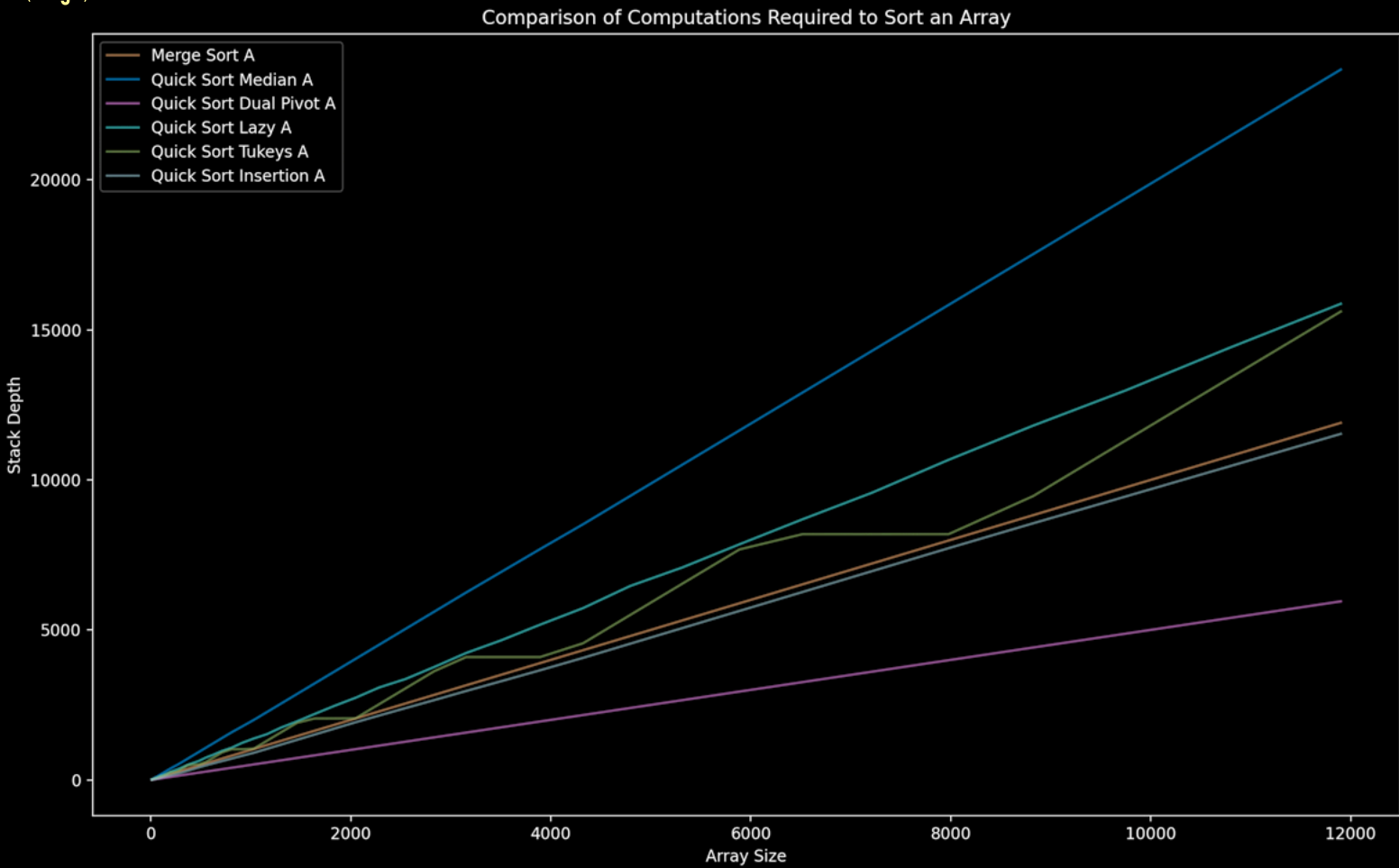
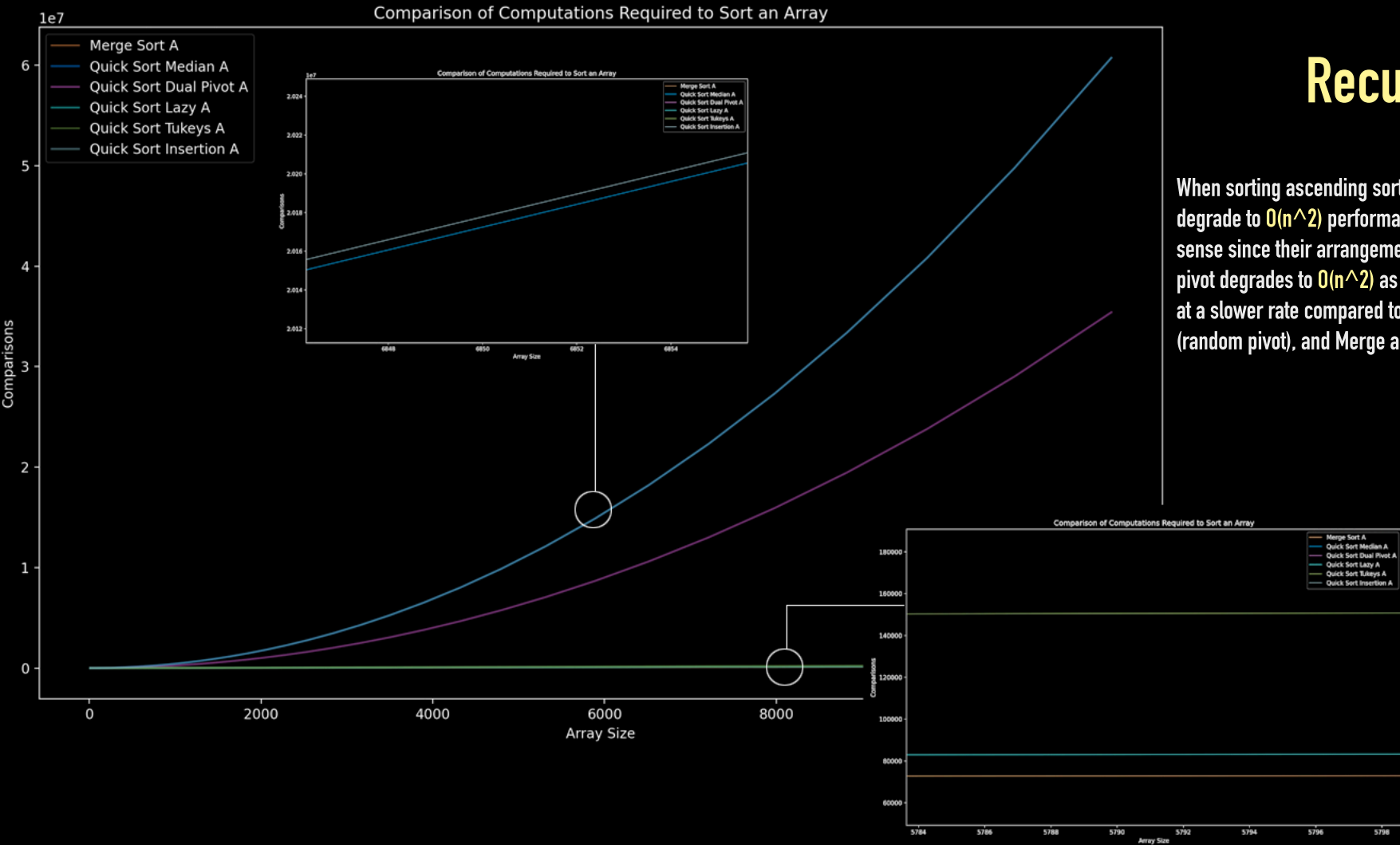
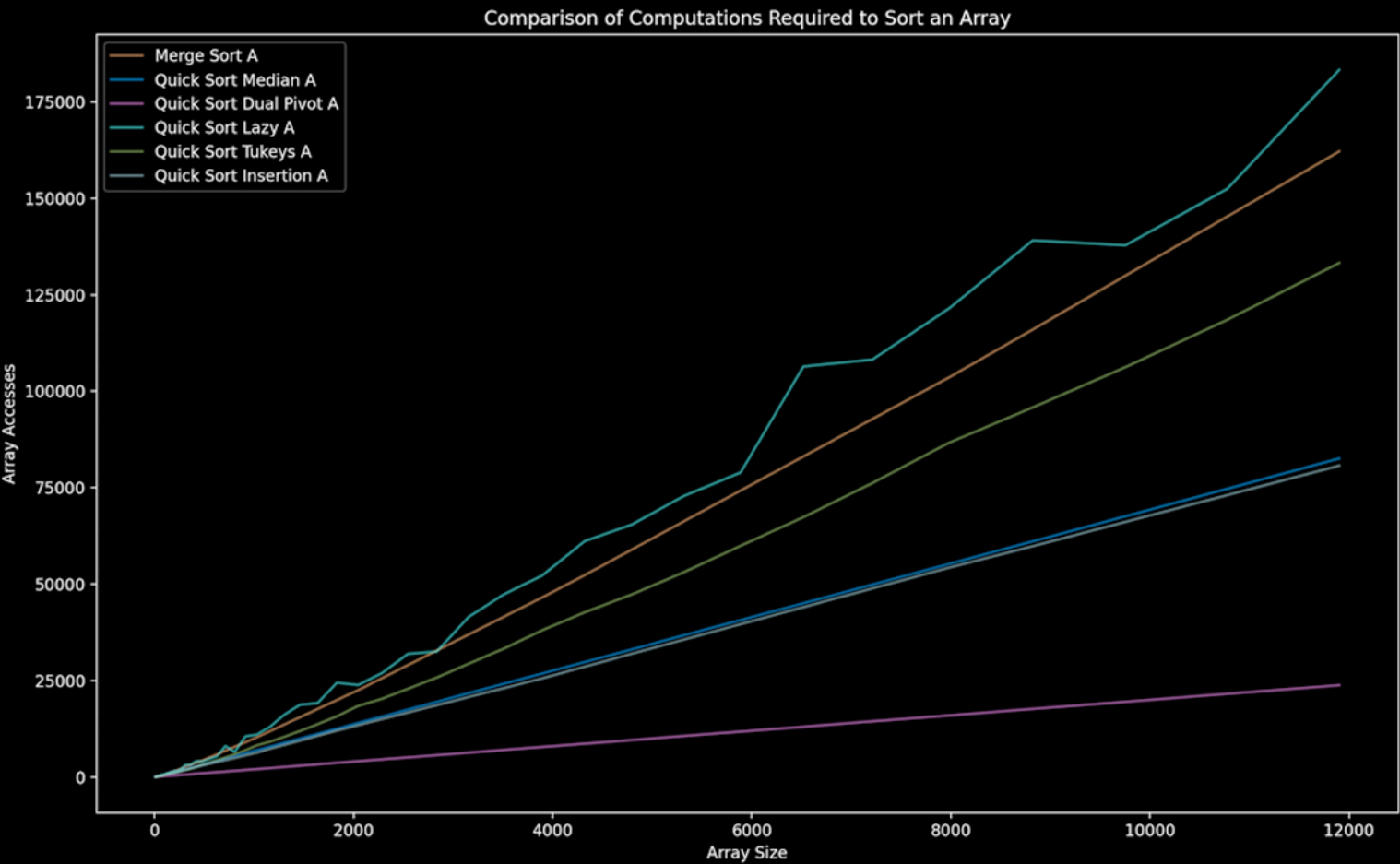


Recursive Sort Algorithm Performance on Arrays with Ascending Sorted Data

When sorting ascending sorted data, the Median of 3 algorithm and Insertion degrade to $O(n^2)$ performance, similar to partially sorted data (which makes sense since their arrangements of data in the array look very similar). Dual pivot degrades to $O(n^2)$ as well, again, just as with partially sorted data, but at a slower rate compared to the two aforementioned algos. Tukey's, Lazy (random pivot), and Merge all perform at $O(N\log N)$.



As with the random data arrays, spacial complexity is $O(N\log N)$ for all algorithms. Quicksort Dual Pivot outperforms all, which makes sense since it splits an array into more parts, thus reducing the number of times a partiucular part of that array will need to be recursed. This is why Merge sort performs well in this regard, too. Insertion Sort performs well by switching to a non recursive method when an array size shrinks to 15 items.



With regard to array accesses, interestingly all algorithms perform at $O(N\log N)$, despite some degrading to $O(n^2)$ with comparisons. Median, Dual Pivot, and Insertion begin to outperform the others at a higher rate when array sizes grow larger. This is the same pattern as seen with partially sorted data.