Dennis Krupitsky, Matthew Connelly, Andrew Teterycz
CSC 330 – Object Oriented Programming
Project #01 – Library Systems Information - Phase 1 (Requirement Specification)
Due Date: 04/17/2019

We must design a program suitable for a functional library system with an inventory of books and their relevant data to allow customers the ability to check books in and out. If a customer requests a specific book, the system will search the library inventory to see if such book exists, and if it does, it will return whether or not it is available currently. The user should be able to type in the name/ID of the book to determine if they are able to check it out. The user should also easily be able to display the full inventory in stock by category(genre) as well as the entire inventory.

The Library Book Information System will require multiple classes:

We will need an object to become a book inside the inventory. It will contain the many data members that will make the book come alive. Basic accessors and mutators, alongside an overloaded output operator for easy display.

BookInformation

- Data:
  - String title, author, subject, publisher;
  - Date publishingDate, dueDate;
  - Status status;
  - Int circulationPeriod, location, id;
  - Double costOfBook, finePerDayOverdue;
- Functions:
  - Accessors/Mutators to private data members
  - Overloaded ostream operator <<

Next comes the customer object. This stores all the information relevant to the customer. Functionality includes accessors and mutators, return and withdrawal methods, and an ability to search one’s currently borrowed books.

BorrowerInformation

- Data:

    - String name, address, phoneNumber;
    - Int id;
    - vector<BookInformation *> books;
    - Double feeBalance;
- Functions:
    - Accessors/Mutators to private data members
    - To Return and Withdraw books currently borrowed
    - To Check if currently has a certain book withdrawn

Date object for use in composition with other objects for easy storage of the month day and year.

Date

- Data:
    - int day, month, year;
- Functions:
    - Accessors/Mutators to private data members
    - Increment date with switch cases
    - Date difference

Next will be an interface for the library's inventory. Two vectors will be employed at storing the Books and Borrowers that will exist in the simulation. The inventory will be able to withdraw and return books and change a book's status. An inventory search will also be available.

LibraryInventory

- Data:
    - vector<BookInformation>
    - vector<BorrowerInformation>
- Functions:
    - Accessors/Mutators to private data members
    - Inventory Search
    - Status Change

  - Insert/Remove Borrowers
  - Withdraw/Return Books
  - Display Book Inventory
  - Display Borrower List

A main menu system will be utilized for seamless access to the library’s database information and perform the necessary tasks as needed.

Menu

- Data:
    - LibraryInventory object
- Functions:
    - Main Menu initialization
    - Book Transactions
    - Book Inventory Search
    - View Information

In the end, the ideal scenario is a program that is easy to use, while retaining full functionality of a Library’s Book Inventory System.