Q.1 Border Layout: Implement following Example of Border Layout.

import javax.swing.\*;

import java.awt.\*;

import java.awt.event.\*;

public class BorderLayoutConverter extends JFrame {

private JTextField inputField, resultField;

private JButton binaryBtn, octalBtn, hexBtn;

public BorderLayoutConverter() {

setTitle("Number Converter");

setSize(400, 200); setDefaultCloseOperation(JFrame.EXIT\_ON\_CLOSE);

setLayout(new BorderLayout());

JPanel northPanel = new JPanel();

northPanel.add(new JLabel("Enter the number:"));

inputField = new JTextField(10);

northPanel.add(inputField);

add(northPanel, BorderLayout.NORTH);

JPanel centerPanel = new JPanel(new GridLayout(1, 3));

binaryBtn = new JButton("Binary");

octalBtn = new JButton("Octal");

hexBtn = new JButton("Hex");

centerPanel.add(binaryBtn);

centerPanel.add(octalBtn);

centerPanel.add(hexBtn);

add(centerPanel, BorderLayout.CENTER);

JPanel southPanel = new JPanel();

southPanel.add(new JLabel("Result:"));

resultField = new JTextField(15);

resultField.setEditable(false);

southPanel.add(resultField);

add(southPanel, BorderLayout.SOUTH);

binaryBtn.addActionListener(e -> convert("binary"));

octalBtn.addActionListener(e -> convert("octal"));

hexBtn.addActionListener(e -> convert("hex"));

setVisible(true);

}

private void convert(String type) {

try {

int number = Integer.parseInt(inputField.getText().trim());

switch (type) {

case "binary": resultField.setText(Integer.toBinaryString(number));

break;

case "octal": resultField.setText(Integer.toOctalString(number));

break;

case "hex": resultField.setText(Integer.toHexString(number).toUpperCase());

break;

}

} catch (NumberFormatException e) {

resultField.setText("Invalid number");

}

}

public static void main(String[] args) {

new BorderLayoutConverter();

}

}

Q.2 FlowLayout: Create a Java program using FlowLayout (aligned left, with horizontal gap 10px and vertical gap 20px) that adds three checkboxes labeled "Java", "Python", and "C++" into the frame.

import javax.swing.\*;

import java.awt.\*;

public class FlowLayoutExample extends JFrame {

public FlowLayoutExample() {

setTitle("FlowLayout Example");

setSize(300, 150); setDefaultCloseOperation(JFrame.EXIT\_ON\_CLOSE);

setLayout(new FlowLayout(FlowLayout.LEFT, 10, 20));

JCheckBox javaBox = new JCheckBox("Java");

JCheckBox pythonBox = new JCheckBox("Python");

JCheckBox cppBox = new JCheckBox("C++");

add(javaBox);

add(pythonBox);

add(cppBox);

setVisible(true);

}

public static void main(String[] args) {

new FlowLayoutExample();

}

}

Q.3 GridLayout: Create a program that demonstrates the use of GridLayout. Display a 2x3 grid with the following numbers inside each box. Also, when the user clicks on any box, the number inside that box should swap with the number

import javax.swing.\*;

import java.awt.\*;

import java.awt.event.\*;

public class GridSwapGame extends JFrame {

private JButton[] buttons = new JButton[6];

private JButton firstSelected = null;

public GridSwapGame() {

setTitle("GridLayout Swap Example");

setSize(300, 200);

setDefaultCloseOperation(JFrame.EXIT\_ON\_CLOSE);

setLayout(new GridLayout(2, 3));

for (int i = 0; i < 6; i++) {

buttons[i] = new JButton(String.valueOf(i + 1));

add(buttons[i]);

buttons[i].addActionListener(new ActionListener() {

public void actionPerformed(ActionEvent e) {

JButton clicked = (JButton) e.getSource();

handleSwap(clicked);

}

});

}

setVisible(true);

}

private void handleSwap(JButton clicked) {

if (firstSelected == null) {

firstSelected = clicked;

} else {

String temp = firstSelected.getText();

firstSelected.setText(clicked.getText());

clicked.setText(temp);

firstSelected = null;

}

}

public static void main(String[] args) {

new GridSwapGame();

}

}

Q. 4 Write a GUI program to find the factorial of a given number using applet. (You will need Java 8 to run applet)

import java.applet.Applet;

import java.awt.\*;

import java.awt.event.\*;

public class FactorialApplet extends Applet implements ActionListener {

TextField inputField;

Button calcButton;

Label resultLabel;

public void init() {

setLayout(new FlowLayout());

add(new Label("Enter a number:"));

inputField = new TextField(10);

add(inputField);

calcButton = new Button("Calculate Factorial");

add(calcButton);

calcButton.addActionListener(this);

resultLabel = new Label("Result: ");

add(resultLabel);

}

public void actionPerformed(ActionEvent e) {

try {

int num = Integer.parseInt(inputField.getText());

long fact = 1;

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

fact \*= i;

}

resultLabel.setText("Result: " + fact);

} catch (NumberFormatException ex) {

resultLabel.setText("Invalid Input");

}

}

}