Exercises to the Lecture FSVT

Prof. Dr. Klaus Madlener sheet 1

On this sheet we will look at the VDM specification method, introduced in the lecture. There is further information at `http://www.vdmportal.org/twiki/bin/view`, especially in the free book available there by Cliff Jones: Systematic Software Development using VDM.

Exercise 1:

Specify sorting functions for arrays of naturals with VDM. Specify in a purely functional manner, i.e. no state, and keep it as general as possible.

1. Sorting

2. Sorting methods based on swapping

3. Sorting by Insertion

4. Merge-Sort

Are there any correlations between your specifications? What could be interesting to prove given that your specifications are intermediate products of software development?

Exercise 2:

1. Model with VDM a bank with some ATMs. The bank offers creating and deleting accounts. An account has a number, a credit limit, and the current amount. An ATM supports incoming and outgoing payments and displaying the current amount of an account.

2. Extend the model by PIN-based authorization of all ATM operations.

Think about the same questions as in the previous exercise.

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