

SKILL DEVELOPMENT

Project Report

**DLithe Consultancy Services Pvt.
Ltd.**



Project Report Assessment

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Submitted to

Signature of Training Supervisor

Date:

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Date:

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1.INTRODUCTION

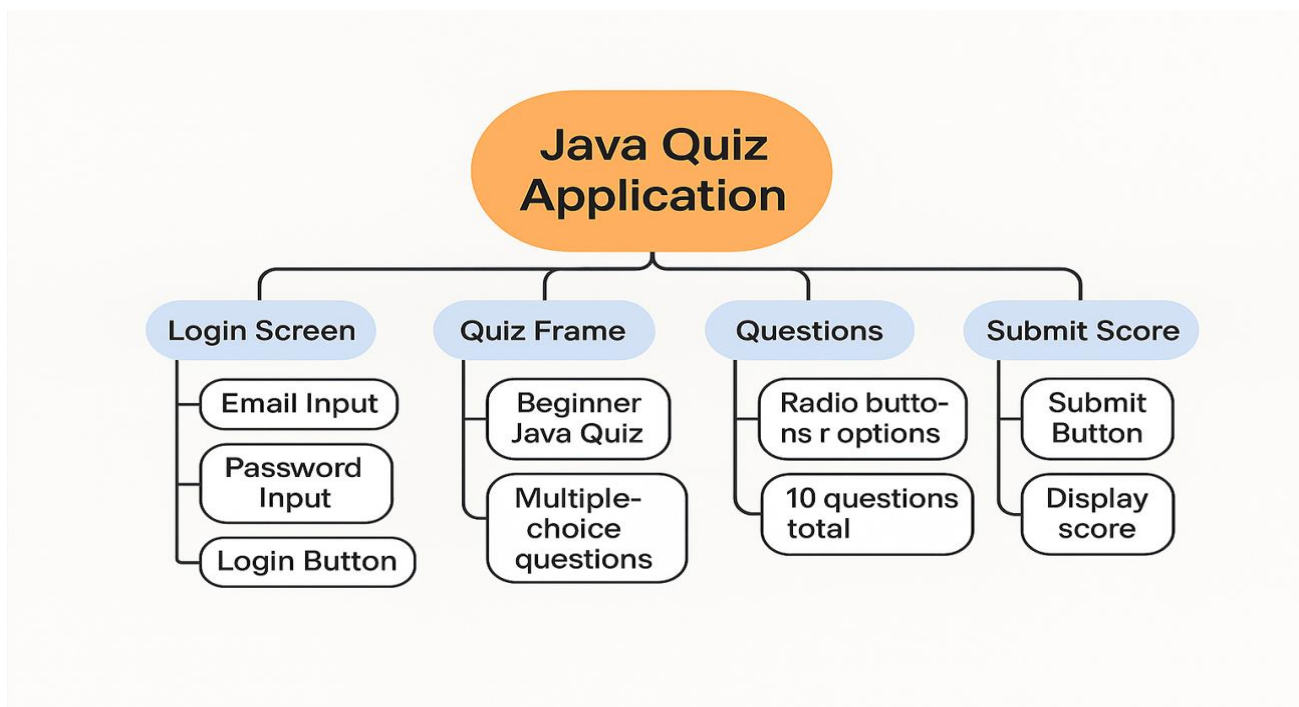
The Java Quiz Application is a GUI-based desktop application designed using Java Swing. The application allows users to log in and then take a 10-question technical multiple-choice quiz targeted at beginners. It provides an interactive environment for testing programming knowledge and understanding basic Java concepts.

