Progressive Education Society’s

**MODERN COLLEGE OF ENGINEERING, Pune -05.**

(An Autonomous Institute Affiliated to Savitribai Phule Pune University)

MCA Department

**PRACTICAL SUBMISSION RECORD- A.Y. 2024-25**

|  |  |  |  |
| --- | --- | --- | --- |
| **Class: FYMCA Div: A**  **Semester: II** | **Course Code: MCA01554**  **Course Name: Java Programming Laboratory** | | **Batch: F2** |
| **Name: Pranav Raju Malwatkar** | | **Roll No: 51037** | |
| **CO No: CO515.2** | | **Assignment No: 6** | |

**Program Title: 6)** **Create a Java Desktop application to find the area of circle, rectangle, circumference of circle**

**and area of square. Design the IDE and programming logic with two JPanel containers**

**contains the following: -JPanel1. Add three JRadioButtons and set the buttons as: Circle,**

**Rectangle and Square.-JPanel2. Add four JCheckBoxes and set the buttons as Area, Perimeter,**

**Circumference.**

**When you select an option from JPanel1, it automatically hides the facilities which is not**

**appropriate for selected option. Similarly, apply the same for JTextfield controls.**

**a) Write the code for circle JRadioButton to make available the display controls which**

**are appropriate for Circle operation.**

**b) Write the code for Rectangle JRadioButton to make available the display controls**

**which are appropriate for Rectangle operation.**

**c) Write the code for Square JRadioButton to make available the display controls which**

**are appropriate for Square operation.**

**d) Write the code for Calculate button to calculate the desired operations which you**

**choose from JRadioButtons.**

**e) Write the code for Exit button to exit application.**

**Program Code:**

import javax.swing.\*;

import java.awt.\*;

import java.awt.event.ActionEvent;

import java.awt.event.ActionListener;

public class Q6 {

    public static void main(String[] args) {

        JFrame frame = new JFrame("Area Calculator");

        frame.setDefaultCloseOperation(JFrame.EXIT\_ON\_CLOSE);

        frame.setSize(400, 400); // Increased size to fit text area

        frame.setLayout(new BorderLayout());

        // Add text fields for input of radius, length, breadth, side and disable any that are not needed on click of radio buttons

        JTextField radiusField = new JTextField();

        JTextField lengthField = new JTextField();

        JTextField breadthField = new JTextField();

        JTextField sideField = new JTextField();

        JPanel panel1 = new JPanel();

        panel1.setLayout(new FlowLayout());

        JRadioButton circleButton = new JRadioButton("Circle");

        JRadioButton rectangleButton = new JRadioButton("Rectangle");

        JRadioButton squareButton = new JRadioButton("Square");

        ButtonGroup buttonGroup = new ButtonGroup();

        buttonGroup.add(circleButton);

        buttonGroup.add(rectangleButton);

        buttonGroup.add(squareButton);

        panel1.add(circleButton);

        panel1.add(rectangleButton);

        panel1.add(squareButton);

        JPanel panel2 = new JPanel();

        panel2.setLayout(new FlowLayout());

        JCheckBox areaCheckBox = new JCheckBox("Area");

        JCheckBox perimeterCheckBox = new JCheckBox("Perimeter");

        JCheckBox circumferenceCheckBox = new JCheckBox("Circumference");

        panel2.add(areaCheckBox);

        panel2.add(perimeterCheckBox);

        panel2.add(circumferenceCheckBox);

        JButton calculateButton = new JButton("Calculate");

        JButton exitButton = new JButton("Exit");

        circleButton.addActionListener(new ActionListener() {

            @Override

            public void actionPerformed(ActionEvent e) {

                radiusField.setEnabled(true);

                lengthField.setEnabled(false);

                breadthField.setEnabled(false);

                sideField.setEnabled(false);

            }

        });

        rectangleButton.addActionListener(new ActionListener() {

            @Override

            public void actionPerformed(ActionEvent e) {

                radiusField.setEnabled(false);

                lengthField.setEnabled(true);

                breadthField.setEnabled(true);

                sideField.setEnabled(false);

            }

        });

        squareButton.addActionListener(new ActionListener() {

            @Override

            public void actionPerformed(ActionEvent e) {

                radiusField.setEnabled(false);

                lengthField.setEnabled(false);

                breadthField.setEnabled(false);

                sideField.setEnabled(true);

            }

        });

        JTextArea resultArea = new JTextArea(10, 30); // Added text area to display results

        resultArea.setEditable(false);

        calculateButton.addActionListener(new ActionListener() {

            @Override

            public void actionPerformed(ActionEvent e) {

                double radius = 0, length = 0, breadth = 0, side = 0;

                resultArea.setText(""); // Clear previous results

                if (circleButton.isSelected()) {

                    radius = Double.parseDouble(radiusField.getText());

