppers and average marks.

A **database management system** stores data in such a way that it becomes easier to retrieve, manipulate, and produce information. Following are the important characteristics and applications of DBMS.

- **ACID Properties** − DBMS follows the concepts of **A**tomicity, **C**onsistency, **I**solation, and **D**urability (normally shortened as ACID). These concepts are applied on transactions, which manipulate data in a database.
- **Multiuser and Concurrent Access** − DBMS supports multi-user environment and allows them to access and manipulate data in parallel.
- **Multiple views** − DBMS offers multiple views for different users. A user who is in the Sales department will have a different view of database than a person working in the Production department.
- **Security** − DBMS offers methods to impose constraints while entering data into the database and retrieving the same at a later stage. DBMS offers many different levels of security features, which enables multiple users to have different views with different features.

3. SQL

SQL is a database computer language designed for the retrieval and management of data in a relational database. **SQL** stands for **Structured Query Language**. This tutorial will give you a quick start to SQL. It covers most of the topics required for a basic understanding of SQL and to get a feel of how it works.

4. Applications of SQL

As mentioned before, SQL is one of the most widely used query language over the databases. I'm going to list few of them here:

- Allows users to access data in the relational database management systems.
- Allows users to describe the data.
- Allows users to define the data in a database and manipulate that data.
- Allows embedding within other languages using SQL modules, libraries & pre-compilers.

We use MySQL for this project.

MySQL Database Service is a fully managed database service to deploy cloud-native applications using the world's most popular open source database. It is 100% developed, managed and supported by the MySQL Team.

5. JAVA and Swing:

Java is a popular programming language, created in 1995. Java is a class-based, object-oriented programming language that is designed to have as few implementation dependencies as possible. It is a general-purpose programming language intended to let application developers *write once, run anywhere* (WORA), meaning that compiled Java code can run on all platforms that support Java without the need for recompilation. Java applications are typically compiled to byte-code that can run on any Java virtual machine (JVM) regardless of the underlying computer architecture. The syntax of Java is similar to C and C++, but has fewer low-level facilities than either of them. It is owned by Oracle, and more than **3 billion** devices run Java.

6. Applications of Java:

- Mobile applications (specially Android apps)
- Desktop applications
- Web applications
- Web servers and application servers
- Games
- Database connection
- And much, much more!
-

Swing API is a set of **extensible GUI Components** to ease the developer's life to create JAVA based Front End/GUI Applications. It is build on top of AWT API and acts as a replacement of AWT API, since it has almost every control corresponding to AWT controls. Swing component follows a Model-View-Controller architecture to fulfill the following criteria.

- A single API is to be sufficient to support multiple looks and feels.
- API is to be model driven so that the highest level API is not required to have data.
- API is to use the Java Bean model so that Builder Tools and IDE can provide better services to the developers for use.

7. Swing Features

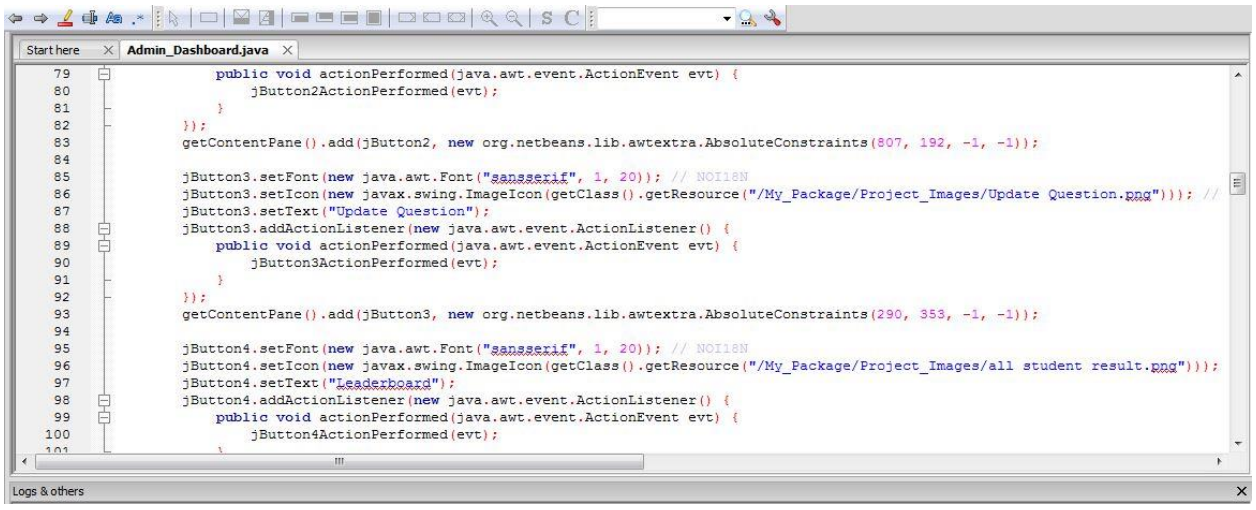
- **Light Weight** − Swing components are independent of native Operating System's API as Swing API controls are rendered mostly using pure JAVA code instead of underlying operating system calls.
- **Rich Controls** − Swing provides a rich set of advanced controls like Tree, TabbedPane, slider, color picker, and table controls.
- **Highly Customizable** − Swing controls can be customized in a very easy way as visual appearance is independent of internal representation.
- **Pluggable look-and-feel** − SWING based GUI Application look and feel can be changed at run-time, based on available values.

Programs:

Due to the sheer size of our project, adding the code in this report is not feasible. We will be adding the .zip file on the Google Drive which contains the entire project folder.

The project is written entirely in Java, Swing and MySQL. We have added a simple screenshot to demonstrate how the code is written. The example is written in Java / Swing.

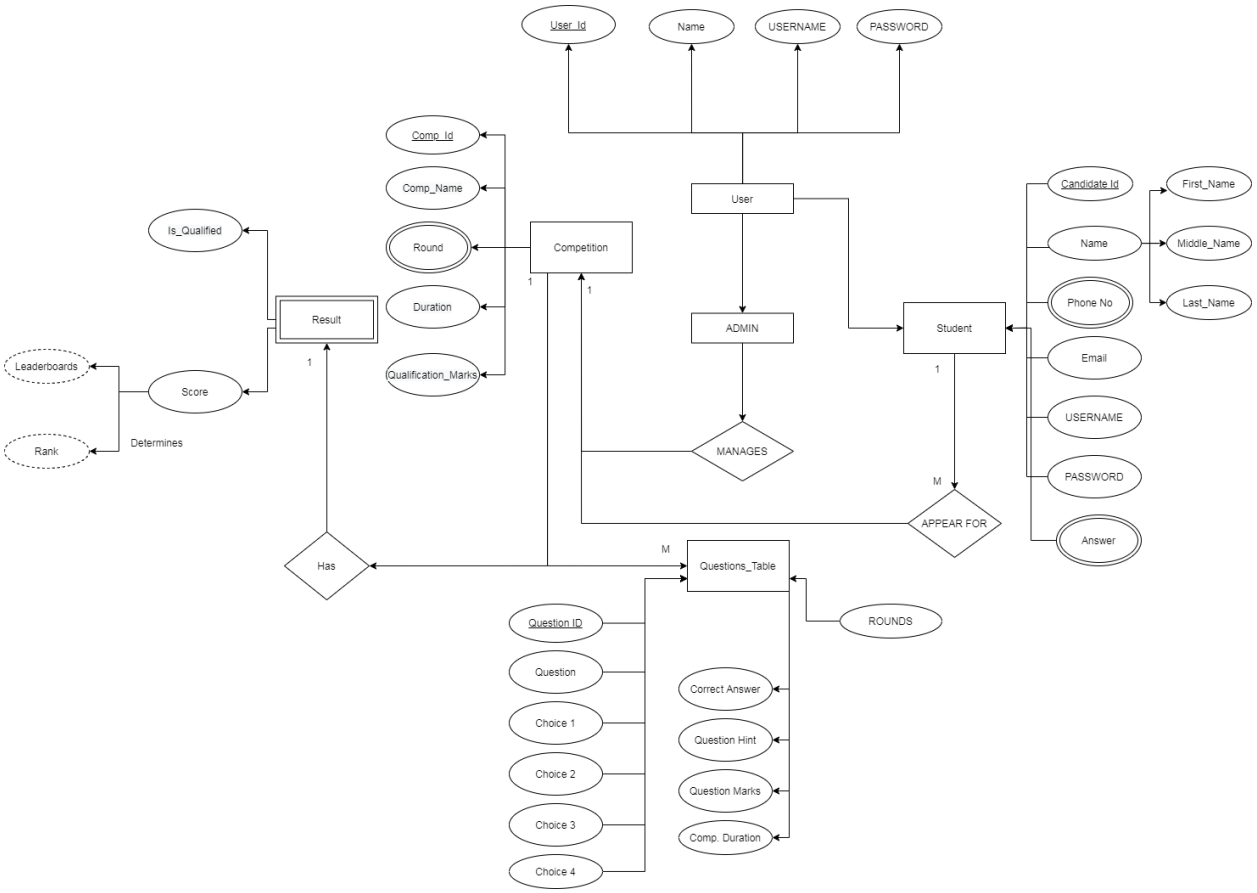
The example shows Some functions such as “JButton.setFont();” or “JButton.setIcon();” which are able to style any clickable button on the front end. The functions shown here are able to add two add buttons on the Admin home page with various styles such as Icon, Text font, Background Color etc. and also the on-click event associated with it.



