

CMSC 206: Data Structures
Assignment #8: Sorting Experiments
due on Gradescope by the beginning of class on Thursday, May 5, 2018

Write a report presenting the five sorting algorithms we cover in class and how fast (or slow) they run. The six sorts are bubble sort, selection sort, insertion sort, merge sort, and quick sort. For each sorting algorithm, present the following information:

1. A textual description of the algorithm. This description does not have to be very detailed, but it should make clear the general intent of the algorithm.
2. Two tables of data for each sort. One table should show the relationship between size of an array and the number of comparisons in a run of the algorithm. The other should show the relationship between size of an array and the number of swaps (for bubble, selection, and quick) or the number of moves (for insertion and merge).
3. Two graphs presenting the data from your tables in a visual format.
4. An analysis of your data giving the Big- O estimate of the growth of both sets of data, using techniques we have discussed in class.
5. An analysis of the algorithm showing how the behavior observed corresponds with what we should expect. For merge sort and quick sort, this will be vaguer, given our level of understanding of the running time of complex recursive algorithms. For the other three sorts, this analysis of the algorithm should be exact.
6. A small conclusion summarizing your results and pointing out any unusual or interesting features of the algorithm.

Include your code in your submission. (This likely means you will put your writeup, as a PDF, in the Eclipse project before extracting it for submission.) As always, cite whatever resources you used to write your code.