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**EXERCISE:10**

***1.Write a temperature conversion applet that converts from Fahrenheit to Celsius. The Fahrenheit temperature should be entered from the keyboard (via a JTextField). A JLabel should be used to display The converted temperature. Use the following formula for the conversion: Celsius = ((5/9)\*(Ferenheit-32)). Enhance the temperature conversion applet of Q1 by adding the Kelvin temperature scale. The applet should also allow the user to make conversion between any two scale. Use the following formula for the conversion between Kelvin and Celsius (in addition to the formula Q1 Kalvin = Celsius + 273.15***

**SOLUTION:**

import javax.swing.\*;

import java.awt.\*;

import java.awt.event.\*;

import java.text.\*;

public class TempCon extends JApplet implements ActionListener

{

JTextField txtInput;

JLabel lblResult;

JRadioButton rbCelcius, rbKelvin;

public void init()

{

Container conpane = getContentPane();

conpane.setLayout (new FlowLayout());

txtInput = new JTextField("",10);

conpane.add(txtInput);

rbCelcius= new JRadioButton ("to Celcius", true);

conpane.add(rbCelcius);

rbKelvin = new JRadioButton("to Kelvin", false);

conpane.add(rbKelvin);

ButtonGroup selection = new ButtonGroup();

selection.add(rbCelcius);

selection.add(rbKelvin);

JButton button1 = new JButton ("Show Result");

button1.addActionListener(this);

conpane.add(button1);

lblResult= new JLabel ("Enter Ferenheit, Choose an option to convert and Click Show Result");

conpane.add(lblResult);

}

public void actionPerformed(ActionEvent e)

{

DecimalFormat df = new DecimalFormat ("#.##");

double ferenheit = Double.parseDouble(txtInput.getText());

double answer = 0.0;

answer = ((5.0/9.0)\*(ferenheit - 32.0));

if (rbKelvin.isSelected())

answer += 273.15;

lblResult.setText(String.valueOf(df.format(answer)));

}

}

***2.Calculator using AWT controls***

**SOLUTION:**

import java.awt.\*;

import java.awt.event.\*;

 class Calculator implements ActionListener

{

Frame f=new Frame();

Label l1=new Label("First Number");

Label l2=new Label("Second Number");

Label l3=new Label("Result");

TextField t1=new TextField();

TextField t2=new TextField();

TextField t3=new TextField();

Button b1=new Button("Add");

Button b2=new Button("Sub");

Button b3=new Button("Mul");

Button b4=new Button("Div");

Button b5=new Button("Cancel");

Calculator()

{

l1.setBounds(50,100,100,20);

l2.setBounds(50,140,100,20);

3.setBounds(50,180,100,20);

t1.setBounds(200,100,100,20);

t2.setBounds(200,140,100,20);

t3.setBounds(200,180,100,20);

b1.setBounds(50,250,50,20);

b2.setBounds(110,250,50,20);

b3.setBounds(170,250,50,20);

b4.setBounds(230,250,50,20);

b5.setBounds(290,250,50,20);

f.add(l1);

f.add(l2);

f.add(l3);

f.add(t1);

f.add(t2);

f.add(t3);

f.add(b1);

f.add(b2);

f.add(b3);

f.add(b4);

f.add(b5);

b1.addActionListener(this);

b2.addActionListener(this);

b3.addActionListener(this);

b4.addActionListener(this);

b5.addActionListener(this);

f.setLayout(null);

f.setVisible(true);

f.setSize(400,350);

}

public void actionPerformed(ActionEvent e)

{

int n1=Integer.parseInt(t1.getText());

int n2=Integer.parseInt(t2.getText());

if(e.getSource()==b1)

{

t3.setText(String.valueOf(n1+n2));

}

if(e.getSource()==b2)

{

t3.setText(String.valueOf(n1-n2));

}

if(e.getSource()==b3)

{

t3.setText(String.valueOf(n1\*n2));

}

if(e.getSource()==b4)

