Phạm Minh Trường- 20215292
Báo cáo thực hành oop lab 05

Nội dung

1 Swing component

2 Organizing Swing components with Layout Managers

```
public class ButtonListener implements ActionListener {
    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("C")) {
            tfDisplay.setText("");     //xóa hết
        } else if (button.equals("DEL")) {
            String currentText = tfDisplay.getText();
            if (!currentText.isEmpty()) {
                tfDisplay.setText(currentText.substring(0, currentText.length() -
1));//xóa chữ số cuối cùng
            }
        }
    }
```

- Video demo kết quả ở bên ngoài phần nộp bài

3. Create a graphical user interface for AIMS with Swing

- Media:

```
package hust.soict.dsai.aims.screen;


import java.awt.BorderLayout;
import java.awt.Color;
import java.awt.Dialog;
import java.awt.FlowLayout;
import java.awt.Font;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
import java.util.ArrayList;


import javax.swing.BorderFactory;
import javax.swing.Box;
import javax.swing.BoxLayout;
import javax.swing.JButton;
import javax.swing.JDialog;
import javax.swing.JLabel;
import javax.swing.JPanel;
import javax.swing.JScrollPane;
import javax.swing.JTextArea;


import hust.soict.dsai.aims.cart.Cart;
import hust.soict.dsai.aims.media.*;
import hust.soict.dsai.aims.screen.*;


public class MediaStore extends JPanel{
    private Media media;
    private boolean isAdded;
```

```
public MediaStore(Media media){
    this.media=media;
    isAdded=false;
    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 add=new JButton("Add to cart");
    container.add(add);
    add.addActionListener(new AddToCartButtonListener());

    if(media instanceof Playable){
        JButton play=new JButton("Play");
        container.add(play);
        play.addActionListener(new PlayButtonListener());

    }
    this.add(Box.createVerticalGlue());
    this.add(title);
    this.add(cost);
    this.add(Box.createHorizontalGlue());
```

```
        this.add(container);


        this.setBorder(BorderFactory.createLineBorder(Color.BLACK));
    }


    private class AddToCartButtonListener implements ActionListener {
        @Override
        public void actionPerformed(ActionEvent e) {
            JDialog  notify=createNotify(media);
            notify.setVisible(true);



        }
    }
    private JDialog createNotify(Media media){
        JDialog notify=new JDialog((Dialog)null,"Thông báo",true);
        JLabel label=new JLabel("Đã thêm thành công media: "+media.getTitle());
        label.setAlignmentX(CENTER_ALIGNMENT);
        JPanel panel = new JPanel();
        panel.setLayout(new BoxLayout(panel, BoxLayout.Y_AXIS));
        panel.add(label,BorderLayout.CENTER);




        notify.add(panel);
        notify.setSize(300, 150);
        notify.setLocationRelativeTo(null);
        notify.setVisible(true);
```

```
  return notify;
}

private class PlayButtonListener implements ActionListener {
  @Override
  public void actionPerformed(ActionEvent e) {
    JDialog play=createPlayDialog(media);
    play.setVisible(true);
    isAdded=true;
  }
}

private JDialog createPlayDialog(Media media) {
  JDialog playDialog = new JDialog((Dialog)null, "Play Media", true);

  playDialog.add(new JPanel().add(createPlayMessage(media)));
  playDialog.setSize(300, 200);
  playDialog.setLocationRelativeTo(MediaStore.this);
  return playDialog;
}
private JPanel createPlayMessage(Media media) {
  JPanel panel = new JPanel(new BorderLayout());
  JTextArea textArea=new JTextArea(((Playable)media).play());
  textArea.setLineWrap(true);
  textArea.setWrapStyleWord(true);
  textArea.setEditable(false);
  panel.add(new JScrollPane(textArea), BorderLayout.CENTER);
```

```
        return panel;
    }


    public static void main(String[] args) {


    }
    public boolean getIsAdded() {
        return isAdded;
    }
}
```

