Abstract

One-shot Delimited Continuations

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Coroutines and delimited-control operators are useful means for abstracting control in sequential programs. While the former is considered equivalent to the one-shot case of the latter, the literature only provides its proof in the presence of states, which makes it hard to precisely compare the expressive power of the two. This presentation gives a simpler translation with a simpler correctness proof for the property that one-shot delimited-control operators can be expressed by asymmetric coroutines without relying on the presence of states. More precisely, we give an simulation of the one-shot delimited control-operators shift0 and reset0 in terms of asymmetric coroutines by de Moura and Ierusalimschy. Our simulation is syntax-directed and does not rely on states, thus establishing the essential connection between the two. We prove, with elementary arguments, that our translation preserves operational semantics.

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