

BÁO CÁO THỰC HÀNH LAB 2

LẬP TRÌNH HƯỚNG ĐỐI TƯỢNG

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1. Bài toán đặt ra

2. Yêu cầu hệ thống

2.1. Đối với Customer:

2.2. Đối với Store Manager:

3. Use Case Diagram

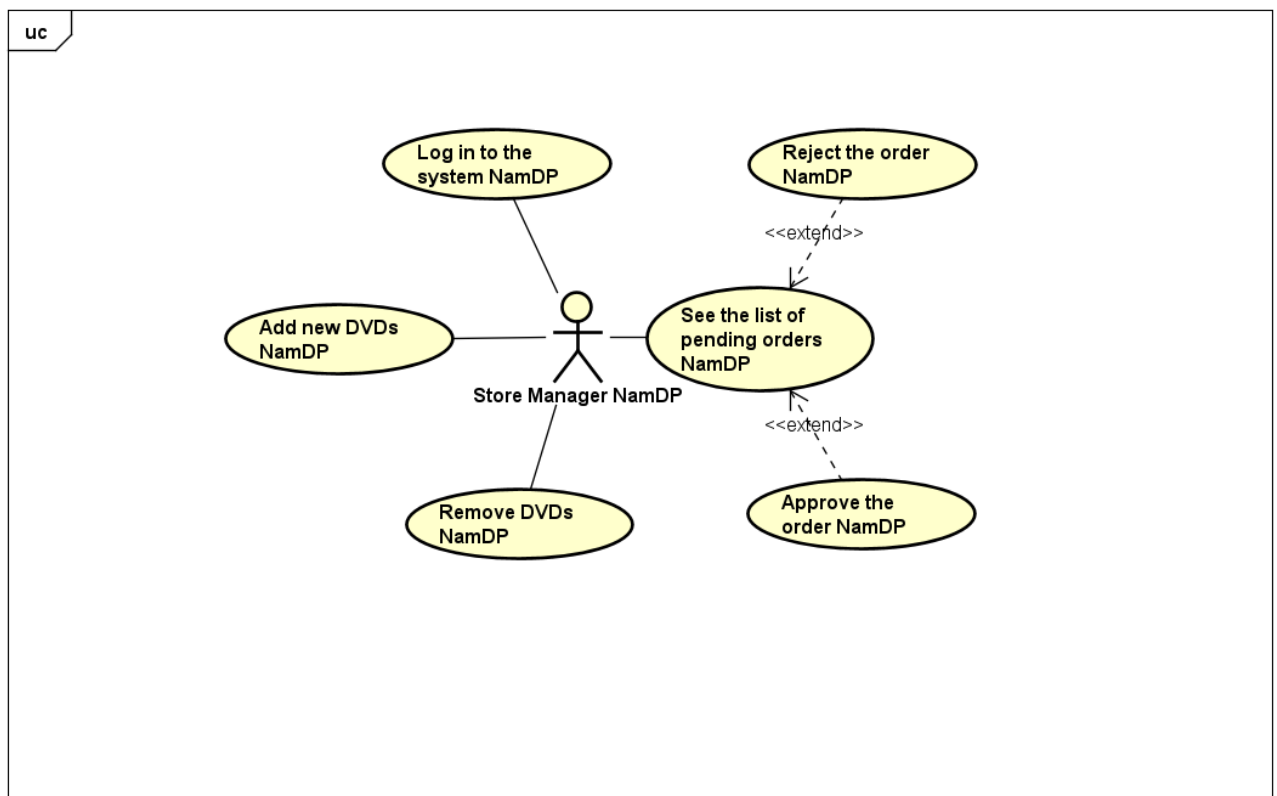
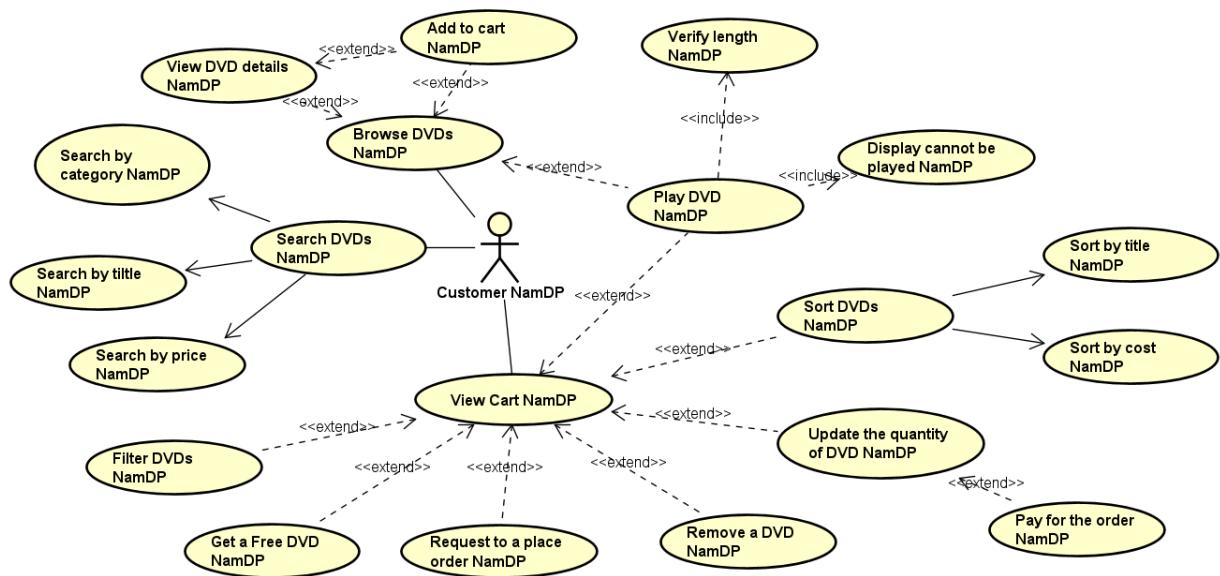


