Journal Assignment

* Reflect on linked-list data structures as a means of organizing data. What are the pros and cons of using a singly-linked versus doubly linked-list? What are some potential uses of a linked list?

In Module 3 the program activity our program activity used linked list data structures and algorithm to organize data and house variables and information to reference within the program. There are two types of linked-list structures that use abstract data type (ADT) to implement and manipulate data. Doubly linked-list data structures for implementing a list ADT, where each node has data, a pointer to the next node, and pointer to the previous node. The list structure typically points to the first and last node. A singly linked list does not have both pointers, but just the next pointer which is a way of organizing data involving arrays as well. They are quicker to for searches and simpler to implement versus doubly linked-lists where there is a more involved implementation and can cost time and resources. In the program a good example is when the program compiled the load, append, and insert functions differed in time when the clock printed out times. A program with vectors shows quick access but slow for inserts and or deletes on large lists. Linked-lists store each item anywhere and it supports fast inserts and or deletes, but access to i’th element may be slow as the list must be traversed from the first item to the i’th element. It also stores more memory due to storing a link for each item. An example for linked lists is organizing a fund and expense report where there is a large list of items titles, fund accounts, and amounts for tracking. Other examples may include like store inventory for a place like Nebraska Furniture market, or a search database like the Amazon marketplace.

* Reflect on search algorithms as a means of finding items of data. Are these algorithms tied to the data structures being searched, or can they be utilized in other scenarios?

The way I understand it is that for any example you need to read the data of file into either an array or linked list or other Data Structure, then once the data is in a Data Structure, we can select what kind of algorithm to sort and handle that data. I believe it correlates in that way where if you have chosen a certain Algorithm it has to be based on the type of Data Structure and or the other way around.