- StoreScreen:

```
package hust.soict.dsai.aims.screen;

import java.awt.BorderLayout;
import java.awt.Color;
import java.awt.Container;
import java.awt.Dimension;
import java.awt.FlowLayout;
import java.awt.Font;
import java.awt.GridBagLayout;
import java.awt.GridLayout;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;

import javax.swing.Box;
import javax.swing.BoxLayout;
import javax.swing.JButton;
import javax.swing.JFrame;
import javax.swing.JLabel;
import javax.swing.JMenu;
import javax.swing.JMenuBar;
import javax.swing.JMenuItem;
import javax.swing.JPanel;

import hust.soict.dsai.aims.cart.Cart;
import hust.soict.dsai.aims.media.*;
import hust.soict.dsai.aims.store.Store;

import java.util.*;
```

```
public class StoreScreen extends JFrame {

  private Store store;
  private List<Media> itemOrdered=new ArrayList<Media>();

  public StoreScreen(Store store) {

    this.store = store;

    Container cp = getContentPane();
    cp.setLayout(new BorderLayout());
   setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
    cp.add(createNorth(), BorderLayout.NORTH);
    cp.add(createCenter(), BorderLayout.CENTER);

    setVisible(true);
    setTitle("Store");
    setSize(1024, 768);
  }

  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"));
    smUpdateStore.add(new JMenuItem("Add CD"));
    smUpdateStore.add(new JMenuItem("Add DVD"));

    smUpdateStore.addActionListener(new UpdateStoreListener());

    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;
}

private class UpdateStoreListener implements ActionListener {
    @Override
    public void actionPerformed(ActionEvent e) {
        JMenuItem source = (JMenuItem) e.getSource();
        String command = source.getText();


        switch (command) {
            case "Add Book":

                break;
            case "Add CD":

                break;
            case "Add DVD":

                break;
        }
    }
}

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 cart = new JButton("View cart");
    cart.setPreferredSize(new Dimension(100, 50));
    cart.setMaximumSize(new Dimension(100, 50));

    header.add(Box.createRigidArea(new Dimension(10, 10)));
    header.add(title);
    header.add(Box.createHorizontalGlue());
    header.add(cart);
    header.add(Box.createRigidArea(new Dimension(10, 10)));
    return header;
    }

    private class ViewCartListener implements ActionListener{
        public void actionPerformed(ActionEvent e){

        }
    }

    JPanel createCenter() {
        JPanel center = new JPanel();
        center.setLayout(new GridLayout(3, 3, 2, 2));

        ArrayList<Media> mediaInStore = store.getItemInStore();
        for (int i = 0; i < 9 ; i++) {
            MediaStore cell = new MediaStore(mediaInStore.get(i));
            if(cell.getIsAdded()==true){


                itemOrdered.add(mediaInStore.get(i));
                 System.out.println("Added to cart: " +
mediaInStore.get(i).getTitle());
            }
            center.add(cell);

        }
        return center;
    }



    public static void main(String[] args) {
        Store store=new Store();
       // Cart cart=new Cart();
        DigitalVideoDisc dvd1 = new DigitalVideoDisc("Director 1",
"Category 1", "DVD Title 1", 15.0f);
        DigitalVideoDisc dvd2 = new DigitalVideoDisc("Director 2",
"Category 2", "DVD Title 2", 20.0f);
        DigitalVideoDisc dvd3 = new DigitalVideoDisc("Director 3",
"Category 3", "DVD Title 3", 25.0f);

        CompactDisc cd1 = new CompactDisc("CD Title 1", "Category 1",
12.0f, "Artist 1");
        CompactDisc cd2 = new CompactDisc("CD Title 2", "Category 2",
18.0f, "Artist 2");
```

```
        CompactDisc cd3 = new CompactDisc("CD Title 3", "Category 3",
22.0f, "Artist 3");
        Track track1 = new Track("hello", 12);
        Track track3 = new Track("hello1", 13);
        Track track2 = new Track("hello2", 14);
        cd1.addTrack(track1);
        cd1.addTrack(track2);
        cd1.addTrack(track3);

        Book book1 = new Book("Book Title 1", "Category 1", 8.0f);
        Book book2 = new Book("Book Title 2", "Category 2", 10.0f);
        Book book3 = new Book("Book Title 3", "Category 3", 14.0f);
        //Book book4 = new Book("Book Title 4", "Category 4", 16.0f);

        store.addMedia(dvd1);
        store.addMedia(dvd2);
        store.addMedia(dvd3);
        store.addMedia(cd1);
        store.addMedia(cd2);
        store.addMedia(cd3);
        store.addMedia(book1);
        store.addMedia(book2);
        store.addMedia(book3);
     //   store.addMedia(book4);

       StoreScreen s= new StoreScreen(store);

           for(Media media : s.itemOrdered){
            System.out.println(media.toString());
           }

    }
}
```

- Demo kết quả ở video bên ngoài!

3 JavaFX API

- Painter.fxml:

```
<?xml version="1.0" encoding="UTF-8"?>

<?import com.gluonhq.charm.glisten.control.ToggleButtonGroup?>
```

```
<?import javafx.geometry.Insets?>
<?import javafx.scene.control.Button?>
<?import javafx.scene.control.RadioButton?>
<?import javafx.scene.control.ToggleGroup?>
<?import javafx.scene.layout.BorderPane?>
<?import javafx.scene.layout.ColumnConstraints?>
<?import javafx.scene.layout.GridPane?>
<?import javafx.scene.layout.Pane?>
<?import javafx.scene.layout.RowConstraints?>
<?import javafx.scene.layout.TilePane?>
<?import javafx.scene.layout.VBox?>
<?import javafx.scene.text.Font?>

<BorderPane maxHeight="-Infinity" maxWidth="-Infinity" minHeight="-
Infinity" minWidth="-Infinity" prefHeight="480.0" prefWidth="640.0"
xmlns="http://javafx.com/javafx/21"
xmlns:fx="http://javafx.com/fxml/1" fx:controller="PainterController">
  <padding>
    <Insets top="8.0" />
  </padding>
  <right>
    <GridPane BorderPane.alignment="CENTER">
      <columnConstraints>
        <ColumnConstraints hgrow="SOMETIMES" minWidth="10.0"
prefWidth="100.0" />
        <ColumnConstraints hgrow="SOMETIMES" minWidth="10.0"
prefWidth="100.0" />
      </columnConstraints>
      <rowConstraints>
        <RowConstraints minHeight="10.0" prefHeight="30.0"
vgrow="SOMETIMES" />
        <RowConstraints minHeight="10.0" prefHeight="30.0"
vgrow="SOMETIMES" />
        <RowConstraints minHeight="10.0" prefHeight="30.0"
vgrow="SOMETIMES" />
      </rowConstraints>
    </GridPane>
  </right>
  <left>
    <VBox maxHeight="1.7976931348623157E308"
BorderPane.alignment="CENTER">
      <BorderPane.margin>
        <Insets />
      </BorderPane.margin>
```

```
            <padding>
                <Insets bottom="8.0" left="8.0" right="8.0" top="8.0" />
            </padding>
            <children>
                <TilePane prefHeight="92.0" prefWidth="48.0">
                    <children>
                        <ToggleButtonGroup selectionType="SINGLE">
                            <toggles>
                                <RadioButton mnemonicParsing="false"
onMouseClicked="#drawButtonPressed" text="Draw">
                                    <toggleGroup>
                                        <ToggleGroup fx:id="identical" />
                                    </toggleGroup>
                                </RadioButton>
                            </toggles>
                        </ToggleButtonGroup>
                        <RadioButton mnemonicParsing="false"
onMouseClicked="#eraserButtonPressed" text="Eraser"
toggleGroup="$identical" />
                    </children>
                </TilePane>
                <Button mnemonicParsing="false"
onMouseClicked="#clearButtonPressed" text="Clear">
                    <font>
                        <Font size="13.0" />
                    </font>
                </Button>
            </children>
        </VBox>
    </left>
    <center>
        <Pane fx:id="drawingAreaPane"
onMouseDragged="#drawingAreaMouseDragged" prefHeight="200.0"
prefWidth="200.0" style="-fx-background-color: white;"
BorderPane.alignment="CENTER" />
    </center>
</BorderPane>
```

