

Home Exercise #2 Design and Architecture

Intended learning outcome

After passing this exercise, the student will be able to exemplify some of the most common ways of representing the design and architecture of a system.

Problem description

We continue with the “Molvo” system as introduced in exercise 1 and add the following information found in the analysis:

- The customers of the rides, hereafter called passengers, need to register a membership profile at “Molvo” to start booking rides.
- When booking a ride, the passenger needs to pay in advance to “Molvo”, who sets the account with the car owner at the end of each month.

Task

Your tasks this week are:

- a) Now it is your task to make an overall architecture description of the complete system. You don't need to use UML; informal box-and-line diagrams will do. Give an example of a quality factor that you think is attained by your suggestion. A short motivation is needed. Hint: Don't be too detailed about the architecture, about 7 boxes will do.
- b) Discover classes from the Problem description above and in exercise 1 and draw an UML class diagram to describe the relations between the classes. Use attributes and operations, at least one generalization and one composition. Data types and variables are not needed. Put names and multiplicity information on associations. The class diagram doesn't need to be 100% complete but you will probably need around 10 classes to describe most of the system.
- c) Draw a UML sequence diagram for a passenger booking of one or many rides, starting with the passenger searching for available rides and ends with the passenger paying for the ride(s). Note: the passenger can book many rides in the same session and pay for them all at the end. Don't forget that the car owner needs to be informed about the bookings. You need to use at least one fragment.
- d) Draw a UML state diagram of the class Ride. There are not many states, so focus on using correct UML syntax and semantics.

You may make more assumptions of features of the system than those given in the Problem description, but in that case, you shall explain your assumptions in the solution.

Report

Architecture diagram with explaining text.

UML Class diagram.

UML Sequence diagram.

UML State diagram.

Pass criteria

Diagrams are possible to read but may be hand-written and scanned.

The UML diagrams have correct standard UML syntax and semantics.

The UML diagrams describes models with a sensible connection to the system in the scenario.