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Data Structures and Algorithms

Critical Reflection

Week 6 – Task B

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**Analysis of tasks**

What went well

The task was to create a graph containing airports and their connections, either direct or connecting. The programme was required to be able to add airports, remove and add direct flights, whilst also allowing the user to identify flights from a given airport either connecting or direct. Direct flights are simply the edges from one airport to another, whereas connecting flights required the use of a depth first search algorithm to identify all airports accessible from the starting airport. All the above requirements were successfully implemented, with error catching with user search specifications.

Encountered difficulties

The most difficult aspect of this task was the depth first search development with finding the connecting flights. DFS needs a first in first out stack which takes the child of a parent and adds it to a queue, this is then used as the next search until the brank is fully explored. This method originally included both the direct and connecting flights, to resolve this, removing the airports within the direct flights path from the connecting path, both direct and connecting are used for both option on the flight search.

**Difficulty assessment**

The difficulty of this task was more working out how to code the depth first search recursively, pseudocoding the problem helped visualise how the algorithm works with first in first out data structure. As discussed earlier this was resolved within a recursive DFS function which identifies all the children from a given node.

**Improvement/Reflection**

Improving the task, I would have added a way of removing airports, doing so also removes any direct connections breaking links both connecting and direct flights. Otherwise, there are no other improvements I would advise.