The project covers core Java concepts such as:

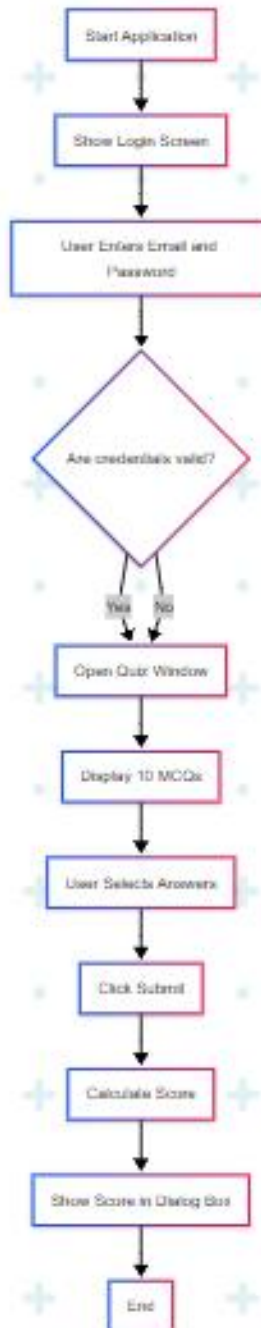
- Object-Oriented Programming (OOP)
- Swing for GUI development
- Event Handling
- Arrays and ButtonGroups
- Basic form validation and navigation

It serves as a real-world beginner-friendly Java project demonstrating how GUIs work in Java, with logic structured for easy expansion.

