

The pattern I see is that the larger the array gets the insert function gets slower. However, the append function which uses the push() method fares better.

For the most part push() will be faster and have a better time complexity than unshift().

Unshift is slower than push because it also needs to unshift all the elements to the left once the first element is added. In contrast, push() adds the element at the end of the array. You can see in the results below that the doublerAppend function that uses the push() method runs quicker, specifically when larger arrays are passed in. Push() default time complexity is constant $O(1)$. As seen in the results below it doesn't matter how many elements are in the array, because the number of operations being performed won't change. Because Unshift() adds to the beginning the new element will have an index of 0 and all other indexes will change and be incremented, meaning it has linear time complexity.

Results for the extraLargeArray

insert 780.022375 ms

append 1.876417 ms

Results for the largeArray

insert 6.958917 ms

append 421.792 μ s

Results for the mediumArray

insert 151.458 μ s

append 104.375 μ s

Results for the smallArray

insert 39.167 μ s

append 69.875 μ s

Results for the tinyArray

insert 27 μ s

append 81.416 μ s