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

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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

Description automatically generated

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

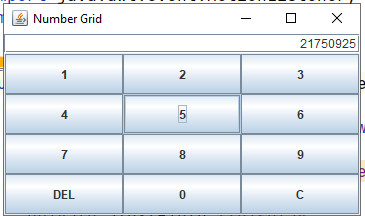
A screenshot of a computer

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

A screenshot of a computer

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1. Xử lý ngoại lệ
2. Tạo lớp ngoại lệ PlayException trong package ../aims/exception

*//Do Gia Huy  
//20215060*package hust.soict.hedspi.aims.exception;  
public class PlayerException extends Exception{  
 public PlayerException(String message) {  
 super(message);  
 }  
}

1. Từ ngoại lệ đấy, sửa các phương thức có liên quan
2. Trong interface Playable

*//Do Gia Huy  
//20215060  
//Interface "Playable"*package hust.soict.hedspi.aims.media;  
import hust.soict.hedspi.aims.exception.PlayerException;  
public interface Playable {  
 public void play() throws PlayerException;  
}

1. Trong class DigitalVideoDisc

public void play() throws PlayerException {  
 if (this.getLength() < 0){  
 throw new PlayerException("ERROR: DVD-length is non-positive!");  
 } else {  
 System.*out*.println("Playing DVD: " + this.getTitle());  
 System.*out*.println("DVD length: " + this.getLength());  
 }  
}

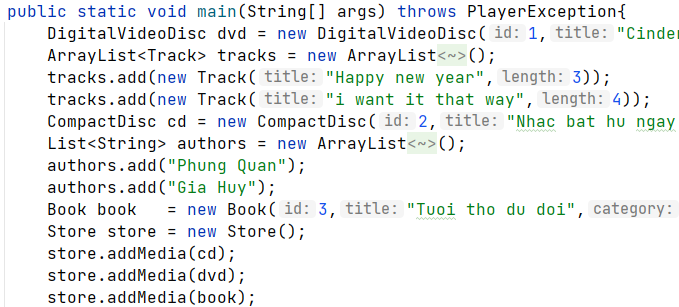
1. Trong class CompactDisc

public void play() throws PlayerException {  
 if(this.getLength() < 0) {  
 throw new PlayerException("ERROR: DVD-length is non-positive!");  
 } else {  
 System.*out*.println("\ntitle: " + getTitle() + '\n' + "artist: " + getArtist() + "\n\n" + "TRacks:");  
 for (Track song : tracks) {  
 song.play();  
 }  
 }  
}

1. Trong class Track

public void play() throws PlayerException {  
 if(this.getLength() < 0) {  
 throw new PlayerException("ERROR: DVD-length is non-positive!");  
 } else {  
 System.*out*.println("Playing DVD: " + this.getTitle());  
 System.*out*.println("DVD length: " + this.getLength());  
 }  
}

1. Trong class chính AIMS



A screenshot of a computer

Description automatically generated

A screen shot of a computer code

Description automatically generated

A computer code with text

Description automatically generated

A screenshot of a computer program

Description automatically generated

1. Tạo tất cả giao diện trong project AIMS
2. Tạo package screen trong project AIMS

Em đã làm xong rồi, và trong package screen đó, tạo các lớp liên quan.

1. Tạo class MediaStore

*//Do Gia Huy  
//20215060  
//Class "MediaStore"*package hust.soict.hedspi.aims.screen;  
import hust.soict.hedspi.aims.cart.Cart;  
import hust.soict.hedspi.aims.media.\*;  
import javax.swing.\*;  
import java.awt.\*;  
import java.awt.event.ActionEvent;  
import java.awt.event.ActionListener;  
  
public class MediaStore extends JPanel {  
 private Media media;  
 public MediaStore(Media media, Cart myCart) {  
 this.media = media;  
 this.setLayout(new BoxLayout(this, BoxLayout.*Y\_AXIS*));  
  
 JLabel title = new JLabel(media.getTitle());  
 title.setFont(new Font(title.getFont().getName(),Font.*PLAIN*,20));  
 title.setAlignmentX(*CENTER\_ALIGNMENT*);  
  
 JLabel cost = new JLabel("" +media.getCost() + "$");  
 cost.setAlignmentX(*CENTER\_ALIGNMENT*);  
  
