RPN Calculator - Specifications Sheet

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1   Objective

In a quest to spread the joys of using a Reverse Polish Notation (RPN) Calculator, and the efficiency of the stack, a basic calculator will be presented. This calculator will do most everything a calculator should, it will add, subtract, multiply, and divide. The only difference to a regular calculator, will be in its strange, to most, operational syntax.

2   Postfix vs. Infix

RPN style calculators have been around for a while and are definitely not a new concept, and were born out of simplicity. RPN does math using postfix notation, meaning input looks like 2 5 +. Infix, what we think of when we think calculator these days, uses notation that is very similar (sometimes identical) to how we actually write math, 2 + 5. Infix lends itself to readability, while postfix lends itself to efficiency.

3   Goals

- Basic REPL, for user interface

- A working stack

- 4 basic mathematical operations: + - * /

3.1   Secondary Goals

- Display of top items on stack on screen

- Additional math operations: sqrt and pow

- Stack manipulation: swap and dup

- (Really ambitious) User variables

4   Concerns

The biggest concern going into this project will be the limited ROM and RAM of the Jack machine. Additionally the limited standard library of the Jack language will prove to be quite challenging, since a lot of underlying data structures will have to be implemented.

5   User Interface

The user interface will be a simple text based interface. The user will have a basic input line at bottom of line. Bad input checking will be minimal at best so the program is relying on the user to enter valid input. Additionally every element to the stack must be entered separately, simply separating elements with spaces will not be accepted. While this interface may sound limited to other similar programs (dc), it does not at all reduce the functionality.