Check Ramsey

From Ramsey theorem we know that for every *k, l* pair there exists an integer: *R*(*k, l*) for that if *n* >= *R*(*k, l*), then if you color the edges of a complete graph on *n* vertices with red and blue then it contains a complete subgraph on *k* vertices whose edges are blue or a complete subgraph on *l* vertices whose edges are red. To get an impression of the theorem you have to count the number of complete subgraphs having *k* nodes with blue edges - *K*(*k*) and the number of complete subgraphs having *l* nodes with red edges - *K*(*l*) for each edge coloring.

To make the problem somewhat easier (or harder?) for each test the probability that an edge is red (or blue) is close to 1/2. This means that on *n* vertices you will see about *n*(*n*-1)/4 red edges.

Input

The first line contains the number of test cases *T*, where *T* <= 100. After it there is a blank line and also after every test. Each test starts with four integers *n*, *k*, *l*, *e* in this order, where 3 <= *k* <= *l* <= *n* < 100, here *e* is the number of red edges (we are not interested in very large monochromatic complete subgraphs, so you can assume that *k*, *l* <= 10 is also true). Then follow *e* lines, each of them gives two integers: *x*, *y*, it means that there is a red edge between points 0 <= *x*, *y* < *n*. All other edges are blue.

Output

For each test print the case number then the count of blue *K*(*k*) and red *K*(*l*) for the edge coloring.

Example

Input:

```
3

5 3 3 5
0 1
1 2
2 3
3 4
4 0

6 3 3 6
0 1
1 2
2 3
3 4
4 5
5 0

8 3 4 7
0 1
0 2
0 3
0 4
1 2
```

1 3
2 3

Output:
Case #1:
The number of blue K(3) is 0 and the number of red K(3) is 0.
Case #2:
The number of blue K(3) is 2 and the number of red K(3) is 0.
Case #3:
The number of blue K(3) is 25 and the number of red K(4) is 1.