**Introduction**

Definitions

* *Function* – Takes one or more arguments and evaluates to a single number
* *Operator* – A mathematical function that has two arguments and is written in infix notation
* *Operand* – A numerical argument to an operator
* *Expression* – A syntactically correct string of numbers and operators
* *Result* – The evaluation of an expression
* *Field* – The text area that acts as a display for expressions
* *Precedence* – Determines the order of operations

Purpose

The purpose of this document is to specify the requirements of the client-requested calculator. This document tries to state all necessary user and system requirements and will act as a guideline for system developers.

**System Requirements**

Properties

Compatible Platforms: Windows, Mac OS X, Linux

Language: Java SE 8

**User Requirements**

# Expressions

Memory

Up to 10 of the most recently evaluated expressions will be stored in a text file when the application is closed by the user. When the application is opened, that text file's existence is checked. If it exists, use it to initialize history; otherwise, start normally.

Operators

All conventional operations are supported along with the modulus operator as well. Below is a table that specifies each operation's related symbol and precedence. For precedence, 1 is the “highest”, and 3 is the “lowest”, and all operators are left associative.

|  |  |  |
| --- | --- | --- |
| Operator | Symbol | Precedence |
| Exponentiate | ^ | 1 |
| Multiply | \* | 2 |
| Divide | / | 2 |
| Modulo | % | 2 |
| Add | + | 3 |
| Subtract | - | 3 |

Output

Each result will be a decimal number with up to 10 digits of precision.

# Interface

Functionality

* When one of the six conversion functions is clicked, an appropriate expression will be generated as the last expression, and the result will be displayed in the field.
* If the current expression is empty, all six conversion functions are disabled.
* If the current expression is not the last expression, the “=” button is disabled.
* The “Ans” button inserts the result of the previous calculation into the last expression.
* The “Clr” button clears all expressions and the current result, if they exist.
* The “Del” button deletes the last character in the last expression, if either exists.