Task 1: Fraud (`fraud`)

You have been put in charge of the 24^{th} National Olympiad in Informatics!

This year, the competition consisted of N contestants and 2 rounds. The i^{th} contestant scored A_i points in the first round and B_i points in the second round.

Furthermore, the rounds have associated **positive integer** weightages X and Y respectively. The i^{th} contestant's final score S_i is given by $S_i = A_i \times X + B_i \times Y$.

As the chairman, you have been given the freedom to select the values of X and Y as you wish.

Alas, Squeaky the Mouse has bribed you into committing fraud. To be exact, he has promised to reward you handsomely if you select some X and Y such that $S_i > S_j$ for all $1 \leq i < j \leq N$.

But is it even possible to do so?

Input

Your program must read from standard input.

The first line contains a single integer N, the number of contestants.

The second line contains N space-separated integers, $A_1, \ldots, A_N$.

The third line contains N space-separated integers, $B_1, \ldots, B_N$.

Output

Your program must print to standard output.

Output `YES` if it is possible to commit fraud and `NO` otherwise.

Implementation Note

As the input lengths for subtasks 1 and 4 may be very large, you are recommended to use C++ with fast input routines to solve this problem.

C++ and Java source files containing fast input/output templates have been provided in the attachment. You are strongly recommended to use these templates.

If you are implementing your solution in Java, please name your file `Fraud.java` and place your main function inside `class Fraud`.

Subtasks

The maximum execution time on each instance is 1.0s, and the maximum memory usage on each instance is 1GiB. For all testcases, the input will satisfy the following bounds:

- $2 \leq N \leq 3 \times 10^5$
- $0 \leq A_i, B_i \leq 10^6$

Your program will be tested on input instances that satisfy the following restrictions:

Subtask	Points	Additional Constraints
1	10	$B_i = 0$
2	25	$N = 2$
3	50	$2 \leq N \leq 10^4$
4	15	-

Sample Testcase 1

This testcase is valid for subtasks 2, 3, and 4 only.

Input	Output
2 1 2 2 1	YES

Sample Testcase 1 Explanation

A possible solution is $X = 1$ and $Y = 2$.

This is since $S_1 = 1 \times 1 + 2 \times 2 = 5 > S_2 = 2 \times 1 + 1 \times 2 = 4$.

Sample Testcase 2

This testcase is valid for subtasks 3 and 4 only.

Input	Output
3 2 4 3 4 2 3	NO

Sample Testcase 3

This testcase is valid for all subtasks.

Input	Output
2 5 1 0 0	YES