* **Assignment 4: Design analysis models - Due November 16, 2018 @11:55pm**

UML Class model and protocol state machines:

Develop a design level class model for your project. For this, you should add:

* 1. operations with their pre- and post conditions.
  2. bodies only for those operations/interactions/use case that are discussed in the project meetings with me (the lecturer) held between November 5-9, 2018.
  3. protocol state machines for each the classes in your model that have a "status kind" attribute.

*Grades for this section will evaluate how well you assign the responsibilities to the classes. None of your operations should be directly accessing/navigating roles more than 1 hop away from the class in which the operation is defined.*

*More details are below.*

Adding Pre- and Postconditions:

* 1. Before you go on, ensure that you have corrected the class model as discussed in the above mentioned project meetings.
  2. Write pre- and postconditions for all the operations with side-effects that you add to the model.
  3. Write preconditions for all the side-effect free operations (i.e., query operations) that you add to the model

Adding operation bodies

* 1. add bodies to all the operations that allow you to execute the use cases agreed upon in the project meetings.
  2. add bodies to all the operations in the class(es) where a protocol state machine is defined.

Simulate the operation/use cases/protocol state machine

* 1. Create the commands to simulate the interactions - create a separate command file for each use case.
     + Save the object model produced from each simulation
  2. create the commands to fully simulate the interactions of one of the protocol state machines - this simulation should include illegal transitions.
     + Save the state of the object model after each operation call in the protocol state machine. In your report you will be presenting these as snapshots - a filmstrip at best showing the state of the system when we simulate the operations in a protocol state machine.

For your submission due on November 16, 2018 @11:55pm,  include in a zip file with the following:

* 1. (for 3%) A pdf file that includes with the the class model and protocol state machines. Include:
     + each operation with their pre- and postconditions as appropriate along with its English description and  how it is formulated in OCL.
     + each states machine with a description of the transitions.
  2. (for 2%) USE specification for your class model. It should include all the OCL statements as described above. It is your responsibility to ensure that your specifications are free of errors, i.e., it loads in the USE tool without errors. Include a USE layout file for your class model, the the layout files for each of the state machines.
  3. (for 2 %) for each use case simulation, an object model showing the object model that resulted from the simulation:
     + put the statements to create the simulation a file, name the file the same name as the use case.
     + save the layout of the objects into a file also using the same name as the use case.

4.  (for 2%) for the simulation of one of the protocol state machine, the sequence of snapshot object models that were produced.

* + - put the statements to create the simulation in a file, name the file the same name as the protocol state machine.
    - save the snapshot object models in a series of files also using the same name as the protocol state machine, e.g. if your protocol state machine is called CustomerStates then the object model (files) should be called CustomerStates\_1, CustomerStates\_2, etc.
    - include a layout file for each of the snapshot object model.

Project meetings with me

The final 1% for this assignment will be given based on the outcome of the meetings

All the members of the group are to be present for the meeting. If you are absent you lose the 1%.

* *Assignments*