

UNIVERSITY OF OSLO

Faculty of Mathematics and Natural Sciences

Examination in:	IN219 — Software Engineering
Date of examination:	13 December 1999
Examination hours:	09.00 – 13.00
This exercise set consists of	3 pages
Appendices:	None
Permitted aids:	Anything printed or written

Exercise 1 has weight 50%.

Exercise 2 has weight 50%.

Please make sure that your copy of the exercise set is complete before you attempt to answer anything.

It is recommended that you read through the full exercise set before you start answering.

Emphasise good structure and relevance in what you in your answers. Read the text carefully!

Introduce and justify your own assumptions where appropriate.

Put more emphasis on illustrating basic principles rather than presenting large amounts of details (particularly in Exercise 1).

Exercise 1 (50 %)

A real estate agent wants a web based system for displaying the properties that they have for sale as well as for handling bidding. At present, bidding is done by fax or telephone. The system should have functionality for creating a homepage with descriptions of all the properties that are for sale. Each property should be registered with address, type (villa, bungalow, town house or flat), no. of square meters, no. of rooms, estimated value, rated value and suggested price as well as a detailed description. The estate agent should be able to add descriptions of new properties when they receive new assignments, and remove descriptions when properties are sold. It should also be possible for the estate agent to change the description of a property.

A person who wants to bid for a property must register with the system with personal information as well as a financing plan. The personal information consists of name, address, phone number, email-address and date of birth. When a bidder is registered, he or she receives a username and a password. A registered bidder can bid for a property. A bid consists of a sum of money and a time when the bid expires. A bidder who has given a bid for a property should be able to see information (anonymised) about other bids for

the same property. A bidder can only bid for one property at a time. When a bidder has a bid for a property, he/she should receive an email each time the estate agent receives a new bid for the same property. A registered bidder should be able to change his/her personal information and financing plan.

Exercise 1A Make a domain model and a use case diagram for the system. The use case diagram should show which actors will communicate with the system and the system's functionality.

Exercise 1B Make detailed use case descriptions of the use cases from Exercise 1A that deals with registering and handling of bidders and bids for properties.

Exercise 1C Make a complete class diagram from the domain model in Exercise 1A.

Exercise 1D Make sequence diagrams showing which classes and methods are necessary in order to realize two (you may choose which ones) of the use cases for which you made detailed descriptions in Exercise 1B.

Exercise 2 (50 %)

Exercise 2A PROCESS MODEL

Describe situations where an incremental process model (the one you used in the compulsory project) most likely is better than the waterfall process model. Use your experience from the compulsory project when relevant.

Exercise 2B CODE GENERATION

Describe advantages and disadvantages of generation of code (programs) from design as opposed to writing the code yourself. Use your experience from the compulsory project when relevant.

Exercise 2C ACTIVITY NETWORK

- i. Draw an activity network based on the list of activities, duration and dependencies in Figure 1 page 3.
- ii. List the activities that lie on the critical path.
- iii. How suitable are activity networks to plan projects that follow an evolutionary process model?

Figure 1**Activity list**

Activity	Estimated duration (weeks)	Dependencies
A1 Project initiation	1	
A2 Requirement analysis	2	A1
A3 Requirement specification	3	A2
A4 Design	4	A3
A5 Programming of functionality F1	1	A4
A6 Programming of functionality F2	2	A4
A7 Programming of functionality F3	1	A4
A8 Programming of functionality F4	1	A7
A9 Programming of functionality F5	2	A5
A10 Programming of functionality F6	2	A6, A8
A11 Programming of functionality F7	1	A7
A12 Programming of functionality F8	2	A11
A13 Programming of functionality F9	1	A11
A14 Programming of functionality F10	2	A9, A10, A12
A15 Test of functionality F1-F10	3	A13, A14

End of exercise set

Good luck!

Bente Anda, Magne Jørgensen og Dag Sjøberg