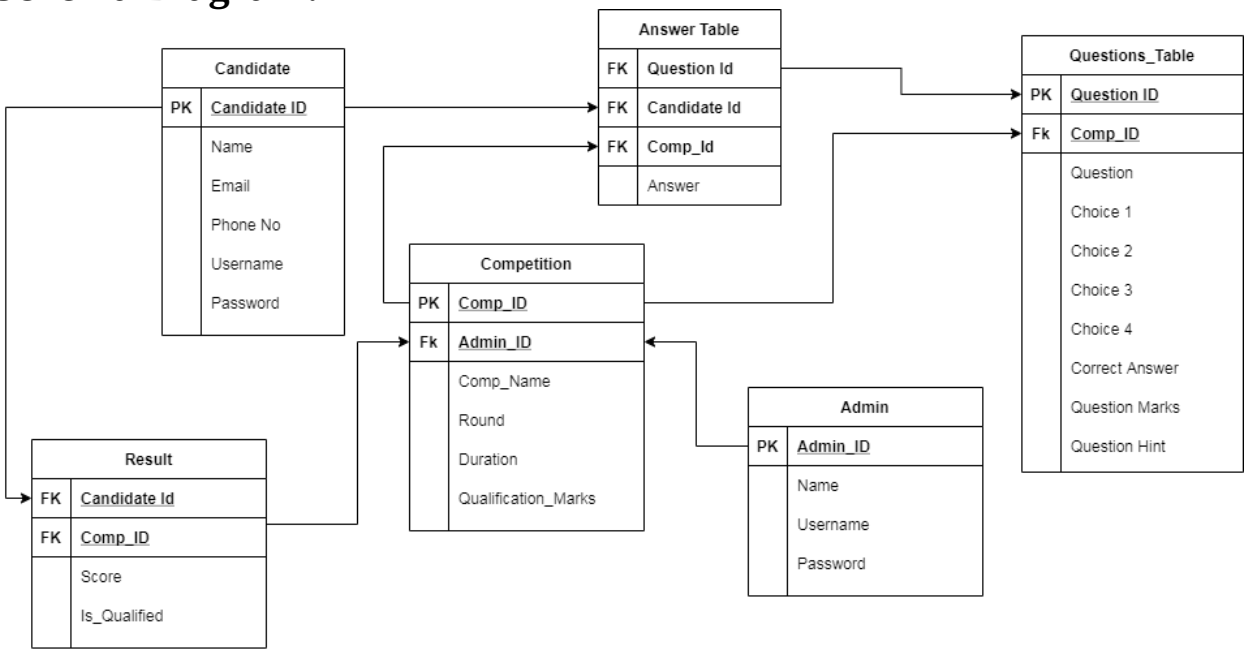
ER Diagram and Schema:

Following are the ER diagram and the Schema diagram which relates to the various functions and attributes in our project

ER diagram:



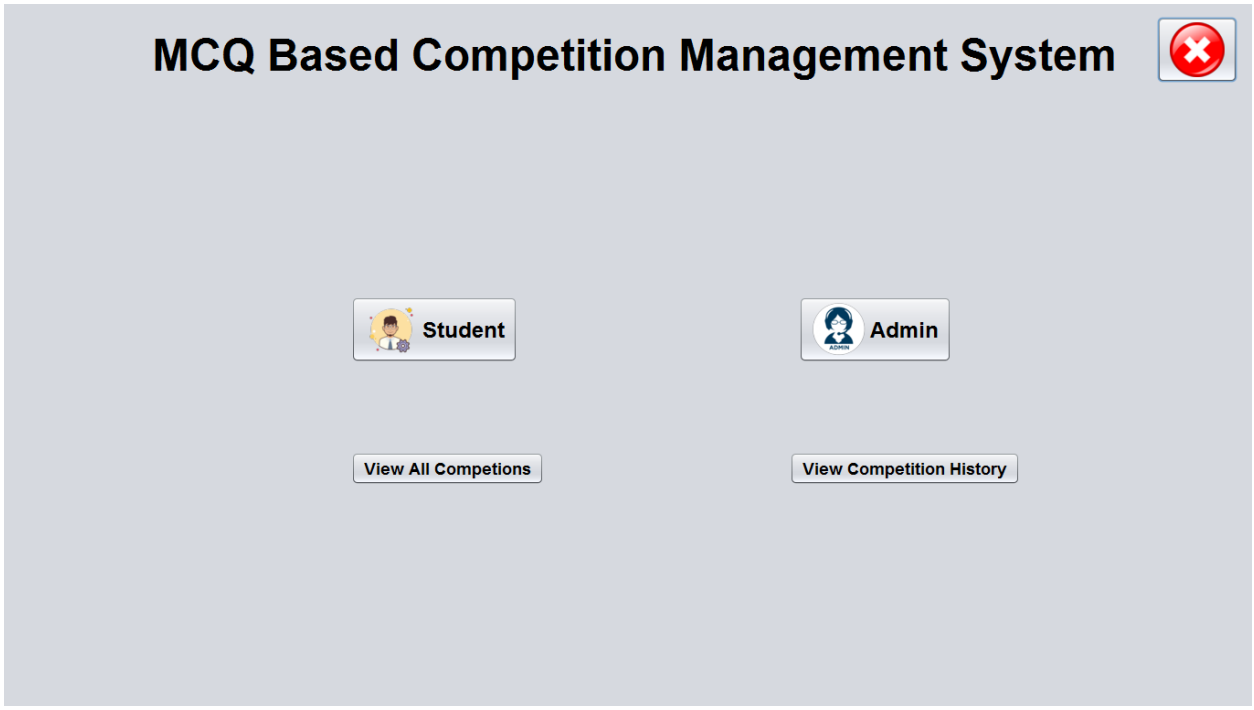
Schema Diagram:



