Algorithms & Data Structures II

Final Project

Design Document

Design Flow:

I wanted to start designing the project incrementally, by doing the tasks one at a time and then fine tuning them.

So,

1. Begin Task 1
   1. Implement methods to read in all three files to begin filling data structures
   2. Implement a method add vertices and edges to an Edge Weighted Digraph
   3. Implement a method to run a Dijkstra shortest path algorithm and print the path.
2. Begin Task 2
   1. Build on reading in the stops to fill a Trinary search tree
   2. Edit the stop names, moving NB/EB/SB/WB from the start to the end of a string
   3. Implement a method to run a keys with prefix method and print all lines that match the criteria
3. Begin Task 3
   1. Build on reading in stop\_times.txt to fill a new data structure dedicate to arrival times
   2. Implement a method to add values to a red-black binary search tree
   3. Implement a method to return all lines from stop\_times.txt that contain the specified arrival time
4. Begin Task 4
   1. Implement a new file, that contains a main method with several loops to repeatedly ask the user for what method they wish to run and their inputs
   2. Begin Error Handling and Management
   3. Clean up the code

Analyses

Task 1: Shortest Path Algorithm

References: