CSC 330 Object Oriented Design   Project 1 in C++

Library Information System

Our library requires a system to keep track of the lending of our books. The library currently has a volume of 100 books. The current number of borrowers is 50. We have a staff of 5 librarians with limited computer knowledge. The system will be used solely by the librarians and will not be used by the borrowers.

We want the system to store information about borrowers, books, and the status of lending books. The system should also tell us the location of each book in our 2-story library. To reduce our bookkeeping, we would like to use the system to keep track of borrower transactions, i.e., lending books, returning books, etc. We would also like the system to report information to borrowers and librarians.

Book and Borrower Information

Book Attributes - the system will contain the following information for each book:

> **Title** - the title of the book
>
> **Author** - first name, last name
>
> **Subject** - a category that the book fits under (e.g. computer science - networking)
>
> **Call number** - a unique 9-digit number assigned to each book, different copies of the same book will have different call numbers
>
> **Publisher** - contains the publisher's name, address
>
> **Publishing date** - date the book was published
>
> **Location** - physical location of the book in the library
>
> **Status** - the availability of the book based on one of the following:
>
> - Out - the book is on loan
> - Available - the book is in library and can be lent out
> - Hold - the book is out but a request has been made to borrow/recall the book
> - Maintenance - the book is in library but it is currently under repairs
>
> **Due date** - date on which the book is due to be returned, depending on the type of book
>
> **Fine per day overdue** - fine charged on borrower when a book is overdue, default set by type. The maximum fine is the cost of the book.
>
> **Circulation period** - how long a borrower can lend a book, default set by type (e.g. 3 weeks for circulation, overnight for reserved). It can be changed manually.
>
> **Cost of book** - the cost to replace the book

Borrower Attributes - the following borrower information should be stored in the library system:

> **Name** - borrower's name, first and last name
>
> **Address** - borrower's mailing address
>
> **Phone number** - borrower's phone number including area code (e.g., (403)555-5555)

ID - a unique identification number for every borrower in the system

Currently borrowed - a list of books that the borrower has taken out, but not returned

Balance of fees - the total amount owed to the library for overdue books

1. **Your project should be large enough to take about 10-15 hours of coding.**

2. **Your project must make use of all of the following: classes using advanced class features such as composition and inheritance and/or polymorphism and/or STL (Standard Template Library).**

3. **It is very important that you write easily readable, well-designed code. Do not forget comments.**

4. **Include a README file with basic instructions on how to use your program. Also include in this README what problems you had with your project, what the challenges were, and what would you have done differently if you could do it again.**