United International University
Department of Computer Science and Engineering
CSI 412: Compiler Laboratory
Assignment 3

Introduction

We will build a simple calculator in this assignment. Our calculator will evaluate expressions containing 4 operators- addition, subtraction, multiplication and division and also parenthesis. Additionally, it will also evaluate expressions containing assignment operator, The operands can be numbers or variables. For detailed description of input and output format, see the provided sample files.

Sample Inputs and Outputs

Case	Input	Output
1	100 ;	100
2	3 * (4 + 5) ;	27
3	x = 3 * (4 + 5) ;	x=27
4	y = 5 ;	y=5
5	x + 2 * y ;	37
6	z = x + 2 * y ;	z=37

Tasks

Implement the following functionalities:

1. Write grammar rules to handle expressions containing addition, subtraction, multiplication, division operators and parenthesis.
2. Report syntax errors if there is any.

Implementation Issues

Write the code for lexical analyzer in a *.l* file, grammar rules for parser in a *.y* file and run the following commands in terminal.

flex calc.l
yacc -d calc.y
g++ -c -w lex.yy.c y.tab.c
g++ -o mycalc y.tab.o lex.yy.o
./mycalc <in.txt>out.txt

1. The first command generates a C source file (*lex.yy.c*).
2. The second command generates a header file and a C source file (*y.tab.h* and *y.tab.c*).
3. The next two commands creates an executable binary file, which runs on the input file *in.txt* and saves the output in file *out.txt*.

Deadline

9th week.
Late submission, after the deadline will result in **60% penalty**.