Department of Software Engineering

# (SW-121: Object Oriented Programming)

**Lab 12:**

**Class:** K20SW (2nd Semester 1st Year)

**Building GUI Components**

**Instructor:** Engr. Abdul Hafeez Babar

# Date: 11 August, 2021

**Time: 12:00 PM – 3:00 PM**

**Mehran University of Engineering and Technology, Shaheed**

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**Score: Signature: Date: 27/11/2021**

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| **Lab performance indicator** | Subject knowledge | Data analysis and interpretation | Ability to conduct experiment | Presentation | Calculation and coding | Observatio n/results | Score |
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01:Construct a simple additive calculator. Your calculator should have buttons for the digits 0- 9, a "+/=" button and a "clear" button. The calculator should also have a TextField in which to display numbers the user has entered and results of their calculations. The layout of the graphical components is entirely up to you.

**Editable input:**

package calculator.java; 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(Action Event e) {

String displayText = textfield.getText(); if (e.getActionCommand().equals("sin"))

{

textfield.setText("" + Math.*sin*(Double.*valueOf*(displayText).double Value()));

}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 set Total(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);

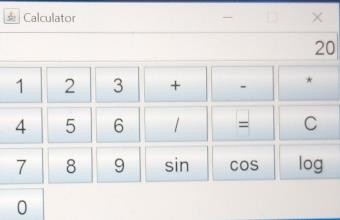
}

}

public class projectcalculator {

}

## output:



02:Create a java program to make a marksheet using GUI components.

## Editable input:

package marksheet;

import javax.swing.JOptionPane; class swingMarksheet{

public static void main(String[]args) throws Exception{

String a = JOptionPane.*showInputDialog*("Enter Java Marks"); int java = Integer.*parseInt*(a);

String b = JOptionPane.*showInputDialog*("Enter PHP Marks"); int php = Integer.*parseInt*(b);

String c = JOptionPane.*showInputDialog*("Enter vb Marks"); int vb = Integer.*parseInt*(c);

String d = JOptionPane.*showInputDialog*("Enter C++ Marks"); int cpp = Integer.*parseInt*(d);

String e = JOptionPane.*showInputDialog*("Enter Ruby Marks"); int ruby = Integer.*parseInt*(e);

int total = 500;

int obtained = java + php + cpp + vb + ruby; int percentage = obtained \* 100 / total;

if(java >39 && php >39 && vb >39 && cpp >39 && ruby >39 &&

(percentage <100 && percentage >=80))

JOptionPane.*showMessageDialog*(null, "Total Marks Are :" + total + " Obtained Marks Are : " + obtained +

" Percentage is : " + percentage +"%" + " You Are Pass" + " You Got A+ Grade");

if(java >39 && php >39 && vb >39 && cpp >39 && ruby >39 &&

(percentage <80 && percentage >=70))

JOptionPane.*showMessageDialog*(null, "Total Marks Are :" + total + " Obtained Marks Are : " + obtained +

" Percentage is : " + percentage +"%" + " You Are Pass" + "You Got A Grade");

if(java >39 && php >39 && vb >39 && cpp >39 && ruby >39 &&

(percentage <70 && percentage >=60))

JOptionPane.*showMessageDialog*(null, "Total Marks Are :" + total + " Obtained Marks Are : " + obtained +

" Percentage is : " + percentage +"%" + " You Are Pass" + " You Got B Grade");

if(java >39 && php >39 && vb >39 && cpp >39 && ruby >39 &&

(percentage <60 && percentage >=50))

JOptionPane.*showMessageDialog*(null, "Total Marks Are :" + total + " Obtained Marks Are : " + obtained +

" Percentage is : " + percentage +"%" + "You Are Pass" + " You Got C Grade");

if(java >39 && php >39 && vb >39 && cpp >39 && ruby >39 &&

(percentage <50 && percentage >=40))

JOptionPane.*showMessageDialog*(null, "Total Marks Are :" + total + " Obtained Marks Are : " + obtained +

" Percentage is : " + percentage +"%" + " You Are Pass" + " You Got D Grade");

< 40)

if(java <40 || php <40 || vb <40 || cpp <40 || ruby <40 || percentage JOptionPane.*showMessageDialog*(null, "Total Marks Are :" + total +

" Obtained Marks Are : " + obtained +

" Percentage is : " + percentage +"%" + "You Are Fail");

}

}

public class marksheets {

}

## output:

