**Báo cáo thực hành Lập trình hướng đối tượng Lab 5**

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MSSV: 20215060

1. Java swing and java awt
2. AWT Accumlator
3. Code

*//Do Gia Huy  
//20215060  
//Class "AWTAccumulator"*package hust.soict.hedspi.swing;  
import java.awt.Label;  
import java.awt.GridLayout;  
import java.awt.TextField;  
import java.awt.Frame;  
import java.awt.event.ActionListener;  
import java.awt.event.ActionEvent;  
public class AWTAccumulator extends Frame {  
 private TextField tfInput;  
 private TextField tfOutput;  
 private int sum = 0;  
  
 public AWTAccumulator(){  
 setLayout(new GridLayout(2,2));  
 add(new Label("Nhập 1 số nguyên: "));  
  
 tfInput = new TextField(10);  
 add(tfInput);  
 tfInput.addActionListener(new TFInputListener());  
  
 add(new Label("The Accumulated Sum is: "));  
  
 tfOutput = new TextField(10);  
 tfOutput.setEditable(false);  
 add(tfOutput);  
  
 setTitle("AWT Accumulator");  
 setSize(350, 120);  
 setVisible(true);  
 }  
  
 public static void main(String[] args){  
 new AWTAccumulator();  
 }  
 private class TFInputListener implements ActionListener {  
 @Override  
 public void actionPerformed(ActionEvent ewt){  
 int numberIn = Integer.*parseInt*(tfInput.getText());  
 sum += numberIn;  
 tfInput.setText("");  
 tfOutput.setText(sum + "");  
 }  
 }  
}

1. Result

A screenshot of a computer

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1. Swing Accumulator
2. Code

*//Do Gia Huy  
//20215060  
//Class "SwingAccumulator"*package hust.soict.hedspi.swing;  
import javax.swing.\*;  
import java.awt.\*;  
import java.awt.event.ActionEvent;  
import java.awt.event.ActionListener;  
public class SwingAccumulator extends JFrame {  
 private JTextField tfInput;  
 private JTextField tfOutput;  
 private int sum = 0;  
 public SwingAccumulator() {  
 Container cp = getContentPane();  
 cp.setLayout(new GridLayout(2,2));  
  
 cp.add(new Label("Nhap 1 so nguyen"));  
 tfInput = new JTextField(10);  
 cp.add(tfInput);  
 tfInput.addActionListener(new TFInputListener());  
  
 cp.add(new Label("The Accumulated Sum is: "));  
 tfOutput = new JTextField(10);  
 tfOutput.setEditable(false);  
 cp.add(tfOutput);  
  
 setTitle("Swing Accumulator");  
 setSize(350, 120);  
 setVisible(true);  
 }  
  
 public static void main(String[] args){  
 new SwingAccumulator();  
 }  
  
 private class TFInputListener implements ActionListener {  
 @Override  
 public void actionPerformed(ActionEvent ewt){  
 int numberIn = Integer.*parseInt*(tfInput.getText());  
 sum += numberIn;  
 tfInput.setText("");  
 tfOutput.setText(sum + "");  
 }  
 }  
}

1. Result

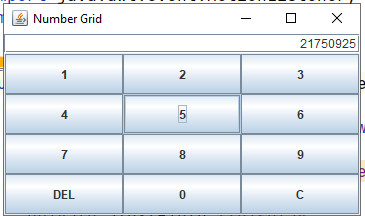
A screenshot of a computer

Description automatically generated

1. Number Grid
2. Code

*//Do Gia Huy  
//20215060  
//Class "NumberGrid"*package hust.soict.hedspi.swing;  
  
import java.awt.\*;  
import java.awt.event.ActionEvent;  
import java.awt.event.ActionListener;  
import javax.swing.\*;  
  
public class NumberGrid extends JFrame {  
 private JButton[] btnNumbers = new JButton[10];  
 private JButton btnDelete, btnReset;  
 private JTextField tfDisplay;  
  
 public NumberGrid() {  
 tfDisplay = new JTextField();  
 tfDisplay.setComponentOrientation(ComponentOrientation.*RIGHT\_TO\_LEFT*);  
 JPanel panelButtons = new JPanel(new GridLayout(4,3));  
 addButtons(panelButtons);  
  
