A Simple Calculator

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1. Code Explanation
   1. Struct Overview

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Helps.cpp is to output some instructional statement to help user;

BigNum is a structure to store big number;

Head.cpp is some typedef and define;

StringFunctions.cpp provide some useful **tool** to manage string;

BigNumFunctions.cpp provide some useful **tool** related to BigNum;

calculateExperSystem.cpp in a structure calculateExperSystem which **work as ExperSystem** to receive statements and queries and react to answer the value of expression or give some warning.

* 1. BigNum.hpp
     1. Some parameters

N = 1e5; BigNum can store big number like 123e123 , -123e-123

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* + 1. reload the basical operator

Reload the basical operator for BigNum to **ease** following coding work

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1.2.3 Some useful tool

In which sqrt() is by **binary search algorithm**

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1.3 BigNumFunctions.cpp

1.3.1 BigNum Function

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In which pow is in **quick pow method**

1.3.2 Function takeOffBigNumFromString

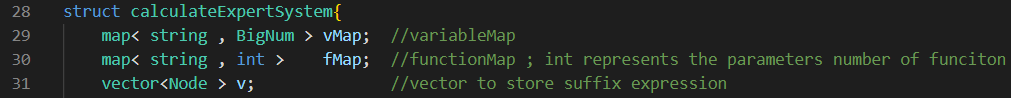
take off the first BigNum from string ; return true and change the string **IFF** success; bn is the BigNum takenoff from s.

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1.4 calculateExpertSystem.cpp

1.4.1 parameters



1.4.2 initialize

Insert all function name in to fMap

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1.4.3 tool function

To add and search vMap and fMap

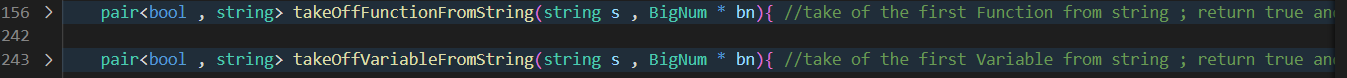
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1.4.4 string Function

take of the first Function from string ; return true and change the string IFF success; bn is the value of the takenoff Function.

take of the first Variable from string ; return true and change the string **IFF** success; bn is the value of the takenoff Variable.



1.4.5 statement handle function







1.4.6 calculate function

for an expression , turn it in to **suffix expression** firtly , then calculate the suffix expression





1.5 head.hpp

Some typedef and definition to **ease** following coding work

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1.6 helps.cpp

Helps.cpp is to output some instructional statement to help user;

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1.7 stringFunctions.cpp

Includes all string management tool functions to **ease** string operation

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3.Requirements

3.1 When you run your program and input an express in a line as follows, it can output the

correct results. The operator precedence (order of operations) should be correct.

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3.2 Use parentheses to enforce the priorities

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3.3 Variables can be defined as follows

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3.4 Some math functions can be supported

Sqrt(x) pow(a, b) abs(x)

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3.5 It can support arbitrary precision.

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3.6 More features can be found in the calculator BC in Unix-like systems. You can visit this page for more information.

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Like BC we also have help command and exit command

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3.7 Please use CMake to manage the source files if there are several.

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3.8 GitHub

<https://github.com/cunlidaniang/coding-workshop/tree/master/c%2B%2B%20workshop/project%202>

4. HighLight

4.1 can calculate any complicated expression

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5.Need to improve

Easy to cause segment fault if recursion depth is too high

Cause by the memory of stack in linux is too low (stack overflow)

