Sukkur IBA University

OOP Using Java

Final Assignment

GUI Calculator

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Code

```
import java.awt.*;
import javax.swing.*;
import javax.swing.event.*;
import java.util.*;
import java.awt.event.*;
import static java.lang.Math.*;
class GUI implements ActionListener
{
	JFrame frame ;
	JPanel panel1 ;
	ImageIcon image ;
	JLabel bl,history;
	JTextArea hist;
	Container c ;
	JTextField inp,res;
	JButton b1,b2,b3,b4,b5,b6,b7,b8,b9,b0,plus,min,Bs,clear,mul,div,eq,dec,sq,sqRt,Sinx,Cosx,Tanx;
	Font font;
	String input = "", result = "" ,oper,str;
	StringBuilder sb;
	String [] token = null;
	char f,l;
	double num1,num2,ans;
	int i,len;
	void Draw ()
	{
		frame = new JFrame ("CALCULATOR");
			frame.setBounds(100,100,600,450);
			frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
			frame.setVisible(true);

			Color color = new Color (200,250,50,80);
		c = frame.getContentPane();
			c.setBackground(color);
			c.setLayout(null);


		font = new Font("Calibiri",Font.BOLD,15);

		history = new JLabel("HISTORY");
			history.setBounds(340,12,100,40);
			history.setFont(font);
			c.add(history);
		hist = new JTextArea();
			hist.setBounds(340,60,200,280);
			hist.setFont(font);
			c.add(hist);

		inp = new JTextField ();
			inp.setPreferredSize(new Dimension (1,24));
			inp.setBounds(10,12,310,32);
			c.add(inp);
		res = new JTextField();
			res.setPreferredSize(new Dimension(1,24));
			res.setBounds(10,50,310,32);
			c.add(res);

		// ==================================Row1=========================
```

```
clear = new JButton ("C");
		clear.setFont(font);
		clear.addActionListener(this);
		clear.setBounds(66,88,50,50);
		c.add(clear);
Bs = new JButton (new ImageIcon("D:/BSCS-II/OOP with Java/Java GUI/Bs.png"));
		Bs.addActionListener(this);
		Bs.setBounds(122,88,50,50);
		c.add(Bs);
div = new JButton (new ImageIcon("D:/BSCS-II/OOP with Java/Java GUI/div.png"));
		div.addActionListener(this);
		div.setBounds(178,88,50,50);
		c.add(div);
sqRt = new JButton("\u221A");
		sqRt.setFont(font);
		sqRt.addActionListener(this);
		sqRt.setBounds(244,88,70,50);
		c.add(sqRt);
// ============================Row2==============================

b7 = new JButton ("7");
		b7.setFont(font);
		b7.addActionListener(this);
		b7.setBounds(10,144,50,50);
		c.add(b7);
b8 = new JButton ("8");
		b8.setFont(font);
		b8.addActionListener(this);
		b8.setBounds(66,144,50,50);
		c.add(b8);
b9 = new JButton ("9");
		b9.setFont(font);
		b9.addActionListener(this);
		b9.setBounds(122,144,50,50);
		c.add(b9);
mul = new JButton (new ImageIcon("D:/BSCS-II/OOP with Java/Java GUI/mul.png"));

		mul.addActionListener(this);
		mul.setBounds(178,144,50,50);
		c.add(mul);
Sinx = new JButton ("Sinx");
		Sinx.setFont(font);
		Sinx.addActionListener(this);
		Sinx.setBounds(244,144,70,50);
		c.add(Sinx);
// ============================Row3==============================

b4 = new JButton ("4");
		b4.setFont(font);
		b4.addActionListener(this);
		b4.setBounds(10,200,50,50);
		c.add(b4);
b5 = new JButton ("5");
		b5.setFont(font);
		b5.addActionListener(this);
		b5.setBounds(66,200,50,50);
		c.add(b5);
b6 = new JButton ("6");
		b6.setFont(font);
		b6.addActionListener(this);
		b6.setBounds(122,200,50,50);
```

```
            c.add(b6);
min = new JButton (new ImageIcon("D:/BSCS-II/OOP with Java/Java GUI/min.png"));
            // min.addActionListener(new ListenTomin());
            min.addActionListener(this);
            min.setBounds(178,200,50,50);
            c.add(min);
            c.add(Sinx);
Cosx = new JButton("Cosx");
            Cosx.setFont(font);
            Cosx.addActionListener(this);
            Cosx.setBounds(244,200,70,50);
            c.add(Cosx);

// ==================================Row4==============================

b1 = new JButton ("1");
            b1.setFont(font);
            b1.addActionListener(this);
            b1.setBounds(10,256,50,50);
            c.add(b1);
b2 = new JButton ("2");
            b2.setFont(font);
            b2.addActionListener(this);
            b2.setBounds(66,256,50,50);
            c.add(b2);

b3 = new JButton ("3");
            b3.setFont(font);
            b3.addActionListener(this);
            b3.setBounds(122,256,50,50);
            c.add(b3);
plus = new JButton (new ImageIcon("D:/BSCS-II/OOP with Java/Java GUI/plus.png"));
            plus.addActionListener(this);
            plus.setBounds(178,256,50,50);
            c.add(plus);
Tanx = new JButton ("Tanx");
            Tanx.setFont(font);
            Tanx.addActionListener(this);
            Tanx.setBounds(244,256,70,50);
            c.add(Tanx);

// ========================Row5============================

dec = new JButton(".");
            dec.setFont(font);
            dec.addActionListener(this);
            dec.setBounds(10,312,50,50);
            c.add(dec);

b0 = new JButton ("0");
            b0.setFont(font);
            b0.addActionListener(this);
