

# In-Class Sorting Assignment

Grades published

Immersive Reader

Due: Thursday, May 15, 2025 at 11:59 pm

- (1) Sort the sequence 3, 1, 4, 1, 5, 9, 2, 6, 5 using insertion sort. Show the intermediate steps after each pass (see figure 7.1 for an example).
- (2) Show the result of running Shellsort on the input 9, 8, 7, 6, 5, 4, 3, 2, 1 using increments {1, 3, 7}. Show the intermediate steps after each pass (see figure below for an example).

Original	81	94	11	96	12	35	17	95	28	58	41	75	15
After 5-sort	35	17	11	28	12	41	75	15	96	58	81	94	95
After 3-sort	28	12	11	35	15	41	58	17	94	75	81	96	95
After 1-sort	11	12	15	17	28	35	41	58	75	81	94	95	96

**Figure 7.3** Shellsort after each pass, using {1, 3, 5} as the increment sequence

Image from Weiss, M. A. (2014). *Data structures and algorithm analysis in Java*. Pearson Education, pg. 275.

- (3) Show the result of running Quicksort on the input 30, 9, 7, 46, 14, 5, 22, 1, 6, 12, 17. Show the intermediate steps then combining repeatedly back into a single sorted array.
- (4) Sort the sequence 3, 12, 4, 1, 5, 9, 2, 6, 15, 1, 14 using mergesort. Show the intermediate steps splitting arrays down to a single element, then merging them repeatedly back into a single sorted array.

Posted Thu May 15, 2025 at 12:30 pm

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