QUIZ APPLICATION

Semester Long Project

Table of Content

Agenda

1. User Registration
2. Rules
3. Question Display
4. Answer Submission
5. Scoring
6. Results
7. Timer

OOPS Concepts

Classes and Objects

Class in Java is a template or a blueprint for creating Objects, and it defines the attributes and behaviors of Objects of a certain type. On the other hand, an Object is an Instance of a Class, representing a real-world entity with its behavior and state.

Register Class:

- Represents the registration form of the quiz application.
- Inherits from the JFrame class.
- Constructs a registration form with input fields for username and password.
- Displays error messages for incomplete or invalid inputs.
- Provides an option to navigate back to the login page if the user is already registered.

Rules and Score Class:

- Displays the rules of the quiz game.
- Inherits from the JFframe class and implements the ActionListener interface.
- Represents the score page displayed after completing the quiz.
- Provides options to play again or close the application.

Credentials Class:

- Manages user credentials for login functionality.
- Provides **methods** to add and validate users' credentials.
- Utilizes exceptions for error handling, including **FileDeletedException, UserAlreadyExistsException** and **UserDoesNotExistsException**.

Login Class:

- Represents the login page of the quiz application.
- Inherits from the JFrame class and implements the ActionListener interface.

Quiz Class:

- Implements the quiz functionality.
- Displays questions with multiple-choice options.
- Tracks user answers and calculates scores.
- Includes a timer for each question.

Main Methods:

. Both Login and Quiz classes have a main method to instantiate objects of their respective classes.

Encapsulation

Access Modifiers:

The access modifiers private and static are used to encapsulate variables and methods within the Credentials class. For example, the path, fileName, and name variables are declared as private static, restricting direct access from outside the class and ensuring data encapsulation.

Encapsulation of Data:

The Credentials class encapsulates data related to user credentials management, including username, password, and file paths. These details are hidden from other classes and are accessed only through well-defined methods like addUser(), validate() etc.

Exception Handling:

Custom exception classes **(FileDeletedException, UserAlreadyExistsException** and **UserDoesNotExistsException) are encapsulated within the Credentials class**. These exceptions encapsulate specific error conditions and provide controlled access to exception handling logic.

Method Encapsulation:

The **addUser()** and **validate()** methods encapsulate the logic for adding a new user and validating user credentials, respectively. These methods encapsulate the implementation details of user management and provide a clear interface for interaction with other parts of the program.

Grouping Related Functionality:

Related functionality, such as user registration and login, is encapsulated within the Login and Register classes, respectively. This encapsulation helps in organizing and managing different aspects of the application's behavior in a modular and understandable way.

Encapsulation of Data and Logic:

The Register, Rules, and Score classes encapsulate specific functionality related to registration, displaying rules, and showing the score, respectively. Each class encapsulates its own set of UI components and logic.

Overall, encapsulation helps in organizing the code into modular, self-contained units, improving code readability, maintainability, and reusability. It also promotes the principle of separation of concerns, where each class is responsible for a specific aspect of the application'functionality.

Inheritance

Inheritance is a fundamental concept in object-oriented programming (OOP) where a class (subclass or derived class) can inherit properties and behaviour (methods) from another class (superclass or base class). This allows the subclass to reuse existing code from the superclass and extend its functionality. Following are the uses of Inheritance in our project:.

- Login, Quiz, Register, and Score classes extend Jframe.
- Inherits all properties and methods of JFrame.
- Utilizes JFrame functionality for window creation and management.
- Utilizes inherited methods to integrate Swing components (e.g., JLabel, JButton etc.) into the window.
- Properties and position components within the window can be set using inherited methods.
- Utilizes inherited methods to respond to user actions.

Polymorphism

Polymorphism is a fundamental concept in object-oriented programming (OOP) that allows objects of different classes to be treated as objects of a common superclass. It enables a single interface to represent multiple underlying forms (classes) and allows objects to be processed uniformly regardless of their specific types.

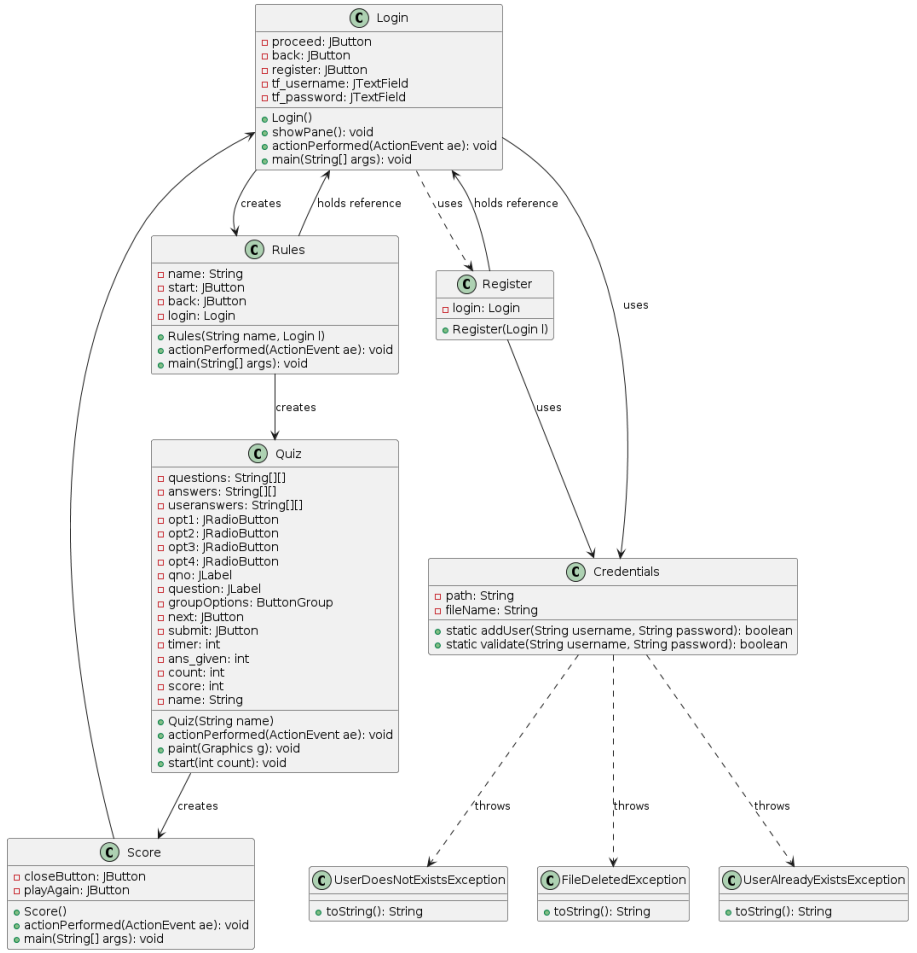
Method Overriding:

- Custom exception classes (e.g. **FileDeletedException, UserAlreadyExistsException** override the **toString()** method to provide meaningful error messages.
- The **actionPerformed()** method is overridden in various classes (e.g., Login, Quiz, Register, Rules, Score) to define specific actions for button clicks.