 Container cp = getContentPane();  
 cp.setLayout((new BorderLayout()));  
 cp.add(tfDisplay,BorderLayout.*NORTH*);  
 cp.add(panelButtons,BorderLayout.*CENTER*);  
 setDefaultCloseOperation(JFrame.*EXIT\_ON\_CLOSE*);  
 setTitle("Number Grid");  
 setSize(200,200);  
 setVisible(true);  
 }  
  
 void addButtons(JPanel panelButtons) {  
 ButtonListener btnListener = new ButtonListener();  
 for (int i=1;i<=9;i++) {  
 btnNumbers[i] = new JButton("" + i);  
 panelButtons.add(btnNumbers[i]);  
 btnNumbers[i].addActionListener(btnListener);  
 }  
  
 btnDelete = new JButton("DEL");  
 panelButtons.add(btnDelete);  
 btnDelete.addActionListener(btnListener);  
  
 btnNumbers[0] = new JButton("0");  
 panelButtons.add(btnNumbers[0]);  
 btnNumbers[0].addActionListener(btnListener);  
  
 btnReset = new JButton("C");  
 panelButtons.add(btnReset);  
 btnReset.addActionListener(btnListener);  
  
 }  
  
 private class ButtonListener implements ActionListener {  
 @Override  
 public void actionPerformed(ActionEvent e) {  
 String button = e.getActionCommand();  
 if(button.charAt(0) >= '0' && button.charAt(0) <= '9') {  
 tfDisplay.setText(tfDisplay.getText() + button);  
 }  
 else if (button.equals("DEL")) {  
  
 tfDisplay.setText(tfDisplay.getText().substring(0,tfDisplay.getText().length() -1));  
 }  
 else {  
 tfDisplay.setText("");  
 }  
 }  
 }  
  
 public static void main(String[] args) {  
 new NumberGrid();  
 }  
}

1. Result



1. Java FX

Chúng ta cần tạo 1 ứng dụng vẽ tranh bằng JavaFX

1. Tạo lớp Painter

*//Do Gia Huy  
//20215060*package hust.soict.hedspi.javafx.painter;  
  
import javafx.application.\*;  
import javafx.fxml.\*;  
import javafx.scene.Parent;  
import javafx.scene.Scene;  
import javafx.stage.Stage;  
  
import java.util.Objects;  
  
public class Painter extends Application {  
 @Override  
 public void start(Stage stage) throws Exception {  
 try {  
 Parent root = FXMLLoader.*load*(Objects.*requireNonNull*(getClass().getResource("Painter.fxml")));  
 Scene scene = new Scene(root);  
 stage.setTitle("Painter");  
 stage.setScene(scene);  
 stage.show();  
 } catch (Exception e) {  
 System.*out*.println(e.toString());  
 }  
 }  
  
 public static void main(String[] args) {  
 *launch*(args);  
 }  
}

1. Tạo lớp PainterController

*//Do Gia Huy  
//20215060*package hust.soict.hedspi.javafx.painter;  
  
import javafx.event.ActionEvent;  
import javafx.fxml.FXML;  
import javafx.scene.Node;  
import javafx.scene.control.RadioButton;  
import javafx.scene.input.MouseEvent;  
import javafx.scene.layout.AnchorPane;  
import javafx.scene.paint.Color;  
import javafx.scene.shape.Circle;  
  
import java.util.Iterator;  
  
public class PainterController {  
  
 @FXML  
 private RadioButton penRadioButton;  
  
 @FXML  
 private RadioButton eraserButton;  
  
 @FXML  
 private AnchorPane drawingAreaPane;  
  