○ PainterController class:

```
import javafx.event.ActionEvent;
import javafx.fxml.FXML;
import javafx.scene.control.ToggleGroup;
import javafx.scene.input.MouseEvent;
import javafx.scene.layout.Pane;
import javafx.scene.layout.VBox;
import javafx.scene.paint.Color;
import javafx.scene.shape.Circle;

public class PainterController {

    @FXML
    private Pane drawingAreaPane;

    @FXML
    private ToggleGroup identical;

    private boolean isEraserMode = false;

    @FXML
    void drawButtonPressed(MouseEvent event) {
        isEraserMode = false;
    }

    @FXML
    void eraserButtonPressed(MouseEvent event) {
        isEraserMode = true;
    }

    @FXML
    void clearButtonPressed(ActionEvent event) {
        drawingAreaPane.getChildren().clear();
    }

    @FXML
    void drawingAreaMouseDragged(MouseEvent event) {
        if (isEraserMode) {
            Circle newCircle = new Circle(event.getX(), event.getY(), 4,
Color.WHITE);
            drawingAreaPane.getChildren().add(newCircle);
        } else {
            Circle newCircle = new Circle(event.getX(), event.getY(), 4,
Color.BLACK);
            drawingAreaPane.getChildren().add(newCircle);
        }
    }
}
```

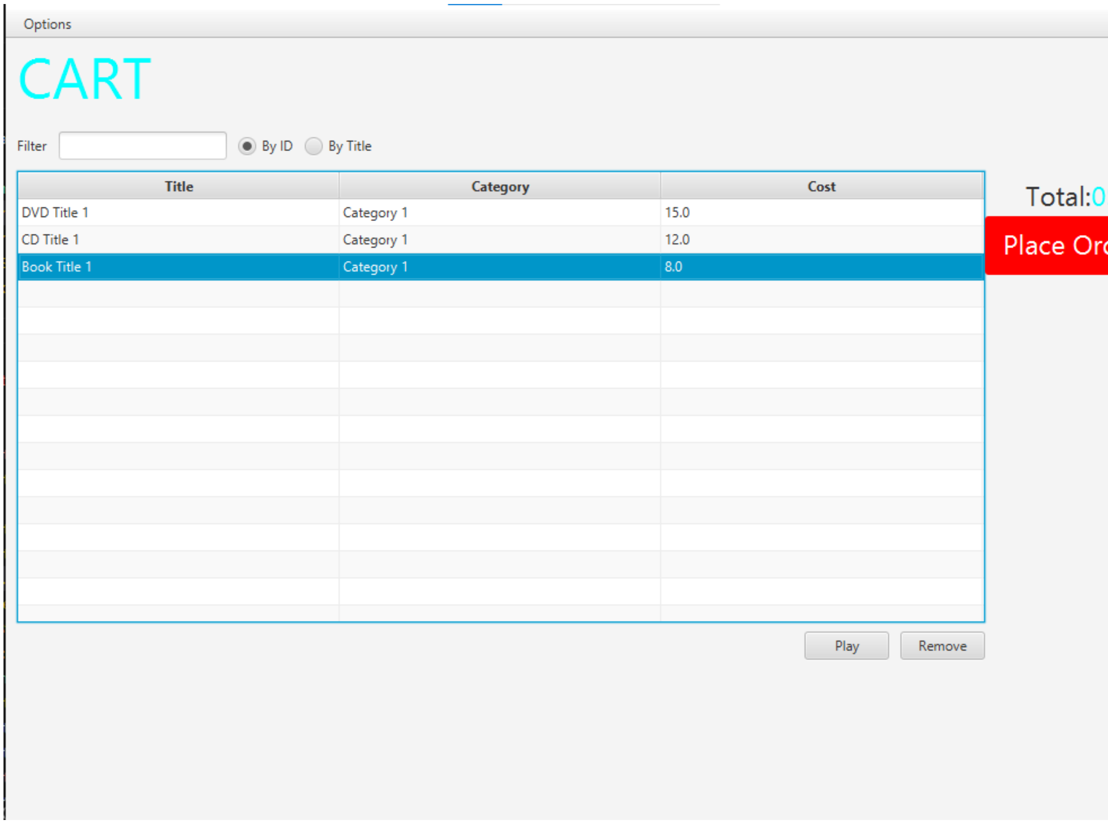
- Kết quả demo ở video nộp bài: Painter

7. View the items in cart – JavaFX’s data-driven UI

- Ta thử chạy với dữ liệu:

```
public static void main(String[] args) {
      DigitalVideoDisc dvd1 = new DigitalVideoDisc("Director 1",
"Category 1", "DVD Title 1", 15.0f);
      CompactDisc cd1 = new CompactDisc("CD Title 1", "Category 1",
12.0f, "Artist 1");
      Book book1 = new Book("Book Title 1", "Category 1", 8.0f);

      cart = new Cart();
      cart.addMedia(dvd1);
      cart.addMedia(cd1);
      cart.addMedia(book1);

      launch(args);
   }
```