Interface Implementation:

Classes such as Login, Quiz, Register, Rules and Score implement the **ActionListener** interface to handle action events like button clicks.

By implementing this interface, these classes define the **actionPerformed()** method to respond to user interactions uniformly.

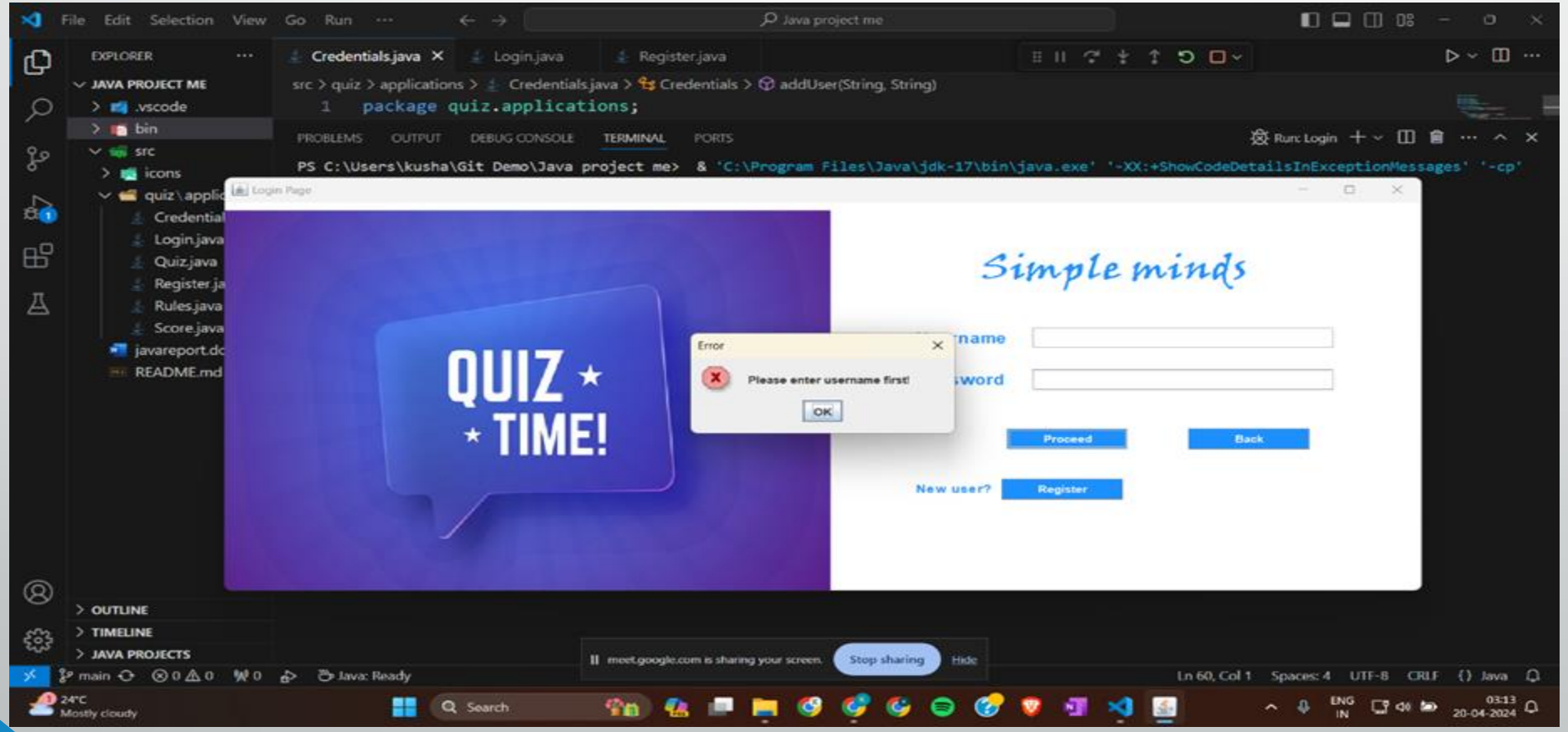


UML Of Quiz Application

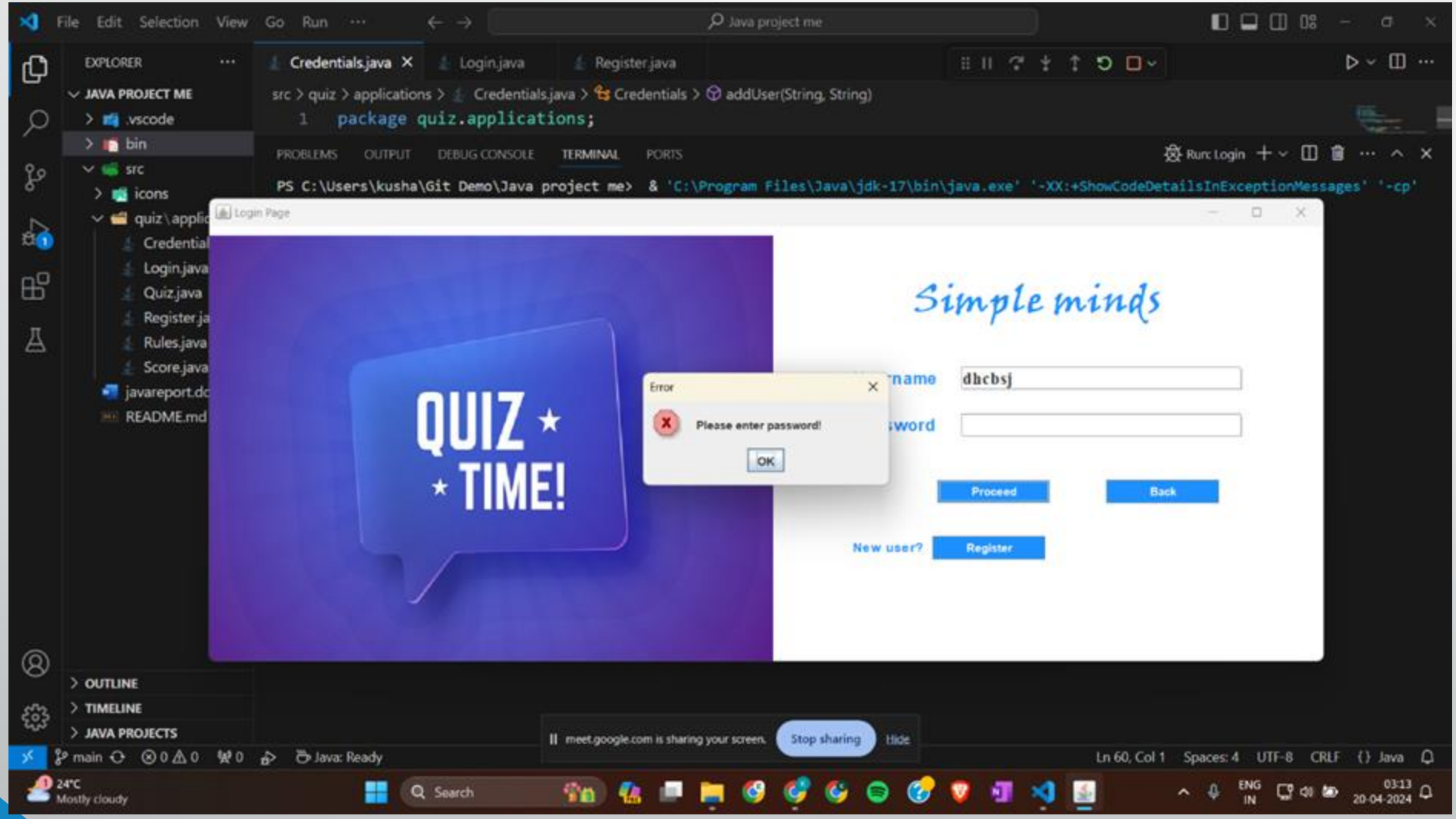
Code implementation:

