

Homework 7: Sorting

Instructor: Mehmet Emre

CS 32 Spring '22

Due: 05/04 12:30pm

Name & Perm # (no partners allowed):

Reading: DS 13.1, also review DS 12.1, 2.6, 6.1

Please also read the handout at <http://cs.ucsb.edu/~richert/cs32/misc/h07-handout.pdf>

1 (10 pts)

Briefly explain: What does it mean to say that an algorithm has *quadratic* worst-case run time?

2

Show the steps of bubble sort following the example of the solved problems on the handout for the algorithm and the format of your answer. **Stop after the first pass with no swaps.**

2.1 5 pts

initial values	8	5	3	10	2
<hr/>					
i = 4					
<hr/>					
i = 3					
<hr/>					
i = 2					
<hr/>					
i = 1					

2.2 5 pts

initial values	40	42	-3	10	0
<hr/>					
i = 4					
<hr/>					
i = 3					
<hr/>					
i = 2					
<hr/>					
i = 1					

3

Show the steps of **insertion sort** following the example of the solved problems on the handout for the algorithm and the format of your answer.

3.1 5 pts

initial values	8	5	3	10	2
<hr/>					
i = 0					
<hr/>					
i = 1					
<hr/>					
i = 2					
<hr/>					
i = 3					
<hr/>					
i = 4					

3.2 5 pts

initial values	40	42	-3	10	0
<hr/>					
i = 0					
<hr/>					
i = 1					
<hr/>					
i = 2					
<hr/>					
i = 3					
<hr/>					
i = 4					

4

Show the steps of **selection sort** following the example of the solved problems on the handout for the algorithm and the format of your answer. **Show all rows even for passes that no swaps occur.**

4.1 5 pts

initial values	8	5	3	10	2
<hr/>					
i = 4					
<hr/>					
i = 3					
<hr/>					
i = 2					
<hr/>					
i = 1					

4.2 5 pts

initial values	40	42	-3	10	0
<hr/>					
i = 4					
<hr/>					
i = 3					
<hr/>					
i = 2					
<hr/>					
i = 1					