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PROBLEMS SUBMIT STATUS STANDINGS CUSTOM TEST

C. Prepend and Append

time limit per test: 1 second memory limit per test: 256 megabytes input: standard input output: standard output

Timur initially had a binary string[†] s (possibly of length 0). He performed the following operation several (possibly zero) times:

Add 0 to one end of the string and 1 to the other end of the string. For example, starting from the string 1011, you can obtain either 010111 or 110110.

You are given Timur's final string. What is the length of the **shortest** possible string he could have started with? A binary string is a string (possibly the empty string) whose characters are either **0** or **1**.

Input

The first line of the input contains an integer t ($1 \le t \le 100$) — the number of testcases.

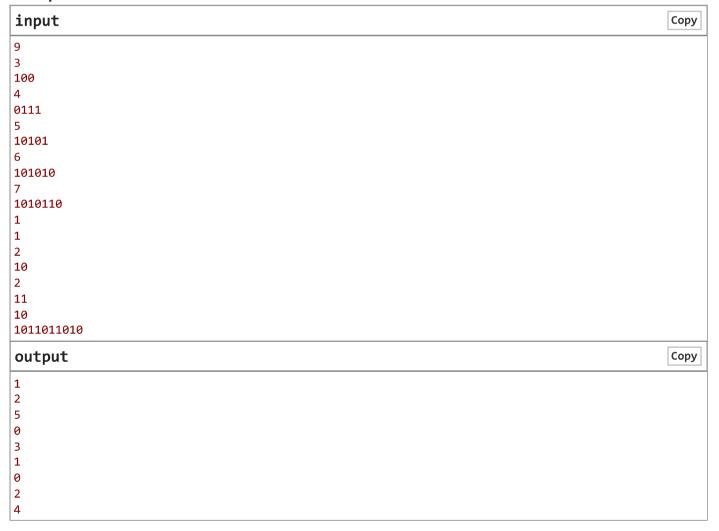
The first line of each test case contains an integer n ($1 \le n \le 2000$) — the length of Timur's final string.

The second line of each test case contains a string s of length n consisting of characters t0 or t1, denoting the final string.

Output

For each test case, output a single nonnegative integer — the shortest possible length of Timur's original string. Note that Timur's original string could have been empty, in which case you should output 0.

Example



Note

In the first test case, the shortest possible string Timur started with is 0, and he performed the following operation: $0 \to 100$.

In the second test case, the shortest possible string Timur started with is 11, and he performed the following operation: $11 \rightarrow 0111$.

In the third test case, the shortest possible string Timur started with is 10101, and he didn't perform any operations.

In the fourth test case, the shortest possible string Timur started with is the empty string (which we denote by ε), and he performed the following operations: $\varepsilon \to 10 \to 0101 \to 101010$.

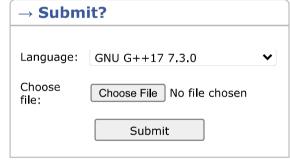
Codeforces Round 849 (Div. 4) Finished Practice

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In the fifth test case, the shortest possible string Timur started with is 101, and he performed the following operations: $101 \rightarrow 01011 \rightarrow 1010110$.

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