Login Page

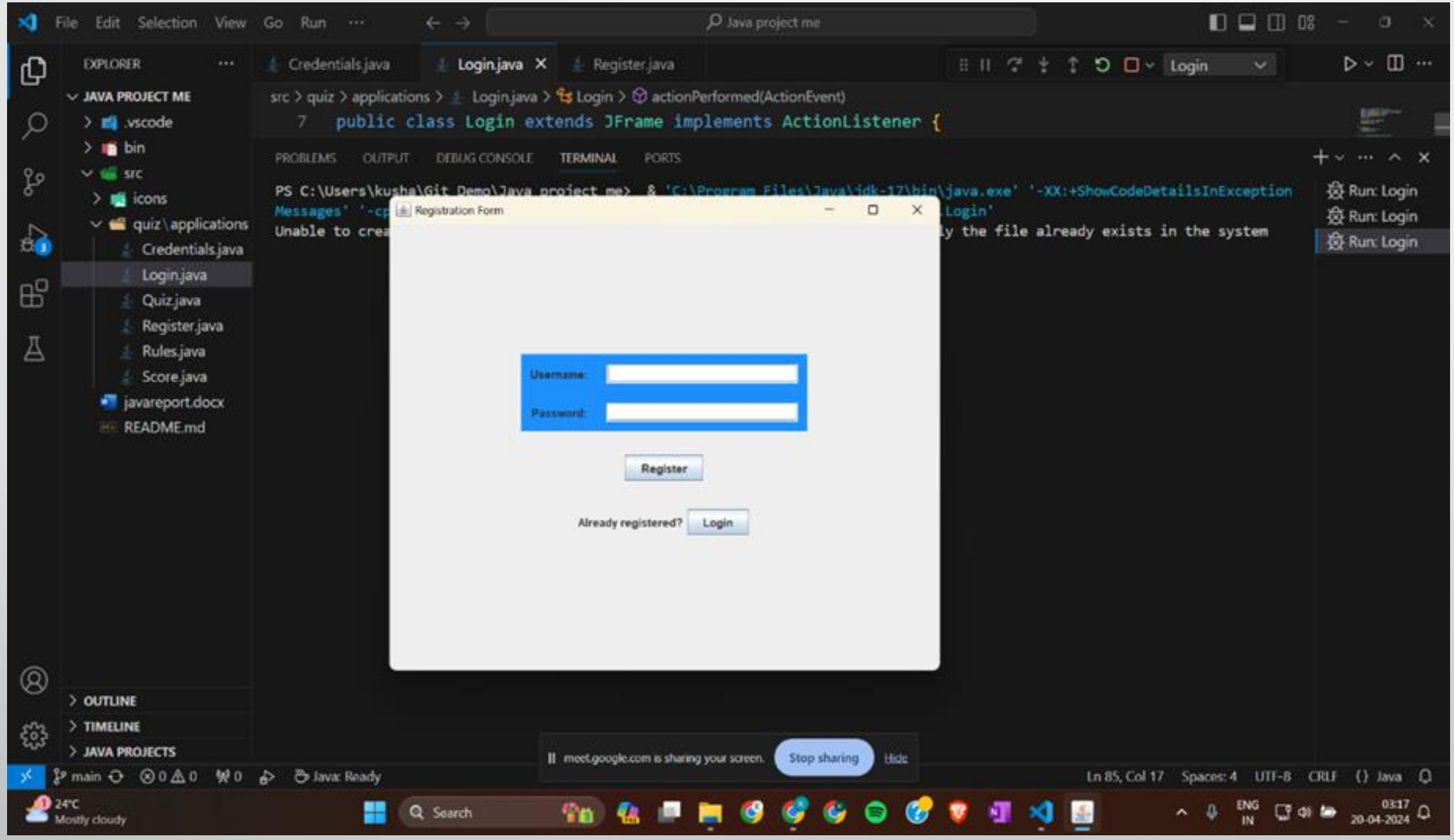
1) If username not entered



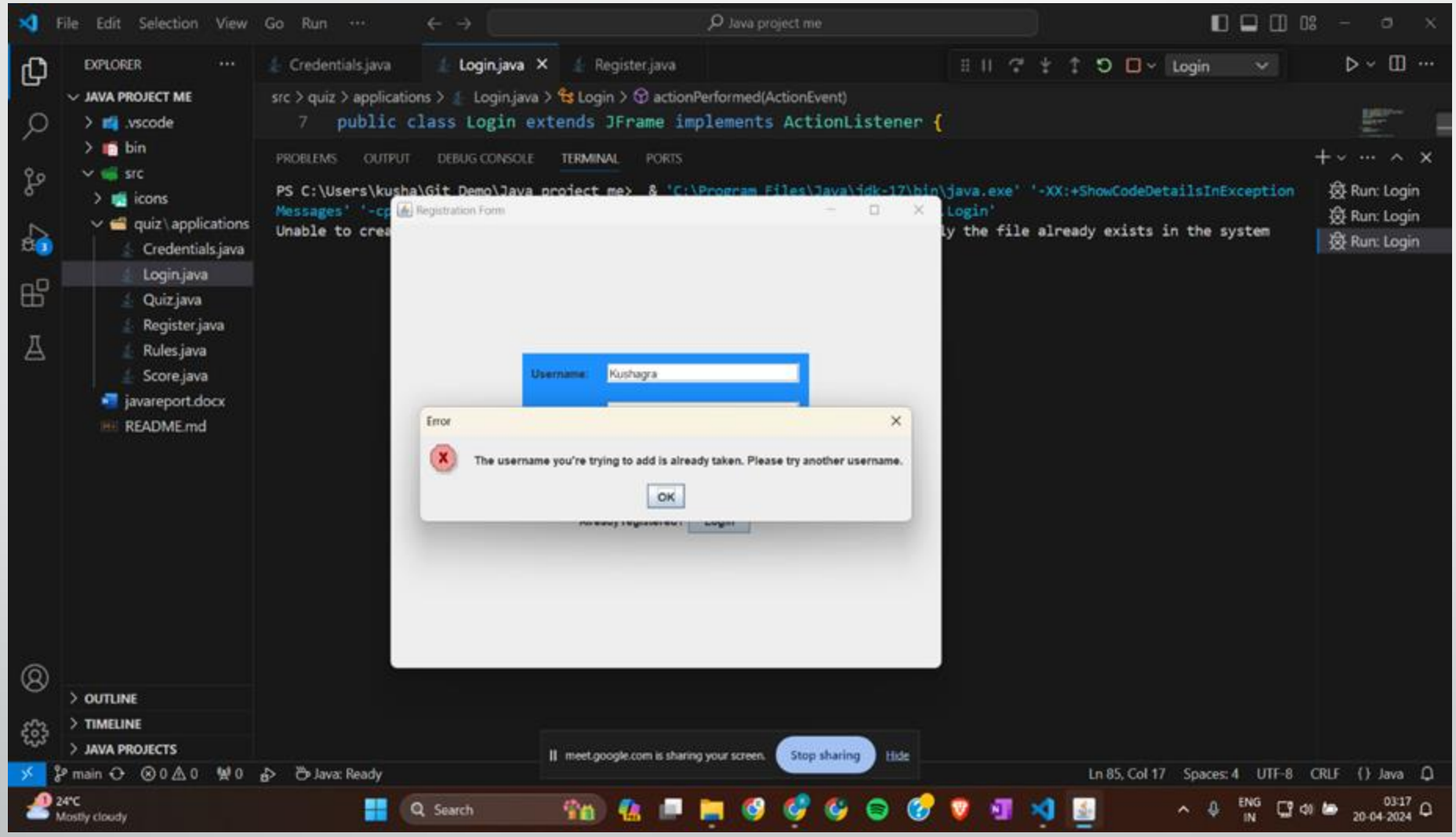