Figure 1: Use Case Diagram

4. Class Diagram

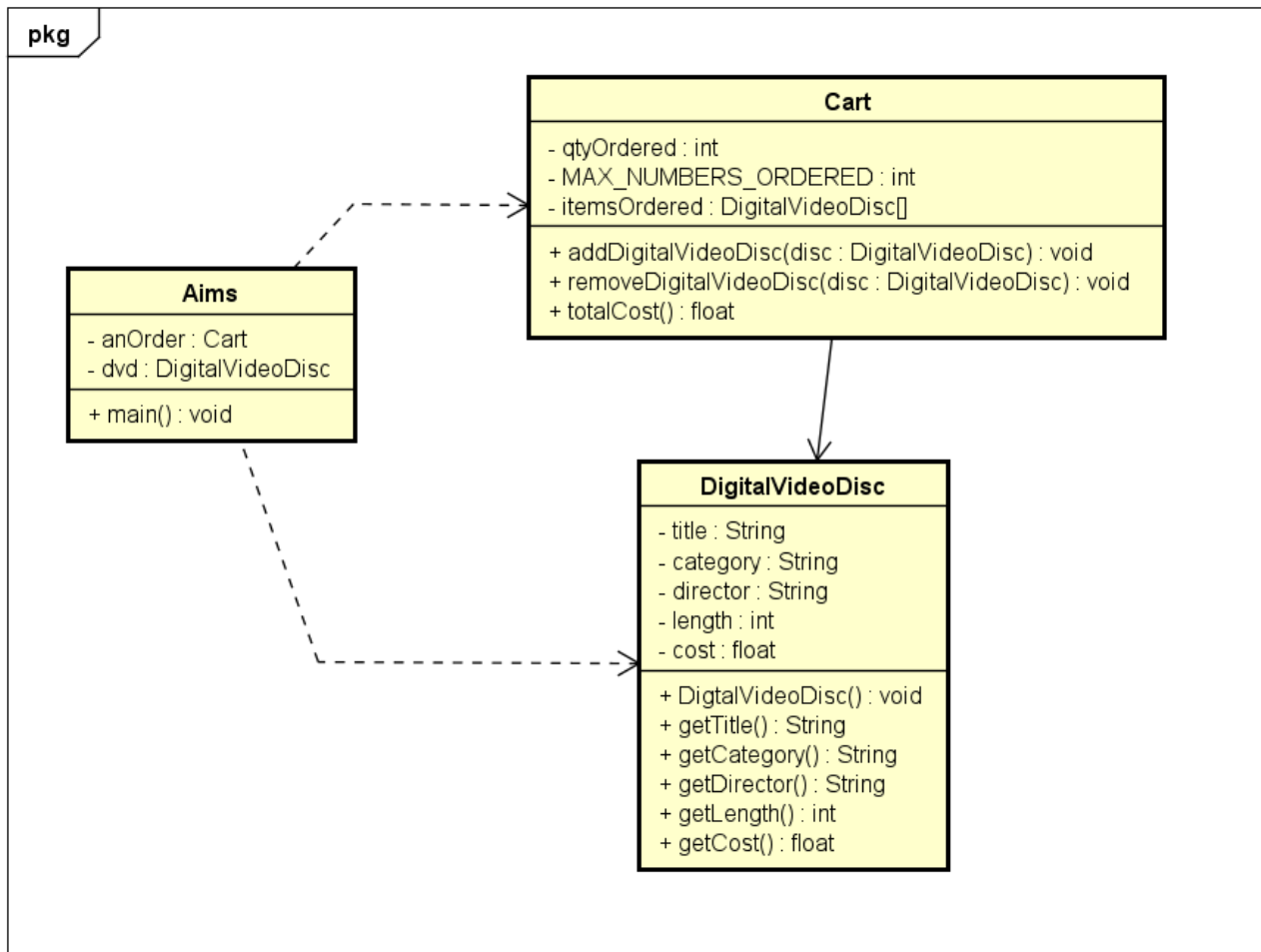
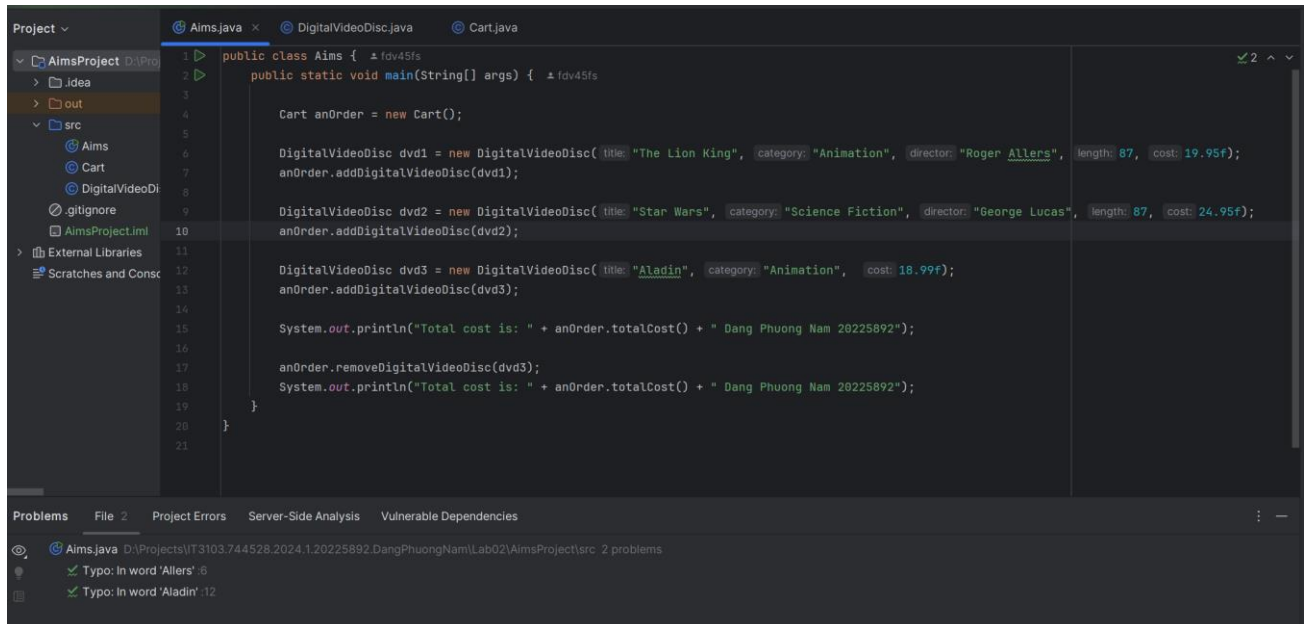


