Make Convex Sequence

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	1024 megabytes

You are given two integer sequences $L = (L_1, L_2, \ldots, L_N)$ and $R = (R_1, R_2, \ldots, R_N)$. Determine if there exists a sequence $A = (A_1, A_2, \ldots, A_N)$ of **real numbers** that satisfy the following conditions:

- For all integers i such that $1 \leq i \leq N$, $L_i \leq A_i \leq R_i$ holds.
- For all integers i such that $2 \leq i \leq N-1$, $A_{i-1} + A_{i+1} \geq 2A_i$ holds.

Input

The input is given from Standard Input in the following format:

N
$L_1\ L_2\ \cdots\ L_N$
$R_1\ R_2\ \cdots\ R_N$

- All values in the input are integers.
- $3 \leq N \leq 3 \times 10^5$
- $1 \leq L_i \leq R_i \leq 10^9$ $(1 \leq i \leq N)$

Output

If there exists a sequence A of real numbers that satisfies the conditions, output `Yes`. Otherwise, output `No`.

Examples

standard input	standard output
4 2 1 2 5 4 6 5 8	Yes
3 1 4 2 3 7 4	No

Note

In the first example, for example, $A = (4, \frac{3}{2}, 3, 7)$ satisfies the conditions.