Software Architecture and Engineering: Projekt 1

Due until 03. March 2016

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Task A.

What we cannot express in UML, that:

- Parameters cannot be assigned and declared.
- Variables need to be declared before being assigned and need to be assigned before being read.
- Functions may not contain unreachable Statements.
- Recursion is not allowed
- Return value of a functions must match the functions return type
- The expression tree doesn't allow recursion
- The typing rules hold
- Variables are declared once and parameters are not declared
- Variables cannot be assigned without a following read
- Expression not on the right-hand side.

Task B.

What we cannot express in Alloy

- We cannot determine how the actual parameters are mapped to the formal parameters besides matching their type.

Task C.

1. A program with one function, 2 function calls
   This cannot be achieved. A program with exactly one function contains only the main function. Since we don't allow recursion the main function cannot have a function call.
2. A program with two functions, 2 function calls
   This still cannot be achieved. Since we don't allow recursion the main function (*Function A*) can only call *Function B*. *Function B* cannot call itself, so it has to call *Function A*. But this would lead to indirect recursion which is still not allowed.

Exercise 3 to 5 are feasible models and can be found in the folder.