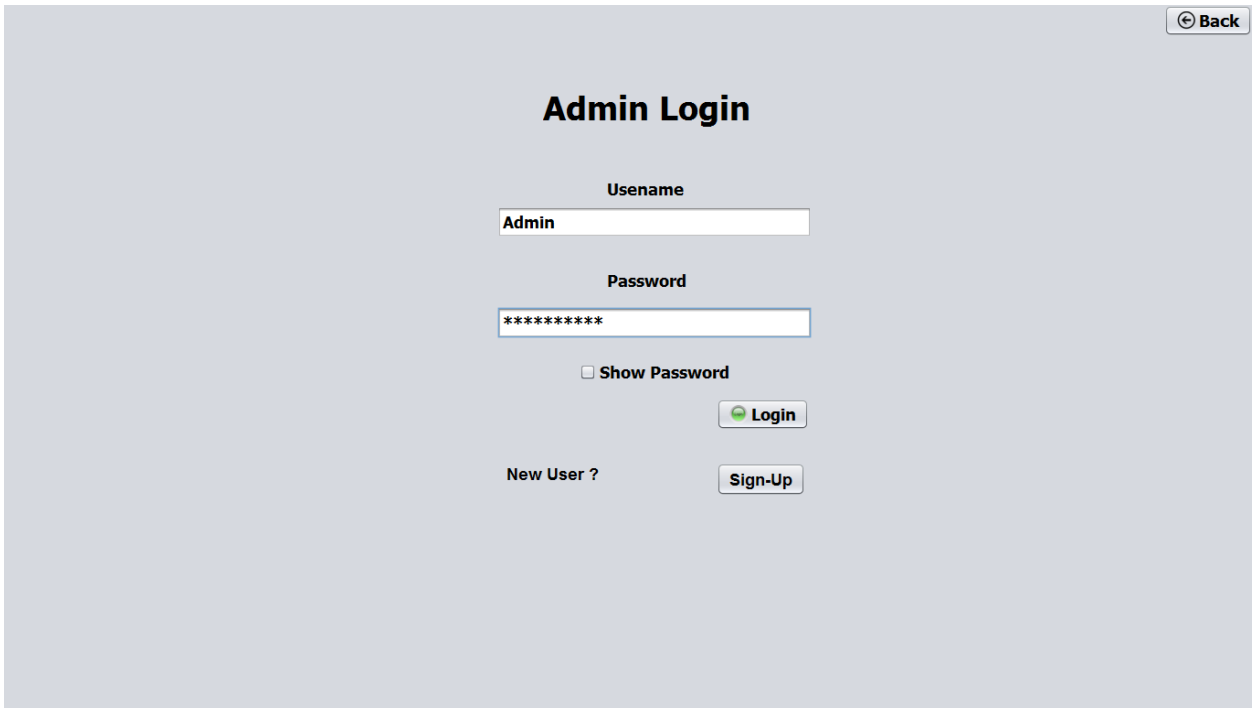
Output Screenshots:

Output Screenshots will be provided to demonstrate the interface and the functionality of our project.

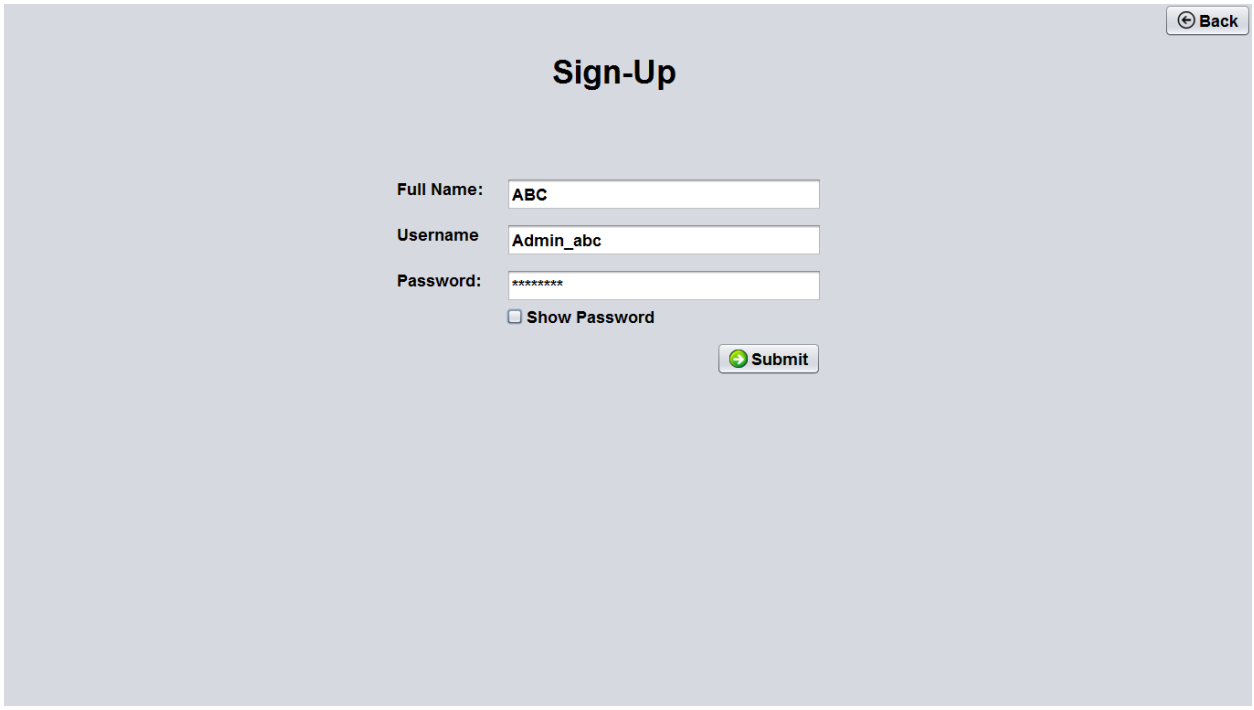
The landing page of the System with admin and candidate login.



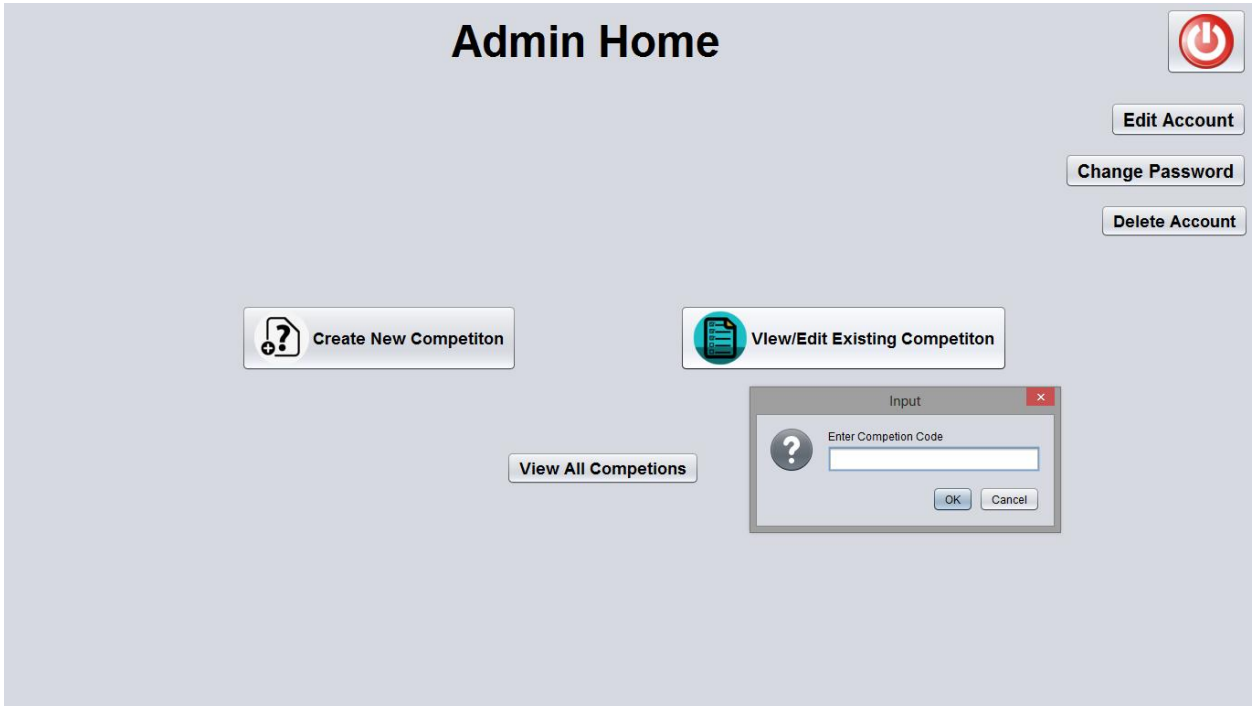
Admin login page with login example.



Sign up page, in-case user account doesn't exist.

