

## Elevator Inspection (inspection)

Bella's internship at *YetAnotherRoboticsCompany* is (finally!) almost over. Over the last year, her team built a huge structure used by robots to move packages around. Unfortunately, robots cannot use stairs, therefore they need to use some specially built elevators to move between different floors. There's a total of  $N$  elevators, numbered from 0 to  $N - 1$ , and the  $i$ -th elevator can be used to move to any floor  $f$  such that  $L_i \leq f \leq H_i$ .

Unlike elevators, robots are extremely fast. As each individual floor can be completely navigated by any robot without any additional help, they can easily access all elevators at their current floor.

Bella's final task is to use a robot to inspect that all of the elevators are working correctly. Starting from floor 1, Bella will instruct her robot to board each elevator exactly twice: once to move **up**, from a floor  $l$  to an higher floor  $h > l$ , and once again to move **down** from a floor  $h$  to a lower floor  $l < h$ . When getting off from its last inspection, the robot must also have returned back to floor 1.

Elevators can be used in any order, and it's not required that an elevator  $i$  is first used to move up and later to move down, either order is fine as long as both are tested. When boarding an elevator for the second time you may get in at any floor, not necessarily the same floor where you got off the first time.

As there's a lot of different elevators to choose from, Bella is getting very confused by this assignment: help her find a valid sequence of elevators to be used, if one such sequence exists, and the floor to which each elevator will be used to move to.

### Input

The first line of input contains an integer  $N$ , the number of elevators.

Each of the following  $N$  lines contain two integers,  $L_i$  and  $H_i$ , respectively the lowest and highest floors that can be reached by the  $i$ -th elevator.

### Output

If it's not possible to satisfy Bella's requirement, you should output a single line containing "NO" without quotes.

If it is, you should output a first line containing "YES" without quotes. Then, you should output  $2N$  more lines, each containing two space separated integers  $E_i$  and  $F_i$ , meaning that in the  $i$ -th movement, the robot will use elevator  $E_i$  to move from its current floor to floor  $F_i$ .

### Constraints

- $1 \leq N \leq 200\,000$ .
- $1 \leq L_i < H_i \leq 10^9$ .



Figure 1: A common robot, clearly not able to use stairs.

## Examples

input	output
3 1 2 2 3 3 4	YES 0 2 1 3 2 4 2 3 1 2 0 1
2 1 2 1 3	YES 0 2 1 1 1 2 0 1
2 1 3 4 5	NO
3 1 6 2 3 4 5	NO

## Explanation

In the **first sample case** there's only one possible way to test all elevators and return to floor 1.

In the **second sample case** there could be multiple answers. A valid sequence to test all elevators is:

- Move up to the second floor using the first elevator.
- Move down to the first floor using the second elevator.
- Move up to the second floor using the second elevator.
- Move down to the first floor using the first elevator.

In the **third sample case** it's impossible to test all elevators.

In the **fourth sample case** it's impossible to test all elevators while also returning back to floor 1.