 JPanel container = new JPanel();  
 container.setLayout(new FlowLayout(FlowLayout.*CENTER*));  
 JButton btnAdd = new JButton("Add to cart");  
 container.add(btnAdd);  
 btnAdd.addActionListener(new ActionListener() {  
 @Override  
 public void actionPerformed(ActionEvent e) {  
 myCart.addMedia(media);  
 }  
 });  
  
 if(media instanceof Playable) {  
 JButton playBtn= new JButton("Play");  
 playBtn.addActionListener(new ActionListener() {  
 @Override  
 public void actionPerformed(ActionEvent e) {  
 JDialog playDialog = *createPlayDialog*(media);  
 playDialog.setVisible(true);  
 playDialog.setSize(300,200);  
 playDialog.pack();  
 }  
 });  
 container.add(playBtn);  
 }  
 this.add(Box.*createVerticalGlue*());  
 this.add(title);  
 this.add(cost);  
 this.add(Box.*createVerticalGlue*());  
 this.add(container);  
 this.setBorder(BorderFactory.*createLineBorder*(Color.*BLACK*));  
 }  
  
 static JDialog createPlayDialog(Media media) {  
 JDialog playDialog = new JDialog();  
 Container container = playDialog.getContentPane();  
 playDialog.setDefaultCloseOperation(JDialog.*DISPOSE\_ON\_CLOSE*);  
 container.setLayout(new BoxLayout(container,BoxLayout.*Y\_AXIS*));  
 container.add(Box.*createRigidArea*(new Dimension(10,10)));  
 if(media instanceof DigitalVideoDisc dvd) {  
 container.add(new JLabel("Playing DVD:" + dvd.getTitle()));  
 container.add(new JLabel("DVD length:" + dvd.getLength() +" min"));  
 } else if (media instanceof CompactDisc cd) {  
 container.add(new JLabel("Title: " + cd.getTitle()));  
 container.add(new JLabel("Artist: " + cd.getArtist()));  
 for (Track track : cd.getTracks()) {  
 container.add(new JLabel("Play: " + track.getTitle() + ". Length: " + track.getLength() + " min"));  
 }  
 }  
 playDialog.setTitle("Play " + media.getTitle());  
 return playDialog;  
 }  
}

1. Tạo giao diện giỏ hàng
2. Tạo class CartScreenController để điều khiển file fxml

*//Do Gia Huy  
//20215060  
//Class "CartScreenControler"*package hust.soict.hedspi.aims.screen;  
import hust.soict.hedspi.aims.cart.Cart;  
import hust.soict.hedspi.aims.media.\*;  
import javafx.beans.value.ChangeListener;  
import javafx.beans.value.ObservableValue;  
import javafx.collections.FXCollections;  
import javafx.event.ActionEvent;  
import javafx.event.EventHandler;  
import javafx.fxml.FXML;  
import javafx.geometry.Pos;  
import javafx.scene.Scene;  
import javafx.scene.control.\*;  
import javafx.scene.control.Button;  
import javafx.scene.control.Label;  
import javafx.scene.control.TextField;  
import javafx.scene.control.cell.PropertyValueFactory;  
import javafx.scene.layout.VBox;  
import javafx.scene.paint.Color;  
import javafx.scene.paint.\*;  
import javafx.scene.text.Font;  
import javafx.scene.text.FontWeight;  
import javafx.stage.Modality;  
import javafx.stage.Stage;  
import javax.swing.\*;  
import java.awt.\*;  
import java.util.ArrayList;  
  
public class CartScreenController {  
 private Cart cart;  
 @FXML  
 private Button btnPlaceOrder;  
 @FXML  
 private TextField tfFilter;  
 @FXML  
 private ToggleGroup filterCategory;  
 @FXML  
 private RadioButton radioBtnFilterId;  
 @FXML  
 private RadioButton radioBtnFilterTitle;  
 @FXML  
 private Button btnPlay;  
 @FXML  
 private Button btnRemove;  
 @FXML  
 private TableView<Media> tblMedia;  
 @FXML  
 private TableColumn<Media, String> colMediaTitle;  
 @FXML  
 private TableColumn<Media, String> colMediacategory;  
 @FXML  
 private TableColumn<Media,Float> colMediaCost;  
 @FXML  
 private Label totalPrice;  
  
