Mini-Lab #5: An Analysis Paper
(From Discussion Questions #8)

Re-read the books description of selection sort, insertion sort, bubble sort, quicksort, and merge sort.

1. In class, we worked through an analysis of the number of comparisons performed by selection sort. Perform a similar analysis for insertion sort. Does the original ordering of the items impact the number of comparisons made by insertion sort? selection sort?

2. Each of the sorting algorithms that we have discussed (selection, insertion, bubble, merge, and quick) have their own strengths and weaknesses. Is any one of these algorithms the best choice under all circumstances? Can you think of a scenario for each sorting algorithm in which it would be the best choice?

3. A stable sort is defined as a sorting algorithm that preserves the original order of duplicate objects. Which of the sorting algorithms that we studied are stable sorts?

4. Can you implement merge sort without recursion? Explain your answer. Why is the time complexity of a merge sort always $O(n \log n)$?