Exercises for Softwaretechnik II

Sheet 2 — Issue date: 27.04.2017, Solution due by: 04.05.2017

Task 2.1: Use of the OCL in the UML specification

[ sporty / Examination processing time ca. 20 Min.; actually: _____; preparatory reading: _____ ]

Get the specification of the UML, more precisely: Unified Modeling Language, Version 2.5; OMG, Doc. formal/15-03-01:2015 (or alternatively version 2.4.1).

This document contains the metamodels for all UML model types. Find the chapter where state machines are defined. First look at the metamodels in the section “Abstract Syntax”. Then find the OCL conditions that represent the following informally formulated restrictions on correct state machines. Submit these OCL conditions as a solution, possibly accompanied by a comment on how the OCL conditions implement the informally specified condition.

a. An initial state must not have more than one outgoing transition.
b. The transition outgoing from an initial state may have an action (UML: behavior), but no trigger and no guard.
c. A region may contain no more than one history state.
d. A final state has no outgoing transitions, regions, entry behavior or exit behavior.
e. All incoming transitions of a pseudo state of type “join” must originate in different regions.
f. All outgoing transitions of a pseudo state of type “fork” must end in different regions.
g. An internal transition must lead from a state to the same state.

Task 2.2: Practical testing of OCL conditions

[ medium / Examination processing time ca. 20 Min.; actually: _____; preparatory reading: _____ ]

For each of the OCL conditions from the previous task, create a “model” (e.g. using the Papyrus editor) that violates this condition.

If not possible: why is this the case?

Otherwise, use the OCL plugin for Eclipse to search for errors in this model and record what is found.