

**Báo cáo Thực hành Lập trình hướng đối tượng
Lab 2**

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I. Đề bài
Thiết kế hệ thống mới cho dự án AIMS.

II. Yêu cầu bài toán

1. Đối với người mua hàng

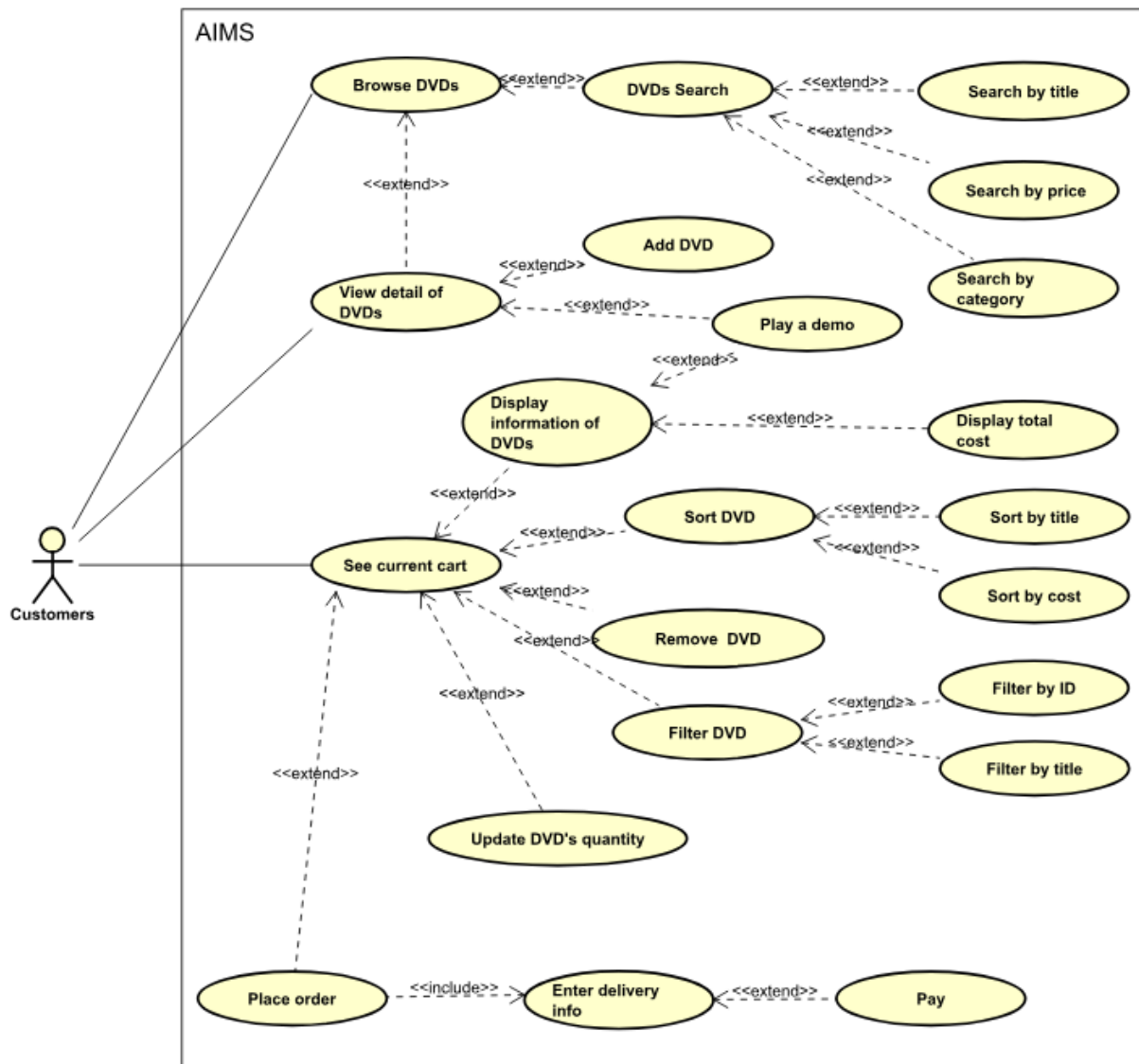
- Duyệt danh sách các DVD có sẵn
- Tìm kiếm DVD theo tiêu đề, danh mục, giá cả
- Xem thông tin chi tiết của 1 DVD
- Thêm DVD vào giỏ hàng
- Xem giỏ hàng
- Sắp xếp DVD theo tiêu đề hoặc chi phí
- Cập nhật số lượng DVD trong giỏ hàng
- Đặt hàng

