

**A PROJECT REPORT ON**  
**QUIZ-BASED EXAM MANAGEMENT SYSTEM**

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

**BACHELOR OF TECHNOLOGY IN**  
**INFORMATION TECHNOLOGY**

Submitted By:

<b>Name</b>	<b>GR No.</b>	<b>Roll No.</b>
<b>Shubham R. Shinde</b>	21810526	331052
<b>Saurabh Velankar</b>	21810493	331062
<b>Sumit Vairalkar</b>	21810617	331060

UNDER THE GUIDANCE OF

**Swati Patil Madam**



**DEPARTMENT OF INFORMATION TECHNOLOGY**  
**VISHWAKARMA INSTITUTE OF INFORMATION TECHNOLOGY,**  
**Pune - 411048**  
**[2019 - 2020]**

## Table of Contents

Title: .....	3
Aim: .....	3
Objective: .....	3
Theory: .....	4
1. Database Management System: .....	4
2. Applications of DBMS.....	4
3. SQL .....	5
4. Applications of SQL .....	5
5. JAVA and Swing: .....	5
6. Applications of Java: .....	6
7. Swing Features .....	6
Programs: .....	7
ER Diagram and Schema: .....	8
ER diagram: .....	8
Schema Diagram: .....	9
Output Screenshots: .....	9
Conclusion: .....	20

**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 **Atomicity**, **Consistency**, **Isolation**, and **Durability** (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

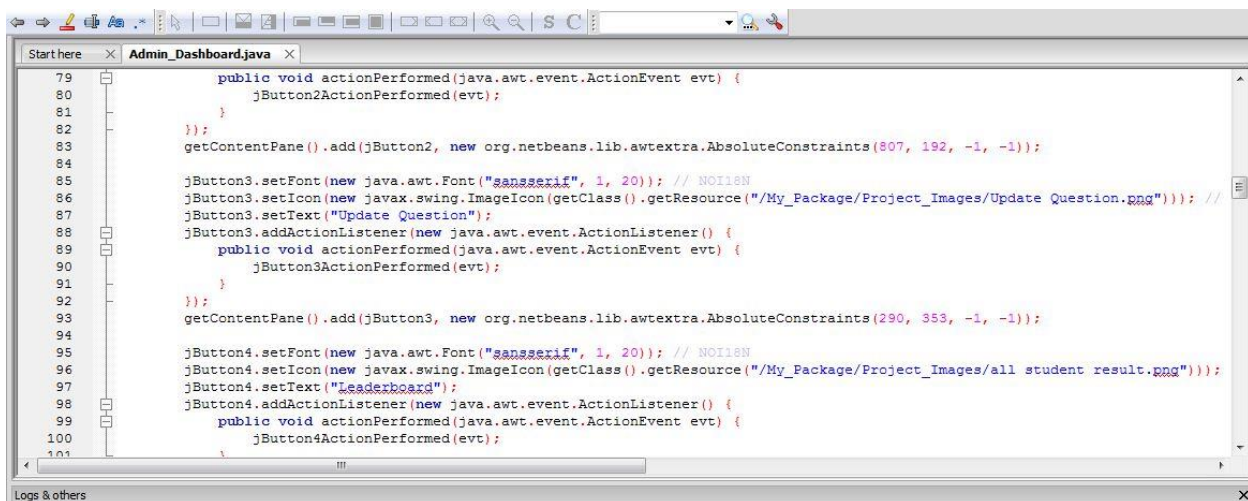
- **Light Weight** – Swing components are independent of native Operating System's API as Swing API controls are rendered mostly using pure JAVA code instead of underlying operating system calls.
- **Rich Controls** – Swing provides a rich set of advanced controls like Tree, TabbedPane, slider, color 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.

