

Title: Redex: Transforming Language Definitions through Conditionals, Syntactic Sugar, and Reversal

Abstract:

Understanding how to define programming languages is crucial in Computer Science, because it helps analyze, verify, and modify code structures. Redex, a language/library built on Racket, aids in giving formal meaning to these languages. This capstone project explores Redex in depth, focusing on three areas: adding conditionals for more complex rules, simplifying language writing with syntactic sugar, and examining languages differently by reversing the evaluation order of function arguments.

The addition of conditionals improves Redex's ability to handle diverse code flows. Using syntactic sugar makes writing functions simpler while keeping the meaning clear. Additionally, the project examines language definitions by flipping the evaluation order of function arguments, offering a new perspective.

Overall, this project delves into the formal definition and alteration of languages, fundamental for creating new programming languages and studying their functions. It emphasizes the necessity of adaptable tools for constructing and analyzing programming languages. The goal is to contribute to formal methods and language theories, showcasing Redex's adaptability and usefulness in defining languages.