Abstract

Formal Proof of Higman's Lemma on Isabelle/HOL

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This paper reports a formal proof of Higman's lemma on Isabelle/HOL, including its brief history of its proofs, both informal and formal ones. Among them, we focus on a formal proof based on open induction. A technical problem in a formal proof of Higman's lemma is how to manage various orderings. They share the axioms of orderings in many different contexts, with additional axioms, e.g., total ordering, well-founded ordering, and well-quasi-ordering. Isabelle provides two methods: (old) axclass and (latest) locale. We discuss on the limitaton on axclass and how to overcome it by locale.

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