2) Missing password



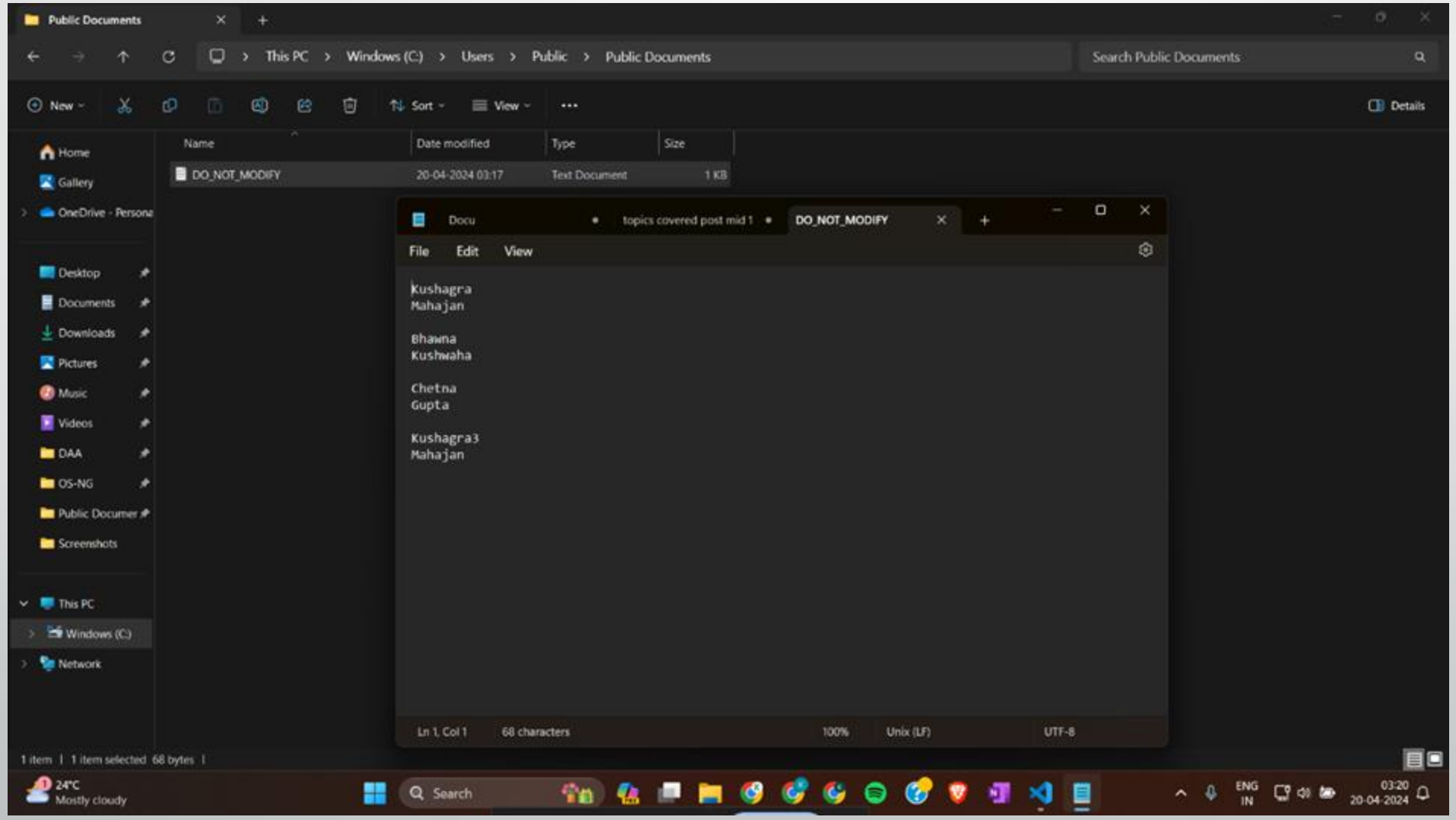
3) Register?


Registration Form
Username:
