import java.awt.\*;

import java.awt.event.\*;

import javax.swing.\*;

import javax.swing.event.\*;

class Calculator extends JFrame {

private final Font BIGGER\_FONT = new Font("monspaced",Font.PLAIN, 20);

private JTextField textfield;

private boolean number = true;

private String equalOp = "=";

private CalculatorOp op = new CalculatorOp();

public Calculator() {

textfield = new JTextField("", 12);

textfield.setHorizontalAlignment(JTextField.RIGHT);

textfield.setFont(BIGGER\_FONT);

ActionListener numberListener = new NumberListener();

String buttonOrder = "1234567890 ";

JPanel buttonPanel = new JPanel();

buttonPanel.setLayout(new GridLayout(4, 4, 4, 4));

for (int i = 0; i < buttonOrder.length(); i++) {

String key = buttonOrder.substring(i, i+1);

if (key.equals(" ")) {

buttonPanel.add(new JLabel(""));

} else {

JButton button = new JButton(key);

button.addActionListener(numberListener);

button.setFont(BIGGER\_FONT);

buttonPanel.add(button);

}

}

ActionListener operatorListener = new OperatorListener();

JPanel panel = new JPanel();

panel.setLayout(new GridLayout(4, 4, 4, 4));

String[] opOrder = {"+", "-", "\*", "/","=","C","sin","cos","log"};

for (int i = 0; i < opOrder.length; i++) {

JButton button = new JButton(opOrder[i]);

button.addActionListener(operatorListener);

button.setFont(BIGGER\_FONT);

panel.add(button);

}

JPanel pan = new JPanel();

pan.setLayout(new BorderLayout(4, 4));

pan.add(textfield, BorderLayout.NORTH );

pan.add(buttonPanel , BorderLayout.CENTER);

pan.add(panel , BorderLayout.EAST);

this.setContentPane(pan);

this.pack();

this.setTitle("Calculator");

this.setResizable(false);

}

private void action() {

number = true;

textfield.setText("");

equalOp = "=";

op.setTotal("");

}

class OperatorListener implements ActionListener {

public void actionPerformed(ActionEvent e) {

String displayText = textfield.getText();

if (e.getActionCommand().equals("sin"))

{

textfield.setText("" + Math.sin(Double.valueOf(displayText).doubleValue()));

}else

if (e.getActionCommand().equals("cos"))

{

textfield.setText("" + Math.cos(Double.valueOf(displayText).doubleValue()));

}

else

if (e.getActionCommand().equals("log"))

{

textfield.setText("" + Math.log(Double.valueOf(displayText).doubleValue()));

}

else if (e.getActionCommand().equals("C"))

{

textfield.setText("");

}

else

{

if (number)

{

action();

textfield.setText("");

}

else

{

number = true;

if (equalOp.equals("="))

{

op.setTotal(displayText);

}else

if (equalOp.equals("+"))

{

op.add(displayText);

}

else if (equalOp.equals("-"))

{

op.subtract(displayText);

}

else if (equalOp.equals("\*"))

{

op.multiply(displayText);

}

else if (equalOp.equals("/"))

{

op.divide(displayText);

}

textfield.setText("" + op.getTotalString());

equalOp = e.getActionCommand();

}

}

}

}

class NumberListener implements ActionListener {

public void actionPerformed(ActionEvent event) {

String digit = event.getActionCommand();

if (number) {

textfield.setText(digit);

number = false;

} else {

textfield.setText(textfield.getText() + digit);

}

}

}

public class CalculatorOp {

private int total;

public CalculatorOp() {

total = 0;

}

public String getTotalString() {

return ""+total;

}

public void setTotal(String n) {

total = convertToNumber(n);

}

public void add(String n) {

total += convertToNumber(n);

}

public void subtract(String n) {

total -= convertToNumber(n);

}

public void multiply(String n) {

total \*= convertToNumber(n);

}

public void divide(String n) {

total /= convertToNumber(n);

}

private int convertToNumber(String n) {

return Integer.parseInt(n);

}

}

}

class SwingCalculator {

public static void main(String[] args) {

JFrame frame = new Calculator();

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

frame.setVisible(true);

}

}