Detecting Logical Errors in Haskell

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Abstract : In order to facilitate both processes, this paper presents HaskellFL, a tool that uses fault localization techniques to locate a logical error in Haskell code. The Haskell subset used in this work is sufficiently expressive for those studying functional programming to get immediate help debugging their code and to answer questions about key concepts associated with the functional paradigm. HaskellFL was tested against functional programming assignments submitted by students enrolled at the functional programming class at the Federal University of Minas Gerais and against exercises from the Exercism Haskell track that are publicly available on GitHub. Furthermore, the EXAM score was chosen to evaluate the tool's effectiveness, and results showed that HaskellFL reduced the effort needed to locate an error for all tested scenarios. Results also showed that the Ochiai method was more effective than Tarantula.