

# Practice Contest 2

## Pairs of intervals

You are given  $n$  pairs of intervals. The  $i$ -th pair consists of **disjoint** intervals  $[l_i, r_i]$  and  $[L_i, R_i]$ . You need to choose one interval from each pair such that no two of the  $n$  chosen intervals intersect. Two intervals  $[a, b]$  and  $[c, d]$  are said to intersect, if there exists some  $t$  such that  $a \leq t \leq b$  and  $c \leq t \leq d$ .

## Input

- The first line contains  $n$ , the number of intervals.
- $i$ -th of the next  $n$  lines contains 4 space separated integers,  $l_i, r_i, L_i, R_i$ .

## Output

On the first line of the input, print **Yes** if it is possible to choose  $n$  intervals such that no two intersect, and **No** otherwise. If the output is **Yes**, you must print another line containing  $n$  space separated integers, the  $i$ -th of which should be 1 if  $[l_i, r_i]$  is chosen and 2 if  $[L_i, R_i]$  is chosen.

If there are multiple solutions, you can output any.

## Test Data

In all inputs,

- $1 \leq n \leq 10^5$
- $0 \leq l_i \leq r_i < L_i \leq R_i \leq 10^9$

**Subtask 1 (10 Points):**  $n \leq 20$

**Subtask 2 (15 Points):**  $n \leq 4000$  and for each  $i$ ,  $l_i = r_i, L_i = R_i$ .

**Subtask 3 (32 Points):**  $n \leq 4000$

**Subtask 4 (43 Points):** No additional constraints

## Sample Input 1

```
3
0 0 1 6
2 2 3 4
1 3 5 5
```

## Sample Output 1

```
Yes
1 2 2
```

## Sample Input 2

```
3
0 0 1 6
2 2 3 4
0 0 1 3
```

**Sample Output 2**

No

**Explanation**

In the first example, we can choose the interval  $[0, 0]$  from the first pair,  $[3, 4]$  from the second pair and  $[5, 5]$  from the third pair. Note that  $1\ 1\ 2$  is also valid.

In the second example, there is no valid solution.

**Limits**

Time: 2 seconds

Memory: 256 MB