Problem B. Birthday Gift

Time limit:	1 second
Memory limit:	1024 megabytes

Grammy's birthday is approaching, and she gets a sequence A from her friends as a gift. The sequence consists of only 0, 1, and 2. Grammy thinks that the sequence is too long, so she decides to modify A to make it shorter.

Formally, Grammy can perform an arbitrary number of operations. Each time she can choose one of the following three operations to perform:

- Change any 2 into 0 or 1.
- Choose two adjacent 0s, erase them, and concatenate the rest of the parts.
- Choose two adjacent 1s, erase them, and concatenate the rest of the parts.

Calculate the minimum sequence length Grammy can get.

Input

There are multiple test cases. The first line of the input contains an integer T indicating the number of test cases. For each test case:

The first and only line contains a string of length n ($1 \le n \le 2 \times 10^5$) consisting of digits 0, 1, and 2, indicating the initial sequence A.

It is guaranteed that the sum of n of all test cases will not exceed 5×10^5.

Output

For each test case, output one line containing one integer indicating the minimum sequence length Grammy can get.

Example

standard input	standard output
5 0110101 01020102 0000021111 1012121010 0100202010	3 4 0 6 0