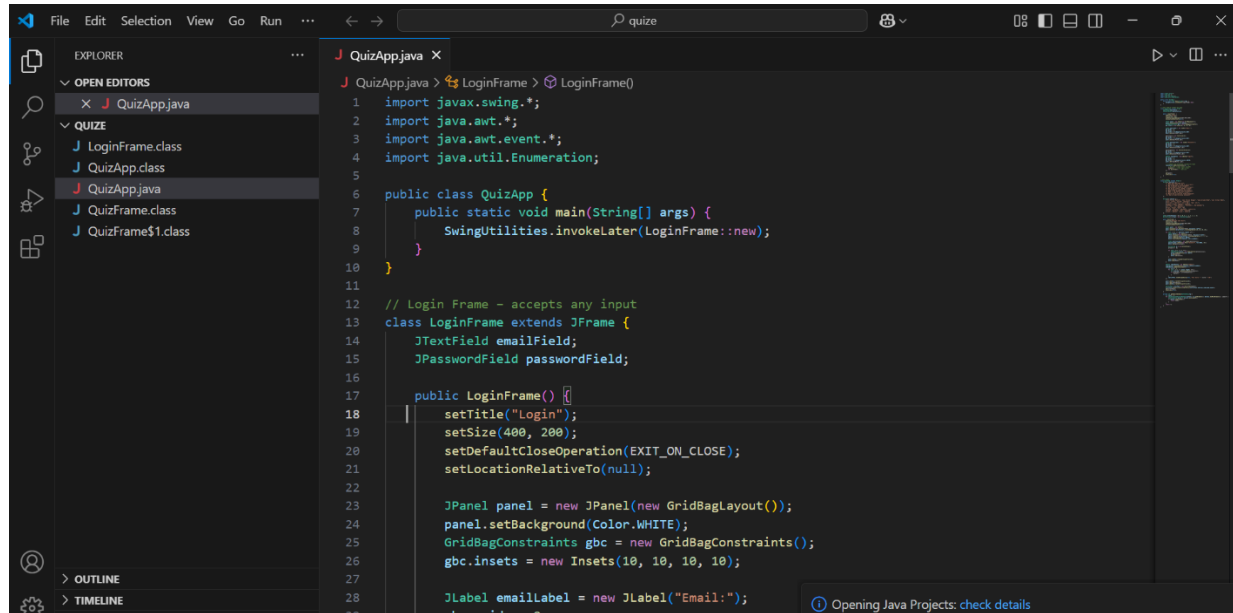
MIND-MAP



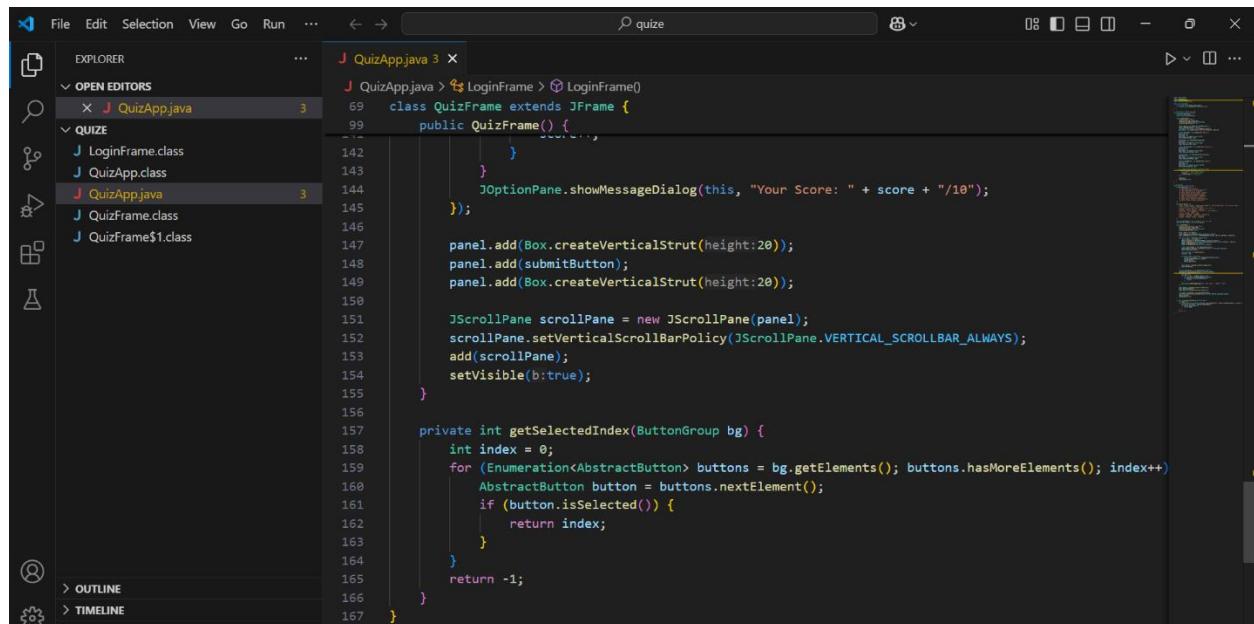
FLOWCHART



Project Development Images(CODE)



```
1 import javax.swing.*;
2 import java.awt.*;
3 import java.awt.event.*;
4 import java.util.Enumuration;
5
6 public class QuizApp {
7     public static void main(String[] args) {
8         SwingUtilities.invokeLater(LoginFrame::new);
9     }
10
11
12 // Login Frame - accepts any input
13 class LoginFrame extends JFrame {
14     JTextField emailField;
15     JPasswordField passwordField;
16
17     public LoginFrame() {
18         setTitle("Login");
19         setSize(400, 200);
20         setDefaultCloseOperation(EXIT_ON_CLOSE);
21         setLocationRelativeTo(null);
22
23         JPanel panel = new JPanel(new GridBagLayout());
24         panel.setBackground(Color.WHITE);
25         GridBagConstraints gbc = new GridBagConstraints();
26         gbc.insets = new Insets(10, 10, 10, 10);
27
28         JLabel emailLabel = new JLabel("Email:");
29         gbc.gridx = 0;
```



```
69 class QuizFrame extends JFrame {
99     public QuizFrame() {
100         // ...
101     }
102
103     JOptionPane.showMessageDialog(this, "Your Score: " + score + "/" + 10);
104
105     panel.add(Box.createVerticalStrut(height:20));
106     panel.add(submitButton);
107     panel.add(Box.createVerticalStrut(height:20));
108
109     JScrollPane scrollPane = new JScrollPane(panel);
110     scrollPane.setVerticalScrollBarPolicy(JScrollPane.VERTICAL_SCROLLBAR_ALWAYS);
111     add(scrollPane);
112     setVisible(b:true);
113 }
114
115 private int getSelectedIndex(ButtonGroup bg) {
116     int index = 0;
117     for (Enumeration<AbstractButton> buttons = bg.getElements(); buttons.hasMoreElements(); index++)
118         AbstractButton button = buttons.nextElement();
119         if (button.isSelected()) {
120             return index;
121         }
122     }
123     return -1;
124 }
125 }
```

