Name: Clinton J Schultz

Professor: Michael Clark, Jr.

Assignment: Homework #2 - Response

Date: 03/18/2021

For homework assignment number two, the class was asked to create a program that calculates students’ grades while applying the Singleton design concept to a Logger class that simply prints the information we want to see without creating multiple instances of the Logger class object. The reason we only want to contain the Logger class to having one instance is to have more control over memory operations, reducing the memory we are using tremendously. The other main advantage to implementing the Singleton design pattern is that the code in the Logger class can be changed to perform various other output operations without having to go back and change the code in our other classes.

I implemented three separate classes: Logger, Grade, and Student. Logger just handles the output with one simple function “log( )” and is used throughout the project whenever anything needs to be printed to the console. The Grade class is fairly simple in that it takes 4 parameters (pointsEarned, totalPoints, weight, and assignment that is just a string with the name of the assignment) that have to do with each individual assignment that are then used to calculate the particular student’s final grade. However, we are using the information given to the Grade class by creating a vector of Grade pointers that point to the Grade information and allow us to calculate the final grade of the student without altering anything in the Grade class by mistake, which is where the pointers come in. The student class takes in a unique student ID number and a name for the student and also utilizes the vector of Grade pointers, and it contains all of the functions that calculate the grade of each student.

For-loops were necessary in being able to obtain the Grade information, for each function running correctly, and for copying and deleting information inside of the vector I used. I utilized the “big three” in my Student class and I now understand why the concept is important. I reinforced my knowledge of pointers, classes and functions during this project, which was absolutely important, and I was able to glean some valuable experience to what a professional project would begin to look like. Implementing the Singleton design pattern was a very unique and valuable asset to the assignment and it challenged what I knew about programming thus far in my education, which inspires me to work harder and become a lot more interested in what we are doing in class.