Password:
Register
Already registered?
Login

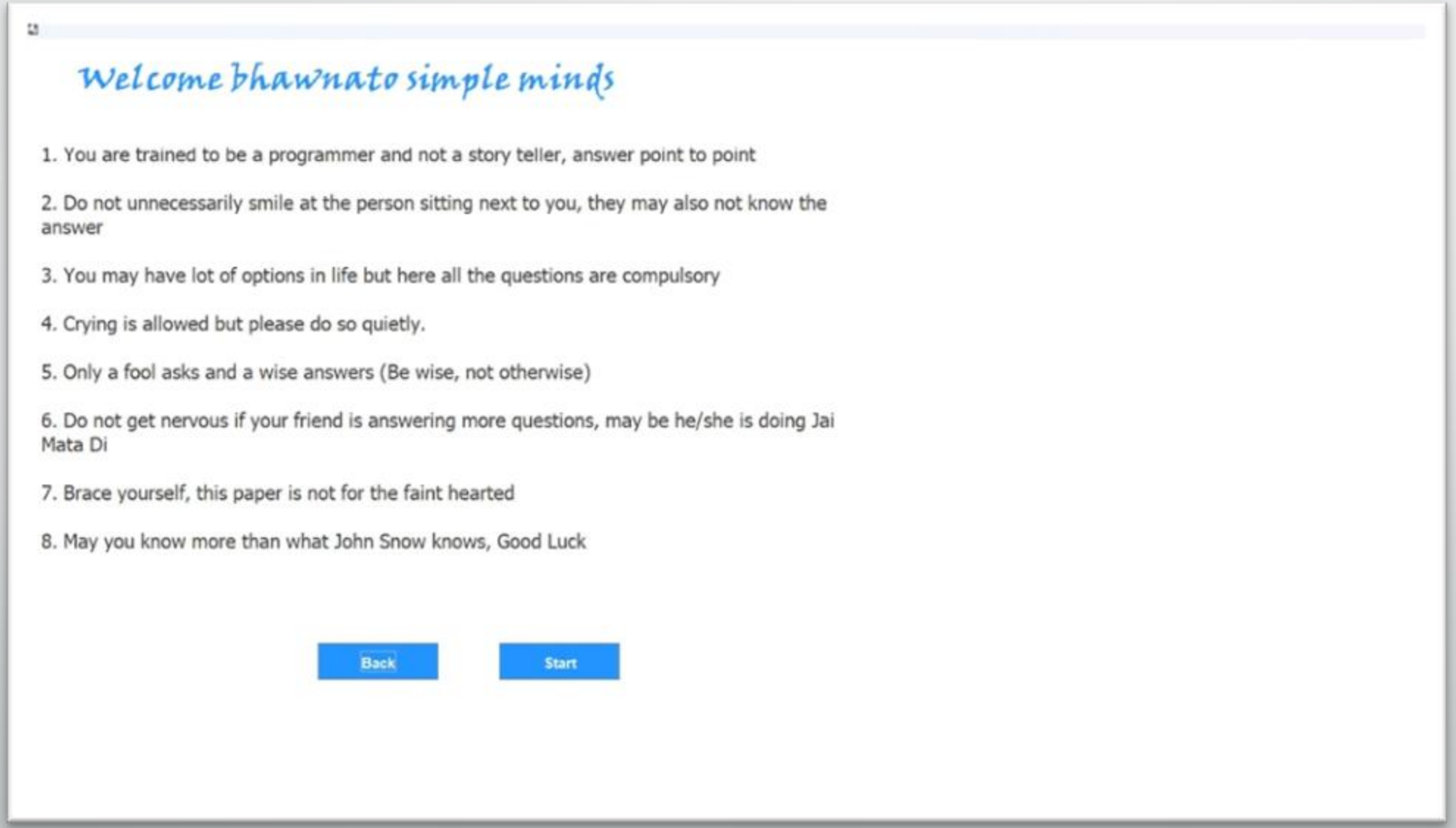
4) If user already registered.



