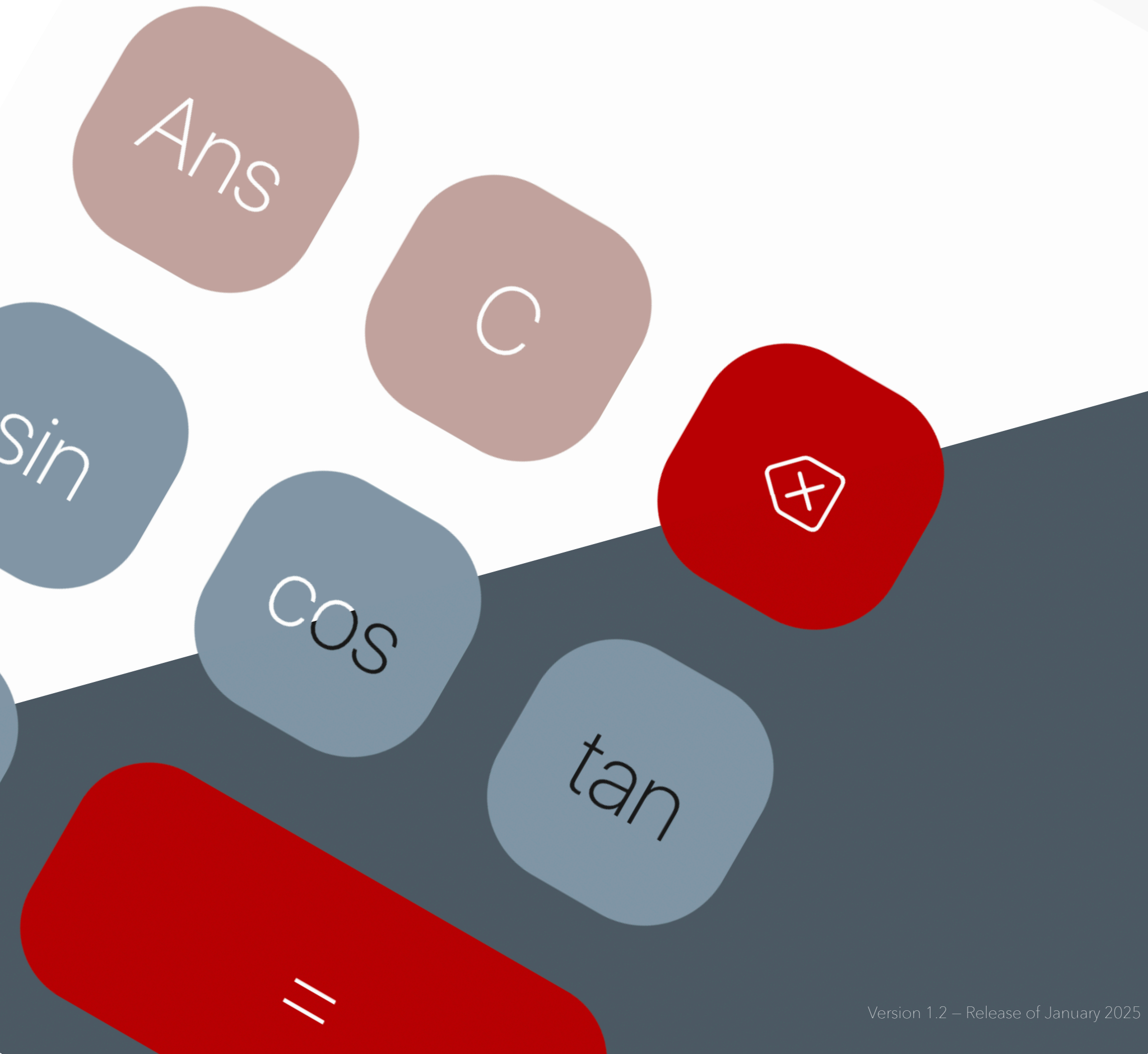
User Manual For

Nucleus Calculator

2025©



Version 1.2 – Release of January 2025

THANK YOU FOR DOWNLOADING

Thank you for downloading the original copy of Nucleus Calculator created and developed by Parsa SabetZadeh. You will be using version 1.2 , release of January 10, 2025, with this copy. Please note, that any use that would or could harm copyright laws will be legally encountered with. Looking at the code and modifying it for only educational and personal purposes is not considered as breaking the copyright laws.

