

Points on a Rectangle

You are given q queries where each query consists of a set of n points on a two-dimensional plane (i.e., (x, y)). For each set of points, print YES on a new line if all the points fall on the edges (i.e., sides and/or corners) of a non-degenerate rectangle which is axis parallel; otherwise, print NO instead.

Input Format

The first line contains a single positive integer, q , denoting the number of queries. The subsequent lines describe each query in the following format:

1. The first line contains a single positive integer, n , denoting the number of points in the query.
2. Each line i of the n subsequent lines contains two space-separated integers describing the respective values of x_i and y_i for the point at coordinate (x_i, y_i) .

Constraints

- $1 \leq q \leq 10$
- $1 \leq n \leq 10$
- $-10^4 \leq x, y \leq 10^4$

Output Format

For each query, print YES on a new line if all n points lie on the edges of some non-degenerate rectangle which is axis parallel; otherwise, print NO instead.

Sample Input

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

Sample Output

```
YES
NO
```

Explanation

We perform the following $q = 2$ queries:

1. In the first query, all points lie on the edges of a non-degenerate rectangle with corners at $(0,0)$, $(0,1)$, $(1,0)$, and $(1,1)$. Thus, we print **YES** on a new line.
2. In the second query, points $(0,0)$, $(0,2)$, and $(2,0)$ *could* all lie along the edge of some non-degenerate rectangle, but point $(1,1)$ would have to fall *inside* that rectangle. Thus, we print **NO** on a new line.