# **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  $T \le 100$ . 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  $3 \le k \le l$   $\le n < 100$ , 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  $0 \le x$ , 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**

23

#### 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.