Format of the 1st compulsory activity

This is a compulsory activity in which student participation is required.

Each group will demonstrate comprehension of the article "Formal Design and Analysis of a Gear Controller: an Industrial Case Study using UPPAAL" and present the actual models and verification/simulation results of the Gear Control System case study on **March 18th during the lecture.** Two groups will be paired and each will provide feedback to the other during the mandatory activities.

1. One group will give a presentation (Max. 20 minutes – everyone in the group must participate equally in the talk);
2. After that group completes their presentation, the paired group will give feedback on the presentation and/or ask questions (Max. 15 minutes).
3. The other group will then present their work (20 minutes) and will receive feedback/questions from the paired group (15 minutes);
4. Each group should submit the following by **March 27th**:
    - Max. 2 pages, IEEE template: A list of questions, answers to the questions, feedback and the 5 deliverables (refer to the Further tips/guideline below);
        i. IEEE template can be download via:

        https://www.ieee.org/conferences/publishing/templates.html
    - UPPAAL files: model.xml and property-CTL-expression.q;

Further tips/guidelines for the 1st compulsory activity

In addition to demonstrating basic understanding, running a simulation and verification of the case study, you *must* deliver the following during your talk and the discussion with your peers:

1. Do you find UPPAAL to be a useful tool? Yes or no, then why?
2. Do the case study and the user experience help in understanding the use/the strength of the model checker?
3. In addition to the specified requirements given in the article, what other properties do/can you identify and verify?
4. Are there any failed properties you found during verification, if yes, what are they? What are the causes for such failures? How can they be fixed? e.g. Do you have to refine or modify your system models and/or requirements? Can you provide any counter-examples of the failed cases?
5. In addition to the suggested points above, you can, of course, also explore and identify something else or something additional during the experiment and share that with your classmates on your presentation day. Indeed, this is strongly encouraged.

Bear in mind that the purpose of this activity is to improve formal analysis and verification skills using a model-checker. The skills you have learned and techniques you have utilized/mastered feed into your mini-project work and/or can be used in your report, so this is essential preparatory work.

Since everyone will have already read the article and knows what the gear controller system is, the detailed illustration on how the system works is not necessary during your presentation, a general overview of the system description is sufficient.