

In 1976 the “Four Color Map Theorem” was proven with the assistance of a computer. This theorem states that every map can be colored using only four colors, in such a way that no region is colored using the same color as a neighbor region.

Here you are asked to solve a simpler similar problem. You have to decide whether a given arbitrary connected graph can be bicolored. That is, if one can assign colors (from a palette of two) to the nodes in such a way that no two adjacent nodes have the same color. To simplify the problem you can assume:

- no node will have an edge to itself.
- the graph is nondirected. That is, if a node  $a$  is said to be connected to a node  $b$ , then you must assume that  $b$  is connected to  $a$ .
- the graph will be strongly connected. That is, there will be at least one path from any node to any other node.

## Input

The input consists of several test cases. Each test case starts with a line containing the number  $n$  ( $1 < n < 200$ ) of different nodes. The second line contains the number of edges  $l$ . After this,  $l$  lines will follow, each containing two numbers that specify an edge between the two nodes that they represent. A node in the graph will be labeled using a number  $a$  ( $0 \leq a < n$ ). An input with  $n = 0$  will mark the end of the input and is not to be processed.

## Output

You have to decide whether the input graph can be bicolored or not, and print it as shown below.