

T-76.4602 Software Development Methods Examination, 8th March, 2011

Write the following information in each paper you return: name, student number, course code and name, date, signature.

Important: Answer any 4 out of the 5 questions only. Each question is worth 7,5 points.

1. Requirements engineering. Answer both a) and b).

- What does a cultural change related to requirements engineering mean and how do use cases support this cultural change?
- You are a software engineer and are supposed to review the use case diagram presented in Figure 1, based on the brief case description below. Your tasks are to
 - record what mistakes and omissions there are in the diagram,
 - and draw an improved version of the diagram where these mistakes and omissions have been fixed.

A company selling home electronics products wants to go online. They hope to reach a great number of customers and increase their sales through making ordering in the Internet possible. The customer shall be able to buy products to herself or as a gift. To help gift purchases, the customer shall be able to add products to her wish list so friends of the customer can view what she wants. The same system will be used (via a standalone UI) from the physical shop to update inventory (by a storeman) and to record normal sales (by a sales person). Sales persons are also responsible for modifying product information.

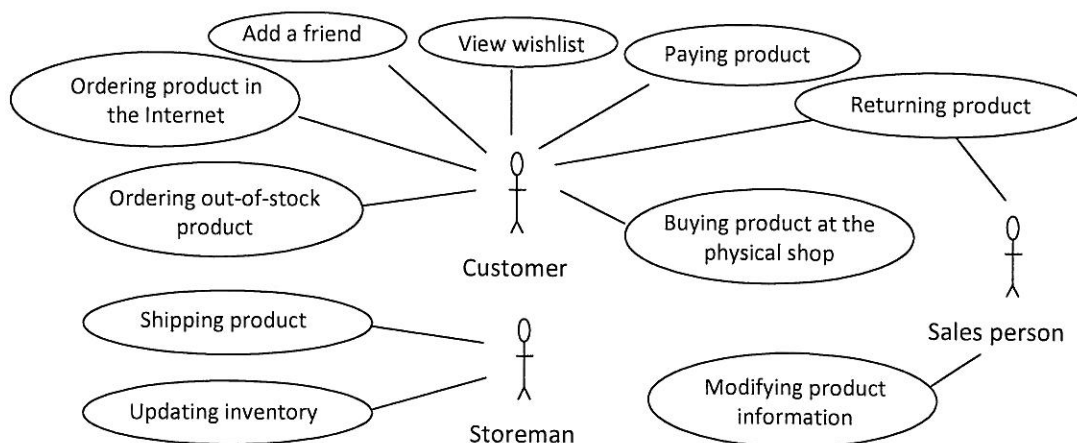


Figure 1. Use case diagram for the online selling system of home electronics

2. Testing

Describe the process of test case design as described in the lecture. Explain the most relevant topics starting from the operation variable identification up to and including test case development.

3. Linking requirements and architecture design

Explain briefly what is central in linking requirements and software architecture.

Describe how the Quper model can support in the linking by giving an example from the navigator exercise of the course.

4. Domain modeling. Answer both a) and b).

- Review the Preliminary domain model below using the glossary as the basis. Identify errors and list the modifications to the domain model.
- What parts of the domain model are static or dynamic and how exactly? Justify your answers.

Table 1. Glossary

| Concept | Description |
|--------------|--|
| Direction | Direction of a road segment is defined by from intersection and to intersection. A road segment must have exactly one direction. |
| Intersection | An intersection represents a place where route selection must take place. From each intersection a number of roads can enter and leave. |
| Lane | Each intersection has one or more lanes entering from one direction. The user must be guided to a correct lane by the picture shown to the user and by voice commands that differ based on the subtype of the lane in question. The complete set of subtypes are departs right, departs left and straight. |
| Road segment | A road segment is a directed path from one intersection to another. |
| Route | A route represents a navigation concept that shows a path to navigate. |
| Way | An ordered set of road segments is a way. Way has a user understandable name, e.g., "Abbey Road". |
| Waypoint | A waypoint is point on the route the user want to travel, including the start and end. |

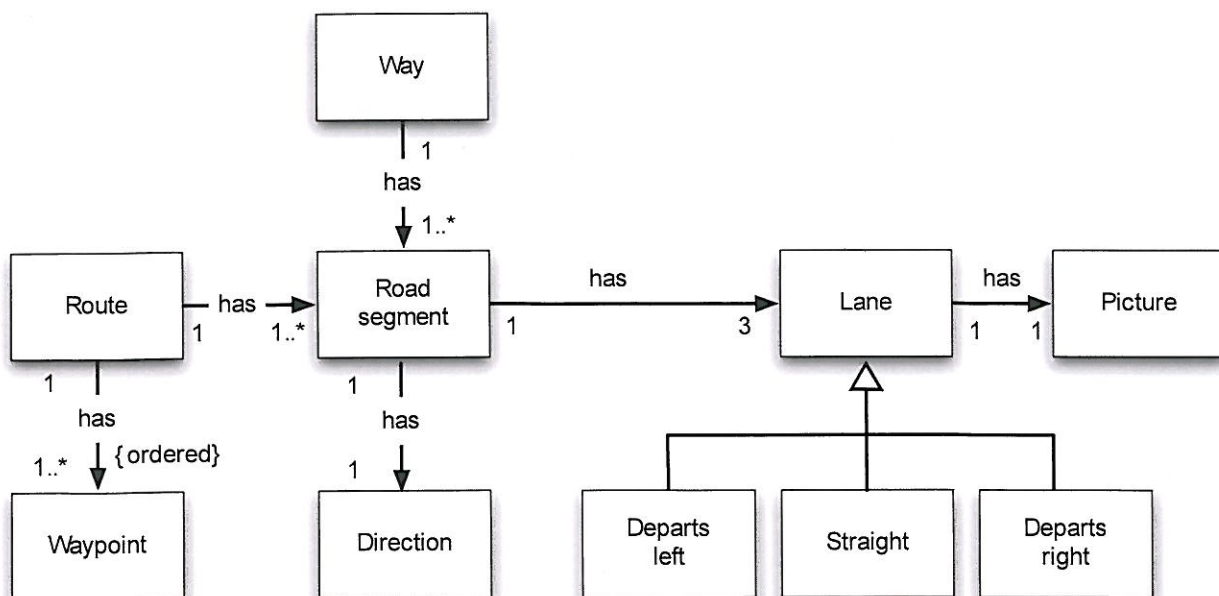


Figure 2. Preliminary domain model

5. Teamwork

Eisenhardt, Kahwajy and Bourgeois (1997)ⁱ have discovered six tactics that successful management teams apply for managing conflicts. These six tactics are

- focus on facts
- multiply the alternatives
- create common goals
- use humor
- balance the power structure
- seek consensus with qualification

Describe why conflicts over issues are important and explain three tactics for managing conflicts. Analyze the selected three tactics from the perspective of your team work during the exercise.

Guideline: We expect your answer to be an essay with a good structure, reflecting your own experiences from the exercise with the tactics, and justifying and explaining your answer.

ⁱ Eisenhardt K. M., Kahwajy J. L., and Bourgeois III L.J. (1997) "How Management Teams Can Have a Good Fight", *Harvard Business Review*, Vol 4, pp. 77-85.