CS 1800 **CD #6 (Study Guide)** **Spring 2024**

Instructions:

- This competency demo follows the procedures spelled out in your syllabus. That is, this exam is **closed book, closed internet, closed fellow students.** However, you may use any **handwritten** notes (of your creation) in your notebook.

Graph Vocabulary	Tree Vocabulary
• Vertex • Edge • Vertex degree • Total degree • Neighbors • Adjacent • Regular graph • Complete graph • Connected graph • Walk (open and closed) • Trail • Path • Circuit • Cycle	• Free tree • Rooted tree • Root • Level • Height • Parent/ancestor • Child/descendant • Leaf • Siblings • Subtree • Spanning Tree • • Pre-order traversal • Post-order traversal • Breadth-first search (BFS) • Depth-first search (DFS)

You should be able to:

1. Given a provided graph, answer questions about the graph applying the appropriate graph vocabulary.
   - Exercise 13.1.1
   - Exercises 13.4.1, 13.4.2
2. Given a provided graph, create the mathematical representation of the graph or vice versa (given the mathematical representation of a graph, draw out the described graph.)
   - Exercise 13.2.1a

3. Given a provided graph, create the adjacency list representation of the graph or vice versa (given the adjacency list representation of a graph, draw out the described graph.)

    - Exercise 13.2.1b, 13.2.2a

4. Given a provided graph, create the adjacency matrix for the graph or vice versa (given the adjacency matrix for a graph, draw out the described graph.)

    - Exercise 13.2.1c, 13.2.2b

5. Identify if two graphs are isomorphic.

    - Exercises 13.2.3, 13.3.1, 13.3.2

6. Given a provided tree, answer questions about the tree applying the appropriate tree vocabulary.

    - Exercise 14.1.1

7. Given a provided tree, use the tree to "solve a problem" or "represent a scenario"

    - Exercises in 14.2

8. Given a provided tree, list the nodes in the order visited using a defined traversal technique (pre-order or post-order)

    - Exercises in 14.5.1