CSC340.05
Jason Fujii, 921019525
Assignment #04
Assignment Due: 11-12-2020 at 11:55 PM

Assignment 04 Report

Assignment 4 tasked me with familiarizing myself with pointers, smart pointers, the LinkedBag program (similar to the LinkedList program), and recursive functions. In Part A, I had to use my knowledge from the lectures to give my own definitions and descriptions to raw pointer and Smart Pointer concepts. Part B required me to use those concepts and create 8 functions that utilize pointers and recursion. In Part C, I needed to use the algorithms and strategies that I had used in Part B; this time, however, I needed to implement the code with Smart Pointers. Once I had completed that, I needed to go back through all of the code and implement a Smart Pointers version. I included the file names and line numbers where I used smart pointers in the pdf file "Assignment 4 Part A and C" as well as my reasoning for why I used the Smart Pointer implementation there.

This assignment immediately started with issues. When I first tried to run the code in my IDE, I was presented with many errors. The error resembled an error I had previously encountered with other projects, so I thought the solution was the same. I spent the next day and a half attempting to solve the problem by adding files to the CMake files in my IDE. I finally realized that this was not the issue and asked my classmates if they had encountered these issues as well. Finally, I was able to comment out code that was causing the issue because it referenced code that I hadn't yet written. After almost 2 days of issues, I was finally able to start.

In Part B, the functions that required raw pointers were fairly simple to me. There were a few errors here and there, but nothing too malicious. The real issues presented themselves in the "No Helper" functions involving immediate recursion. At first, I thought the solution was to

traverse the LinkedBag object by changing headPtr, but I realized that this would not work because the functions were supposed to be constant functions and could not change anything that already existed. My idea failed and after the longest time, I was unable to complete the implementation of either of the “No helper method” recursive functions.

In Part C, the biggest issue I encountered was at the beginning when I was trying to figure out the implementation of smart pointers. I had trouble creating smart pointers from the old pointers. No matter how I tried, I kept getting an error in the instantiation. Finally, I discovered that I couldn’t create the smart pointer by entering the raw pointer as a parameter and that I needed to create a new node in the make_shared() constructor using the raw pointer’s data. Doing that, I was able to work on the project!