2. Đối với người quản lý cửa hàng

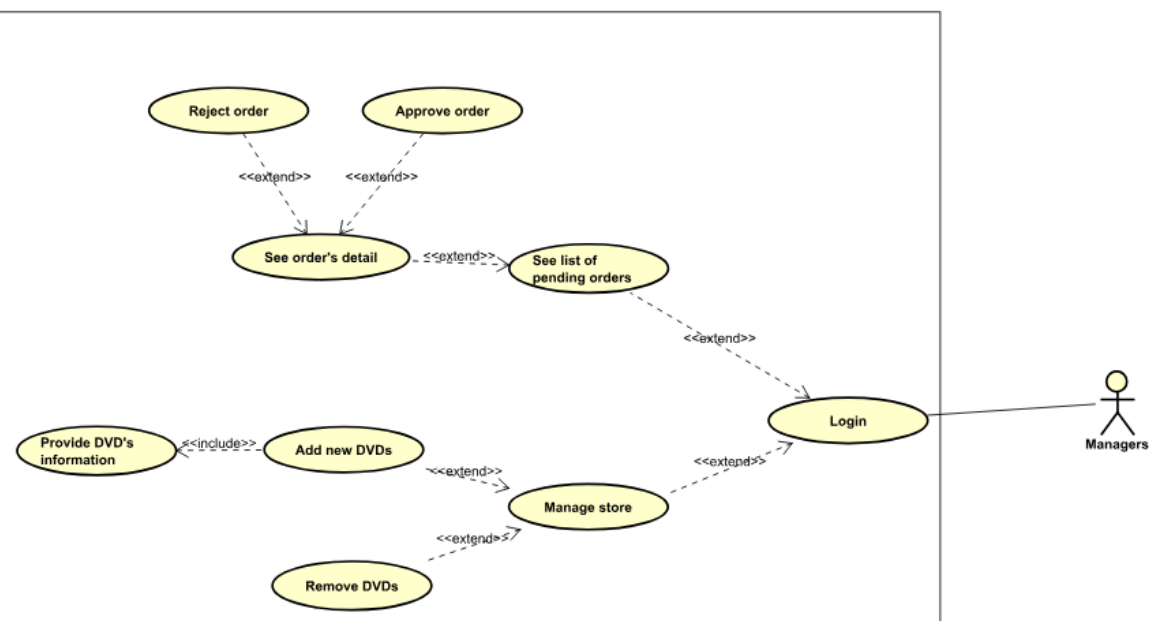
- Đăng nhập, kiểm tra quyền
- Xem danh sách các đơn hàng đang được xử lý
- Xem chi tiết đơn hàng, chấp nhận, từ chối đơn hàng
- Thêm mới, xóa danh sách sản phẩm

III. Use case diagram

1. Use case diagram với người mua hàng



2. Use case diagram với người quản lý cửa hàng



IV. Class diagram

1. Các đối tượng

1.1. AIMS (đối tượng chính)

Phương thức: void()

1.2. Cart

Thuộc tính:

- qtyOrdered
- MAX_NUMBER_ORDER: int
- itemOrdered: DigitalVideoDisc[]

Phương thức:

- addDigitalVideoDisc(disc: DigitalVideoDisc): int
- totalCost(): float
- removeDigitalVideoDisc(disc: DigitalVideoDisc): int

1.3. DigitalVideoDisc

Thuộc tính:

- title: String
- category: String
- director: String
- length: int
- cost: float

Phương thức:

