Grass

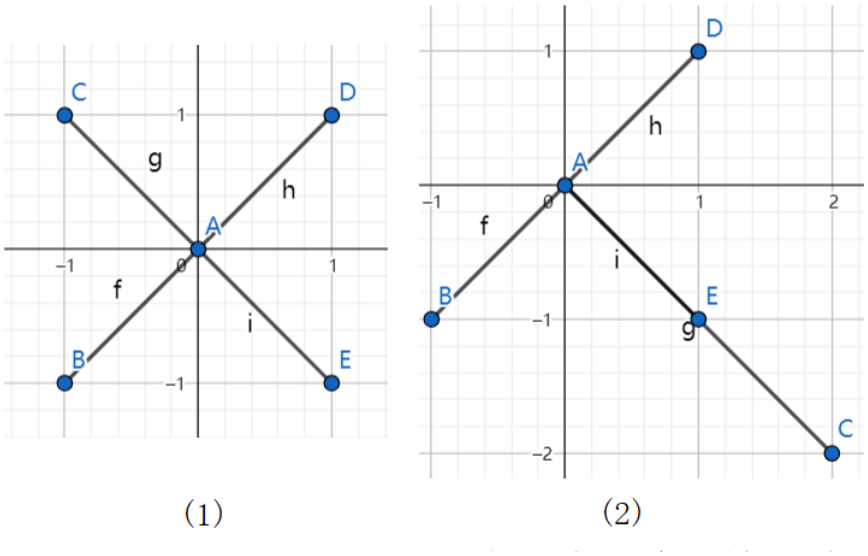
Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

Charles the Rabbit likes eating grass. As the saying goes, rabbits do not eat the grass by their burrows. Therefore, Charles has to go outside his burrow every day to look for grass to eat.

One day, Charles comes to a two-dimensional plane with many distinct points. He can choose a point A and another four points B, C, D, E to connect with A to form four segments. We consider these four segments as a clump of grass if they meet the following condition:

- Any two of the four segments have only a single point of intersection A between them.

For example, in the picture below, (1) is a clump of grass, but (2) is not one as the intersection of segments AC and AE is not only a single point A.



Given n points on a plane, Charles wants to know whether there exists a clump of grass. If so, help him find a certain one.

Input

The first line contains an integer T ($1 \leq T \leq 120$), indicating the number of test cases.

The first line of each test case contains an integer n ($1 \leq n \leq 25000$), indicating the number of points.

Each of the following n lines contains two integers x, y ($-10^7 \leq x, y \leq 10^7$), indicating that the coordinates of the point are (x, y). It is guaranteed that all points are distinct.

It is guaranteed that $\sum n \leq 10^5$ over all test cases.

Output

For each test case, if there does not exist a clump of grass, output `NO` in a single line.

Otherwise, output `YES` in the first line. Then output two integers separated by a space in the second line, indicating the coordinates of point A. Then output two integers separated by a space in each of the third to sixth lines, indicating the coordinates of the other four points B, C, D, E.

If there is more than one clump of grass, output any.

Example

standard input	standard output
3 5 0 0 1 1 1 -1 -1 1 -1 -1 3 1 1 4 5 1 4 5 1 0 2 0 3 0 4 0 5 0	YES 0 0 1 1 1 -1 -1 1 -1 -1 NO NO