**ASSIGNMENT ONE**

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import javax.swing.JFrame;

import javax.swing.JPanel;

import javax.swing.JTextArea;

import javax.swing.JButton;

import javax.swing.border.TitledBorder;

import javax.swing.JOptionPane;

import javax.swing.JLabel;

import java.awt.Font;

import java.awt.GridLayout;

import java.awt.BorderLayout;

import java.awt.Color;

import java.awt.event.ActionListener;

import java.awt.event.ActionEvent;

import java.util.ArrayList;

public class MyCalcode extends JFrame implements ActionListener

{

final static int w=350;

final static int h=450;

final static Font font=new Font("Helvetica",Font.BOLD+Font.ITALIC,15);

final static Font myFont=new Font("MONOSPACE",Font.BOLD+Font.PLAIN,15);

final static Color cc=Color.LIGHT\_GRAY;

static boolean b=true;

boolean clear=false;

ArrayList<String> signs=new ArrayList<>();

ArrayList<String> numbers1=new ArrayList<>();

ArrayList<String> numbers2=new ArrayList<>();

ArrayList<String> result=new ArrayList<>();

JPanel containerpanel=new JPanel();

JPanel northpanel=new JPanel();

JTextArea txtarea=new JTextArea(3,20);

JPanel centerpanel=new JPanel();

JPanel toppanel=new JPanel();

JButton btnreset=new JButton("Reset");

JButton btnon=new JButton("Off/On");

JPanel buttonpanel=new JPanel();

JPanel numberpanel=new JPanel();

JButton btn1=new JButton("3");JButton btn2=new JButton("2");JButton btn3=new JButton("1");

JButton btn4=new JButton("6");JButton btn5=new JButton("5");JButton btn6=new JButton("4");

JButton btn7=new JButton("9");JButton btn8=new JButton("8");JButton btn9=new JButton("7");

JButton btn0=new JButton("0");JButton btnpoint=new JButton(".");

JPanel signspanel=new JPanel();

JButton btnadd=new JButton("+");JButton btnminus=new JButton("-");JButton btnmultiply=new JButton("\*");

JButton btndivide=new JButton("/");JButton btndel=new JButton("Del");JButton btnequals=new JButton("=");

public MyCalcode()

{

setSize(w,h);

setTitle("Jay's Calc");

setDefaultCloseOperation(JFrame.EXIT\_ON\_CLOSE);

setLocationRelativeTo(null);

setResizable(false);

setLayout(new BorderLayout());

add(containerpanel,"Center");

containerpanel.setLayout(new BorderLayout());

containerpanel.add(northpanel,"North");

containerpanel.add(centerpanel,"Center");

northpanel.setLayout(new BorderLayout());

northpanel.add(txtarea,"Center");

txtarea.setLineWrap(true);

txtarea.setEditable(false);

txtarea.setBackground(cc);

txtarea.setFont(myFont);

centerpanel.setLayout(new BorderLayout());

centerpanel.add(toppanel,"North");

centerpanel.add(buttonpanel,"Center");

toppanel.setLayout(new GridLayout(1,3,5,5));

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

toppanel.add(btnreset);toppanel.add(btnon);

btnreset.setFont(font);

btnon.setFont(font);

btnreset.addActionListener(this);

btnon.addActionListener(this);

buttonpanel.setLayout(new BorderLayout());

buttonpanel.add(numberpanel,BorderLayout.CENTER);

buttonpanel.add(signspanel,BorderLayout.EAST);

numberpanel.setLayout(new GridLayout(4,3,20,20));

numberpanel.add(btn7);numberpanel.add(btn8);numberpanel.add(btn9);

numberpanel.add(btn4);numberpanel.add(btn5);numberpanel.add(btn6);

numberpanel.add(btn1);numberpanel.add(btn2);numberpanel.add(btn3);

numberpanel.add(btn0);numberpanel.add(btnpoint);

btn1.addActionListener(this);

btn2.addActionListener(this);

btn3.addActionListener(this);

btn4.addActionListener(this);

btn5.addActionListener(this);

btn6.addActionListener(this);

btn7.addActionListener(this);

btn8.addActionListener(this);

btn9.addActionListener(this);

btn0.addActionListener(this);

btnpoint.addActionListener(this);

signspanel.setLayout(new GridLayout(4,2,5,45));

signspanel.setBorder(new TitledBorder(""));

signspanel.add(btnadd);signspanel.add(btnminus);

signspanel.add(btnmultiply);signspanel.add(btndivide);

signspanel.add(new JLabel());signspanel.add(new JLabel());

signspanel.add(btndel);signspanel.add(btnequals);

btnadd.addActionListener(this);

btnminus.addActionListener(this);

btnmultiply.addActionListener(this);

btndivide.addActionListener(this);

btndel.addActionListener(this);

btnequals.addActionListener(this);

