**Developer Name- Kumari Soni**

**Project Name- Scientific Calculator**

**Language Used- Java (using awt and swing)**

**CODE:**

import java.io.\*;

import java.util.\*;

import java.awt.\*;

import javax.swing.\*;

import java.awt.event.\*;

import javax.swing.event.\*;

class SoniCalci extends JFrame implements ActionListener

{

double num,ans;

double num1;

int cal;

JLabel l1;

JTextField t1;

JRadioButton r1,r2;

ButtonGroup g;

JButton b1,b2,b3,b4,b5,b6,b7,b8,b9,b0,

bdot,bsqrt,bex,blog,b1x,bsin,bcos,btan,bsinh,bcosh,btanh,

bxn,bper,bclr,bback,badd,bsub,bmul,bdiv,bx2,bx3,bfact,bpm,beq;

SoniCalci()

{

super("SONI CALCI");

l1= new JLabel("You are using SONI CALCI");

t1= new JTextField();

r1= new JRadioButton("on");

r2= new JRadioButton("off");

g= new ButtonGroup();

b1= new JButton("1");

b2= new JButton("2");

b3= new JButton("3");

b4= new JButton("4");

b5= new JButton("5");

b6= new JButton("6");

b7= new JButton("7");

b8= new JButton("8");

b9= new JButton("9");

b0= new JButton("0");

bdot= new JButton(".");

bsqrt= new JButton("sqrt");

bex= new JButton("exp");

blog= new JButton("log");

b1x= new JButton("1/x");

bsin= new JButton("sin");

bcos= new JButton("cos");

btan= new JButton("tan");

bsinh= new JButton("sinh");

bcosh= new JButton("Cosh");

btanh= new JButton("tanh");

bxn= new JButton("x^n");

bper= new JButton("%");

bclr= new JButton("Clr");

bback= new JButton("<-");

badd= new JButton("+");

bsub= new JButton("-");

bmul= new JButton("\*");

bdiv= new JButton("/");

bx2= new JButton("x^2");

bx3= new JButton("x^3");

bfact= new JButton("n!");

bpm= new JButton("+/-");

beq= new JButton("=");

**//-----------------------Arranging the components**

//setLayout(new FlowLayout());

setLayout(null);

//row 1

l1.setBounds(100,10,150,30);

//row 2

t1.setBounds(30,40,345,50);

//row 3

r1.setBounds(40,100,40,30);

r2.setBounds(100,100,40,30);

//row 4

bsqrt.setBounds(40,140,60,40);

bex.setBounds(105,140,60,40);

bsin.setBounds(170,140,60,40);

bcos.setBounds(235,140,60,40);

btan.setBounds(300,140,60,40);

//row 5

b1x.setBounds(40,200,60,40);

blog.setBounds(105,200,60,40);

bsinh.setBounds(170,200,60,40);

bcosh.setBounds(235,200,60,40);

btanh.setBounds(300,200,60,40);

//row 6

bxn.setBounds(40,260,60,40);

bper.setBounds(105,260,60,40);

bclr.setBounds(170,260,60,40);

bback.setBounds(235,260,60,40);

badd.setBounds(300,260,60,40);

//row 7

bx3.setBounds(40,320,60,40);

b7.setBounds(105,320,60,40);

b8.setBounds(170,320,60,40);

b9.setBounds(235,320,60,40);

bsub.setBounds(300,320,60,40);

//row 8

bx2.setBounds(40,380,60,40);

b4.setBounds(105,380,60,40);

b5.setBounds(170,380,60,40);

b6.setBounds(235,380,60,40);

bmul.setBounds(300,380,60,40);

//row 9

bfact.setBounds(40,440,60,40);

b1.setBounds(105,440,60,40);

b2.setBounds(170,440,60,40);

b3.setBounds(235,440,60,40);

bdiv.setBounds(300,440,60,40);

//row 10

bpm.setBounds(40,500,60,40);

b0.setBounds(105,500,125,40);

bdot.setBounds(235,500,60,40);

beq.setBounds(300,500,60,40);

**//Adding the components**

//row 1

add(l1);

//row 2

add(t1);

//row 3

add(r1);

add(r2);

g.add(r1);

g.add(r2);

//row 4

add(bsqrt);

add(bex);

add(bsin);

add(bcos);

add(btan);

//row 5

add(b1x);

add(blog);

add(bsinh);

add(bcosh);

add(btanh);

//row 6

add(bxn);

add(bper);

add(bclr);

add(bback);

add(badd);

//row 7

add(bx3);

add(b7);

add(b8);

add(b9);

add(bsub);

//row 8

add(bx2);

add(b4);

add(b5);

add(b6);

add(bmul);