 public CartScreenController(Cart cart) {  
 super();  
 this.cart = cart;  
 }  
  
 @FXML  
 private void initialize() {  
 colMediaTitle.setCellValueFactory(new PropertyValueFactory<Media,String>("title"));  
 colMediacategory.setCellValueFactory(new PropertyValueFactory<Media,String>("category"));  
 colMediaCost.setCellValueFactory(new PropertyValueFactory<Media,Float>("cost"));  
 tblMedia.setItems(FXCollections.*observableList*(this.cart.getItemsOrdered()));  
 tblMedia.setPlaceholder(new Label("No item in cart"));  
 btnPlay.setVisible(false);  
 btnRemove.setVisible(false);  
 btnRemove.setOnAction(new EventHandler<javafx.event.ActionEvent>() {  
 @Override  
 public void handle(javafx.event.ActionEvent event) {  
 Media media = tblMedia.getSelectionModel().getSelectedItem();  
 cart.removeMedia(media);  
 totalPrice.setText(Float.*toString*(cart.totalCost()) +"$");  
 tblMedia.setItems(FXCollections.*observableList*(cart.getItemsOrdered()));  
 }  
 });  
 tfFilter.textProperty().addListener(new ChangeListener<String>() {  
 @Override  
 public void changed(ObservableValue<? extends String> observableValue, String s, String t1) {  
 showFilterMedia(t1);  
 }  
 });  
  
 tblMedia.getSelectionModel().selectedItemProperty().addListener(  
 new ChangeListener<Media>() {  
 @Override  
 public void changed(ObservableValue<? extends Media> observableValue, Media media, Media t1) {  
 updateButtonBar(t1);  
 }  
 }  
 );  
 totalPrice.setText(Float.*toString*(cart.totalCost()) + "$");  
  
 btnPlay.setOnAction(new EventHandler<ActionEvent>() {  
 @Override  
 public void handle(ActionEvent event) {  
 JDialog playDialog = MediaStore.*createPlayDialog*(tblMedia.getSelectionModel().getSelectedItem());  
 playDialog.setVisible(true);  
 playDialog.setSize(300,200);  
 playDialog.pack();  
 }  
 });  
  
 btnPlaceOrder.setOnAction(new EventHandler<ActionEvent>() {  
 @Override  
 public void handle(ActionEvent event) {  
 createPopUp();  
 cart.getItemsOrdered().clear();  
 tblMedia.setItems(FXCollections.*observableList*(cart.getItemsOrdered()));  
 totalPrice.setText(Float.*toString*(cart.totalCost()) + "$");  
 }  
 });  
 }  
  
 @FXML  
 void updateButtonBar(Media media) {  
 btnRemove.setVisible(true);  
 if(media instanceof Playable) {  
 btnPlay.setVisible(true);  
 } else {  
 btnPlay.setVisible(false);  
 }  
 }  
  
 @FXML  
 void showFilterMedia(String t1) {  
 if (filterCategory.getSelectedToggle() == radioBtnFilterTitle) {  
 ArrayList<Media> filterByTitle = new ArrayList<Media>();  
 for (Media item : cart.getItemsOrdered()) {  
 if (item.getTitle().contains(t1)) {  
 filterByTitle.add(item);  
 }  
 }  
 tblMedia.setItems(FXCollections.*observableList*(filterByTitle));  
 } else if (filterCategory.getSelectedToggle() == radioBtnFilterId) {  
 ArrayList<Media> filterByID = new ArrayList<Media>();  
 for (Media item : cart.getItemsOrdered()) {  
 if (item.getId() == Integer.*parseInt*(t1)) {  
 filterByID.add(item);  
 }  
 }  
 tblMedia.setItems(FXCollections.*observableList*(filterByID));  
 }  
 }  
  
 @FXML  
 void createPopUp() {  
 Stage popupwindow =new Stage();  
 popupwindow.initModality(Modality.*APPLICATION\_MODAL*);  
 popupwindow.setTitle("Place order");  
  
