CSE310 – JAVA

Java Mini Project

Quiz Application

Submitted to – Dr. Jeevan Bala(26699)
Assistant Professor,
School of Computer Science & Engineering

LOVELY PROFESSIONAL UNIVERSITY

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Name(Project Head) – Ankit Kumar Registration No – 12105042
Name – Aashutosh Kumar Registration No – 12104690
Name – Ripunjay Tiwari Registration No – 12109888
Class Name – K21RX

ABSTRACT

This paper presents the development of a Java quiz application. The main objective of the application is to provide a platform for users to take quizzes and test their knowledge on various topics. The application is designed to be user-friendly and interactive, with a simple and intuitive user interface. The quiz application is developed using Java programming language and utilizes the Java FX library for the graphical user interface. The application features a database of questions and answers, which are randomly selected for each quiz. The user can select from a range of quiz topics and difficulty levels. The application is designed to provide instant feedback to the user, with correct answers highlighted and incorrect answers indicated with appropriate feedback. The application also tracks the user's progress, allowing them to view their scores and performance history.

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1.INTRODUCTION

In recent years, technology has been changing the way we learn and acquire knowledge. One of the most popular ways of learning is through quizzes, which are widely used in schools, universities, and online learning platforms. Quizzes are an effective way of assessing one's knowledge and can be used to reinforce learning or identify areas where further study is needed. This report presents the development of a Java quiz application, designed to provide a platform for users to take quizzes and test their knowledge on java topics. The application is developed using the Java programming language and utilizes the JavaFX library for the graphical user interface. The Java quiz application is designed to be user-friendly and interactive, with a simple and intuitive user interface. It features a set of questions and answers, which are randomly selected for each quiz. The user can attempt range of quiz questions and difficulty levels. The application is also designed to provide the total score they have scored in quiz.

2. SYSTEM REQUIREMENTS

- Operating System: Your Java quiz application should be compatible with different operating systems such as Windows, Mac, and Linux.

- Java Development Kit (JDK): JDK 8 or later should be installed on the user's machine to run the application.

- Memory: The application should not consume excessive memory. Therefore, it should be optimized to use minimum memory resources.

- Processor: The application should run on a variety of processors. However, it should be optimized to use minimal CPU resources.

- User Interface: The application should have a user-friendly interface with easy navigation.

- Screen Resolution: The application should support different screen resolutions and computers.

- Database: The application may (optional) require a database to store the quiz questions, answers, and user data. The database should be compatible with the operating system).

3.CODE

1)Login

```
package quiz.application;

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

public class Login extends JFrame implements ActionListener{

    JButton rules, back;
    JTextField tfname;

    Login() {
        getContentPane().setBackground(Color.WHITE);
        setLayout(null);

        ImageIcon i1 = new
ImageIcon(ClassLoader.getSystemResource("icons/Log.jpeg"));
        JLabel image = new JLabel(i1);
        image.setBounds(0, 0, 600, 500);
        add(image);

        JLabel heading = new JLabel("Simple Minds");
        heading.setBounds(750, 60, 300, 45);
        heading.setFont(new Font("Viner Hand ITC", Font.BOLD, 40));
        heading.setForeground(new Color(30, 144, 254));
        add(heading);

        JLabel name = new JLabel("Enter your name");
        name.setBounds(810, 150, 300, 20);
        name.setFont(new Font("Mongolian Baiti", Font.BOLD, 18));
        name.setForeground(new Color(30, 144, 254));
        add(name);

        tfname = new JTextField();
        tfname.setBounds(735, 200, 300, 25);
        tfname.setFont(new Font("Times New Roman", Font.BOLD, 20));
        add(tfname);

        rules = new JButton("Next");
```

```
        rules.setBounds(735, 270, 120, 25);
        rules.setBackground(new Color(30, 144, 254));
        rules.setForeground(Color.WHITE);
        rules.addActionListener(this);
        add(rules);

        back = new JButton("Back");
        back.setBounds(915, 270, 120, 25);
        back.setBackground(new Color(30, 144, 254));
        back.setForeground(Color.WHITE);
        back.addActionListener(this);
        add(back);

        setSize(1200, 500);
        setLocation(200, 150);
        setVisible(true);
    }

    public void actionPerformed(ActionEvent ae) {
        if (ae.getSource() == rules) {
            String name = tfname.getText();
            setVisible(false);
            new Rules(name);
        } else if (ae.getSource() == back) {
            setVisible(false);
        }
    }

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

2)Quiz

