C950 WGUPS Algorithm Overview

Daniel Crites

ID #002152169

WGU Email: dcrite5@my.wgu.edu

Date

C950 Data Structures and Algorithms II

# Introduction

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# A. Algorithm Identification

The algorithm that I used to delivery packages is the greedy algorithm. I use the min function in python to find the closest route and through-out of the delivery process. As packages are delivered, they are removed from a list until no packages is left. Once that happens the truck returns to the Hub from last delivery.

# B1. Logic Comments

Trucks are manually loaded and assign to a specific truck. Once loaded the trucks begin their deliveries. The following pseudocode demonstrates how I used the greedy algorithm.

loadTruck1 = manually load packages

loadTruck2 = manually load packages

loadTruck3 = manually load packages

total\_mileage = 0

delivery\_process(truck)

packages = truck.packages

current\_position = 0

mileage\_list = mileage distances for current locations

duplicate\_list = handles duplicate distances on route

while len(packages) > 0  
 shortest\_route = min(mileage)

total\_mileage += shortest\_route

duplicate\_list.determine the right package that needs to be delivered

update.packages

update.current\_position

remove(package) from packages

return truck mileage

# B2. Development Environment

This program used Python 3.10 and Pycharm for the IDE. The OS use was Windows 11. GitHub was used as the repository. This allowed me to work on the project on two different machines, my laptop and desktop.

# B3. Space-Time and Big-O

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# B4. Scalability and Adaptability

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# B5. Software Efficiency and Maintainability

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# B6. Self-Adjusting Data Structures

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# C. Original Code

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# C1. Identification Information

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# C2. Process and Flow Comments

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# D. Data Structure

Text goes here

# D1. Explanation of Data Structure

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# E. Hash Table

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# F. Look-Up Function

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# G. Interface

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# G1. First Status Check

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# G2. Second Status Check

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# G3. Third Status Check

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# H. Screenshots of Code Execution

Screenshots (and possibly labels) go here

# I1. Strengths of Chosen Algorithm

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# I2. Verification of Algorithm

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# I3. Other possible Algorithms

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# I3A. Algorithm Differences

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# J. Different Approach

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# K1. Verification of Data Structure

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# K1A. Efficiency

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# K1B. Overhead

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# K1C. Implications

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# K2. Other Data Structures

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# K2a. Data Structure Differences

Text goes here

# M. Professional Communication

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# L. Sources - Works Cited

Text goes here

An example:

Lysecky, R., & Vahid, F. (2018, June). *C950: Data Structures and Algorithms II*. zyBooks.

Retrieved March 22, 2021, from <https://learn.zybooks.com/zybook/WGUC950AY20182019/>