***Objective***

* Objective of your Project.

What was the objective of the project at the beginning of the project and what were you finally able to achieve?

* In the beginning objective was to create project based on Library with 5 java classes: Book, LibraryDriver, LibraryList, BorrowedList, RequestedList. RequestedList was supposed to be a queue ADT where the first student to request a book will receive the book first. However, while building the class I realized not all students are going to request the same book and I am going to have to use Linked list again with lot of complicated methods for the class to work efficiently. So, finally I decided to create Library project with 4 java classes: Book, LibraryDriver, LibraryList, BorrowedList.

***Design***

* What Menu Options are there in your project?

Add, Find, Borrow, Return, Print, Quit

* What are the classes and the class hierarchy?

Book.java, LibraryDriver.java, LibraryList.java, BorrowedList.

* What are the different instance variables in different classes and the methods used?

Book.java

private int isbn;  
private String title;  
private String author;

LibraryDriver.java

LibraryList library = new LibraryList();  
BorrowedList borrowed = new BorrowedList(library);  
Book b;

LibraryList.java

static private LinkedList<Book>*libraryList*;

private BorrowedList bList;

BorrowedList.java

static private LinkedList<Book>*borrowedList*;  
private LibraryList lib;

***Output***

* How you expected your final project to look like and execute and how different or same did it turn out to be?

Output was what I expected.

* What data will be expected as input by your project and what will be the expected output?

Input will be Books (isbn , title, author) added into the library (libraryList) and then output will be based on the menu options provided to the user.

* What validations for input data did you incorporate?

Based on ISBN, same book cannot be added twice into libraryList.

* Show the sample run of running your program on your data.

PDF has been submitted along with the documents with sample output.

* Explain your results and what they mean.

All the menu options are working perfectly so there are no errors in the methods.

***Challenges***

* After writing and compiling the project, this is the error I was getting at run-time:

Exception in thread “main” java.lang.StackOverflowError . I instantiated a LibraryList every time I instantiated a BorrowedList because of this line: LibraryList lib = new LibraryList(); and on the other side I instantiated a BorrowedList every time I instantiated a LibraryList because of this line: BorrowedList bList = new BorrowedList();

This resulted in an infinite loop of instantiation that caused the stack overflow.

* To solve this error, I gave the instance of BorrowedList as a constructor argument of LibraryList.

public BorrowedList (LibraryList lib) {

borrowedList = new LinkedList<Book>();

this.lib = lib;

}

And created BorrowedList object in LibraryList constructor.

bList = new BorrowedList(this);

* Small problem was nextLine() after nextInt(). I quickly remembered from my CS 140 project 3 that next() or nextInt() does not read the newline character created by hitting “enter” so the nextLine() is skipped.
* To solve this I used Integer.parseInt(in.nextLine());

***References***

Which other references did you use other than the prescribed textbook.

* https://stackoverflow.com/questions/16443894/exception-in-thread-main-java-lang-stackoverflowerror