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INTERMEDIATE COMPUTER PROGRAMMING

INDIVIDUAL PROJECT ONE

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The project focuses on determining the route between two cities. To ensure the program satisfies the assignment's conditions, I used various data structures that are responsive to the uniform cost search algorithm where the cost, in this case, is the distance covered in arriving at the destination city. I created three classes to read the CSV files, one for each. The instance fields of the classes are the specific elements stored in each line of the files. To ensure easy access to the instance variables, I used array lists and HashMap to keep the essential items I may need in my algorithm. I used a uniform cost search to find the route that uses the distance between two airports.

It was challenging to work on this project because many approaches came to mind that looked like the best but failed along the way. The continuous failure of the algorithm made it difficult to know which search algorithm to use to get the correct route between two airports. My first approach was a depth-first search, but it harmed time complexities and subsequently failed to explore more optimal paths. When applied to real life, it might lead to stress and an expensive journey on the part of travelers, hence the need for a uniform cost search algorithm.

It was an amazing project because it enabled me to think critically about devising many approaches to a project and selecting the best one that solves the problem and validates a good learning process that can be applied to other concepts.

Although I have learned data structures, I have not used most of them for any projects, and that was one of the significant challenges I faced. However, it was an excellent opportunity to spend ample time learning these data structures and applying them to my work. I would be happy to work on a project like this in the future but not under so much stress and little supervision. Working on this project was a learning journey, and finding the best approach to use was more like finding the optimal solution to the question and that was nothing but a uniform cost search algorithm.