```
package quiz.application;

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

public class Quiz extends JFrame implements ActionListener {

    String questions[][] = new String[10][5];
    String answers[][] = new String[10][2];
    String useranswers[][] = new String[10][1];
    JLabel qno, question;
    JRadioButton opt1, opt2, opt3, opt4;
    ButtonGroup groupoptions;
    JButton next, submit, lifeline;

    public static int timer = 15;
    public static int ans_given = 0;
    public static int count = 0;
    public static int score = 0;

    String name;

    Quiz(String name) {
        this.name = name;
        setBounds(50, 0, 1440, 850);
        getContentPane().setBackground(Color.WHITE);
        setLayout(null);

        ImageIcon i1 = new
ImageIcon(ClassLoader.getSystemResource("icons/quiz.jpg"));
        JLabel image = new JLabel(i1);
        image.setBounds(0, 0, 1440, 392);
        add(image);

        qno = new JLabel();
        qno.setBounds(100, 450, 50, 30);
        qno.setFont(new Font("Tahoma", Font.PLAIN, 24));
        add(qno);

        question = new JLabel();
```

```
        question.setBounds(150, 450, 900, 30);
        question.setFont(new Font("Tahoma", Font.PLAIN, 24));
        add(question);

        questions[0][0] = "Which is used to find and fix bugs in
the Java programs.?";
        questions[0][1] = "JVM";
        questions[0][2] = "JDB";
        questions[0][3] = "JDK";
        questions[0][4] = "JRE";

        questions[1][0] = "What is the return type of the
hashCode() method in the Object class?";
        questions[1][1] = "int";
        questions[1][2] = "Object";
        questions[1][3] = "long";
        questions[1][4] = "void";

        questions[2][0] = "Which package contains the Random
class?";
        questions[2][1] = "java.util package";
        questions[2][2] = "java.lang package";
        questions[2][3] = "java.awt package";
        questions[2][4] = "java.io package";

        questions[3][0] = "An interface with no fields or methods
is known as?";
        questions[3][1] = "Runnable Interface";
        questions[3][2] = "Abstract Interface";
        questions[3][3] = "Marker Interface";
        questions[3][4] = "CharSequence Interface";

        questions[4][0] = "In which memory a String is stored, when
we create a string using new operator?";
        questions[4][1] = "Stack";
        questions[4][2] = "String memory";
        questions[4][3] = "Random storage space";
        questions[4][4] = "Heap memory";

        questions[5][0] = "Which of the following is a marker
interface?";
        questions[5][1] = "Runnable interface";
        questions[5][2] = "Remote interface";
        questions[5][3] = "Readable interface";
        questions[5][4] = "Result interface";
```

```
        questions[6][0] = "Which keyword is used for accessing the
features of a package?";
        questions[6][1] = "import";
        questions[6][2] = "package";
        questions[6][3] = "extends";
        questions[6][4] = "export";

        questions[7][0] = "In java, jar stands for?";
        questions[7][1] = "Java Archive Runner";
        questions[7][2] = "Java Archive";
        questions[7][3] = "Java Application Resource";
        questions[7][4] = "Java Application Runner";

        questions[8][0] = "Which of the following is a mutable
class in java?";
        questions[8][1] = "java.lang.StringBuilder";
        questions[8][2] = "java.lang.Short";
        questions[8][3] = "java.lang.Byte";
        questions[8][4] = "java.lang.String";

        questions[9][0] = "Which of the following option leads to
the portability and security of Java?";
        questions[9][1] = "Bytecode is executed by JVM";
        questions[9][2] = "The applet makes the Java code secure
and portable";
        questions[9][3] = "Use of exception handling";
        questions[9][4] = "Dynamic binding between objects";

