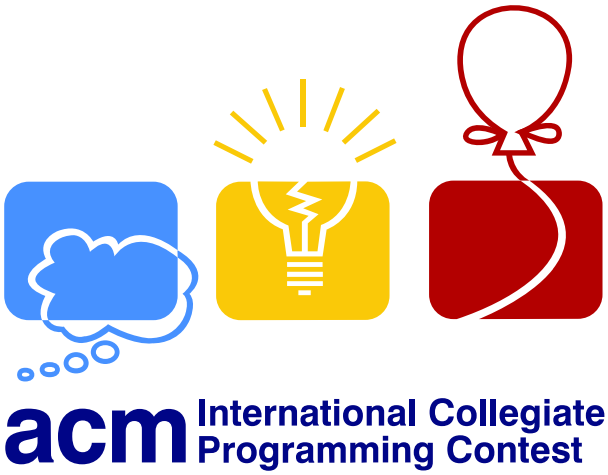
NORTHWESTERN EUROPEAN REGIONAL CHAMPIONSHIP 2013

PRACTICE SESSION

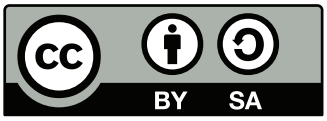
NOVEMBER 23, 2013



A Wooden Shoes

B Election

C The Twin Non-Prime Conjecture



A - Wooden Shoes

Kees is an ordinary Dutch fellow: he works at the local windmill, cultivates tulips for a hobby, and his favorite food is raw herring.

It goes without saying that all of Kees' shoes are wooden. In fact, he owns a whole collection of them, all of the same brand and in a single size. The only distinctive feature of his wooden shoes is their 'footedness': they come as either left-foot or right-foot models.

Kees suspects that some of his wooden shoes are missing. He examines all of them, noting whether they are a left-foot or right-foot model by writing 'L' or 'R'.

Photo by Wikimedia Commons user Berkh

Given a record of his wooden shoe collection, can you figure out if they can be divided up into a set of matching pairs (i.e., one left and one right wooden shoe), with no wooden shoes left over?

Input

Each test case consists of a single line containing a string representing Kees' wooden shoe collection, consisting of at least 1 wooden shoe and at most 500. Each wooden shoe is represented as either an 'L' or an 'R'.

Output

For each test case, your program must print a single line; print '`ok`' if the shoe collection can be divided up into pairs with no wooden shoe left over, and '`missing`' otherwise.

Example

input	output
`LRRL` `RRLLL`	`ok` `missing`

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B - Election

The date for the next presidential election is closing in and, naturally, you are responsible for writing the software that will count the votes and announce the winner of the election.

If there is exactly one candidate with the most votes, this will be the next president. If there is no such candidate a reelection has to be held.

Photo by Wikimedia Commons user Rama

Input

For each test case, you get a single line consisting of positive integers.

The first number on the line n denotes the number of votes cast in the election ($1 \leq n \leq 10\,000$). This number is followed by n integers c_i, ($1 \leq i \leq n; 1 \leq c_i \leq 100$). The numbers c_i represent the candidate for which the i'th vote was cast.

Output

For each test case, print a line containing the unique integer identifying the winner of the election, or the word '`reelection`' if no clear winner of the election exists.

Example

input	output
`4 1 5 5 5` `4 3 1 1 3`	`5` `reelection`

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C - The Twin Non-Prime Conjecture

The following conjecture has not received a lot of attention in 2013, and has not seen great strides towards a possible proof:

There are infinitely many numbers n such that
both n and $n+2$ are non-primes.

To make progress on proving the conjecture, we need a a computer program that, for a given number z, finds the smallest number $n \geq z$ such that both n and $n+2$ are non-primes.

Input

For each test case, the input consists of one line containing an integer z ($1 \leq z \leq 1\,000\,000$).

Output

For each test case, print one line containing the smallest number $n \geq z$ such that both n and $n+2$ are non-primes.

Example

input	output
1 11 111 1111 11111 111111	4 12 112 1111 11112 111111

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