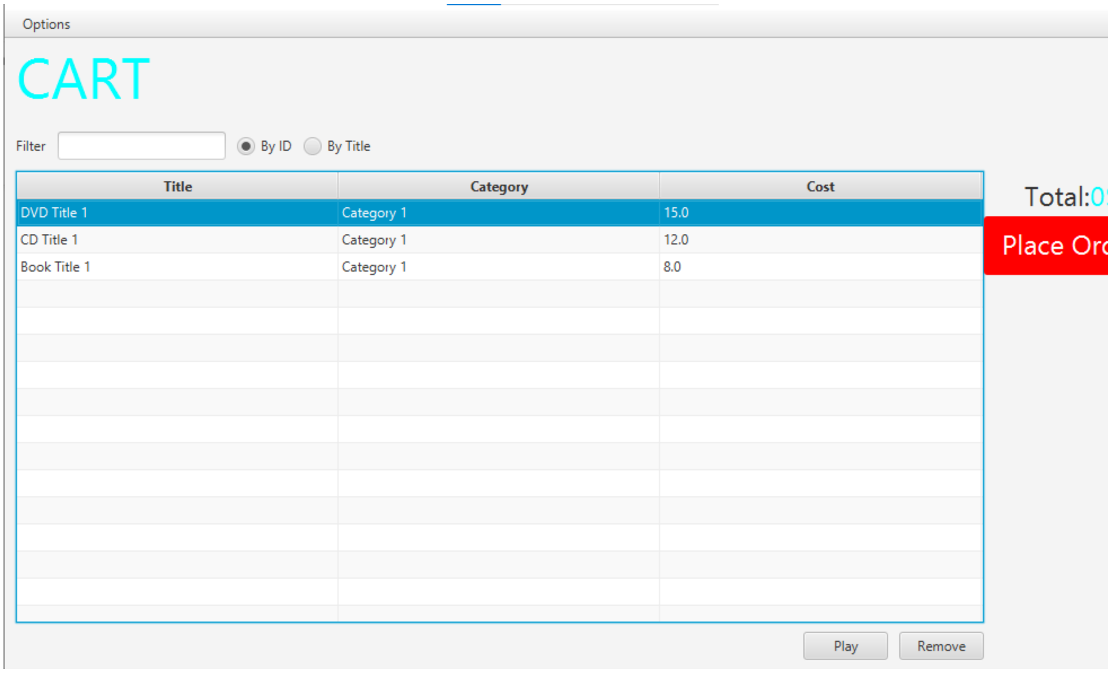
- Kết quả:



Title	Category	Cost
DVD Title 1	Category 1	15.0
CD Title 1	Category 1	12.0
Book Title 1	Category 1	8.0

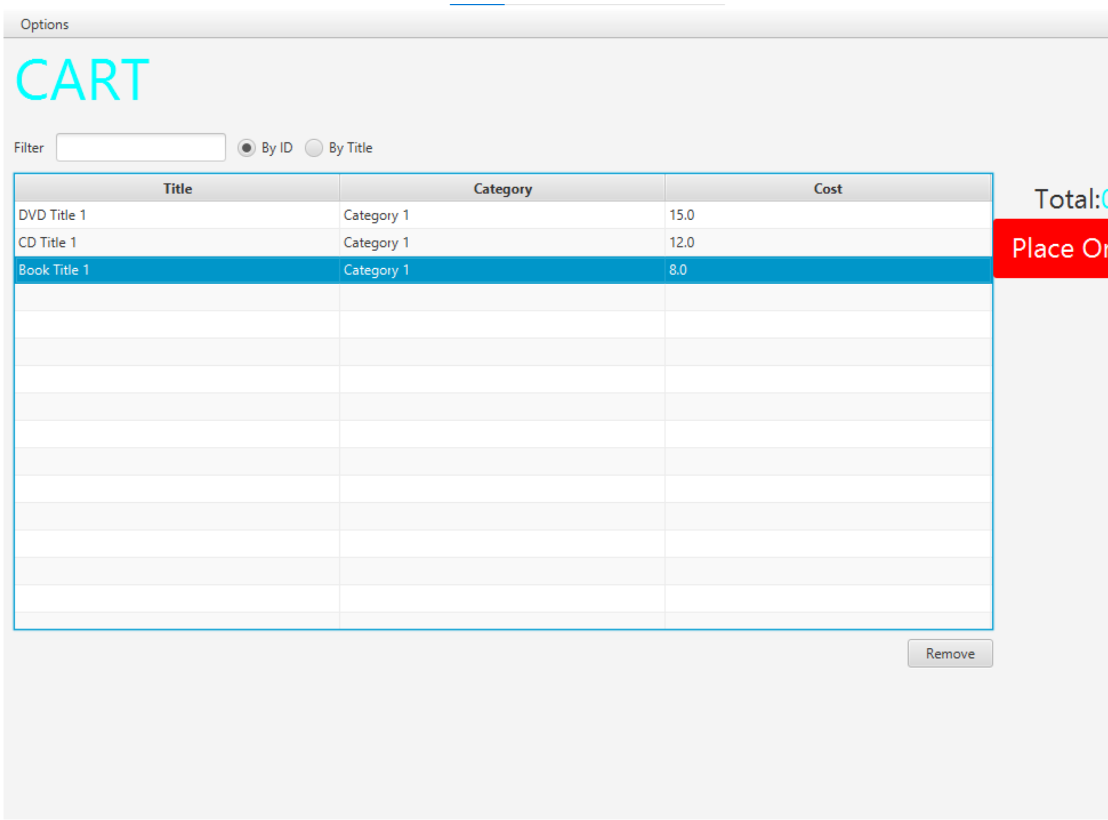
8. Updating buttons based on selected item in **`TableView`** – **`ChangeListener`**

- Khi chọn DVD hoặc CD thì có hiện Play& Remove:



Title	Category	Cost
DVD Title 1	Category 1	15.0
CD Title 1	Category 1	12.0
Book Title 1	Category 1	8.0

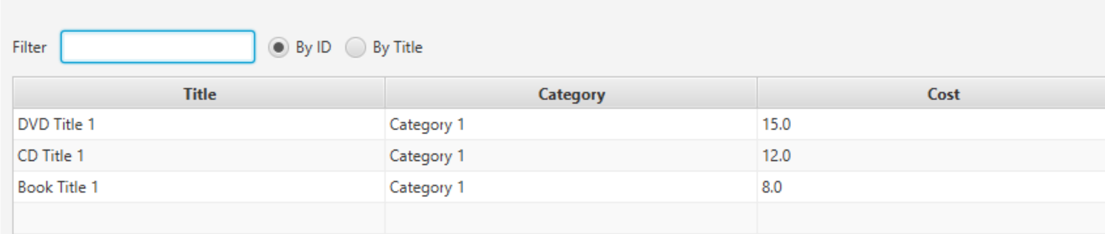
- Khi chọn Book:



Title	Category	Cost
DVD Title 1	Category 1	15.0
CD Title 1	Category 1	12.0
Book Title 1	Category 1	8.0

