

Instructions
Scoreboard
My score
Friends
Everyone

Problems

10: Boomerang Conste...

25: High Security

25: The Price is Correct

40: Text Editor

68:04:44

Resources

Past Rounds

Update Registration

FAQ

Terms and Conditions

Facebook Hacker Cup 2016 Qualification Round

Boomerang Constellations10 points

Download Input

The night sky can be modeled as an infinite 2D plane. There are  $N$  stars at distinct positions on this plane, the  $i$ th of which is at coordinates  $(X_i, Y_i)$ .

A boomerang constellation is a pair of distinct equal-length line segments which share a single endpoint, such that both endpoints of each segment coincide with a star's location.

Two boomerang constellations are distinct if they're not made up of the same unordered pair of line segments. How many distinct boomerang constellations can you spot?

Input

Input begins with an integer  $T$ , the number of nights on which you look out at the sky. For each night, there is first a line containing the integer  $N$ . Then,  $N$  lines follow, the  $i$ th of which contains the space-separated integers  $X_i$  and  $Y_i$ .

Output

For the  $i$ th night, print a line containing "Case #i: " followed by the number of boomerang constellations in the night sky.

Constraints

$1 \leq T \leq 50$

$1 \leq N \leq 2,000$

$-10,000 \leq X_i, Y_i \leq 10,000$

Explanation of Sample

On the first night, every pair of stars is a unique distance apart, so there are no boomerang constellations. On the second night, there are 4 boomerang constellations. One of them consists of the line segments  $(0,0)-(0,2)$  and  $(0,2)-(0,4)$ .

Example input · Download

Example output · Download

5

3

0 0

0 1

0 3

5

0 0

0 1

0 2

0 3

0 4

4

0 0

0 100

100 0

100 100

4

0 0

-3 4

0 5

-5 6

5 6

6 5

7 6

6 7

7 8

8 7

Chat (Off)

Case #1: 0

Case #2: 4

Case #3: 4

Case #4: 3

Case #5: 12