Sci-Calculator
Documentation

Introduction

The Sci-Calculator is a C program designed to provide various mathematical operations and functionalities including arithmetic calculations, trigonometric functions, logarithmic calculations, memory management, unit conversions. It offers a user-friendly interface with a menu-driven approach for easy navigation through different operations.

Features Overview

1. Basic Operations

- **Addition and Subtraction:** Parses and calculates arithmetic expressions containing **+** and **-**.
- **Multiplication and Division:** Parses and calculates expressions involving ***** and **/**.
- **Modulo:** Computes the modulo operation between two integers.
- **Square Root:** Calculates the square root of a given number.
- **Absolute Value:** Computes the absolute value of a number.
- **Prime Factorization:** Factorizes a positive integer into its prime factors.

2. Mathematical Functions

Trigonometric Functions:

- Sine, Cosine, and Tangent: Computes trigonometric functions based on the entered value. Supports angle units in Degrees, Radians, and Gradians.
- Arcsine, Arccosine, and Arctangent: Calculates inverse trigonometric functions.

Logarithmic and Exponential Functions:

- Logarithm: Calculates logarithm with base 10.
- Natural Logarithm: Computes the natural logarithm.
- Exponential: Computes the exponential value of a number.

3. Configuration Settings

Edit Settings: Allows users to modify the calculator settings.

- Change Angle Unit: Allows choosing between Degrees, Radians, and Gradians.

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4. Memory Management and Read Memory

Memory Handling: Provides functionality to store and retrieve values from memory.

- Store Value in Memory: Stores a numeric value in memory.
- Read Memory: Displays the value currently stored in memory.

5. Unit Conversions

Length, Area, Volume, Weight, and Temperature Conversions: Converts values between different units from US to Metric within each category.

How to Use

Running the Program

- Compile and run the program in a C-compatible environment.
- Upon execution, the program displays a menu with options.

Menu Navigation

- Choose an option by entering the respective number from the menu.

Performing Calculations

- Follow on-screen instructions to input values and perform calculations.
- For arithmetic operations, enter expressions containing relevant operators as prompted.

Configuration Settings

- Access the 'Edit' option from the menu to modify angle units or memory values.

Conversions

- Select the 'Conversions' option to convert values between different units from US to Metric (length, area, volume, weight, temperature).

Exiting the Calculator

- Choose 'Exit' or a similar exit option from the menu to exit the calculator.

Additional Notes

- Ensure to provide valid inputs as instructed by the program for accurate calculations.
- The default angle unit is set to Radians. Modify this setting in 'Edit' if needed.
- Follow the prompts and instructions displayed by the program for smooth operation and accurate results.

This documentation serves as a comprehensive guide to understand and utilize the functionalities provided by the Sci-Calculator program. Users can navigate through the

menu-driven interface to perform various mathematical operations, configure settings, manage memory, and perform unit conversions effortlessly.