

## Problem D: Necklace!

Time Limit: 2 Sec Memory Limit: 256 MB

Submit: 547 Solved: 193

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### Description

D1rtyPaw5 wants to drink coco with his girlfriend! Unfortunately, he has no girlfriend now, but he still wishes to prepare a necklace for his future goddess.

This is a kind of special necklace which contains a sequence of diamonds with letters in, and it can be regarded as a string. D1rtyPaw5 gives Amayama a semi-finished necklace and asks Amayama to add as few as possible diamonds to the head or tail of the necklace to make the necklace **consist of at least two same circulation sections**. A circulation section of a string is a substring which could build the original string by repeating the circulation section several times.

Please answer the number of diamonds that Amayama should add.

### Input

The first line contains an integer  $n$ , which is the number of test cases.

( $1 \leq n \leq 1000$ )

For each case, there is only one line of string containing lowercase letters, which indicates the semi-finished necklace. The length of each string is no more than 200000.

### Output

The output for each test case is an integer which is the number of diamonds that Amayama should add.

### Sample Input

```
2
wawawa
failed
```

### Sample Output

```
0
6
```

### HINT

If a necklace has contained two circulation sections and ended with an uncomplete circulation section, you should complete this section to finish the whole necklace.

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