

Faculty of mathematics and natural Science

Enclosed: None

Make sure that the set is complete before you start answering.

When you are asked to explain something, it means that you must provide text as explanation or with arguments. You should assume that the reader is familiar with OOA&D, so you need not explain this method. Diagrams and drawings should be as specified in the method or accordance with the UML notation.

This case description below applies to all questions in the set.

The initiators are well aware of how challenging it may be to establish a new company in this demanding market with many competitors. They have therefore decided to cooperate with two local saving banks that already have a number of local offices in place. The idea is thus to use their existing physical and technical infrastructure and competence along with their administrative IT-systems for functions as accounting, payroll and other office support systems.

The new company aims to establish a common IT infrastructure that will provide all offices access to a common *customer service system*, but the overall architecture is not designed yet. The customer services shall be based on both using traditional phones and physical contact along with providing web-based services. Customers may use the web-services to e.g. buy an insurance policy online, to calculate the annual premium, to submit an accident report and for other types of communication with the company.

In this question set, you should primarily deal with the customer service system. This system shall register new insurance customers, receive and handle accident reports and so on. You may assume that there are two types of customers: private and business customers, and that the insurance contracts are limited to cover fire and burglary cases and automobile insurance. The system shall calculate the yearly premium to be paid, (e.g. when insuring a car the premium depends on the type, age, mileage, previous accidents etc.)

The initiators have established a small project group with representatives from the owners, management and employees in the banks. This group shall be responsible for the system development work. You are engaged as a consultant to help them carry out the analysis and design of this future system, according to your textbooks.

1. Strategy and overall project plan (20%).

The establishment of this new company implies to that different interests have to be handled adequately, e.g. to secure satisfactory return on investment with a much decentralized organization, and that the two, previously competing banks now need to cooperate.

- a) What do you see as the *main challenges* (difficulties, uncertainties) in this projects? What *specific conditions* (requirements) do you recommend that the group clarify in this stage of the work?
- b) Describe briefly the *system development methods and techniques* you would recommend the company should choose? If you see *prototyping* as relevant, you must describe the *purpose and type* of prototyping they might use.

2. System definition and analysis of the problem area (10%)

- a) Give a short description of the *problem and application* domains. Specify a *system definition* where you aim at combining the different interests in the organisation. Explain this definition and the *limitations* you have defined. Use the *FACTOR criterion* on this system definition.

3. Classes, events and structures (20%)

- a) Define the *classes* and *events* you find of relevance for this system. Explain what *attributes* are needed, both for the classes and the events. Specify an *event table*, and describe briefly how you went about this.
- b) Draw a *structure diagram* for the system. Include *multiplicity (cardinality)*.
- c) Create *state chart diagrams* for at least two (2) important classes. Explain the diagrams.

4. Quality (15%)

- a) What *quality requirements* will you emphasize the most in the development work? Explain why.
- b) How would you recommend the project group *assesses (evaluate, measure,...)* to what extent/degree these requirements are met?

5. Design of architecture (20%)

You shall design the overall architecture.

- a) Define *criteria and goals* for the system and specify the conditions for design and realisation. Prioritize.
- b) Create a *system structure* by describing *component architecture*. Explain your choices.

6. Ethical concerns (15%)

- a) List 2-3 *ethical concerns* (conflicts) you would argue that this system development project should pay attention to in its work.
- b) Describe briefly the main points of the ethical analysis in this project where you can identify at least 3 key actors (stakeholders) and interests? Indicate how the project may handle ('resolve') these potential ethical conflicts.

END OF QUESTIONS.

Good Luck