Cool Graph

Input file:	`standard input`
Output file:	`standard output`
Time limit:	3 seconds
Memory limit:	512 megabytes

You are given an undirected graph with n vertices and m edges.

You can perform the following operation at most $2 \cdot \max(n, m)$ times:

- Choose three distinct vertices a, b, and c, then for each of the edges (a, b), (b, c), and (c, a), do the following:
  - If the edge does not exist, add it. On the contrary, if it exists, remove it.

A graph is called *cool* if and only if one of the following holds:

- The graph has no edges, or
- The graph is a tree.

You have to make the graph *cool* by performing the above operations. Note that you can use at most $2 \cdot \max(n, m)$ operations.

It can be shown that there always exists at least one solution.

Input

Each test contains multiple test cases. The first line of input contains a single integer t ($1 \le t \le 10^4$) — the number of test cases. The description of test cases follows.

The first line of each test case contains two integers n and m ($3 \le n \le 10^5$, $0 \le m \le \min\left(\frac{n(n-1)}{2}, 2 \cdot 10^5\right)$) — the number of vertices and the number of edges.

Then m lines follow, the i-th line contains two integers u_i and v_i ($1 \le u_i, v_i \le n$) — the two nodes that the i-th edge connects.

It is guaranteed that the sum of n over all test cases does not exceed 10^5, and the sum of m over all test cases does not exceed $2 \cdot 10^5$.

It is guaranteed that there are no self-loops or multiple-edges in the given graph.

Output

For each test case, in the first line output an integer k ($0 \le k \le 2 \cdot \max(n, m)$) — the number of operations.

Then output k lines, the i-th line containing three distinct integers a, b, and c ($1 \le a, b, c \le n$) — the three integers you choose in the i-th operation.

If there are multiple solutions, you can output any of them.

Example

standard input	standard output
5 3 0 3 1 1 2 3 2 1 2 2 3 3 3 1 2 2 3 3 1 6 6 1 2 1 6 4 5 3 4 4 6 3 6	0 1 1 2 3 0 1 1 2 3 3 1 3 6 2 4 5 3 4 6

Note

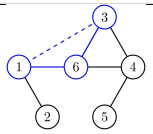
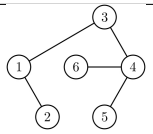
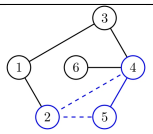
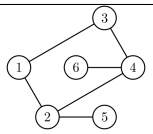
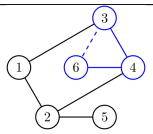
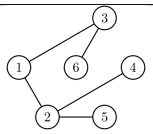
In the first test case, the graph is already *cool* because there are no edges.

In the second test case, after performing the only operation, the graph becomes a tree, so it is *cool*.

In the third test case, the graph is already *cool* because it is a tree.

In the fourth test case, after performing the only operation, the graph has no edges, so it is *cool*.

In the fifth test case:

Operation	Graph before the operation	Graph after the operation
1		
2		
3		

Note that after the first operation, the graph has already become *cool*, and there are two extra operations. As the graph is still *cool* after the two extra operations, this is a valid answer.