Team 1

Arithmetic Expression Evaluator

User's Manual

Version 1.0

Revision History

Date	Version	Description	Author
<09/12/24	1.0	Wrote the entire user manual.	Everyone

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Test Case

1. Purpose

The purpose of this User Manual is to provide an accessible guide on how to use the Arithmetic Expression Evaluator software. This manual will cover what the software is, how to download and use it, advanced features, any potential issues, example inputs, a glossary of terms, and frequently asked questions.

2. Introduction

The Arithmetic Expression Evaluator software allows the user to input simple arithmetic expressions and get a result. To install, the user must access the project's repository on GitHub and download the src folder. After unzipping the folder, the user must open the terminal and navigate to the downloaded src folder. Then, the user should type "make" to compile the code and create a Unix Executable File titled "Evaluator." The user can then open the "Evaluator" file and start inputting expressions.

3. Getting started

After following the install and run instructions in the Introduction section above, the user can begin to input simple expressions. The user can enter expressions containing numeric constants and the operators for addition, subtraction, multiplication, division, modulo, and exponentiation, as well as parentheses to establish precedence and grouping in the equation. The software evaluates the expression following the order of operations and prints the result. All operators require two numbers, one on either side of the operator, to function properly. Any opening parantheses must have a corresponding closing parenthesis and vice versa.

4. Advanced features

In the most current version of the software as of 09/12/2024, there are no advanced features implemented.

5. Troubleshooting

If the user inputs an invalid expression, the software will print "Invalid Expression" and allow the user to enter the expression again.

6. Examples

The user may input expressions such as those below to the left of the equals sign to get the result to the right of the equals sign. For the user's reading benefit, the operator(s) used in the expressions are in square brackets after the result, but these should not be entered when using the software. Any valid combination of operators and numeric constants is allowed.

- 3 + 4 = 7 [Addition]
- 8 - (5 - 2) = 5 [Subtraction with Parentheses]
- 10 * 2 / 5 [Multiplication and Division]
- 2 ** 3 [Exponentiation]
- 4 * (3 + 2) % 7 - 1 [Mixed Operators]
- (((2 + 3))) + (((1 + 2))) [Complex Addition with Extraneous Parentheses]

7. Glossary of terms

Operators:

- Addition: +
- Subtraction: -
- Multiplication: *
- Division: /
- Modulo: %
- Exponentiation: **

Order of Operations:

- Parentheses
- Exponentiation
- Multiplication and Division and Modulo, left to right
- Addition and Subtraction, left to right

Invalid expression:

- An expression that contains characters that are not numeric constants, the operators listed above, or parentheses; or contains unmatched parentheses; or contains incorrectly used operators (i.e. one number on the left of the operator and nothing on the right).

8. FAQ

Q. How does this software work?

A. The software program takes an arithmetic expression as input, parses it, and calculates the result according to the order of operations.

Q. What are the features of this software?

A. The software program can parse expressions, support operators, handle parentheses, and recognize and calculate numeric constants, as well as handle errors.