Week Eleven Reading Notes

This week is all about graphs. Any deep study of math and physics leaves one with a sense of amazement as to how a couple of symbols can so accurately describe the workings of the physical world. The connection of graphs and computational problems has the same amazement.

Graphs can be used to represent a wide range of actions, events, puzzles, and simulations.   This is not a course on graph theory, but graphs and algorithms that use graphs occur everywhere in the study of computer science. In fact, any computation can be viewed as a graph! Is that puzzling? Well, perhaps it is best to see how graphs, even implicit ones, help solve puzzles.

Computational solutions to puzzles, challenges, or any other problem are often divided into two major efforts. The first is to find *any* solution to a small or moderately sized instance of the problem. Solving a small version of the problem answers the question – "can we solve this problem at all?"

Once we've solved a small version of a problem, the second effort is to solve it faster or in a more efficient manner. This week's lectures are divided along these lines. The first set of videos cover how to solve small versions of a problem, whilst the second set of lectures are about efficient solutions.

-Larry Rudolph