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A *Directi* Educational Initiative

CODECHEF Certified
Data Structure & Algorithms Programme (CCDSAP)   EXAM DATE **26** AUGUST 2018   KNOW MORE

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Chef and Sign Sequences | Problem Code: **CHEFSIGN**

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All submissions for this problem are available.

Read problems statements in Mandarin Chinese, Russian and Vietnamese 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 a **'<', '='** 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|** $\leq 10^5$
- $1 \leq$ Sum of **|s|** over all test cases in a single test file $\leq 10^6$

Subtasks

Subtask 1 (30 points)

- $1 \leq$ **T, |s|** $\leq 10^3$

- $1 \le$ Sum of **|s|** over all test cases in a single test file $\le 10^4$

Subtask #2 (70 points)

- Original constraints

Example

```
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
```

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CodeChef was created as a platform to help programmers make it big in the world of algorithms, **computer programming** and **programming contests**. At CodeChef we work hard to revive the geek in you by hosting a **programming contest** at the start of the month and another smaller programming challenge in the middle of the month. We also aim to have training sessions and discussions related to **algorithms**, **binary search**, technicalities like **array size** and the likes. Apart from providing a platform for **programming competitions**, CodeChef also has various algorithm tutorials and forum discussions to help those who are new to the world of **computer programming**.

Practice Section - A Place to hone your 'Computer Programming Skills'

Try your hand at one of our many practice problems and submit your solution in a language of your choice. Our **programming contest** judge accepts solutions in over 35+ programming languages. Preparing for coding contests were never this much fun! Receive points, and move up through the CodeChef ranks. Use our practice section to better prepare yourself for the multiple **programming challenges** that take place through-out the month on CodeChef.

Compete - Monthly Programming Contests and Cook-offs

Here is where you can show off your **computer programming skills**. Take part in our 10 day long monthly coding contest and the shorter format Cook-off **coding contest**. Put yourself up for recognition and win great prizes. Our **programming contests** have prizes worth up to INR 20,000 (for Indian Community), $700 (for Global Community) and lots more CodeChef goodies up for grabs.

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