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Assignment 12

Part B write-up

**Summary of data structures used**:

For assignment 12 I took advantage of disjointSets and graphs. The disjoint sets are useful in that I can create a minspanning tree using a minimal amount of code with setUnion() and setFind(). The graph is the initial structure in holding all the data that would eventually be used to create the min spanning tree.

**Applications of min spanning trees:**

One obvious use of min spanning trees would be maze generation as shown in Assigrnment 10. They could also have a very efficient use in computer networks, transportation networks and other such similar networks.

**Sort algorithm used:**

I decided to use the selection sort algorithm to avoid rearranging any elements that did not need to be. I initially chose quick sort, but realized it would swap elements even if they were the same weight which would be a very big problem for graphs with no weight(or 1). The selection sort algorithm was simple and allowed me to work on minimally swapped graphs.

**Big-O for min spanning tree**

The complexity of the algorithm used to generate a minimum spanning tree, Kruskal’s algorithm, is represented with O(E log V), where E is the number of edges and V is the number of vertices.