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C950 Data Structures & Algorithms II

PA Task 1: WGUPS Routing Program Planning

A - Algorithm Identification

I will be using the nearest neighbor algorithm as the core algorithm in my routing program. The nearest neighbor algorithm is an algorithm in which for each node left to visit, the nearest node is always the next to be visited. More information on my choice of using the nearest neighbor algorithm can be found in part C.

In this program, the nearest neighbor algorithm will be used to determine the most efficient route each truck should take to maximize the efficiency of their deliveries. It will plot a route from one package’s address to another, always choosing the nearest address to the previous delivery address when choosing the next location.

Being a greedy algorithm, the nearest neighbor algorithm may not always select the most optimal path for each truck; however, the paths chosen will be sufficient for the purposes of this project.

B - Data Structure Identification

I will be using a hash table to store packages with their related data. A hash table is a self-adjusting data structure which stores key-value pairs. More information on my choice of using a hash table can be found in part C.

All package-related data will be held in the hash table. This includes fields such as delivery address, delivery deadline, package weight, and delivery status.

C1 - Algorithm Overview