

Function Calculator

Problem Description

You are tasked with creating a calculator that can evaluate nested function compositions using three predefined functions

1. $f(x) = 4x - 1$
2. $g(x, y) = 2x + y - 5$
3. $h(x, y, z) = 3x - 5y + z$

e.g.

You are given an input $h(f(5), g(3, 4), 3)$, with using above predefined functions to compute the output value.

Input	Output
$h(f(5), g(3, 4), 3)$	35.000

You should implement using **yacc (bison)** and **lex (flex)**.

Input Format

- Single line input of function composition expressions
- Parameters can be
 - integer or decimal numbers
 - results of other function calls
- Invalid inputs should print ***Invalid***

Output Precision

- The result must be in 3 decimal places, using standard rounding rules (四捨五入)

Tokens Definition

- **FFUNC** ::= "f"
- **GFUNC** ::= "g"
- **HFUNC** ::= "h"
- **NUM** ::= $-?[0-9]+(\.[0-9]+)?$
- **LPAREN** ::= "("
- **RPAREN** ::= ")"
- **COMMA** ::= ","

Grammar Specification

- **startsymbol** ::= function

- $\text{function} ::= \text{FFUNC LPAREN expression RPAREN} \mid \text{GFUNC LPAREN expression COMMA expression RPAREN} \mid \text{HFUNC LPAREN expression COMMA expression COMMA expression RPAREN}$
- $\text{expression} ::= \text{function} \mid \text{NUM}$

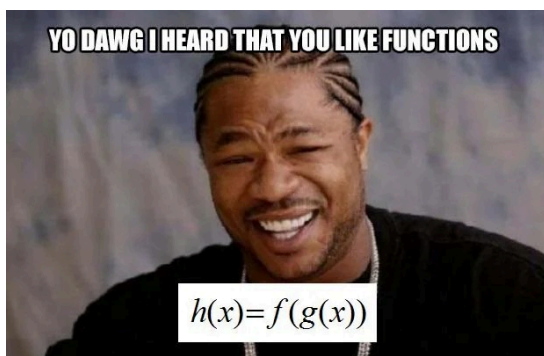
Input Validation

- Check for correct number of parameters
- Validate function name and syntax
- Each line must contain at least one function
- Print **Invalid** for incorrect inputs

Sample Inputs and Outputs

Input	Output
$h(f(5), g(3, 4), 3)$	35.000
$f(g(2, 3))$	7.000
$g(h(1, 2, 3), 4)$	-9.000
$h(1.123456, 2, 3)$	-3.630
$h(1, 2)$	Invalid

Note: If `fprintf()` does not output normally, you can try using `printf()` instead.



SO WE TOOK A FUNCTION AND PUT IT INSIDE ANOTHER FUNCTION AND CALLED THAT BITCH A COMPOSITE

