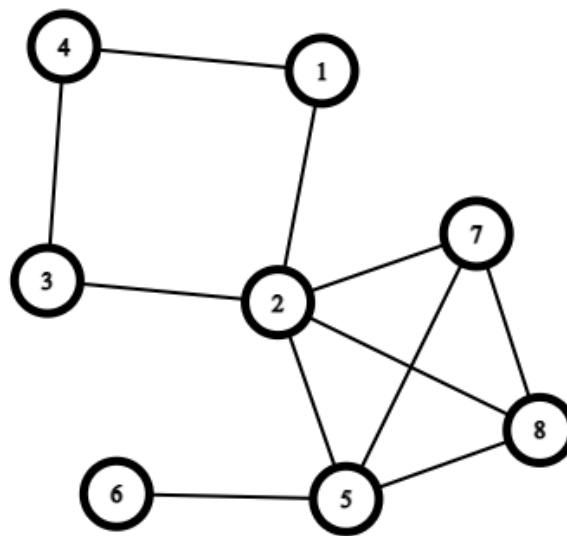
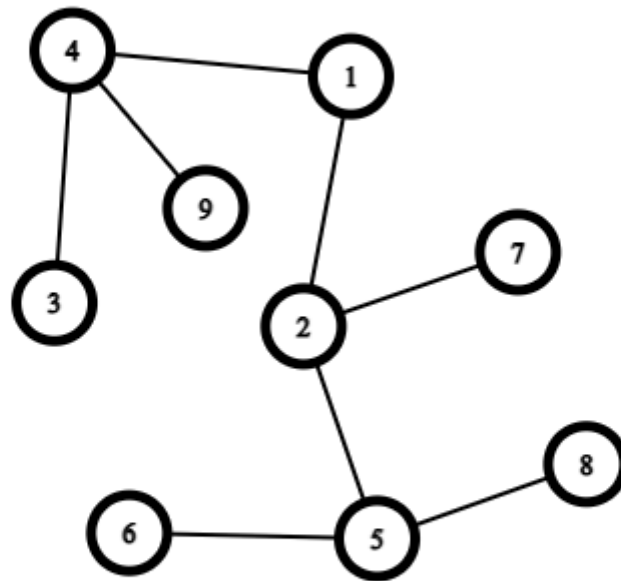


## Module - 4.5: Practice Problems

1. Perform **BFS** Traversal on the following graph and write the traversal output. Choose node **1** as the source. Determine the level of each node. Can you determine the cross edges?



2. Perform **DFS** Traversal on the following graph and write the traversal output. Choose node **4** as the source.



3. Can you think of a connected graph of **6** nodes where both **DFS** and **BFS** traversal would produce the same output?
  
4. Your friend wants you to reverse a string in a recursive way. He wants you to write a function `reverse(string str)` which takes a string input and returns the reversed string but this function has to be **recursive**.
  - a. What is the base case?
  - b. Write one or two examples of how you can solve the larger problem given the smaller problem is already solved
  - c. Can you write the generalised formula for this task?
  - d. Implement the function in C++
  - e. Simulate your code for an example input.

Example:

Input: `phitron`  
 Output: `nortihp`

5. Write a **recursive** function `digitSum(int n)` that takes a non-negative integer as input and returns the sum of its digits. Follow all the steps of **problem 4**.

Example:

**Input:** 7464

**Output:** 21

**Explanation:**  $7 + 4 + 6 + 4 = 21$

6. Write a **recursive** function `getCapital(string str)` that takes a string as input and returns the first capital letter of the input string. Follow all the steps of **problem 4**.

Example:

**Input:** thisStRING

**Output:** S