

Báo cáo thực hành Lập trình hướng đối tượng Lab 5

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I. Java swing and java awt

1. AWT Accumlator

a. 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: "));

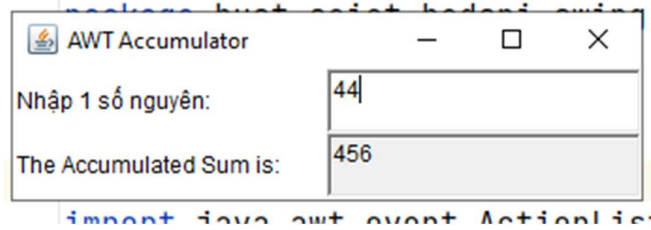
        tfOutput = new TextField(10);
        tfOutput.setEditable(false);
        add(tfOutput);

        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 evt){
            int numberIn =
Integer.parseInt(tfInput.getText());
            sum += numberIn;
            tfInput.setText("");
            tfOutput.setText(sum + "");
        }
    }
}
```

```
}  
}
```

b. Result



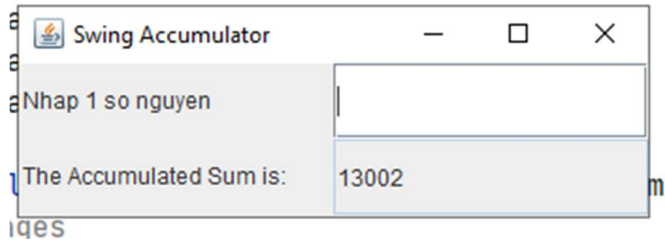
2. Swing Accumulator

a. 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("Nhập 1 số nguyên"));  
        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 evt){
            int numberIn =
Integer.parseInt(tfInput.getText());
            sum += numberIn;
            tfInput.setText("");
            tfOutput.setText(sum + "");
        }
    }
}
```

b. Result



3. Number Grid

a. 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);
    }

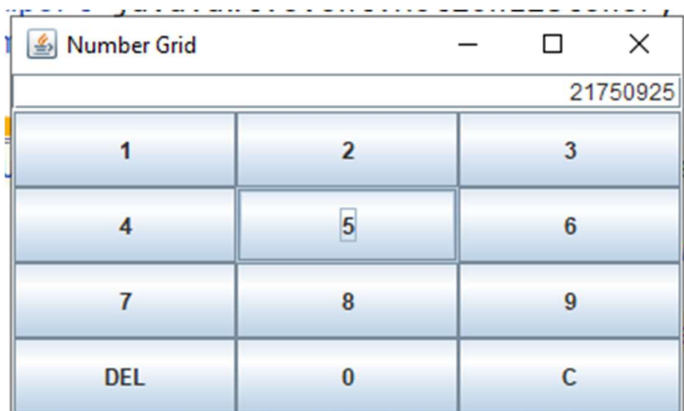
    private class ButtonListener implements ActionListener {
        @Override
        public void actionPerformed(ActionEvent e) {
            String button = e.getActionCommand();
            if(button.charAt(0) >= '0' && button.charAt(0) <=
'9') {
                tfDisplay.setText(tfDisplay.getText() +
button);
            }
            else if (button.equals("DEL")) {

tfDisplay.setText(tfDisplay.getText().substring(0,tfDisplay.ge
tText().length() -1));
            }
            else {
                tfDisplay.setText("");
            }
        }
    }

    public static void main(String[] args) {
        new NumberGrid();
    }
}

```

b. Result



The image shows a screenshot of a software application window titled "Number Grid". The window contains a 4x3 grid of buttons. Above the grid is a display area showing the number "21750925". The buttons in the grid are labeled as follows:

1	2	3
4	5	6
7	8	9
DEL	0	C

II. 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);
    }
}
```

2. 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();
                    }
                }
            }
        }
    }
}
```

3. 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.PainterControl
ler">
    <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>

