

Semester Project

MultiJava, JML, and Generics

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Introduction: The Software Component Technology group developed the Universe type system, an extension of Java that allows the programmer to express object ownership constraints in the source code. The Universe type system was integrated into the MultiJava and JML tools that were developed at Iowa State University.

Goal of this semester project is to extend the Universe type system implementation of the MultiJava compiler to support *generic types* following a recently elaborated master's thesis [1] and a proposal for Generic Universes [2]. To that end, the MultiJava compiler must first be adapted to produce Java 1.5 bytecode and to parse the Java 1.5 language. Beside the actual implementation, an additional task of this semester project consists in enriching the generic type support described in [1] by special features such as *wildcards* and *raw types*. Supporting the notion of raw types is particularly important since this allows to use legacy code within generic code.

The main parts of this project are:

1. Make the class files generated by the MultiJava compiler conform to the Java 1.5 specification.
2. Make the MultiJava compiler parse the Java 1.5 language.
3. Implement generic types for the Universe type system including wildcards and raw types.

A written report and an oral presentation will complete the semester project.

References

- [1] Tongjie Chen. Extending MultiJava with generics. Master's thesis, Iowa State University, 2004.
[2] Werner Dietl and Peter Müller. Generics and Universes. SE Annual Report 2006, ETH Zürich.