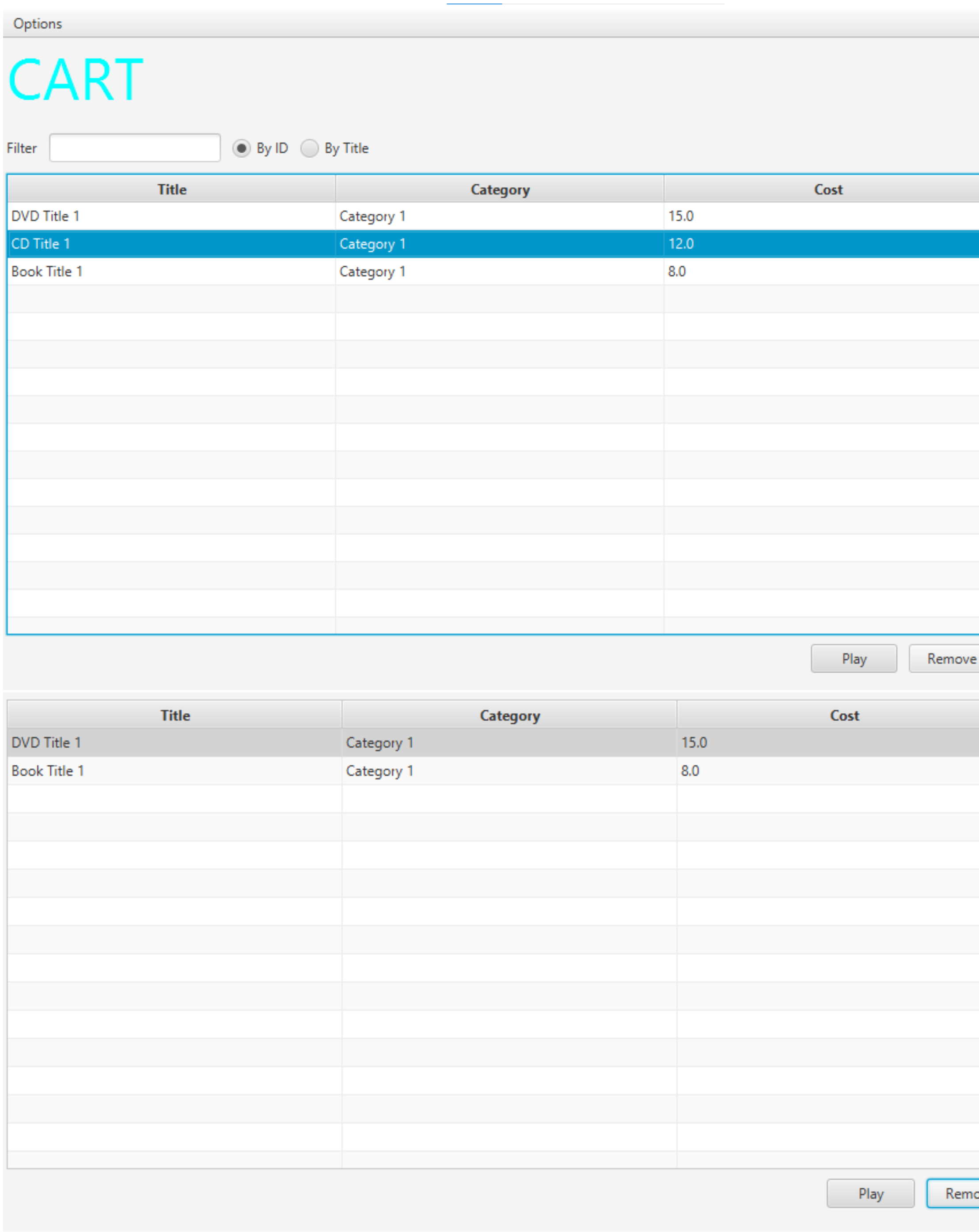
9. Deleting a media

- Ban đầu có 3 Media:



Title	Category	Cost
DVD Title 1	Category 1	15.0
CD Title 1	Category 1	12.0
Book Title 1	Category 1	8.0

- Ta xóa đi CD Title1:



CART

Filter ● By ID ○ By Title

Title	Category	Cost
DVD Title 1	Category 1	15.0
CD Title 1	Category 1	12.0
Book Title 1	Category 1	8.0

Title	Category	Cost
DVD Title 1	Category 1	15.0
Book Title 1	Category 1	8.0

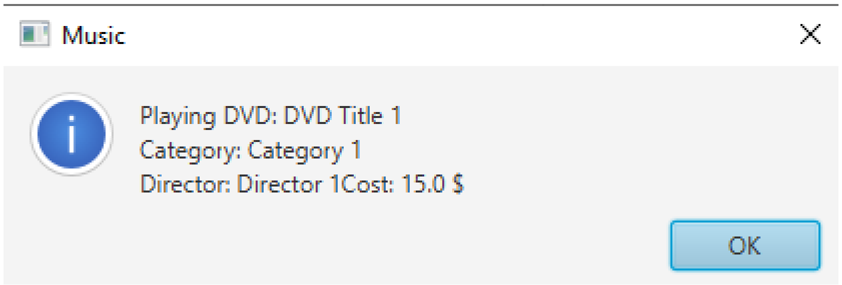
10.Filter items in cart – `FilteredList`

