

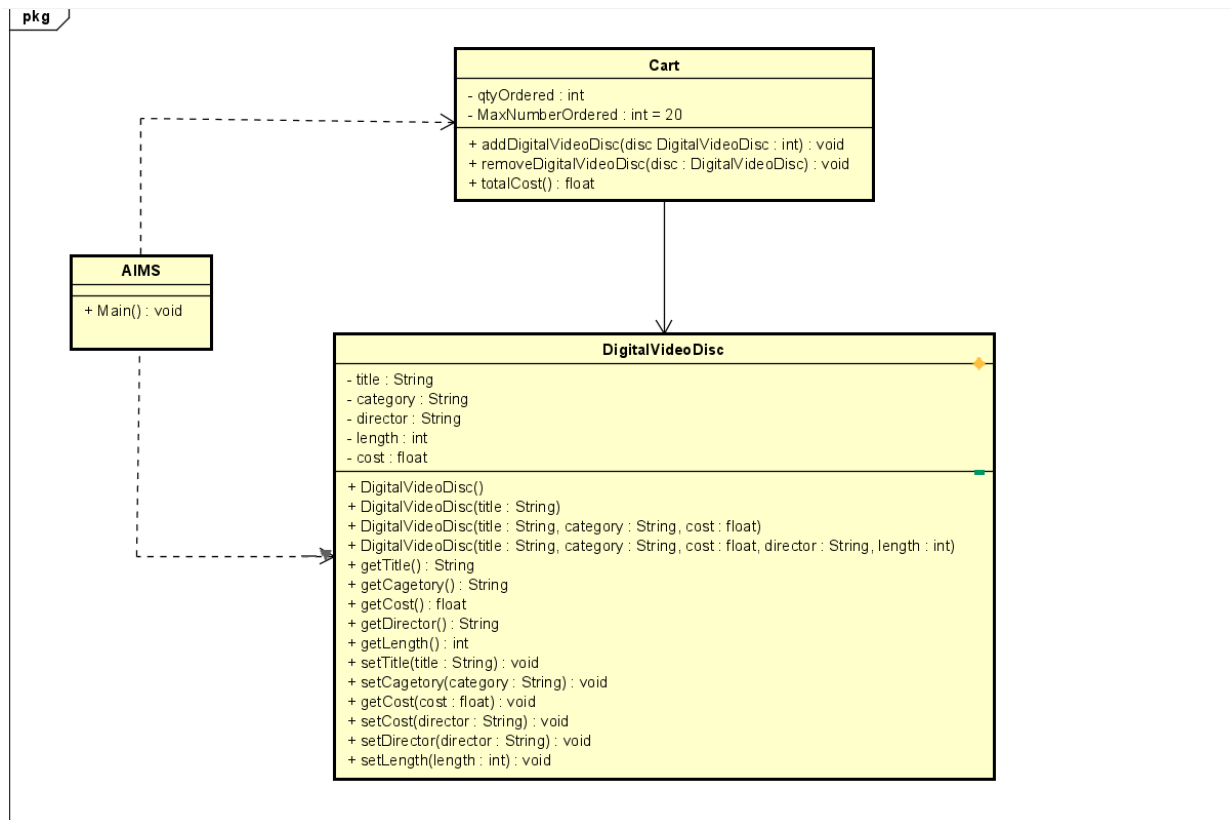
Object-Oriented Programming

Lab 02: Problem Modeling and Encapsulation

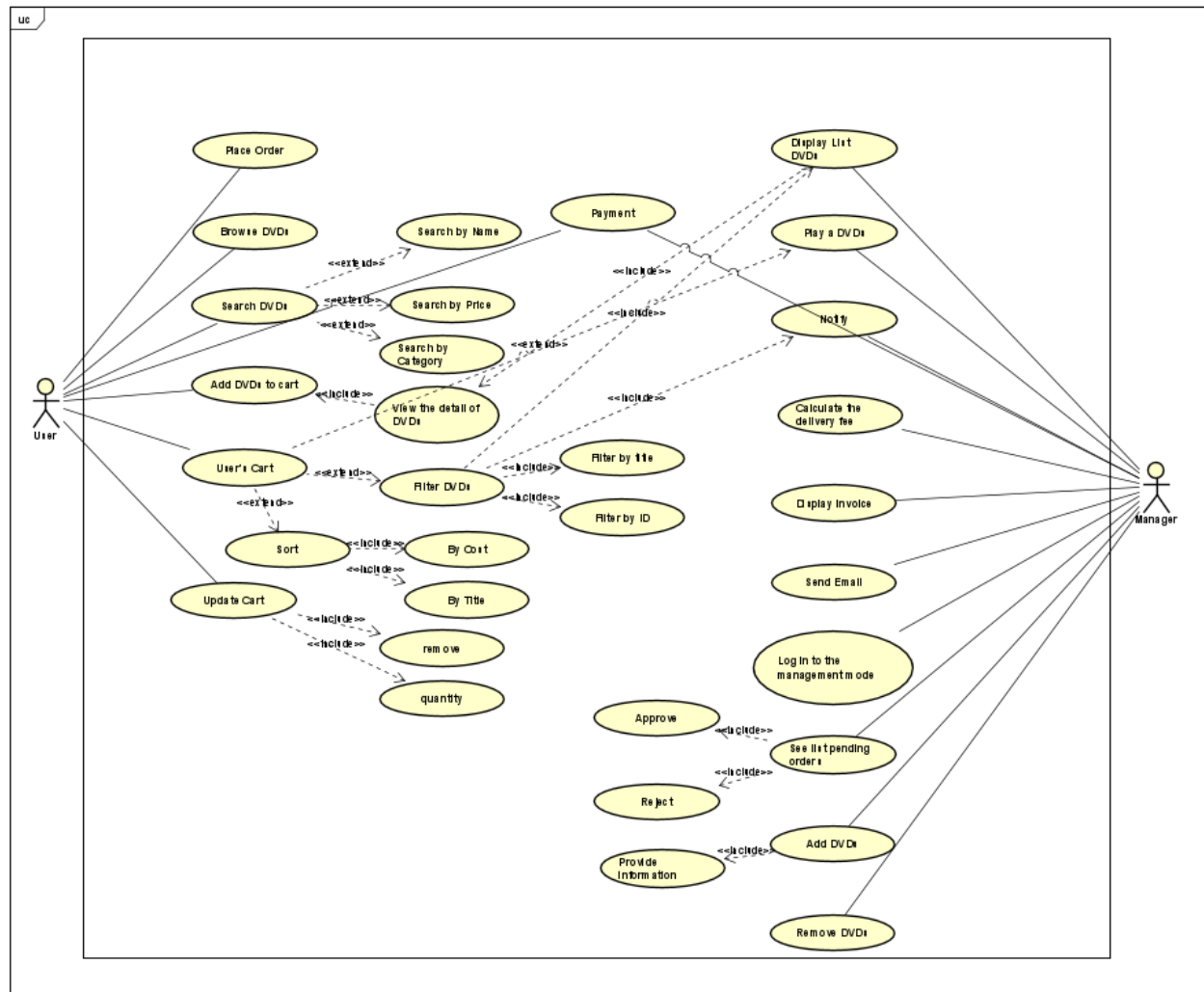
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Class diagram:



