Project Goals

Our team have decided to use the airports dataset and routes dataset from OpenFlight to implement this project. When the user inputs the source airport's name and the destination airport's name, our program will be able to output the shortest path's distance and the shortest path, which marks the source, destination, and stops on the world map. We will load the data files from our selected data sets as a graph (airport dataset), in which nodes represent airports, and directed edges represent routes from source airports to destination airports.

Reading from airports dataset, we insert airports as nodes to create a graph and record each airport's information, such as ID, name, longitude, and latitude. Reading from routes dataset file, we insert directed edges between vertices. Then we will be using GetDistance function to set the weight of the edges (with two airports' altitude and longitude as parameters).

We will also implement BFS traversal which checks whether there exists a path from source to destination. To continue finding the shortest path, we need to check whether source vertex and destination vertex are in the same connected graph by BFS traversal in the graph in which source vertex is located,

To find the shortest path from source to destination, we will implement Dijkstra's Algorithm, by which it will return the shortest path between two places and the shortest distance.

The uncovered algorithm we chose to implement is the Graphic Output of Graph. We will project our vertices (source, destination, stops) in our shortest path on to the map (base picture) based on our data.

Finally, test files and read me file are also important parts in our final project. As we will need to know if our graph works properly or not. This will include if our code complies and

several test case to see if the function is working correctly, this step also makes sure that our code also runs on EWS. And the read me file will give the code user a direct view on what our program do and what input he needs to put in in order to get the correct output.

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