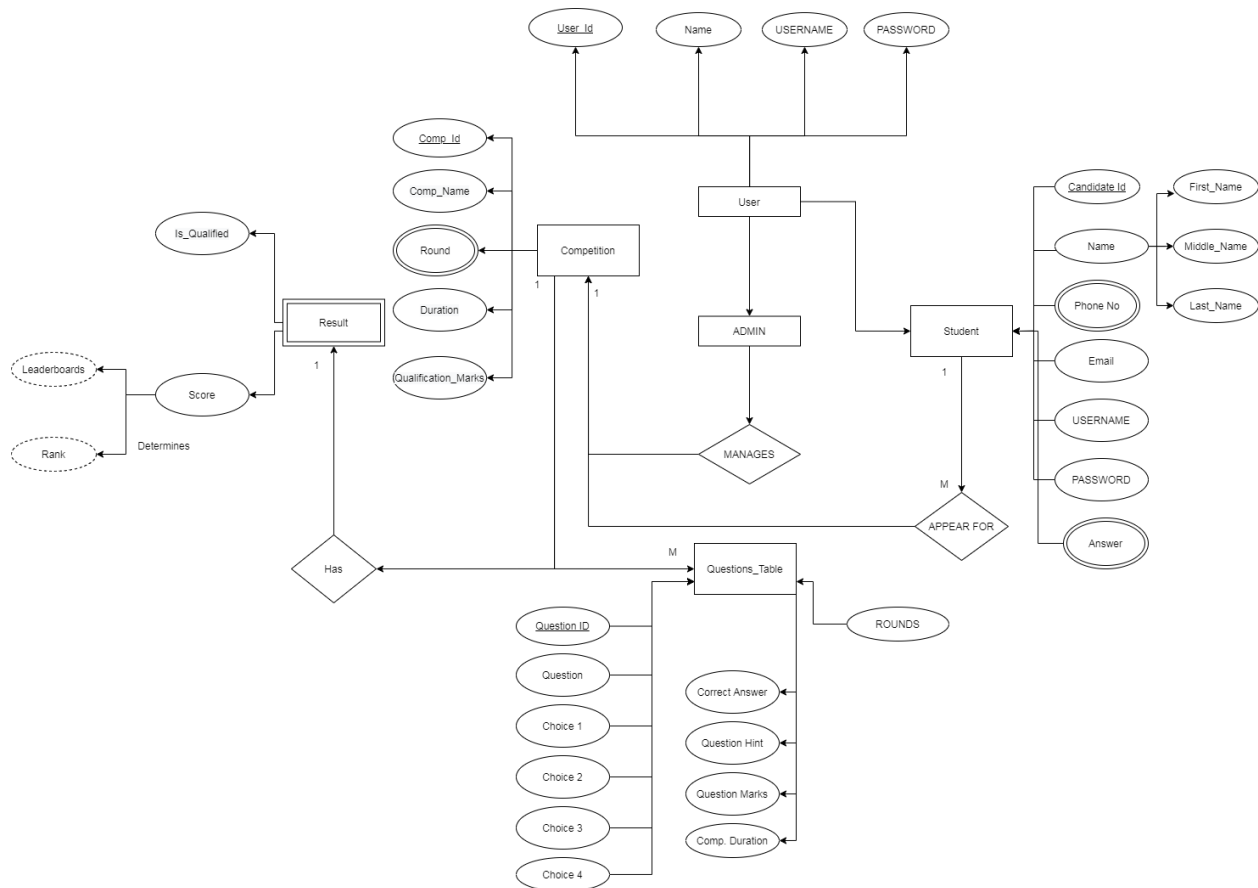
The example shows Some functions such as “JButton.setFont();” or “JButton.setIcon();” which are able to style any clickable button on the front end. The functions shown here are able to add two add buttons on the Admin home page with various styles such as Icon, Text font, Background Color etc. and also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



