

# User Document

## Purpose

Evaluates arithmetic infix expressions with operators  $+$ ,  $-$ ,  $*$ ,  $/$ , and parentheses.  
Validates input, detects unbalanced parentheses, and handles runtime errors safely.

## Compilation Instructions

In the terminal, navigate to your project folder and compile:

```
g++ main.cpp InfixCalculator.cpp -o calc
```

## Execution Instructions

Run the program:

```
./calc
```

Then enter expressions like:

```
(2+3)*4
```

Type exit to terminate the program.

## Sample Run

```
==== Infix Expression Calculator ====
```

Enter infix expression (or 'exit' to quit): 2+3

Result: 5

Enter infix expression (or 'exit' to quit): 2+3\*4

Result: 14

Enter infix expression (or 'exit' to quit): 9/(3-3)

Error: Division by zero

Enter infix expression (or 'exit' to quit): exit

Exiting calculator. Goodbye!

## Error Messages and Meaning

Message	Description
Invalid or unbalanced expressions. Please try again.	Input has syntax or bracket errors.
Error: Division by zero	Attempted division by zero.
Stack underflow	Internal exception on empty stack operation.

## **Programming Limitations**

- Accepts only **single-digit** operands (0–9).
- Unary operators are not supported.
- Input must not contain space.

## **Future Enhancements**

- Support multi-digit and floating-point numbers.
- Add operators like  $\wedge$  and  $\%$ .
- Develop GUI interface or file-based batch mode.