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## Algorithms Lab

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### Exercise 1 – *Palindromes*

**Description** A palindrome is a string such as “anna” or “rats live on no evil star” that reads the same both forwards and backwards.

Some strings are almost palindromes, for example “abcdba” is just one ‘d’ (or ‘c’) short of being a palindrome. Other strings, such as “abcdef” need many more characters added to them to be turned into a palindrome (5 in this case).

Your task in this exercise is to find the smallest number of letter insertions (at any position) which will turn a given string into a palindrome.

**Input** The first line of the input contains the number of test cases  $T \leq 200$ . Each of the following  $T$  lines contains one string. This string consists of at most 2000 letters from the lower-case English alphabet.

**Output** For each string in the input print the minimum number of letter insertions needed to make it a palindrome on a single line.

#### Sample input

```
6
a
nna
na
an
abc
rats
```

#### Sample output

```
0
1
1
1
2
3
```