```

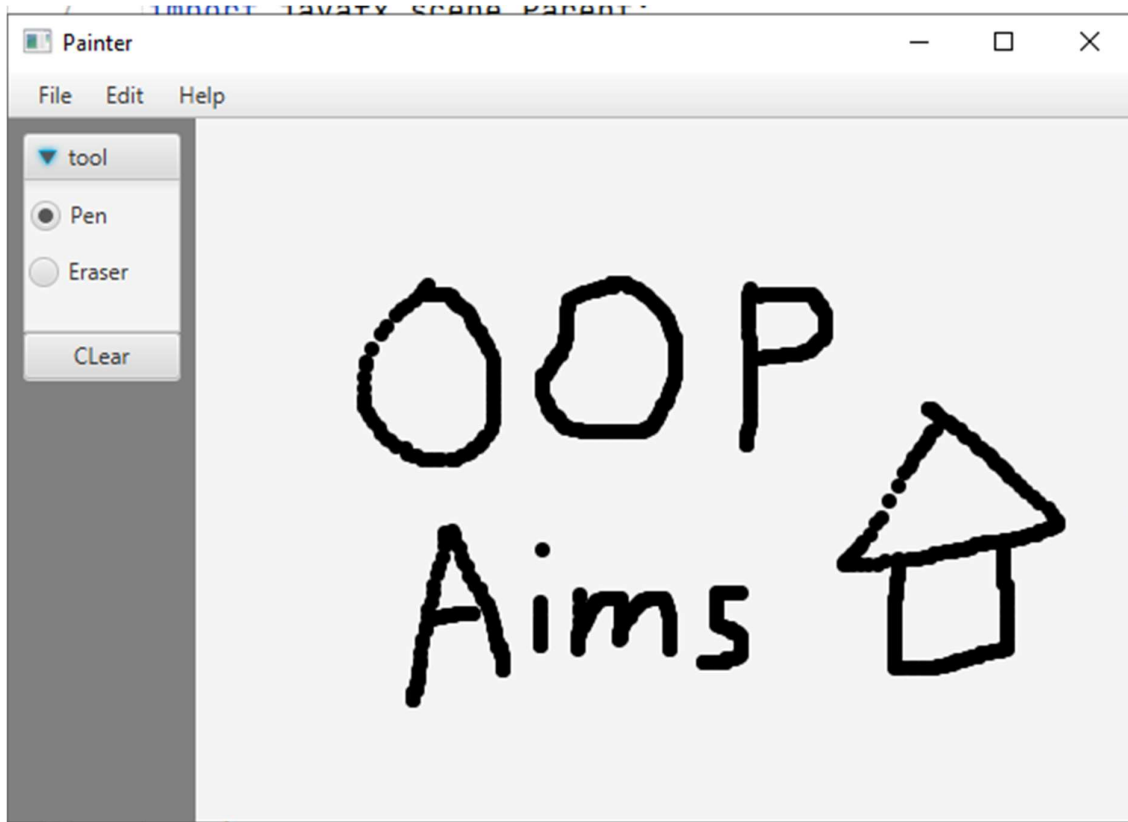
```

                                <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>

```

4. Kết quả



III. Xử lý ngoại lệ

1. 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);
    }
}
```

2. Từ ngoại lệ đấy, sửa các phương thức có liên quan

a. 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;
}
```

b. 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());
    }
}
```

c. 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();
        }
    }
}
```

```

    }
}

```

d. 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());
    }
}

```

e. Trong class chính AIMS

```

public static void main(String[] args) throws PlayerException{
    DigitalVideoDisc dvd = new DigitalVideoDisc( id: 1, title: "Cinderella");
    ArrayList<Track> tracks = new ArrayList<>();
    tracks.add(new Track( title: "Happy new year", length: 3));
    tracks.add(new Track( title: "i want it that way", length: 4));
    CompactDisc cd = new CompactDisc( id: 2, title: "Nhac bat hu ngay");
    List<String> authors = new ArrayList<>();
    authors.add("Phung Quan");
    authors.add("Gia Huy");
    Book book = new Book( id: 3, title: "Tuoi tho du doi", category: "Romance");
    Store store = new Store();
    store.addMedia(cd);
    store.addMedia(dvd);
    store.addMedia(book);

    public static void showMenu(Scanner scanner, Store store, Cart cart) throws PlayerException{
        while (true) {
            System.out.println(
                """
                AIMS:
                -----
                1. View store
                2. Update store
                3. See current cart
                0. Exit
                -----
                Please choose a number: 0-1-2-3
                """);
            int option = scanner.nextInt();
            switch (option) {

```

```

1 usage  unknown
public static void mediaDetailsMenu(Scanner scanner, Store store, Cart cart) throws
    System.out.print("Enter media's title: ");
    String title = scanner.nextLine();
    Media item = store.findMedia(title);
    if(item == null) {
        System.out.println("There is no such media !");
        return;
    }
    System.out.println(item);
    while (true) {
        System.out.println("""
                                Options:
                                -----
                                . . . . .

if (item instanceof CompactDisc cd) {
    try {
        cd.play();
    } catch (PlayerException e) {
        System.out.println("asd");
    }
}
}

```

