Journal Assignment

* Reflect on stacks and queues: When is one or the other a good choice to use?

Module 4 we learned about stack and queue abstract data type and its operations and how they are implemented in linked lists. A stack is referred to as a “last-in first-out ADT” (ZyBooks, section 4.1) which are used to manipulate an item in the head node or the top of the stack. A Queue abstract data type is referred to as a “first-in first-out” (ZyBooks, section 4.3) which are when items are manipulated at the end of the queue (tail) and the front of the queue (head node) an item is removed and returned. These data structures are used for different purposes for example, “stacks can be used to solve problems like pre-order, post-order and in-order traversal of the binary tree, which are based on recursion, whereas queue can be used to solve problems like producer-consumer problem involving sequential processing of underlying data.” (EDUCBA, 2021) This assignment for the week I felt my strengths in understanding the implementation and use of the stacks and queues, but where I felt weakest is the algorithm portion especially for the quicksort algorithm implementation. There is a lot of referencing for code syntax and creating the partition function to organize and iterate through the two sub lists created in the exercise require more in depth knowledge versus just knowing how stack and queue works. I see where the implementation was, but maybe I need to revisit recursion and partitions when it relates to quicksort algorithms .

* Why might you combine a sorting algorithm with another algorithm you have learned so far?

The combining of sorting algorithms with other algorithms we have learned about are great tools to develop a program to organize large data files and provide a system to update and or remove files for either personal records, a business service, or banking statements for an institutions clients. Arrays, vectors, and list/searches are what we have learned and applied so far. Adding queues, stacks and sorting algorithms is showing a complex strategy to develop and implement on projects.

Resources:

Stack vs queue. (2021, March 12). EDUCBA. Retrieved January 31, 2023,

from <https://www.educba.com/stack-vs-queue/>

Zybooks Chapter 4 online textbook