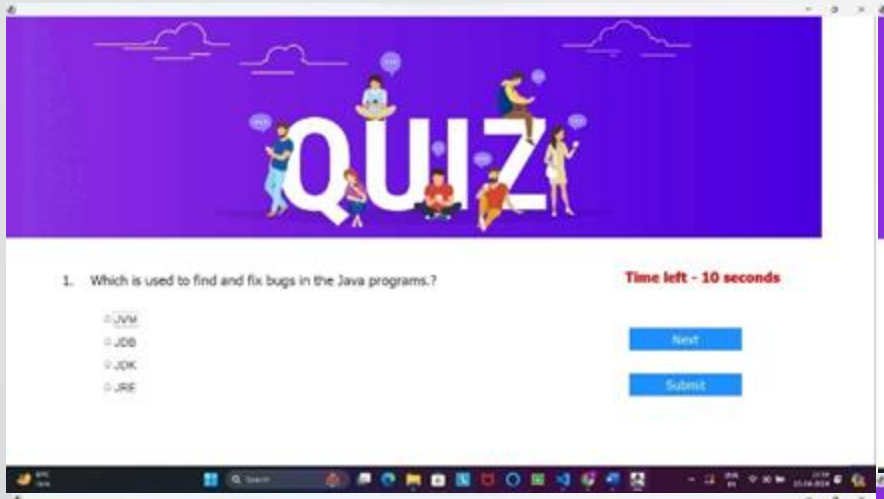
5) Data stored in text file.



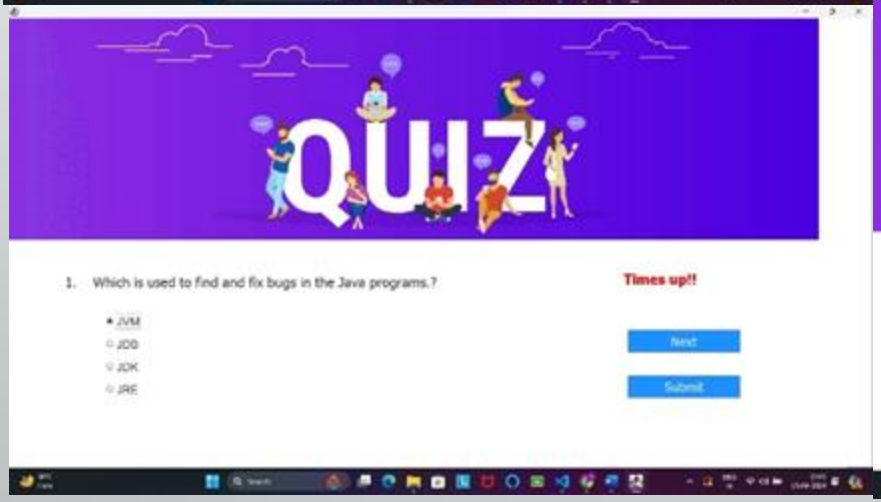
Rules Page


Welcome bhawnato simple minds
1. You are trained to be a programmer and not a story teller, answer point to point
2. Do not unnecessarily smile at the person sitting next to you, they may also not know the answer
3. You may have lot of options in life but here all the questions are compulsory
4. Crying is allowed but please do so quietly.
5. Only a fool asks and a wise answers (Be wise, not otherwise)
6. Do not get nervous if your friend is answering more questions, may be he/she is doing Jai Mata Di
7. Brace yourself, this paper is not for the faint hearted
8. May you know more than what John Snow knows, Good Luck
Back
Start

Questions


QUIZ
1. Which is used to find and fix bugs in the Java programs.?
Time left - 10 seconds
JVM
JDB
JDK
JRE
Next
Submit


