CSE 5050 Algorithms and Complexity
Problem Set 3.1

Please note:

- *Students are permitted to discuss general concepts and questions concerning the homework assignments, but sharing written solutions with others or using solutions provided by others, in part or in whole, is prohibited.*
- *Whenever a question asks you to give an algorithm for a problem, be sure to also prove its correctness and analyze its time complexity.*
- *If you consult an outside resource (e.g., web page, book, or research paper) to arrive at your solution, be sure to cite that resource.*

Required preparation: Video lectures M3_L1, M3_L2, M3_L3, and M3_L4.

Suggested reading: Chapter 3 from textbook.

Homework questions:

Question 1. (10 points) Exercise 2 from Chapter 3, page 107 of the textbook. You may assume that the input graph is given to you as an adjacency list.

Question 2. (10 points) Exercise 7 from Chapter 3, pages 108-109 of the textbook.

Question 3. (10 points) Consider the pseudocode for BFS given in the slides for video lecture M3_L3. How would the running time of this algorithm change if the input graph is represented as an adjacency matrix? Justify your answer.