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

- function ::= FFUNC LPAREN expression RPAREN | GFUNC LPAREN expression COMMA expression RPAREN | HFUNC LPAREN expression COMMA expression COMMA expression RPAREN
- expression ::= function | 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.