Java Annotations for Mult-Stage Programming

COMP 617 Proposal, Fall 2008

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Research problem: Create support for staging, dependent types and extensible language support for Java (Mint)

Work done so far:

1. Last semester, I provided a grammar for Java 1.5 for a particular parser generator (ANTLR) and a program to explore the ASTs generated by it.

2. Other project members have begun surveys of parsers and pretty printers.

3. I have proposed the use of Java annotations as specified in JSR 308 for use in staging.

Plan for this semester:

Using Java annotations to create multi-stage support for Java could have two advantages:

1. By default, the Java compiler ignores annotations. A program with annotations for staging could be run single-staged without modification.
2. There is a proposal for a standardized framework that integrates annotation processing into the Java compile process. Utilizing existing work could shorten the implementation time.

I will study the Java annotations specification (JSR 308) and its prototype implementation and examine if it can be used to express multi-stage programs. In the process, I will explain the current uses for Java annotations, illustrate limitations, and suggest possible improvements.

Bibliography:

1. Michael Ernst. *JSR 308: Annotations on Java Types*. Available online at: `http://groups.csail.mit.edu/pag/jsr308/`