LINGI2251
Software Engineering: Development Methods
Assignment 1
Spring 2015

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Due March 23, 2015

In this assignment, you are part of a software company in charge of developing a software system for gas stations. The description of the **Dinoco Gas Station Control System** is available as a separate document. The object of the assignment is to analyse and develop models for requirements of that system.

This assignment can be performed in **groups of two students**. Individual submissions are also accepted. Interaction between students and groups is allowed but plagiarism will not be tolerated.

Please post any question regarding this assignment on the corresponding forum on the course website. For personal issues you may contact the assistant, *Antoine Cailliau* (`antoine.cailliau@uclouvain.be`).

Tasks

- The provided requirements may have omissions, ambiguities and contradictions. In these situations, propose a sensible correction or improvement of the corresponding requirements. Keep a record of the identified **requirement issues and adopted corrections**.
- Identify all **interfaces** of the system to the environment and the external entities connecting through those interfaces. For each interface, list the different interactions, types and ranges of data exchanged.

- Identify all parts of the **state** of the system (inventory, accounts, ...) and the types and ranges of data contained.
- Provide a **data-flow diagram** for the system. Describe succinctly the meaning and role of each process, actor and store.
- Provide a **class diagram** for the system. Distinguish classes representing entities outside the scope of the system.
- Provide **sequence diagrams** for the following scenarios:
  - A customer successfully purchases gas and charges it on a monthly bill.
  - A customer purchases gas and attempts to pay by credit card but his card is refused. He then pays by cash to the cashier.
  - The cashier successfully processes a monthly payment by credit card.
- Provide **state diagrams** for the behaviour of the gas pump interface and cashier's interface. They should be consistent with the sequence diagrams above.

Deliverables

Assignment results will be returned as an archive file (`.zip` or `.gz`) whose base name is the last names of the students (e.g. `Pecheur_Cailliau.zip`, no accents please). Submit your deliverables using the *Assignments* tool of iCampus, before the deadline stated on the first page. Late submissions will not be accepted. Make sure to *include proper identification* (course, year, assignment number, student names) at the beginning of all documents.

The archive will at least contain a report covering all task items above. If more files are provided, their use will be explained at the beginning of the report.

You can use any drawing tool to construct diagrams asked in this assignment. We recommend *yEd* from yWorks, a general-purpose graphing tool with excellent graph layout capabilities. yEd is freely available and runs on all platforms, see `http://www.yworks.com`.