6615 Easy Problem Once More

Define matrix $A \in R^{n\times n}$, if for every m $(1 \le m \le n)$,

$$det\ A\begin{pmatrix} i_1, i_2, \ldots, i_m \\ i_1, i_2, \ldots, i_m \end{pmatrix} = \begin{vmatrix} a_{i_1 i_1} & a_{i_1 i_2} & \ldots & a_{i_1 i_m} \\ a_{i_2 i_1} & a_{i_2 i_2} & \ldots & a_{i_2 i_m} \\ \ldots & \ldots & \ddots & \ldots \\ a_{i_m i_1} & a_{i_m i_2} & \ldots & a_{i_m i_m} \end{vmatrix} < 0, (1 \le i_1, \ldots, i_m \le n),$$

then matrix A can be called as partially negative matrix. Here matrix

$$A = \begin{pmatrix} a_{11} & a_{12} & \ldots & a_{1n} \\ a_{21} & a_{22} & \ldots & a_{2n} \\ \ldots & \ldots & \ddots & \ldots \\ a_{n1} & a_{n2} & \ldots & a_{nn} \end{pmatrix}, \text{ and } \{i_1, \ldots, i_m\} \text{ is a subset of } \{1, \ldots, n\}.$$

If you are not familiar with determinant of a matrix, please read the Note part of this problem.

For example, matrix $\begin{pmatrix} -2 & 4 \\ 4 & -6 \end{pmatrix}$ is a partially negative matrix because $|-2|$, $|-6|$ and $\begin{vmatrix} \text{-2} & 4 \\ 4 & \text{-6} \end{vmatrix}$ are negative.

A symmetric matrix is a square matrix that equals to its transpose. Formally, matrix A is symmetric if $A = A^T$. For example, $\begin{pmatrix} 1 & 3 \\ 3 & 1 \end{pmatrix}$ is a symmetric matrix.

Given two N-dimensional vector x and b, and we guarantee that there will be at least one 0 value in vector b. You task is to judge if there exists a symmetric partially negative matrix A, which fulfills $Ax = b$.

Input

There are several test cases. Proceed to the end of file.

Each test case is described in three lines.

The first line contains one integer N $(2 \le N \le 100000)$.

The second line contains N integers x_i $(-1000000 < x_i < 1000000,\ 1 \le i \le N)$, which is vector x.

The third line contains N integers b_i $(-1000000 < b_i < 1000000,\ 1 \le i \le N)$, which is vector b. There will be at least one b_i which equals to zero.

Output

For each test case, output '`Yes`' if there exists such a matrix A, or '`No`' if there is no such matrix.

Hint:

There exists a symmetric partially negative matrix $\begin{pmatrix} -2 & 4 \\ 4 & -6 \end{pmatrix}$

$$Ax = \begin{pmatrix} -2 & 4 \\ 4 & -6 \end{pmatrix}\begin{pmatrix} 2 \\ 1 \end{pmatrix} = \begin{pmatrix} 0 \\ 6 \end{pmatrix} = b.$$

Note: Determinant of an $n \times n$ matrix A is defined as below:

$$det(A) = \sum_{\sigma \in S_n} sgn(\sigma) \prod_{i=1}^{n} A_{i,\sigma_i}$$

Here the sum is computed over all permutations σ of the set $\{1, 2, \ldots, n\}$. A permutation is a function that reorders this set of integers. The value in the i-th position after the reordering σ is denoted σ_i. For example, for $n = 3$, the original sequence 1, 2, 3 might be reordered to $\sigma = [2, 3, 1]$, with $\sigma_1 = 2$, $\sigma_2 = 3$, and $\sigma_3 = 1$. The set of all such permutations (also known as the symmetric group on n elements) is denoted S_n. For each permutation σ, $sgn(\sigma)$ denotes the signature of σ, a value that is +1 whenever the reordering given by σ can be achieved by successively interchanging two entries an even number of times, and -1 whenever it can be achieved by an odd number of such interchanges.

Sample Input

```
2
2 1
0 6
```

Sample Output

```
Yes
```