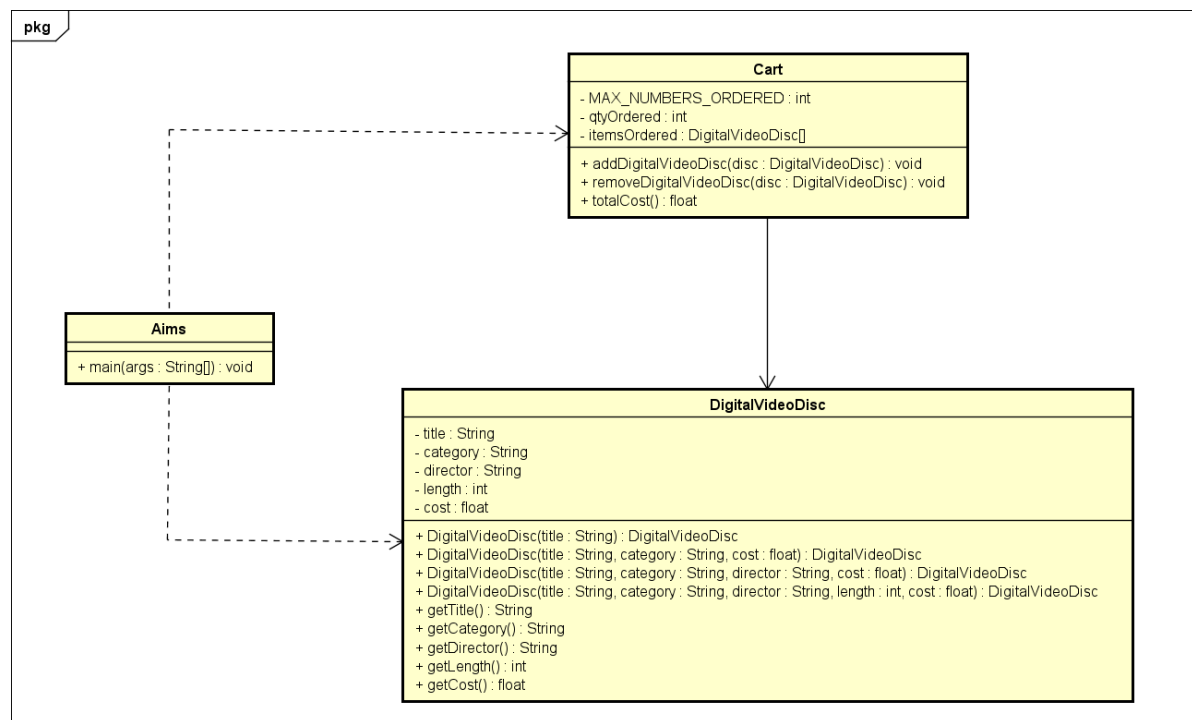
- DigitalVideoDisc(title: String): DigitalVideoDisc
- DigitalVideoDisc(title: String, category: String): DigitalVideoDisc
- DigitalVideoDisc(title: String, category: String, cost: float):

DigitalVideoDisc

- DigitalVideoDisc(title: String, category: String, length: int, cost: float): DigitalVideoDisc

- getTitle(): String
- getCategory(): String

- getDirector(): String
- getLength(): int
- getCost(): float



V. Source code

1. DigitalVideoDisc.java

```

package AIMS;

public class DigitalVideoDisc {
    private String title;
    private String category;
    private String director;
    private int length;
    private float cost;

    // Constructor by title
    public DigitalVideoDisc(String title) {
        this.title = title;
    }

    // Constructor by title, category and cost
    public DigitalVideoDisc(String title, String category, float cost) {
        this.title = title;
        this.category = category;
        this.cost = cost;
    }
  
```

```
}

// Constructor by title, category, director and cost
public DigitalVideoDisc(String title, String category, String director, float
cost) {
    this.title = title;
    this.category = category;
    this.director = director;
    this.cost = cost;
}

// Constructor by by all attributes: title, category, director, length and
cost
public DigitalVideoDisc(String title, String category, String director, int
length, float cost) {
    this.title = title;
    this.category = category;
    this.director = director;
    this.length = length;
    this.cost = cost;
}

public String getTitle() {
    return title;
}

public String getCategory() {
    return category;
}

public String getDirector() {
    return director;
}

public int getLength() {
    return length;
}

public float getCost() {
    return cost;
}
}
```

Câu hỏi: Nếu bạn tạo một constructor method để xây dựng 1 đĩa DVD theo tiêu đề sau đó tạo một constructor method để xây dựng 1 đĩa DVD theo danh mục. Java có cho phép bạn làm điều này không?

Trả lời: Không, vì 2 constructor methods này không có sự khác biệt về kiểu dữ liệu hay số lượng tham số nên không thể thực hiện method overloading.

