6284 Hyperdrome

Hypergnome planet is famous for its Great Universal Games between gnomes — the Games between gnomes from each part of the galaxy in various disciplines.

The most popular discipline in the Games is the Hyperdrome discipline. The rules are the follows: one string of length n is given to all gnomes. The gnomes shall find, as fast as they can, the total number of Hyperdrome substrings — such strings that characters inside the string can be rearranged to get a palindrome.

Substring is defined as a sequence of characters from position i to position j inclusive, where $1 \le i \le j \le n$. Substrings with different pairs of positions (i, j) are considered different regardless of their contents.

Palindrome is defined as a string $x_1 x_2 \dots x_l$, where $x_i = x_{l-i+1}$ for all $1 \le i \le l$.

Judges choose a string and your task is to help them find the answer.

The gnome alphabet consists of lowercase and uppercase English letters — '`a`'-'`z`' and '`A`'-'`Z`' where letters in different case are considered to be different letters.

Input

The input will contain several test cases, each of them as described below.

The first line of the input contains a single integer n ($1 \le n \le 3 \cdot 10^5$).

The second line of the input contains the string for Hyperdrome discipline — n lowercase or uppercase English letters.

Output

For each test case, write to the output on a line by itself.

Output the answer for the Hyperdrome discipline — the number of Hyperdrome substrings in the input string.

Note for the Sample:

In the first example there are 6 Hyperdrome substrings — (1, 1), (1, 2), (1, 3), (2, 2), (2, 3), (3, 3).

In the second example there are 12 Hyperdrome substrings — (1, 1), (2, 2), (3, 3), (4, 4), (5, 5), (6, 6), (7, 7), (1, 3), (3, 5), (5, 7), (2, 6), (1, 7).

In the third example there are 5 Hyperdrome substrings — (1, 1), (1, 3), (2, 2), (2, 3), (3, 3). Note, that a Hyperdrome substring (1, 3) is "`aAA`". It is not a palindrome itself, but its characters can be rearranged to get a palindrome "`AaA`"

Sample Input

```
3
aaa
7
abadaba
3
aAA
```

Sample Output

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6
12
5
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