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CSSE 230 Introduction to Data Structures

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MET Navigation System – Feature List

Text File Loading

This system loads all map information from a .txt file containing information on various cities and points of interests across Nevada. This allows our system to expand to cover additional destinations through modification of a text file without any changes necessary in our program. The information loaded from the text file was stored in a graph of nodes connected by edges.

Pathfinding

Our project implements a slightly modified version Dijkstra’s Algorithm using LinkedLists to find the shortest path between two destinations. If the user inputs their desired starting and ending points, chooses if they want the shortest or quickest path, and clicks the Search button, the GUI will display the route on the Nevada map and list destinations used the shortest path in a JPanel. The top panel displays the route’s total distance and time while the lower panel displays the route. In addition, the route is drawn on the Nevada map, but only one route will be drawn at a time. The shortest path will be shown in yellow, while the quickest path will be shown in green. The names of the visited nodes will be displayed next to the respective node in the Nevada map in the route’s color.

Map Display

Through clicking the “Show Map” checkbox in our GUI and pressing the “Search” button, our GUI will bring up a map of the United States in a separate window. At the time of this writing, only Nevada – shown in red – has had pathfinding implemented so far. Clicking on the state of Nevada will bring up a map of Nevada with all of our destinations displayed in blue circles with blue lines representing roads connecting our destinations.

Trip planner, time and distance

When enabled, this feature allows the user to select a start position and amount of free time or mileage available to them. The system will suggest a route to the user, displayed in the lowest panel.

List of Interesting Places

If the user checks the “Interesting Places” box and clicks our “Search” button, a popup will display a list of all of our destinations sorted by their 0 through 5 rating sorted by a PriorityQueue. This list also indicates whether the location is a city or a point of interest.