TLE '16 Contest 1 P6 - A Very Normal Test

The ~~unfortunate~~ very, very, very, lucky members of Trudeau's Computer Science Club are given another chance to become an exec. To actually be able to become an exec, one must solve an annoying problem that has been approved by **ZQFMGB12**. No one has bothered to try it in the past, but today that will change!

ZQFMGB12 has put out a simple true/false test for everyone to try. Each question is labelled from 1 to N. The test is extremely boring because all of the questions follow this rather strict format:

Question	Description
`p==q`	If the answers for question p and question q are equal, answer `true` to this question. Otherwise, answer `false`.
`!p`	Put the opposite of question p's answer.

There is actually a reason for this unusual test format. Tests are fairly compact and easy to grade, yet it is difficult to answer all the questions perfectly.

This test might be impossible because **ZQFMGB12** is too lazy to check for a solution. You are responsible for verifying whether each test has at least one perfect solution by providing an example.

Constraints

$1 \leq N \leq 300$

Subtask 1 [20%]

$N \leq 20$

Subtask 2 [20%]

Questions will only be in the form `!p`.

Subtask 3 [60%]

No further constraints.

Input Specification

The first line contains integer N.

The N questions are on separate lines. Question k is on line number $k+1$.

Output Specification

If no perfect solution exists, output `No perfect solution found`.

Otherwise, provide N lines of output. The k^{th} line of output should contain your answer to the k^{th} question, which could either be `true` or `false`.

Sample Input 1

```
5
1==1
!3
!2
3==2
!1
```

Sample Output 1

```
true
false
true
false
false
```

Sample Input 2

```
1
!1
```

Sample Output 2

```
No perfect solution found
```

Explanation for Sample 2

If the answer is `false`, then the grader would look for the opposite of `false`. The opposite of `false` is not provided, so the answer is labelled incorrect.

If the answer is `true`, then the grader would look for the opposite of `true`. The answer would also be labelled incorrect.

There is no way to answer the question correctly, so no perfect solution exists.

Sample Input 3

```
4
!2
1==4
1==2
!3
```

Sample Output 3

```
No perfect solution found
```