QUIZ
2. What is the return type of the hashCode() method in the Object class?
int
Object
long
void
Next
Submit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JVM
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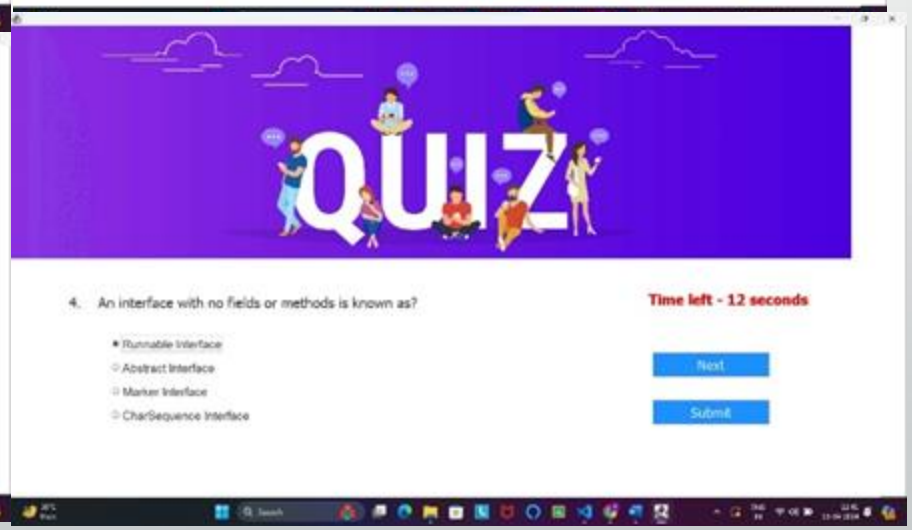
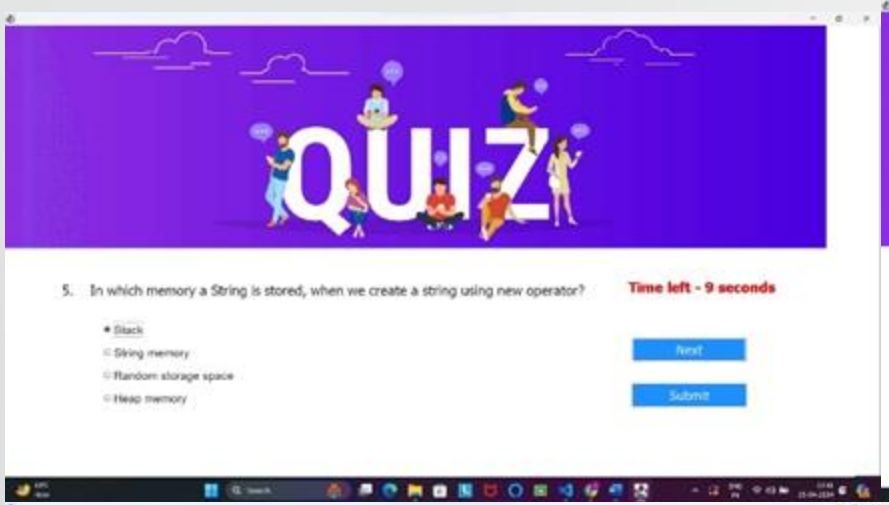
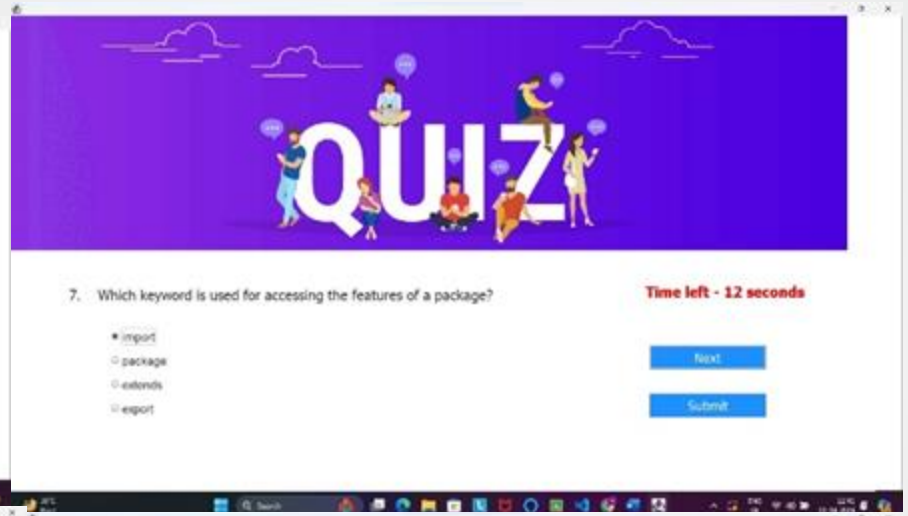
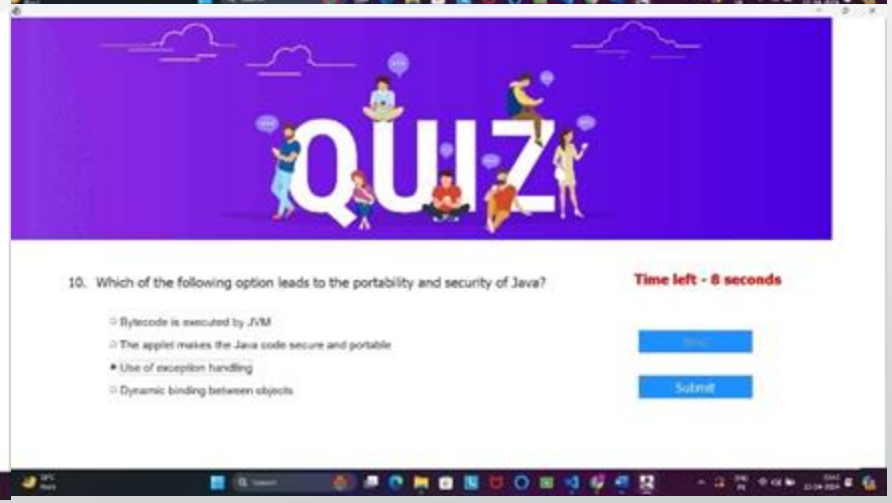
Submit

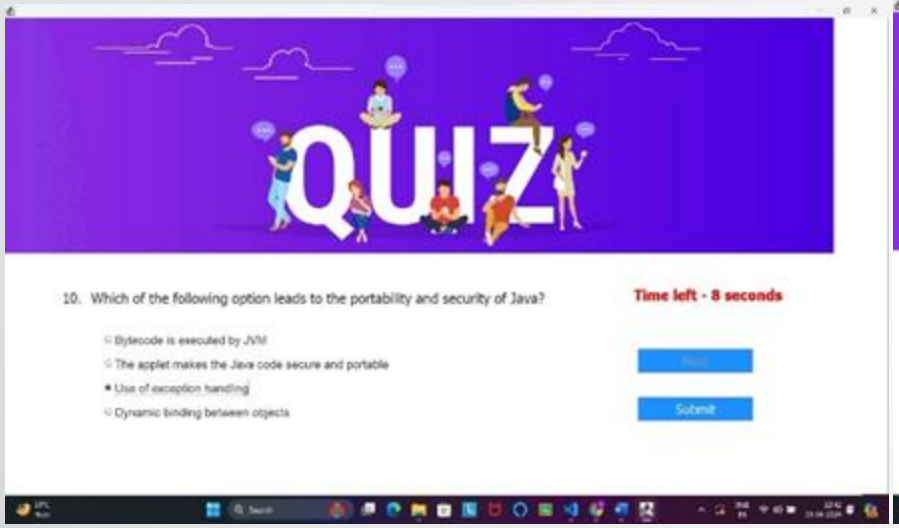

QUIZ
4. An interface with no fields or methods is known as?
Time left - 12 seconds
Runnable Interface
Abstract Interface
Marker Interface
CharSequence Interface
Next
Submit


QUIZ
5. In which memory a String is stored, when we create a string using new operator?
Time left - 9 seconds
Stack
String memory
Random storage space
Heap memory
Next
Submit


QUIZ
7. Which keyword is used for accessing the features of a package?
Time left - 12 seconds
import
package
extends
export
Next
Submit


QUIZ
9. Which of the following is a mutable class in java?
Time left - 7 seconds
java.lang.StringBuilder
java.lang.Short
java.lang.Byte
java.lang.String
Next
Submit


