Project Goals

Dataset: Openflights

https://openflights.org/data.html

- Vertexes - airports
- Edges - flights between airports

Traversal:

BFS

- Given the starting location, we will use BFS traversal to traverse through all airports with commercial flights connecting them.
- Given a starting location and final destination, we will use a BFS in order to find the shortest route between the airports based on the least amount of connecting flights.

Shortest Path Algorithms:

Dijkstra's algorithm

- We will use longitude and latitude coordinates of airports to calculate the distance between airports (weight of edges).
- We will use Dijkstra's algorithm to calculate the shortest path between 2 airports based on the shortest distance traveled.

Landmark algorithm

- Using the same criteria as Dijkstra's algorithm, we will implement a landmark algorithm to find the shortest distance between 2 airports based on distance traveled with connection through a third airport (landmark).

Given the starting and destination airports as inputs from the user, the program will list the connecting flights for the shortest flight time and also the total distance. For airport identification, users will use 3 letter IATA codes for their location and destination inputs. If the user enters an invalid input (non-existent airport), the system will ask for users to re-enter the input.