Design Document

1. **Introduction**

* The language is called SEA++
* The language’s Paradigm:
  + Stack-based language
* The Language’s Unique Features:
  + String operations
  + Static type system
  + Infix to RPN notation of integer expressions

1. **Design**

* The language’s Base Features:
  + Basic data types and operations will be implemented at the **core** level, because they are the foundation of our programming language.
  + Conditionals will be implemented at the **core** level due to the need for logic switching.
  + Recursion will be implemented at the **core** level due to the necessity of repetition in more abstract functions.
  + Stack manipulation operations will be implemented at the **core** level, because the operations will be defined as a part of a command
  + Procedures/functions with arguments will be implemented at the **core** level, because they will be a part of the basic command implementation.
  + Static type system will be implemented at the **core** level, because the type checking will be built with the basic data types.
  + Strings and operations will be implemented at the **syntactic sugar** level, because strings will be comprised of the basic data type “char”.
* The language’s Safety Systems:
  + Static Type System, no type errors
  + Stack will not underflow/overflow

1. **Implementation**

* The language’s semantic domains:
  + Integers, boolean values, arithmetic expressions, strings, functions.
* Unique Implementation Highlights:
  + String concatenation and reversal.
  + Data types will be checked statically.
  + Reverse polish notation will be a unique feature to allow stack math.

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