

**VISIBLE STACK CALCULATOR INDEX**

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**About**

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**.**

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## Overview

This program is a scientific calculator. It is similar to other stack (or Reverse Polish Notation -- RPN) calculators, but with enhancements that make it easier to use and understand.

Remember that before you can perform any operation on a number, that number must be pushed onto the stack (visible in the large box with the scroll bar beside it) by clicking the 'Push' button with the mouse. (Pressing either the "Enter" key or the right-arrow key also pushes the number onto the stack.) For instance, if you wanted to subtract 3 from 5 you would click ....

'5', 'Push', '3', 'Push', '-'.

The result, 2, will be found at the top of the stack window. Note that the 5 and 3 are on the stack before you click the '-' button and that the 5 is pushed before the 3. This is a concept that takes a little getting used to, but users of RPN calculators know that a very short learning curve will soon pay for itself with power of computation and real ease of use -- especially for computations that are more complicated than "5-3=2." This is because intermediate results can be kept on the stack.

Other RPN calculators provide only a tiny stack window, and the user must imagine what is happening on the stack. With this calculator, you will be able to see the stack through a large window as you manipulate it.

Other RPN calculators' functions (like "Swap", "+", and "Rot") only operate on the top few items of the stack. For instance, when the "Swap" button is pressed, the first two members of the stack are switched. But with the Visible Stack Calculator, you can scroll the stack. Any operator will work on the first few items in the stack window just as if they were the top items on the stack. On a practical level, this means that you can keep a number of different calculations going on the stack at the same time, and move around to the different ones by scrolling the stack. Technically, this makes the stack more than a stack--it makes it a kind of linked list. But you don't have to know any more than you would with an old-fashioned stack calculator -- except how to drag and click scroll bars. Remember that you can fine-adjust scroll bars by clicking the arrow buttons at each end. The up- and down-arrow keys can also be used for fine adjustments.

Take some time to browse through the rest of the documentation, then just play with the calculator for a while. You'll get the hang of it in no time.

## **Buttons**

C, <-, +/-

Pop, Push, Swap, Rot, Dupe, Clear

Sum, Mean, Stdev

Sin, Asin, Cos, Acos, Tan, Atan, Log, Ln, Mod, Pi, Sqr, Sqrt, ^, 1/x, Exp

., Numbers, e +/-,

+, -, \*, /

DEC, SCI, HEX

## **DEC,SCI,HEX**

Input to the small editing box is always in normal decimal notation or scientific notation. However, the stack can be displayed in decimal, scientific, or hex notation by pressing the appropriate button. When displaying the stack in hex, the numbers appear to be truncated, but they have NOT been changed internally, so you can always go back to decimal or scientific notation without affecting your calculations. Negative numbers and very large numbers are also not displayed in hex mode. When in decimal mode, very large numbers are displayed in scientific notation.

**+, -, \*, /**

These buttons act on the first two numbers in the stack window. The first two numbers in the window are removed. The result of the operation on these two numbers is placed at the top of the window. The rest of the stack is shifted so that there will be no empty space.

With '/', the number at the top of the stack window divides INTO the second number from the top of the window. With '-' the number at the top of the stack window is subtracted FROM the second number from the top of the stack window. If you find that you have pushed the numbers onto the stack in the wrong order, simply click the 'swap' button just before clicking '/' or '-'.

The '+', '-', '\*', and '/' keys can be used in place of the buttons.

## **.,Numbers,e+/-**

Pressing any number key or clicking a number button will place that number into the small editing box. The '.' key and button works similarly. Pressing the 'e' key or the 'E' key or clicking the 'e+/-' button will place the 'e+' symbol in the small editing box. (The 'e+/-' button can be used both in scientific and decimal mode. In decimal mode, the system will try to convert the number to decimal when it is pushed. It will not do so only if the number is too large.) Each subsequent time that the 'e+/-' button is clicked after the 'e+' symbol appears in the small editing box, the symbol will toggle between 'e+' and 'e-'.

## **Sin,Asin,Cos,Acos,Tan,Atan,Log,Ln,Mod,Pi,Sqr,Sqrt,^,1/x,Exp**

Pi pushes the value of Pi onto the stack at the top of the stack window.

'^' raises the second number in the stack window to the power of the first number in the stack window. The result is placed at the top of the stack window after the first two numbers are removed, and the stack is shifted so that there will be no empty space.

Mod divides the second number in the stack window by the first. The remainder is placed at the top of the stack window after the first two numbers are removed and the stack is shifted so that there will be no empty space.

For the other functions, the number at the top of the stack window is replaced with its own sine, arc sine, reciprocal, etc. If you want the original number to remain on the stack, press 'dupe' before pressing one of these buttons. The trig functions return their answer in radians. Log is the base 10 log; Ln is the natural log, and 1/x is the reciprocal of the number at the top of the stack window.



## **C,<-,+/-**

These are all special editing buttons for the small editing box at the top left of the calculator.

The 'C' button clears the calculator's small editing window. You will need to press it after errors occur, or whenever you want to re-try the edit you are making in the small window. Pressing the 'c' or 'C' key has the same effect. Do not confuse this button with the 'Clear' button, which clears the stack.

The '<-' button erases the last character in the small editing box. Pressing the backspace key has the same effect.

The '+/-' button toggles the number in the small editing box between positive and negative. Pressing the 'n' or 'N' key has the same effect.

=

**Sum,Mean,Stdev**

The sum, mean, or standard deviation of the stack from the top of the stack window will be pushed onto the stack at the top of the window. Nothing is removed from the stack when you use these buttons.

### **Pop,Push,Swap,Rot,Dupe,Clear**

These buttons manipulate the stack.

**Pop** removes the number from the top of the stack window and places it in the small editing box. The stack is shifted to close the empty gap. If there are no numbers on the stack to remove, you will be warned. The left-arrow key can also be used to pop numbers.

**Push** shifts the stack to create an empty space at the top of the stack window. Then it moves the number from the small editing box to the top of the stack window. You must push one or more numbers onto the stack before you can use any of the operations like addition, trig, stack manipulation, etc. If there is nothing in the small editing box, 0 is pushed onto the stack. Both the enter key and the right-arrow key can also be used to push numbers.

**Swap** interchanges the two numbers at the top of the stack window. Pressing Swap twice consecutively will leave the stack as it was before Swap was pressed.

**Rot** saves the number at the top of the stack window. Then it shifts the next two numbers up. Then it moves the saved number to the space left by the shifted numbers. Pressing Rot three times consecutively will leave the stack as it was before Rot was pressed. If this sounds complicated, place three different numbers onto the stack and press Rot a few times to see what happens.

**Dupe** puts a copy of the number at the top of the stack window into the top position in the stack window after shifting the stack to make a space for it.

**Clear** clears the stack. The entire stack is cleared -- not just from the stack window. (Do not confuse 'Clear' with the 'C' button, which clears only the small editing box.)