North South University

Department of Electrical and Computer Engineering

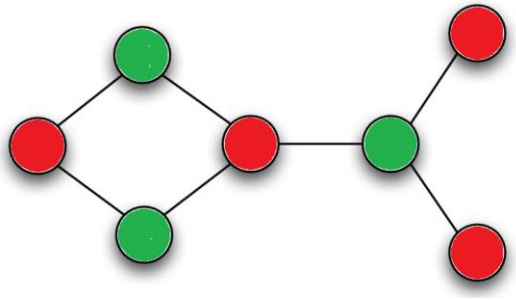
CSE 373: Design and Analysis of Algorithms

Fall 2019

Assignment 03

Problem description:

In this assignment, you have write a C program that determines 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.



In order to keep the problem simple, you can assume:

- No node will have an edge to itself.
- The graph is undirected, that is, if a node *a* is said to be adjacent to a node *b*, then you must assume that *b* is adjacent to *a*.
- The graph will be strongly connected, that is, there will be at least one path from any node to any other node.

Note: In order to store the graph, you are allowed to use adjacency matrix. Using adjacency list is not required, but accepted with appreciation.

Input specification:

Input starts with a two integer numbers *V* and *E*, representing the number of vertices and the number of edges respectively. *V* is in the range (*1 < V < 200*) and vertices are numbered from 0 to *V*-1. Next, *E* lines will follow, each containing two numbers that specify an edge between the two vertices that they represent.

Output specification:

If the input graph can be bicolored, the output of your program is “Yes”, and “No” otherwise. Your program must not print any extra text whatsoever.

Sample input:	Sample output:
3 3 0 1 1 2 2 0	No
7 7 1 2 1 4 2 3 3 4 3 5 5 6 5 7	Yes

Submission instructions:

Please read carefully the following instructions on how to submit your assignment. If you make any mistake at all in the submission process, your assignment will not be marked.

Suppose your NSU student ID is 1234567890. After you complete the assignment, rename your source file (let's say main.c for example) as "1234567890.c" and upload this file on Google Classroom in assignment section. Do not send assignments as message attachment. Do not upload any additional file.

Any form of cheating will be penalized heavily. Duplicate codes (no matter if full or partial) will not be marked regardless of which one the original is.