Title: Scientific Fraculator

# Description: A graphical calculator application for performing both simple and scientific calculations using the Tkinter library in Python.

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## Introduction

The Scientific Fraculator is a desktop application developed using Python and the Tkinter library. It provides users with the ability to perform both simple and scientific calculations while maintaining a user-friendly graphical interface. The application offers a wide range of mathematical functions and supports the use of variables.

## Requirements

Python 3.6 or later

Tkinter library (usually included with Python)

## Main Components

The application consists of the following main components:

* Root Window: The main application window that houses all other components.
* Clock: A widget that displays the current time.
* Memory Section: Allows users to store and retrieve values for variables x, y, and z.
* Input Screen: A multiline text widget where users can input mathematical expressions.
* Navigation Buttons: Arrow buttons to navigate within the input screen.
* Output Screen: A widget that displays the result of the calculation.
* Buttons Section: Contains buttons for various mathematical functions and operators.

### Functions and Features

The Scientific Fraculator offers the following functions and features:

* Simple calculations (addition, subtraction, multiplication, division)
* Scientific functions (trigonometric, inverse trigonometric, logarithmic, exponentiation, factorials, square roots, cube roots, and more)
* Fraction support
* Use of variables (x, y, z) in calculations
* Pi constant support
* Angle conversion (degrees, radians)
* Navigation buttons for moving through the input screen.
* Shortcuts for common actions (Enter, Tab, Escape)

## Usage

To use the Scientific Fraculator, follow these steps:

* Run the application by executing the Python script.
* Select either Simple or Scientific mode to display the appropriate buttons for your calculations.
* Type your calculations in the middle line of input screen, using the buttons or keyboard as needed.
* Press the "=" button or the Enter key to calculate the result, which will be displayed in the output screen.
* Use the Memory Section to store and retrieve values for the variables x, y, and z.
* Utilize the navigation buttons or keyboard shortcuts for easier navigation within the input screen.

## Methods of Entering Fractions:

### Method 1:

To enter a fraction in this calculator, you can use the division symbol (/) between the numerator and the denominator. Here's how to input a fraction:

1. Enter the numerator (the top number of the fraction) using the number buttons or by typing it directly.

2. Press the division button ("/") or type it using the keyboard.

3. Enter the denominator (the bottom number of the fraction) using the number buttons or by typing it directly.

### Method 2:

1. Navigate to the location in the multi-line display where you want to enter the fraction.

2. Press the 'Tab' key to enter the fraction mode.

3. Type the numerator of the fraction.

4. Press the 'Tab' key again to move to the denominator.

5. Type the denominator of the fraction.

6. Press the 'Tab' key one more time to complete the fraction input. The fraction is now entered, and you can continue to input other expressions or perform calculations.

## LIMITATIONS

This program has several limitations that users should be aware of:

* This is beta version of the project, and it may have errors.
* The User Should start typing from the middle line of the input screen.
* It does not support complex numbers or advanced mathematical functions such as calculus or linear algebra.
* It does not provide output in integer fraction form.
* It may not be suitable for use in high-precision or mission-critical applications.

## TROUBLESHOOTING

If you encounter any issues while using the program, try the following troubleshooting steps:

* Check that you have entered the expression in middle line (second line) of input screen and selected a valid operation from the menu or calculator buttons. Pressing CE button usually clears all text editing problems.
* Make sure that you have Python 3.x installed on your computer and that it is properly configured.
* If you encounter any error messages or crashes, try restarting the program or your computer and attempting the operation again.

## SUPPORT

If you need additional support or have questions about the program, please contact the developer at inayat@uok.edu.pk.