Mechanical Soundness Proof of Separation Logic in Sequential and Concurrent Programming Language

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Abstract

In this UROP project, we use the concept of separation logic to apply in program verification. In the first semester, we built the operational semantic of sequential language. Next, we developed the Hoare rule for each command in our language and proved its correctness. In the following semester, we investigated the concurrent model, developed the operational semantics for the concurrent language. At the same time, we developed a new model for separation algebra called the Diamond join.