GOALS

We will use the OpenFlights dataset to search for the safest and efficient path to travel from one location to another one assuming there is no direct path between these locations. The safest route means that the chance of getting the COVID is the smallest. This will be determined by analyzing the population density at each location, since a higher population density will have a greater chance of contracting COVID. The most efficient route means that the number of airports on the path will be lowest. Also, we will use landmarks to travel through specific locations. If the person travelling would like to visit a stop along the way, then we will ensure that our path from start to end will include this intermediate landmark.

Our output will present an ordered list of airports to travel between that will offer the optimal route in terms of efficiency and safety. As a reach goal, we would like to present three paths; the optimal path, the next-best in terms of efficiency, and the next-best in terms of safety.

In the project we will use a BFS traversal to find the best path. To prevent travelling in cycles we will use Eulerian Paths/Cycle Identification algorithms. Since we want to be able to find paths through specific locations we will use the Landmark paths algorithm.

The user is made as an object that contains instances of age and departure location which will determine the chance they will wear a mask during their trip. Each destination will be identified with the nodes given from the OpenFlights dataset. There will be a new list of cities with corresponding percentages of spreads of the virus that can be linked to the cities of each node. The list of cities with corresponding virus spread rate will be made manually with online data and population density. With the data from the object and node, the most efficient route will be found with the method explained above.