

# Sorting

TOTAL POINTS 4

1. What is the running time of selecting the minimum element on each iteration of the selection sort?

1 / 1 point

- ☒  $O(n)$
- ☐  $O(n^2)$
- ☐  $O(1)$
- ☐  $O(\log n)$

✓ Correct

Selecting the minimum of  $O(n)$  elements is  $O(n)$ .

2. Can we use the merging procedure from the lectures to merge the arrays [1, 3, 2, 5, 4] and [5, 6, 7, 8, 9] in order to receive a sorted array?

1 / 1 point

- ☐ Yes
- ☒ No

✓ Correct

Both arrays must be sorted prior to merging.

3. How many operations are needed to merge two sorted arrays of sizes  $m$  and  $n$  respectively?

1 / 1 point

- ☐  $O(m \log n)$
- ☒  $O(n + m)$
- ☐  $O(nm)$
- ☐  $O(1)$

✓ Correct

Merge works in  $O(n + m)$ .

4. Can you use Count Sort to sort an array of positive real numbers which are less than 100, such as [0.572, 0.25, 2.34, 3.14159, 2.781828, 42], in  $O(n)$  time?

1 / 1 point

- ☐ Yes, because the numbers are bounded
- ☒ No

✓ Correct

Although the numbers in the array are bounded, Count Sort is not applicable, because it can only be applied to integer numbers: real numbers cannot play the role of indices of an array.