

SM523 Software Design Pattern

Assignment 3-Behavioral Design Patterns

Case 1 (35 points):

Suppose you are required to write a web application to follow discounts in airway companies. There are three companies registered to the system (such as THY, Lufthansa, and Sunexpress). Users of the application are their potential customers. The users are classified into three categories: regular, VIP, and Gold. The users can follow any of the companies in the application and are notified when there is a discount. In the future, the application will be extended by adding new companies and users. Suggest a design pattern for the development team of this application. Give the pattern name and the reason why you have chosen this pattern. Give a UML diagram showing your solution. Give partial implementation showing the pattern usage and the client usage.

Case 2 (35 Points):

Suppose that you are working for an e-commerce company selling products and goods. The customers add the items to the cart and do payments in the system to buy products. After that, the order is processed to the logistics. To deal with the order cancellation efficiently after the order is processed, which design pattern should be implemented? Give the name and the reason why you have chosen this pattern. Give a UML diagram showing your solution. Give partial implementation showing the pattern usage and the client usage.

Case 3 (35 points):

There is a shipping company. The company is responsible for delivering the packages from one city to another. There are central distribution stations in some of the cities (not all of them). The packages are collected in these stations. According to the delivery address, the close station is selected. The packages are delivered to the destination from these stations. Each station has a package capacity to store. If the station's capacity is full, it should forward the incoming packages to the closest station. Your application should realize package delivery with the most suitable distribution network. Suggest a design pattern for the development team of this application. Give the pattern name and the reason why you have chosen this pattern. Give a UML diagram showing your solution. Give partial implementation showing the pattern usage and the client usage.

For all three cases:

- Suggest a design pattern to implement the applications/systems. Give your reasons and point out why/how you use this pattern.
- Give a UML diagram. The diagram should include every participant in the pattern implementation, including pattern-related methods; however, you may omit details unrelated to the pattern.
- Give code segments showing the pattern usage (especially the client part must be provided).

All deliverables will be submitted via oduclass.

Deadline: 8 January 2023

Note that: This is an individual assignment. You can combine UML and sample codes into one word/pdf file or submit as separate files.