Introduction to Algorithms

Module 7.5: Practice Day 02

(Practice Questions)

Topics:

1. Graph
2. BFS
3. Cycle Detection

Practice Problem 1

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

Note: In the explanation video there was a mistake, the explanation was for DFS traversal, but you have to do it using BFS traversal.

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

Practice Problem 2

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 level. Consider root as 1.

Sample Input	Sample Output
7 6 1 2 2 4 2 5 1 3 3 6 1 7 7	Level of 7 = 1
8 7 1 2 2 4 2 5 1 3 3 6 1 7 4 8 8	Level of 8 = 3

Practice Problem 3

Question: You will be given an undirected graph as input. Now print “YES” if there is a cycle and print “NO” if there isn’t any cycle. Consider root as 1.

Sample Input	Sample Output
4 4 1 2 2 3 3 4 4 2	YES
6 4 1 2 2 3 3 4 5 6	NO

Practice Problem 4

Question: You will be given an undirected graph as input. Now count its connected components and print it.

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

Practice Problem 5

Question: You will be given an undirected graph as input. Now count its connected components and print it. Then print All the nodes in a connected component. See the sample output for more clarification.

Sample Input	Sample Output
6 4 1 2 2 3 3 4 5 6	2 Component 1 : 1 2 3 4 Component 2 : 5 6
8 4 1 2 2 3 3 4 5 6	4 Component 1 : 1 2 3 4 Component 2 : 5 6 Component 3 : 7 Component 4 : 8