Line Graph Sequence

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	512 megabytes

In the mathematical discipline of graph theory, the line graph of a simple undirected graph G is another simple undirected graph $L(G)$ that represents the adjacency between every two edges in G.

Precisely speaking, for an undirected graph G without self-loops or multiple edges, its line graph $L(G)$ is a graph such that

- each vertex of $L(G)$ represents an edge of G; and
- two vertices of $L(G)$ are adjacent if and only if their corresponding edges share a common endpoint in G.

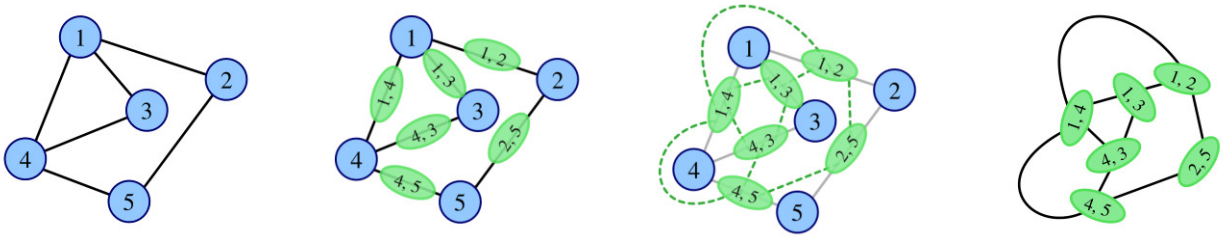

Figure: Generation of the Line Graph

Given a simple undirected graph G, you need to find the minimum number of vertices among all the graphs in sequence $L^0(G), L^1(G), \ldots, L^{k-1}(G)$, where $L^0(G) = G$ and $L^t(G) = L(L^{t-1}(G))$ for each positive integer t.

Input

The input contains several test cases, and the first line contains a single integer T ($1 \le T \le 10^5$), denoting the number of test cases.

For each test case:

The first line contains three integers n ($1 \le n \le 10^5$), m ($0 \le m \le \min\left(\frac{n(n-1)}{2}, 10^5\right)$), and k ($1 \le k \le 10^5$), denoting the number of vertices and edges in graph G and the length of the line graph sequence.

Then m lines follow, each of which contains two integers u and v ($1 \le u, v \le n$), denoting an undirected edge connecting the u-th and the v-th vertices in graph G. It is guaranteed that graph G contains no self-loops or multiple edges.

It is guaranteed that the total number of vertices and edges in all test cases do not exceed 10^5 respectively.

Output

For each test case, output a line containing a single integer, indicating the minimum number of vertices among all the graphs in the sequence $L^0(G), L^1(G), \ldots, L^{k-1}(G)$.

Example

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