{

t3.setText(String.valueOf(n1/n2));

}

if(e.getSource()==b5)

{

System.exit(0);

}

}

public static void main(String...s)

{

new Calculator();

}

}

***3.Authentication check using AWT Controls***

**SOLUTION**

import java.awt.\*;

import java.awt.event.\*;

class MyLoginWindow extends Frame

{

TextField name,pass;

Button b1,b2;

MyLoginWindow()

{

setLayout(new FlowLayout());

this.setLayout(null);

Label n=new Label("Name:",Label.CENTER);

Label p=new Label("password:",Label.CENTER);

name=new TextField(20);

pass=new TextField(20);

pass.setEchoChar('#');

b1=new Button("submit");

b2=new Button("cancel");

this.add(n);

this.add(name);

this.add(p);

this.add(pass);

this.add(b1);

this.add(b2);

n.setBounds(70,90,90,60);

p.setBounds(70,130,90,60);

name.setBounds(200,100,90,20);

pass.setBounds(200,140,90,20);

b1.setBounds(100,260,70,40);

b2.setBounds(180,260,70,40);

}

public static void main(String args[])

{

MyLoginWindow ml=new MyLoginWindow();

ml.setVisible(true);

ml.setSize(400,400);

ml.setTitle("my login window");

}

}

***4.Design a Calculator using event-driven programming paradigm of java with the following options.***

***1.Decimal manipulations***

***2.Scientific manipulatons***

***SOLUTION***

import java.awt.\*;

import javax.swing.\*;

import java.awt.event.\*;

import javax.swing.event.\*;

public class calci extends JFrame implements ActionListener

{

Container contentpane;

JPanel DisplayPanel,ControlPanel;

JTextField txt;

JButton one, two,three, four, five, six, seven, eight, nine, zero;

JButton plus, min,mul, div, log,CLR,exp;

JButton eq, addSub, dot, memread, memcancel, memplus;

JButton sqrt, sin, cos, tan,onebyx;

double tempnum, tempnextnum, result, ans;

static double ValueInMem;

int num1 = 0,num2 = 0;

int MemPlusFlag = 1,

RepeatFlag = 0;

char ch;

calci()

{

contentpane = getContentPane();

contentpane.setLayout(new BorderLayout());

JPanel DisplayPanel = new JPanel();

txt = new JTextField(30);

txt.setHorizontalAlignment(SwingConstants.RIGHT);

txt.addKeyListener(

new KeyAdapter()

{

public void keyTyped(KeyEvent keyevent)

{

char ch = keyevent.getKeyChar();

if (ch >= '0' && ch <= '9')

{

}

else

{

keyevent.consume();

}

}

});

DisplayPanel.add(txt);

ControlPanel = new JPanel();

contentpane.add("Center", ControlPanel);

contentpane.add("North", DisplayPanel);

ControlPanel.setLayout(new GridLayout(7,4,5,5));

memcancel = new JButton("MC");

ControlPanel.add(memcancel);

memcancel.addActionListener(this);

one = new JButton("1");

ControlPanel.add(one);

one.addActionListener(this);

two = new JButton("2");

ControlPanel.add(two);

two.addActionListener(this);

three = new JButton("3");

ControlPanel.add(three);

three.addActionListener(this);

memread = new JButton("MR");

ControlPanel.add(memread);

memread.addActionListener(this);

four = new JButton("4");

ControlPanel.add(four);

four.addActionListener(this);

five = new JButton("5");

ControlPanel.add(five);

five.addActionListener(this);

six = new JButton("6");

ControlPanel.add(six);

six.addActionListener(this);

memplus = new JButton("M+");

ControlPanel.add(memplus);

memplus.addActionListener(this);

seven = new JButton("7");

ControlPanel.add(seven);

seven.addActionListener(this);

eight = new JButton("8");

ControlPanel.add(eight);

eight.addActionListener(this);

nine = new JButton("9");

ControlPanel.add(nine);

nine.addActionListener(this);

zero = new JButton("0");

