Chapter 8 Homework

Deadline: 2021/10/20 10:10 a.m.

1. Show that any decision tree that sorts n elements has a height h which is $\Omega(n \log n)$.

2. Illustrate the operation of Radix Sort on the following list of English words: NTHU, NCTU, NCKU, TNUA, NTUE, NCYU, NUTC, NTUA.

3. Given a non-negative integer array A of length N. Please design an $O(N)$ algorithm and write the pseudocode to find the largest X that satisfies the equation: at least($\geq$) X integers in A are larger than X. Briefly explain your pseudocode and show it is $O(N)$.

   For example:
   A = [27,49,13,7,0,1,6,10]
   X = 5

   A = [1,0]
   X = 0

   A = []
   X = 0