Problem F. Fun at Luggage Claim

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	512 megabytes

In most cases it's not about whether your job is fun or not, it's about whether you know how to have fun or not. This task is about Olya and Kolya — staff members of Vnumometyevo airport who certainly do have fun while working at a luggage claim.

Luggage belt consists of n consecutive cells numbered from 1 to n. As it is a belt, cells numbered i and $i + 1$ are adjacent for any i from 1 to $n - 1$ as well as cells n and 1.

At the beginning of the Luggage Belt Game Olya puts a_i items of luggage at the i-th cell of the belt. She also tells Kolya a sequence $b_1, b_2, \ldots, b_n$ that describes a desired distribution of the luggage among the belt cells. While all passengers are stuck at the arrival passport control Kolya has enough time to apply an arbitrary number of operation of the following type. He can pick any cell i such that it has **at least two** items of luggage more than each of two adjacent cells, and move one item of luggage from cell i to each of them.

Is it possible for Kolya to achieve a state where the i-th belt cell has exactly b_i items of luggage in it?

Input

The first line of the input contains a single integer n ($3 \le n \le 100\,000$) — the length of the luggage belt.

The second line contains n integers $a_1, a_2, \ldots, a_n$ ($0 \le a_i \le 10^9$).

The input ends with the third line containing n integers $b_1, b_2, \ldots, b_n$ ($0 \le b_i \le 10^9$).

Output

If it is possible for Kolya to achieve luggage distribution provided by Olya print "Yes" in the only line of the output. Otherwise, print "No".

Examples

standard input	standard output
3 0 0 2 1 1 0	Yes
3 0 2 0 0 1 1	No
4 0 100 0 10 33 40 33 4	Yes