11.Complete the Aims GUI application

1. Với playButton, ta dùng Alert để in cửa sổ phát nhạc, kết hợp với nội dung từ hàm Play trong Playable

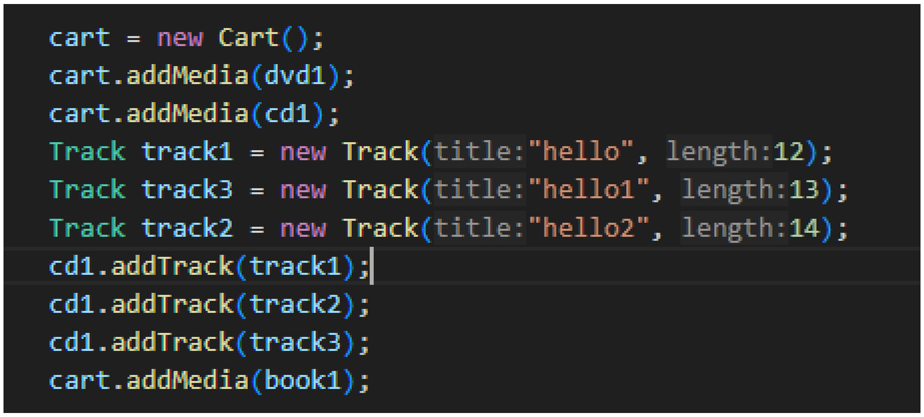
```
@FXML
    void btnPlayPressed(ActionEvent event) {
        Media media = tblMedia.getSelectionModel().getSelectedItem();
        if (media instanceof Playable) {
            showAlert("Playing", ((Playable) media).play());
        }
    }

    private void showAlert(String title, String content) {
        Alert alert = new Alert(Alert.AlertType.INFORMATION);
        alert.setTitle(title);
        alert.setHeaderText(null);
        alert.setContentText(content);
        alert.showAndWait();
    }
```

- Kết quả:

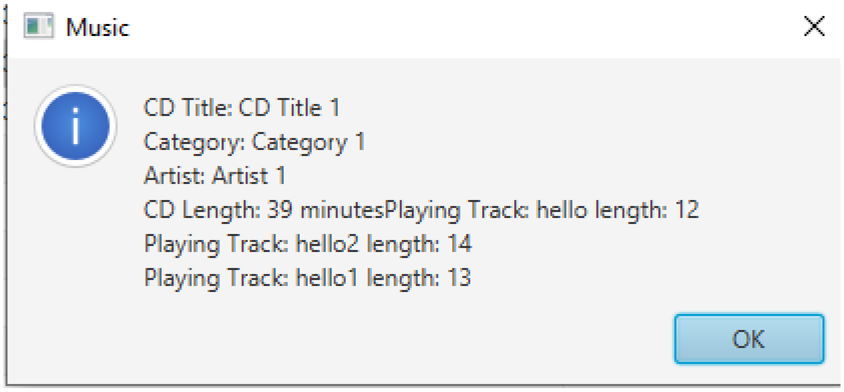


Playing DVD: DVD Title 1
Category: Category 1
Director: Director 1Cost: 15.0 $

- Thêm CD1 3 Track:



```
cart = new Cart();
cart.addMedia(dvd1);
cart.addMedia(cd1);
Track track1 = new Track(title:"hello", length:12);
Track track3 = new Track(title:"hello1", length:13);
Track track2 = new Track(title:"hello2", length:14);
cd1.addTrack(track1);
cd1.addTrack(track2);
cd1.addTrack(track3);
cart.addMedia(book1);
```

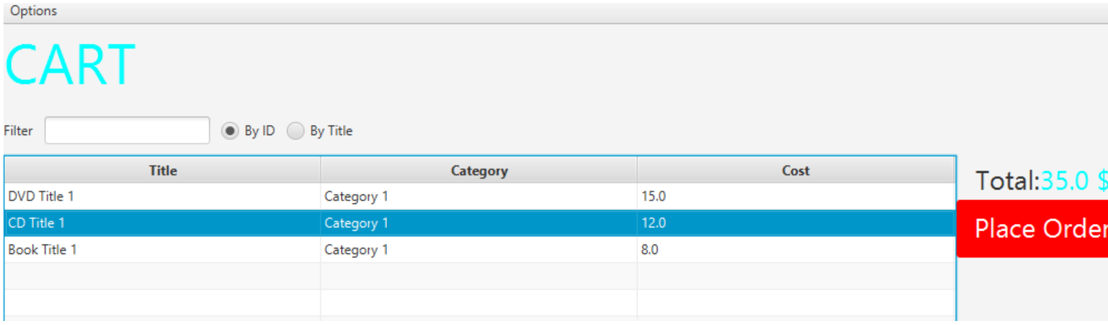


CD Title: CD Title 1
Category: Category 1
Artist: Artist 1
CD Length: 39 minutesPlaying Track: hello length: 12
Playing Track: hello2 length: 14
Playing Track: hello1 length: 13

2. Với Label:Total cost
    - Hàm để đặt lại Total Cost:

```
@FXML
    private Label totalcost;



    private void updateTotalCost() {
        float total = cart.totalCost();
        totalcost.setText(  total + " $");
    }
```

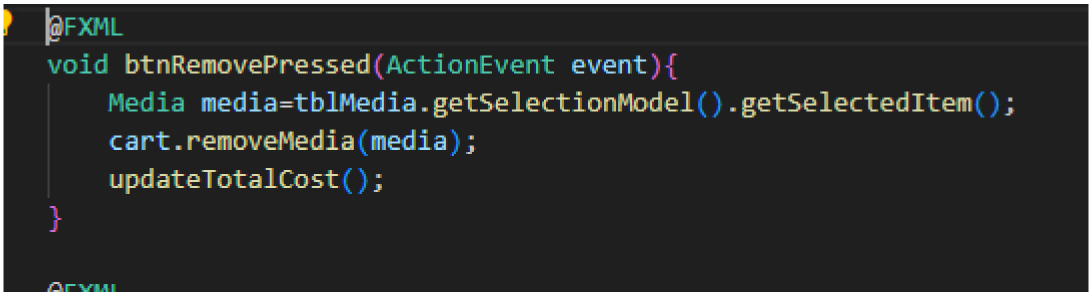
- Ở hàm initialize, ta gọi updateTotalCost



Title	Category	Cost
DVD Title 1	Category 1	15.0
CD Title 1	Category 1	12.0
Book Title 1	Category 1	8.0