Figure 2: Class Diagram

5. Source Code

5.1. Aims Class



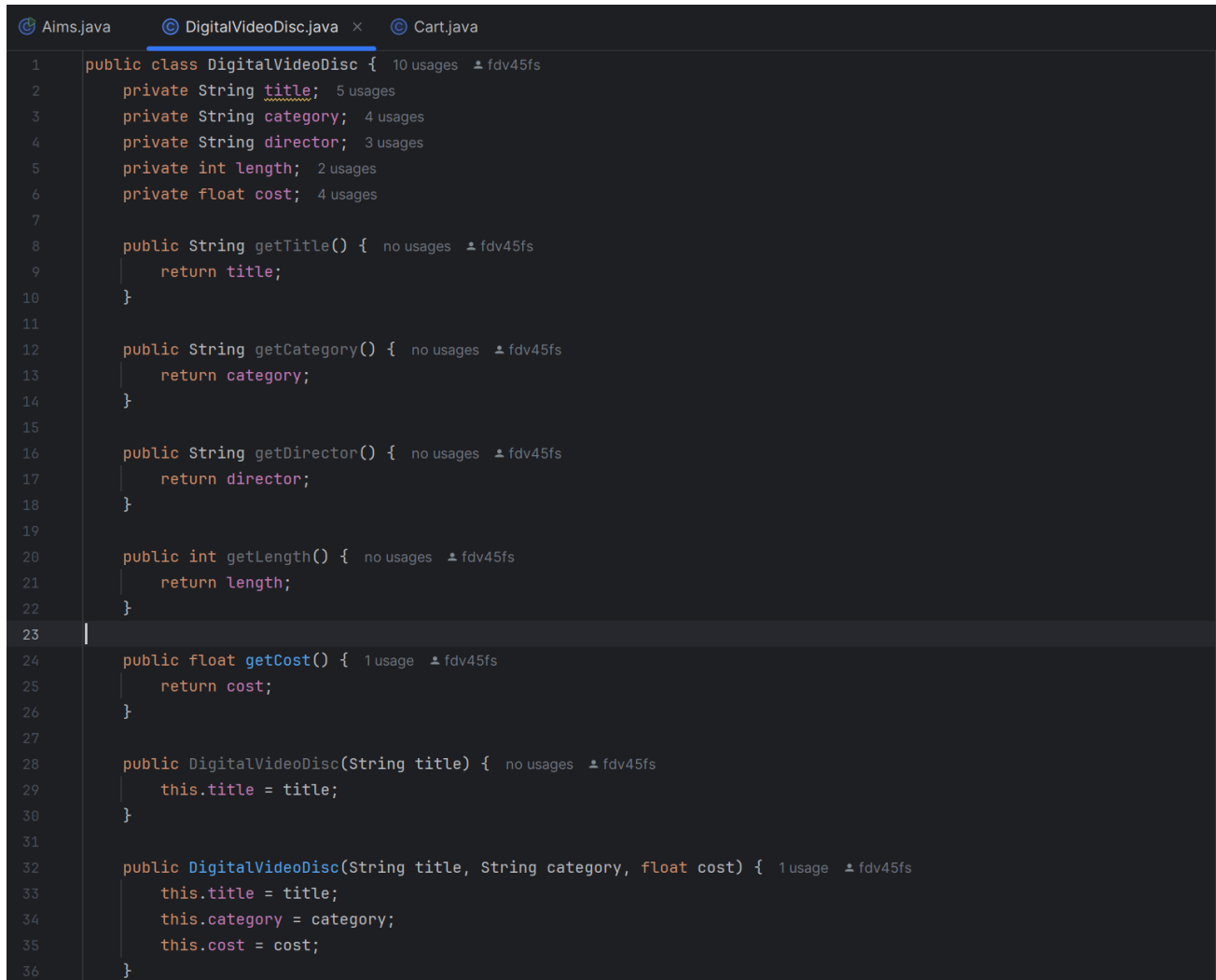
```
1 public class Aims {
2     public static void main(String[] args) {
3
4         Cart anOrder = new Cart();
5
6         DigitalVideoDisc dvd1 = new DigitalVideoDisc( title: "The Lion King", category: "Animation", director: "Roger Allers", length: 87, cost: 19.95f);
7         anOrder.addDigitalVideoDisc(dvd1);
8
9         DigitalVideoDisc dvd2 = new DigitalVideoDisc( title: "Star Wars", category: "Science Fiction", director: "George Lucas", length: 87, cost: 24.95f);
10        anOrder.addDigitalVideoDisc(dvd2);
11
12        DigitalVideoDisc dvd3 = new DigitalVideoDisc( title: "Aladin", category: "Animation", cost: 18.99f);
13        anOrder.addDigitalVideoDisc(dvd3);
14
15        System.out.println("Total cost is: " + anOrder.totalCost() + " Dang Phuong Nam 20225892");
16
17        anOrder.removeDigitalVideoDisc(dvd3);
18        System.out.println("Total cost is: " + anOrder.totalCost() + " Dang Phuong Nam 20225892");
19    }
20 }
21
```

