Calculator API - Design Document

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Objective/Goal: Have user enter a calculation, program will determine calculation based on the operation symbol entered (i.e. +, -, *, /). This program is being created in Python!

Design:

A = integer	Addition +	A + B = sum
B = integer	Subtraction -	A - B = difference
	Multiplication *	A * B = product
	Division /	A / B = quotient

1) Main.py: This file will execute the program and call upon the needed classes to calculate the entered expression
2) Operations.py: This file holds the Operations() class, each function returns its respective operation value:
    a) def(addition)
    b) def(difference)
    c) def(product)
    d) def(quotient)
3) Calculation.py: This file takes care of parsing the expression and calling the appropriate operations method
4) Future implementations: In the future, I will implement unit testing, more operations, and a more robust expression parsing.

Parsing an expression:

- In order to parse a mathematical expression we need to consider the elements that make up an expression. A basic expression consists of 3 elements: Left side operand, operation symbol, and right hand operand. ex.) 2 + 3, 3 - 4, 5 * 6, 7 / 8
- Additionally, my parser will also take into account negative numbers. So the parser will account for negative symbols '-'. ex.) -2 + 3, -4 - 7, -8 - -7, etc.

Parser Algorithm:

- A user enters an expression
- A dictionary is created and initialized, 3 keys represent the elements in an expression
- Loop through each character in the expression
- Determine if the first character is a negative symbol, if yes, continue
- Else, when the current character is not a digit(aka. Operator symbol), we append the current character to the symbol dict key, and split the expression at that current character
- We then append the left operand value and right operand value to their respective key values.