Problem C
One-way traffic

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In a certain town there are n intersections connected by two- and one-way streets. The town is very modern so a lot of streets run through tunnels or viaducts. Of course it is possible to travel between any two intersections in both ways, i.e. it is possible to travel from an intersection a to an intersection b as well as from b to a without violating traffic rules. Because one-way streets are safer, it has been decided to create as much one-way traffic as possible. In order not to make too much confusion it has also been decided that the direction of traffic in already existing one-way streets should not be changed.

Your job is to create a new traffic system in the town. You have to determine the direction of traffic for as many two-way streets as possible and make sure that it is still possible to travel both ways between any two intersections.

Task

Write a program that:

- reads a description of the street system in the town from the standard input,
- for each two-way street determines one direction of traffic or decides that the street must remain two-way,
- writes the answer to the standard output.

Input

The first line of the input contains two integers n and m, where $2 \leq n \leq 2000$ and $n-1 \leq m \leq n(n-1)/2$. Integer n is the number of intersections in the town and integer m is the number of streets.

Each of the next m lines contains three integers a, b and c, where $1 \leq a \leq n$, $1 \leq b \leq n$, $a \neq b$ and c belongs to $\{1, 2\}$. If $c = 1$ then intersections a and b are connected by an one-way street from a to b. If $c = 2$ then intersections a and b are connected by a two-way street. There is at most one street connecting any two intersections.

Output

The output contains exactly the same number of lines as the number of two-way streets in the input. For each such street (in any order) the program should write three integers a, b and c meaning, the new direction of the street from a to b ($c = 1$) or that the street connecting a and b remains two-way ($c = 2$). If there are more than one solution with maximal number of one-way streets then your program should output any of them but just one.

Example

For the input:

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4 4
4 1 1
4 2 2
1 2 1
1 3 2
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the correct answer is:

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2 4 1
3 1 2
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