            b0.setBounds(66,312,50,50);
            c.add(b0);

eq = new JButton (new ImageIcon("D:/BSCS-II/OOP with Java/Java GUI/eq.png"));

            eq.addActionListener(this);
            eq.setBounds(122,312,106,50);
            c.add(eq);
```

```
		sq = new JButton ("x^y");
			sq.setFont(font);
			sq.setBounds(244,312,70,50);
			sq.addActionListener(this);
			c.add(sq);

	}

	public void actionPerformed (ActionEvent ae)
	{
		input = inp.getText();
		if (ae.getSource() == b0){input = input+ "0";}
		if (ae.getSource() == b1){input = input+ "1";}
		if (ae.getSource() == b2){input = input+ "2";}
		if (ae.getSource() == b3){input = input+ "3";}
		if (ae.getSource() == b4){input = input+ "4";}
		if (ae.getSource() == b5){input = input+ "5";}
		if (ae.getSource() == b6){input = input+ "6";}
		if (ae.getSource() == b7){input = input+ "7";}
		if (ae.getSource() == b8){input = input+ "8";}
		if (ae.getSource() == b9){input = input+ "9";}
		if (ae.getSource() == plus){input = input+ "+";}
		if (ae.getSource() == min){input = input+ "-";}
		if (ae.getSource() == mul){input = input+ "x";}
		if (ae.getSource() == div){input = input+ "/";}
		if (ae.getSource() == clear){input = ""; res.setText("");}
		if (ae.getSource() == dec){input = input+ ".";}
		if (ae.getSource() == sq) {input = input + "^";}
		if (ae.getSource() == sqRt) {input = "\u221A"+input;}
		if (ae.getSource() == Sinx) {input = "Sin("+input+")";}
		if (ae.getSource() == Cosx) {input = "Cos("+input+")";}
		if (ae.getSource() == Tanx) {input = "Tan("+input+")";}
		if (ae.getSource() == Bs)
		{
			sb = new StringBuilder(inp.getText());
			if (sb.length() > 0)
			{
				sb = sb.deleteCharAt(sb.length()-1);
				input = sb.toString();
			}

		}

		inp.setText(input);

		str = input;


		if (ae.getSource() == eq)
		{
			l = input.charAt(input.length()-1);
			f = input.charAt(0);

		//Here we are dealing with input syntax error of signs. This if will not allow to enter a sign at last of first.
			// if ((input.charAt(input.length()-1) != '+') || (input.charAt(input.length()-1) != '-') ||
(input.charAt(input.length()-1) != 'x') || (input.charAt(input.length()-1) != '/')||(input.charAt(0) != '+') ||(input.charAt (0) != '-') ||
(input.charAt(0) != 'x') || (input.charAt(0) != '/'))
		if ((f != '+') && (f != '-') && (f != 'x') && (f != '/')&& (f != '^') &&(l != '+') &&(l != '-') && (l != 'x') && (l != '/')&& (l != '^')&& (l
!= '\u221A'))
		{
			if (input.contains("+") )
```

```
		{
			token = input.split("[+]");
			num1= Double.parseDouble(token[0]);
			num2= Double.parseDouble(token[1]);

			ans = (num1+num2);
			result = ans+"" ;
		}
		if (input.contains("-"))
		{
			token = input.split("[-]");
			num1= Double.parseDouble(token[0]);
			num2= Double.parseDouble(token[1]);
			result = (num1-num2)+"";
		}
		if (input.contains("x"))
		{
			token = input.split("[x]");
			num1= Double.parseDouble(token[0]);
			num2= Double.parseDouble(token[1]);
			result = (num1*num2)+"";
		}
		if (input.contains("/"))
		{
			token = input.split("[/]");
			num1= Double.parseDouble(token[0]);
			num2= Double.parseDouble(token[1]);
			result = (num1/num2)+"";
		}
		if (input.contains("^"))
		{
			token[0] = input.substring(0,input.indexOf('^'));
			token[1] = input.substring(input.indexOf('^')+1);

			num1 = Double.parseDouble(token[0]);
			num2 = Double.parseDouble(token[1]);
			result = token[0]+" "+token[1];

		}
		if (input.contains("\u221A"))
		{
			token = input.split("[\u221A]");
			num2 = Double.parseDouble(token[1]);
			result = (sqrt(num2))+"";

		}
}
else
{
		result = "Syntax Error!";
}

//Trigonometric functions.

		if (input.contains("Sin"))
		{
			input = input.substring(4,input.length()-1);
			num1 = Double.parseDouble(input);
			num1 = toRadians(num1);
			ans = sin(num1);
			result = ans+"";
```

```
                    }
                    if (input.contains("Cos"))
                    {
                            input = input.substring(4,input.length()-1);
                            num1 = Double.parseDouble(input);
                            num1 = toRadians(num1);
                            ans = cos(num1);
                            result = ans+"";
                    }
                    if (input.contains("Tan"))
                    {
                            input = input.substring(4,input.length()-1);
                            num1 = Double.parseDouble(input);
                            num1 = toRadians(num1);
                            ans = tan(num1);
                            result = ans+"";
                    }
                    res.setText(result);

                    str = str +" = " + result;
                    hist.setText(hist.getText()+"\n"+str);
            }
        }
}
public class Calculator
{
        public static void main (String args[])
        {
                GUI gui = new GUI ();
                gui.Draw();
        }
}
```

Output