```

2 usages  unknown
public static void cartMenu(Scanner scanner, Cart cart) throws PlayerException{
    while (true) {
        System.out.println("""
                                Optio
                                -----
                                1. Fi
                                2. So
                                3. Re
                                4. PL
                                5. PL
                                0. Ba
                                -----
                                © java.io.PrintStream
                                public void println(
                                    @Nullable String x
                                )
                                Prints a String and then terminate
                                the line. This method behaves as
                                though it invokes print(String) and
                                then println().
                                Params: x - The String to be

```

IV. Tạo tất cả giao diện trong project AIMS

1. Tạo package screen trong project AIMS

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

2. 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 BorderLayout(this, BorderLayout.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;
}
}

```


3. Tạo giao diện giỏ hàng

a. Tạo class CartScreenController để điều khiển file fxml

```
//Do Gia Huy
//20215060
//Class "CartScreenController"
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
PropertyFactory<Media, String>("title"));
    colMediacategory.setCellValueFactory(new
PropertyFactory<Media, String>("category"));
    colMediaCost.setCellValueFactory(new
PropertyFactory<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().getSe
lectedItem());
        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.getItemsOr
dered()));

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 scenel= new Scene(layout, 300, 200);
    popupwindow.setScene(scenel);
    popupwindow.show();
}
}

```

b. 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.CartScreenControl
ler">
    <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>
<ToolBar prefHeight="40.0"
prefWidth="200.0">
    <buttons>
        <Button fx:id="btnPlay"
mnemonicParsing="false" text="Play" />
        <Button fx:id="btnRemove"
mnemonicParsing="false" text="Remove" />
    </buttons>
</ToolBar>
</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>

```

```
        </Button>
    </children>
</VBox>
</right>
</BorderPane>
```

c. 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();
                }
            }
        });
    }
}
```



```
}
}
```

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

a. 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, "Tuoì 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("");
            }
        });
    }
}

```

```

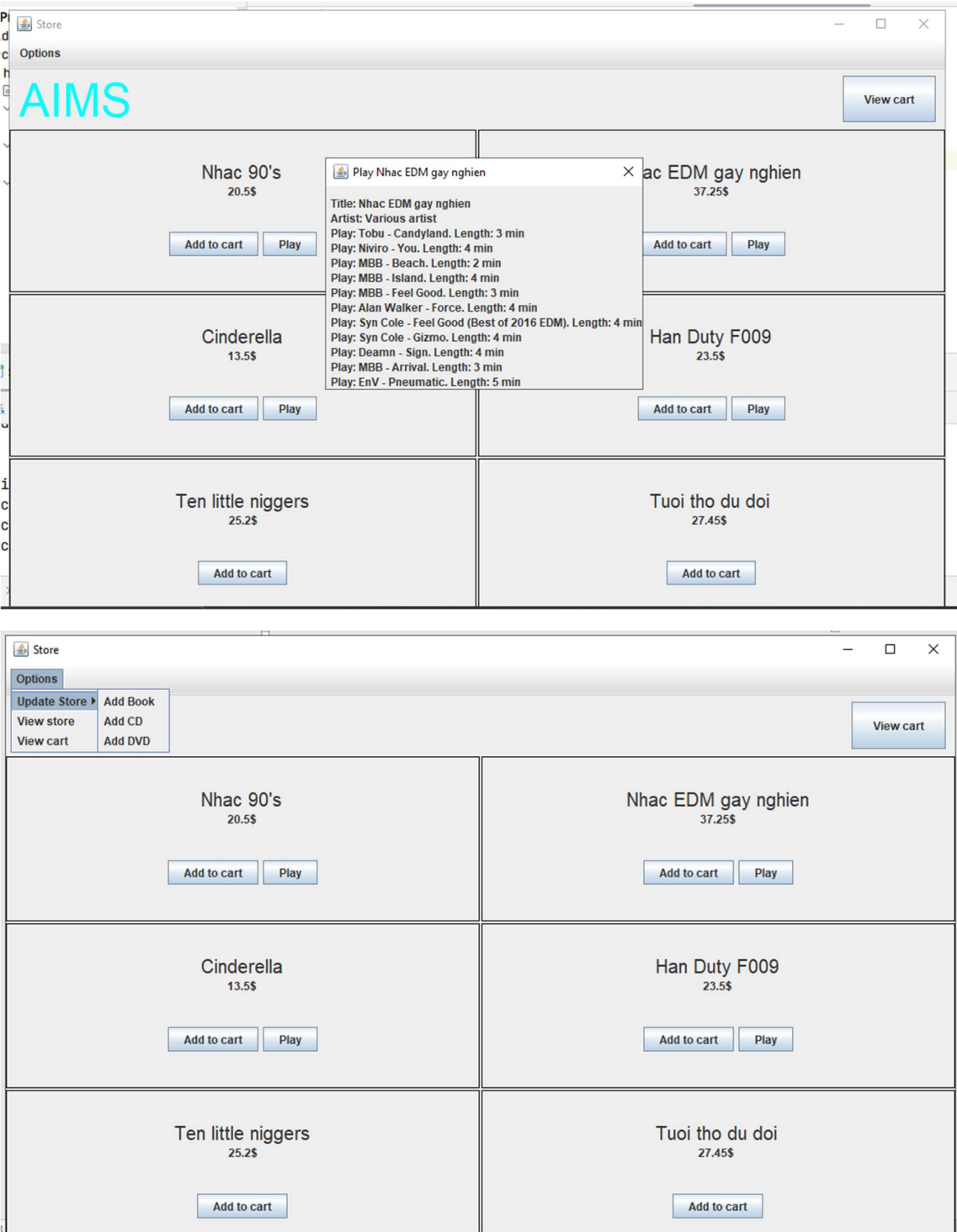
        category.setText("");
        cost.setText("");
    }
});
this.show();
}

