

7408 Infinity Point Sets

This story comes from an ancient book written by an old frog philosopher.

When will be the end of the world? Perhaps the best way to understand is using geometry for a calculation.

At first, you should draw some points on a piece of paper. Each time you should choose two points and connect them with a segment. When there are two segments meet and produce a new point at the cross, you add that point to the paper, and try to connect it with previous ones as before.

You should do this again and again, keep drawing segments, and adding points if possible, until there are no new segments to draw. Then is the end of the world, the old frogs will die and a new age will begin.

As you can see, different sets of initial points lead to different results. For some sets of points, the end of the world will never come, we call those sets *Infinity*.

Now you are given N points, and you need to find, among all the possible subsets of those N points (**not including** empty set, so there will be $2^N - 1$ sets in total), how many of them are not *Infinity*?

Input

First line contains an integer T , which indicates the number of test cases.

Every test case begins with an integers N , which indicates the numbers of points.

In the following N lines, the i -th line contains two intergers x_i and y_i , indicating the coordinate of i -th point is (x_i, y_i) .

Restrictions:

- $1 \leq T \leq 10$.
- for 90% data, $1 \leq N \leq 100$.
- for 100% data, $1 \leq N \leq 1000$.
- $1 \leq x_i, y_i \leq 10^4$.
- there is no a pair of points with the same coordinate.

Output

For every test case, you should output 'Case # x : y ', where x indicates the case number and counts from 1 and y is the result.

Because y could be very large, just mod it with $10^9 + 7$.

Sample Input

```
2
4
0 0
0 2
2 2
2 0
5
0 0
```

0 2
2 2
2 0
1 2

Sample Output

Case #1: 15
Case #2: 30