**CSE 212 – Programming with Data Structures**

**W02 Prove – Response Document**

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**Question 1: From Part 1, what is the big O notation for the sort\_list function?**

O(n^2)

**Question 2: From Part 1, what is the big O notation for the standard\_deviation\_1 function?**

O(kn) -> O(n)

**Question 3: From Part 1, what is the big O notation for the standard\_deviation\_2 function?**

O(n^2)

**Question 4: From Part 1, what is the big O notation for the standard\_deviation\_3 function?**

O(n)

**Question 5: From Part 1, put the following big O notations in order from best performance to worst performance: O(n^2), O(1), O(2^n), O(n log n), O(log n), O(n).**

O(1), O(log n), O(n), O(n log n), O(2^n), O(n^2)

**Question 6: From Part 2, what is the performance (using big O notation) for the search\_sorted\_1 function?**

Performance was gradually getting slower

**Question 7: From Part 2, what is the performance (using big O notation) for the search\_sorted\_2 function?**

Performance was faster

**Question 8: From Part 2, which function (search\_sorted\_1 or search\_sorted\_2) has the better performance?**

search\_sorted\_2 has the better performance

**Question 9: From Part 2, for both functions (search\_sorted\_1 and search\_sorted\_2), explain in detail how you determined the big O notation by just looking at the code without the benefit of observing actual execution results?**

By just looking at both functions, I can see that in the first function counts the item in the data by 1 (count+= 1). The second function is using a while loop instead of a for loop. I can also see that it is counting from the middle, then again from the middle, then again until it reaches its target.

**Question 10: From Part 2, it is possible in the best case for each of these functions (search\_sorted\_1 and search\_sorted\_2) to complete in O(1) time even if the size of the list was very large. What input scenarios would give this result for both functions?**

If I had a function that had a smaller list/data.

If the for loop on line 51 had a range(0,2,1)