EECS-214 Worksheet 6

# Problem 1

Here’s a directed graph with nodes labeled with integers:



Write the class definitions for two different data structures that could be used for representing the graph (there are many, we just want you to do two different ones).

# Problem 2

Give an algorithm to print the shortest path between two nodes in an undirected graph. You may assume whatever graph representation you like.

# Problem 3

Suppose you have a DAG (directed acyclic graph) represented using the following data structure.

class DAG {  
 class Node {  
 List<Node> Neighbors;  
 }  
 List<Node> Nodes;  
}

Suppose you wanted to test whether two nodes in the DAG are connected. As you know, you could do this with DFS or BFS. Normally for a graph, you’d use a version of DFS or BFS that keeps track of visited nodes. Is that necessary for a DAG? That is, is it possible to write an algorithm that works and doesn’t keep visited information? If so, is there a cost of doing so?