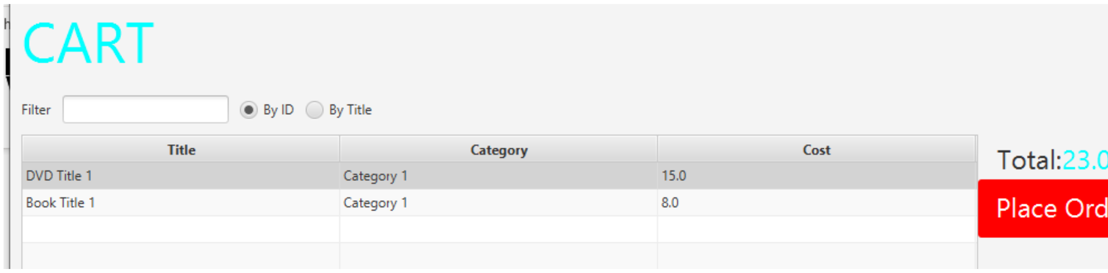
Total:35.0 $

- Trong hàm xử lý với Add và Remove, ta đều gọi đến updateTotalCost::



```
@FXML
void btnRemovePressed(ActionEvent event){
    Media media=tblMedia.getSelectionModel().getSelectedItem();
    cart.removeMedia(media);
    updateTotalCost();
}

@FXML
```

- Add, ta sẽ xử lý sau ;
- Ta xóa CD Title1 đi, và được:

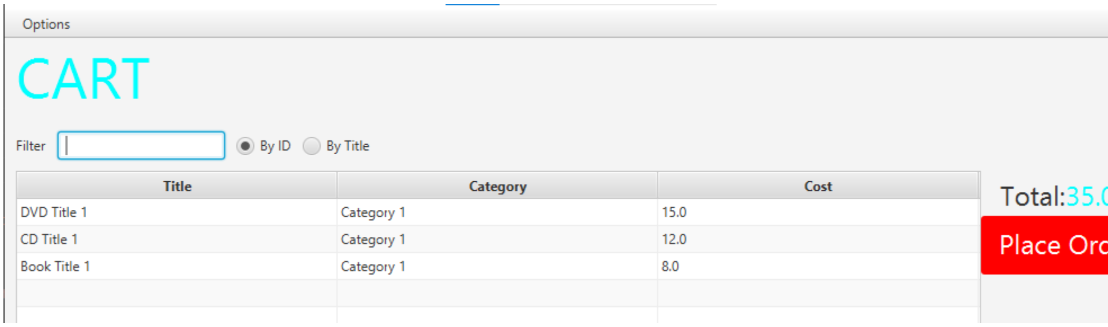


Title	Category	Cost
DVD Title 1	Category 1	15.0
Book Title 1	Category 1	8.0

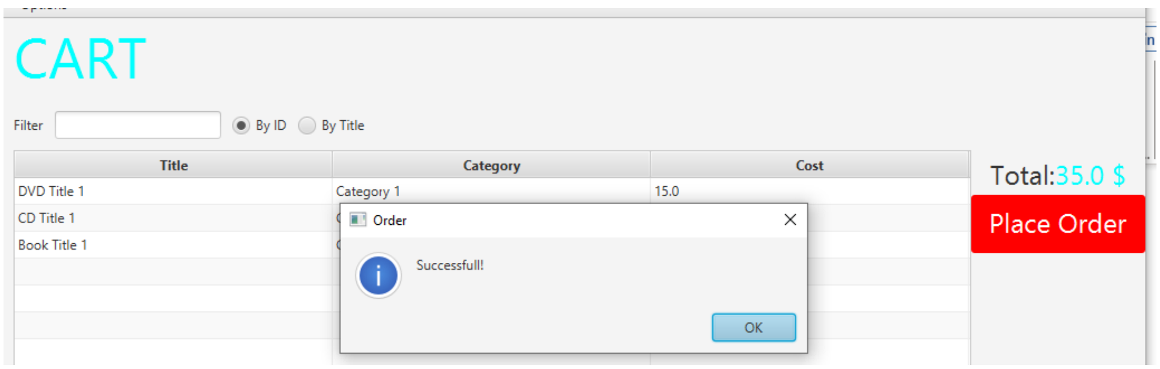
3. Với Place Order:

```
    @FXML
        void btnPlaceOrderPressed(ActionEvent event) {
            showAlert("Order", "Successfull!");
            cart.getItemOrdered().clear();
            updateTotalCost();
        }
```

- Kết quả:



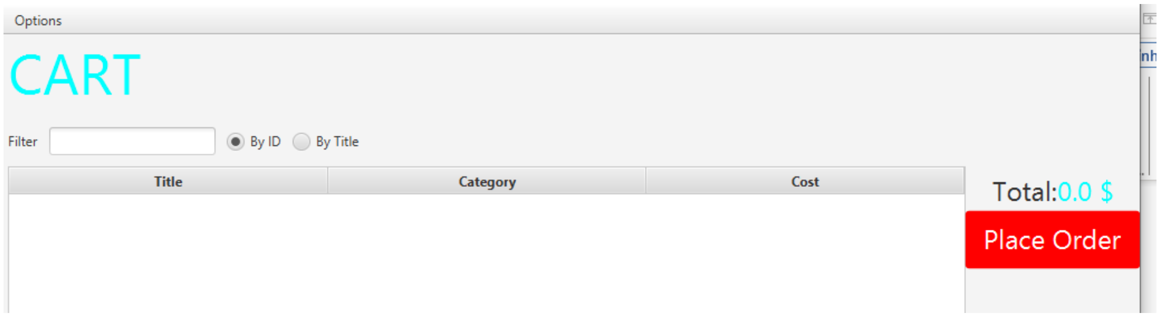
Title	Category	Cost
DVD Title 1	Category 1	15.0
CD Title 1	Category 1	12.0
Book Title 1	Category 1	8.0



Title	Category	Cost
DVD Title 1	Category 1	15.0
CD Title 1		
Book Title 1		

Order

Successfull!



