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ECE 368 project3 milestone 1

This assignment deals with traversing graphs using Dijkstra's algorithm. The purpose of this assignment and program is to find the shortest path from location A to location B. This project will require an understanding of Dijkstra's algorithm, as well as the graph data structure, so I will start from there to improve my understanding of both, and to begin writing a general outline of the code that I plan to write for implementation.

The data, to be used in the graph data structure, will be given in the first input file, and it will be used to create the necessary graph, with the correct vertices and edges. The first two numbers in the input file contain the number of vertices and edges, which can be used to ease the process of creating the correct graph. I plan on parsing the input file and storing it in some sort of data structure, such as a multi-linked list, in order to have easy access to it. All of the different elements in the linked list would be able to store the points of the vertices and could also store information regarding the nodes connected to that particular vertex. I believe that this will be able to work well with Dijkstra's algorithm.

The second file contains the queries, and gives starting locations and the destinations, which is obviously necessary to find the shortest distance possible using the graph data structure. This data structure is significantly different from others, because it connects elements with a number of edges, and there are few limits on the implementation of the edges. All of the graph nodes will have the vertex location as well as the link to its' connected nodes from the edge and the distance.

The way to calculate the shortest path uses the positive edge lengths and filters through all of the nodes until it finds the shortest path to the final location. Each node that still hasn't been visited should have a marking, which will then be marked visited once the program finishes using it for its' traversal. When the program reaches the destination, it will return the shortest path from location A to location B.