//row 9

add(bfact);

add(b1);

add(b2);

add(b3);

add(bdiv);

//row 10

add(bpm);

add(b0);

add(bdot);

add(beq);

**//-----------------------adding ActionListener to all the buttons**

//row 3

r1.addActionListener(this);

r2.addActionListener(this);

//row 4

bsqrt.addActionListener(this);

bex.addActionListener(this);

bsin.addActionListener(this);

bcos.addActionListener(this);

btan.addActionListener(this);

//row 5

b1x.addActionListener(this);

blog.addActionListener(this);

bsinh.addActionListener(this);

bcosh.addActionListener(this);

btanh.addActionListener(this);

//row 6

bxn.addActionListener(this);

bper.addActionListener(this);

bclr.addActionListener(this);

bback.addActionListener(this);

badd.addActionListener(this);

//row 7

bx3.addActionListener(this);

b7.addActionListener(this);

b8.addActionListener(this);

b9.addActionListener(this);

bsub.addActionListener(this);

//row 8

bx2.addActionListener(this);

b4.addActionListener(this);

b5.addActionListener(this);

b6.addActionListener(this);

bmul.addActionListener(this);

//row 9

bfact.addActionListener(this);

b1.addActionListener(this);

b2.addActionListener(this);

b3.addActionListener(this);

bdiv.addActionListener(this);

//row 10

bpm.addActionListener(this);

b0.addActionListener(this);

bdot.addActionListener(this);

beq.addActionListener(this);

setResizable(false);

setSize(600,600);

setLocation(10,10);

setVisible(true);

setDefaultCloseOperation(JFrame.EXIT\_ON\_CLOSE);

}

**//-----------------------Method to perform action**

public void actionPerformed(ActionEvent e)

{

// for buttons 0 to 9

if(e.getSource()==b1)

t1.setText(t1.getText()+"1");

else if(e.getSource()==b2)

t1.setText(t1.getText()+"2");

else if(e.getSource()==b3)

t1.setText(t1.getText()+"3");

else if(e.getSource()==b4)

t1.setText(t1.getText()+"4");

else if(e.getSource()==b5)

t1.setText(t1.getText()+"5");

else if(e.getSource()==b6)

t1.setText(t1.getText()+"6");

else if(e.getSource()==b7)

t1.setText(t1.getText()+"7");

else if(e.getSource()==b8)

t1.setText(t1.getText()+"8");

else if(e.getSource()==b9)

t1.setText(t1.getText()+"9");

else if(e.getSource()==b0)

t1.setText(t1.getText()+"0");

else if(e.getSource()==bdot)

t1.setText(t1.getText()+".");

else if(e.getSource()==bclr)

t1.setText("");

else if(e.getSource()==beq)

calculation();

**//-----------------------for buttons performing add, sub, mul, div**

else if(e.getSource()==badd)

{

num=Double.parseDouble(t1.getText());

cal=1;

t1.setText("");

//l1.setText(num+"+");

}

else if(e.getSource()==bsub)

{

num=Double.parseDouble(t1.getText());

cal=2;

t1.setText("");

//l1.setText(num+"-");

}

else if(e.getSource()==bmul)

{

num=Double.parseDouble(t1.getText());

cal=3;

t1.setText("");

//l1.setText(num+"\*");

}

else if(e.getSource()==bdiv)

{

num=Double.parseDouble(t1.getText());

cal=4;

t1.setText("");

//l1.setText(num+"/");

}

else if(e.getSource()==bxn)

{

num=Double.parseDouble(t1.getText());

cal=5;

t1.setText("");

//l1.setText(num+"^");

}

else if(e.getSource()==bper)

{

num=Double.parseDouble(t1.getText());

cal=6;

t1.setText("");

//l1.setText(num+"%");

}

else if(e.getSource()==beq)

{

calculation();

t1.setText("");

}

**//-----------------------other math class functions**

else if(e.getSource()==bsqrt)

{

num=Double.parseDouble(t1.getText());

ans=Math.sqrt(num);

t1.setText(Double.toString(ans));

}

else if(e.getSource()==bsin)

{

num=Double.parseDouble(t1.getText());

ans=Math.sin(num);

t1.setText(Double.toString(ans));

}

else if(e.getSource()==bsinh)

{

num=Double.parseDouble(t1.getText());

ans=Math.sinh(num);

t1.setText(Double.toString(ans));

}

else if(e.getSource()==bcos)

{

num=Double.parseDouble(t1.getText());

ans=Math.cos(num);

t1.setText(Double.toString(ans));

}

else if(e.getSource()==bcosh)

{

num=Double.parseDouble(t1.getText());

ans=Math.cosh(num);

t1.setText(Double.toString(ans));

}

else if(e.getSource()==btan)

