

Bachelor's Thesis

**On the Applicability of Annotation-based Source  
Code Modification in Kotlin**

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Annotations can be used to add metadata to various source code entities such as classes or methods, which later can be processed by so-called *annotation processors*.

Specifically, various applications in Java make use of annotations to modify their source code while being compiled.

While it has been well-explored how to achieve annotation-based source code modification in Java, the Kotlin community is still lacking a comprehensive summary of how this can be achieved in Kotlin.

In this thesis, the student should investigate which main approaches for annotation processing exist in Kotlin. Once the most common approaches are found, a proof-of-concept implementation for a small annotation-based sample application (pre- and postconditions as annotations for methods) should be implemented to showcase each approach's applicability to modify source code.

The thesis should also contain a discussion of each approach's pros and cons and how well each of these approaches supports modifying the source code that is currently being compiled.

If well-executed, a short version of the bachelor's thesis could be prepared together with the supervisor to be submitted to a suitable software engineering conference for publication.

**Modalities:**

The progress of the project should be discussed at least every four weeks with the advisor. A time schedule and a milestone plan must be set up within the first 3 weeks and discussed with the advisor. 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 31.08.2023.