12371 - LAB 11

Instructions

1. Access the auto-grader at https://c200.luddy.indiana.edu
2. Please write the code for the problems in python language
3. The code should be readable with variables named meaningfully
4. Plagiarism is unacceptable and we have ways to find it, so do not do it
5. Don't change the function signature (name of the function and number and types of arguments) provided in this file.
6. Once you pass all the tests on the auto grader, show your work to the teaching assistant

Problem

Question

There is an undirected graph with n nodes, where each node is numbered between 0 and $n - 1$. You are given a 2D array *graph*, where $graph[u]$ is an array of nodes that node u is adjacent to. More formally, for each v in $graph[u]$, there is an undirected edge between node u and node v. The graph has the following properties:

- There are no self-edges ($graph[u]$ does not contain u).
- There are no parallel edges ($graph[u]$ does not contain duplicate values).
- If v is in $graph[u]$, then u is in $graph[v]$ (the graph is undirected).

The graph may not be connected, meaning there may be two nodes u and v such that there is no path between them.

A graph is bipartite if the nodes can be partitioned into two independent sets A and B such that every edge in the graph connects a node in set A and a node in set B.

Return **true** if and only if it is bipartite.

Example 1
Input: graph = [[1,2,3],[0,2],[0,1,3],[0,2]]
Output: false
Explanation: There is no way to partition the nodes into two independent sets such that every edge connects a node in one and a node in the other.

Example 2
Input: graph = [[1,3],[0,2],[1,3],[0,2]]
Output: true
Explanation: We can partition the nodes into two sets: 0, 2 and 1, 3.

Function signature

```
def isBipartite(graph):
    # Your implementation here
```