

Data Structure and Advanced Programming

Homework #6

Due: 2021/4/20 08:00am (CST)

NOTE: Please upload your answers in either English or Chinese as a PDF to NTU COOL before the due date and time.

1. (60%) Trace the following sorting method as it sorts the array 20 80 40 25 60 40 32 into ascending order:
 - a. (10%) the selection sort
 - b. (10%) the insertion sort
 - c. (10%) the bubble sort
 - d. (15%) the merge sort. List the calls to `mergeSort` and to `merge` in the order in which they occur.
 - e. (15%) the quick sort. List the calls to `quicksort` and to `partition` in the order in which they occur.
2. (20%) How many comparisons would be needed to sort an array containing 30 entries using the bubble sort in
 - a. (10%) The worst case?
 - b. (10%) The best case?
3. (20%) Compare the performance of sorting methods: selection sort, bubble sort, insertion sort, merge sort, and quick sort in terms of time complexity.