Comprehensive User Manual for Arithmetic Expression Evaluator

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**1. Introduction**

Welcome to the Arithmetic Expression Evaluator, a program designed to take arithmetic expressions as input, evaluate them, and print the result. This manual provides detailed information on how to use the program effectively.

**2. System Requirements**

**2.1 Supported Platforms**

The Arithmetic Expression Evaluator is written in C++ and is compatible with platforms that support C++ development.

**2.2 Software Requirements**

Ensure you have the following software installed on your system:

- C++ Compiler: A compatible C++ compiler to build and run the program.

**3. Installation**

No installation is required for this program. Follow the steps below:

**3.1 Downloading the Code**

1. Copy the provided C++ code.

2. Open a C++ development environment or text editor.

3. Paste the code into a new or existing file.

**3.2 Compiling and Running**

1. Compile the code using your C++ compiler.

2. Run the compiled executable.

**4. Usage**

To use the program, follow these steps:

1. Open a C++ development environment or editor.

2. Copy and paste the provided C++ code into a new or existing file.

3. Compile and run the program.

Upon running, the program will prompt you to enter an arithmetic expression. After inputting the expression, the program will evaluate it and print the result.

**5. Examples**

**Example 1:**

Enter expression: 2 + 3 \* (4 - 1)

The result is: 14

**Example 2:**

Enter expression: 5^2 - 3

The result is: 22

**Example 3 (Error - Missing Parenthesis):**

Enter expression: 2 \* (3 + 4

Invalid expression: Missing parenthesis.

**Example 4 (Error - Division by Zero):**

Enter expression: 8 / 0

Invalid expression: Division by zero.

**Example 5 (Error - Invalid Character):**

Enter expression: 2 3

Invalid expression: Invalid character.

**6. Troubleshooting**

**6.1 Invalid Expression: Missing Parenthesis**

If the program encounters an imbalance in the number of opening and closing parentheses, it will display an error message.

**6.2 Invalid Expression: Division by Zero**

An attempt to divide by zero will result in an error message, and the program will terminate.

**6.3 Invalid Expression: Invalid Operator Sequence**

If an invalid operator sequence is detected within parentheses, the program will display an appropriate error message.

**6.4 Invalid Expression: Invalid Character**

If an invalid character is entered in the expression, the program will terminate and display an error message.

**7. Version History**

Version 1.10 (Initial release)

**8. Acknowledgments**

This program is based on the work of Derek Norton, Ryan Grimsley, Jordan Burns, Manu Redd, and Priyatam Nuney.