Problem G. Jacana Numbers

Input file:	*standard input*
Output file:	*standard output*
Time limit:	1 second
Memory limit:	512 mebibytes

Let us define *Jacana numbers* in the following way:

$$\begin{aligned} J(n,1) &= n, \\ J(n,k) &= n^{J(n,k-1)} \text{ for } k > 1. \end{aligned}$$

We have two Jacana numbers: $J(n,a)$ and $J(m,b)$. Your task is to compare them.

Input

The first line of input contains an integer T, the number of test cases ($1 \le T \le 10^4$).

Each test case contains four integers: n, a, m, and b ($1 \le n, a, m, b \le 10^9$).

Output

For each test case, print a single line containing a single character:

- if $J(n,a) > J(m,b)$, output "`>`",
- if $J(n,a) = J(m,b)$, output "`=`", and
- if $J(n,a) < J(m,b)$, output "`<`".

Example

standard input	standard output
3 2 2 3 1 2 3 3 2 1 2 1 4	> < =