Problems

- Aims.java: Typo: In word 'Allers' :6
- Aims.java: Typo: In word 'Aladin' :12

Figure 3: Aims Class

5.2. DigitalVideoDisc Class



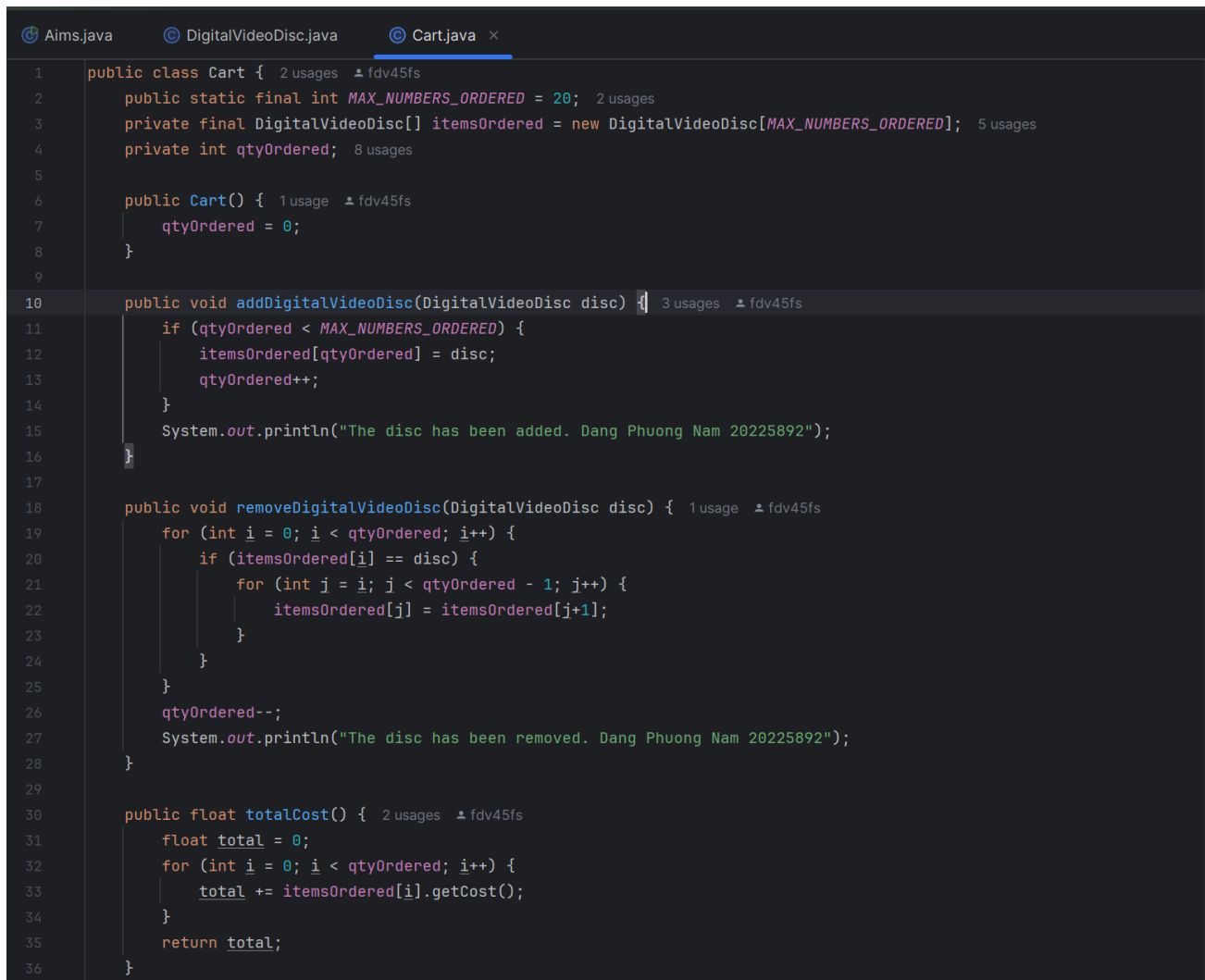
```
1 public class DigitalVideoDisc { 10 usages  ⚡ fdv45fs
2     private String title; 5 usages
3     private String category; 4 usages
4     private String director; 3 usages
5     private int length; 2 usages
6     private float cost; 4 usages
7
8     public String getTitle() { no usages  ⚡ fdv45fs
9         return title;
10    }
11
12    public String getCategory() { no usages  ⚡ fdv45fs
13        return category;
14    }
15
16    public String getDirector() { no usages  ⚡ fdv45fs
17        return director;
18    }
19
20    public int getLength() { no usages  ⚡ fdv45fs
21        return length;
22    }
23
24    public float getCost() { 1 usage  ⚡ fdv45fs
25        return cost;
26    }
27
28    public DigitalVideoDisc(String title) { no usages  ⚡ fdv45fs
29        this.title = title;
30    }
31
32    public DigitalVideoDisc(String title, String category, float cost) { 1 usage  ⚡ fdv45fs
33        this.title = title;
34        this.category = category;
35        this.cost = cost;
36    }
```

