Jurgen Famula

4-4-17

Intro to Computer Science 3

Lab 3 questions

Addition methods:

1. Both the singly and doubly linked lists show approximately the same as the number of elements grew, as opposed to the array list which run significantly slower.
2. The array list performed worse because the array list needs to copy the whole array and then shift every element to make room for the new element. The linked lists are faster because adding a new value does not affect the locations of the rest of the elements.

Removal methods:

1. The singly linked list had the worst performance when removing elements from the tail of the list, while the doubly linked list and the array list performed on par with each other.
2. The singly linked list’s poor performance is the result of the need to move through the list from head to tail every time an element need to be deleted because there is no way for the tail pointer to move backwards through the list. The doubly linked list was much faster because the trailing node already points to the previous node, so there is no need to read through the entire list. The array list is fast because the elements are stored consecutively, so finding the last element is instantaneous, and the other elements do not need to be moved when the last element is removed.