Exam Software Engineering (400071)
23 June 2008

Part of this exam is based on the following case study[1]:

Company WeOnTheWeb wants to develop a Web Portal for university students. The objective of this portal is to share photos and videos related to events that happen on the university Campus, like festivals, information days, diploma ceremonies, sport tournaments, events organized by students associations. The initial version of this system will support the following aspects:
- Register as new user and login in your own home page. Registered university students can use their own student account, while external users can get an account if invited by a university student. In the latter case, the request must be approved by the system administrator.
- Each logged-in user can:
    (1) upload photos/videos; (2) organize photos/videos in collections/albums and create tags to classify them; (3) use groups to share photos/videos with family and friends; (4) get updates from family and friends about new published material; (5) attach comments to published photos/videos; (6) browse/search the portal.

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. Indicate which of the following statements about Extreme Programming (XP) are true? [0.5 point] (select one or more answers from the following possible answers):
    1.a) Typically an XP team has a small size.
    1.b) In XP, software design is very important to guide implementation. Therefore it is documented very extensively.
    1.c) In XP, requirements are developed incrementally, resulting into multiple system releases.
    1.d) As a rule, XP developers do not work overtime.

2. What is the Kano model? [0.5 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 structure user preferences into a number of categories.
    2.c) It is a way to relate user satisfaction with quality requirements.

3. Indicate which of the following statements about testing and debugging is true. [1 point] (select one or more answers from the following possible answers):
    3.a) testing finds the "bugs", debugging fixes them.
    3.b) debugging is an activity that supports testing.
    3.c) testing is an activity that supports debugging.
    3.d) testing activities are carried out only during the programming phase.

4. Indicate which of the following statements about requirements engineering is true? [1 point] (select one answer from the following possible answers):
    4.a) Requirements engineering focuses on the external aspects of a software system.
    4.b) Requirements elicitation is a requirements engineering process that describes the requirements of a system in a software specification.
    4.c) Use case diagrams and component diagrams are both UML diagrams typically used for requirements engineering.

5. Select one requirements elicitation technique. Give a concise description of it. [1 point]

6. You want to extend your Web Portal application to be used on different types of devices like mobile phone, laptop or PDA. Which design pattern will you use to show the same information but in a different way depending on the device in use? [1 point] (select one answer from the following possible answers):
    5.a) Adapter.
    5.b) Proxy.
    5.c) Observer.
    5.d) Strategy.

7. Indicate which of the following statements about design documentation is true? [0.5 point] (select one answer from the following possible answers):
    7.a) The goal of design documentation is to describe what the expected documentation readers need to know.

---

1 This case study description is also translated in Dutch in the end of this exam text.

7.b) The goal of design documentation is to describe everything about the developed design solution.

7.c) The goal of design documentation is to describe only how the functional requirements have been fulfilled in a design solution.

Questions related to the case study

7.Use a UML class diagram to describe the data model for the complete case study. [2 points].

8.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, mobile phones or similar electronic device.

___

Translation of the "Case study description" in Dutch:

Bedrijf WeOnTheWeb is van plan een Web Portal voor universiteitsstudenten te ontwikkelen. Het doel van de portal is foto's en videos rond evenementen op de Campus met elkaar te delen. Evenementen zijn bv. festivals, informatiedagen, buluitreikingen, sporttoernooien, en evenementen georganiseerd door studentenverenigingen. De eerste versie van het systeem zal de volgende functies moeten aanbieden:

- Registreren als nieuwe gebruiker en login op de eigen homepage. Geregistreerde studenten kunnen hun eigen studentenaccount ook voor de portal gebruiken, terwijl externe gebruikers (bv. familie) een account kunnen krijgen mits uitgenodigd door een reeds geregistreerde student. In dit geval moet de aanvraag worden goedgekeurd door de systeembeheerder.

- Elke ingelogde gebruiker kan:
  (1) foto's/videos uploaden; (2) foto's/videos in collecties/albums organiseren en tags creëren om ze te classificeren; (3) groepen gebruiken om foto's/videos met familie en vrienden te delen; (4) updates krijgen van familie en vrienden over nieuw upgeloade materiaal; (5) commentaar toevoegen aan gepubliceerde foto's/videos; (6) browse/search de portal.