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 ($1 \le t \le 10^4$) — the number of test cases. Description of the test cases follows.

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

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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Practice

→ **Virtual participation**

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Start virtual contest

→ **Clone Contest to Mashup**

You can clone this contest to a mashup.

Clone Contest

→ **Submit?**

Language: GNU G++20 13.2 (64 bit, win

Choose file: Choose File No file chosen

Submit

→ **Last submissions**

Submission	Time	Verdict
234516942	Nov/27/2023 00:58	Accepted

→ **Problem tags**

bitmasks constructive algorithms dp greedy *800

No tag edit access

→ **Contest materials**

- Announcement (en)
- Tutorial (en)