CS 341 – Fall 2020
Assignment #1 – Keepin' It Classy
Due: 9/10/2020

This first assignment will serve as a refresher for the C++ programming language and allow you to become more comfortable with the tools we will be using this semester to accomplish our goals. This project will serve as the foundation for exploring the many benefits that the C++ programming language can provide and will help you re-explore Object-Oriented concepts that you previously learned in CS 248 (in Java) all the while learning Make and Git in the process.

For this assignment you will not be completing a full design and implementation, instead I will provide a skeleton of a project to begin as your base. This program, as specified by the client, is designed to examine the differences between various popular sorting algorithms. It has been designed to make use of Inheritance, multiple files, Objects/Classes, and therefore necessitates linking of files together in order to compile and run the solution. Your job is to produce a working program and to upload the solution to your GitHub repository.

A few notes about the specific requirements of the program:

- The program should load SPACE delimited numerical data from a text file.
    - The user should input the name of this file during program execution.
- The program should then give the user the choice between two different sorting techniques (in this case Insertion sort and Bubble sort).
    - The program should sort the numbers in descending order.
- The program should then prompt the user to enter the name of the file in which to store the resulted sorted list.
    - The sorted list should NOT be displayed in the terminal.
- The program should then prompt the user if they wish to continue ('Y') or to terminate ('N').
- The program should handle invalid cases (e.g., invalid text entry, file I/O, etc.).

Development Process:

You will assume that all of the existing code is correct – at least the code provided. You will need to Fork the project found at:

https://github.butler.edu/rrybarcz/sorting

This will be the code you use as a starting point for this assignment.

You will need to complete the Header and Source files for Insertion and Bubble sort Classes. You will then need to write a Driver that will test these two Classes and provide the necessary functionality as listed above. Once you have completed that task, you will need to create a Makefile that properly links all of this code together and creates an executable named **A1.exe**

For this assignment, all development must take place on the **master branch** in your GitHub repository. It is strongly recommended that you commit and push often! This will help to familiarize you with the workings of a source code repository and its importance in software design and development. We will be using this the entire semester – so best to become very well versed in it now!

Submission:

All assignments must be submitted on Butler GitHub (github.butler.edu). This an individual assignment – meaning that each student should submit their OWN work. The name of your Butler GitHub repository must be as follows: **cs341_fall2020**

The directory structure of the repository must contain the following files:

- **driver.cpp**
- **Insertion.h**
- **Insertion.cpp**
- **Bubble.h**
- **Bubble.cpp**
- **Sort.h**
- **Sort.cpp**
- **makefile**

Each source file (.cpp/.h) **must** include the Honor Pledge and digital signature – more details about this can be found in the lecture slides.