## Name: Implementation of Backtracking to solve Map Coloring Problem.

In this problem, you will solve the Map Coloring problem using backtracking.

Here the input map will be presented as a graph. The nodes of the graph will present unique cities. In the first line, there will be given two integer variables, V and E denoting the number of nodes of the input graph and the adjacency information respectively. In each of the following E lines, you will be given two integer variables u (1<=u<=V) and v (1<=v<=V) denoting which nodes are adjacent to each other. After that, you will be given a single integer variable K representing the maximum number of colors that can be used to color the graph.

You need to write a program that will calculate if it is possible to color the map using at most K colors, maintaining the constraint that the adjacent nodes will always have different colors. Print a valid configuration if it is possible else print a single string “NO” (without quotes). A valid configuration means a valid assignment of the colors to the nodes denoting V values for V nodes and ith color will denote the assignment for the ith node. Use 0-based indexing for coloring.

Please look at the input-output section for more clarification.

Test Cases:

| Input | Output |
| --- | --- |
| 7 9  1 2  1 3  2 3  2 4  3 4  3 5  3 6  4 5  5 6  4 | 2  1  0  2  1  2  0 |
| 8 9  1 2  1 3  1 4  1 5  3 4  2 6  6 7  7 8  5 8  7 | 0  1  1  2  1  0  1  0 |
| 8 9  1 2  1 3  1 4  1 5  3 4  2 6  6 7  7 8  5 8  2 | NO |