**Assignment 3 SWEN421 2020** *[25 marks]*

**Refers to Event B Steam Boiler solution**

First read the *A Case Study in Refinement-Based Modelling of a Resilient Control System* paper. You can obtain the paper by either Googeling the title or downloading the copy from the SWEN421 Lecture Schedule. The Event B solution appears at the end of the paper from pages 16 to 56.

The problem and it's solution is explained in English in the paper. Some times it is easier to understand the actual Event B model than the English. Other times it help to read both the Event B and the English.

Please note: you only need to interpret the Event B machines as pseudo code. It is not necessary to understand the exact Event B semantics in order to understand the behaviour of the Event B State Machine.

1. Read the paper cited above.
2. *[5 marks]* Build a TLA+ (PlusCal) version of the Event B M0 machine
3. *[5 marks]* Build a TLA+ (PlusCal) version of the Event B M1 machine
4. *[10 marks]* Document and models check as many of the Functional and safety requirements, listed in Table 2 and Table 3 of the Event B paper, as you can. Add documentation to your TLA+ using the same IDs as in the paper.
5. *[5 marks]* Model check that M1 is a refinement of M0