Specification document

Problem to be solved

A reasonably performing programming language interpreter, for a nice functional language.

Targets

- Functional
- Light syntax
- Mostly immutable
- Macro system

Example

The language **might** look something like this:

```
stuff = [42 36 72]
add = (arg1, arg2) ->
    arg1 + arg2
main = (args) ->
    print(reduce(add, stuff)) # 150
    for range(100), (i) ->
        print(i) # 0..99
    length(args) == 0 ?
        print("No args")
!?
    printf("Args: {}", args)
```

Algorithms and data structures

Data structure	For	Time Complexity	Space Complexity
Hash Table	Scoping, use in programming	mostly O(1)	0(n)
Dynamic Array	Use in programming	mostly $O(n)$	0(n)
Stack	Programs run on a stack	0(1)	0(n)
Some tree	Representation of source, programming	$O(\log(n))$	0(n)
Heap	Use in programming	O(log(n))	0(n)

Algorithm	For	Time Complexity	Space Complexity
Pratt parser	Creates an AST tree from the tokens	LL(1) O(n)	0(n)
Some tokenizer	Creates tokens from the source code	O(n)	0(n)
Some GC	For collecting garbage	Not sure	Not sure
Some sort	For programming	O(n log(n))	Not sure