        answers[0][1] = "JDB";
        answers[1][1] = "int";
        answers[2][1] = "java.util package";
        answers[3][1] = "Marker Interface";
        answers[4][1] = "Heap memory";
        answers[5][1] = "Remote interface";
        answers[6][1] = "import";
        answers[7][1] = "Java Archive";
        answers[8][1] = "java.lang.StringBuilder";
        answers[9][1] = "Bytecode is executed by JVM";

        opt1 = new JRadioButton();
        opt1.setBounds(170, 520, 700, 30);
        opt1.setBackground(Color.WHITE);
        opt1.setFont(new Font("Dialog", Font.PLAIN, 20));
        add(opt1);
```

```
        opt2 = new JRadioButton();
        opt2.setBounds(170, 560, 700, 30);
        opt2.setBackground(Color.WHITE);
        opt2.setFont(new Font("Dialog", Font.PLAIN, 20));
        add(opt2);

        opt3 = new JRadioButton();
        opt3.setBounds(170, 600, 700, 30);
        opt3.setBackground(Color.WHITE);
        opt3.setFont(new Font("Dialog", Font.PLAIN, 20));
        add(opt3);

        opt4 = new JRadioButton();
        opt4.setBounds(170, 640, 700, 30);
        opt4.setBackground(Color.WHITE);
        opt4.setFont(new Font("Dialog", Font.PLAIN, 20));
        add(opt4);

        groupoptions = new ButtonGroup();
        groupoptions.add(opt1);
        groupoptions.add(opt2);
        groupoptions.add(opt3);
        groupoptions.add(opt4);

        next = new JButton("Next");
        next.setBounds(1100, 550, 200, 40);
        next.setFont(new Font("Tahoma", Font.PLAIN, 22));
        next.setBackground(new Color(30, 144, 255));
        next.setForeground(Color.WHITE);
        next.addActionListener(this);
        add(next);

        lifeline = new JButton("50-50 Lifeline");
        lifeline.setBounds(1100, 630, 200, 40);
        lifeline.setFont(new Font("Tahoma", Font.PLAIN, 22));
        lifeline.setBackground(new Color(30, 144, 255));
        lifeline.setForeground(Color.WHITE);
        lifeline.addActionListener(this);
        add(lifeline);

        submit = new JButton("Submit");
        submit.setBounds(1100, 710, 200, 40);
        submit.setFont(new Font("Tahoma", Font.PLAIN, 22));
        submit.setBackground(new Color(30, 144, 255));
```

```
        submit.setForeground(Color.WHITE);
        submit.addActionListener(this);
        submit.setEnabled(false);
        add(submit);

        start(count);

        setVisible(true);
    }

    public void actionPerformed(ActionEvent ae) {
        if (ae.getSource() == next) {
            repaint();
            opt1.setEnabled(true);
            opt2.setEnabled(true);
            opt3.setEnabled(true);
            opt4.setEnabled(true);

            ans_given = 1;
            if (groupoptions.getSelection() == null) {
               useranswers[count][0] = "";
            } else {
                useranswers[count][0] =
groupoptions.getSelection().getActionCommand();
            }

            if (count == 8) {
                next.setEnabled(false);
                submit.setEnabled(true);
            }

            count++;
            start(count);
        } else if (ae.getSource() == lifeline) {
            if (count == 2 || count == 4 || count == 6 || count ==
8 || count == 9) {
                opt2.setEnabled(false);
                opt3.setEnabled(false);
            } else {
                opt1.setEnabled(false);
                opt4.setEnabled(false);
            }
            lifeline.setEnabled(false);
        } else if (ae.getSource() == submit) {
            ans_given = 1;
```

```
            if (groupoptions.getSelection() == null) {
                useranswers[count][0] = "";
            } else {
                useranswers[count][0] =
groupoptions.getSelection().getActionCommand();
            }

            for (int i = 0; i < useranswers.length; i++) {
                if (useranswers[i][0].equals(answers[i][1])) {
                    score += 10;
                } else {
                    score += 0;
                }
            }
            setVisible(false);
            new Score(name, score);
        }
    }

    public void paint(Graphics g) {
        super.paint(g);

