Midterm Study Guide Computer Science 311 Fall 2019 Gardner/Rager

1. You should be able to hand simulate all of the following. You should also be able to describe the running time of the algorithms marked *. (Describe the running time means give a convincing albeit informal argument, not merely state. Note that we did not discuss all of these runtimes in class, but in general you should be comfortable reasoning about the running time of a given piece of pseudocode.):

a. *Prim's algorithm (Greedy)
b. Kruskal's algorithm (Greedy)
c. *Making change (Dynamic programming)
d. *Weighted Interval Scheduling (Dynamic programming)
e. *Bellman-Ford (Dynamic programming)
f. Ford-Fulkerson

2. You should understand the greedy and dynamic programming algorithmic paradigms.

a. You should be able to give examples of these algorithms
b. Given a novel problem, you should be able to devise an algorithm. We will tell you whether you should use a greedy algorithm or a dynamic programming algorithm.