CHALMERS | UNIVERSITY OF GOTHENBURG

DIT541 Software Architecture

Assignment 5: Layered Architecture of a Webshop

Solution discussed on Nov 13, 10:15-12:00

Figure 1. Webshop (Left) and Layering Reference Architecture (Right)

In this assignment you are asked to design the architecture of a webshop that sells products. You can think of a webshop for selling books, wines, clothing, etc. A famous example is Amazon.com – but our example will not be as elaborate as their system.

Assignment

The questions will guide you through a number of steps.

1. Identify (at least 2) types of users of the system.
2. Are there other stakeholders than the users?

Users of the webshop should be able to:

- Create an account and enter personal information (delivery address, credit card information, etc.)

- Search or browse a catalog of products. The system will show availability of the products as based on the current inventory of the warehouse.

- Put products into their shopping-cart or remove products.

- Pay for an order.

The people that run the webshop can add and remove products to the catalogue. The people in the warehouse can add and remove items from the stock. The owners of the webshop can analyze patterns in buying behavior (business intelligence!) and send advertisements based on this. Payments are handled via an online interface with a bank.

3. Draw use case diagrams for the webshop.
4. Identify which groups of use cases relate to the same area of functionality (e.g. the functionalities logically belong together or operate on the same data).

Typically an area of functionality is mapped onto a single component in the system.

5. Identify the subsystems/components in the architecture of the webshop system.
6. Describe the responsibility of each component using at most a single sentence.
7. Provide a structural view of the architecture of the system that uses the layering as shown in (the right of) Figure 1. You should allocate all the components that you identified in question 5 to the layers of the architecture. You may omit the business-logic layer if you prefer.
8. Illustrate the interaction of the components by illustrating 3 key use cases by means of sequence diagrams.
9. Which architectural style does your system use? Why?
10. Discuss the deployment relationships between the elements of the architectural style you selected and the layers shown in (the right of) Figure 1.