**CSE 212 – Programming with Data Structures**

**W02 Prove – Response Document**

|  |  |
| --- | --- |
| **Name:** | Kaden Payne |
| **Date:** | 5/22/2021 |
| **Teacher:** | Bro Tucker |

*It is a violation of BYU-Idaho Honor Code to post or share this document with others or to post it online. Storage into a personal and private repository (e.g. private GitHub repository, unshared Google Drive folder) is acceptable.*

**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(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(2^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(n), (O2^n), O(log n), O(n log n), O(n^2)

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

O(n)

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

O(1)

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

Sorted\_search\_2

**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?**

**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?**