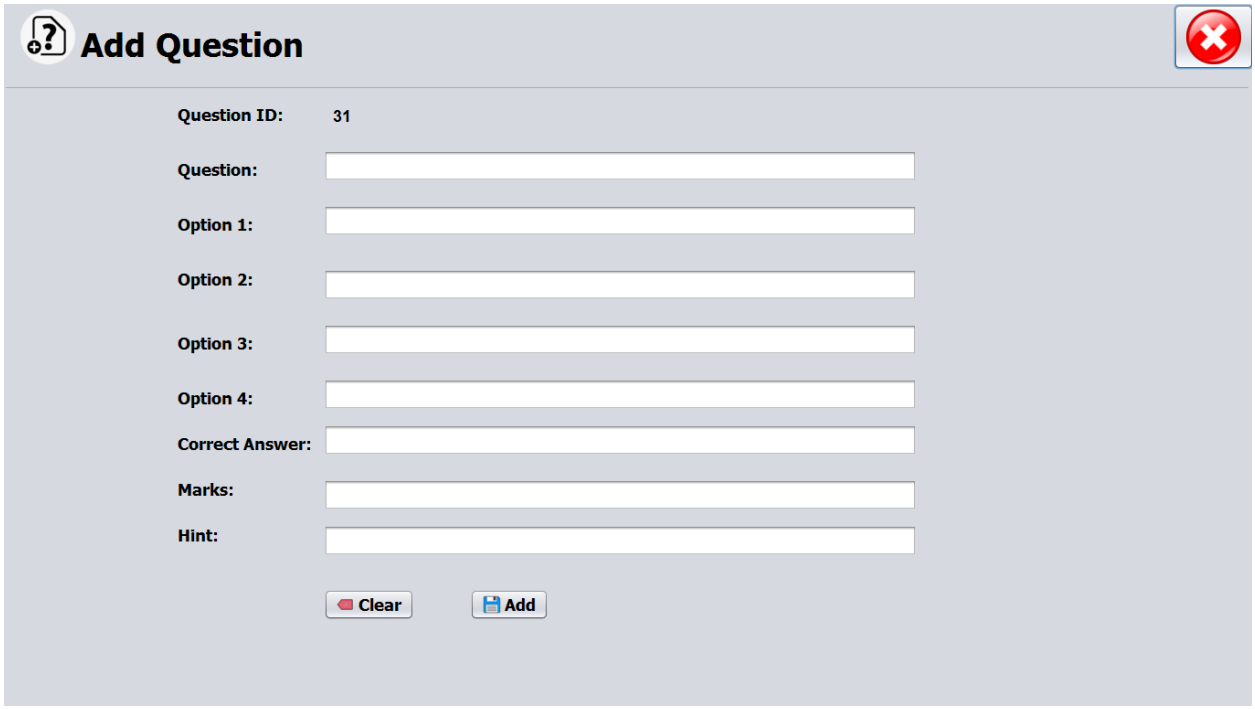


Admin home with two options to create or update a competition.

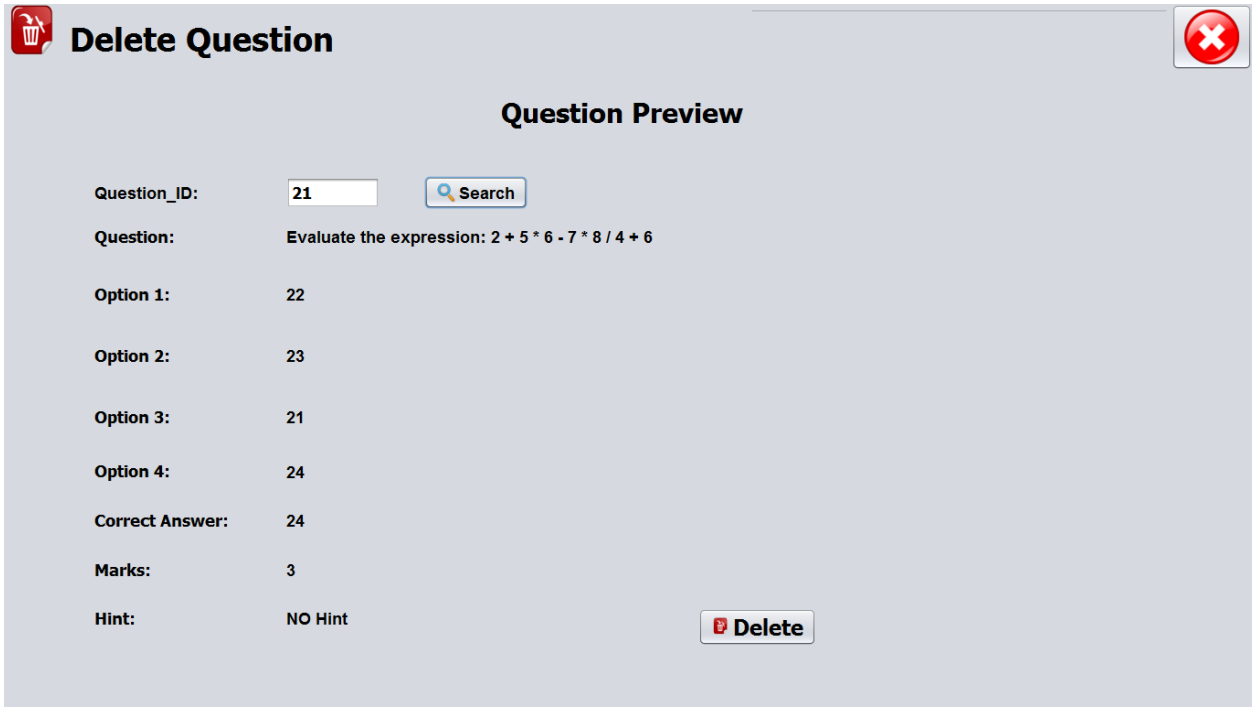


Admin dashboard with various functionalities

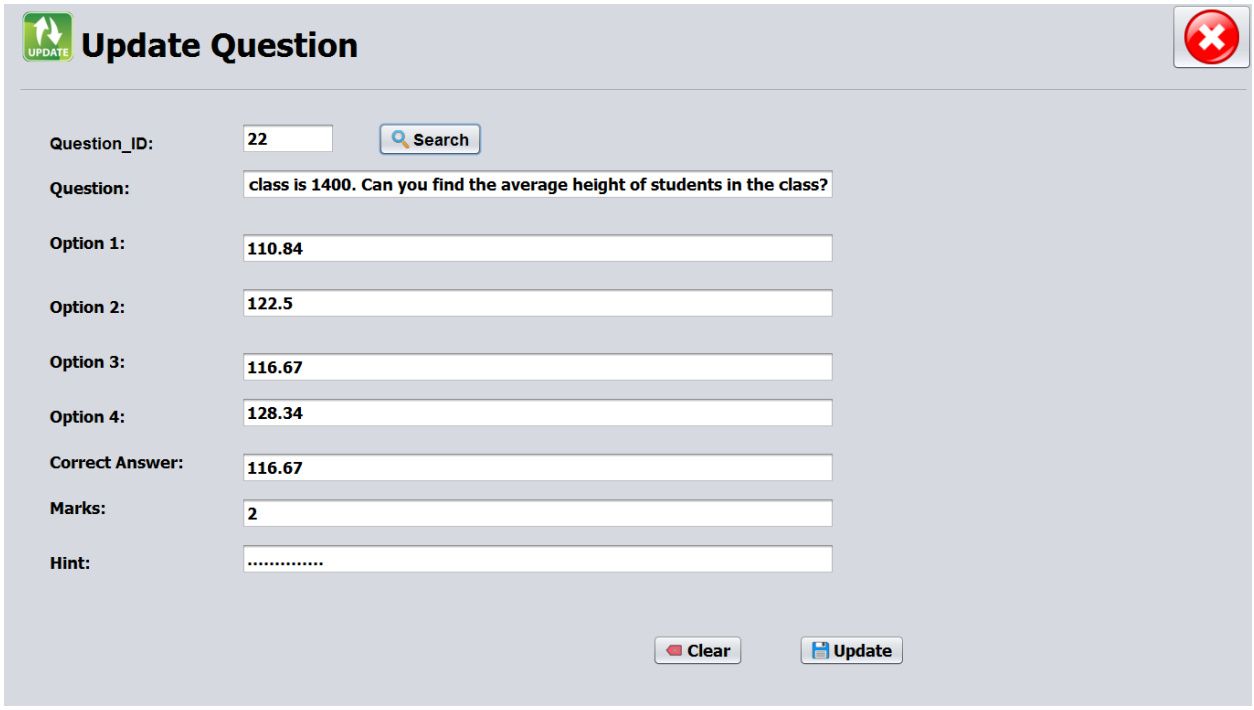
The Add Question Feature.