 Label label1 = new Label("You have place your order !");  
 label1.setFont(Font.*font*("Arial", FontWeight.*BOLD*,14));  
 Label label2 = new Label("Your bill total is " + Float.*toString*(cart.totalCost()) + "$");  
 Button button1= new Button("OK !");  
 label2.setTextFill(Color.*RED*);  
 button1.setOnAction(e -> popupwindow.close());  
 VBox layout= new VBox(10);  
 layout.getChildren().addAll(label1, label2,button1);  
 layout.setAlignment(Pos.*CENTER*);  
 Scene scene1= new Scene(layout, 300, 200);  
 popupwindow.setScene(scene1);  
 popupwindow.show();  
 }  
}

1. Tạo file Cart.fxml

*<?*xml version="1.0" encoding="UTF-8"*?>  
<?*import javafx.geometry.Insets*?>  
<?*import javafx.scene.control.Button*?>  
<?*import javafx.scene.control.ButtonBar*?>  
<?*import javafx.scene.control.Label*?>  
<?*import javafx.scene.control.Menu*?>  
<?*import javafx.scene.control.MenuBar*?>  
<?*import javafx.scene.control.MenuItem*?>  
<?*import javafx.scene.control.RadioButton*?>  
<?*import javafx.scene.control.TableColumn*?>  
<?*import javafx.scene.control.TableView*?>  
<?*import javafx.scene.control.TextField*?>  
<?*import javafx.scene.control.ToggleGroup*?>  
<?*import javafx.scene.layout.BorderPane*?>  
<?*import javafx.scene.layout.HBox*?>  
<?*import javafx.scene.layout.VBox*?>  
<?*import javafx.scene.text.Font*?>*<BorderPane maxHeight="-Infinity" maxWidth="-Infinity" minHeight="-Infinity" minWidth="-Infinity" prefHeight="768.0" prefWidth="1024.0" xmlns="http://javafx.com/javafx/21" xmlns:fx="http://javafx.com/fxml/1" fx:controller="hust.soict.hedspi.aims.screen.CartScreenController">  
 <top>  
 <VBox prefWidth="100.0" BorderPane.alignment="CENTER">  
 <children>  
 <MenuBar>  
 <menus>  
 <Menu mnemonicParsing="false" text="Options">  
 <items>  
 <Menu mnemonicParsing="false" text="Update store">  
 <items>  
 <MenuItem mnemonicParsing="false" text="Add book" />  
 <MenuItem mnemonicParsing="false" text="Add DVD" />  
 <MenuItem mnemonicParsing="false" text="Add CD" />  
 </items>  
 </Menu>  
 <Menu mnemonicParsing="false" text="View store">  
 <items>  
 <MenuItem mnemonicParsing="false" text="Action 1" />  
 </items>  
 </Menu>  
 <Menu mnemonicParsing="false" text="View cart">  
 <items>  
 <MenuItem mnemonicParsing="false" text="Action 1" />  
 </items>  
 </Menu>  
 </items>  
 </Menu>  
 </menus>  
 </MenuBar>  
 <Label text="CART" textFill="#000fff">  
 <font>  
 <Font size="50.0" />  
 </font>  
 </Label>  
 </children>  
 </VBox>  
 </top>  
 <center>  
 <VBox BorderPane.alignment="CENTER">  
 <padding>  
 <Insets left="10.0" />  
 </padding>  
 <children>  
 <HBox alignment="CENTER\_LEFT" prefWidth="200.0" spacing="10.0">  
 <padding>  
 <Insets bottom="10.0" top="10.0" />  
 </padding>  
 <children>  
 <Label text="Filter" />  
 <TextField fx:id="tfFilter" />  
 <RadioButton fx:id="radioBtnFilterId" mnemonicParsing="false" selected="true" text="By ID">  
 <toggleGroup>  
 <ToggleGroup fx:id="filterCategory" />  
 </toggleGroup>  
 </RadioButton>  
 <RadioButton fx:id="radioBtnFilterTitle" mnemonicParsing="false" text="By Title" toggleGroup="$filterCategory" />  
 </children>  
 </HBox>  
 <TableView fx:id="tblMedia" prefHeight="200.0" prefWidth="200.0">  
 <columns>  
 <TableColumn fx:id="colMediaTitle" prefWidth="75.0" text="Title" />  
 <TableColumn fx:id="colMediacategory" prefWidth="75.0" text="Category" />  
 <TableColumn fx:id="colMediaCost" prefWidth="75.0" text="Cost" />  
 </columns>  
 <columnResizePolicy>  
 <TableView fx:constant="CONSTRAINED\_RESIZE\_POLICY" />  
 </columnResizePolicy>  
 </TableView>  
 <ButtonBar prefHeight="40.0" prefWidth="200.0">  
 <buttons>  
 <Button fx:id="btnPlay" mnemonicParsing="false" text="Play" />  
 <Button fx:id="btnRemove" mnemonicParsing="false" text="Remove" />  
 </buttons>  
 </ButtonBar>  
 </children>  
 </VBox>  
 </center>  
 <right>  
 <VBox alignment="TOP\_CENTER" BorderPane.alignment="CENTER">  
 <padding>  
 <Insets left="10.0" right="10.0" top="50.0" />  
 </padding>  
 <children>  
 <HBox alignment="CENTER">  
 <children>  
 <Label text="Total:">  
 <font>  
 <Font size="24.0" />  
 </font>  
 <padding>  
 <Insets right="10.0" />  
 </padding>  
 </Label>  
 <Label fx:id="totalPrice" text="0 $" textFill="#000fff">  
 <font>  
 <Font size="24.0" />  
 </font>  
 </Label>  
 </children>  
 </HBox>  
 <Button fx:id="btnPlaceOrder" mnemonicParsing="false" style="-fx-background-color: red;" text="Place Order" textFill="WHITE">  
 <font>  
 <Font size="24.0" />  
 </font>  
 </Button>  
 </children>  
 </VBox>  
 </right>  
</BorderPane>

