

String and Nails

Input file: **standard input**
Output file: **standard output**
Time limit: 2 seconds
Memory limit: 256 megabytes

You are given n nails mounted on a wooden board at integer coordinates. You have a piece of string that encloses all the nails and is pulled tight to form the smallest loop that encloses the points. You have to remove the nails one at a time, following this rule:

First, you pull the string tight around the remaining nails. Then, you may choose any nail that the string is pulled taut around (so the string touches this nail and makes an angle of < 180 degrees) and remove it. You try to repeat this process until only one point remains.

Check if you can repeatedly remove nails until only one nail is left, and if so, give such a sequence of removals.

Input

The first line of input contains a single integer, n ($1 \leq n \leq 200\,000$) — the number of points in the input.

Each of the next n lines contains the description of a nail. Each line contains two integers x and y , ($0 \leq x, y \leq 10^9$) — the coordinates of the nail on the wooden board.

It is guaranteed that no two nails occupy the exact same position on the wooden board.

Output

Output “YES” if it is possible to remove all but one nail according to the rules; otherwise, print “NO”. If the answer is “YES”, on the following lines output the removals.

On each of the following $n - 1$ lines, print two integers x and y , ($0 \leq x, y \leq 10^9$) — the coordinates of the nail that you currently want to remove.

If there are multiple solutions, any solution is accepted.

Examples

standard input	standard output
3 1 1 2 4 3 1	YES 1 1 2 4
1 1000000000 0	YES