Program 4 Report

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Each graph follows this format for its vector size:

10

100

1000

5000

10000

25000

**Time Complexity:**

Best: *O(n)*

Worst: *O(n2)*

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Best: *O(n)*

Worst: *O(n2)*

**Time Complexity:**

Best: *O(n)*

Worst: *O(n log n)*

**Comparison**

Both sort methods above have a time complexity of O(n^2), however Insertion Sort is still faster based on the graph.

These two methods also share the same time complexity of O(n log n). The graph displays that the Iterative Merge Sort is faster.

Quick Sort has a time complexity of O(n log n) while Shell Sort is at O(n log n)^2. Quick Sort is clearly faster as displayed.

For the final graph, it is clear the Bubble Sort is the worst data type to use to sort a list. Every other sorted method that is not O(n2) is hard to display since Bubble Sort takes up so much of the space.