

```
package quizapplication;

import javax.swing.*;
import java.awt.*;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;

public class QuizApplication {

    private JFrame frame;
    private JLabel questionLabel, timerLabel;
    private JRadioButton option1, option2, option3, option4;
    private ButtonGroup optionsGroup;
    private JButton nextButton;
    private int questionIndex = 0;
    private int timeLeft = 10; // Time in seconds for each question
    private Timer timer;

    private int score = 0; // Track correct answers

    private String[] questions = {
        "What is the capital of France?",
        "Which planet is known as the Red Planet?",
        "Who wrote 'Hamlet'?"
    };

    private String[][] options = {
```

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        {"Berlin", "Madrid", "Paris", "Rome"},  
        {"Earth", "Mars", "Jupiter", "Saturn"},  
        {"Shakespeare", "Dickens", "Hemingway", "Tolstoy"}  
};
```

```
private int[] correctAnswers = {2, 1, 0}; // Index of correct answers
```

```
public QuizApplication() {  
    // Initialize the GUI  
    frame = new JFrame("Quiz Application");  
    frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);  
    frame.setSize(450, 400);  
    frame.setLayout(new BorderLayout());  
  
    questionLabel = new JLabel();  
    questionLabel.setHorizontalAlignment(SwingConstants.CENTER);  
    questionLabel.setFont(new Font("Arial", Font.BOLD, 16));  
    frame.add(questionLabel, BorderLayout.NORTH);  
  
    JPanel optionsPanel = new JPanel();  
    optionsPanel.setLayout(new GridLayout(4, 1));  
    option1 = new JRadioButton();  
    option2 = new JRadioButton();  
    option3 = new JRadioButton();  
    option4 = new JRadioButton();  
    optionsGroup = new ButtonGroup();  
    optionsGroup.add(option1);  
    optionsGroup.add(option2);  
    optionsGroup.add(option3);
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optionsGroup.add(option4);
optionsPanel.add(option1);
optionsPanel.add(option2);
optionsPanel.add(option3);
optionsPanel.add(option4);
frame.add(optionsPanel, BorderLayout.CENTER);

JPanel bottomPanel = new JPanel();
bottomPanel.setLayout(new BorderLayout());

timerLabel = new JLabel("Time left: " + timeLeft + "s");
timerLabel.setHorizontalAlignment(SwingConstants.CENTER);
bottomPanel.add(timerLabel, BorderLayout.WEST);

nextButton = new JButton("Next");
bottomPanel.add(nextButton, BorderLayout.EAST);
frame.add(bottomPanel, BorderLayout.SOUTH);

nextButton.addActionListener(new ActionListener() {
    @Override
    public void actionPerformed(ActionEvent e) {
        checkAnswer();
    }
});

loadQuestion();

frame.setVisible(true);
}
```

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private void loadQuestion() {
    if (questionIndex < questions.length) {
        questionLabel.setText(questions[questionIndex]);
        option1.setText(options[questionIndex][0]);
        option2.setText(options[questionIndex][1]);
        option3.setText(options[questionIndex][2]);
        option4.setText(options[questionIndex][3]);
        optionsGroup.clearSelection();

        timeLeft = 10;

        timerLabel.setText("Time left: " + timeLeft + "s");

        startTimer();
    } else {
        endQuiz();
    }
}

```

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private void startTimer() {
    if (timer != null) {
        timer.stop();
    }

    timer = new Timer(1000, new ActionListener() {
        @Override
        public void actionPerformed(ActionEvent e) {
            timeLeft--;

            timerLabel.setText("Time left: " + timeLeft + "s");

            if (timeLeft <= 0) {
                timer.stop();

                JOptionPane.showMessageDialog(frame, "Time's up! The correct answer was: " +

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        options[questionIndex][correctAnswers[questionIndex]]);
    questionIndex++;
    loadQuestion();
}
}
});
timer.start();
}

```

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private void checkAnswer() {

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    if (timer != null) {

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        timer.stop();

```

```

    }

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    int selectedOption = -1;

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    if (option1.isSelected()) {

```

```

        selectedOption = 0;

```

```

    } else if (option2.isSelected()) {

```

```

        selectedOption = 1;

```

```

    } else if (option3.isSelected()) {

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```

        selectedOption = 2;

```

```

    } else if (option4.isSelected()) {

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```

        selectedOption = 3;

```

```

    }

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    if (selectedOption == correctAnswers[questionIndex]) {

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        JOptionPane.showMessageDialog(frame, "Correct!");

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        score++;

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    } else if (selectedOption != -1) { // Avoid message if no selection

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        JOptionPane.showMessageDialog(frame, "Wrong! The correct answer was: " +

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```
        options[questionIndex][correctAnswers[questionIndex]]);  
    }
```

```
    questionIndex++;  
    loadQuestion();  
}
```

```
private void endQuiz() {  
    JOptionPane.showMessageDialog(frame, "Quiz Over! Your score: " + score + "/" + questions.length);  
    frame.dispose();  
}
```

```
public static void main(String[] args) {  
    new QuizApplication();  
}  
}
```