Department of Computer Science and Information Systems,

Intermediate Computer Programming

Lecturer: Robert Sowah

Reflective Report – C++ Project

Senam Afi Glover-Tay

Fortunately for us, we had done the project in Java, hence I already had a high-level solution to the problem. The next thing required was an implementation in C++. We had just started learning C++, hence I had to do a lot of research on the data structures and their functions under C++. W3 schools was beneficial in this regard.

I used an object-oriented approach. I created classes for airports and routes, each with corresponding header and implementation files. The project required that we read and process data from csv files. The data obtained would be used to find the route from one city to another via airports and airlines. CSV files are comma separated hence to get the input I needed, my delimiter was the comma ",". In each project file, I imported all the required libraries and modules such as 'iostream', 'fstream,', 'set', 'vector' and the likes.

The data I read from the files; I stored in unordered maps for easy location and indexing of data and improved time complexity. For my airports unordered map, my key was a string of city and country and the values, a vector of objects of all possible airports in that location. For my routes unordered map, my key was the source airport code, and the values were route objects of all the destination airports. For the airline unordered map, with data from the routes file, the key was a string of source airport code and destination airport code while the values were a vector of all the possible airlines. Next was performing the search. I decided to use the breadth-first search we learnt in our Intro to AI course. It is the most optimal search that I am familiar with. I wrote my search according to the algorithm from Russell & Norvig (2020). After performing the search and gaining the path, I used my airline unordered map to retrieve an airline from the passenger based on their source and destination airport codes.

This project improved my understanding of Object-oriented programming, error handling and file input/output. I gained confidence in programming in C++ and self-learning. I also came to appreciate the importance of planning ahead for coding projects.

References

Russell, S. J., & Norvig, P. (2020). Artificial Intelligence: A Modern Approach (4th ed.). New

Jersey, United States: Prentice Hall.