1. Tạo class CartScreen

*//Do Gia Huy  
//20215060  
//Class "CartScreen"*package hust.soict.hedspi.aims.screen;  
import hust.soict.hedspi.aims.cart.Cart;  
import hust.soict.hedspi.aims.media.\*;  
import javafx.application.Platform;  
import javafx.embed.swing.JFXPanel;  
import javafx.fxml.FXMLLoader;  
import javafx.scene.Parent;  
import javafx.scene.Scene;  
import javax.swing.\*;  
import java.io.IOException;  
  
public class CartScreen extends JFrame {  
 private Cart cart;  
  
 public CartScreen(Cart cart) {  
 super();  
 this.cart = cart;  
 JFXPanel fxPanel = new JFXPanel();  
 this.add(fxPanel);  
 this.setTitle("Cart");  
 this.setVisible(true);  
 setSize(1100,768);  
 Platform.*runLater*(new Runnable() {  
 @Override  
 public void run() {  
 try {  
 FXMLLoader loader = new FXMLLoader(getClass().getResource("cart.fxml"));  
 CartScreenController controller = new CartScreenController(cart);  
 loader.setController(controller);  
 Parent root = loader.load();  
 fxPanel.setScene(new Scene(root));  
 } catch (IOException e) {  
 e.printStackTrace();  
 }  
 }  
 });  
 }  
}

1. Tạo class StoreScreen, trong file StoreScreen.java thì sẽ tạo ra một vài chức năng như thêm xoá sửa tìm kiếm, hoàn thành các chức năng của ứng dụng AIMS trên GUI (Sau khi tạo xong các lớp như CartScreen, …)
2. Source code

*//Do Gia Huy  
//20215060  
//Class "StoreScreen"*package hust.soict.hedspi.aims.screen;  
import javax.swing.\*;  
import javafx.scene.control.Tab;  
import hust.soict.hedspi.aims.cart.Cart;  
import hust.soict.hedspi.aims.media.\*;  
import hust.soict.hedspi.aims.store.Store;  
import java.awt.\*;  
import java.awt.event.ActionEvent;  
import java.awt.event.ActionListener;  
import java.util.ArrayList;  
import java.util.LinkedList;  
import java.util.List;  
  
public class StoreScreen extends JFrame {  
 private Store store;  
 private Container cp;  
 private Cart cart;  
 JPanel createNorth() {  
 JPanel north = new JPanel();  
 north.setLayout(new BoxLayout(north,BoxLayout.*Y\_AXIS*));  
 north.add(createMenuBar());  
 north.add(createHeader());  
 return north;  
 }  
  
