# COP 4531, Spring 2017
Complexity and Analysis of Data Structures and Algorithms

Assignment 3: Due Apr 10

Note: Show the important steps in your answers; you may lose points if you don't!

---

1. (10 points) Determine an optimal solution to the activity selection problem using the greedy algorithm discussed in class, for the following problem instance. Each triple is of the form *(task #, start-time, end-time)*. Problem instance: *{(1, 4, 5), (2, 3, 6), (3, 2, 5), (4, 5, 8), (5, 8, 9)}*.

2. (20 points) What is the optimal Huffman code for the following set of frequencies: *a:7, b:5, c:3, d:6, e:8, f:3, g:31*?

3. (20 points) Text, exercise 16.1-2.

4. (20 points) Text, exercise 22.5-1.

5. (10 points) Show how the strongly connected component algorithm will find the strongly connected components of the following graph. Show the steps clearly.
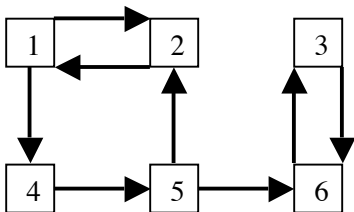
6. (20 points) Show how (a) Prim's algorithm and (b) Kruskal's algorithm will find a minimum spanning tree for the following graph. List the order in which edges are added to the minimum spanning tree.