Figure 4: DigitalVideoDisc Class 1

```
32     public DigitalVideoDisc(String title, String category, float cost) { 1 usage ± fdv45fs
33         this.title = title;
34         this.category = category;
35         this.cost = cost;
36     }
37
38     public DigitalVideoDisc(String title, String category, String director, float cost) { no usages ± fdv45fs
39         this.title = title;
40         this.category = category;
41         this.director = director;
42         this.cost = cost;
43     }
44
45     public DigitalVideoDisc(String title, String category, String director, int length, float cost) { 2 usages ± fdv45fs
46         this.title = title;
47         this.category = category;
48         this.director = director;
49         this.length = length;
50         this.cost = cost;
51     }
52 }
53
```

Figure 5: DigitalVideoDisc Class 2

5.3. Cart Class



```
1 public class Cart { 2 usages  fdv45fs
2     public static final int MAX_NUMBERS_ORDERED = 20; 2 usages
3     private final DigitalVideoDisc[] itemsOrdered = new DigitalVideoDisc[MAX_NUMBERS_ORDERED]; 5 usages
4     private int qtyOrdered; 8 usages
5
6     public Cart() { 1 usage  fdv45fs
7         qtyOrdered = 0;
8     }
9
10    public void addDigitalVideoDisc(DigitalVideoDisc disc) { 3 usages  fdv45fs
11        if (qtyOrdered < MAX_NUMBERS_ORDERED) {
12            itemsOrdered[qtyOrdered] = disc;
13            qtyOrdered++;
14        }
15        System.out.println("The disc has been added. Dang Phuong Nam 20225892");
16    }
17
18    public void removeDigitalVideoDisc(DigitalVideoDisc disc) { 1 usage  fdv45fs
19        for (int i = 0; i < qtyOrdered; i++) {
20            if (itemsOrdered[i] == disc) {
21                for (int j = i; j < qtyOrdered - 1; j++) {
22                    itemsOrdered[j] = itemsOrdered[j+1];
23                }
24            }
25        }
26        qtyOrdered--;
27        System.out.println("The disc has been removed. Dang Phuong Nam 20225892");
28    }
29
30    public float totalCost() { 2 usages  fdv45fs
31        float total = 0;
32        for (int i = 0; i < qtyOrdered; i++) {
33            total += itemsOrdered[i].getCost();
34        }
35        return total;
36    }
```

