HW7

Formal Certificaiton of a Compiler Back-end

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The paper proposes formal certification of a compiler from C-minor to PowerPC assembly code using Coq, an interactive theorem prover for programming the compiler and proving it's correctness. The paper spends considerable energy into comparing their technique with the existing techniques. Its a really nice related work section. In the end, the authors perform a little performance check and observe that it measures up to optimization level 0 of gcc, which is not too bad.
Using theorem prover to prove complete compiler correctness is pretty cool. It basically passes through three stages after converting from Cminor external to C minor internal. The intermediate languages chosen are not entirely new or unknown such as RTL, LTL, and linear and Mach. I wonder why this was not done before this? Also, if instead of using Coq, had the authors used an automated theorem prover such as Z3, will it work? Or Isabelle?