JYU
JOHANNES KEPLER
UNIVERSITY LINZ

Master's Thesis
Automatic Generation of Introspection Guards

Dipl.-Ing. Markus Weninger
Institute for System Software

P +43-732-2468-4361
F +43-732-2468-4345
markus.weninger@jku.at

Student: Alexander Endtmayer
Advisor: Dipl.-Ing. Markus Weninger
Dynatrace Supervisor: Dr. Philipp Lengauer
Start date: March 2019

The Dynatrace OneAgent instruments applications to collect data about incoming and outgoing transactions. As instrumentation by means of manipulating bytecode is very error-prone, the inserted code is as minimal as possible. The inserted bytecode usually just forwards to a class that is provided by the OneAgent which then implements more complex tasks. These classes are called introspection classes. A lot of code in the introspection classes, however, could easily be generated, such as catch blocks, logging, or performance measurements.

The goal of this thesis is to develop a compiler plugin that automatically generates boilerplate code for introspection classes. Methods called by instrumented code must be marked with annotations and, depending on their configuration, wrapped with the appropriate code. The generated code must be compatible with Java 5.

The written thesis must include a qualitative evaluation and a discussion about the advantages and disadvantages of the chosen approach.

Modalities:
The progress of the project should be discussed at least every two weeks with the advisor. A time schedule and a milestone plan must be set up within the first 3 weeks. It should be continuously refined and monitored to make sure that the thesis will be completed in time. The final version of the thesis must be submitted not later than July 2019.