# A Sound, Complete and Usable Hoare-Style Logic for a Sequential Java Subset

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Proofing a Hoare-style logic sound and complete is not a new idea. In [1] we find a formalization of a rather large subset of sequential Java together with a Hoare-style logic and a proof of its soundness and completeness. Why do we do it again?

Our long-term goal is to find a way to modularize reasoning about programs. So we have to find a proper notion of modules but also a way to reason about these. An axiomatic semantic seems to be the best way to do the latter. So this work can be seen as a preparation for our long-term goals: To acquire more insight into program logics and a better understanding of the used theorem prover Isabelle/HOL.

Another aim of this work is to provide a more usable logic than [1]. That essentially means to keep the important definition and especially the rules of the logic as legible and concise as possible. As a technical detail we will show how the locale mechanism of Isabelle/HOL contributed towards this aim.

### References

[1] David Oheimb, Analyzing Java in Isabelle/HOL: Formalization, Type Safety and Hoare Logic