

6687 Cipher

A hacker recently invented a new encryption method. Given an original message represented as a binary string, we can pick a random substring, and insert the reversed copy of it right after the original substring. The process is repeated until we get a sufficiently long encrypted message that (hopefully) no one will be able to crack. For example, if the current message is `011010`, and the selected substring is `110`, the encrypted message would be `011001110` (note how the reversed string is inserted into the original message).

Given an encrypted message using the above-mentioned method, your task is to determine the length of the shortest possible original message.

Input

The input file consists of several data sets. The first line of the input file contains the number of data sets which is a positive integer and is not greater than 100. The following lines describe the data sets.

Each data set has one string representing the encrypted message on a single line. The string consists of only digits '0' and '1' and contains at most 100 digits.

Output

For each data set, write on one line the length of the shortest possible original message.

Sample Input

```
2
011001110
0
```

Sample Output

```
2
1
```