CS 362, HW5

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Due: November 23rd

"Our greatest weariness comes from work not done" - Eric Hoffer

1. Exercise 22.2-6 (note: this type of graph is called bipartite)

2. Exercise 22.2-8 (hint: Compute the BFS tree and think about how you can handle the tree edges. Now figure out how you can also handle the edges that are not in the BFS tree)

3. Exercise 24.1-1

4. Exercise 24.3-1

5. Prove Claim 2 made about GenericSSSP in Lecture 20. Let l be the number of edges in the path. Your goal is to show that: "For all $l \geq 0$, if any path $s \rightsquigarrow v$ has l edges then $dist(v) \leq w(s \rightsquigarrow v)$ when the algorithm halts". Do this by induction on l. Show the base case (i.e. the goal holds when $l = 0$). Write down the inductive hypothesis (i.e. for all $j < l$, . . .) and then show the inductive step.

6. Exercise 24.3-6 (hint: review the solutions from the last hw)

7. Extra Credit: Problem 22-3

8. Extra Credit: Problem 24-3