



IEEEXtreme 10.0 > N-Palindromes

# **N-Palindromes**





by IEEEXtreme

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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**

 $1 \le t \le 20$ 

 $1 \le n \le [length of string] \le 500$ 

#### **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 ncharacters of the given string. Since this number may be very large, you should output the number modulo  $(10^9 + 7)$ .

### Sample Input

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.

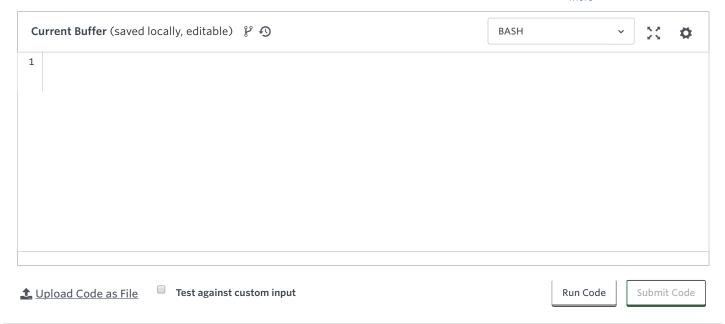
Max Score: 74pts dynamic

Submissions: 333

Max Score: 74

Difficulty: Hard

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