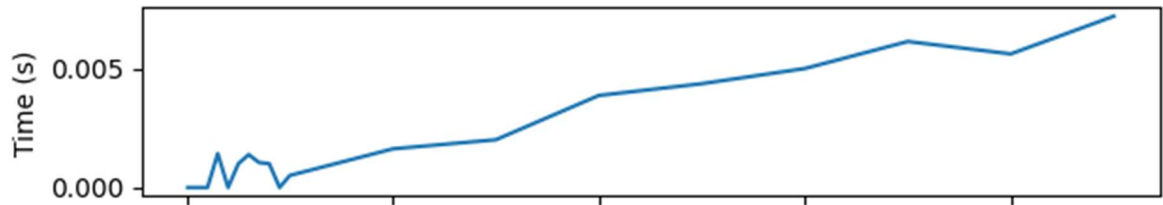
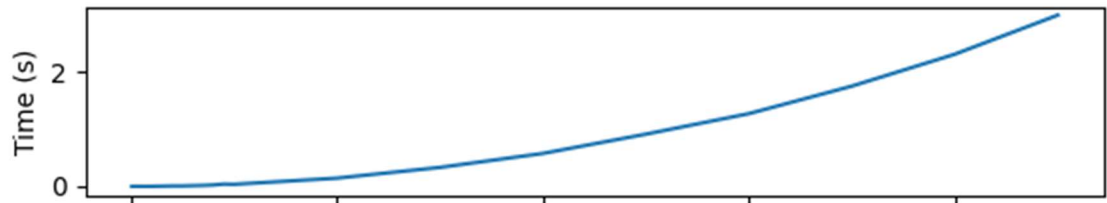


Q3)

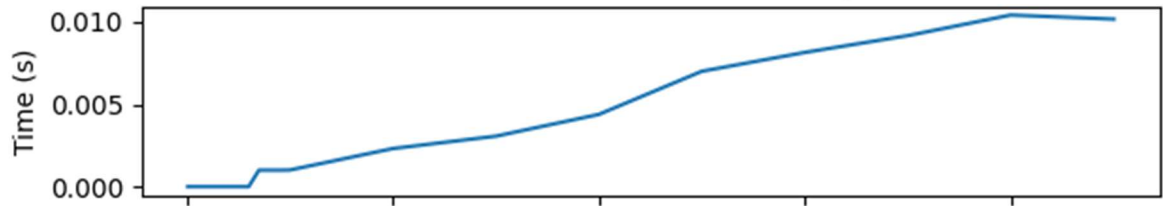
Performance of Quicksort (Best Case)



Performance of Quicksort (Worst Case)

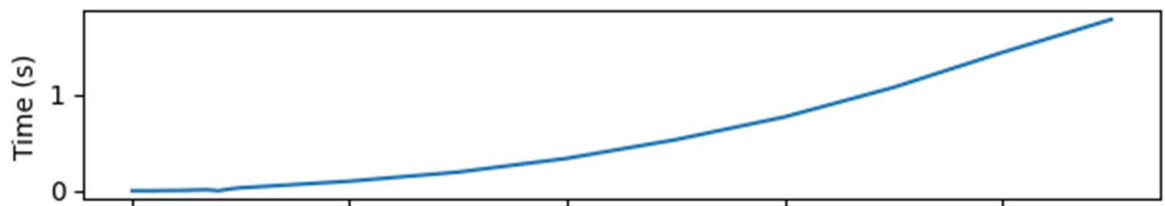


Performance of Quicksort (Average Case)

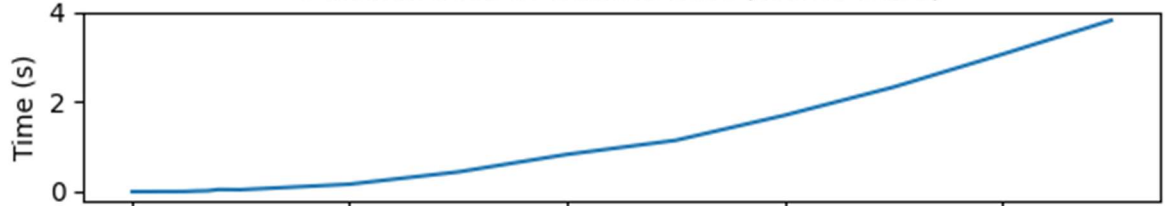


Input Size

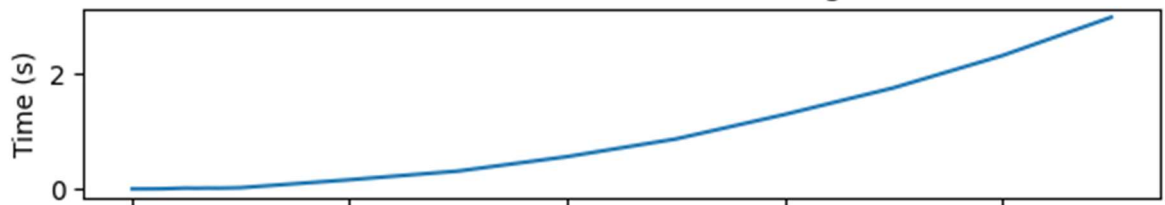
Performance of Bubble Sort (Best Case)



Performance of Bubble Sort (Worst Case)



Performance of Bubble Sort (Average Case)



Input Size

sizes = [10, 50, 100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 2000, 3000, 4000, 5000, 6000, 7000, 8000, 9000] these were the input sizes.

For input sizes 10, 50, 100, 200] bubble sort performed better than quick sort. For size of 200 worse case scenario for quicksort was around 0.003 seconds and for bubble sort it was at 0 seconds. For input sizes 300 to 9000 quicksort performed better than bubble sort.

Q4)

Small inputs are inputs less than or equal to 200 because as the input size increases, Bubble Sort tends to perform worse compared to Quicksort. This trend becomes more pronounced as the input size grows larger. Quicksort generally outperforms Bubble Sort for larger input sizes, especially in the worst case scenario. For example, for input sizes of 3000 and above, Quicksort consistently exhibits shorter execution times compared to Bubble Sort. For size of 9000 worse case scenario for quicksort was 2.5 seconds and for bubble sort it was nearly 4 seconds.