Homework 5 - Lists, Trees, and Tries

`LinkedList vs ArrayList vs. TreeSet` Timing

`ArrayList`

Timing

$29.11(s)$

Memory

$39.689872(MB)$

`LinkedList`

Timing

$18.8428(s)$

Memory

$12.871496(MB)$

`TreeSet`

Timing

$0.007(s)$

Memory

$15.9886(MB)$

Conclusion

Based on what we have learned in class, I would say that this makes sense because `ArrayLists` would have store the index alongside the data. It would also make sense that adding would be the longest since you would have to iterate over the entire list each time you wanted to add a word. `LinkedList` would have the smallest storage type since it is only storing the data and a pointer to the next `Node`. It would also be a lot faster to add since `LinkedList` comes with the capability of adding to the back. Finally, `TreeSet` would take only a little bit more storage since it has to store more pointers but the same amount of data. However, the adding happens almost instantly because adding for trees is `O(h)`.