

# Exam Software Engineering (400071)

## 1 June 2007

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

A real estate broker (in Dutch: makelaar) sells houses to private clients and wants to go on-line and offer its clients the possibility to Web browse its catalogues, select houses, check for price and purchase conditions. To browse and check prices no authentication is necessary. To access further information and functionalities, the user must have a user name and password. Privacy and reliability must be ensured. The system must also store the user details. Available functionality for authenticated users are: (1) linking with a bank to check possible conditions for a mortgage loan; (2) make an appointment with an adviser; (3) make an appointment for visiting a selected house; and (4) make an appointment with an independent agency to check the state of a selected house.

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

### Questions about the theory

1. Which are the main characteristics of the waterfall software life cycle model? [1 point] (select one or more answers from the following possible answers):
  - 1.a) The various development phases occur in strict sequence.
  - 1.b) Verification & Validation are not included at all.
  - 1.c) Verification & Validation are local to each single phase.
2. What is the Kano model? [1 point] (select one answer from the following possible answers):
  - 2.a) It is a way to order the user functional requirements according to the Moscow classification.
  - 2.b) It is a way to classify user preferences.
  - 2.c) It is a way to relate user satisfaction with quality requirements.
3. Which is the difference between task analysis and scenario analysis in requirements elicitation? [1 point] (select one answer from the following possible answers):
  - 3.a) task analysis aims at specifying what the software engineer 'thinks' the users do in their daily work, whereas scenario analysis looks at the real work done by users.
  - 3.b) task analysis defines the types of tasks, whereas scenario analysis defines specific situations in which the tasks are carried out (scenarios)
  - 3.c) task analysis defines specific situations in which the tasks are carried out, whereas scenario analysis groups tasks in clusters (scenarios)
4. How can you motivate the use of the 'total number of lines of source code' to measure intra-modular complexity? [1 point] (select one or more answers from the following possible answers):
  - 4.a) Because this is the only concrete measure you can calculate.
  - 4.b) Because it has the same meaning for all companies developing software in a common application domain.
  - 4.c) Because within a certain company standard coding practices are applied and therefore measurements can be used across different software systems.
5. What is a software inspection? [1 point] (select one answer from the following possible answers):
  - 5.a) A manual evaluation of source code, aimed at identifying problems.
  - 5.b) A manual simulation of source code.
  - 5.c) A source code test method using proof checkers.

### Questions related to the case study

6. For the case study, use a UML diagram to specify the functional requirements. Explain why you selected that UML diagram. [2.5 points].
7. Use a UML component diagram to describe a possible design solution for the complete case study. Define in a clear way each operation offered by the interface(s) of all components. If needed, use additional text. [2.5 points].

Exam rules:

- No books or reference material.
- No calculator or similar electronic device.
- No mobile phones.