Homework Set #6

1. **QuickSort:** This problem uses array **A** = < 22, 98, 17, 6, 34>, the same as in Problem 4 in Homework 5. You will apply **QuickSort** to array **A** to sort it into non-decreasing order. Use the (nonrandomized) version of **Partition** of the text.

   (a) Illustrate the operation of **QuickSort** using Figure 7.1 on p. 172 as a model for the operation of **Partition**. (10 points)

   (b) How many swaps are performed by **QuickSort** to sort the array **A**? How does this compare with the number of swaps used by **HeapSort** for this same array in Problem 4 of Homework 5? (10 points)

2. QuicksSort Analysis: Textbook Exercise 7.4-2 on p. 184. (20 points)

3. Suppose that the **PARTITION** procedure of **QUICKSORT** is modified to always use the ***first*** element as the pivot (instead of the last element). In this case:

a) Provide an example of an array of elements that constitutes a ***worst-case*** input for the revised **QUICKSORT** procedure. (10 points)

b) Provide an example of an array of elements that constitutes a ***best-case*** input for the revised **QUICKSORT** procedure. (10 points)

4. Hoare Partition: Textbook Problem 7-1 on p. 185-186, parts (a)-(d) (40 points)