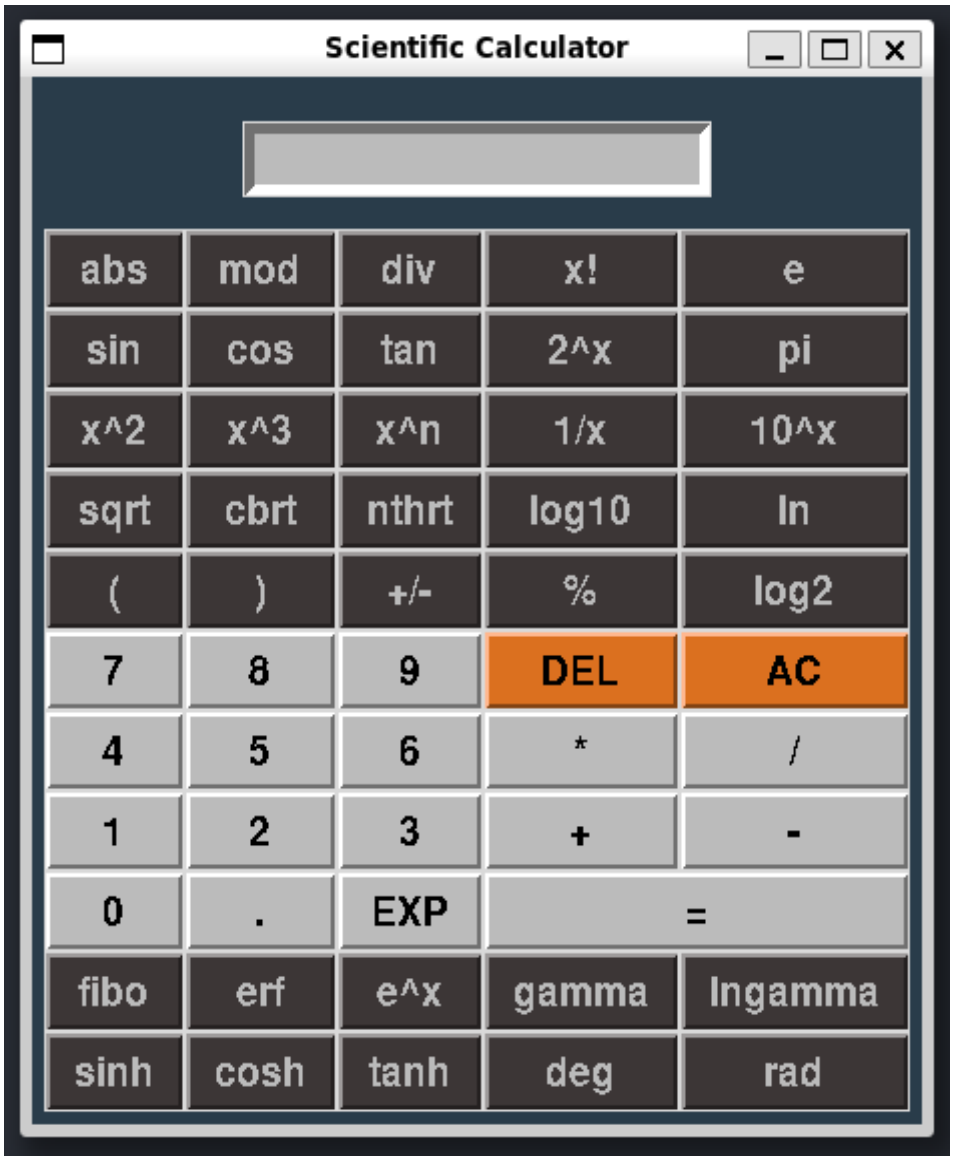
Tkinter Calculator

Scientific calculator using Python's library Tkinter



Some explanations for each button and the function which represents are the following :

- **1st Row**

1. **abs** : The absolute value of a number (e.g. abs(-5) = 5).
2. **mod** : From *modulo*. it's the operation to find the remainder of the division of one number by another.
   In python we use the symbol % (e.g. 5mod2 = 5%2 = 1).
3. **div** : Floor division returns the result of the division rounded down to the nearest integer.
   In python we use the symbol // (e.g. 8div3 = 8//3 = 2).
4. **x!** : The factorial of the number x (e.g. 4! = 24).
5. **e** : The Euler's number. A mathematical constant approximately equal to 2.71828.

