Introduction to Algorithms

Module 6.5: Practice Day 01

(Practice Questions)

Topics:

1. Graph
2. DFS

Practice Problem 1

Question: You will be given an undirected graph. Print its DFS traversal in reverse order.

Sample Input	Sample Output
4 4 1 2 4 3 3 2 2 4	3 4 2 1 (4 3 2 1 is also valid ans)

Practice Problem 2

Question: You will be given an adjacency matrix for a directed graph (index starting from 1) as input. Now, convert it to an adjacency list and print it.

Sample Input	Sample Output
4 0 0 0 1 1 0 0 1 1 1 0 0 0 0 1 0	List 1 : 4 List 2 : 1 4 List 3 : 1 2 List 4 : 3
5 0 0 0 0 0 1 0 0 1 1 1 1 0 1 1 1 1 1 0 0 0 0 1 0 0	List 1 : List 2 : 1 4 5 List 3 : 1 2 4 5 List 4 : 1 2 3 List 5 : 3

Practice Problem 3

Question: You will be given a directed graph as input. Store this graph in an adjacency list. Now, convert this adjacency list to an adjacency matrix (index starting from 1) and print it.

Sample Input	Sample Output
3 5 1 2 2 3 1 3 3 1 3 2	0 1 1 0 0 1 1 1 0

Practice Problem 4

Question: You will be given an undirected graph as input. This graph will contain only one connected component. The edge number will be exactly node-1. Then take a node from the input and print its depth.

Sample Input	Sample Output
7 6 1 2 2 4 2 5 1 3 3 6 1 7 7	Depth of 7 = 1
7 6 1 2 2 4 2 5 1 3 3 6 1 7 4	Depth of 4 = 2

Practice Problem 5

Question: You will be given an undirected graph as input. This graph will contain only one connected component. The edge number will be exactly node-1. Then take a node from the input and print its height.

Sample Input	Sample Output
7 6 1 2 2 4 2 5 1 3 3 6 1 7 1	height of 1 = 2
7 6 1 2 2 4 2 5 1 3 3 6 1 7 7	height of 7 = 0