

B. Little Artem and Grasshopper

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Little Artem found a grasshopper. He brought it to his house and constructed a jumping area for him.

The area looks like a strip of cells $1 \times n$. Each cell contains the direction for the next jump and the length of that jump. Grasshopper starts in the first cell and follows the instructions written on the cells. Grasshopper stops immediately if it jumps out of the strip. Now Artem wants to find out if this will ever happen.

Input

The first line of the input contains a single integer n ($1 \leq n \leq 100\,000$) — length of the strip.

Next line contains a string of length n which consists of characters "<" and ">" only, that provide the direction of the jump from the corresponding cell. Next line contains n integers d_i ($1 \leq d_i \leq 10^9$) — the length of the jump from the i -th cell.

Output

Print "INFINITE" (without quotes) if grasshopper will continue his jumps forever. Otherwise print "FINITE" (without quotes). FIN

Examples

input
2 >< 1 2
output
FINITE

input
3 >>< 2 1 1
output
INFINITE

Note

In the first sample grasshopper starts from the first cell and jumps to the right on the next cell. When he is in the second cell he needs to jump two cells left so he will jump out of the strip.

Second sample grasshopper path is 1 - 3 - 2 - 3 - 2 - 3 and so on. The path is infinite.