2. Cart.java

```
package AIMS;

public class Cart {
    public static final int MAX_NUMBERS_ORDERED = 20;
    private DigitalVideoDisc itemsOrdered[] = new
DigitalVideoDisc[MAX_NUMBERS_ORDERED];
    private int qtyOrdered = 0;

    public void addDigitalVideoDisc(DigitalVideoDisc disc) {
        itemsOrdered[qtyOrdered] = disc;
        qtyOrdered += 1;
        System.out.println("The disc " + disc.getTitle() + " has been
added!");

        if(qtyOrdered == MAX_NUMBERS_ORDERED) {
            System.out.println("The cart is almost full!");
            return;
        }
    }

    public void removeDigitalVideoDisc(DigitalVideoDisc disc) {
        int discPosition = -1;
        if(itemsOrdered[0] == null) {
            System.out.println("Your cart is empty!");
            return;
        }
        for(int i = 0; i < MAX_NUMBERS_ORDERED; i++) {
            if(itemsOrdered[i].equals(disc)) {
                discPosition = i;
                break;
            }
        }

        if(discPosition == -1) {
            System.out.println("Could not find the searched disc in cart!");
        }
    }
}
```

```

        for(int i = discPosition; i < MAX_NUMBERS_ORDERED; i++) {
            if(i == MAX_NUMBERS_ORDERED-1) {
                itemsOrdered[i] = null;
            }
            else itemsOrdered[i] = itemsOrdered[i+1];
        }
        qtyOrdered -= 1;
        System.out.println("The disc " + disc.getTitle() + " has been
remove!");
    }

    public float totalCost() {
        float result = 0f;
        for (int i = 0; i < qtyOrdered; i++) {
            result += itemsOrdered[i].getCost();
        }
        return result;
    }
}

```

3. Aims.java

```

package AIMS;

public class Aims {
    public static void main (String [] args) {

        // Create a new cart
        Cart anOrder = new Cart();

        // Create new DVD objects and add them to the cart
        DigitalVideoDisc dvd1 = new DigitalVideoDisc("The Lion King",
"Animation", "Roger Allers", 87, 19.95f);
        anOrder.addDigitalVideoDisc(dvd1);

        DigitalVideoDisc dvd2 = new DigitalVideoDisc("Star Wars", "Science
Fiction", "George Lucas", 87, 24.95f);
        anOrder.addDigitalVideoDisc(dvd2);

        DigitalVideoDisc dvd3 = new DigitalVideoDisc("Aladin", "Animation",
18.99f);
        anOrder.addDigitalVideoDisc(dvd3);
    }
}

```

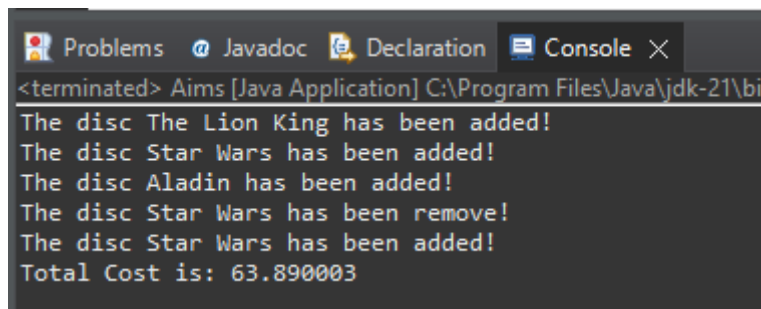


```
// Test remove and add
anOrder.removeDigitalVideoDisc(dvd2);
anOrder.addDigitalVideoDisc(dvd2);

// Print total cost of the items in the cart
System.out.println("Total Cost is: " + anOrder.totalCost());
}
}
```

VI. Demo chương trình

Chạy chương trình như mã nguồn ở phần V



```
<terminated> Aims [Java Application] C:\Program Files\Java\jdk-21\bin
The disc The Lion King has been added!
The disc Star Wars has been added!
The disc Aladin has been added!
The disc Star Wars has been remove!
The disc Star Wars has been added!
Total Cost is: 63.890003
```

Xóa đĩa dvd3

```

1 package AIMS;
2
3 public class Aims {
4     public static void main (String [] args) {
5
6         // Create a new cart
7         Cart anOrder = new Cart();
8
9         // Create new DVD objects and add them to the cart
10        DigitalVideoDisc dvd1 = new DigitalVideoDisc("The Lion King", "Animation", "Roger Allers", 87, 19.95f);
11        anOrder.addDigitalVideoDisc(dvd1);
12
13        DigitalVideoDisc dvd2 = new DigitalVideoDisc("Star Wars", "Science Fiction", "George Lucas", 87, 24.95f);
14        anOrder.addDigitalVideoDisc(dvd2);
15
16        DigitalVideoDisc dvd3 = new DigitalVideoDisc("Aladin", "Animation", 18.99f);
17        anOrder.addDigitalVideoDisc(dvd3);
18
19        // Test remove and add
20        anOrder.removeDigitalVideoDisc(dvd2);
21        anOrder.addDigitalVideoDisc(dvd2);
22        anOrder.removeDigitalVideoDisc(dvd3);
23
24        // Print total cost of the items in the cart
25        System.out.println("Total Cost is: " + anOrder.totalCost());
26    }
27 }

