

Assignment 08 — 07/11/2018 – v1.0

Static Program Analysis

Please submit this exercise by mail to sma@list.inf.unibe.ch before 14 November 2018, 10:15am.

Installation

Download and unpack [this](#) project, then import it as Maven project into your IDE. Run `ReachingDefinitionsAnalysis` to start a reaching definition analysis on the provided `TestClass`. `ReachingDefinitionsAnalysis` shows an example of a dataflow analysis. Its output is stored using the file formats *Jimple* and *Dot* (on non-Windows computers also as *PDF* if you have the `dot` application installed that converts *Dot* files into the *PDF* file format). If the execution fails with an error you probably miss the `dot` application. Nevertheless, you can still visualize the *Dot* files by copying the content of a `*.dot` file into [this online renderer](#).

Exercise

Your task is to assess how *Guava v18.0*, a utility library from Google, makes use of its own APIs. You do this by statically analyzing the *Guava* code and by counting how often each internal method is invoked.

Task 1: Completion of `InternalInvocationAnalysis` (6 Points)

`InternalInvocationAnalysis` counts how often a method of an application is invoked internally, i.e., how many calls it makes to its own methods. Your task is to implement `InternalInvocationAnalysis#process()` that is applied on all methods defined within the analyzed application. Look at the class and its comments to get an idea on what is left to do. If you run `InternalInvocationAnalysis` with an implemented `InternalInvocationAnalysis#process`, you will be shown the 10 most used methods. You might want to look into the [Soot wiki](#) to better understand Soot.

- a) Submit the code of the `InternalInvocationAnalysis#process` method.
- b) Submit the output of the analysis.

Task 2: Inspection of results (4 Points)

Inspect the code (and the documentation) of the 10 most used methods in the [Guava v18.0 repository](#) with your implementation of `InternalInvocationAnalysis`. Summarize how Guava “eats its own dogfood”, i.e., what are the features that Guava uses from itself?

- a) Submit a short summary of your inspection results.