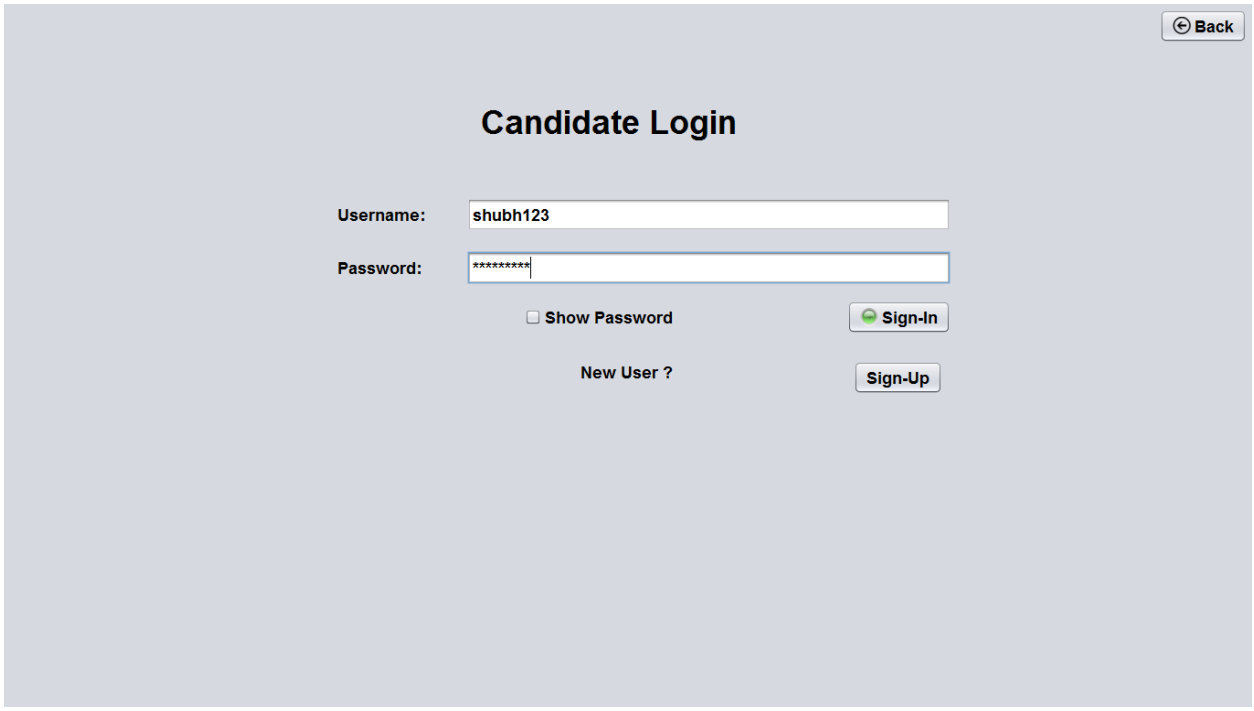
Delete Question feature.



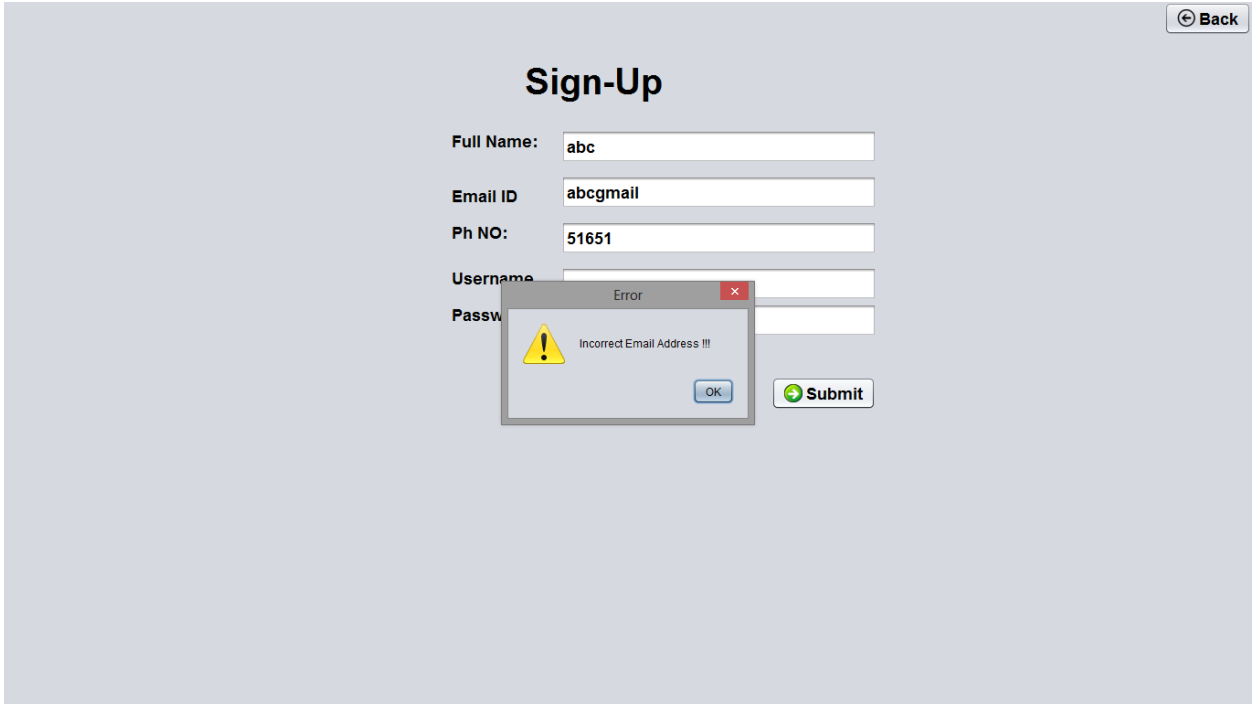
Update Question feature with text field for updating.



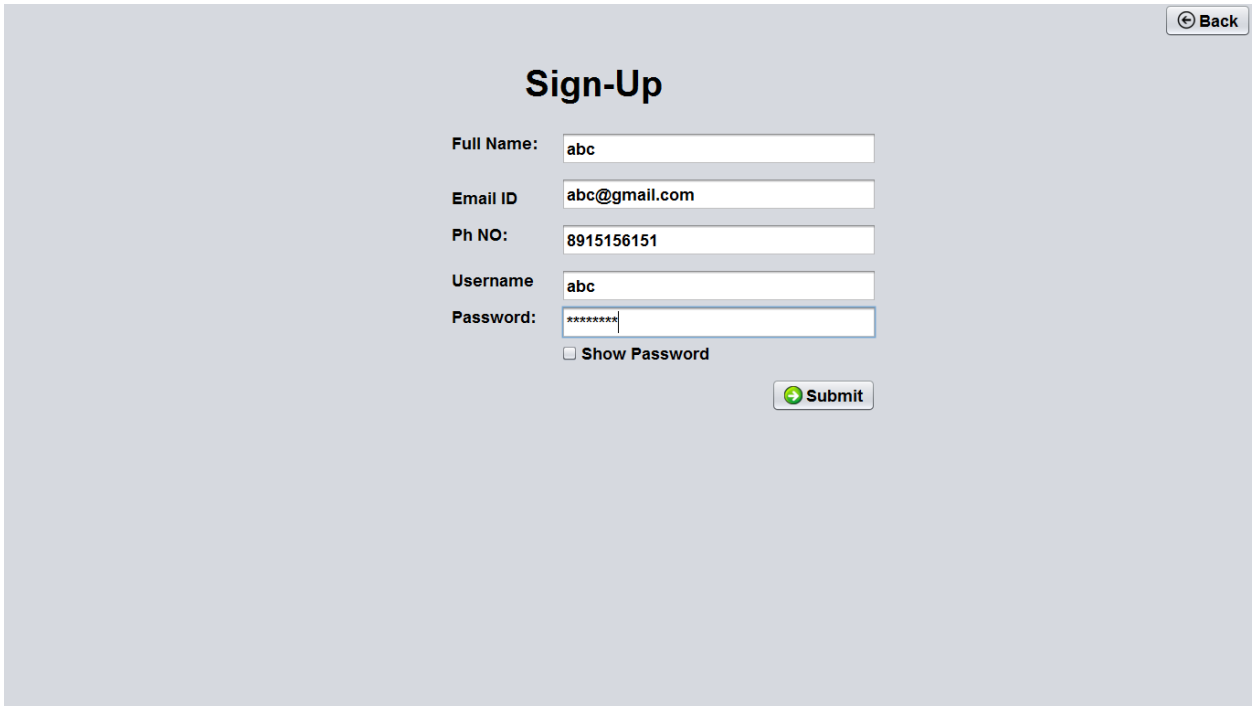
Candidate Login page.



