

Problem I. Disk Tree

Input file: standard input
Output file: standard output
Time limit: 3 seconds
Memory limit: 256 megabytes

You are given a set of n disks in the plane. The disks can have different radii. The disks are not intersecting, and not touching. The edge of a disk is included in its area. Your job is to draw $n - 1$ straight line segments to connect the disks, such that there exists a path from any disk to any other disk, that only walks inside the areas of the disks and on the line segments.

There are some constraints on the line segments.

- The line segments should have integer coordinate endpoints.
- A line segment can only touch or intersect with at most two disks.
- Any two line segments cannot intersect, and cannot touch. The only exception is that it is allowed for two line segments to share an endpoint.

Input

The first line contains an integer n ($2 \leq n \leq 200\,000$), denoting the number of disks.

Each of the next n lines contains the description of a disk. Each line contains three integers x_i , y_i and r_i ($0 \leq x_i, y_i \leq 10^9$, $1 \leq r_i \leq 10^9$), denoting a disk with centre point x_i, y_i and with a radius of r_i .

It is guaranteed that no two disks touch or intersect.

Output

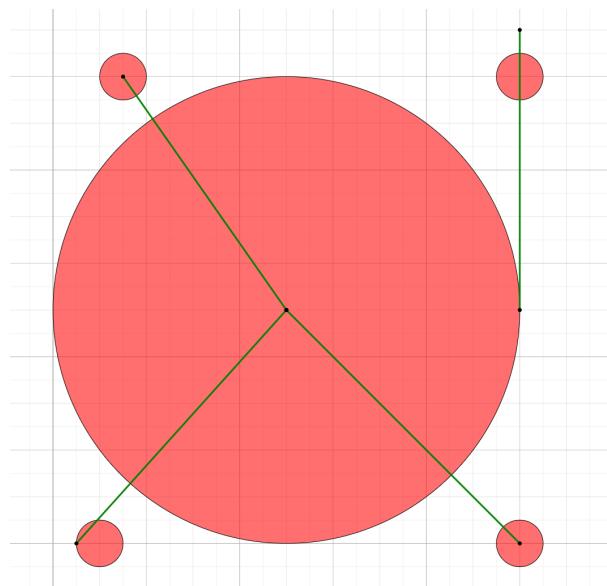
Output “YES” if there exists a solution, otherwise print “NO”. If the answer is “YES”, on the following lines output a description of the line segments.

The description contains $n - 1$ lines. Each of the $n - 1$ lines should contain 4 integers x_1, y_1, x_2, y_2 , denoting a line segment that connects points (x_1, y_1) and (x_2, y_2) . These two points should not be the same. Furthermore it must hold that $0 \leq x_1, y_1, x_2, y_2 \leq 10^9$. It can be proven that if there exists a solution, then there also exists a solution with the coordinates of the line segments being bounded like this.

Examples

standard input	standard output
3 1 0 3 10 10 6 0 5 1	YES 0 4 7 12 0 0 16 8
2 1 1 1 3 3 1	YES 2 1 3 2
5 10 10 10 2 0 1 20 20 1 3 20 1 20 0 1	YES 1 0 10 10 20 0 10 10 20 10 20 22 3 20 10 10

Note



Visualisation of sample 3