Problem J. Jumbled Trees

Time limit: 3 seconds
Memory limit: 1024 megabytes

You are given an undirected connected graph with n vertices and m edges. Each edge has an associated counter, initially equal to 0. In one operation, you can choose an arbitrary spanning tree and add any value v to all edges of this spanning tree.

Determine if it's possible to make every counter equal to its target value x_i modulo prime p, and provide a sequence of operations that achieves it.

Input

The first line contains three integers n, m, and p — the number of vertices, the number of edges, and the prime modulus ($1 \le n \le 500$; $1 \le m \le 1000$; $2 \le p \le 10^9$, p is prime).

Next m lines contain three integers u_i, v_i, x_i each — the two endpoints of the i-th edge and the target value of that edge's counter ($1 \le u_i, v_i \le n$; $0 \le x_i < p$; $u_i \ne v_i$).

The graph is connected. There are no loops, but there may be multiple edges between the same two vertices.

Output

If the target values on counters cannot be achieved, print `-1`.

Otherwise, print t — the number of operations, followed by t lines, describing the sequence of operations. Each line starts with integer v ($0 \le v < p$) — the counter increment for this operation. Then, in the same line, followed by $n - 1$ integers e_1, e_2, $\dots e_{n-1}$ ($1 \le e_i \le m$) — the edges of the spanning tree.

The number of operations t should not exceed $2m$. You don't need to minimize t. Any correct answer within the $2m$ bound is accepted. You are allowed to repeat spanning trees.

Examples

standard input	standard output
3 3 101 1 2 30 2 3 40 3 1 50	3 10 1 2 20 1 3 30 2 3
2 2 37 1 2 8 1 2 15	2 8 1 15 2
5 4 5 1 3 1 2 3 2 2 5 3 4 1 4	-1