CS 5633: Analysis of Algorithms

Homework 4

1. Draw the decision tree for deterministic quicksort with an input of size 3.

2. Try to sort the following three-digit numbers with radix sort, starting with the most significant digit:

   $$646, 920, 619, 853, 864, 541, 196, 582, 167, 678, 661$$

   How does swapping the order complicate the algorithm here? How can we overcome these complications (while still sorting from most significant digit to least significant digit)?

3. Choose a sorting algorithm with the best worst-case running time possible for an array of n values in the range 0 to 2n, and specify the worst-case running time.