TTK4145 2025

Preliminary design description

You should write a concise description of the design you have chosen for your project. The purpose of this description is to make you consider your options and start the thought process required to design a good real-time system.

To do so, you should:

- read through the project specification and understand the challenge;
- think through and discuss the major design decisions; and
- decide on a preliminary design for your system.

The description should reflect all the above points. However, we are not interested in general descriptions of the challenge or trivial statements. We want to know about your unique design decisions and why you have made them. Focus on what is complex and non-obvious. Keep it concise; longer is not better.

Remember, this is a preliminary design description, so you may make changes at any time later during the semester if desired.

Formal requirements:

- Your lab time, workstation/desk number and group number on the top of the first page.
- Names and email addresses of **all** group members on the first page.
- Max length: Keep it to less than one page of text (excluding titles, names, emails, figures and diagrams).
- The description should be handed in as one (1) PDF document named "PDD-##.pdf", where ## is your **group number** (NOT desk number). Single digit groups do 0#.

Recommended content:

- Description of your concrete strategy to achieve the required fault tolerance as described in the project specification.
- Network topology and choice of protocols.
- If you choose a programming language due to a design paradigm, tell us why.
- If you have started planning how to divide the system into modules, please include a description.

You may style the description as you like, using text, use cases, sequence charts, scenarios etc. Hand drawings are acceptable if they are clear and readable. You may use UML (Unifies Modeling Language), we do not require you to follow any standard.

After having read the design description, we want to get the impression that you have understood the challenges and that you are one a viable, and not too complex, road to solving them. Specifically, we should get an understanding of how you aim to deal with

- The button light contract, network unreliability, spontaneous crashes and unscheduled restarts;
- normal operation of hall or cab calls from the button press to the opening of the door;
- the network disconnecting a node with active hall requests (detection -> takeover);
- a node with an active cab order crashing; and
- all of the above in the presence of network packet loss.

Evaluation:

We will evaluate your designs and give you feedback. We don't expect that you present a complete solution in this short document, and the evaluation criteria lean more toward "effort" than "solution".