



# Chef and Sign Sequences

Problem Code: **CHEFSIGN**

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as well.

Chef found a strange string yesterday - a string of signs **s**, where each sign is either a '<', '=' or a '>'. Let **N** be the length of this string. Chef wants to insert **N** + 1 positive integers into this sequence and make it valid. A valid sequence is a sequence where every sign is preceded and followed by an integer, and the signs are correct. That is, if a sign '<' is preceded by the integer *a* and followed by an integer *b*, then *a* should be less than *b*. Likewise for the other two signs as well.

Chef can take some positive integers in the range **[1, P]** and use a number in the range as many times as he wants.

Help Chef find the minimum possible **P** with which he can create a valid sequence.

## Input

The first line of the input contains an integer **T** denoting the number of test cases. The description of **T** test cases follows.

The only line of each test case contains the string of signs **s**, where each sign is either '<', '=' or a '>'.

## Output

For each test case, output a single line containing an integer corresponding to the minimum possible **P**.

## Constraints

- $1 \leq T, |s| \leq 10^5$
- $1 \leq \text{Sum of } |s| \text{ over all test cases in a single test file} \leq 10^6$

## Subtasks

### Subtask #1 (30 points)

- $1 \leq T, |s| \leq 10^3$
- $1 \leq \text{Sum of } |s| \text{ over all test cases in a single test file} \leq 10^4$

### Subtask #2 (70 points)

- Original constraints

## Example

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Successful Submissions



**Input :**

```
4
<<<
<><
<=>
<=<
```

**Output :**

```
4
2
2
3
```

## Explanation

Here are some possible valid sequences which can be formed with the minimum **P** for each of the test cases:

```
1 < 2 < 3 < 4
1 < 2 > 1 < 2
1 < 2 = 2 > 1
1 < 2 = 2 < 3
```

Author: [berezin \(/users/berezin/\)](/users/berezin/)

Date Added: 18-11-2015

Time Limit: 2 secs

Source Limit: 50000 Bytes

Languages: ADA, ASM, BASH, BF, C, C99 strict, CAML, CLOJ, CLPS, CPP 4.3.2, CPP 4.9.2, CPP14, CS2, D, ERL, FORT, FS, GO, HASK, ICK, ICON, JAVA, JS, LISP clisp, LISP sbcl, LUA, NEM, NICE, NODEJS, PAS fpc, PAS gpc, PERL, PERL6, PHP, PIKE, PRLG, PYPY, PYTH, PYTH 3.4, RUBY, SCALA, SCM chicken, SCM guile, SCM qobi, ST, TCL, TEXT, WSPC

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