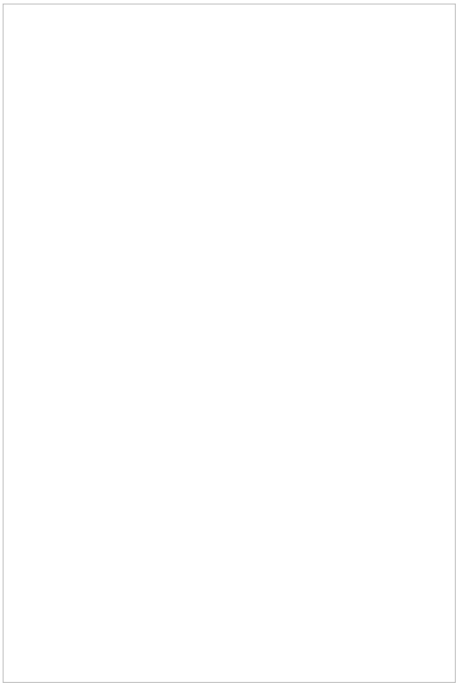
Cactus

In the mathematical field of graph theory, a spanning tree T of a connected, undirected graph G is a tree composed of all the vertices and some (or perhaps all) of the edges of G. Informally, a spanning tree of G is a selection of edges of G that form a tree spanning every vertex. That is, every vertex lies in the tree, but no cycles (or loops) are formed. On the other hand, every bridge of G must belong to T (a bridge is an edge whose deletion increases the number of connected components).

A spanning tree of a connected graph G can also be defined as a maximal set of edges of G that contains no cycle, or as a minimal set of edges that connect all vertices. - Wikipedia

In graph theory, a cactus (sometimes called a cactus tree) is a connected graph in which any two simple cycles have at most one vertex in common. Equivalently, every edge in such a graph belongs to at most one simple cycle. Equivalently, every block (maximal subgraph without a cut-vertex) is an edge or a cycle. - Wikipedia



cactus graph

Your task in this problem is to count the number of ways you can convert a cactus graph to a spanning tree.

Input

The first line of input will be the number of test cases. Each test case will start with a two numbers N and E where N is the number of vertices of the cactus graph, vertices are numbered from 1 to N, 3 <= N

<= 81 and E is the number of edges in the graph, 2 <= E <= 120. The next E lines each one will have two numbers v and w and that means there is an edge between vertix v and w.

Output

For each test case print “Case C: X” without quotes where C is the case number starting with 1 and X is the number of ways you can convert the given cactus graph to a spanning tree.

Example

Input:
2
3 3
1 2
2 3
1 3
5 5
1 2
2 3
2 4
3 4
4 5

Output:
Case 1: 3
Case 2: 3