 JMenuBar createMenuBar() {  
 JMenu menu = new JMenu("Options");  
 JMenu smUpdateStore = new JMenu("Update Store");  
 smUpdateStore.add(new JMenuItem("Add Book"));  
  
 JMenuItem addCD = new JMenuItem("Add CD");  
 smUpdateStore.add(addCD);  
 addCD.addActionListener(new ActionListener() {  
 @Override  
 public void actionPerformed(ActionEvent e) {  
 AddCDStoreScreen popUp = new AddCDStoreScreen(store);  
 }  
 });  
  
 JMenuItem addDVD = new JMenuItem("Add DVD");  
 smUpdateStore.add(addDVD);  
 addDVD.addActionListener(new ActionListener() {  
 @Override  
 public void actionPerformed(ActionEvent e) {  
 AddDVDStoreScreen popUp = new AddDVDStoreScreen(store);  
 }  
 });  
 menu.add(smUpdateStore);  
 menu.add(new JMenuItem("View store"));  
 menu.add(new JMenuItem("View cart"));  
  
 JMenuBar menuBar = new JMenuBar();  
 menuBar.setLayout(new FlowLayout(FlowLayout.*LEFT*));  
 menuBar.add(menu);  
 return menuBar;  
 }  
  
 JPanel createHeader() {  
 JPanel header = new JPanel();  
 header.setLayout(new BoxLayout(header,BoxLayout.*X\_AXIS*));  
  
 JLabel title = new JLabel("AIMS");  
 title.setFont(new Font(title.getFont().getName(),Font.*PLAIN*,50));  
 title.setForeground(Color.*CYAN*);  
  
 JButton cart1 = new JButton("View cart");  
 cart1.setPreferredSize(new Dimension(100,50));  
 cart1.setMaximumSize(new Dimension(100,50));  
 cart1.addActionListener(new ActionListener() {  
 @Override  
 public void actionPerformed(ActionEvent e) {  
 Container cp = getContentPane();  
 cp.add(new CartScreen(cart));  
 }  
 });  
 header.add(Box.*createRigidArea*(new Dimension(10,10)));  
 header.add(title);  
 header.add(Box.*createHorizontalGlue*());  
 header.add(cart1);  
 header.add(Box.*createRigidArea*(new Dimension(10,10)));  
 return header;  
 }  
  
 JPanel createCenter() {  
 JPanel center = new JPanel();  
 center.setLayout(new GridLayout(3,3,2,2));  
 LinkedList<Media> mediaStore = store.getItemsInStore();  
 for(Media media : mediaStore) {  
 MediaStore cell = new MediaStore(media,cart);  
 center.add(cell);  
 }  
 return center;  
 }  
  
 public StoreScreen(Store store, Cart myCart) {  
 this.store = store;  
 this.cart = myCart;  
 cp = getContentPane();  
 cp.setLayout(new BorderLayout());  
 cp.add(createNorth(),BorderLayout.*NORTH*);  
 cp.add(createCenter(),BorderLayout.*CENTER*);  
 setVisible(true);  
 setTitle("Store");  
 setSize(1024,768);  
 }  
  
 public static void main(String[] args) {  
 DigitalVideoDisc dvd = new DigitalVideoDisc(1,"Cinderella","Fantasy",  
 13.5f,"Gia Huy",97);  
 DigitalVideoDisc dvd2 = new DigitalVideoDisc(6,"Han Duty F009","Phim cam dong",  
 23.5f,"Qianchang, Kelan",117);  
  
 ArrayList<Track> tracks = new ArrayList<Track>();  
 tracks.add(new Track("Happy new year",3));  
 tracks.add(new Track("i want it that way",4));  
 CompactDisc cd = new CompactDisc(2,"Nhac 90's","Nhac nuoc ngoai",20.5f,"Various artist",tracks);  
  
