

# Guess the Number

Input file:            **standard input**  
Output file:           **standard output**  
Time limit:            2 seconds  
Memory limit:         1024 megabytes

**This is an interactive problem.**

Little Q has an integer between 0 and 100 (both inclusive) in mind. You can ask him at most 100 queries to find out the integer in his mind.

Each query consists of an integer  $x$ . The interactor will output an integer  $t$  ( $t \in \{0, 1\}$ ) as the answer.

- If  $t = 0$ , the integer in his mind is not  $x$ ;
- Otherwise, the integer in his mind is  $x$ .

Note that the interactor is **adaptive**, meaning that the answer for each test case is not pre-determined. The interactor can determine the integer in his mind, as long as it does not conflict with the previous queries and answers.

## Input

The first line of the input contains an integer  $T$  ( $1 \leq T \leq 100$ ), indicating the number of test cases. There is no extra input for each test case.

## Interaction Protocol

If you want to ask a query, output one line. Firstly, output `?` followed by a space, and then output an integer  $x$  ( $0 \leq x \leq 100$ ). After flushing your output, your program should read a single integer  $t$ , indicating the answer to your query.

If you want to guess the integer, output one line. Firstly, output `!` followed by a space, and then output an integer  $y$  ( $0 \leq y \leq 100$ ). After flushing your output, your program should continue processing the next test case, or exit immediately if there are no more test cases. Note that your guess does not count as a query.

To flush your output, you can use:

- `fflush(stdout)` (if you use `printf`) or `cout.flush()` (if you use `cout`) in C and C++.
- `System.out.flush()` in Java and Kotlin.
- `sys.stdout.flush()` in Python.

## Example

standard input	standard output
1	? 100
0	? 0
1	! 0

## Note

The blank lines in the sample case are added for readability. In your output, extra spaces or blank lines will be ignored.