

ISE/MA/OR 766

Homework #1

Assigned: February 1, 2024

Due Date: February 15, 2024

Here are two tasks for your assignment:

1. Find the second shortest path without repeated nodes from a given node $i = 1$ to a given node j in a directed network with n nodes and m arcs.
2. Find a pair of arc-disjoint paths with the shortest total distance from a given node $i = 1$ to a given node j in a directed network with n nodes and m arcs.

For each task, please report the following information:

- (1) A clear **Problem Statement**.
- (2) A quick **Literature Review** on this problem.
- (3) An **Approach** you propose with proper **Assumptions**.
- (4) The **Logic** that supports your approach.
- (5) A step-by-step **Solution Algorithm**.
- (6) A careful **Complexity Analysis**.
- (7) An illustrative **Example**.

Please submit your work electronically to me at fang@ncsu.edu.