

Master Project

September 6th 2005 - March 6th 2006

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# Design and Implementation of a JML Frontend for Boogie

The Java Modeling Language (JML) is a specification language that can be used to specify the behavior of Java modules. These specifications include pre- and postconditions for methods, class invariants, model fields and methods. Java code enhanced with JML specifications allows one to reason about its correctness (i.e. if the code fulfills the specification or not).

Boogie is a fully automatic, static program verifier developed by Microsoft Research. It is built to verify programs written in Spec#, which is a programming language based on C#, extended with specification features. For the actual verification an intermediate programming language, BoogiePL, is used.

In a previous semester project at ETH Zurich, a compiler was written which translates Java code into BoogiePL code. The compiler covers a small subset of the Java language and excludes for instance static fields and methods.

The goal of this master project is to further enhance the Java to BoogiePL compiler by designing and implementing translations for JML specifications. The core of the project consists of a limited subset of JML, which also includes support for the Universe type system. Depending on how fast progress is made, further Java or JML features will be added.

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