Beaumont Yin
CS 146

Task: There are a total of numCourses courses you have to take, labeled from 0 to numCourses - 1. You are given an array prerequisites where prerequisites[i] = [ai, bi] indicates that you must take course bi first if you want to take course ai.

For example, the pair [0, 1], indicates that to take course 0 you have to first take course 1.

Return true if you can finish all courses. Otherwise, return false.

Approach:

1. Create an Adjacency List to represent a graph of the courses
2. Fill the Adjacency List based on the given prerequisites
3. Keep track of the nodes visited in an array
4. Go through each course and perform Depth First Search, if there is a cycle return false
5. Otherwise return true
6. **For Helper method DFS**: it marks the current course as visited, recursively explores adjacent courses, and if it encounters a visited course there is a cycle so it returns false

Test cases:
Test Case 1:
Input: numCourses = 2, prerequisites = [[1,0]]
Output: true
Explanation: There are a total of 2 courses to take.
To take course 1 you should have finished course 0. So it is possible.

Test Case 2:
Input: numCourses = 2, prerequisites = [[1,0],[0,1]]
Output: false
Explanation: There are a total of 2 courses to take.
To take course 1 you should have finished course 0,
and to take course 0 you should also have finished course 1. So it is impossible.