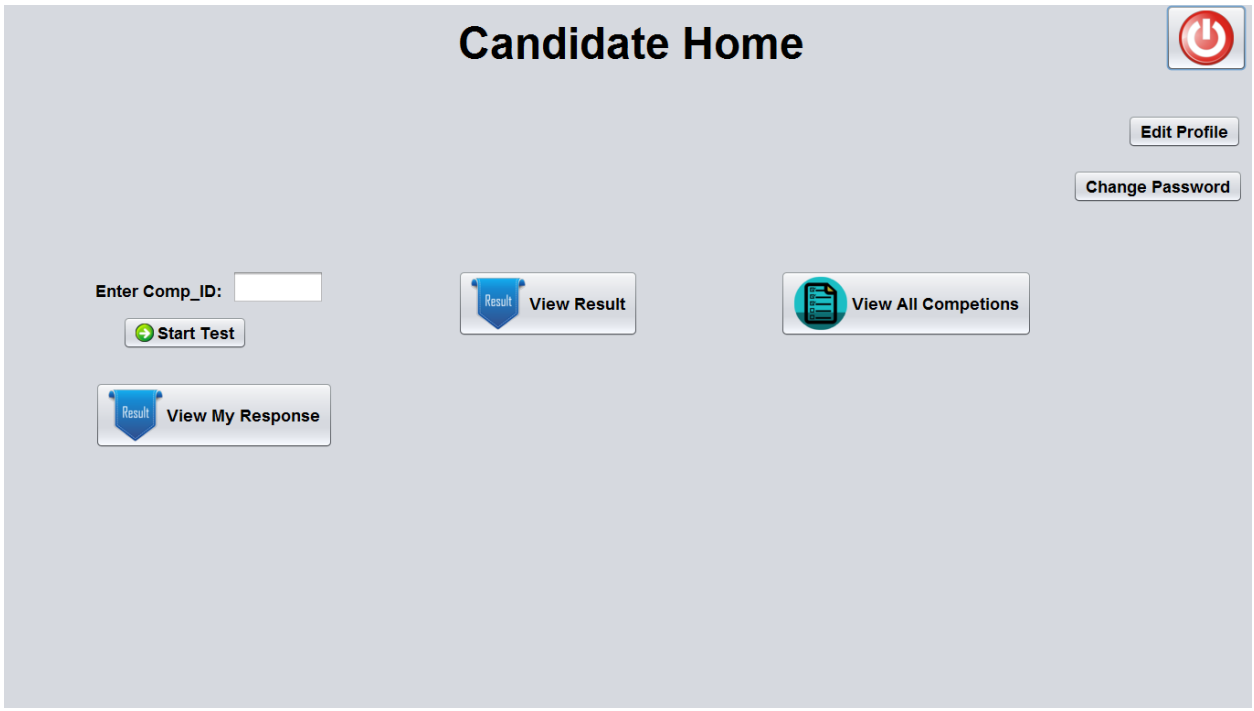
Sign-up feature, in case of non-existent account.



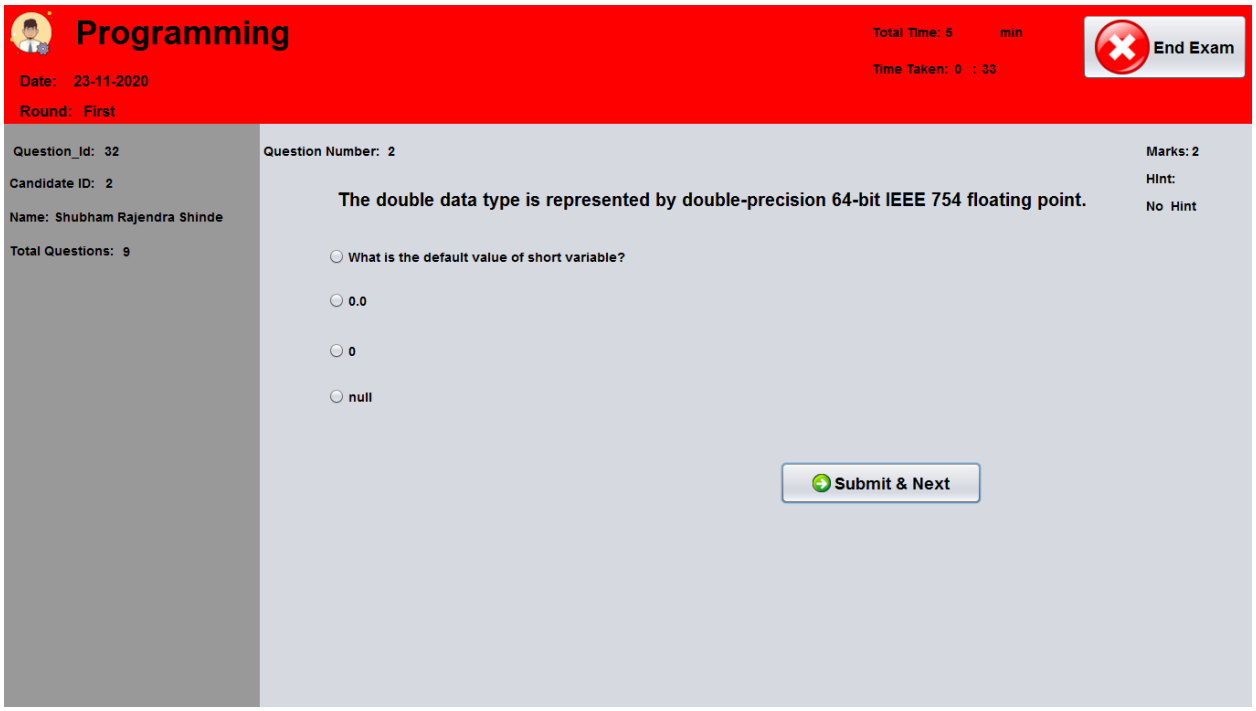
Sign-Up example.



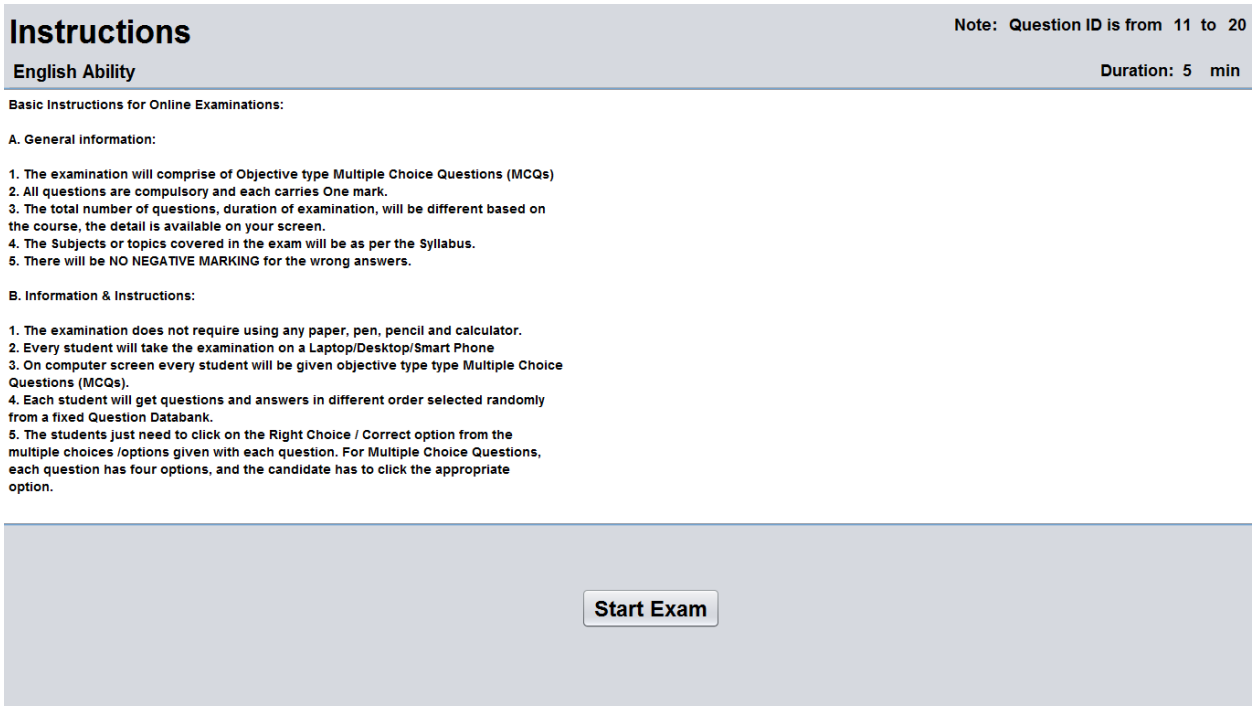
Candidate home with various features.



