

## LAB #4 – Practice “Big Three”

**Each lab will begin with a brief demonstration by the TAs for the core concepts examined in this lab. As such, this document will not serve to tell you everything the TAs will in the demo. It is highly encouraged that you ask questions and take notes.**

**As long as you attended lab 1 or received prior permission for missing the lab, then you can receive any number of points back for finishing the lab prior to this lab #2. Make sure you get checked off at the beginning of lab #2 for credit!!!**

### **Pair Programming**

In this lab, you can choose a partner for pair programming. **You must be checked off together. You only need one computer for pair programming.** One person will be the driver, who controls the computer and codes, while the other is the navigator, who observes and advises. After 20 minutes, your TA will switch driver and navigator, continuing this pattern until the task is complete. Please read more about pair programming and the benefits: [Pair Programming Student Handout](#)

**Classes Tip:** If you find yourself struggling to understand classes and follow the flow of classes (when you are in which class), then the best way to think about classes is writing/designing each class on a separate piece of paper. Each time you put a dot after an object, then you essentially have taken yourself to a different piece of paper, and you can only access the members and functions on that piece of paper!!!

### **(1 pts) Quiz/Survey in Class Section of Canvas**

You need to consent or not consent to be in the research study regarding your recitation designs. Show the TAs the confirmation to get credit!!!

### **(6 pts) The Big Three**

Another concept you will need to implement in the cart and library classes is the Big Three for handling the dynamic memory. You can look up the concept of the “Big Three” to help you with this (Google C++ Big Three)!!! Also, use slides from the calendar page to help you with getting started.

- Write the “Big Three” for the **library** class. Here are the prototypes to get you started.

```
library(const library &); //copy constructor to do deep copy
~library(); //destructor to delete book array
//assignment operator overload, same contents as copy constructor
//but with deleting memory, since object was already constructed
void operator=(const library &);
```

- Write the “Big Three” for the **cart** class. Here are the prototypes to get you started.

```
cart(const cart &); //copy constructor to do deep copy
~cart(); //destructor to delete book array
//assignment operator overload, same contents as copy constructor
//but with deleting memory, since object was already constructed
void operator=(const cart &);
```

**Convince your TA that the “Big Three” are working correctly for the library and cart classes!!!**

### **(3 pts) Changing Info in a File**

Since you will have to remove a book from the database in your Assignment #2, practice this function in lab. Look into the remove() and rename() options in the cstdio library, cplusplus.com.

Determine the book or books you want to remove from the database, and remove those books using the following algorithm:

**While you are not at the end of the file**

**Read book information from database, books.txt**

**If the book is not found in the list of books to remove**

**Write information to temporary file, temp.txt**

**Remove old database, books.txt**

**Rename temporary file, temp.txt to books database, books.txt**

**Remember**, you and your partner **will not receive lab credit if you do not get checked off** before leaving each lab. Once you have a zero on a lab, then it cannot be changed because we have no way of knowing if you were there or not!!!