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Period #: 6

AP Computer Science
Practice #37

1. Write out the concept of the selection sort's code.

The concept of selection sort starts with the smallest element being found and swap it with index 0. From there, the array (w/o index 0) is checked for the smallest element which is then swapped w/ index 1. This process continues until the array has two elements left, where the biggest number will be placed in the last index.

1. A list has 37 items, how many iterations of the outside loop are made? 36
2. sort the following list in ascending order: [5, 21, 3, 14, 1, 10]

1 st pass:	1	21	3	14	5	10
2 nd pass:	1	3	21	14	5	10
3 rd pass:	1	3	5	14	21	10
4 th pass:	1	3	5	10	21	14
5 th pass:	1	3	5	10	14	21

3. What is the disadvantage of the Selection Sort?

the disadvantage of selection sort
is the lack of efficiency → there is ALOT of checking

4. What is the best, worst, and average cases of the Selection Sort?

best: the list is already sorted properly

worst: the list is sorted opposite from wanted

average: no sorting - just random-list

5. Write out the concept of the insertion sort's code.

The concept of insertion sort starts with the first element "staying put". A "new" array is then worked through (the unsorted portion) and the first element in that array is compared to the "original" (sorted) array + placed in the proper spot (moving some elements over to the right sometimes)

6. sort the following list in ascending order: [5, 21, 3, 14, 1, 10]

1 st pass:	5	21	3	14	1	10
2 nd pass:	3	5	21	14	1	10
3 rd pass:	3	5	14	21	1	10
4 th pass:	1	3	5	14	21	10
5 th pass:	1	3	5	10	14	21

7. What is the advantage of the Insertion Sort as compared to the Selection Sort?

the advantage comes from selection sort having to find the smallest element for EVERY run while insertion sort is more efficient → placed in proper order

8. What is the best, worst, and average cases of the Insertion Sort?

best: already sorted properly
worst: sorted opposite from wanted
average: random in beginning

9. Why is the k loop started at 1 instead of 0?

the 1st element does not need checked, everything after that is part of the unsorted array + needs checked

10. What code would change to make it go in descending order?

changing the greater than / less than sign in the if statement would change it