

In this problem you are asked to convert a string into a palindrome with minimum number of operation. The operations are described below:

Here you'd have the ultimate freedom. You are allowed to:

- Add any character at any position
- Remove any character from any position
- Replace any character at any position with another character

Every operation you do on the string would count for a unit cost. You'd have to keep that as low as possible.

For example, to convert "abccda" you would need at least two operations if we allowed you only add characters. But when you have the option to replace any character you can do it with only one operation. We hope you'd be able to use this feature to your advantage.

Input

The input file contains several test cases. The first line of the input gives you the number of test cases T ($1 \leq T \leq 10$). Then T test cases will follow, each in one line. The input for each test case consists of a string containing lower case letters only. You can safely assume that the length of this string will not exceed 1000 characters.

Output

For each set of input print the test case number first. Then print the minimum number of characters needed to turn the given string into a palindrome.

Sample Input

```
6
tanbirahmed
shahriarmanzoor
monirulhasan
syedmonowarhossain
sadrulhabibchowdhury
mohammadsajjadhossain
```

Sample Output

```
Case 1: 5
Case 2: 7
Case 3: 6
Case 4: 8
Case 5: 8
Case 6: 8
```

