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

//This program uses java library to create a working calculator.
public class Calculator
{
    public static void main(String[] args) //main begins
    {
        EventQueue.invokeLater(new Runnable()
        {
            public void run()
            {
                CalculatorFrame frame = new CalculatorFrame();
                frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
                frame.setVisible(true);
            }
        });
    }
}

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class CalculatorFrame extends JFrame
{
    public CalculatorFrame()
    {
        CalculatorPanel panel = new CalculatorPanel();
        add(panel);
        pack();
    }
}

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//Make the frame and buttons for the calculator
class CalculatorPanel extends JPanel
{
    public CalculatorPanel()
    {
        setLayout(new BorderLayout());

        result = 0;
        lastCommand = "=";
        start = true;

        // add the display

        display = new JButton("Lets do some calculation!!");
        display.setEnabled(false);
        add(display, BorderLayout.NORTH);

        ActionListener insert = new InsertAction();
        ActionListener command = new CommandAction();

        panel = new JPanel();
    }
}

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panel.setLayout(new GridLayout(4, 4)); //sets the 4 x 4 grid calculator

addButton("7", insert);
addButton("8", insert);
addButton("9", insert);
addButton("/", command);

addButton("4", insert);
addButton("5", insert);
addButton("6", insert);
addButton("*", command);

addButton("1", insert);
addButton("2", insert);
addButton("3", insert);
addButton("-", command);

addButton("0", insert);
addButton(".", insert);
addButton("=", command);
addButton("+", command);

add(panel, BorderLayout.CENTER);
}

private void addButton(String label, ActionListener listener)
{
    JButton button = new JButton(label);
    button.addActionListener(listener);
    panel.add(button);
}

private class InsertAction implements ActionListener
{
    public void actionPerformed(ActionEvent event)
    {
        String input = event.getActionCommand();
        if (start)
        {
            display.setText("");
            start = false;
        }
        display.setText(display.getText() + input);
    }
}

private class CommandAction implements ActionListener
{
    public void actionPerformed(ActionEvent event)
    {
        String command = event.getActionCommand();

        if (start)
        {
            if (command.equals("-"))

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        {
            display.setText(command);
            start = false;
        }
        else lastCommand = command;
    }
    else
    {
        calculate(Double.parseDouble(display.getText()));
        lastCommand = command;
        start = true;
    }
}

}

public void calculate(double value)
{
    if (lastCommand.equals("+")) result += value;
    else if (lastCommand.equals("-")) result -= value;
    else if (lastCommand.equals("*")) result *= value;
    else if (lastCommand.equals("/")) result /= value;
    else if (lastCommand.equals("=")) result = value;
    display.setText("" + result);
}

//instance variables
private JButton display;
private JPanel panel;
private double result;
private String lastCommand;
private boolean start;
}

```

