Vidyavardhini's College of Engineering and Technology

Department of Artificial Intelligence & Data Science

Experiment No. 12
Course Project based on the content of the syllabus.
Date of Performance:
Date of Submission:

Aim: Write a program to implement mini project.

Code :

```
import java.awt.Color;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;

import javax.swing.JButton;
import javax.swing.JFrame;
import javax.swing.JPanel;
import javax.swing.JTextField;
import javax.swing.UIManager;
import javax.swing.UnsupportedLookAndFeelException;

public class CalculatorApp extends JFrame implements ActionListener {

    private static final long serialVersionUID = -1315467733997126666L;

    static JFrame frame;
    static JTextField textField;
    String first, second, operator;

    CalculatorApp() {
        first = second = operator = "";
    }

    public static void main(String[] args) throws UnsupportedLookAndFeelException {

        // Create a frame
        frame = new JFrame("Calculator");

        // Set the default look and feel
        UIManager.setLookAndFeel(UIManager.getLookAndFeel());

        // Create an instance of the calculator app
        CalculatorApp calculator = new CalculatorApp();

        // Create a text field
        textField = new JTextField(16);
        textField.setEditable(false);
```

```
        // Create number and operator buttons
        JButton btn0, btn1, btn2, btn3, btn4, btn5, btn6, btn7, btn8, btn9, btnAdd, btnSub, btnDiv,
btnMul, btnDot, btnClr, btnEq;

        btn0 = new JButton("0");
        btn1 = new JButton("1");
        btn2 = new JButton("2");
        btn3 = new JButton("3");
        btn4 = new JButton("4");
        btn5 = new JButton("5");
        btn6 = new JButton("6");
        btn7 = new JButton("7");
        btn8 = new JButton("8");
        btn9 = new JButton("9");

        btnEq = new JButton("=");

        btnAdd = new JButton("+");
        btnSub = new JButton("-");
        btnDiv = new JButton("/");
        btnMul = new JButton("*");
        btnClr = new JButton("C");

        btnDot = new JButton(".");

        // Add action listeners for the buttons
        btnMul.addActionListener(calculator);
        btnDiv.addActionListener(calculator);
        btnSub.addActionListener(calculator);
        btnAdd.addActionListener(calculator);
        btn9.addActionListener(calculator);
        btn8.addActionListener(calculator);
        btn7.addActionListener(calculator);
        btn6.addActionListener(calculator);
        btn5.addActionListener(calculator);
        btn4.addActionListener(calculator);
        btn3.addActionListener(calculator);
        btn2.addActionListener(calculator);
        btn1.addActionListener(calculator);
        btn0.addActionListener(calculator);
        btnDot.addActionListener(calculator);
        btnClr.addActionListener(calculator);
        btnEq.addActionListener(calculator);

        // Create a panel to add buttons and text field
        JPanel panel = new JPanel();
        panel.add(textField);
        panel.add(btn7);
```

```
    panel.add(btn8);
    panel.add(btn9);
    panel.add(btnDiv);
    panel.add(btn4);
    panel.add(btn5);
    panel.add(btn6);
    panel.add(btnMul);
    panel.add(btn1);
    panel.add(btn2);
    panel.add(btn3);
    panel.add(btnSub);
    panel.add(btnDot);
    panel.add(btnClr);
    panel.add(btn0);
    panel.add(btnAdd);
    panel.add(btnEq);

    // Set background color of panel
    panel.setBackground(Color.PINK);

    // Add panel to frame
    frame.add(panel);

    // Set frame properties
    frame.setSize(200, 220);
    frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE); // Exit on close
    frame.setVisible(true); // Corrected to show the frame
}

@Override
public void actionPerformed(ActionEvent e) {
    String action = e.getActionCommand();

    // If the value is a number or a dot
    if ((action.charAt(0) >= '0' && action.charAt(0) <= '9') || action.charAt(0) == '.') {
        if (action.equals(".") && first.contains(".")) {
            // no action
        } else if (!operator.equals(""))
            second = second + action;
        else
            first = first + action;

        textField.setText(first + operator + second);
    } else if (action.charAt(0) == 'C') {
        // Clear everything
        operator = second = "";
        first = ""; // Changed from "0" to ""
        textField.setText(first + operator + second);
```

```
            } else if (action.charAt(0) == '=' && !first.equalsIgnoreCase("") &&
!second.equalsIgnoreCase("")) {
        // Perform calculation when equals is pressed
        double result;
        switch (operator) {
            case "+":
                result = (Double.parseDouble(first) + Double.parseDouble(second));
                break;
            case "-":
                result = (Double.parseDouble(first) - Double.parseDouble(second));
                break;
            case "/":
                result = (Double.parseDouble(first) / Double.parseDouble(second));
                break;
            default:
                result = (Double.parseDouble(first) * Double.parseDouble(second));
                break;
        }

        // Display result
        textField.setText(first + operator + second + "=" + result);
        first = Double.toString(result);
        operator = second = "";
      } else {
        // Handle operator
        if (operator.equals("") || second.equals(""))
            operator = action;
        else {
            double result;
            switch (operator) {
                case "+":
                    result = (Double.parseDouble(first) + Double.parseDouble(second));
                    break;
                case "-":
                    result = (Double.parseDouble(first) - Double.parseDouble(second));
                    break;
                case "/":
                    result = (Double.parseDouble(first) / Double.parseDouble(second));
                    break;
                default:
                    result = (Double.parseDouble(first) * Double.parseDouble(second));
                    break;
            }
            first = Double.toString(result);
            operator = action;
            second = "";
        }
        textField.setText(first + operator + second);
      }
```

```
    }
}
```

Output –