Continue reading this User Manual to find how you can use Nucleus Calculator for your scientific calculations.

Welcome to Nucleus Scientific Calculator

Nucleus Calculator is a scientific expression parsing calculator.

Meaning you can enter your mathematical expressions that include exponential functions, square roots or squared parentheses, factorials and logarithms including natural logarithm and even the four main trigonometric functions using standard radian units and get your results back, you can also use your previous answer anywhere in your expression that you'd like.

For the matter of your comfort and focus, User Interface of Nucleus is automated with your device's choice of either light or dark mode so you won't have to manually switch the UI Mode every time you switch your device's mode.

Nucleus is designed with the maximum efficiency, so your largest expressions will be back to you in matter of hundreds of a second and your memory will not be filled and cause crashes in or for the application.

The main technologies used to create Nucleus are Python 3.12+ for the core brain and JavaScript (ECHMA23+) for a dynamic UI and UX. The package of the application is in standard web architecture, formed in two main parts as FrontEnd and BackEnd, connected through Chris Knott's Python Eel Library and a minimal database to load the history and logs from, directly to the UI for you.

The UI has been carefully designed to create the maximum reliability in UX and increase your muscle memory along with using components that you are already familiar with to increase your speed during your work with the calculator. You do not need to write the expression by keyboard, causing yourself a lot of confusion in using right weird symbols. Nucleus uses simple keypad divided and color coded for you to easily enter your expressions and be sure the result is what you want.

This manual is only going to show you the very few simple techniques to work with the calculator, as that is all you need to start working on your expressions.

KeyPad

— A carefully designed keypad is dynamically loaded to the UI when you load the app. Buttons on the keypad show you the hover and active status of them so you know you've clicked them.

Each button when you use them, will have an output in the operation section of the output window. For the sake of making a general common factor between Nucleus and your other tools that you may use beside Nucleus, the operation will be outputted in the common digital mathematical notation, that many websites and other tools use as well.

The keypad is made of three sections. From left to right:

- Numeric Keypad: Numbers and basic operators along with a comma key for entering floating points.
- Functional Keypad: Parentheses, percentage and other functions along with irrational numbers of Pi and Euler's Constant.
- Trigonometric Keypad and ToolKeys: ToolKeys such as delete, clear, last answer and equals along with main trigonometric functions.

Functions

— Functions are designed as simple as possible. Note that Nucleus completely supports nested functions and you can use them however you'd like.

To use functional keypads, first click on the function key then use rest of the keypad to complete your expression. Please note that the expressions you enter will face an error if they have issues in the domain of arguments or expressions you enter.

An exception is for factorials, that you should first enter the function (as any other) and then enter the argument expression you want. This is to make a common functionality between all functions supported by the calculator.

Note that in the current version is more dynamic with trigonometric functions than the operatic mathematical functions in the middle section of the keypad.

History & Logs

— History list is located in the top left of the screen, giving you the access to see your 10 previous expressions + results that you can reuse simply.

In the top left, you find the spinning settings icon that gives you access to technically the logs of your use. This option gives you access to 100 previous expression, results and even the date and time you have entered them. You can also simply reuse those as in the history list.

Final Word

You can use the calculator safely with your calculations as the results have been tested in numerous ways and tested in different conditions, specially in using nested complicated functions . You can show your support and tell me your suggestions and critics in the Github Repository.

Note that the codebase is fully developed by Parsa SabetZadeh with minor help from the Paul McGuire's Parser algorithm, as well as the entire UI and UX.

Use the app, and enjoy!

— Parsa SabetZadeh,
Friday, January 10, 2025