        String time = "Time left - " + timer + " seconds"; // 15
        g.setColor(Color.RED);
        g.setFont(new Font("Tahoma", Font.BOLD, 25));

        if (timer > 0) {
            g.drawString(time, 1100, 500);
        } else {
            g.drawString("Times up!!", 1100, 500);
        }

        timer--; // 14

        try {
            Thread.sleep(1000);
            repaint();
        } catch (Exception e) {
            e.printStackTrace();
        }

        if (ans_given == 1) {
            ans_given = 0;
            timer = 15;
        } else if (timer < 0) {
```

```
            timer = 15;
            opt1.setEnabled(true);
            opt2.setEnabled(true);
            opt3.setEnabled(true);
            opt4.setEnabled(true);

            if (count == 8) {
                next.setEnabled(false);
                submit.setEnabled(true);
            }
            if (count == 9) { // submit button
                if (groupoptions.getSelection() == null) {
                   useranswers[count][0] = "";
                } else {
                    useranswers[count][0] =
groupoptions.getSelection().getActionCommand();
                }

                for (int i = 0; i < useranswers.length; i++) {
                    if (useranswers[i][0].equals(answers[i][1])) {
                        score += 10;
                    } else {
                        score += 0;
                    }
                }
                setVisible(false);
                new Score(name, score);
            } else { // next button
                if (groupoptions.getSelection() == null) {
                   useranswers[count][0] = "";
                } else {
                    useranswers[count][0] =
groupoptions.getSelection().getActionCommand();
                }
                count++; // 0 // 1
                start(count);
            }
        }

    }

    public void start(int count) {
        qno.setText("" + (count + 1) + ". ");
        question.setText(questions[count][0]);
        opt1.setText(questions[count][1]);
```

```
        opt1.setActionCommand(questions[count][1]);

        opt2.setText(questions[count][2]);
        opt2.setActionCommand(questions[count][2]);

        opt3.setText(questions[count][3]);
        opt3.setActionCommand(questions[count][3]);

        opt4.setText(questions[count][4]);
        opt4.setActionCommand(questions[count][4]);

        groupoptions.clearSelection();
    }

    public static void main(String[] args) {
        new Quiz("User");
    }
}
```

3)Rules

```
package quiz.application;

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

public class Rules extends JFrame implements ActionListener{

    String name;
    JButton start, back;

    Rules(String name) {
        this.name = name;
        getContentPane().setBackground(Color.WHITE);
        setLayout(null);
```

```
        JLabel heading = new JLabel("Welcome " + name + " to Simple
Minds");
        heading.setBounds(50, 20, 700, 30);
        heading.setFont(new Font("Viner Hand ITC", Font.BOLD, 28));
        heading.setForeground(new Color(30, 144, 254));
        add(heading);

        JLabel rules = new JLabel();
        rules.setBounds(20, 90, 700, 350);
        rules.setFont(new Font("Tahoma", Font.PLAIN, 16));
        rules.setText(
            "<html>"+
                "1. You are trained to be a programmer and not a
  story teller, answer point to point" + "<br><br>" +
                "2. Do not unnecessarily smile at the person
  sitting next to you, they may also not know the answer" +
"<br><br>" +
                "3. Candidates will not get any facility for
safekeeping their personal belongings" + "<br><br>" +
                "4. Crying is allowed but please do so quietly." +
"<br><br>" +
                "5. Only a fool asks and a wise answers (Be wise,
not otherwise)" + "<br><br>" +
                "6. Do not get nervous if your friend is answering
more questions, may be he/she is doing Jai Mata Di" + "<br><br>" +
                "7. Brace yourself, this paper is not for the faint
hearted" + "<br><br>" +
                "8. Candidates must not carry any paper or cheating
material with them" + "<br><br>" +
            "<html>"
        );
        add(rules);

        back = new JButton("Back");
        back.setBounds(250, 500, 100, 30);
        back.setBackground(new Color(30, 144, 254));
        back.setForeground(Color.WHITE);
        back.addActionListener(this);
        add(back);

        start = new JButton("Start");
        start.setBounds(400, 500, 100, 30);
        start.setBackground(new Color(30, 144, 254));
        start.setForeground(Color.WHITE);
        start.addActionListener(this);
```

