

7062 Everlasting L

Matt loves letter L.

A point set P is (a, b) -L if and only if there exists x, y satisfying:

$$P = \{(x, y), (x + 1, y), \dots, (x + a, y), (x, y + 1), \dots, (x, y + b)\} \quad (a, b \geq 1)$$

A point set Q is good if and only if Q is an (a, b) -L set and $\gcd(a, b) = 1$.

Matt is given a point set S . Please help him find the number of ordered pairs of sets (A, B) such that:

- A, B are both *good*,
- $A, B \subseteq S$ and $A \cap B = \emptyset$

Input

The first line contains only one integer T , which indicates the number of test cases.

For each test case, the first line contains an integer N ($0 \leq N \leq 40000$), indicating the size of the point set S .

Each of the following N lines contains two integers x_i, y_i , indicating the i -th point in S ($1 \leq x_i, y_i \leq 200$). It's guaranteed that all (x_i, y_i) would be distinct.

Output

For each test case, output a single line 'Case $\#x$: y ', where x is the case number (starting from 1) and y is the number of pairs.

Hint: In the second sample, the ordered pairs of sets Matt can choose are:

$$A = \{(1, 1), (1, 2), (1, 3), (2, 1)\} \text{ and } B = \{(2, 2), (2, 3), (3, 2)\}$$

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Hence, the answer is 6.

Sample Input

```
2
6
1 1
1 2
2 1
3 3
3 4
4 3
9
1 1
```

```
1 2
1 3
2 1
2 2
2 3
3 1
3 2
3 3
```

Sample Output

```
Case #1: 2
Case #2: 6
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