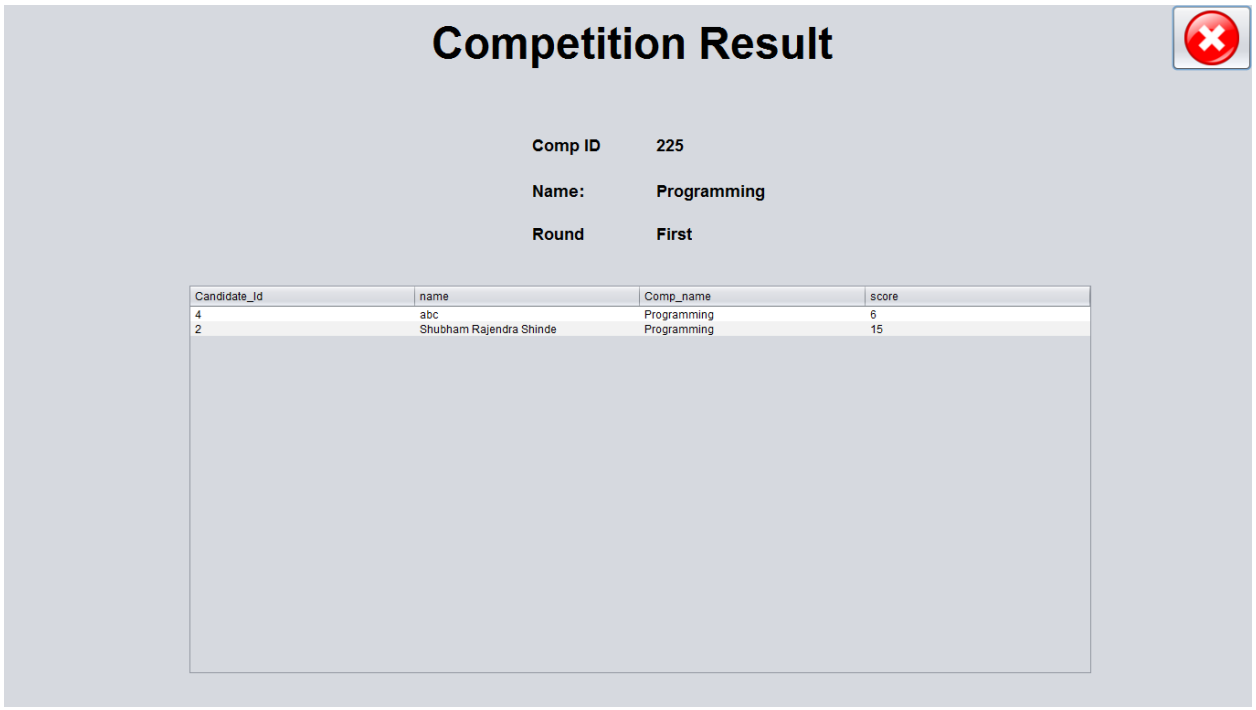
An in-exam Screenshot of the UI while taking the exams for students.



Instructions page for the students to follow guidelines.

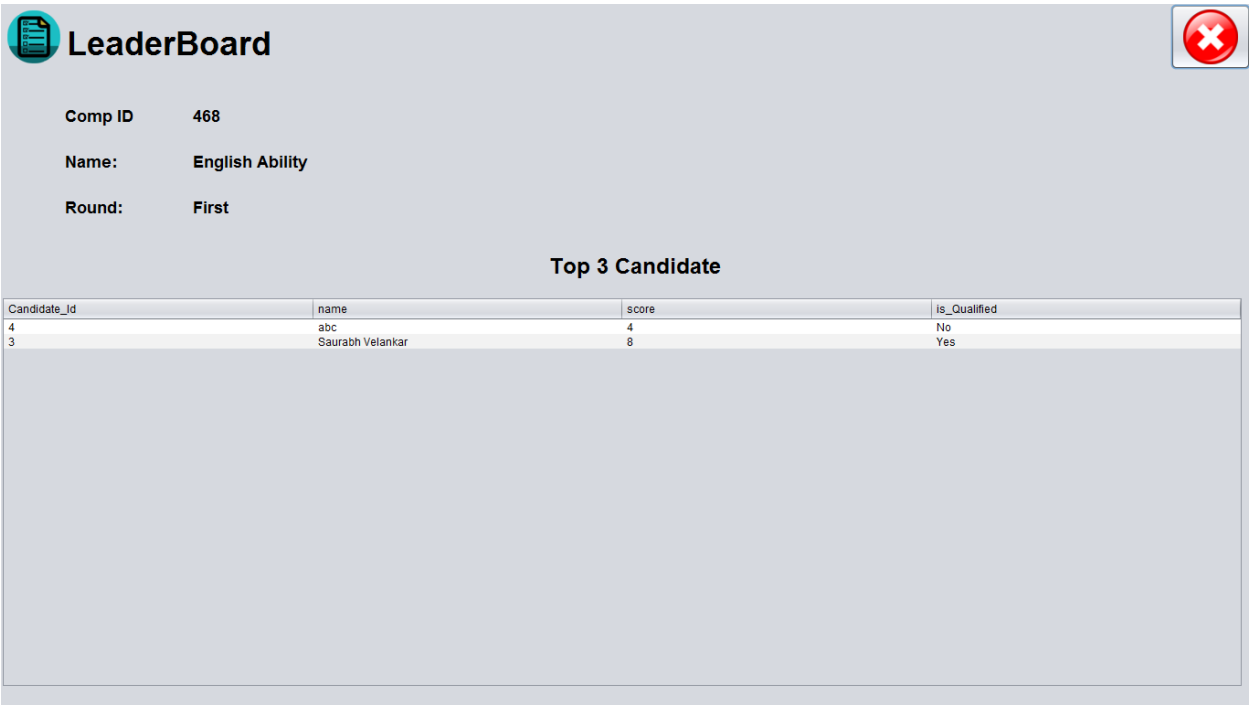


Competition results after appearing for the exam.

