

## 109HW3-A

### Summary:

In this exercise, you need to complete an integer calculator which is more powerful than general calculator. For example, given the equation:  $2*(10+3)$  you will print this equation in preorder :  $* 2 + 10 3$  and the result of this equation : 26.

### Description:

Use Lex to recognizes integer tokens in given equations.

Use Yacc to create a program that analyzes a given equation, prints the result of the equation and prints the equation in preorder.

The program prints the above output and terminates when **end-of-line** (`'\n'`) is encountered

The following table shows a list of operators that may appear in the input equation.

Operator	Description	example
'+'	addition	1+1
'-'	subtraction	1-1
'*'	multiplication	1*1
'/'	division	1/1
'(')'	parentheses	2*(1+1)

### 1. Make sure your program can compute and print the result of the equation

- Can handle equation **without** parentheses and negative sign  
ex:  $1+2$  will print 3  
 $1-2$  will print -1
- Can handle parentheses  
ex:  $2*(6+5)$  will print 22  
 $(5-7)/2$  will print -1

### 2. Print equation in preorder

- Can print an equation in preorder **without** parentheses and negative sign  
ex:  $1+2$  will print + 1 2  
 $2*3+5$  will print + \* 2 3 5
- Can handle Parentheses  
ex:  $2*(6+5)$  will print \* 2 + 6 5

- 輸出答案請四捨五入成整數

Example : Suppose we have the input file *input.txt*.

```
10*(1+2)-10/5
```

The program should output: #the output format must be the same as below

```
the preorder expression is : - * 10 + 1 2 / 10 5
```

```
the result is : 28
```