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CS 260 Module 3 Journal

For this module we worked on implementing a linked list through methods that work on adding to the front or end of the list, removing a node, and printing the entire list. A normal link list consists of a few variables and those are a head, tail, and next pointer, and a data variable. With the use of these we can point to anywhere in the list and access or adjust elements as needed. There are several pros and cons as to what makes a linked list a good data structure and I will try and lay them out in this journal.

For the advantage of linked list, we have the following, it is a dynamic data structure, we can implement memory management, it is flexible, and we can store large amounts of data in it. The linked list is unique when we look at data structures for several reasons. One of those reasons is that we can grow it and shrink it by allocating and deallocating memory. Another reason is that through the use of methods we can create we have the ability to add, remove, and move elements with ease. Because a linked list is unique, we can store different types of data in it that we might not have been able to with other types of data structures.

When it comes to disadvantages a linked list has a few. These disadvantages are, traversal, complexity of application, and not well suited for smaller amounts of data. In a single linked list we are limited to forward traversal only so every method for manipulating the data can only be done in a forwards direction which can cause to longer times to search the list. Because of the use of methods for each type of manipulation on the linked list it tends to be harder to implement than say an array, vector, or any of these smaller data structures. Lastly we look at the fact that if we are not working on a larger list of elements it tend can cause storage issues. The reason for this is that the amount of memory needed for an element in a linked list is larger than that of an array or vector.

A linked list like several other data structures in programming has its purposes and because of that we tend to run into issues using for something that it shouldn’t be used for. Ultimately as programmer it tends to make things easier to use a data structure that you can traverse easier and because of that a linked list has limited usage to be beneficial.