## ER Diagram and Schema:

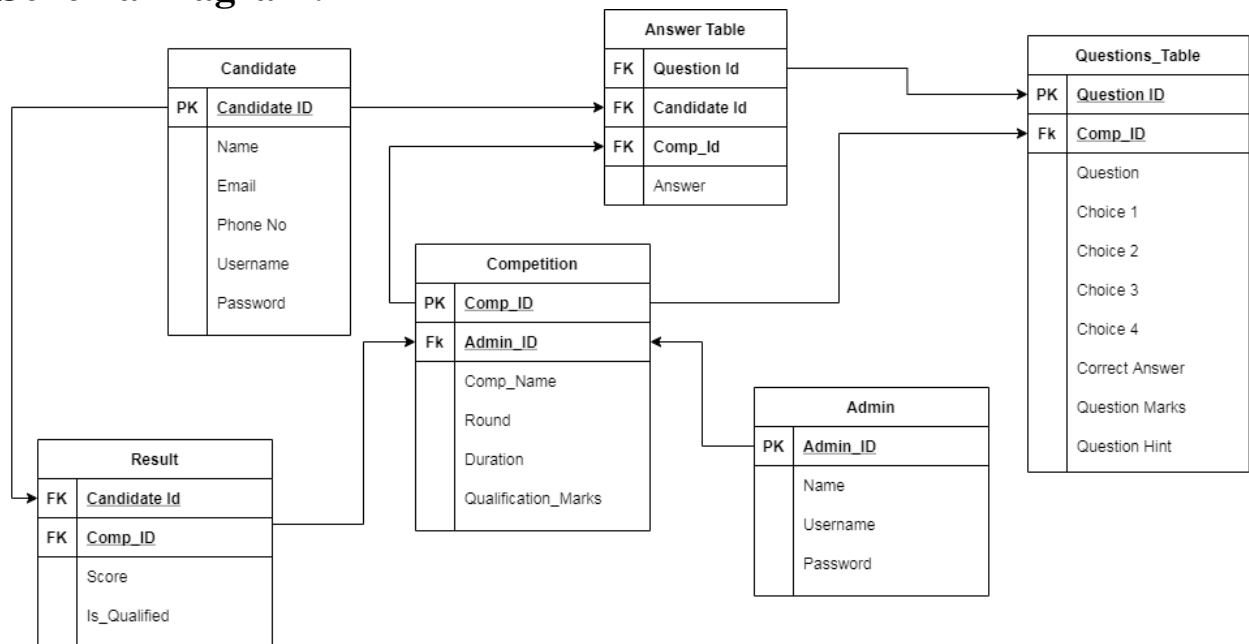
Following are the ER diagram and the Schema diagram which relates to the various functions and attributes in our project

### ER diagram:





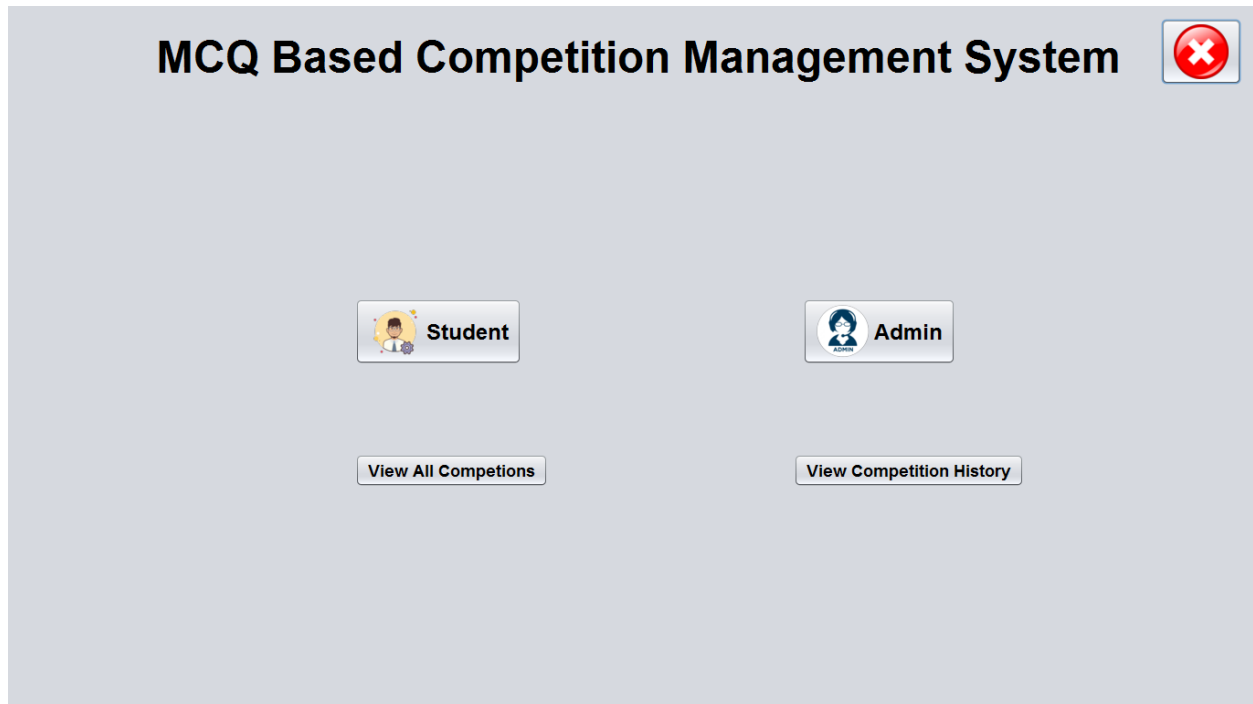
## Schema Diagram:



