



B. MIN-MEX Cut

time limit per test: 1 second

memory limit per test: 256 megabytes

input: standard input

output: standard output

A binary string is a string that consists of characters 0 and 1.

Let **MEX** of a binary string be the smallest digit among 0, 1, or 2 that does not occur in the string. For example, **MEX** of 001011 is 2, because 0 and 1 occur in the string at least once, **MEX** of 1111 is 0, because 0 and 2 do not occur in the string and $0 < 2$.

A binary string s is given. You should cut it into any number of substrings such that each character is in exactly one substring. It is possible to cut the string into a single substring — the whole string.

A string a is a substring of a string b if a can be obtained from b by deletion of several (possibly, zero or all) characters from the beginning and several (possibly, zero or all) characters from the end.

What is the **minimal** sum of **MEX** of all substrings pieces can be?

Input

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

Each test case contains a single binary string s ($1 \leq |s| \leq 10^5$).

It's guaranteed that the sum of lengths of s over all test cases does not exceed 10^5 .

Output

For each test case print a single integer — the minimal sum of **MEX** of all substrings that it is possible to get by cutting s optimally.

Example

input	Copy
6 01 1111 01100 101 0000 01010	
output	Copy
1 0 2 1 1 2	

Note

In the first test case the minimal sum is $\text{MEX}(0) + \text{MEX}(1) = 1 + 0 = 1$.

In the second test case the minimal sum is $\text{MEX}(1111) = 0$.

In the third test case the minimal sum is $\text{MEX}(01100) = 2$.

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 Language: GNU G++17 7.3.0

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Be careful: there is 50 points penalty for submission which fails the pretests or resubmission (except failure on the first test, denial of judgement or similar verdicts). "Passed pretests" submission verdict doesn't guarantee that the solution is absolutely correct and it will pass system tests.



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