Solution Exam Software Engineering (400071)
1 June 2007

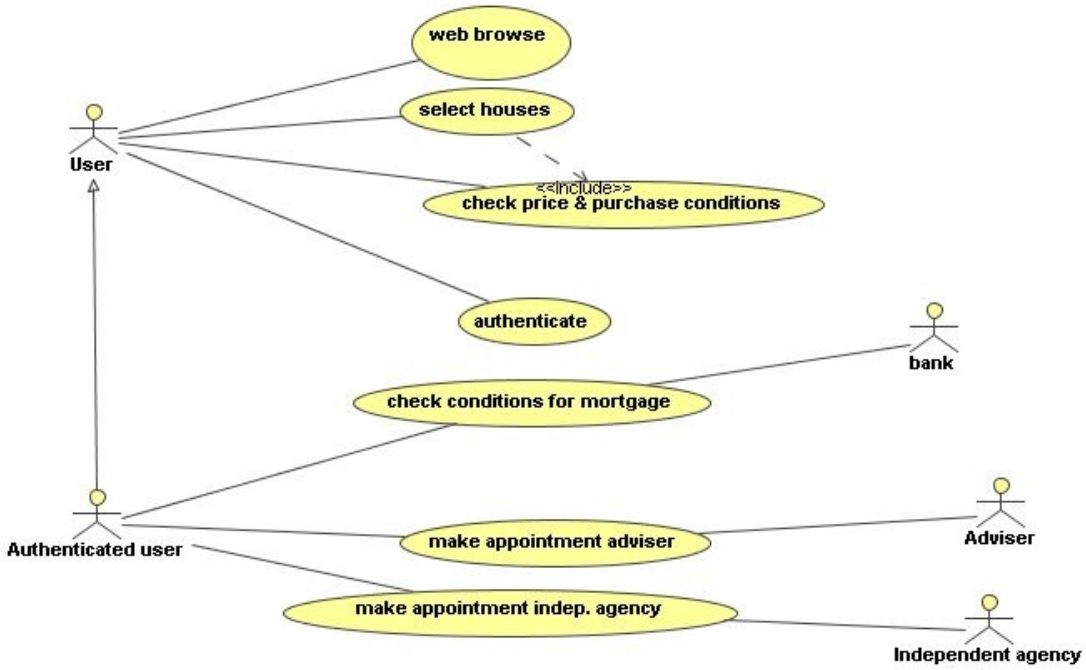
The correct answers are underlined:

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].

   The most appropriate UML diagram is in this case a Use case diagram, because it aims at requirements specifications and because it describes functionalities (in the form of use cases) as required by the exercise. One possible solution is illustrated here below:



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].

One design solution is illustrated in the following UML component diagram, showing the design of the complete system. All functionalities specified in the UCD given above, are translated into operations of the component interfaces here below.