



Task Koreografija

Jura: *And Tvrtko, how was the show yesterday?*

Tvrtko: *It was great. The best part was when 1000 dancers lined up from left to right and started performing the choreography. Each of them had a number written on their costume between 1 and 1000, and all those numbers were different. But I have to admit, when I saw them in a line, I didn't like their order.*

Jura: *What do you mean?*

Tvrtko: *I saw some consecutive interval of dancers in the line and counted how many pairs of dancers there were such that the dancer at the lower position had a higher number than the dancer at the higher position. I like it when the number of such pairs is an odd number.*

Jura: *Oh Tvrtko, you have to see the big picture. I'll handle it. But tell me, how did their numbers go in order?*

Tvrtko: *Hm... I've already forgotten. But I can tell you for each consecutive interval of dancers whether I liked it or not.*

Jura: *So be it. We have no choice but to try to determine their numbers based on that.*

Interaction

This is an interactive task. Your program needs to establish a dialogue with the program made by the organizers that responds to the queries asked.

Your program can send queries by writing to standard output. Each query should be printed in a separate line and should have the form “? a b ”, where a and b are positive integers satisfying $1 \leq a \leq b \leq 1000$. Numbers a and b represent the positions of the dancers that define the observed interval.

After each printed query, your program should *flush* the output and read the *response* to the query from standard input – a number from the set $\{0, 1\}$ which represents Tvrtko's opinion on the given interval. The number 1 indicates that Tvrtko liked that interval, while 0 indicates he didn't.

Your program may send at most 500 000 such queries.

Once your program has reconstructed the numbers on the dancers' costumes, it should print in a separate line to standard output the symbol ! followed by printing the requested sequence of numbers as they appear from left to right.

After that, your program should again *flush* the output and terminate execution.

Scoring

Let Q be the maximum number of queries your program sends in all test cases.

If $Q > 500\,000$, your program will score 0 points.

Otherwise, the number of points your program will score is based on the following table:

Range	Score
$40\,000 \leq Q \leq 500\,000$	$30 + 70 \cdot \frac{1/Q - 1/500\,000}{1/40\,000 - 1/500\,000}$
$Q \leq 40\,000$	100



Sample Interaction

Although in the task the number of dancers will always be 1000, for illustration purposes we provide an example interaction when the number of dancers is 4.

Let's assume the numbers on the dancers' costumes go in order 2 1 4 3.

Output	Input	Note
? 1 2	1	Tvrtko counted one pair.
? 1 3	1	Tvrtko counted one pair.
? 1 4	0	Tvrtko counted two pairs.
? 2 3	0	Tvrtko counted zero pairs.
? 2 4	1	Tvrtko counted one pair.
? 3 4	1	Tvrtko counted one pair.
!		The numbers have been found, they are printed in order.
2 1 4 3		