Figure 6: Cart Class 1

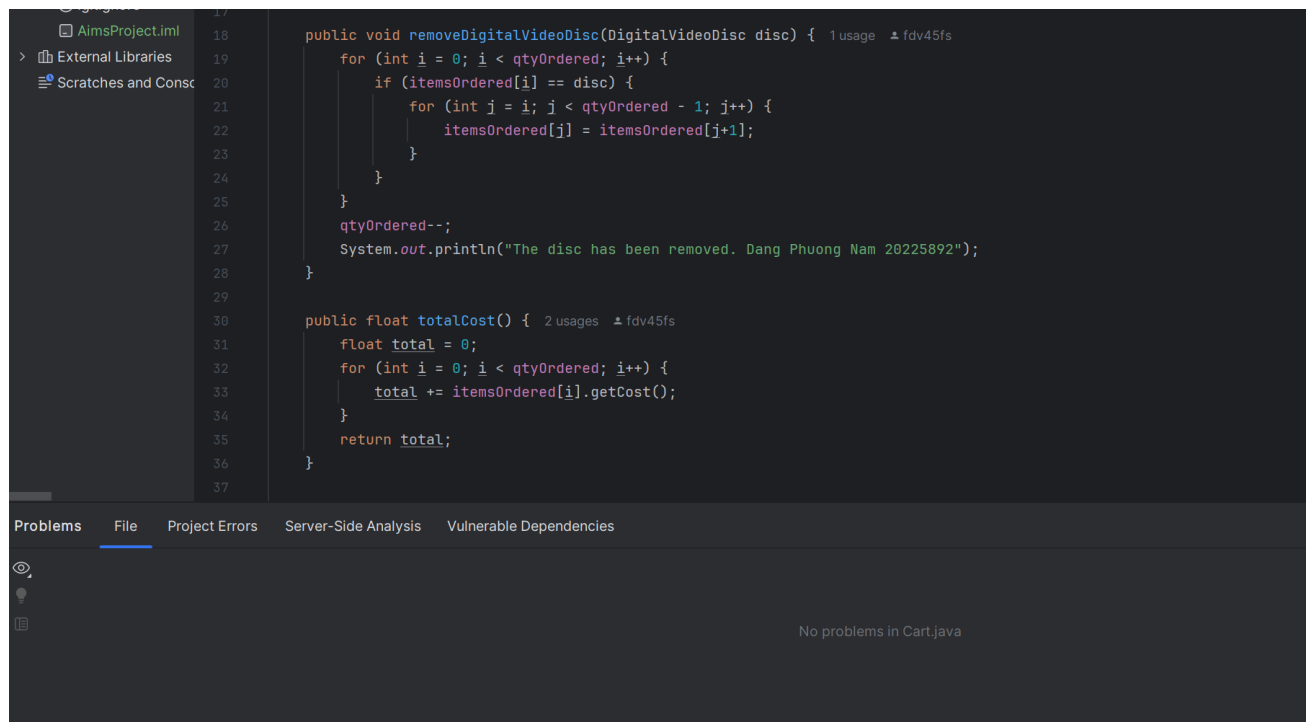
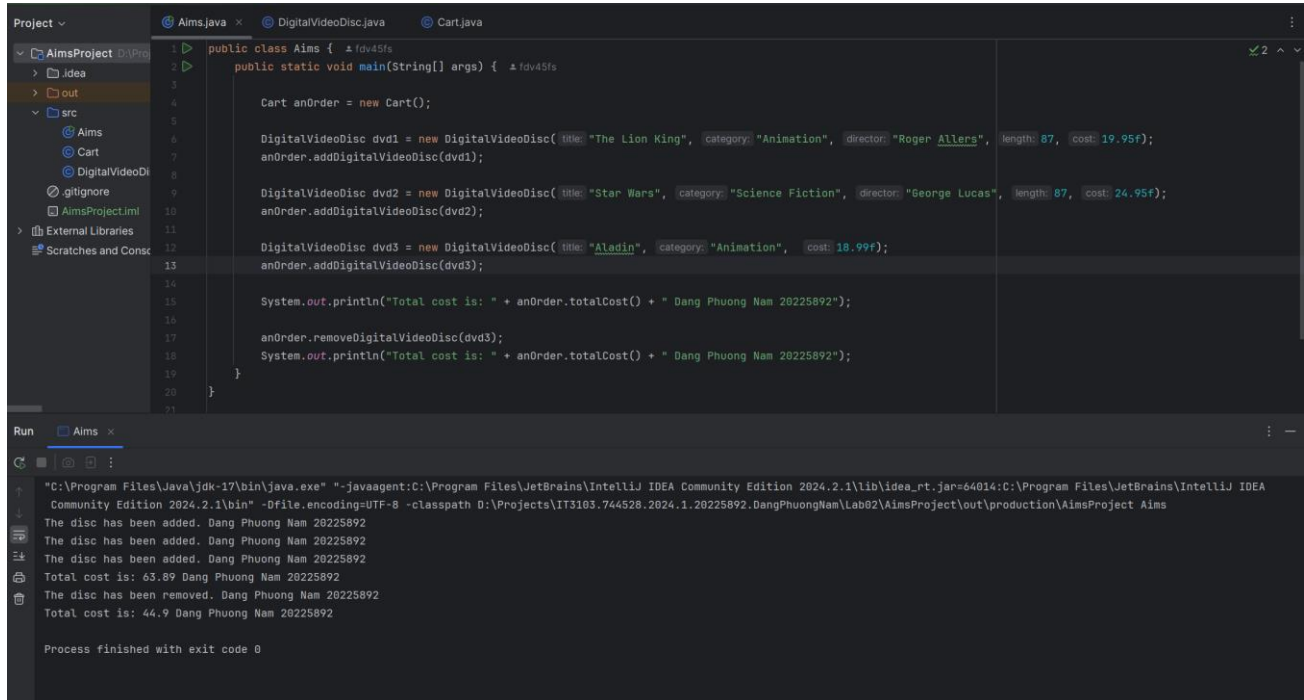


Figure 7: Cart Class 2

6. Kết quả demo



The screenshot displays the IntelliJ IDEA IDE with a project named 'AimsProject'. The main editor shows the 'Aims.java' file, which contains a Java class with a 'main' method. The code initializes a 'Cart' object, adds three 'DigitalVideoDisc' objects (The Lion King, Star Wars, and Aladin), prints the total cost, removes the 'Aladin' disc, and prints the total cost again.

```
1 public class Aims {
2     public static void main(String[] args) {
3
4         Cart anOrder = new Cart();
5
6         DigitalVideoDisc dvd1 = new DigitalVideoDisc("The Lion King", "Animation", "Roger Allens", length: 87, cost: 19.95f);
7         anOrder.addDigitalVideoDisc(dvd1);
8
9         DigitalVideoDisc dvd2 = new DigitalVideoDisc("Star Wars", "Science Fiction", "George Lucas", length: 87, cost: 24.95f);
10        anOrder.addDigitalVideoDisc(dvd2);
11
12        DigitalVideoDisc dvd3 = new DigitalVideoDisc("Aladin", "Animation", cost: 18.99f);
13        anOrder.addDigitalVideoDisc(dvd3);
14
15        System.out.println("Total cost is: " + anOrder.totalCost() + " Dang Phuong Nam 20225892");
16
17        anOrder.removeDigitalVideoDisc(dvd3);
18        System.out.println("Total cost is: " + anOrder.totalCost() + " Dang Phuong Nam 20225892");
19    }
20 }
21
```