Email:

Password:

Login

- ☐ ==
- ☒ !=
- ☐ equals()

7. What is the default value of boolean?

- ☐ true
- ☐ false
- ☐ null
- ☒ 0

8. What is used to inherit a class?

- ☐ extend
- ☒ extends
- ☐ implement
- ☐ inherits

9. Which loop is used for fixed iteration?

- ☐ while
- ☐ do-while
- ☒ for
- ☐ switch

10. What is used to define constants?

- ☐ const
- ☒ define
- ☐ final
- ☐ static

2.Background

The goal behind developing this project was to implement Java Swing in a hands-on application that mimics real educational platforms. By combining login functionality and quiz logic, this project replicates the flow of many technical test portals. It also builds confidence in GUI programming — a common skill tested in Java-based development roles.

3.Technologies used

- Java: Used as the core programming language to build the application using object-oriented principles.
- Java Swing: Provided GUI components such as JFrame, JPanel, JLabel, JButton, JRadioButton, etc., to design the login and quiz interface.
- AWT Event Handling: Enabled interaction with the application through listeners like ActionListener for button clicks.
- JRadioButton & ButtonGroup: Used to allow users to select only one option per multiple-choice question.
- Arrays: Used to store the questions, options, and correct answers.
- Layouts (BoxLayout & GridBagLayout): Helped structure the GUI components neatly across login and quiz screens.
- JScrollPane: Added scrolling support to the quiz panel for better user experience when displaying multiple questions.
- JOptionPane: Used to display the final score in a dialog box after quiz submission.
- (IntelliJ IDEA / VS Code): Used for coding, compiling, and debugging the application.

4.Training Experience

- Gained hands-on experience with Java Swing layouts.
- Learned about organizing large GUI projects using multiple classes.
- Understood how to use ButtonGroup, JRadioButton, and JScrollPane.

- Practiced validating user inputs and GUI event handling.
- Built a modular and expandable structure for future quiz versions.

5.Key Learnings

- Swing UI Design: Learned how to layout forms and manage components using BorderLayout, GridBagLayout, etc.
- OOP Principles: Used class-based structure to separate login and quiz logic.
- Event Handling: Implemented listeners for button actions and scoring logic.
- UI-UX Concepts: Improved user interaction through scrollable quizzes and clean layouts.
- Error Handling: Debugged layout and logic errors in real time using IntelliJ and VS Code.

6.Challenges Faced

- Understanding layout managers (GridBagLayout, BorderLayout) was initially confusing.
- Creating reusable quiz question panels required experimentation.
- Managing long quiz forms without scrollbars caused UI issues.
- Login logic had to be adjusted to accept any credentials (as per requirement).
- Initial attempts caused labels to be cut off — fixed by replacing titled borders with JLabel.

7.Applications of My Project

- Acts as a basic Java-based exam portal simulation.
- Can be extended to include:
 - User database
 - Timer for quiz

- Answer review and feedback
- Useful as a technical demo for resumes or internships.
- Great practice for building Java GUI projects with real-world structure.

8.Conclusion

The Java Quiz Application demonstrates how to design a user-friendly technical test using Java Swing. It provides an excellent introduction to GUI-based programming and covers foundational Java skills like classes, event handling, user input, and layout management.

This project has deepened understanding of both GUI structure and interactive software design in Java.