UseCase diagram:



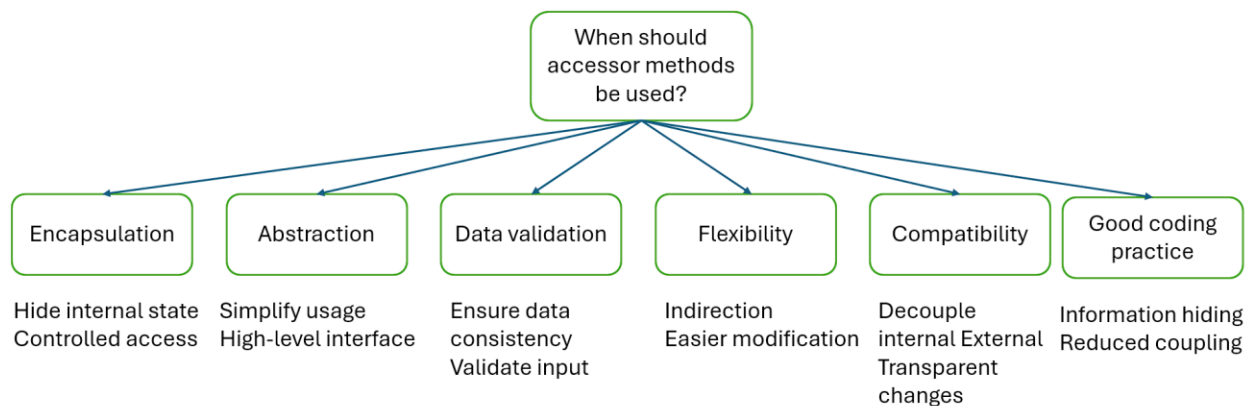
Cart.java:

```

1 public class Cart { no usages new *
2     public static final int MAX_NUMBERS_ORDERED = 20; 2 usages
3     private DigitalVideoDisc itemsOrdered[] = new DigitalVideoDisc[MAX_NUMBERS_ORDERED]; 6 usages
4     private int qtyOrdered = 0; 9 usages
5
6     public void addDigitalVideoDisc(DigitalVideoDisc disc){ no usages new *
7         if ( qtyOrdered < MAX_NUMBERS_ORDERED){
8             itemsOrdered[qtyOrdered] = disc;
9             qtyOrdered++;
10            System.out.println("The disc has been added");
11        }
12        else{
13            System.out.println("The cart is almost full");
14        }
15    }
16
17    public void removeDigitalVideoDisc(DigitalVideoDisc disc){ no usages new *
18        int findItem = -1;
19        if (qtyOrdered > 0){
20            for (int i = 0; i < qtyOrdered; i++){
21                if (itemsOrdered[i].getTitle().equals((disc.getTitle()))){
22                    findItem = i;
23                }
24            }
25            if (findItem != -1){
26                for (int i = findItem; i < qtyOrdered - 1; i++) {
27                    itemsOrdered[i] = itemsOrdered[i + 1];
28                }
29                itemsOrdered[qtyOrdered - 1] = null;
30                qtyOrdered--;
31                System.out.println("The disc has been removed");
32            }
33        }
34        else {
35            System.out.println("The disc is not in the cart");
36        }
37    }
38
39    public float totalCost(){ no usages new *
40        float total = 0;
41        for (int i = 0; i < qtyOrdered; i++){
42            total += itemsOrdered[i].getCost();
43        }
44        return total;
45    }
46 }
47

```

Reading Assignment: When should accessor methods be used?



Question: If you create a constructor method to build a DVD by title then create a constructor method to build a DVD by category. Does JAVA allow you to do this?

Answer: Java does not allow this because both constructors would have a single String parameter, which would cause ambiguity. If you create a constructor that accepts a String for the title and another constructor that also accepts a String for the category, Java cannot determine which constructor to call. To solve this, you could either:

1. Use different parameter types (e.g., use String for title and int or enum for category).
2. Use a different parameter order if there are multiple parameters.