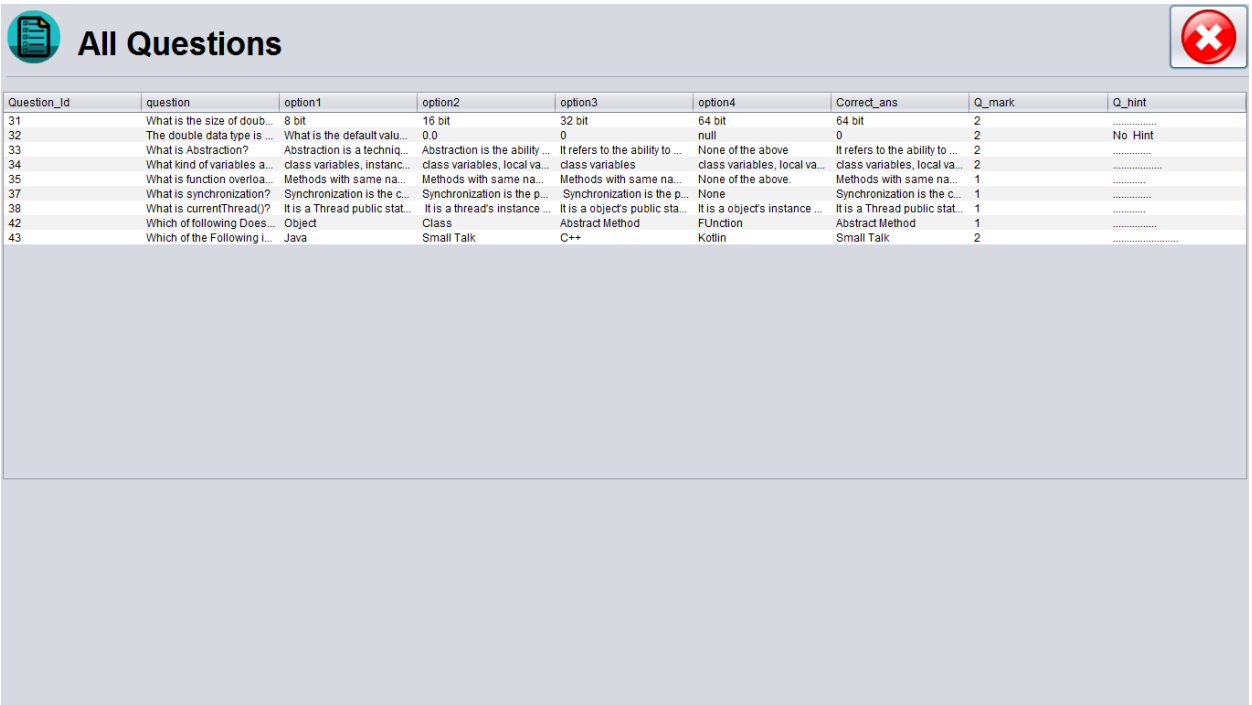


A list of qualified candidates is automatically updated.

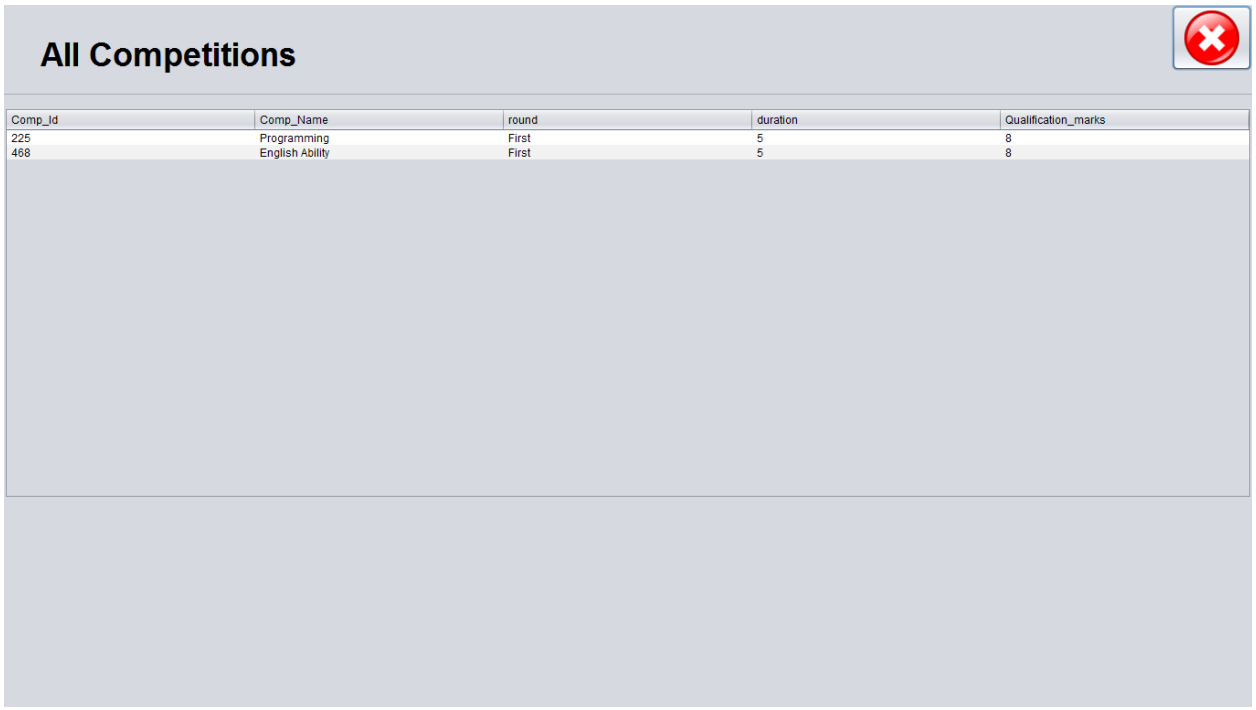
A Leaderboard system is updated automatically.



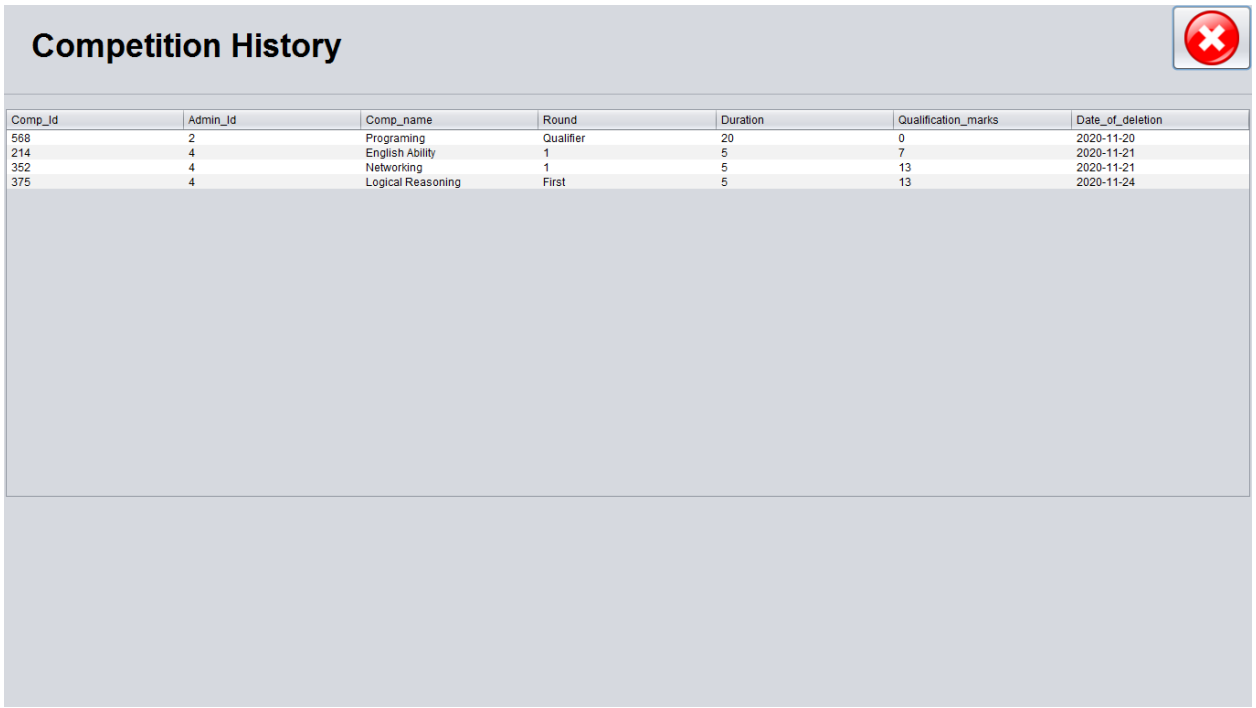
A “View Result” feature which lets the user view given answers.



A list of all competitions which the admin has created.



Competition history which shows all the past and existing competitions.



Conclusion:

A Quiz based Management system was Made using Java Swing and MySQL systems on the NetBeans IDE. An in-depth understanding of databases was understood. Concepts such as ER Diagrams, Schema diagrams were implemented successfully.