

**Introduction to Algorithms**

# **Module 6.5: Practice Day 01**

**(Practice Questions)**

**Topics:**

1. Graph
2. DFS

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**Question:** You will be given an undirected graph. Print its DFS traversal in reverse order. Consider root as 1.

| **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) |

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**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 |

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**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. Consider root as 1.

| **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 |

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**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. Consider root as 1.

| **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 |

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**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. Consider root as 1.

| **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 |