Reflection on Individual Project

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The first step in solving a problem is defining it. This involves deciding its representation, the steps required for solving it, and what the goal is. Often, route-planning problems are represented with a graph or tree. I did the latter. The problem required a route given a start city and a destination city. The start city was the root node, and all possible destinations leading from it formed the rest of the tree.

The components of the problem were cities, airports, airlines, and routes (Instead of thinking of a route as a path, I thought of it as two cities). I represented all these, except routes, with a class. These classes helped to keep track of attributes of the various objects that would arise from the problem. These classes also had getter and setter methods for accessing private instance variables.

I used a bread first search approach to find the route given a start city and destination city. I first looped through the airports.csv file to extract the ids, codes, and names of all airports in the start city. Then, I moved to the routes.csv file to collect the ids and codes of all destination airports of every airport in the start city. Each airport object had an array list of destination airports. I also collected the ids and codes of the airlines used for travelling from the source airport to the destination airport. I returned to the airports.csv to extract the cities and the names of the destination airports identified in the routes.csv file. After, I compared the city of each destination airport to the destination city. If they were the same, the problem was solved. Otherwise, this process was repeated with the cities of the destination airports acting as the new starting points. The previous start city was placed in an array list called *exploredCities*. Thanks to the *sourceAirport* instance variable in the Airport class I created, I was able to trace a route from the destination back to the starting point.

I had to overcome the fear of running into errors. I encountered many along the way. However, they helped in making the path to my solution clearer. With every error, I knew which adjustments I had to make. Again, it was overwhelming having to keep track of a lot of attributes, but thanks to proper code organization, I overcame this issue. Overall, it was a challenging but enjoyable experience.