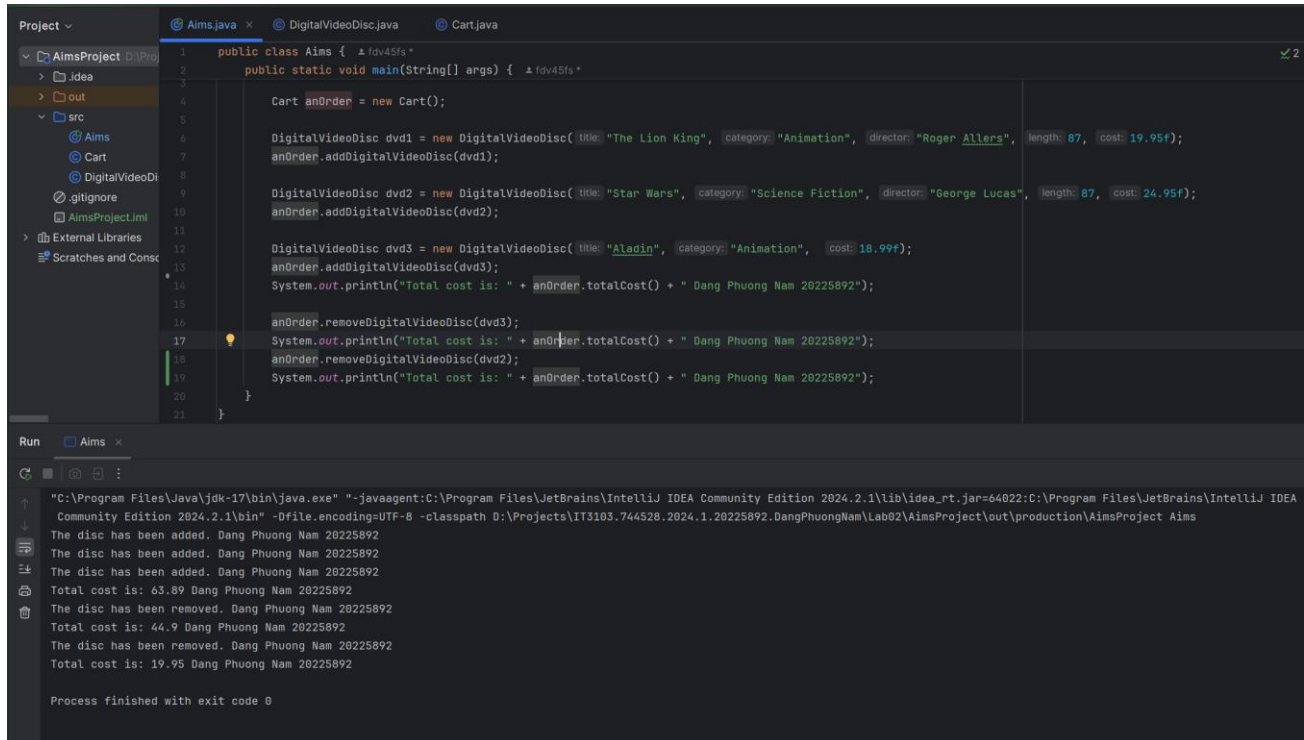
The Run window at the bottom shows the execution output:

```
"C:\Program Files\Java\jdk-17\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2024.2.1\lib\idea_rt.jar=64014:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2024.2.1\bin" -Dfile.encoding=UTF-8 -classpath D:\Projects\IT3103.744528.2024.1.20225892.DangPhuongNam\Lab02\AimsProject\out\production\AimsProject Aims
The disc has been added. Dang Phuong Nam 20225892
The disc has been added. Dang Phuong Nam 20225892
The disc has been added. Dang Phuong Nam 20225892
Total cost is: 63.89 Dang Phuong Nam 20225892
The disc has been removed. Dang Phuong Nam 20225892
Total cost is: 44.9 Dang Phuong Nam 20225892

Process finished with exit code 0
```

Figure 8: Code Demo

Kết quả:



```
1 public class Aims {  
2     public static void main(String[] args) {  
3  
4         Cart anOrder = new Cart();  
5  
6         DigitalVideoDisc dvd1 = new DigitalVideoDisc("The Lion King", "Animation", "Roger Allers", length: 87, cost: 19.95f);  
7         anOrder.addDigitalVideoDisc(dvd1);  
8  
9         DigitalVideoDisc dvd2 = new DigitalVideoDisc("Star Wars", "Science Fiction", "George Lucas", length: 87, cost: 24.95f);  
10        anOrder.addDigitalVideoDisc(dvd2);  
11  
12        DigitalVideoDisc dvd3 = new DigitalVideoDisc("Aladin", "Animation", "cost: 18.99f");  
13        anOrder.addDigitalVideoDisc(dvd3);  
14        System.out.println("Total cost is: " + anOrder.totalCost() + " Dang Phuong Nam 20225892");  
15  
16        anOrder.removeDigitalVideoDisc(dvd3);  
17        System.out.println("Total cost is: " + anOrder.totalCost() + " Dang Phuong Nam 20225892");  
18        anOrder.removeDigitalVideoDisc(dvd2);  
19        System.out.println("Total cost is: " + anOrder.totalCost() + " Dang Phuong Nam 20225892");  
20    }  
21 }
```

