

Calculator

This is a simple java application written to evaluate mathematical expressions. *GitHub* hosts an up-to-date version at <http://github.com/sahasatvik/Calculator>

Documentation

The `docs/` folder in this repository contains an extensive documentation of the libraries used by Calculator. You can start at `docs/index.html`.

Usage

Execution

Navigate to `bin/`, or add it to your classpath, then simply enter :

```
java Calculator
```

Compiling

Compile all `.java` source files in `src/` in their directory, or use `javac -d bin/` in order to keep binaries and sources separate. Documentation can be regenerated by using `javadoc -d docs/ [src/source/files.java] -author -version`.

Alternatively, you can simply use the shell scripts `build` and `buildDocs` if you are running a UNIX-like OS.

Manual

Arithmetic Expressions

Calculator can evaluate simple arithmetic expressions, using the operators (`+`, `-`, `*`, `/`, `^` (power)), as well as parenthesis (`(`, `)`). *Calculator* follows the BODMAS rule.

Examples

<code>1 + 1</code>	<code>=></code>	<code>2.0</code>
<code>1 * (2 + 3)</code>	<code>=></code>	<code>5.0</code>
<code>10 * (64 ^ -0.5)</code>	<code>=></code>	<code>1.25</code>

Variables

Calculator can also store user-defined *variables*. A total of 32 variables can be stored in one runtime.

Syntax

<code>var = value</code>	>	assign 'value' to 'var'
<code><var></code>	>	<code><var></code> will be replaced by its value.

Uses

<code>x = 3</code>	=>	3.0
<code>y = <x> + 1</code>	=>	4.0
<code>(<x>^2 + <y>^2)^0.5</code>	=>	5.0

Miscellaneous features

Nesting of assignments is also supported, as follows :

<code>x = 1 + (y = 1)</code>	=>	2.0
<code><x></code>	=>	2.0
<code><y></code>	=>	1.0

A special variable `<ans>` stores the previous expression. Thus, the following is valid :

<code>1 * 2 * 3 * 4</code>	=>	24.0
<code><ans> * 5</code>	=>	120.0

Functions

Calculator supports the use of some basic *functions*.

Syntax

<code>fnc[value]</code>	>	evaluate 'fnc' of 'value'
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Uses

```
sin[<pi> / 2]    =>    1.0
1 + abs[2 - 3]   =>    2.0
log[<e> ^ 3]     =>    3.0
```

Function	Value returned
<code>abs[x]</code>	absolute value of <code><x></code>
<code>exp[x]</code>	exponent of <code><x></code> (<code><e> ^ <x></code>)
<code>log[x]</code>	logarithm of <code><x></code> (base <code><e></code>)
<code>fct[x]</code> or <code>x!</code>	factorial of <code><x></code>
<code>deg[x]</code>	convert <code><x></code> to degrees from radians
<code>rad[x]</code>	convert <code><x></code> to radians from degrees
<code>sin[x]</code> , <code>cos[x]</code> , <code>tan[x]</code> , <code>csc[x]</code> , <code>sec[x]</code> , <code>ctn[x]</code>	trigonometric functions (<code><x></code> in radians)

Commands

Calculator interprets expressions starting with `/` as *commands*. These are special expressions which are not parsed as mathematical expressions, but as instructions to the *Calculator*.

Command	Purpose
<code>/help</code>	general help
<code>/help vars</code>	help on <i>Variables</i>
<code>/help funcs</code>	help on <i>Functions</i>
<code>/help cmds</code>	help on <i>Commands</i>
<code>/list vars</code>	list <i>Variables</i>
<code>/list funcs</code>	list <i>Functions</i>
<code>/list cmds</code> or <code>/list</code>	list <i>Commands</i>
<code>/exit</code>	exit <i>Calculator</i>