A. Two Bases

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

After seeing the "ALL YOUR BASE ARE BELONG TO US" meme for the first time, numbers X and Y realised that they have different bases, which complicated their relations.

You're given a number X represented in base b_x and a number Y represented in base b_y. Compare those two numbers.

Input

The first line of the input contains two space-separated integers n and b_x ($1 \le n \le 10$, $2 \le b_x \le 40$), where n is the number of digits in the b_x-based representation of X.

The second line contains n space-separated integers $x_1, x_2, ..., x_n$ ($0 \le x_i < b_x$) — the digits of X. They are given in the order from the most significant digit to the least significant one.

The following two lines describe Y in the same way: the third line contains two space-separated integers m and b_y ($1 \le m \le 10$, $2 \le b_y \le 40$, $b_x \ne b_y$), where m is the number of digits in the b_y-based representation of Y, and the fourth line contains m space-separated integers $y_1, y_2, ..., y_m$ ($0 \le y_i < b_y$) — the digits of Y.

There will be no leading zeroes. Both X and Y will be positive. All digits of both numbers are given in the standard decimal numeral system.

Output

Output a single character (quotes for clarity):

- '<' if $X < Y$
- '>' if $X > Y$
- '=' if $X = Y$

Examples

input
6 2 1 0 1 1 1 1 2 10 4 7

output
=

input
3 3 1 0 2 2 5 2 4

output
<

input
7 16 15 15 4 0 0 7 10 7 9 4 8 0 3 1 5 0

output
>

Note

In the first sample, $X = 101111_2 = 47_{10} = Y$.

In the second sample, $X = 102_3 = 21_5$ and $Y = 24_5 = 112_3$, thus $X < Y$.

In the third sample, and $Y = 4803150_9$. We may notice that X starts with much larger digits and b_x is much larger than b_y, so X is clearly larger than Y.