

## CS 288 2018S Section 006

### Homework 05

**Due:** At the beginning of class on Monday April 2<sup>nd</sup>, 2018.

Using a programming language of your choice, write 3 different programs to implement the following sorting algorithms: selection sort, mergesort, and radix sort.

- Run the programs and compare their execution time and memory requirements. For the execution time comparisons to be meaningful, you must use the same sequence of data across all programs. Start with a dataset of size 10 integers, and increase it by 10x until you reach 1, 10, or 100 million, depending on the amount of memory available on your system. Note that it may not be feasible to use selection sort on data sets bigger than 1 million. So, once the data set reaches 1 million, you may stop the selection sort comparisons, but do continue with the data set size increase for mergesort and radix sort.
- Plot a graph comparing the performance of the sorting algorithms. The x-axis must reflect the data set size 10, 100, ..., 1 million, 10 million, 100 million, while the y-axis must reflect the execution time in milliseconds.
- Write a short comment discussing the outcome.

Your deliverable include the chart and the comment, not the programs.