

Inc Match Two

Input file: **standard input**
Output file: **standard output**
Time limit: 0.25 seconds
Memory limit: 4 megabytes

You are given a sequence of lowercase Latin letters, on which you can perform the following operation as many times as you please:

- Choose any occurrence of a letter which is not ‘z’ and replace it with the subsequent letter of the alphabet*; then, as long as there are two or more adjacent identical characters, delete them.

Determine the minimum number of operations required to make the string empty.

Input

The first line of the input contains a single integer, t ($1 \leq t \leq 10^4$) — the number of test cases.

The only line of each test case contains a string, s ($1 \leq |s| \leq 5000$) — the character sequence consisting of lowercase Latin letters. It is guaranteed that no two adjacent characters in the string are equal.

It is guaranteed that the sum of $|s|$ over all test cases does not exceed 5000.

Output

For each test case, output a single integer — the minimum number of operations required to make the string empty, or -1 if it’s impossible.

Example

standard input	standard output
9	-1
a	1
ab	-1
abc	3
abac	4
abcab	11
adabc	-1
azabc	2
babcbc	1
babcab	

Note

In the first test case, the string cannot become empty.

In the second test case, the first character can be replaced with ‘b’ to match its neighbor.

In the third test case, it can be proven that one character will always remain in the end, regardless of the operations performed.

*For example, ‘a’ becomes ‘b’, ‘b’ becomes ‘c’, etc.