Week 4 Reflection

1. What was the focus of this week?

This week looked at two topics relating to randomisation and randomised algorithms – Linear Time Selection, focusing on both randomised and deterministic selection algorithms to find the ith smallest element of an array in linear time.

The second part of this week covered graphs and the Minimum Cut problem, introducing the concept of graphs and using randomisation in implementing Karger’s algorithm.

1. What did I learn this week?

This week I learned about some different ways of solving problems in the context of selection: reducing the problem to a different problem, creating a randomised solution and creating a deterministic solution. I also learned about adjacency matrices and how they can be useful for storing specific data, but take up quite a lot of memory.

1. What did I already know?

I was already familiar with graphs and adjacency lists from informatics and my study of algorithms, previously, but the algorithms themselves were new to me.

1. What were some challenges this week?

Some of the probability and mathematics involved in the analysis of the two algorithms was hard to follow, especially the turning of a probability statement into an asymptotic notation statement at the end of an analysis.

1. How has my understanding of Algorithms increased this week?

I am now very familiar with graphs and understand randomised algorithms quite well, as well as the different methods of implementing an algorithm to be deterministic or randomised.