```

Problems Javadoc Declaration Console X

<terminated> Aims [Java Application] C:\Program Files\Java\jdk-21\bin\javaw.exe (27 Oct 2024, 11:32:41 am – 11:32:41 am) [pid: 20560]

The disc The Lion King has been added!
The disc Star Wars has been added!
The disc Aladin has been added!
The disc Star Wars has been remove!
The disc Star Wars has been added!
The disc Aladin has been remove!
Total Cost is: 44.9

Xóa đĩa dvd1 và dvd2

```

1 package AIMS;
2
3 public class Aims {
4     public static void main (String [] args) {
5
6         // Create a new cart
7         Cart anOrder = new Cart();
8
9         // Create new DVD objects and add them to the cart
10        DigitalVideoDisc dvd1 = new DigitalVideoDisc("The Lion King", "Animation", "Roger Allers", 87, 19.95f);
11        anOrder.addDigitalVideoDisc(dvd1);
12
13        DigitalVideoDisc dvd2 = new DigitalVideoDisc("Star Wars", "Science Fiction", "George Lucas", 87, 24.95f);
14        anOrder.addDigitalVideoDisc(dvd2);
15
16        DigitalVideoDisc dvd3 = new DigitalVideoDisc("Aladin", "Animation", 18.99f);
17        anOrder.addDigitalVideoDisc(dvd3);
18
19        // Test remove and add
20        anOrder.removeDigitalVideoDisc(dvd2);
21        anOrder.addDigitalVideoDisc(dvd2);
22        anOrder.removeDigitalVideoDisc(dvd3);
23        anOrder.removeDigitalVideoDisc(dvd1);
24        anOrder.removeDigitalVideoDisc(dvd2);
25
26        // Print total cost of the items in the cart
27        System.out.println("Total Cost is: " + anOrder.totalCost());
28    }
29 }

```

Problems Javadoc Declaration Console X

<terminated> Aims [Java Application] C:\Program Files\Java\jdk-21\bin\javaw.exe (27 Oct 2024, 11:39:37 am – 11:39:37 am) [pid: 24660]

The disc The Lion King has been added!
The disc Star Wars has been added!
The disc Aladin has been added!
The disc Star Wars has been remove!
The disc Star Wars has been added!
The disc Aladin has been remove!
The disc The Lion King has been remove!
The disc Star Wars has been remove!
Total Cost is: 0.0

Xóa thêm dvd1

```
1 package AIMS;
2
3 public class Aims {
4     public static void main (String [] args) {
5
6         // Create a new cart
7         Cart anOrder = new Cart();
8
9         // Create new DVD objects and add them to the cart
10        DigitalVideoDisc dvd1 = new DigitalVideoDisc("The Lion King", "Animation", "Roger Allers", 87, 19.95f);
11        anOrder.addDigitalVideoDisc(dvd1);
12
13        DigitalVideoDisc dvd2 = new DigitalVideoDisc("Star Wars", "Science Fiction", "George Lucas", 87, 24.95f);
14        anOrder.addDigitalVideoDisc(dvd2);
15
16        DigitalVideoDisc dvd3 = new DigitalVideoDisc("Aladin", "Animation", 18.99f);
17        anOrder.addDigitalVideoDisc(dvd3);
18
19        // Test remove and add
20        anOrder.removeDigitalVideoDisc(dvd2);
21        anOrder.addDigitalVideoDisc(dvd2);
22        anOrder.removeDigitalVideoDisc(dvd3);
23        anOrder.removeDigitalVideoDisc(dvd1);
24        anOrder.removeDigitalVideoDisc(dvd2);
25        anOrder.removeDigitalVideoDisc(dvd1);
26
27        // Print total cost of the items in the cart
28        System.out.println("Total Cost is: " + anOrder.totalCost());
29    }
30 }
```

Problems Javadoc Declaration Console X

<terminated> Aims [Java Application] C:\Program Files\Java\jdk-21\bin\javaw.exe (27 Oct 2024, 11:38:02 am – 11:38:03 am) [pid: 9968]

The disc The Lion King has been added!
The disc Star Wars has been added!
The disc Aladin has been added!
The disc Star Wars has been remove!
The disc Star Wars has been added!
The disc Aladin has been remove!
The disc The Lion King has been remove!
The disc Star Wars has been remove!
Your cart is empty!
Total Cost is: 0.0

Kết quả trên đúng với lý thuyết!

VII. Reading Assignment

