Exam Software Modeling (401016)
26 March 2012

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

FindMe Consultancy is asked to develop a system that allows people to find relatives and friends, as well as meeting points and medical help centers to support citizens involved in natural disasters like earthquakes and floods. This system should be accessible via mobile devices (e.g. through app) that discover network connectivity. Once connected, the device should be prompted the possibility to: (a) access the own location information; (b) indicate own identification; (c) submit a request to find other people; (d) browse already located people; (e) eventually connect with someone if reachable. Also, the system should allow to find meeting points (especially published to handle the emergency) and medical help centers. If needed, the user can directly contact a selected medical center to ask for help.

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. What type of software life cycle (SLC) model fits better to the type of project given in the case study description (see above)? In explaining your choice use at least 3 of the studied decision points for the selection of a SLC model. [1 point]

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

3. Explain the Kano model. [1 point]

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

5. Can the same organization play the roles of service provider and service consumer at the same time? If so, provide a concrete example. [0.5 point]

6. Illustrate and explain how discovery and communication occur according to the Service Oriented Architecture (SOA) architectural style. [0.5 point]

Questions related to the case study

7. For the case study, select a UML diagram to specify the functional requirements. Explain why the diagram you chose is in your opinion suitable for the case study. Draw the requirements model with the chosen diagram. Use additional text to describe your model where needed. [2 points].

8. Use a UML component diagram to describe a possible 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].

9. Create a service oriented software design for the system given in the case description. Illustrate the service architecture using a services architecture diagram, showing all participants and service contracts. Briefly explain your diagram and briefly discuss the roles participants have in the service contracts. [1.5 point].

[Text continues on next page]

Exam rules:
-No books or reference material.
-No calculator, mobile phones or other electronic devices.