## Output Screenshots:

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

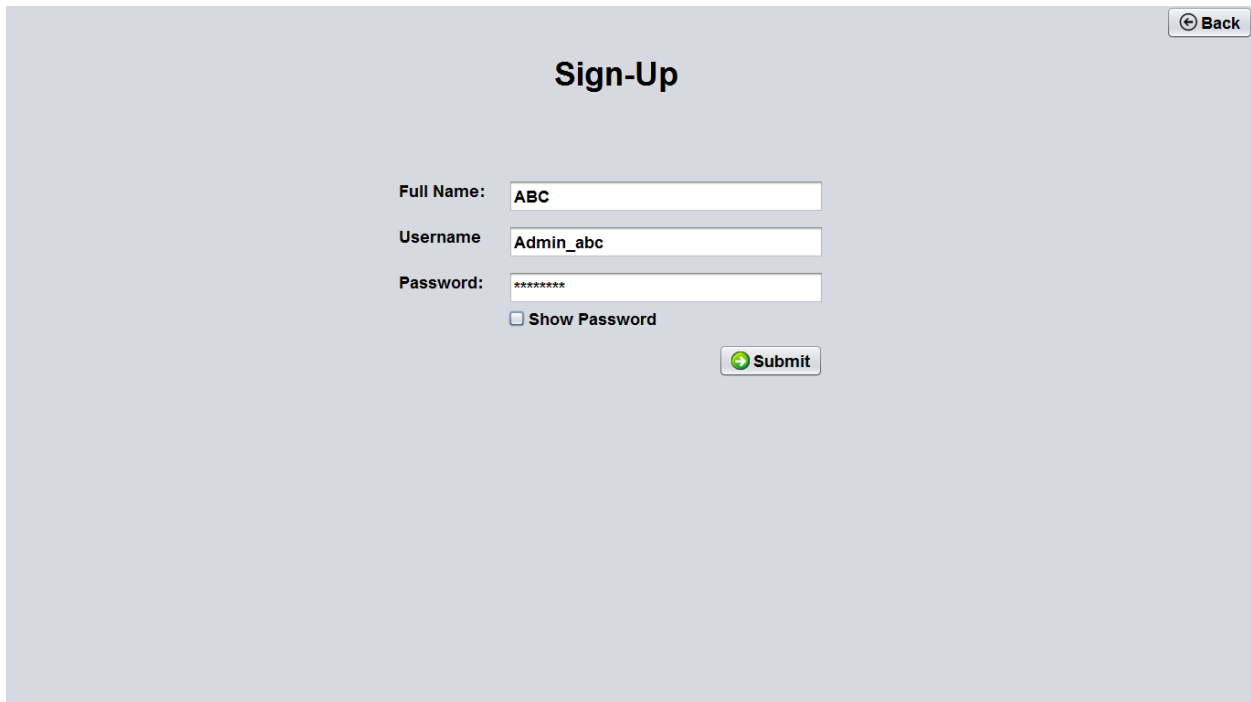
The landing page of the System with admin and candidate login.



Admin login page with login example.

