

A Farewell to Holds

time limit per test: 10 seconds (10 seconds for Python)

memory limit per test: 1 gigabyte

input: standard input

output: standard output

points: 100 · problem code: boulderingwall · author: Parsa

The MAPS marketing team has been assigned to design an Olympic bouldering wall. Since the team goes bouldering after every MAPS workshop, they wanted the wall to follow a very particular $n \times n$ layout.

For each pair (i, j) , the hold in row i and column j has colour $c_{i,j}$ and visibility score $a_{i,j}$.

The broadcast crew has one rule: after the final design is chosen, no remaining colour may appear more than once in any row or in any column. Repainting would require another meeting, so the marketing team may instead remove the colour from some holds.

The removed holds must also be well spread out: no two removed holds may be in the same row or in the same column.

The cost of a removal set is the maximum $a_{i,j}$ among the holds whose colour was removed. If no colour is removed, the cost is 0.

Determine whether it is possible to make the wall valid. If it is possible, find the minimum possible cost.

Input

The first line contains one integer n ($1 \leq n \leq 10^3$).

The next n lines contain the colour matrix c . The value in row i and column j is $c_{i,j}$ ($1 \leq c_{i,j} \leq 10^9$).

The next n lines contain the value matrix a . The value in row i and column j is $a_{i,j}$ ($1 \leq a_{i,j} \leq 10^9$).

Output

If it is possible to make the wall valid, print **Yes** ; otherwise print **No** .

If the answer is **Yes** , print the minimum possible cost on the second line.

Example 1

Input

```
3
1 4 3
1 2 3
6 2 5
1 9 1
3 5 7
9 1 9
```

Output

```
Yes
3
```

Example 2

Input

```
3
1 2 3
1 2 3
1 2 3
1 9 1
3 5 7
9 1 9
```

Output

```
No
```