

C. Koko And The Transformation

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

koko has two arrays a and b , he wants to know if he can transform a to b in a finite number of steps. In each step he can perform one of two operations:

- Pick two values from a and merge them into one value equal to their sum.
- Pick value from a and split it into two values such that their sum are equal to the initial value.

koko needs your help, can you find out if he can transform a to b in a finite number of steps?

Input

The first line of input contains two numbers n and m ($1 \leq n, m \leq 10^5$) – the number of elements in arrays a and b respectively.

The next line contains n integers, the elements in array a ($0 \leq a_i \leq 10^4$).

The next line contains m integers, the elements in array b ($0 \leq b_i \leq 10^4$).

Output

Print "Yes" if koko can transform a to b in a finite number of steps, else, print "No".

Example

input	Copy
3 5 6 15 6 5 12 0 3 7	
output	Copy
Yes	

Note

- One solution to the sample case is: split 15 to 12 and 3, split 6 to 1 and 5, merge 1 and 6 to 7. split 7 to 7 and 0.
- Note that: the order of the numbers in a or b is not important.

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→ About Group



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→ Group Contests

Sheet #10 (General Hard)

Sheet #9 (General medium)

Sheet #8 (General easy)

Sheet #7 (Recursion)

Sheet #6 (Math - Geometry)

Sheet #5 (Functions)

Sheet #4 (Strings)

Contest #3.1

Sheet #3 (Arrays)

Contest #2

Sheet #2 (Loops)

Contest #1

Sheet #1 (Data type - Conditions)

Sheet #10 (General Hard)

Finished

Practice

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→ About Time Scaling

This contest uses time limits scaling policy (depending on a programming language). The system automatically adjusts time limits by the following multipliers for some languages. Despite scaling (adjustment), the time limit cannot be more than 30 seconds. Read the details by the [link](#).