**M-Coloring Problem**

#include <bits/stdc++.h>

bool isSafe(vector<vector<int>> &adjMatrix, vector<int> &nodeColors, int node, int numNodes, int color) {

for (int i = 0; i < numNodes; i++) {

if (i != node && adjMatrix[i][node] == 1 && nodeColors[i] == color) {

return false;

}

}

return true;

}

bool solveGraphColoring(vector<vector<int>> &adjMatrix, vector<int> &nodeColors, int numColors, int numNodes, int node) {

if (node == numNodes) {

return true;

}

for (int color = 1; color <= numColors; color++) {

if (isSafe(adjMatrix, nodeColors, node, numNodes, color)) {

nodeColors[node] = color;

if (solveGraphColoring(adjMatrix, nodeColors, numColors, numNodes, node + 1)) {

return true;

}

nodeColors[node] = 0;

}

}

return false;

}

string graphColoring(vector<vector<int>> &mat, int m) {

vector<int> nodeColors(mat.size(), 0);

if (solveGraphColoring(mat, nodeColors, m, mat.size(), 0)) {

return "YES";

}

return "NO";

}