Introduction to Algorithms

Module 3.5: Practice Day 02

(Leetcode and Practice)

Topics:

1. BFS
2. DFS
3. BFS, DFS on 2D Grid
4. Components

Problem Links:

1. **Counting Rooms** [CSES]

2. **Flood Fill** [Easy]
   - Asked in **[Google, Amazon, Facebook, Apple, Microsoft]**
   solution link

3. **Number of Closed Islands** [Medium]
   - Asked in **[Google]**
   - [This problem is optional, Don't look for support for this problem. We will solve this problem on next module]

Practice Problem 1

Question: You will be given an undirected graph as input. Then you will be given a node **N**. You need to tell the number of nodes that can be visited from node **N**.

Sample Input	Sample Output
6 5 0 1 0 2 0 3 2 3 4 5 2	4
6 5 0 1 0 2 0 3 2 3 4 5 4	2
7 6 0 1 1 2 2 3 1 3 4 0 5 6 1	5

Practice Problem 2

Question: You will be given an undirected graph as input. You need to tell the number of components in this graph.

Sample Input	Sample Output
6 5 0 1 0 2 0 3 2 3 4 5	2
9 7 0 1 0 2 0 3 2 3 4 5 6 8 7 6	3
7 7 0 1 1 2 2 3 1 3 4 0 0 5 5 6	1
10 5 1 2 2 3 1 3 4 0 5 6	6 (Because 7 8 and 9 nodes are not connected, but they are also components)

Practice Problem 3

Question: You will be given an undirected graph as input. You need to tell the number of nodes in each component in ascending order.

Sample Input	Sample Output
6 5 0 1 0 2 0 3 2 3 4 5	2 4
9 7 0 1 0 2 0 3 2 3 4 5 6 8 7 6	2 3 4
7 7 0 1 1 2 2 3 1 3 4 0 0 5 5 6	7
10 5 1 2 2 3	1 1 1 2 2 3

1 3 4 0 5 6	(Because 7 8 and 9 nodes are not connected, but they are also components)