

Title: Enhancing Formal Semantics of SMoLest: Adding Conditionals, Syntactic Sugar, and Reversing Evaluation Order

Abstract:

In this project, I extend the formal semantics of the SMoLest programming language using the Redex system, aimed at providing a comprehensive understanding of language constructs and evaluation strategies. The enhancements include the addition of conditionals for Boolean expressions and reference equality checks, introducing syntactic sugar for commonly used constructs like `let`, `let*`, and `begin`, and altering the evaluation order of function arguments from left-to-right to right-to-left. These modifications not only deepen the understanding of formal language specification but also offer practical insights into language design and implementation. Through rigorous testing and evaluation, I ensure the correctness and effectiveness of these extensions, thereby enriching the capabilities and expressiveness of the SMoLest language within a formal framework.