

Just a Palindrome

A palindrome is a symmetrical string, that is, a string read identically from left to right as well as from right to left.

Chiaki has a string s and she can perform the following operation at most once:

- choose two integer i and j ($1 \leq i, j \leq |s|$).
- swap s_i and s_j .

Chiaki would like to know the longest palindromic substring of string after the operation.

Input

There are multiple test cases. The first line of input contains an integer T , indicating the number of test cases. For each test case:

The first line contains a non-empty string s ($1 \leq |s| \leq 10^6$) consisting of lowercase and uppercase letters.

It is guaranteed that the sum of all $|s|$ does not exceed 10^6 .

Output

For each test case, output an integer denoting the answer.

Example

Input:

```
10
a
xxxx
ssfs
aaabbacaa
missimxx
ababababgg
dfsfsdgdg
asdsasdswe
chiaki
teretwer
```

Output:

```
1
4
3
8
6
9
6
9
```