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();
    }
}
}

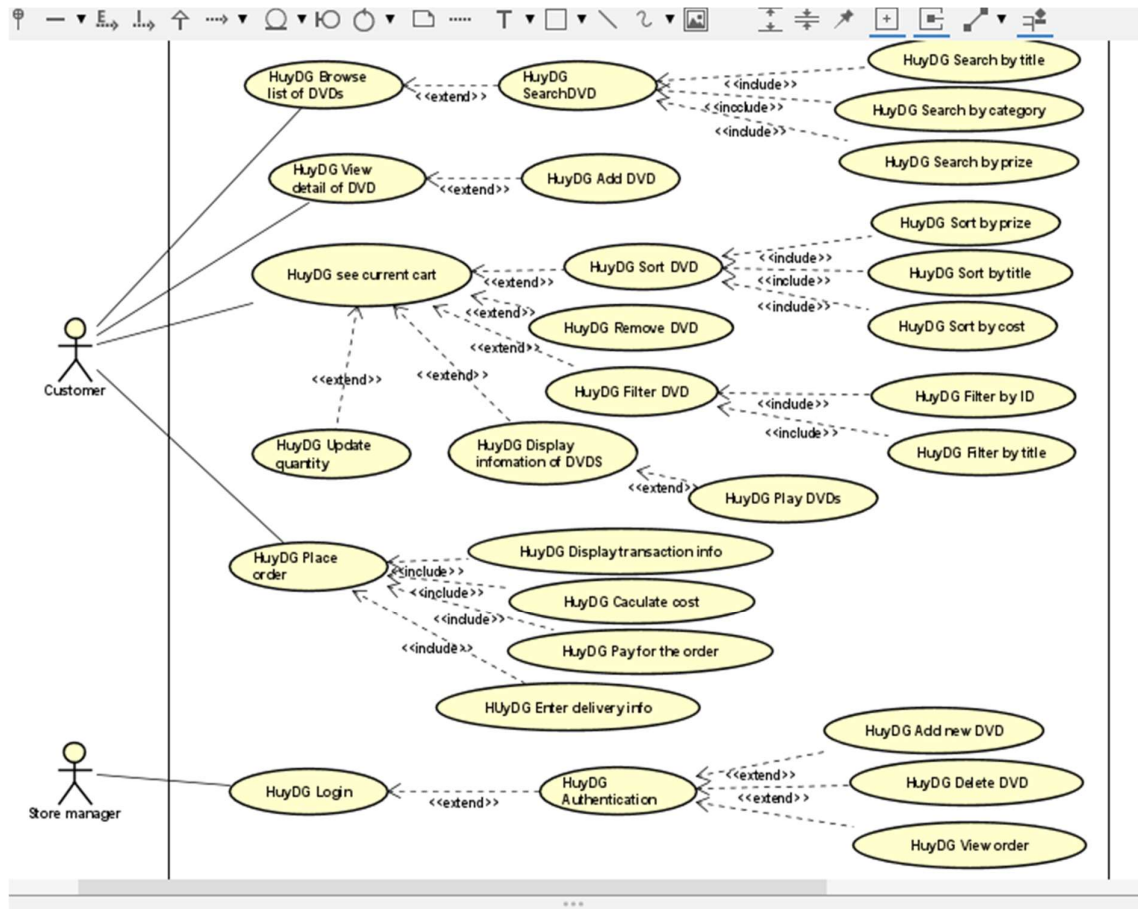
```

b. Result



V. Các biểu đồ

1. Biểu đồ Use-case



2. Biểu đồ Class