```
        add(start);

        setSize(800, 650);
        setLocation(350, 100);
        setVisible(true);
    }

    public void actionPerformed(ActionEvent ae) {
        if (ae.getSource() == start) {
            setVisible(false);
            new Quiz(name);
        } else {
            setVisible(false);
            new Login();
        }
    }

    public static void main(String[] args) {
        new Rules("User");
    }
}
```

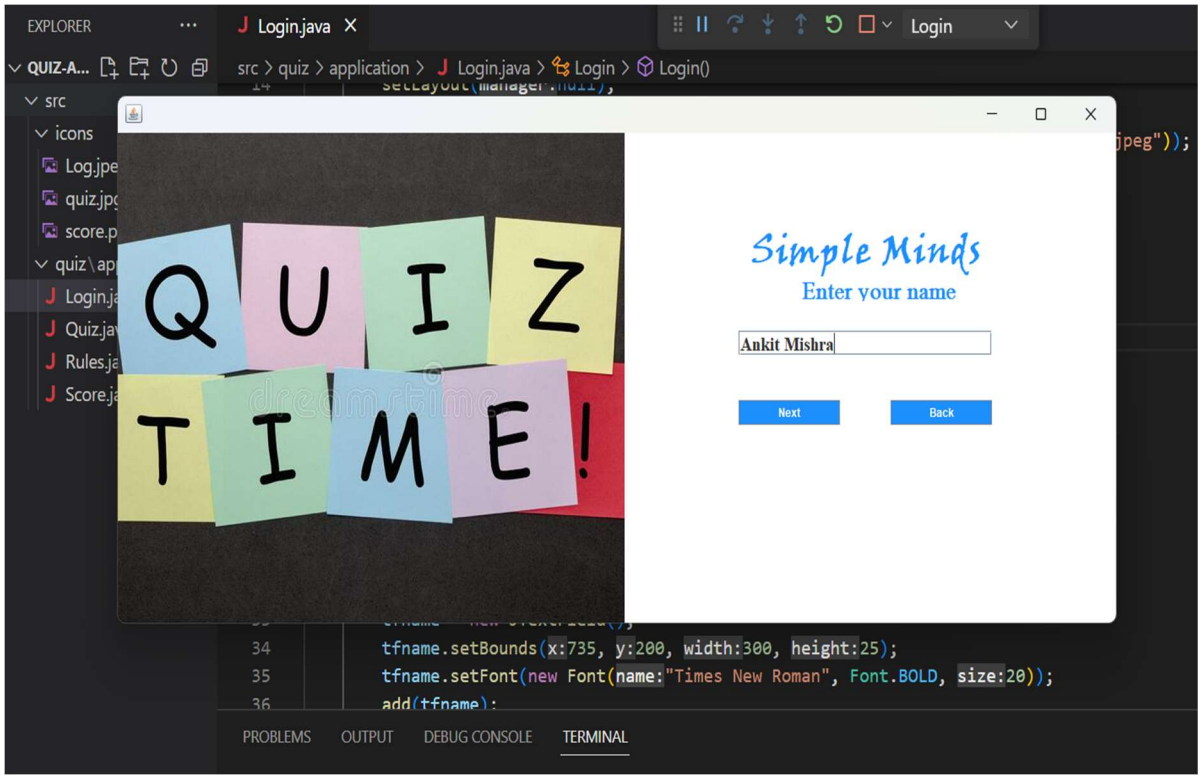
4)Score

```
package quiz.application;

