

## Project 3

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## Introduction

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Within this project we were required to discern flight data into sets of the most efficient flight paths available, with time or money being the determining factors in which was the most efficient. These sets were determined by a separate input from the Requested Flight Plans, a text file which specify the 2 cities and what to sort for, and the program has the job of finding a path from the starting city to the ending city based on the sorting factor. Through this, pathfinding is utilized as a technique to better facilitate the answer to a question with hundreds of possible answer choices and is the cornerstone of this project.

## Process

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Throughout the project there were many moments in which the progress of the software was halted due to unforeseen consequences and errors in the code. Things such as type mismatches and pathing caused errors which halted the progress of the project, but were eventually worked around and as such the team was able to both grow and learn from the experience. In working on the project, in order to specify which cities had flight paths to other cities, we used a linked list of linked lists, so if a city had a flight to another city it would show up when searching through that cities linked list. This allowed us to easily create the web that was the directed graph. Using Dijkstra's algorithm to find the shortest / cheapest flights, the program efficiently navigated the directed graph whenever prompted and succeeded in its objective of creating flight plans given a requested flight plan.

## Conclusion

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In the end, the program was able to handle each problem thrown at it with resounding success. Utilizing Dijkstra's method to best find a solution, the program is now in peak efficiency and each of us who worked on it is more knowledgeable on the subject matter. All in all, the project is a resounding success from both a programming standpoint and a teaching standpoint. A suitable finish to the final project of the semester.