Problem I. I

Time limit   2000 ms

Mem limit   262144 kB

You are given a string s such that each its character is either 1, 2, or 3. You have to choose the shortest contiguous substring of s such that it contains each of these three characters at least once.

A contiguous substring of string s is a string that can be obtained from s by removing some (possibly zero) characters from the beginning of s and some (possibly zero) characters from the end of s.

Input

The first line contains one integer t ($1 \leq t \leq 20000$) — the number of test cases.

Each test case consists of one line containing the string s ($1 \leq |s| \leq 200000$). It is guaranteed that each character of s is either 1, 2, or 3.

The sum of lengths of all strings in all test cases does not exceed 200000.

Output

For each test case, print one integer — the length of the shortest contiguous substring of s containing all three types of characters at least once. If there is no such substring, print 0 instead.

Examples

Input	Output
7 123 12222133333332 112233 332211 12121212 333333 31121	3 3 4 4 0 0 4

Note

Consider the example test:

In the first test case, the substring `123` can be used.

In the second test case, the substring `213` can be used.

In the third test case, the substring `1223` can be used.

In the fourth test case, the substring `3221` can be used.

In the fifth test case, there is no character `3` in s.

In the sixth test case, there is no character `1` in s.

In the seventh test case, the substring `3112` can be used.