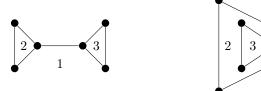
ACM Programming Challenges Lab

Exercise 1 – *Count the Faces*

Description A planar graph is a graph that can be drawn in the plane in such a way that no two edges cross at any point except at common vertices.

As you recall from your graph theory lectures there are many different ways of drawing such a graph in the plane. The figure below for example shows two different ways of drawing the bow-tie graph.



The remarkable thing is that the number of faces is the same in every such drawing. In fact you seem to recall that there is a formula for that...

Your task in this exercise is to count the number of faces in planar graphs.

Input The first line of input contains an integer n denoting the number of graphs you have to analyze. Afterwards there are n blocks encoding a planar graph as follows. The first line of each block contains two non-negative integers v, e denoting the number of vertices and edges in the graph. Then e lines follow, each containing two integers a, b between 0 and v-1, which indicate that the graph contains an edge between the vertices *a* and *b*. The vertex set of the graph is $\{0, ..., v - 1\}$.

Output For each graph in the input you must output one line containing the number of faces that it has in a planar embedding.

Sample input	Sample output
3	1
1 0	2
3 3	3
0 1	
0 2	
1 2	
4 5	
0 1	
0 2	
0 3	
1 2	

2 3