Run Aims

"C:\Program Files\Java\jdk-17\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2024.2.1\lib\idea_rt.jar=64022:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2024.2.1\bin" -Dfile.encoding=UTF-8 -classpath D:\Projects\IT3103.744528.2024.1.20225892.DangPhuongNam\Lab02\AimsProject\out\production\AimsProject Aims

The disc has been added. Dang Phuong Nam 20225892

The disc has been added. Dang Phuong Nam 20225892

The disc has been added. Dang Phuong Nam 20225892

Total cost is: 63.89 Dang Phuong Nam 20225892

The disc has been removed. Dang Phuong Nam 20225892

Total cost is: 44.9 Dang Phuong Nam 20225892

The disc has been removed. Dang Phuong Nam 20225892

Total cost is: 19.95 Dang Phuong Nam 20225892

Process finished with exit code 0

Figure 9: Result

7. Reading Assignment

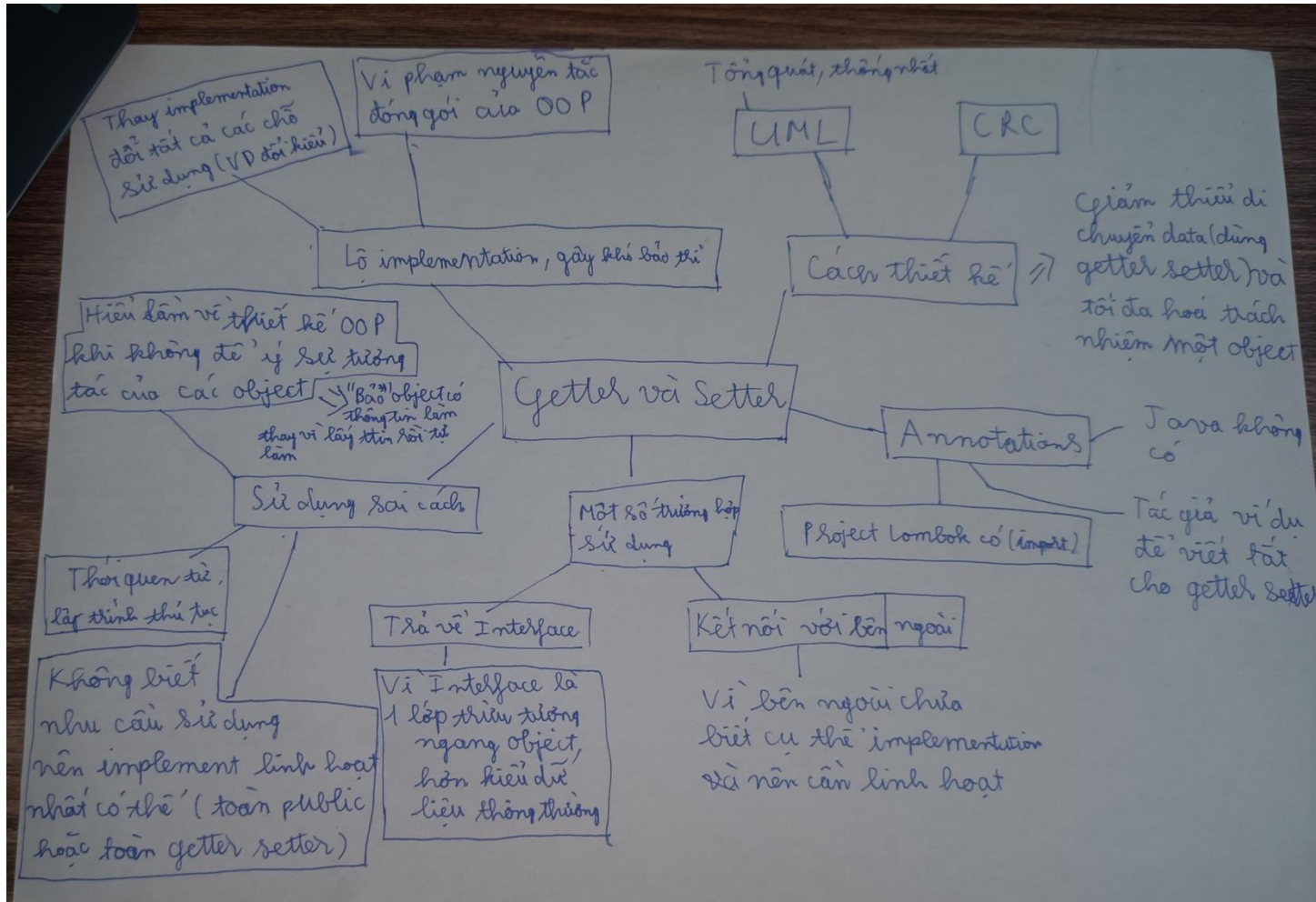


Figure 10: Getter and Setter Methods

8. Answer the question

- Có thể làm vậy vì Java cho phép tạo constructor cho object DVD bằng tiêu đề hoặc thể loại thông qua cơ chế Overloading (chúng ta sẽ overload constructor, arguments sẽ là tiêu đề hoặc thể loại).