Computer Science I – Exercise: Sorting

Before starting the exercise, go through the full slides, simulations, codes, and run time analysis. Then start doing the exercise.

1)Show the contents of the array below being sorted using Insertion Sort at the end of each loop iteration.

Initial	2	8	3	6	5	1	4	7
	2	8	3	6	5	1	4	7
	2	3	8	6	5	1	4	7
	2	3	6	8	5	1	4	7
	2	3	5	6	8	1	4	7
	1	2	3	5	6	8	4	7
	1	2	3	4	5	6	8	7
Sorted	1	2	3	4	5	6	7	8

2) Show the contents of the array below being sorted using Selection Sort at the end of each loop iteration. As shown in class, please run the algorithm by placing the smallest item in place first.

Initial	6	2	8	1	3	7	5	4
	1	2	8	6	3	7	5	4
	1	2	8	6	3	7	5	4
	1	2	3	6	8	7	5	4
	1	2	3	4	8	7	5	6
	1	2	3	4	5	7	8	6
	1	2	3	4	5	6	8	7
Sorted	1	2	3	4	5	6	7	8

3) Show the contents of the array below being sorted using Bubble Sort at the end of each loop iteration. As shown in class, please run the algorithm by placing the largest item in place first.

Initial	4	2	6	5	7	1	8	3
	2	4	5	6	1	7	3	8
	2	4	5	1	6	3	7	8
	2	4	1	5	3	6	7	8
	2	1	4	3	5	6	7	8
	1	2	3	4	5	6	7	8
	1	2	3	4	5	6	7	8
Sorted	1	2	3	4	5	6	7	8

4) When Merge Sort is run on an array of size 8, the merge function gets called 7 times. Consider running Merge Sort on the array below. What would the contents of the array be right before the 7th call to the Merge function?

Initial	7	2	1	5	8	3	4	6
Before 7th Merge	1	2	5	7	3	4	6	8