- **2nd Row**

1. **sin** : Sine of an angle θ in degrees (e.g. sin(90)=1).
2. **cos** : Cosine of an angle θ in degrees (e.g. cos(180)=-1).
3. **tan** : Tangent of an angle θ in degrees (e.g. tan(45)=1).
4. **2^x** : Powers of 2 (e.g. 2^3 = 8).
5. **pi** : Archimedes' constant defined as the ratio of a circle's circumference to its diameter. It is approximately equal to 3.14159.

- **3rd Row**

1. **x^2** : x raised to the power of 2 (e.g. 4^2 = 16).
2. **x^3** : x raised to the power of 3 (e.g. 5^3 = 125).
3. **x^n** : x raised to any power (e.g. 2^4 = 16).
4. **1/x** : e.g. 1/2 = 0.5 (where x = 2).
5. **10^x** : Powers of 10 (e.g. 10^3 = 1000).

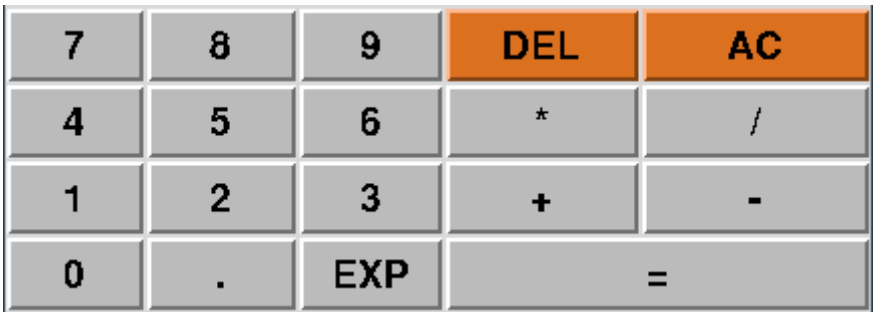
- **4th Row**

1. **sqrt** : Square root of a number (e.g. $\sqrt[2]{144}$ = 12).
2. **cbrt** : Cube root of a number (e.g. $\sqrt[3]{8}$ = 2).
3. **nthrt** : Any root of a number (e.g. $\sqrt[4]{16}$ = 2).
4. **log10** : The logarithm of a number with base 10 (e.g. $\log_{10}1000 = 3$).
5. **ln** : The logarithm of a number with base e (e.g. $\log_e e$ = ln e = 1).

- **5th Row**

1. **(** : Left parenthesis.
2. **)** : Right parenthesis.
3. **±** : Change the sign of a number.
4. **%** : Find the percentage of a number (e.g. 5% = 0.05).
5. **log2** : The logarithm of a number with base 2.

- **6th,7th,8th,9th Row**



In these rows are :

-> The basic number buttons (0 to 9).
-> The basic math symbols (operators) (+, -, *, /).
-> The equal sign (=) and point (.).
-> Button **DEL** to delete one or more from the end of the entry.
-> Button **AC** to delete the whole entry.
-> **EXP** : Multiply any number with powers of 10 (e.g. 2 * 10 ** 3 = 2000).

- **10th Row**

1. **fibo** : The nth fibonacci number.
2. **erf** : The error function erf(x) of a number x.
3. **e^x** : Expotential function (e.g. e^2=approx 7.389).
4. **gamma** : The gamma(x) function of a number x.
5. **lngamma** : The ln(gamma(x)) function of a number x.

- **11nd Row**

1. **sinh** : Hyperbolic sine of an angle θ in degrees.
2. **cosh** : Hyperbolic cosine of an angle θ in degrees.
3. **tanh** : Hyperbolic tangent of an angle θ in degrees.
4. **deg** : Conversion of radians to degrees.
5. **rad** : Conversion of degrees to radians.

- In order to run the calculator download and open the file from the `bin/` folder(for ubuntu users with intel CPUs only).
- You can copy/paste numbers from/to the calculator.
- For all functions except **x^n**, **nthrt**, **EXP** you need to type or paste the number and then press the button for a result to appear(you don't need to press `=`).
- When you type **x^n** `**` will appear when on the left you type the base and on the right the exponent and then you need to press `=` to compute.
- When you type **nthrt** `**(1/` will appear when on the left you type the base and on the right the exponent divided by 1 e.g. `256**(1/4)` for a root of 4 and then you need to press `=` to compute.

- When you type **EXP** `*10**` will appear when on the left you type the base and on the right the exponent e.g. `3*10**8` and then you need to press `=` to compute.
- For all arithmetic operations (+, -, multiplication via * and division via /) as well as **mod** and **div** you need to press `=` to get the result

Authors

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