프로그래밍 과제 08

1. You are given a sequence of N non-negative integers $a_1, a_2, \ldots, a_N$. Let $h(i)$, $i = 1,2,\ldots, N$, be the largest integer such that $a_{i-1}, a_{i-2},\ldots,a_{i-h(i)}$ are all less than or equal to a_i. For example, if the input sequence is

   100 80 60 70 60 75 85

   then, $h(1) = 0$, $h(2) = 0$, $h(3) = 0$, $h(4) = 1$, $h(5) = 0$, $h(6) = 3$, $h(7) = 5$. In other words, $h(i)$ is the number of consecutive integers just before a_i that are all less than or equal to a_i. Write a program to find the value $(h(1) + h(2) + \ldots + h(N))\ \%\ 1{,}000{,}000$ which means the remainder when divided by 1,000,000. N is at most 1,000,000.

   Input:

   Your program is to read from "`input1.txt`" file. The input consists of T test cases. The number of test cases T is given in the first line of the input file. The first line of each test case contains one integer N and the next line contains N non-negative integers.

   Output:

   Your program is to write to standard output. Print the answer in one line for each test case.

   The following shows sample input and output for test cases.

Sample Input	Output for the Sample Input
2 7 100 80 60 70 60 75 85 8 1 2 7 3 6 1 8 2	9 10

2. You are given an expression of length $n \le 1{,}000$ including some parentheses. The task is to print the parenthesis numbers. For an example, if the input expression is (a+(b*c))+(d/e), then you should print 1 2 2 1 3 3, which means that "the first parenthesis is opened, the 2nd parenthesis is opened, the 2nd closed, the 1st closed, the 3rd opened, and the 3rd closed."

   Input:
   The first line contains an integer $T \le 100$, the number of test cases. For each test case, there is a string containing the expression.

   Output:
   For each test case, the output is the parenthesis numbers of the expression.

Sample Input	Output for the Sample Input
3 (a+(b*c))+(d/e) ((()))(())) ((((()	1 2 2 1 3 3 1 2 3 3 2 4 5 5 4 1 1 2 3 4 5 5