

BMI 203 HW 1

Garrett Wong

25 January 2019

Runtime of quicksort and bubble sort

I ran 100 trials of quicksort and bubble sort for lists of N elements randomly chosen with replacement from the range $[0, 1, \dots, N)$ for $N = 100, 200, \dots, 1000$. Plotted are the summed count of assignments and conditionals for each trial, as well as the linear fit for formulae $\text{operations} \sim N^2$ for bubble sort and $\text{operations} \sim N \log(N)$ for quicksort. These fits correspond to the expected big-O behavior of the two algorithms. The β estimates for the N terms for those two fits are 0.998 and 4.493, respectively.