}

@Override

public void actionPerformed(ActionEvent evt)

{

String action=evt.getActionCommand();

if(action.equals("Off/On"))

{

on\_off();

}

else if(action.equals("Reset"))

{

txtarea.setText("");

reset();

}

else if(action.equals("1") || action.equals("2")|| action.equals("3"))

{

buttonsClicked(action);

}

else if(action.equals("4") || action.equals("5")|| action.equals("6"))

{

buttonsClicked(action);

}

else if(action.equals("7") || action.equals("8")|| action.equals("9"))

{

buttonsClicked(action);

}

else if(action.equals("+") || action.equals("-")|| action.equals("/") || action.equals("\*"))

{

signClicked(action);

}

else if( action.equals(".") || action.equals("0"))

{

buttonsClicked(action);

}

else if(action.equals("Del"))

{

String d=del(txtarea.getText().trim());

txtarea.setText(d);

}

else if(action.equals("="))

{

String n=txtarea.getText().trim();

signClicked(action);

// sum();

}

}

public void signClicked(String n)

{

String j=txtarea.getText();

int k=j.length();

String is=j.substring(k);

if(j.equals(""))

{

}

else if(is.equals("+") &&(n.equals("+") || n.equals("-") || n.equals("\*") || n.equals("/") )){

}

else if(is.equals("-") &&(n.equals("+") || n.equals("-") || n.equals("\*") || n.equals("/") )){

}

else if(is.equals("\*") &&(n.equals("+") || n.equals("-") || n.equals("\*") || n.equals("/") )){

}

else if(is.equals("/") &&(n.equals("+") || n.equals("-") || n.equals("\*") || n.equals("/") )){

}

else if(numbers1.size()==0){

String quiz=txtarea.getText();

numbers1.add(quiz);

signs.add(n);

txtarea.setText(quiz+n);

result.add(quiz+n);

}

else{

String quiz2=txtarea.getText();

String quizcomp=result.get(0);

int quizcompl=quizcomp.length();

String d=quiz2.substring(quizcompl);

numbers1.add(d);

signs.add(n);

result.set(0, quiz2+n);

txtarea.setText(quiz2+n);

if(n.equals("="))

{

sum();

}

}

}

public void buttonsClicked(String n)

{

if(clear)

{

txtarea.setText("");

String v=txtarea.getText()+n;

txtarea.setText(v);

clear=false;

}

else{

String v=txtarea.getText()+n;

txtarea.setText(v);

}

}

public String del(String k){

int n=k.length();

String newstring="";

if(n!=0)

{

newstring=k.substring(0, (n-1));

}

return newstring;

}

public void on\_off()

{

if(b)

{

b=false;reset();

txtarea.setText("SHUTING DOWN...\n OFF");

disable\_enable(b);

}

else{

b=true;

txtarea.setText("STARTING UP...\n ON");

Thread t=new Thread(new Runnable(){

@Override

public void run(){

try{

Thread.sleep(1000);

txtarea.setText("");

}catch(Exception ex){

}

}

});t.start();

disable\_enable(b);

}

}

public void disable\_enable(boolean b){

btn1.setEnabled(b);btn2.setEnabled(b);btn3.setEnabled(b);btn4.setEnabled(b);btn5.setEnabled(b);

btn5.setEnabled(b);btn6.setEnabled(b);btn7.setEnabled(b);btn8.setEnabled(b);btn9.setEnabled(b);

btn0.setEnabled(b);btnpoint.setEnabled(b);btnreset.setEnabled(b);btnadd.setEnabled(b);btnminus.setEnabled(b);

btnmultiply.setEnabled(b);btndivide.setEnabled(b);btndel.setEnabled(b);btnequals.setEnabled(b);

}

public static void main(String [] args)

{

MyCalcode m=new MyCalcode();

m.setVisible(true);

}

public void reset(){

// txtarea.setText("");

numbers1.clear();

signs.clear();

result.clear();

numbers2.clear();

}

public void sum()

{

if(numbers1.size()<2){

JOptionPane.showMessageDialog(null,"Please enter at least a number, sign and number to calculate","FORMAT ERROR",JOptionPane.WARNING\_MESSAGE);

// JOptionPane.showMessageDialog(null,"Signs "+signs.toString());

}

else

{

while(numbers1.size()!=1){

double d1=Double.parseDouble(numbers1.get(0));

double d2=Double.parseDouble(numbers1.get(1));

double d3;

String operand=signs.get(0);

if(operand.equals("+"))

{

d3=d1+d2;

}else if(operand.equals("-"))

{

d3=d1-d2;

}

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

{

d3=d1/d2;

}

else{

d3=d1\*d2;

}

numbers1.remove(0);

String d3s=d3+"";

numbers1.set(0, d3s);

signs.remove(0);

}

txtarea.setText(result.get(0)+"\n"+numbers1.get(0));

reset();

clear=true;

}

}

}