Problem L. Limited Shuffle Restoring

Input file:	*standard input*
Output file:	*standard output*
Time limit:	3 seconds
Memory limit:	512 mebibytes

This is an interactive problem.

Zhenya had an array a, initially equal to $(1, 2, \ldots, n)$. He did the following operations with the array.

- For each i from 1 to n in this order, Zhenya picked some index j such that $i \le j \le \min(n, i + 2)$, and swapped a_i and a_j. Of course, if $i = j$, then nothing happened after the operation.

Your goal is to determine the final array. You may ask questions of the following type.

- `? i j` meaning the question "How do a_i and a_j compare to each other?". Zhenya will respond to this with one symbol `<` or `>`, meaning that $a_i < a_j$ or $a_i > a_j$, respectively.

You may ask no more than $\lfloor 5n/3 \rfloor + 5$ questions. After this, you must guess the array.

Interaction Protocol

First, the interactor prints the number n in a separate line ($1 \le n \le 30\,000$). Then the solution makes queries, where each query consists of printing `? i j` on a separate line, where $1 \le i, j \le n$, and $i \ne j$. After each query the interactor prints one character `<` or `>` on a separate line.

After the solution has finished asking questions, it must make a guess. If you think that the array is $(a_1, \ldots, a_n)$, print `!` a_1 a_2 $\ldots$ a_n on a separate line and terminate.

If your solution makes more than $\lfloor 5n/3 \rfloor + 5$ queries, the interactor will finish with the WA verdict. If you do not flush the output after printing a query, you may receive the IL verdict.

Note that the interactor in this task is **adaptive**, i.e. the array may be generated at the runtime consistently with your questions.

Example

standard input	*standard output*
5 < > > < > >	? 5 4 ? 5 1 ? 5 3 ? 3 1 ? 2 1 ? 5 2 ! 2 3 1 5 4