10810EECS204001  
Data Structures Homework 1

Due date: 2019/10/15 23:59

Submit to OJ: #12407

Upload code to iLMS

Submission

* Please **1)** submit your code to OJ (OJ: #12407),   
  and **2)** upload the zipped file (source codes) to iLMs.   
  **Both should be done before the due date.**
* Scores will be given based on your OJ results, and the uploaded file (the source codes) should be identical to those submitted to OJ. TAs will examine your uploaded codes.

Description

In this homework, you are asked to implement three functions. They are

1. Convert infix expression to postfix expression (infix2postfix)
2. Convert infix expression to prefix expression (infix2prefix)
3. Evaluate the value of the given infix expression (evaluate infix)

Input consist of operators and operands. Operators , / means integer division here. For example: 5/2 = 2, 11/3=3. Operands

Infix2postfix

Given an infix expression output its postfix expression.

For example, when input = “1+2”, you should output “12+”.

Infix2prefix

Given an infix expression output its postfix expression.

For example, when input = “1+2”, you should output “+12”.

Evaluate infix

Evaluate the value of the given infix expression. Evaluate its value. For example, when input = “1+2”, you should output “3”. For another example, when input = “1+(3\*4-5)/6\*7, you should output “8”. Since “/” means integer division.

1+(3\*4-5)/6\*7 = 1+7/6\*7 = 1+1\*7 = 8

Input

Each test case contains multiple inputs. Each input is a string of infix expression.

Input consist of operators and operands. Operators , / means integer division here. For example: 5/2 = 2, 11/3=3. Operands

Output

For each input infix expression, output its postfix expression, prefix expression, and evaluate result, separated by a newline symbol.

Sample input

1+(3\*4-5)/6\*7

1+2

Sample output

134\*5-6/7\*+

+1\*/-\*34567

8

12+

+12

3