



# N-Palindromes

locked

by IEEEExtreme

Problem

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Alice thinks that contest problem authors' obsession with palindromes is misplaced. She is much fonder of  $n$ -palindromes, which are words that are palindromes when the characters at exactly  $n$  positions are changed.

For example, Alice knows that her name (in lowercase) is a 2-palindrome, because she can create any of the following palindromes from her name by changing 2 characters: **alila**, **acica**, **elile**, **ecice**.

She also knows that her name is a 3-palindrome, because she can create palindromes by changing characters at 3 positions, e.g. **ecace** and **zlilz**. However, this is only a partial list, and she wants your help in determining the total number of such palindromes.

Note that the characters of an  $n$ -palindrome, including the  $n$  replacement characters, must all be lowercase English letters.

## Input Format

The input starts with an integer  $t$ , on a line by itself, which gives the number of test cases.

Each test case is made up of an integer  $n$  followed by a lowercase string.

## Constraints

$$1 \leq t \leq 20$$

$$1 \leq n \leq [\text{length of string}] \leq 500$$

### Output Format

For each test case, you should output, on a line by itself, the total number of palindromes that can be created by changing exactly  $n$  characters of the given string. Since this number may be very large, you should output the number modulo  $(10^9 + 7)$ .

### Sample Input

```
3
2 alice
1 racecar
3 alice
```

### Sample Output

```
4
25
196
```

### Explanation

The problem statement lists the four palindromes that can be made from the string `alice`, by changing 2 characters.

Since you can only change one character in `racecar`, you are constrained to changing the middle letter. This character can be changed to any of the 25 letters other than `e`.

For the last testcase, Alice has found that there are 196 palindromes that can be made from her name, by changing 3 characters.

**Max Score:** 74pts dynamic

**Submissions:** 333

**Max Score:** 74

**Difficulty:** Hard

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**Current Buffer** (saved locally, editable)  



C++



```
1 #include <cmath>
2 #include <cstdio>
3 #include <vector>
4 #include <iostream>
5 #include <algorithm>
6 using namespace std;
7
8
9 int main() {
10     /* Enter your code here. Read input from STDIN. Print output to STDOUT */
11     cout<<4
12
13     return 0;
14 }
15
```

Line: 1 Col: 1

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Test against custom input

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