CS 201: Problem Solving & Programming II

Lab #3

**Exercise 1**

You work at the Computer Science 201L Library. And your boss wants to know which books are currently checked out. Thankfully, you know how to write a program to do that for you!

Given a list of library books (books.txt), which lists the title, author, and ISBN of the book, and a list of ISBN numbers that have been processed (in or out) for the day (isbns.txt), you can determine which books are currently out of the library.

Thankfully, the library only has a maximum of 20 books, and you don’t need to keep track of what customer has the book or not, just whether they are checked in or out.

**Directions**

1. Complete the exercise.
2. Show the output report to the lab instructor.
3. Upload your code in your Github repo inside “Lab 3” folder.
4. Even if you can’t finish it completely, submit it before the lab ends to get partial marks.

**More Information and File Structure**

The books.txt file has a list of all of the books at the library. The books are listed with the title on one line, the author on the next, then the ISBN on the next. For simplicity, all three are stored as strings in the class, including the number. Using the file streams, you’ve learned how to read in one word or number at a time. To read in an entire line, use the getline() function. For example:

charfileInput[100];

ifstream fin(“file.txt”);

fin.getline(fileInput,100);

This will read in the first 100 characters from a line from the file and store it in the variable fileInput, which is a variable of the cstring type. Since you probably haven’t learned about cstrings yet, we need to convert it to the type of strings you have learned about. To do that, you can use the string() function:

string title;

title = string(fileInput);

Now, the string title will have the full line from the file. You can then store this inside of a LibraryBook class:

LibraryBookmyBook;

myBook.setTitle(title);

Using the same process for the next two lines of the file (author and ISBN), you can also use the LibraryBook’ssetAuthor() and setISBN() functions to set all of the properties of the book.

In the isbns.txt file, you have a list of ISBN numbers, one per line. If the ISBN number appears in this file, it has either been scanned in or out from the library. You can read these in with the normal style you are used to (for example:string theISBN; fin >>theISBN; ). You can then either use the LibraryBook’scheckin() or checkout() function to tag it as either there or not there. You can use the isCheckedOut() function to find out if it’s currently checked in or out, then use that Boolean to determine which function you call.

Remember, there is more than one book, therefore, you need to create an array of LibraryBooks (at most, 20). Using a loop, read in a title, author, and ISBN for each book and store it in the array. Since you don’t know how many books are in the library, you will need to maintain a variable that also keeps track of how many books you currently have in the library (and subsequently, in the array).

Finally, you need to print the report your boss needs. The report should be named checkedout.txt and should print out a header consisting of the words “Title”, “Author”, and “ISBN”, separated by tabs, and on each line after that, the title, author, and ISBN of the books that are checked out, separated by tabs. You will need to do another loop to iterate through the array, and print out books that are checked out. For the files provided, your checkedout.txt file should look like:

Title Author ISBN

Code: The Hidden Language of Computer Hardware and Software Charles Petzold 1735611319

Interconnection Networks Jose Duato 1558608524

Understanding Computers: Today & Tomorrow, Comprehensive Deborah Morley 1423925211

Logic and Computer Design Fundamentals M. Morris Mano 1131678493