{

num=Double.parseDouble(t1.getText());

ans=Math.tan(num);

t1.setText(Double.toString(ans));

}

else if(e.getSource()==btanh)

{

num=Double.parseDouble(t1.getText());

ans=Math.tanh(num);

t1.setText(Double.toString(ans));

}

else if(e.getSource()==blog)

{

num=Double.parseDouble(t1.getText());

ans=Math.log(num);

t1.setText(Double.toString(ans));

}

else if(e.getSource()==b1x)

{

num=Double.parseDouble(t1.getText());

ans=(1/num);

t1.setText(Double.toString(ans));

}

else if(e.getSource()==bx3)

{

num=Double.parseDouble(t1.getText());

ans=num\*num\*num;

t1.setText(Double.toString(ans));

}

else if(e.getSource()==bx2)

{

num=Double.parseDouble(t1.getText());

ans=num\*num;

t1.setText(Double.toString(ans));

}

else if(e.getSource()==bex)

{

num=Double.parseDouble(t1.getText());

ans=Math.exp(num);

t1.setText(Double.toString(ans));

}

else if(e.getSource()==bfact)

{

num=Double.parseDouble(t1.getText());

int i,fact=1;

for(i=1;i<=num;i++)

fact=fact\*i;

ans=fact;

t1.setText(Double.toString(ans));

}

else if(e.getSource()==r1)

enable();

else if(e.getSource()==r2)

disable();

}

**//Method to ON/OFF**

public void enable()

{

t1.setEditable(true);

b1.setEnabled(true);

b2.setEnabled(true);

b3.setEnabled(true);

b4.setEnabled(true);

b5.setEnabled(true);

b6.setEnabled(true);

b7.setEnabled(true);

b8.setEnabled(true);

b9.setEnabled(true);

b0.setEnabled(true);

bdot.setEnabled(true);

bsqrt.setEnabled(true);

bsin.setEnabled(true);

bcos.setEnabled(true);

btan.setEnabled(true);

bsinh.setEnabled(true);

bcosh.setEnabled(true);

btanh.setEnabled(true);

bx2.setEnabled(true);

bx3.setEnabled(true);

bxn.setEnabled(true);

bex.setEnabled(true);

b1x.setEnabled(true);

blog.setEnabled(true);

badd.setEnabled(true);

bsub.setEnabled(true);

bmul.setEnabled(true);

bdiv.setEnabled(true);

bfact.setEnabled(true);

beq.setEnabled(true);

bper.setEnabled(true);

bback.setEnabled(true);

bclr.setEnabled(true);

bpm.setEnabled(true);

}

public void disable()

{

t1.setEditable(false);

b1.setEnabled(false);

b2.setEnabled(false);

b3.setEnabled(false);

b4.setEnabled(false);

b5.setEnabled(false);

b6.setEnabled(false);

b7.setEnabled(false);

b8.setEnabled(false);

b9.setEnabled(false);

b0.setEnabled(false);

bdot.setEnabled(false);

bsqrt.setEnabled(false);

bsin.setEnabled(false);

bcos.setEnabled(false);

btan.setEnabled(false);

bsinh.setEnabled(false);

bcosh.setEnabled(false);

btanh.setEnabled(false);

bx2.setEnabled(false);

bx3.setEnabled(false);

bxn.setEnabled(false);

bex.setEnabled(false);

b1x.setEnabled(false);

blog.setEnabled(false);

badd.setEnabled(false);

bsub.setEnabled(false);

bmul.setEnabled(false);

bdiv.setEnabled(false);

bfact.setEnabled(false);

beq.setEnabled(false);

bper.setEnabled(false);

bback.setEnabled(false);

bclr.setEnabled(false);

bpm.setEnabled(false);

}

**// -----------------------function for calculation of add, sub, mul, div, x^n, %(modulo)**

public void calculation()

{

switch(cal)

{

case 1:

ans=num+Double.parseDouble(t1.getText());

t1.setText(Double.toString(ans));

break;

case 2:

ans=num-Double.parseDouble(t1.getText());

t1.setText(Double.toString(ans));

break;

case 3:

ans=num\*Double.parseDouble(t1.getText());

t1.setText(Double.toString(ans));

break;

case 4:

ans=num/Double.parseDouble(t1.getText());

t1.setText(Double.toString(ans));

break;

case 5:

ans=Math.pow(num,Double.parseDouble(t1.getText()));

t1.setText(Double.toString(ans));

break;

case 6:

double d= Double.parseDouble(t1.getText());

int di= (int)Math.round(d);

int numi=(int)Math.round(num);

ans=Math.floorMod(numi,di);

t1.setText(Double.toString(ans));

break;

}

}

public static void main(String args[])

{

new SoniCalci();

}

}