 ArrayList<Track> tracks2 = new ArrayList<Track>();  
 tracks2.add(new Track("Tobu - Candyland",3));  
 tracks2.add(new Track("Niviro - You",4));  
 tracks2.add(new Track("MBB - Beach",2));  
 tracks2.add(new Track("MBB - Island",4));  
 tracks2.add(new Track("MBB - Feel Good",3));  
 tracks2.add(new Track("Alan Walker - Force",4));  
 tracks2.add(new Track("Syn Cole - Feel Good (Best of 2016 EDM)",4));  
 tracks2.add(new Track("Syn Cole - Gizmo",4));  
 tracks2.add(new Track("Deamn - Sign",4));  
 tracks2.add(new Track("MBB - Arrival",3));  
 tracks2.add(new Track("EnV - Pneumatic",5));  
 CompactDisc cd2 = new CompactDisc(5,"Nhac EDM gay nghien","Nhac quoc te",37.25f,"Various artist",tracks2);  
  
 List<String> authors = new ArrayList<String>();  
 authors.add("Agatha cristine");  
 Book book1 = new Book(3,"Ten little niggers","detective",25.2f,authors);  
 List<String> authors2 = new ArrayList<String>();  
 authors2.add("Phung Quan");  
 Book book2 = new Book(4,"Tuoi tho du doi","novel",27.45f,authors2);  
 Store store = new Store();  
  
 store.addMedia(cd);  
 store.addMedia(cd2);  
 store.addMedia(dvd);  
 store.addMedia(dvd2);  
 store.addMedia(book1);  
 store.addMedia(book2);  
  
 Book[] books = new Book[15];  
 Cart myCart = new Cart();  
 new StoreScreen(store,myCart);  
 }  
  
 private class AddDVDStoreScreen extends JFrame {  
 public AddDVDStoreScreen(Store store) {  
 this.setLayout(new GridLayout(4, 2, 5, 5));  
 this.add(new JLabel("Enter title: "));  
 TextField title = new TextField(10);  
 this.add(title);  
 this.add(new JLabel("Enter category: "));  
 TextField category = new TextField(10);  
 this.add(category);  
 this.add(new JLabel("Enter cost: "));  
 TextField cost = new TextField(10);  
 this.add(cost);  
  
 this.setTitle("Add DVD");  
 this.setSize(300, 100);  
 JButton turnInBtn = new JButton("Add");  
 this.add(turnInBtn);  
 turnInBtn.addActionListener(new ActionListener() {  
 @Override  
 public void actionPerformed(ActionEvent e) {  
 DigitalVideoDisc dvd = new DigitalVideoDisc(2, title.getText(), category.getText(), Float.*parseFloat*(cost.getText()));  
 store.addMedia(dvd);  
 cp.add(createCenter(), BorderLayout.*CENTER*);  
 cp.revalidate();  
 title.setText("");  
 category.setText("");  
 cost.setText("");  
 }  
 });  
 this.show();  
 }  
 }  
  
 private class AddCDStoreScreen extends JFrame {  
 public AddCDStoreScreen(Store store) {  
 this.setLayout(new GridLayout(7, 2, 5, 5));  
 this.add(new JLabel("Enter title: "));  
 TextField title = new TextField(10);  
 this.add(title);  
 this.add(new JLabel("Enter category: "));  
 TextField category = new TextField(10);  
 this.add(category);  
 this.add(new JLabel("Enter cost: "));  
 TextField cost = new TextField(10);  
 this.add(cost);  
 this.add(new JLabel("Enter artist: "));  
 TextField artist = new TextField(10);  
 this.add(artist);  
 this.setTitle("Add CD");  
 this.add(new JLabel("Number of tracks: "));  
 TextField numberOfTracks = new TextField(10);  
 this.add(numberOfTracks);  
 this.pack();  
 JButton turnInBtn = new JButton("Add");  
 this.add(turnInBtn);  
 turnInBtn.addActionListener(new ActionListener() {  
 @Override  
 public void actionPerformed(ActionEvent e) {  
  
 CompactDisc dvd = new CompactDisc(2, title.getText(), category.getText(), Float.*parseFloat*(cost.getText()),artist.getText(),new ArrayList<Track>());  
 store.addMedia(dvd);  
 cp.add(createCenter(), BorderLayout.*CENTER*);  
 cp.revalidate();  
 title.setText("");  
 category.setText("");  
 cost.setText("");  
 }  
 });  
 this.show();  
 }  
 }  
}

1. Result

A screenshot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

1. Các biểu đồ
2. Biểu đồ Use-case

A screenshot of a computer

Description automatically generated

1. Biểu đồ Class

A yellow folders with text

Description automatically generated