



## Bytecode Analysis for Checking Java Access Modifiers

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The access modifiers for Java are a mechanism for information hiding and therefore especially important for large projects. An access modifier that is too restrictive is reported as a compilation error. An access modifier that could be more restrictive is however not reported at all. On the long run, changes to a project lead to less restrictive modifiers, if the programmer does not actively work against it. This project is about building a bytecode analysis tool for checking the access modifiers and giving a report to the programmer, where his access modifiers could be more restrictive.

Features of the bytecode analysis tool include:

- scanning a directory for class files and processing all of them as one unit
- analysis of class modifiers, method modifiers and field modifiers
- the tool needs to analyse the bytecodes and search for method calls and field accesses
- HTML report about the results of the analysis
- introduction of Java annotations to guide the analysis (e.g. mark a method as API method that should be visible to the outside)
- report when a method should be declared as static
- report when a method should be declared in a different class

The tool should be tested on several large Java open source programs. Statistics about the results should be included in the thesis.

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