

University of Nevada, Las Vegas Computer Science 477/677 Spring 2026

Assignment 3: Due Monday March 9, 2026 Noon

Follow instructions given by our Graduate Assistant Rakibul Hassan hassar2@unlv.nevada.edu on how to turn in the assignment.

Name: _____

You are permitted to work in groups, get help from others, read books, and use the internet.

1. Write pseudo-code for the Bellman-Ford algorithm. Assume G a weighted digraph, with vertices named $0, 1, \dots, n$. Let $V_{i,j}$ be the weight of the arc from i to j . If there is no such arc, we write $V_{i,j} = \infty$. For any vertex i , compute the minimum weight of any directed path from 0 to i , as well as its backpointer. Be sure to include the shortcut.
2. Write pseudo-code for the Floyd-Warshall algorithm. Assume G a weighted digraph with vertices $1, 2, \dots, n$. Let $V_{i,j}$ be the weight of the arc from i to j . If there is no such arc, we write $V_{i,j} = \infty$. Compute $W_{i,j}$ the minimum weight of any directed path from i to j , as well as its backpointer.
3. This problem is sometimes called the *knapsack* problem. You are given a list of objects each of which has a value and a weight, and you are also given a knapsack which can only hold a given maximum weight. Write an algorithm which finds a maximum value subset of those objects whose total weight does not exceed the capacity of the knapsack.