

Exercises 1

13th September

- 1) What are typical problems with respect to globally distributed software development? How could software process modeling be used to address these problems?
- 2) Explain the differences between a process, a process model, and a project plan. How are these concepts related to each other?
- 3) Some process quality standards require that all processes of an organization need to be documented systematically. Discuss whether this is sufficient for assessing the quality of the processes performed in an organization or for improving processes. What could be an appropriate meaning of 'process quality'?
- 4) Assume that the goal of process modeling is the automation of processes (e.g., automate a compile or a test process). What are the implications on the selection of an appropriate notation for describing the process? Now assume that the goal of process modeling is guiding software developers. What are the implications on the chosen notation in this case?
- 5) Model the process of brewing coffee and painting a picture by using criteria. An example for the use of entry and exit criteria as well as invariants is below.

Example: We distinguish different kind of criteria: criteria necessary to enact the process (entry criteria), criteria for valid states during enactment (invariant), and criteria expected upon enactment completion (exit criteria). Criteria are specified as Boolean expressions.

Below is an excerpt of an example process model 'Design'.

In this example, the invariant specifies that the actual effort spent for any instance of the process model 'Design' should never exceed a value specified by 'max_effort'. The entry criteria state that any process of type 'Design' can only be executed if attribute 'status' of product 'req_doc' has value 'complete' and attribute 'status' of product 'des_doc' has either value 'non_existing' or 'incomplete'. The expression following the keyword exit_criteria defines the criteria expected upon completion of process execution. In the example, the expected results upon completion are that attribute 'status' of product 'des_doc' has value 'complete'.

```
product_flow
consume
    req_doc: Requirements_document;
produce
    des_doc: Design_document;
entry_criteria
    (req_doc.status = 'complete') and (des_doc.status = 'non_existent' or
    des_doc.status = 'incomplete');
invariant
    effort <= max_effort;
exit_criteria
    des_doc.status = 'complete';
```

6) People who are asked to describe a process they are involved in can give different descriptions of the same process. Why can their responses differ?