Binary String Set

Problem ID: binstrset
Time limit: 1 second

Let S be a set of strings. S^* is a set of the empty string and any concatenation of strings in S (each string in S can appear multiple times).

Given n strings $T_1, ..., T_n$. For each T_i, find the least number of characters to remove to satisfy $T_i \in \{0, 01, 10\}^*$.

Input

The first line of input contains one integer n $(1 \leq n \leq 10^6)$.
The following n lines, each contains a string T_i. The total length of all T_i will not exceed 10^6.

Output

Output n lines, one integer on each line show the number of characters to remove for the respective input.

Sample Input 1

```
2
00110
110
```

Sample Output 1

```
0
1
```