This assignment covers textbook Chapter 8 and Chapter1~7.

1. Lower bounds for comparison-based sorting (25 points)
Exercise 8.1-4, textbook p194
Hint: use decision tree to help your analysis

2. Counting Sort, Radix Sort, Bucket Sort (30 points)
    Illustrate the execution of each of the following sorting methods on the given input:

(1) COUNTING-SORT (show as in Figure 8.2): A = <6, 0, 2, 6, 0, 8>

(2) RADIX-SORT (show as in Figure 8.3): English words: PAT, CAT, CART (*right-justify this word* so that T is compared first), FAT, FIX

(3) BUCKET-SORT (show as in Figure 8.4): A = < 0.67. 0.82, 0.12, 0.46, 0.88, 0.61>

3. **Counting Sort, Radix Sort** (25 points)
(1) (20 points) Exercise 8.3-4, textbook, p200
(2) (5 points) What is the running time if we use Counting Sort? Justify your answer.

4. **Sorting** (20 points)
Exercise 8.4-2, textbook p204