Examination

The exam is an open book, open laptop and open Internet. But you must provide your solutions – collaboration in any form is not allowed. You can prepare your solution using computer and submit it using the course website (only 1 PDF document accepted). Do not mix between the solution format – prepare either paper-based solution and submit it in the class, or one PDF file and submit it at the course website.

University Housing Placement Case

Consider the following process for handling housing applications from student applicants. When applying, the applicant should fill in the application form (it includes the student housing types, application periods, and contact information).

The applicant must fill in the application form before the announced deadline. The form is sent to the student housing officer. The applicant can only apply for one room type for a single housing type. After application is received, the student housing officer will send a notification back to the applicant with application status as “Submitted”.

If the applicant has provided the required information, the student housing officer runs a preliminary check on the applications. Once the student housing officer completes the initial check, the student housing officer will send the applicant a notice of its completion with application status as “In Review”. During the review, the student housing officer checks to determine if the information in the application is administratively correct and complete. If the application has any deficiency, the student housing officer notifies the applicant and asks to provide the necessary information within a set period. If the applicant cannot provide the requested information within the specified period, the application will be rejected, and the student housing officer will notify the applicant of this rejection.

If the application review is successfully completed, the student housing officer adds the housing request to the waitlist for the selected housing and room type and sends the applicant a notice of review completion with application status as “Added to waitlist”. The student housing officer should maintain the waitlist and update housing availability options. When the housing type specified in an application is available and the applicant’s housing request is at the top of the waitlist, the student housing officer assigns the applicant to their selected housing option and sends a notice of housing placement.
Examination Task

For the given case, prepare a requirements specification (document), which includes requirements for the new information system or its component. The new information system should support the university housing placement.

Requirements Management

Your requirements specification must be:
- Structured/organised and prepared according to the requirements specification standard/template (indicate which one). 5 points
- Internally consistent. 10 points
- Traced and traceable – also give an example on how traceability is maintained using the traceability matrix. 15 points
- Annotated by version at the document and requirements artefact level. 10 points

Requirements Engineering

1. **Scope**: Carefully choose the problem scope – define the system context (i.e., four facets). 10 points

2. **User characteristics**: What are the two major stakeholders/actors in the given case? What are their interests (characterise in 1-2 sentence)? How can stakeholders help each other achieve their goals? Explain your answer with the i* strategic rationale model (social – early requirements – viewpoint). 15 points

3. **Product functions**: What are the major goals of the system? How these goals can be assigned to the separate stakeholders, information system or components of the information system? Explain your answer by creating the KAOS goal model. The model should consist of at least 3 hierarchy levels and include at least one alternative refinements. Your model should separate between requirements and expectations. 10 points

4. Select one requirement or expectation from the KAOS model and show how it can be operationalised (i.e., create operation model). Refine one operation using the use case textual template. 15 points

5. **Specific requirements**: What are the functional and non-functional requirements of the newly developed system? From solutions given in Tasks 2, 3 and 4, elicit at least six functional and four non-functional requirements (write their textual expressions). All requirements must respect criteria of good requirements. Which functional requirements are mandatory? Which functional requirements are optional? Select 2 most important functional requirements from the list of optional functional requirements. Explain your selection using AHP method. 20 points

6. Refine the 2 selected (see task 5) functional requirements to the solution-oriented requirements:
   - Create a class diagram that describes data used in the information system. 20 points
   - Create a state diagram for one object from the class diagram.

Requirements Validation

Evaluate quality of your requirements specification. 10 points

*Total 140 points will be converted to 55 course points.*