Title	Category	Cost

Phạm Minh Trường- 20215292
Báo cáo thực hành oop lab 05

Tiếp tục trên màn hình Store screen: khi bấm add dvd thì tạo ra 1 scene mới được quản lý bởi DVDController,CDControler,AddDVD,…

- Ví dụ với DVD:

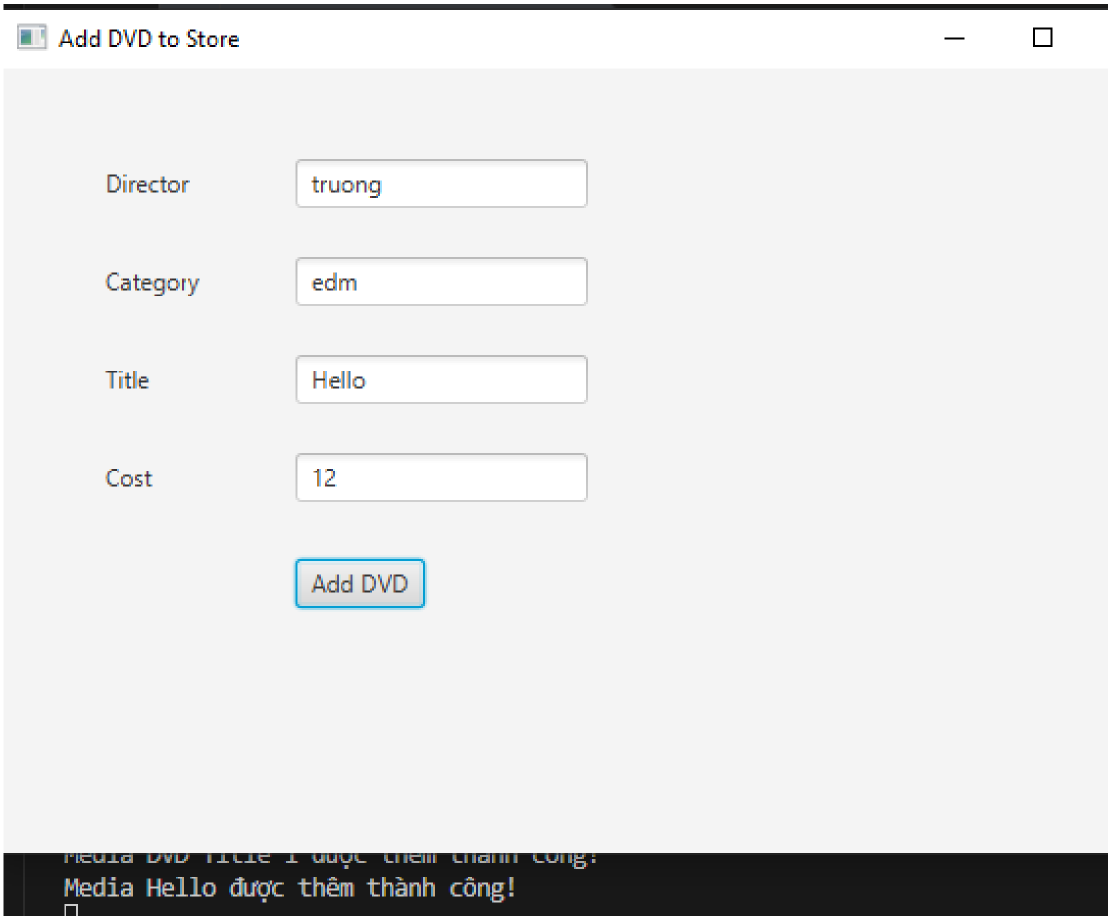
```
package hust.soict.dsai.aims.screen;

import javafx.event.ActionEvent;
import javafx.fxml.FXML;
import javafx.scene.control.TextField;
import hust.soict.dsai.aims.media.DigitalVideoDisc;
import hust.soict.dsai.aims.store.Store;

public class DVDController {
    private Store store;

    public DVDController(Store store) {
        super();
        this.store = store;
    }

    @FXML
    private TextField categoryTextField;

    @FXML
    private TextField costTextField;

    @FXML
    private TextField directorTextField;

    @FXML
    private void initialize() {

    }
    @FXML
    private TextField titleTextField;

    @FXML
    private void handleAddDVD(ActionEvent event) {
        String director = directorTextField.getText();
        String category = categoryTextField.getText();
        String title = titleTextField.getText();
        float cost = Float.parseFloat(costTextField.getText());

        DigitalVideoDisc dvd = new DigitalVideoDisc(director, category, title,
cost);
```

```
      store.addMedia(dvd);
    }
}
```

- Class AddDigitalVideoDiscToStoreScreen:

```
package hust.soict.dsai.aims.screen;

import javafx.application.Application;
import javafx.fxml.FXMLLoader;
import javafx.scene.Parent;
import javafx.scene.Scene;
import javafx.stage.Stage;
import hust.soict.dsai.aims.media.DigitalVideoDisc;
import hust.soict.dsai.aims.store.Store;

public class AddDigitalVideoDiscToStoreScreen extends Application {
    private static Store store;
    public AddDigitalVideoDiscToStoreScreen(){}
    public AddDigitalVideoDiscToStoreScreen(Store store) {
        this.store = store;
    }

    @Override
    public void start(Stage primaryStage) throws Exception {
        FXMLLoader loader = new
FXMLLoader(getClass().getResource("AddDigitalVideoDiscToStoreScreen
.fxml"));
        DVDController controller = new DVDController(store);
        loader.setController(controller);
        Parent root = loader.load();

        Scene scene = new Scene(root, 600, 400);
        primaryStage.setTitle("Add DVD to Store");
        primaryStage.setScene(scene);
        primaryStage.show();
    }

    public void showGUI() {
        launch();
    }

    public static void main(String[] args) {
        Store store = new Store();
        DigitalVideoDisc dvd1 = new DigitalVideoDisc("Director 1",
"Category 1", "DVD Title 1", 15.0f);
        store.addMedia(dvd1);
        AddDigitalVideoDiscToStoreScreen a=new
AddDigitalVideoDiscToStoreScreen(store);
        a.showGUI();
    }
}
```

- Kết quả:



Director: truong

Category: edm

Title: Hello

Cost: 12

```
Media DVD Title 1 được thêm thành công!
Media Hello được thêm thành công!
```