Exam Software Modeling (401016)
27 May 2013

Part of this exam is based on the following case study:

MyWall is an engineering company specialized in the development of virtual reality systems. They want to develop a virtual room system that allows users to choose or create their own ambient in that room. For example a user can choose a beach in Tahiti as the ambient for the room. The system will request a real-time (satellite) image of the beach and change all walls in the room with this image. A user can set his/her ambient in many ways; by choosing one of the provided templates, by creating one from scratch, or by choosing a real-time image of a country. Users can also share their ambient with other users, view the ambient that are shared with them and set them as ambient for their own wall.

In particular:
• An external company provides ambient templates specifically compatible with the system of MyWall. The user can choose among the templates offered by this provider.
• If a user choses to create his/her own ambient, the walls become blank including only an interactive interface with color pickers, brushes and other tools for designing. These tools are also provided by the template provider. The user can save and add these ambient to their custom ambient list.
• When an image of a country is chosen, the ambient template provider will request a real-time satellite image and add the image to the country ambient list of the user.

Note: this problem description may be ambiguous and incomplete. In answering the questions, you are free to complete it (if needed) and briefly motivate your assumptions.

Questions about the theory

1. Use the five decision points learnt in the course to illustrate the properties of the life cycle model "V-model". Is it heavyweight, lightweight or hybrid? Why? [1 point]

2. What requirements prioritization approaches do you know? In what types of SLC models are they typically used? [1 point]

3. What is requirements elicitation? Mention two requirements elicitation methods you learnt. [0.5 point]

4. Explain the Shepperd complexity measure. In software design, is this suitable to measure the level of cohesion or the level of coupling? [0.5 point]

5. Can the same organization play the roles of service provider and service consumer at the same time? If so, model a concrete example by using a SoaML services architecture diagram. [1 point]

6. Define service choreography and service orchestration. What is the difference between them? [0.5 point]

Questions related to the case study
7. For the case study, specify the functional requirements with an UML use case diagram. Use additional text to describe your model and your assumptions where needed. [1.5 points].

8. Complement your specification with a UML sequence diagram that models the scenario in which a user is setting a country image as ambient. Use additional text to describe your model and your assumptions where needed. [2 point].

9. Use a UML deployment diagram to describe a typical deployment of your design solution for the complete case study. Use additional text to document your design. Also, explain the type of decomposition approach you used (procedural- or data abstraction), and why you considered that approach more appropriate for this specific case study. [2 point].

[Text continues on next page]

Exam rules:
−No books or reference material.
−No calculator, mobile phones or other electronic device.