 @FXML  
 void clearButtonPressed(ActionEvent event) {  
 drawingAreaPane.getChildren().clear();  
 }  
  
 @FXML  
 void drawAreaMouseDragged(MouseEvent event) {  
 if (penRadioButton.isSelected()) {  
 Circle circle = new Circle(event.getX(), event.getY(), 4, Color.*BLACK*);  
 drawingAreaPane.getChildren().add(circle);  
 } else if (eraserButton.isSelected()) {  
 Iterator<Node> iter = drawingAreaPane.getChildren().iterator();  
 while (iter.hasNext()) {  
 Node c = iter.next();  
 if (c instanceof Circle circle) {  
 if (circle.getCenterX() <= event.getX() + 4 && circle.getCenterX() >= event.getX() - 4) {  
 if (circle.getCenterY() <= event.getY() + 4 && circle.getCenterY() >= event.getY() - 4) iter.remove();  
 }  
 }  
 }  
 }  
 }  
}

1. Tạo file Painter.fxml

*<?*xml version="1.0" encoding="UTF-8"*?>  
<?*import javafx.geometry.Insets*?>  
<?*import javafx.scene.control.\**?>  
<?*import javafx.scene.layout.\**?>*<BorderPane maxHeight="-Infinity" maxWidth="-Infinity" minHeight="-Infinity" minWidth="-Infinity" prefHeight="400.0" prefWidth="600.0" xmlns="http://javafx.com/javafx/21" xmlns:fx="http://javafx.com/fxml/1" fx:controller="hust.soict.hedspi.javafx.painter.PainterController">  
 <top>  
 <MenuBar BorderPane.alignment="CENTER">  
 <menus>  
 <Menu mnemonicParsing="false" text="File">  
 <items>  
 <MenuItem mnemonicParsing="false" text="Close" />  
 </items>  
 </Menu>  
 <Menu mnemonicParsing="false" text="Edit">  
 <items>  
 <MenuItem mnemonicParsing="false" text="Delete" />  
 </items>  
 </Menu>  
 <Menu mnemonicParsing="false" text="Help">  
 <items>  
 <MenuItem mnemonicParsing="false" text="About" />  
 </items>  
 </Menu>  
 </menus>  
 </MenuBar>  
 </top>  
 <center>  
 <AnchorPane id="drawingAreaPane" fx:id="drawingAreaPane" onMouseClicked="#drawAreaMouseDragged" onMouseDragged="#drawAreaMouseDragged" prefHeight="200.0" prefWidth="200.0" BorderPane.alignment="CENTER" />  
 </center>  
 <left>  
 <VBox prefHeight="200.0" prefWidth="100.0" style="-fx-background-color: grey;" BorderPane.alignment="CENTER">  
 <children>  
 <TitledPane animated="false" text="tool">  
 <content>  
 <AnchorPane minHeight="0.0" minWidth="0.0" prefHeight="80.0" prefWidth="82.0">  
 <children>  
 <RadioButton fx:id="penRadioButton" layoutX="3.0" layoutY="10.0" mnemonicParsing="false" text="Pen" selected="true">  
 <toggleGroup>  
 <ToggleGroup fx:id="dcmbanPhuc" />  
 </toggleGroup>  
 </RadioButton>  
 <RadioButton fx:id="eraserButton" layoutX="2.0" layoutY="40.0" mnemonicParsing="false" text="Eraser" toggleGroup="$dcmbanPhuc" />  
 </children>  
 </AnchorPane>  
 </content>  
 </TitledPane>  
 <Button fx:id="clearButton" maxWidth="1.7976931348623157E308" mnemonicParsing="false" onAction="#clearButtonPressed" text="CLear" />  
  
 </children>  
 <padding>  
 <Insets bottom="8.0" left="8.0" right="8.0" top="8.0" />  
 </padding>  
 </VBox>  
 </left>  
</BorderPane>

1. Kết quả

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1. Xử lý ngoại lệ
2. Tạo tất cả giao diện trong project AIMS
3. Các biểu đồ