Master Thesis

Combining Runtime and Static Universe Type Inference

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Introduction   The Universe type system [2] extends the Java type system with a new programming model that enables alias control to allow reasoning about object structures. The current Universe type system is implemented as a part of the Java Modeling Language JML. To make the Universe type system available to a wider community a programmer should be able to complete an existing Java source without or with incomplete Universe annotations in an easy and user-friendly manner. This is done by using runtime and static inference for the Universe types.

Goal of this master's project   is to combine and enhance the runtime and static Universe type inference. Both were developed in previous Master projects as stand-alone tools ([1] and [3]). The tools should be integrated into the Eclipse IDE.

The main parts   of this project are:

1. enhance existing tools for static and runtime inference so that the same formats are used and the tools can be combined,

2. integrate it into the Eclipse IDE as a collection of plug-ins,

3. define model and weights to use the results of the runtime inference for the static inference, and

4. some experiments to verify the results.

Possible extensions   of this project are:

1. more sophisticated integration of runtime and static inference,

2. optimizations and case studies.

Literatur

[1] Marco Bär. Practical runtime universe type inference. *Master Project Report*, May 2006.

[2] W. Dietl and P. Müller. Universes: Lightweight ownership for JML. *Journal of Object Technology (JOT)*, 4(8):5–32, October 2005.

[3] Matthias Niklaus. Static universe type inference using a SAT-solver. *Master Project Report*, May 2006.