Seminar 2, Design

Object-Oriented Design, IV1350

Intended Learning Outcomes

This seminar concerns the learning outcomes *develop an object-oriented program by applying established guidelines for object-oriented architecture* and *design and discuss the quality of a program referring to established guidelines for object-oriented architecture and design.*

Goal

- Practice basic object-oriented design

Literature

- Chapter five in *A First Course in Object Oriented Development.*

Grading

There are three possible grades:

Fail (0 points) To pass the course you must pass all four seminars. If you fail this seminar you have to report it again at the end of the course, at the fifth seminar.

1 point Active participation in seminar discussions. Written solution submitted in Canvas proving that you can, with minor defects, follow a method for designing an object-oriented program.

2 points Active participation in seminar discussions. Written solution submitted in Canvas proving that you can, without defects, use cohesion, coupling and encapsulation to design an object-oriented program. In the written solution you must also motivate how these principles are used.

Task

Design a program that can handle all parts, including alternative flows, of the *Process Sale* scenario, specified in the document with tasks for seminar one. Remember to also design the startup, that is, the `main` method. The task is only to design the program, you're not required to write any code and you shall not include any code in the report. Still, if you find designing hard, it's a god idea to code some part of it. The meaning of the diagrams becomes much clearer when implemented in code.

The solution must meet the following requirements.

- The design must have high cohesion, low coupling and good encapsulation with a well-designed public interface.
- The solution must be divided into layers, as specified by the *MVC* and *Layer* patterns.
- You are not required to follow the domain model and system sequence diagram you made for seminar one; you may change them now if you find flaws in them. However, do keep your existing analysis model (DM and SSD) unless there are obvious reasons to change it.
- You do not have to design the view, it can be replaced with a class called `View`.
- You do not have to design the data layer, it can be omitted.
- In the `Method` chapter of your report, explain how you worked and give examples of how you reasoned when creating the design.
- In the `Result` chapter of your report, include and briefly explain interaction diagram(s) (that is, either communication or sequence diagrams) of the entire design. There must be interaction diagram(s) describing all functionality of the *Process Sale* scenario, both the basic and alternative flows, and also the main method. The chapter must also contain, and briefly explain, a class diagram showing all classes in the interaction diagram(s).
- In the `Discussion` chapter of your report, evaluate your design using applicable assessment criteria from the document `assessment-criteria-seminar2.pdf`, which is available on the *Seminar Tasks* page in Canvas.

As a preparation for seminar three, which takes a lot of time to solve, it's certainly a good idea to already now think about how the methods you design can be implemented and tested. This is however just an advice, not a requirement, and shall not be covered in the report.