                } else if (rectangleButton.isSelected()) {

                    length = Double.parseDouble(lengthField.getText());

                    breadth = Double.parseDouble(breadthField.getText());

                } else if (squareButton.isSelected()) {

                    side = Double.parseDouble(sideField.getText());

                }

                StringBuilder result = new StringBuilder();

                if (areaCheckBox.isSelected()) {

                    if (circleButton.isSelected()) {

                        double area = Math.PI \* radius \* radius;

                        result.append("Area of circle: ").append(area).append("\n");

                        System.out.println("Area of circle: " + area);

                    } else if (rectangleButton.isSelected()) {

                        double area = length \* breadth;

                        result.append("Area of rectangle: ").append(area).append("\n");

                        System.out.println("Area of rectangle: " + area);

                    } else if (squareButton.isSelected()) {

                        double area = side \* side;

                        result.append("Area of square: ").append(area).append("\n");

                        System.out.println("Area of square: " + area);

                    }

                }

                if (perimeterCheckBox.isSelected()) {

                    if (circleButton.isSelected()) {

                        double perimeter = 2 \* Math.PI \* radius;

                        result.append("Circumference of circle: ").append(perimeter).append("\n");

                        System.out.println("Circumference of circle: " + perimeter);

                    } else if (rectangleButton.isSelected()) {

                        double perimeter = 2 \* (length + breadth);

                        result.append("Perimeter of rectangle: ").append(perimeter).append("\n");

                        System.out.println("Perimeter of rectangle: " + perimeter);

                    } else if (squareButton.isSelected()) {

                        double perimeter = 4 \* side;

                        result.append("Perimeter of square: ").append(perimeter).append("\n");

                        System.out.println("Perimeter of square: " + perimeter);

                    }

                }

                if (circumferenceCheckBox.isSelected()) {

                    if (circleButton.isSelected()) {

                        double circumference = 2 \* Math.PI \* radius;

                        result.append("Circumference of circle: ").append(circumference).append("\n");

                        System.out.println("Circumference of circle: " + circumference);

                    }

                }

                resultArea.setText(result.toString()); // Display results in text area

            }

        });

        exitButton.addActionListener(new ActionListener() {

            @Override

            public void actionPerformed(ActionEvent e) {

                System.exit(0);

            }

        });

        // Layout setup

        JPanel topPanel = new JPanel();

        topPanel.setLayout(new BoxLayout(topPanel, BoxLayout.Y\_AXIS));

        topPanel.add(panel1);

        topPanel.add(panel2);

        JPanel buttonPanel = new JPanel();

        buttonPanel.add(calculateButton);

        buttonPanel.add(exitButton);

        JPanel inputPanel = new JPanel();

        inputPanel.setLayout(new GridLayout(4, 2));

        inputPanel.add(new JLabel("Radius:"));

        inputPanel.add(radiusField);

        inputPanel.add(new JLabel("Length:"));

        inputPanel.add(lengthField);

        inputPanel.add(new JLabel("Breadth:"));

        inputPanel.add(breadthField);

        inputPanel.add(new JLabel("Side:"));

        inputPanel.add(sideField);

        frame.add(topPanel, BorderLayout.NORTH);

        frame.add(inputPanel, BorderLayout.CENTER);

        frame.add(buttonPanel, BorderLayout.SOUTH);

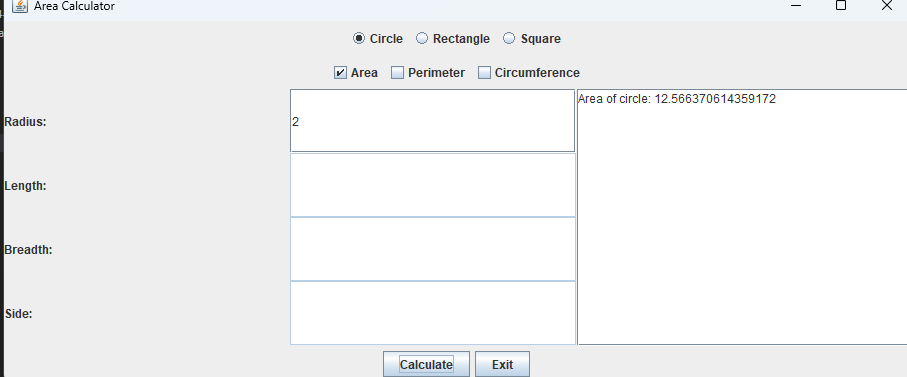
        frame.add(new JScrollPane(resultArea), BorderLayout.EAST); // Add text area to frame

        frame.setVisible(true);

    }

}

**Output:**

****