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 \( 1 \leq i \leq j \leq n \). Substrings with different pairs of positions \( (i, j) \) are considered different regardless of their contents.

Palindrome is defined as a string \( x_1x_2\ldots x_l \), where \( x_i = x_{l-i+1} \) for all \( 1 \leq i \leq l \).

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 \( n \) \( (1 \leq n \leq 3 \cdot 10^5) \).

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**

```
6
12
5
```