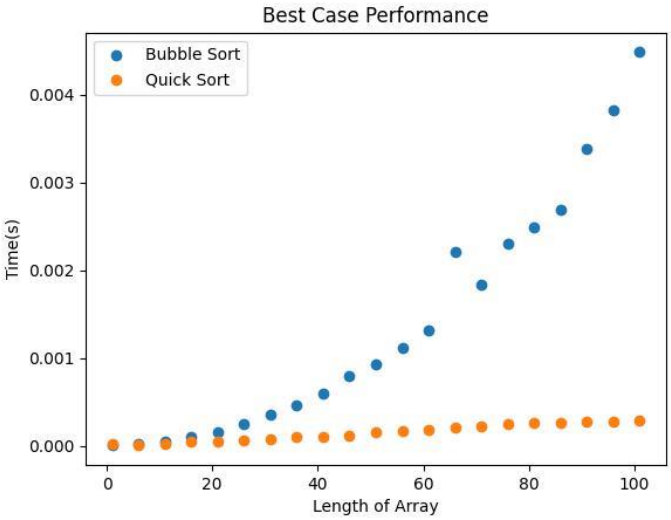
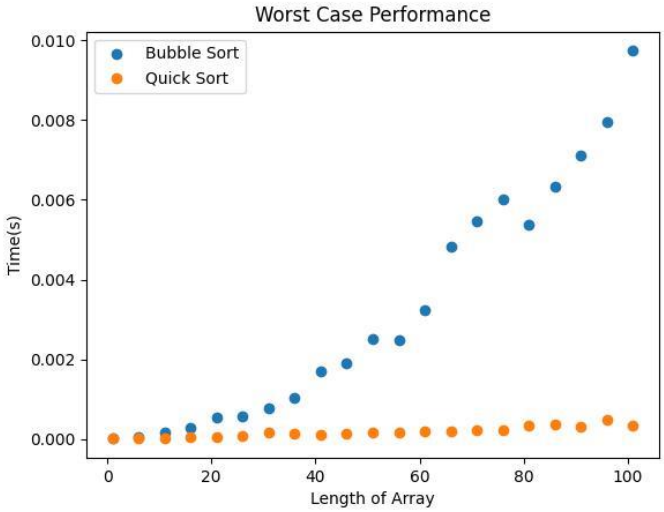
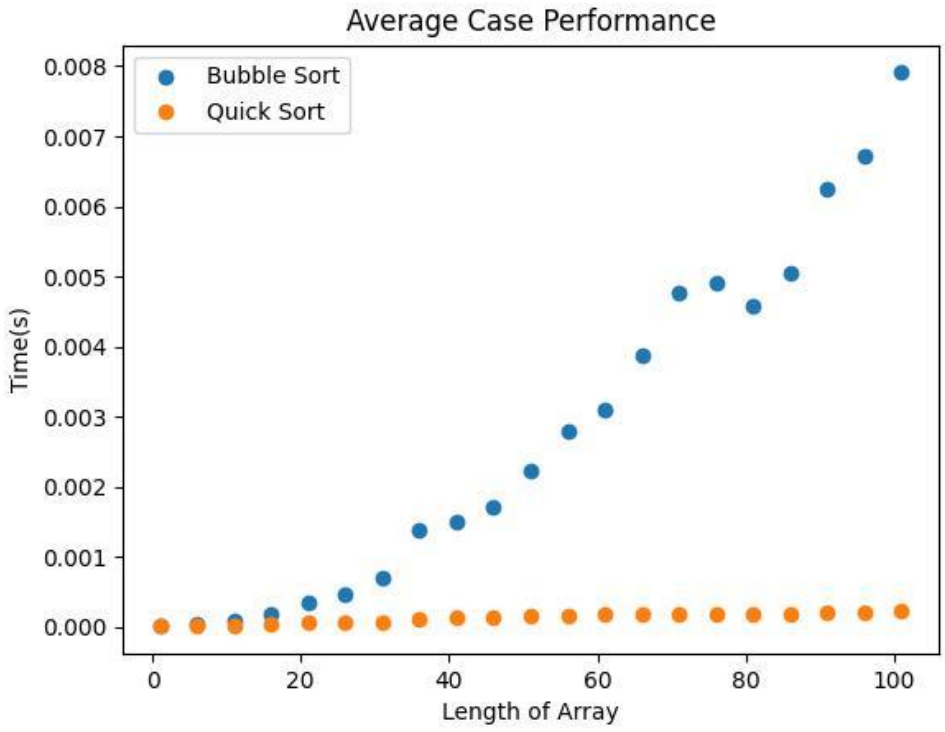
Exercise 2 – Answers

3. The performance plots for the average, best, and worst case complexities of both bubble and quick sort are shown (array sizes increasing by 5 elements per point):







With the performance plots shown, it seems evident that bubble sort always becomes less efficient as input size grows regardless of different complexity cases.

4. Arrays of approximately 40 elements in size seems to be a consistent threshold for deciding what input is “small” . The reason being that the plots in question 3 display that this size is when bubble sort becomes significantly slower than quicksort. ~0.0015s slower in average case, ~0.002s slower in worst case, and ~0.0005s slower in best case.