The screenshot shows the 'Admin Login' page. It features a 'Back' button in the top right corner. The main heading is 'Admin Login'. Below this, there are two input fields: 'Username' with the value 'Admin' and 'Password' with the value '\*\*\*\*\*'. A checkbox labeled 'Show Password' is located below the password field. A green 'Login' button is positioned below the password field. At the bottom, there is a 'New User ?' label and a 'Sign-Up' button.

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



The Sign-Up form is centered on a light gray background. It features a title "Sign-Up" at the top. Below the title, there are three input fields: "Full Name:" with the value "ABC", "Username" with the value "Admin\_abc", and "Password:" with the value "\*\*\*\*\*". A checkbox labeled "Show Password" is located below the password field. A "Submit" button with a green arrow icon is positioned to the right of the password field. A "Back" button with a left arrow icon is in the top right corner.

Sign-Up

Full Name: ABC

Username: Admin\_abc

Password: \*\*\*\*\*

☐ Show Password

Submit

Back

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



The Admin Home page has a light gray background. At the top center is the title "Admin Home". On the right side, there is a red power button icon, and below it are three buttons: "Edit Account", "Change Password", and "Delete Account". In the center, there are two main buttons: "Create New Competiton" (with a plus and question mark icon) and "View/Edit Existing Competiton" (with a document icon). Below these is a "View All Competions" button. An "Input" dialog box is open in the bottom right, titled "Input" with a red close button. It contains a question mark icon, the text "Enter Competition Code", a text input field, and "OK" and "Cancel" buttons.

Admin Home

Edit Account

Change Password

Delete Account

Create New Competiton

View/Edit Existing Competiton

View All Competions

Input

Enter Competition Code

OK Cancel


Admin dashboard with various functionalities




The Add Question Feature.

The screenshot shows the 'Add Question' form. The title bar includes a question mark icon and the text 'Add Question', along with a red close button. The form fields are as follows: 'Question ID:' with the value '31'; 'Question:' with a text input field; 'Option 1:', 'Option 2:', 'Option 3:', and 'Option 4:' each with a text input field; 'Correct Answer:' with a text input field; 'Marks:' with a text input field; and 'Hint:' with a text input field. At the bottom, there are two buttons: 'Clear' (with a red eraser icon) and 'Add' (with a blue plus icon).

Delete Question feature.




## Delete Question




### Question Preview


Question_ID:	<input type="text" value="21"/>	<input type="button" value="Search"/>
Question:	Evaluate the expression: $2 + 5 * 6 - 7 * 8 / 4 + 6$	
Option 1:	<input type="text" value="22"/>	
Option 2:	<input type="text" value="23"/>	
Option 3:	<input type="text" value="21"/>	
Option 4:	<input type="text" value="24"/>	
Correct Answer:	<input type="text" value="24"/>	
Marks:	<input type="text" value="3"/>	
Hint:	<input type="text" value="NO Hint"/>	

 Delete

Update Question feature with text field for updating.



## Update Question



Question_ID:	<input type="text" value="22"/>	<input type="button" value="Search"/>
Question:	<input type="text" value="class is 1400. Can you find the average height of students in the class?"/>	
Option 1:	<input type="text" value="110.84"/>	
Option 2:	<input type="text" value="122.5"/>	
Option 3:	<input type="text" value="116.67"/>	
Option 4:	<input type="text" value="128.34"/>	
Correct Answer:	<input type="text" value="116.67"/>	
Marks:	<input type="text" value="2"/>	
Hint:	<input type="text" value="....."/>	

Candidate Login page.

[← Back](#)

## Candidate Login

Username:

Password:

☐ Show Password

[Sign-In](#)

New User ? [Sign-Up](#)

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

[← Back](#)

## Sign-Up

Full Name:

Email ID:

Ph NO:

Username:

Password:

[Submit](#)

Error

Incorrect Email Address !!!

OK

Sign-Up example.

[← Back](#)

## Sign-Up

Full Name:

Email ID:

Ph NO:

Username:

Password:

☐ Show Password

[→ Submit](#)

Candidate home with various features.