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

public class Score extends JFrame implements ActionListener {

    Score(String name, int score) {
        setBounds(400, 150, 750, 550);
        getContentPane().setBackground(Color.WHITE);
        setLayout(null);
```

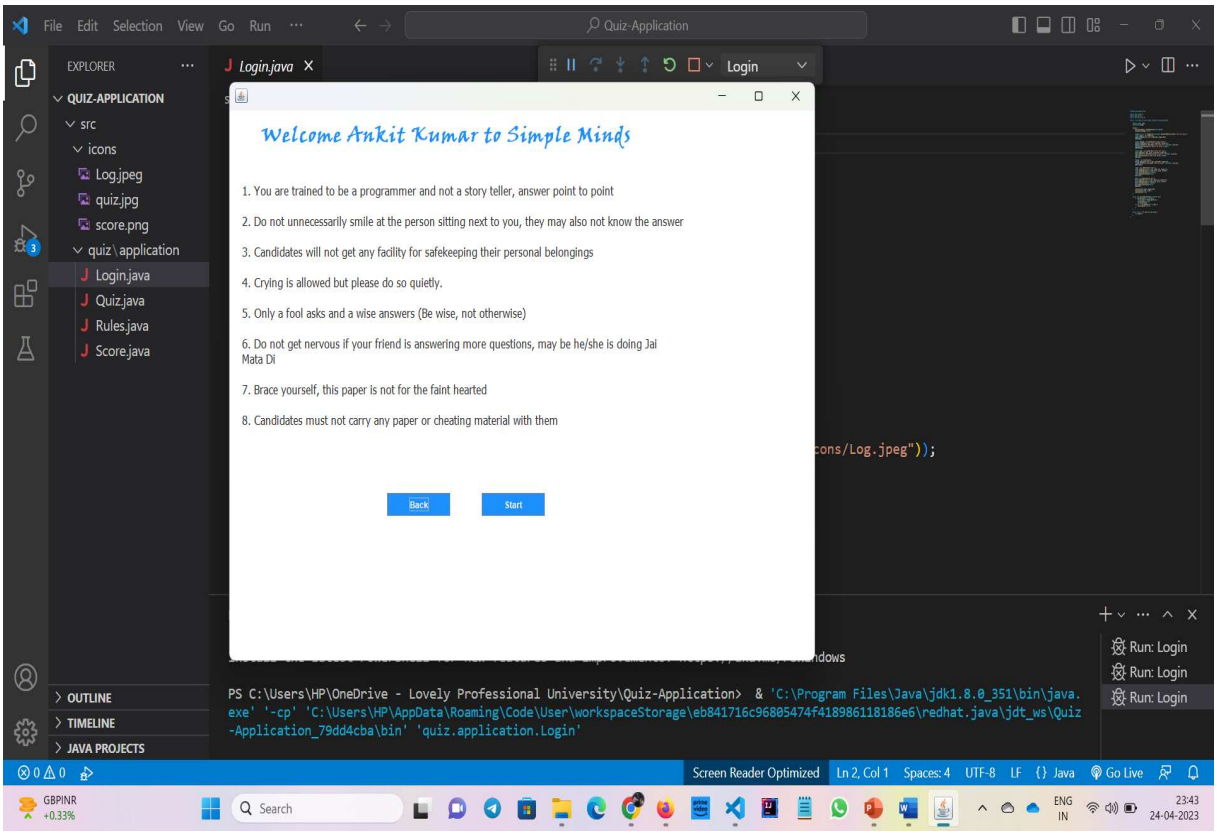
```
        ImageIcon i1 = new
ImageIcon(ClassLoader.getSystemResource("icons/score.png"));
        Image i2 = i1.getImage().getScaledInstance(300, 250,
Image.SCALE_DEFAULT);
        ImageIcon i3 = new ImageIcon(i2);
        JLabel image = new JLabel(i3);
        image.setBounds(0, 200, 400, 250);
        add(image);

        JLabel heading = new JLabel("Thankyou " + name + " for
playing Simple Minds");
        heading.setBounds(45, 30, 700, 30);
        heading.setFont(new Font("Tahoma", Font.PLAIN, 26));
        add(heading);

        JLabel lblscore = new JLabel("Your score is " + score);
        lblscore.setBounds(350, 200, 300, 30);
        lblscore.setFont(new Font("Tahoma", Font.PLAIN, 26));
        add(lblscore);

