

The expected(theoretical) running time for removing the front of LL is $O(1)$ as the front node can be removed simply by dereferencing the 1st node by pointing the header node to front node's next node.

The expected (theoretical) running time for removing the front of Array is $O(n)$ because even though removing the 1st element requires only $O(1)$, every elements after the 1st have to be shifted to the left by 1 index after deletion, thus taking $O(n)$ time.

As expected, the observed run-time reflects the theoretical run-time except for 1 or 2 points which might be due to hardware issue like requiring more memory when the program first executes. In general, the graph of array is linear while the graph of LinkedList is constant(horizontal).