

Willie's Fan Club

Time limit: 5.0s **Memory limit:** 64M

Willie attends a party consisting of N people, including himself. Everyone at the party is assigned a number between 1 to N and no two people will be assigned the same number.

The following statements regarding the party are true,

- Everyone at the party knows Willie because everyone attending the party is part of Willie's Fan Club
- Willie does not know anyone at the party because he has too many fans
- Willie's fans occasionally hold gatherings, so it is possible for a fan A to know fan B but does not guarantee that fan B knows fan A
- Willie is the only person at the party that everyone knows

You are only allowed to ask the question, "Does person A know person B ?".

The answer will be 1 if person A knows person B and 0 if person A does not know person B .

Can you determine which number Willie was assigned?

Each time you output, **you may need to output a new line and flush your output buffers**. For example, in Python you can do this with `import sys; sys.stdout.flush()`, in Java with `System.out.flush()` and in C++ with `cout.flush()` or `fflush(stdout)`.

Constraints

$$3 \leq N \leq 100\,000$$

You are only allowed to ask N questions and submit one answer.

$$A \neq B$$

$$1 \leq x \leq N$$

Interaction

The first line of input will be N .

Questions should be printed in the form `? A B` followed by a newline.

The next line of input will be either `1` or `0`.

In order to submit an answer, print `! x`, where `x` is the number that Willie was assigned.

Sample Interaction

>>> denotes your output. Do not print >>> out.

```
3
>>> ? 1 2
1
>>> ? 2 3
0
>>> ? 3 2
1
>>> ! 2
```