        JButton submit = new JButton("Play Again");
        submit.setBounds(380, 270, 120, 30);
        submit.setBackground(new Color(30, 144, 255));
        submit.setForeground(Color.WHITE);
        submit.addActionListener(this);
        add(submit);

        setVisible(true);
    }

    public void actionPerformed(ActionEvent ae) {
        setVisible(false);
        new Login();
    }

    public static void main(String[] args) {
        new Score("User", 0);
    }
}
```

4.SNAPSHOT

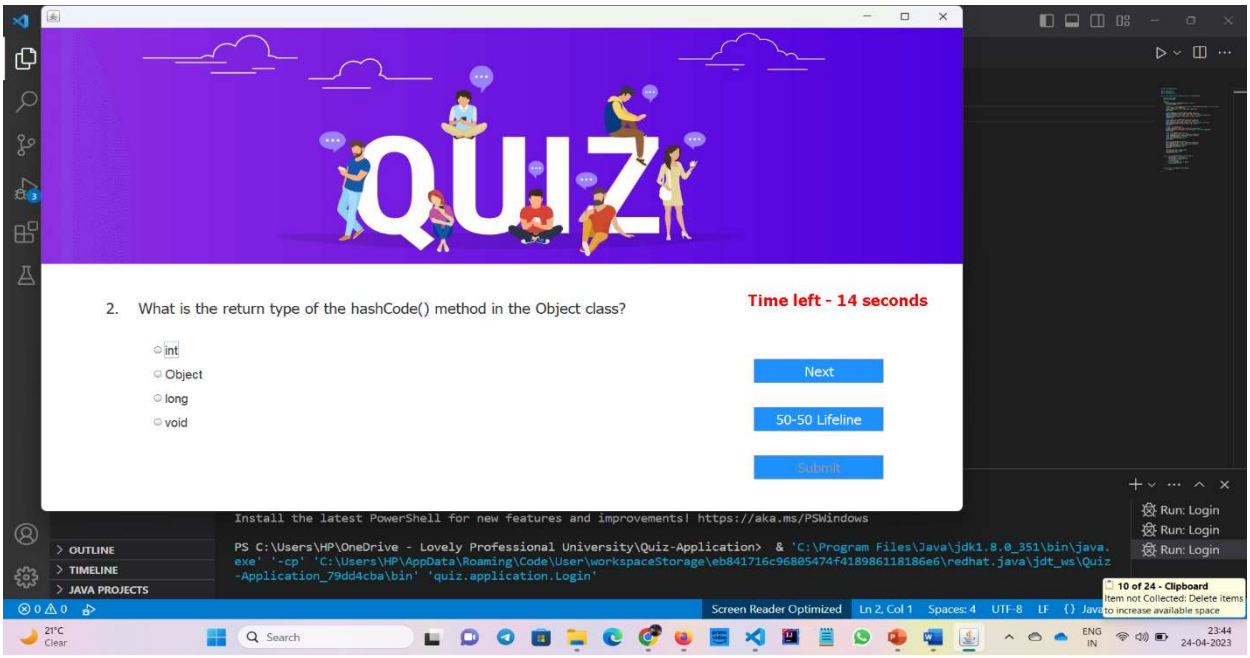
1)Login



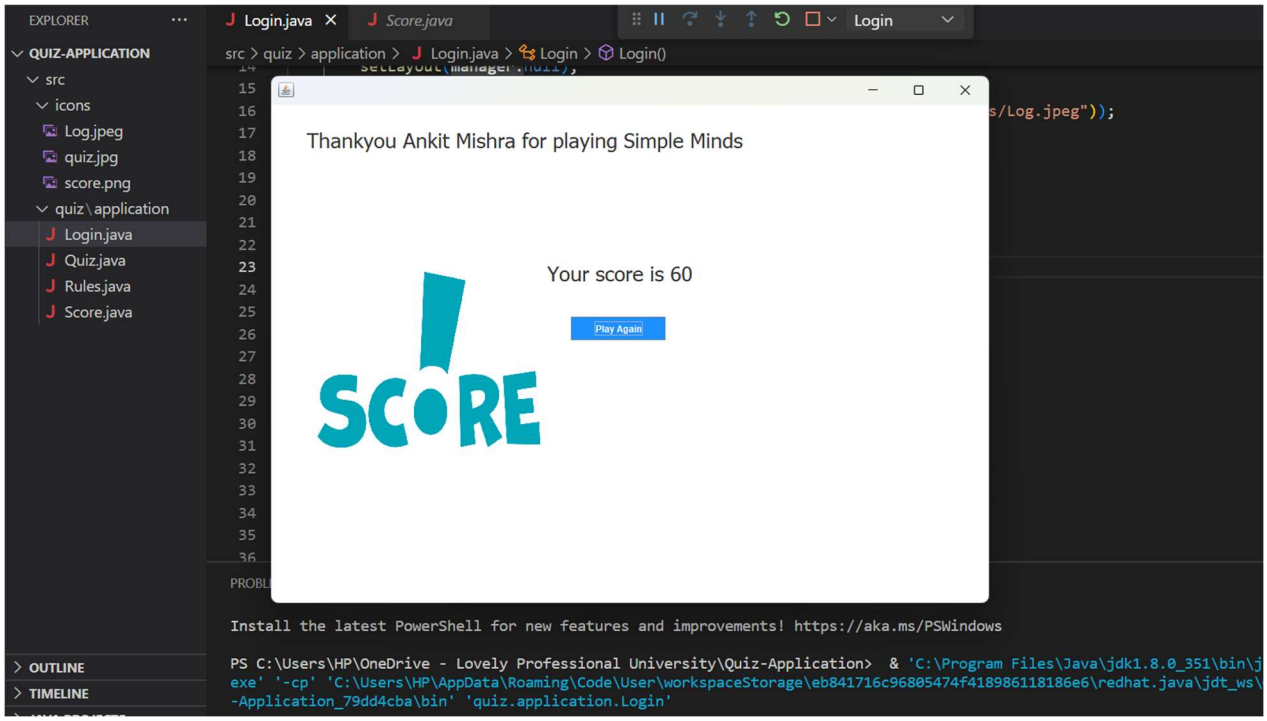
2)Rules



3)Quiz



4)Score


EXPLORER
Login.java
Score.java
Login
QUIZ-APPLICATION
src
icons
Log.jpeg
quiz.jpg
score.png
quiz\application
Login.java
Quiz.java
Rules.java
Score.java
src > quiz > application > Login.java > Login > Login()
Thankyou Ankit Mishra for playing Simple Minds
Your score is 60
Play Again
SCORE
OUTLINE
TIMELINE
Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows
PS C:\Users\HP\OneDrive - Lovely Professional University\Quiz-Application> & 'C:\Program Files\Java\jdk1.8.0_351\bin\j
exe' '-cp' 'C:\Users\HP\AppData\Roaming\Code\User\workspaceStorage\eb841716c96805474f418986118186e6\redhat.java\jdt_ws\
-Application_79dd4cba\bin' 'quiz.application.Login'

5.CONCLUSION