ControlPanel.add(zero);

zero.addActionListener(this);

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

ControlPanel.add(addSub);

addSub.addActionListener(this);

dot = new JButton(".");

ControlPanel.add(dot);

dot.addActionListener(this);

eq = new JButton("=");

ControlPanel.add(eq);

eq.addActionListener(this);

plus = new JButton("+");

ControlPanel.add(plus);

plus.addActionListener(this);

min = new JButton("-");

ControlPanel.add(min);

min.addActionListener(this);

mul = new JButton("\*");

ControlPanel.add(mul);

mul.addActionListener(this);

div = new JButton("/");

div.addActionListener(this);

ControlPanel.add(div);

sqrt = new JButton("Sqrt");

ControlPanel.add(sqrt);

sqrt.addActionListener(this);

log = new JButton("LOG");

ControlPanel.add(log);

log.addActionListener(this);

sin = new JButton("SIN");

ControlPanel.add(sin);

sin.addActionListener(this);

cos = new JButton("COS");

ControlPanel.add(cos);

cos.addActionListener(this);

tan = new JButton("TAN");

ControlPanel.add(tan);

tan.addActionListener(this);

exp = new JButton("Exp");

exp.addActionListener(this);

ControlPanel.add(exp);

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

onebyx.addActionListener(this);

ControlPanel.add(onebyx);

CLR = new JButton("AC");

ControlPanel.add(CLR);

CLR.addActionListener(this);

setDefaultCloseOperation(JFrame.EXIT\_ON\_CLOSE);

}

public void actionPerformed(ActionEvent e)

{

String s = e.getActionCommand();

if (s.equals("1"))

{

if (RepeatFlag == 0)

{

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

}

else

{

txt.setText("");

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

RepeatFlag = 0;

}

}

if (s.equals("2"))

{

if (RepeatFlag == 0)

{

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

}

else

{

txt.setText("");

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

RepeatFlag = 0;

}

}

if (s.equals("3"))

{

if (RepeatFlag == 0)

{

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

}

else

{

txt.setText("");

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

RepeatFlag = 0;

}

}

if (s.equals("4"))

{

if (RepeatFlag == 0)

{

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

}

else

{

txt.setText("");

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

RepeatFlag = 0;

}

}

if (s.equals("5"))

{

if (RepeatFlag == 0)

{

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

}

else

{

txt.setText("");

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

RepeatFlag = 0;

}

}

if (s.equals("6"))

{

if (RepeatFlag == 0)

{

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

}

else

{

txt.setText("");

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

RepeatFlag = 0;

}

}

if (s.equals("7"))

{

if (RepeatFlag == 0)

{

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

}

else

{

txt.setText("");

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

RepeatFlag = 0;

}

}

if (s.equals("8"))

{

if (RepeatFlag == 0)

{

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

}

else

{

txt.setText("");

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

RepeatFlag = 0;

}

}

if (s.equals("9"))

{

if (RepeatFlag == 0)

{

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

}

else

{

txt.setText("");

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

RepeatFlag = 0;

}

}

if (s.equals("0"))

{

if (RepeatFlag == 0)

{

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

}

else

{

txt.setText("");

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

RepeatFlag = 0;

}

}

if (s.equals("AC"))

{

txt.setText("");

num1 = 0;

num2 = 0;

RepeatFlag = 0;

}

if (s.equals("+/-"))

{

if (num1 == 0)

{

txt.setText("-" + txt.getText());

num1 = 1;

}

else

{

txt.setText(txt.getText());

}

}

if (s.equals("."))