[⏻](#)

## Candidate Home

[Edit Profile](#)  
[Change Password](#)

Enter Comp\_ID:


[→ Start Test](#)

[Result View Result](#)

[View All Competions](#)

[Result View My Response](#)

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


**Programming**

Date: 23-11-2020

Round: First

Total Time: 5 min

Time Taken: 0 : 33

End Exam

Question\_Id: 32

Candidate ID: 2

Name: Shubham Rajendra Shinde

Total Questions: 9

Question Number: 2

Marks: 2

Hint: No Hint


The double data type is represented by double-precision 64-bit IEEE 754 floating point.

☐ What is the default value of short variable?

☐ 0.0

☐ 0

☐ null



Instructions page for the students to follow guidelines.

**Instructions**

Note: Question ID is from 11 to 20

English Ability

Duration: 5 min

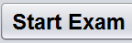
Basic Instructions for Online Examinations:

A. General information:

1. The examination will comprise of Objective type Multiple Choice Questions (MCQs)
2. All questions are compulsory and each carries One mark.
3. The total number of questions, duration of examination, will be different based on the course, the detail is available on your screen.
4. The Subjects or topics covered in the exam will be as per the Syllabus.
5. There will be NO NEGATIVE MARKING for the wrong answers.

B. Information & Instructions:

1. The examination does not require using any paper, pen, pencil and calculator.
2. Every student will take the examination on a Laptop/Desktop/Smart Phone
3. On computer screen every student will be given objective type type Multiple Choice Questions (MCQs).
4. Each student will get questions and answers in different order selected randomly from a fixed Question Databank.
5. The students just need to click on the Right Choice / Correct option from the multiple choices /options given with each question. For Multiple Choice Questions, each question has four options, and the candidate has to click the appropriate option.





Competition results after appearing for the exam.

## Competition Result

Comp ID

225

Name:

Programming

Round

First

Candidate_Id	name	Comp_name	score
4	abc	Programming	6
2	Shubham Rajendra Shinde	Programming	15

A list of qualified candidates is automatically updated.



## Qualified Candidates

candidate_id	Name	email	score
2	Shubham Rajendra Shinde	shubham.21810526@vinit.ac.in	15

A Leaderboard system is updated automatically.

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

All Questions								
Question_Id	question	option1	option2	option3	option4	Correct_ans	Q_mark	Q_hint
31	What is the size of doub...	8 bit	16 bit	32 bit	64 bit	64 bit	2	.....
32	The double data type is ...	What is the default valu...	0.0	0	null	0	2	No Hint
33	What is Abstraction?	Abstraction is a techniq...	Abstraction is the ability ...	It refers to the ability to ...	None of the above	It refers to the ability to ...	2	.....
34	What kind of variables a...	class variables, instanc...	class variables, local va...	class variables	class variables, local va...	class variables, local va...	2	.....
35	What is function overloa...	Methods with same na...	Methods with same na...	Methods with same na...	None of the above	Methods with same na...	1	.....
37	What is synchronization?	Synchronization is the c...	Synchronization is the p...	Synchronization is the p...	None	Synchronization is the c...	1	.....
38	What is currentThread()?	It is a Thread public stat...	It is a thread's instance ...	It is a object's public sta...	It is a object's instance ...	It is a Thread public stat...	1	.....
42	Which of following Does...	Object	Class	Abstract Method	FUnction	Abstract Method	1	.....
43	Which of the Following I...	Java	Small Talk	C++	Kotlin	Small Talk	2	.....

A list of all competitions which the admin has created.

All Competitions				
Comp_Id	Comp_Name	round	duration	Qualification_marks
225	Programming	First	5	8
468	English Ability	First	5	8

Competition history which shows all the past and existing competitions.

Competition History						
Comp_Id	Admin_Id	Comp_name	Round	Duration	Qualification_marks	Date_of_deletion
568	2	Programing	Qualifier	20	0	2020-11-20
214	4	English Ability	1	5	7	2020-11-21
352	4	Networking	1	5	13	2020-11-21
375	4	Logical Reasoning	First	5	13	2020-11-24

## **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.