The Java quiz application is a useful tool for testing and evaluating the knowledge of students or anyone interested in Java programming language. The application has been designed to cover all aspects of Java, from basic to advanced concepts. The application includes different types of questions which help users to test their knowledge comprehensively. Moreover, the Java quiz application has a user-friendly interface, which makes it easy for users to navigate and use. Overall, the Java quiz application is an effective tool for testing and improving one's knowledge of Java programming language. The application's features make it a valuable resource for anyone interested in learning Java or improving their programming skills. With continued development and improvements, the Java quiz application can become an essential tool for students and professionals in the field of computer science.

6.FUTRE REFERENCE

In the future, there are several enhancements that can be made to the Java Quiz Application. These enhancements include the ability to create custom quizzes based on the user's preferences, the addition of multimedia elements such as images and videos to enhance the user experience, and the integration of social media features to allow users to share their quiz results with friends and colleagues. Additionally, the application could be enhanced to include more advanced Java programming topics to cater to professionals and advanced users.

7.REFERENCES

1) https://www.w3schools.com/java/

2)https://docs.oracle.com/javase/tutorial/java/index.html

3) https://www.geeksforgeeks.org/introduction-to-java-swing/

4)https://www.youtube.com/watch?v=Kmgo00avvEw&pp=ygUKamF2YSBzd2luZw%3D%3D