QUIZ
10. Which of the following option leads to the portability and security of Java?
Time left - 8 seconds
Bytecode is executed by JVM
The applet makes the Java code secure and portable
Use of exception handling
Dynamic binding between objects
Next
Submit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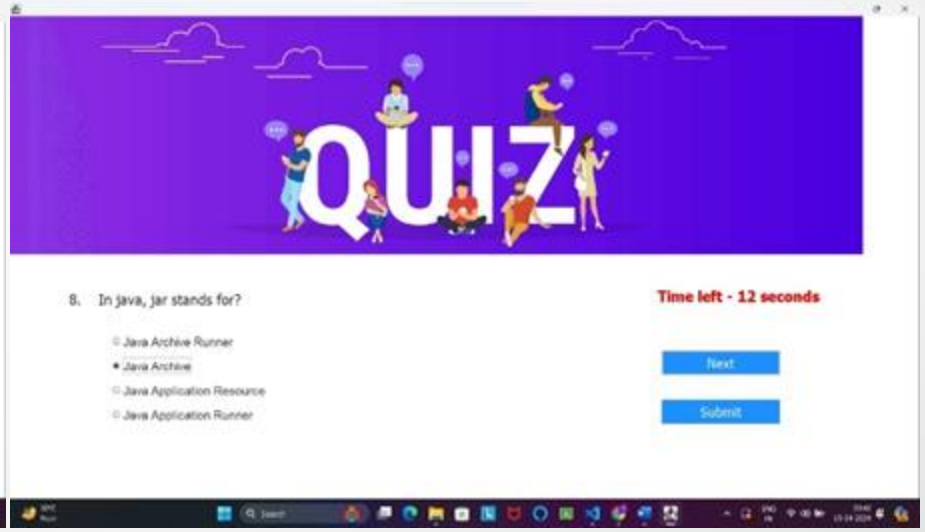
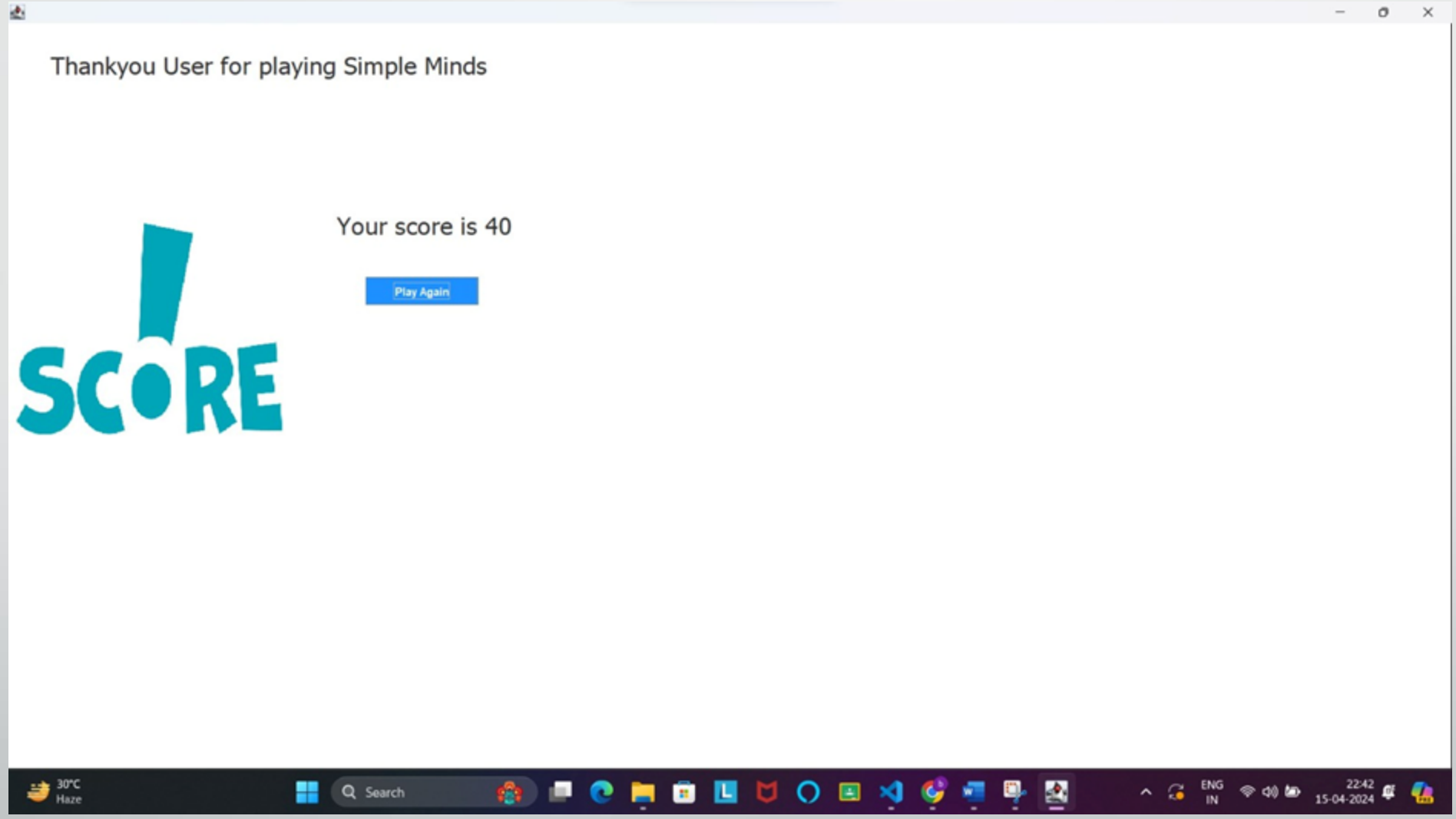

QUIZ
8. In java, jar stands for?
Time left - 12 seconds
Java Archive Runner
Java Archive
Java Application Resource
Java Application Runner
Next
Submit

Score


Thankyou User for playing Simple Minds
Your score is 40
Play Again
SCORE
30°C
Haze
Search
ENG
IN
22:42
15-04-2024

Conclusion

The creation of the "Simple Minds" quiz app highlights our team's collaborative efforts in utilizing Java programming and GUI design to craft an engaging application. Working together, we effectively implemented various features and functionalities, ensuring the app meets its primary goals. However, we recognize that teamwork doesn't end with the current version. As a team, we're committed to continuous improvement, embracing feedback, and leveraging each other's strengths to refine the application further. This collaborative spirit sets the groundwork for future enhancements, where our collective skills and dedication will drive the app's evolution to better serve our users and adapt to technological advancements.

Thank You!