

CS2383 – Fall 2024

Assignment 4 – Sorting Algorithms

Due: Tuesday Oct. 15, 10am (class time)

NO LATE ASSIGNMENT ACCEPTED THIS TIME, as I may discuss the solution in class on that day, in preparation for the midterm.

IMPORTANT: individual work please!

Tasks:

1. Show how the array below would get sorted using each of the following sorting algorithms: selection sort, insertion sort, mergesort, and quicksort (with no initial shuffling of the array). Show what the array looks like at each iteration of the algorithm, when you run it manually.

0	1	2	3	4	5	6	7	8	9
20	10	15	8	29	21	17	3	25	7

2. Compare Mergesort and Quicksort using an empirical analysis (i.e., similar to what you did for Asgn3 Question 4) – both on average over a few executions for each value of N that you decided to use. You can use the code for these algorithms (provided in D2L) as a starting point. Which one is faster? Please submit a printout of your code as well as your experimental runtimes and analysis.
3. If you had to show that Quicksort's worst case is $O(N^2)$ using an empirical analysis, how would you proceed?

Submission: just on paper (no online submission)