Exercise 4 (1)

Scope: Online Software System Architecture

In this exercise, the Analysis, Design and Realization in Java of your Online Business will start. Analysis will be done in this exercise. The Java-based Design and Realization will span two more exercises.

NOTE: The practical exercise makes extensive use of material and knowledge taught in other STS classes (Master Students: LTOOD and OOAD, Diploma students: Software Engineering). As some parts of LTOOD and all of OOAD have not yet been read, detailed help and support will be provided in the lab class and online, on the help page of ECommerce.

Tool support: STS provides tools at its computer pool to create UML diagrams, create Web pages, etc. More information can be found on the ECommerce online page.

Analysis of the business processes and entities

4.1 Analyze what interactions your online business shall provide. For this, create a UML Use Case Diagram. Draw Use Cases to describe how people in roles (e.g., customers, administrators, shop managers) can interact with your system.

NOTE: Find examples of use cases on the ECommerce site.

Electronic Commerce (WS-02/03)

4-1

Exercise 4 (2)

Each use case describes a user – system interaction. These interactions shall now be refined into processes to show in detail the process steps, the order in which the steps occur and who executes which step (user, system or further actors). For this, UML activity diagrams will be used.

4.2 For two or more of the use cases, detail them into processes. Create a UML activity diagram for each process.

NOTE: Find an example for a business process on the ECommerce page.

From the processes, business objects are now extracted. Business objects represent entities that are used in the processes. It is important to name the business objects, describe their properties as well as to relate them. For this, UML class diagrams are used.

4.3 Extract business objects that are used in the processes and create a UML class diagram for them.

NOTE: Find an example class diagram on the ECommerce page.

Electronic Commerce (WS-02/03)

4-2

Exercise 4 (3)

Scope: Web Appearance

4.4 Create a static web front (static HTML pages) for your start-up company. The design of page is up to you. The static content should be at least two HTML pages:

- Your homepage (shall be named *index.htm*). It shall state what business you are in (book seller, shoe seller, hotel broker, etc.).

- An *about* page (with information about your group; name, home country, background, studies, hobbies, etc. of the group members.

Either provide an HTML frame for navigation or else the *about* page and *product* page must be reachable via a link from the welcome page.

4.5 Map business processes to screen orders. The processes defined in 4.2 shall be mapped to screen orders (HTML page orders). Use the process steps from 4.2 as a guideline to define the screens. Decide on

- what information shall be visible on what screen, in what order the screens shall be connected

- which screens require user input and which are purely informative.

Create a very simple, static HTML page for each screen identified. Connect them using links to allow to click through the processes. Make them reachable from your homepage.

Exercise 4 (4)

Scope: Lecture script

4.6 What are the differences between identification, authentication and authorization? Explain each concept by an example where the concept is used.

4.7 How can users send their identification and authentication information to a web server? Give at least two examples. How secure are these information transfers? How can the transfers be secured?

4.8 What purposes do cookies serve online companies? Name at least two purposes.

4.9 Explain how proxy servers enhance the performance of a network. Does it make sense to chain proxies / in which cases does it make sense? Explain for which services / contents proxies do not serve their purpose.

4.10 What is the advantage of using mirror sites? Give a name of a mirrored site (i.e. at least two servers).

4.11 What tool may an ISP (Internet Service Provider) use to restrict its users to certain services (example: telnet, ftp, news, mail only)? How can users circumvent these restrictions?