T. Longest Regular Bracket Sequence

time limit per test: 1 second

memory limit per test: 256 megabytes

A bracket sequence is called regular if by inserting "+" and "1" into it we can get a correct mathematical expression. For example, sequences "(())()", "()" and "((()(")" are regular, while ")(", "(()" and "(()))(" are not.

But in Assiut Juniors training the bracket secuency is more general so the opening brackets are "(", "[", "{" and "<", and the closeing brackets for them are ")", "]", "}" and ">" respectively so "[({})<>]" are regular, while "[{(})<>]" are not.

You are given a bracket sequence of "(", ")", "[", "]", "{", "}", "<" and ">" characters. You are to find its longest substring that is a regular bracket sequence. You are to find the number of such substrings as well.

Input

The only line of input contains string S $(1 \le |S| \le 10^6)$ contains only "(", ")", "[", "]", "{", "}", "<" and ">" characters.

Output

Print the length of the longest substring that is a regular bracket sequence, and the number of such substrings. If there are no such substrings, write the only line containing "0 1".

Examples

input	Copy
)({()}))<()()>	
output	**Copy**
6 2	

input	Copy
))(	
output	**Copy**
0 1	

input	Copy
[](<>){}	
output	**Copy**
8 1	

ICPC Assiut University Training - Juniors Phase 1 Sheets-2022

Public

Participant

→ Group Contests

- Juniors Phase 1 Practice #5 (Bitmask, Bitset, Bits)
- Juniors Phase 1 Practice #4 (Binary search , Two pointers)
- Juniors Phase 1 Practice #3 (STL 2)
- Juniors Phase 1 Practice #2 (STL 1)
- Juniors Phase 1 Practice #1 (Prefix sum , Frequency Array)

Juniors Phase 1 Practice #2 (STL 1)

Finished

Practice

→ About Time Scaling

This contest uses time limits scaling policy (depending on a programming language). The system automatically adjusts time limits by the following multipliers for some languages. Despite scaling (adjustment), the time limit cannot be more than 30 seconds. Read the details by the link.

→ Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

→ Submit?

Language: GNU G++20 13.2 (64 bit, win

Choose file: Choose File No file chosen

Submit

→ Last submissions

Submission	Time	Verdict
311719202	Mar/22/2025 01:44	Accepted
311718903	Mar/22/2025 01:38	Accepted
311718803	Mar/22/2025 01:36	Wrong answer on test 10