

Self-Practice Week 3 - Sorting (part 1)

Sorting Algorithms

The goal of this assignment is to better understand the functioning of sorting algorithms.

Exercise 1 – Insertion Sort, Merge Sort, Quick Sort

Implement three of the sorting algorithms covered during lectures: insertion sort, merge sort, and quick sort. Try implement a non-recursive version of quick sort, to further practice using stacks as data structures.

Hint: use a stack to hold the (sub)arrays to be partitioned. Pop from the stack the next item to be processed and push onto the stack the two resulting sub-arrays.

Exercise 2 – Bubble Sort & Bucket Sort

There are many other sorting algorithms that we have not covered during lectures. Read about Bubble Sort (you may have learned this as part of your “Welcome to UCL Computer Science” course) and Bucket Sort, and implement them.

Exercise 3 – Performance comparison of sorting algorithms

Compare the performance of the 5 sorting algorithms implemented above as a function of the input size n . Consider average, best, and worst-case scenario for each.