Project 1 Commentary

Kayla Barrera

The computational complexity of the methods are as follows:

- insertEnd
  - O(n)
- insert
  - O(n)
- deleteNode
  - O(n)
- edit
  - O(n)
- print
  - O(n)
- search
  - O(n)
- main
  - O(n)
- stringAfterSpace
  - O(n)
- stringBeforeSpace
  - O(n)
- removeQuotes
  - O(1)

The biggest advantage of using a linked list is that insertion and deletion are easier than using an array because you do not have to shift the entire structure. The linked list is dynamically allocated so memory is not being wasted, and the implementation of the linked list is similar to a document because each line is linked to the previous and next line.

However, I think it is strange to use one node to represent an entire line. It seems more intuitive to break it into smaller chunks such as words or larger chunks like a whole paragraph. This implementation could be useful for something like poetry, but for a word processing program, a line is a strange unit to use in my opinion.

The main disadvantage of using a linked list is that access is much slower than an array, for example, because you must traverse the entire list up to that element in order to access it. For instance, if you wanted to know the 100^{th} line, you would have to visit each line before that.

I learned how to manipulate and traverse a linked list and implement one myself. Additionally, I learned how pointers are used to maintain the integrity of the list when adding, deleting, and inserting. I also gained experience with handling input in C++, and I learned about useful standard library functions. I learned about when you would use a linked list, and the process of choosing an appropriate data structure for a situation.

If I had to start over, I would have figured out how to handle the input first, and then implement the linked list methods. This way I would not have to rewrite my main method. I would also make my linked list methods more consistent in their implementation, and I would try to reduce the redundancy of my code. For example, I could make an additional method to iterate through the linked list to the desired index so I would not have to repeat this code for multiple methods. I would also try to manage memory more effectively and deallocate memory that is not being used.