{

if (num2 == 0)

{

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

num2 =1;

}

else

{

txt.setText(txt.getText());

}

}

if(s.equals("+"))

{

if(txt.getText().equals(""))

{

txt.setText("");

tempnum = 0;

ch = '+';

}

else

{

tempnum = Double.parseDouble(txt.getText());

txt.setText("");

ch = '+';

num2 = 0;

num1 = 0;

}

txt.requestFocus();

}

if (s.equals("-"))

{

if (txt.getText().equals(""))

{

txt.setText("");

tempnum = 0;

ch = '-';

}

else

{

num1 = 0;

num2 = 0;

tempnum = Double.parseDouble(txt.getText());

txt.setText("");

ch = '-';

}

txt.requestFocus();

}

if (s.equals("/"))

{

if (txt.getText().equals(""))

{

txt.setText("");

tempnum = 1;

ch ='/';

}

else

{

num1 = 0;

num2 = 0;

tempnum = Double.parseDouble(txt.getText());

ch = '/';

txt.setText("");

}

txt.requestFocus();

}

if (s.equals("\*"))

{

if (txt.getText().equals(""))

{

txt.setText("");

tempnum = 1;

ch = '\*';

}

else

{

num1 = 0;

num2 = 0;

tempnum = Double.parseDouble(txt.getText());

ch = '\*';

txt.setText("");

}

txt.requestFocus();

}

if (s.equals("MC"))

{

ValueInMem = 0;

txt.setText("");

}

if (s.equals("MR"))

{

txt.setText("");

txt.setText(txt.getText() + ValueInMem);

}

if (s.equals("M+"))

{

if (MemPlusFlag == 1)

{

ValueInMem = Double.parseDouble(txt.getText());

MemPlusFlag++;

}

else

{

ValueInMem += Double.parseDouble(txt.getText());

txt.setText("" + ValueInMem);

}

}

if (s.equals("LOG"))

{

if (txt.getText().equals(""))

{

txt.setText("");

}

else

{

ans = Math.log(Double.parseDouble(txt.getText()));

txt.setText("");

txt.setText(txt.getText() + ans);

}

}

if (s.equals("1/x"))

{

if (txt.getText().equals(""))

{

txt.setText("");

}

else

{

ans = 1 / Double.parseDouble(txt.getText());

txt.setText("");

txt.setText(txt.getText() + ans);

}

}

if (s.equals("Exp"))

{

if (txt.getText().equals(""))

{

txt.setText("");

}

else

{

ans = Math.exp(Double.parseDouble(txt.getText()));

txt.setText("");

txt.setText(txt.getText() + ans);

}

}

if (s.equals("Sqrt"))

{

if (txt.getText().equals(""))

{

txt.setText("");

}

else

{

ans = Math.sqrt(Double.parseDouble(txt.getText()));

txt.setText("");

txt.setText(txt.getText() + ans);

}

}

if (s.equals("SIN"))

{

if (txt.getText().equals(""))

{

txt.setText("");

}

else

{

ans = Math.sin(Double.parseDouble(txt.getText()));

txt.setText("");

txt.setText(txt.getText() + ans);

}

}

if (s.equals("COS"))

{

if (txt.getText().equals(""))

{

txt.setText("");

}

else

{

ans = Math.cos(Double.parseDouble(txt.getText()));

txt.setText("");

txt.setText(txt.getText() + ans);

}

}

if (s.equals("TAN"))

{

if (txt.getText().equals(""))

{

txt.setText("");

}

else

{

ans = Math.tan(Double.parseDouble(txt.getText()));

txt.setText("");

txt.setText(txt.getText() + ans);

}

}

if (s.equals("="))

{

if (txt.getText().equals(""))

{

txt.setText("");

}

else

{

tempnextnum = Double.parseDouble(txt.getText());

switch (ch)

{

case '+':

result = tempnum + tempnextnum;

break;

case '-':

result = tempnum - tempnextnum;

break;

case '/':

result = tempnum / tempnextnum;

break;

case '\*':

result = tempnum \* tempnextnum;

break;

}

txt.setText("");

txt.setText(txt.getText() + result);

RepeatFlag = 1;

}

}

txt.requestFocus();

}

public static void main(String args[])

{

calci c= new calci();

c.setTitle("My Calculator");

c.pack();

c.setVisible(true);

}

}