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Homework 2

CSCE 1040 Section 001 – 3018

Fall 2022

Library Loan System Design

Class Relationships:

Books

Loans

Patrons

Collects Collects Collects Requests Contains

Book

Patron

Loan



Class Contents:

*Patron*

- (string) Name  
- (int) ID  
- (float) Fines  
- (int) BooksOut  
-set/get Name  
-set/get ID  
-set/get Fines  
-set/get BooksOut

*Loan*

- (int) ID  
- (Patron) Patron  
- (Book)Book  
- (time\_t) Time  
- (bool) Recheck  
- (bool) Status (overdue, normal)  
-set/get ID  
-set/get PatronID  
-set/get BookID  
-set/get Time  
-set/get Date  
-set/get Status

*Book*

- (string) Author  
- (string) Title  
- (int) ISBN  
- (int) ID  
- (float) Cost  
- (enum) Status   
(In, Out, Repair, Lost)  
- set/get Author  
- set/get Title  
- set/get ISBN  
- set/get ID  
- set/get Cost  
- set/get Status

*Patrons*

- (vector) PatronList  
- (int) count  
- Get PatronList  
- Add Patron  
- Edit Patron  
- Delete Patron  
- Find Patron  
- Print Patron  
- Print Patrons  
- Pay Fines

*Loans*

- (vector) LoanList  
- (int) count  
- Get LoanList  
- Check Out  
- Check In  
- Find Loan  
- List Overdue  
- List by Patron  
- Update Overdue  
- Edit Loan  
- Report Lost Book  
- Re-Check Book  
- Report Damaged Book

*Books*

- (vector) BookList  
- (int) count  
- Get BookList  
- Add Book  
- Delete Book  
- Edit Book  
- Find Book  
- Print Book  
- Print Books

Functions

*Add Patron*- Prompt for Name  
- Create Patron Object  
- PopulateObject  
- Add to Collection

*Edit Patron by Name*- Locate with Find  
- Prompt for Name  
- Set Name

*Delete Patron*- Locate with Find  
- Prompt to Confirm  
- Delete Object  
- Remove from Collection

*Find Patron by Name*- Prompt for name  
- Search collection  
- Return Patron

*Find Patron by ID*- Prompt for ID  
- Search Collection  
- Return Patron

*Print Patron*- Select from Collection  
- Print Name, ID, Fines, and Books Out

*Print Patrons*- Print Patron for each Patron in Collection

*Pay Fines  
­*- Find Patron  
- Prompt for payment amount  
- Subtract payment amount from fines  
- Update fines

*Add Book*- Prompt for Author  
- Prompt for Title  
- Prompt for ISBN  
- Prompt for Price  
- Create Book Object  
- Populate Object  
- Add to Collection

*Edit Book by Author*- Locate with Find  
- Prompt for Author  
- Set Author

*Edit Book by ISBN*- Locate with Find  
- Prompt for ISBN  
- Set ISBN

*Edit Book by Title*- Locate with Find  
- Prompt for Title  
- Set Title

*Edit Book by Cost*- Locate with Find  
- Prompt for Cost  
- Set Cost

*Edit Book by Status*- Locate with Find  
- Prompt for Status  
- Set Status

*Delete Book*- Locate with Find  
- Prompt for Confirmation  
- Delete Object  
- Remove Object from Collection

*Find Book by ID*- Prompt for Book ID  
- Search Collection  
- Return Book

*Print Book*  
- Find Book  
- Print Author, Title, ISBN, ID, Cost, and Status

*Check Out*- Find Patron  
- Check Books Out < 6   
- Check Fines = 0  
- Find Book   
- Check Book Status   
- Get Current Time  
- Create Loan Object  
- Populate Object  
- Add Object to Collection  
- Update Books Out  
- Update Book Status

*Check In*- Find Loan   
- Update Overdue  
- Update Fines  
- Update BooksOut  
- Update Book Status  
- Delete Loan Object  
- Remove Object from Collection

*List Overdue*  
- Find Loans by Status  
- Print Loans

*List by Patron*  
- Find Loans by Patron  
- Print Loans

*Update Overdue Status*- Find Loans  
- Get Due Date  
- Compare Due Date and Current Date  
- Update Loan Status

*Report Lost*- Find Loan  
- Update Book Status  
- Add Cost to Fines

*Re-Check Book*- Find Loan   
- Get Current Time  
- Set Time

*Report Damaged*- Find Loan  
- Update Book Status  
- Add Cost to Fines

*Find Loan by Patron Name  
-* Prompt for Patron Name  
- Search Collection  
- Return all Loan Objects with Patron Name

*Find Loan by Patron ID*- Prompt for Patron ID  
- Search Collection  
- Return all Loan Objects with Patron ID

*Find Loan by Book ID*- Prompt for Book ID  
- Search Collection  
- Return Loan Object

Report for Homework 2 (preserved from original)

I spent around 4 active hours on this assignment, and a week of passive time thinking about the assignment before beginning specific writing of it. I started working on it passively on Tuesday, September 13th and wrote my first draft after class on Tuesday, September 20th. I found this homework to be somewhat challenging. I have written design documents and proposals before, but sometimes it is hard to understand the exact language I should use for each type of document. Taking adequate time to really think about what I wanted to do before actively beginning drafting made the assignment much easier. In terms of time management, I think I did fairly well with understanding the amount of time I wanted to spend thinking about the problem and how I wanted to solve it. As far as problem-solving, I feel I have gained some better tools to understand the scope of a design document.

I would like to spend less time on the next assignment and start actively drafting earlier. While I felt like I had adequate time, it would be nice to get faster at this process. The most difficult piece of this assignment was assessing the scope of this document. I have trouble scoping correctly in general and I value the chance to make a mistake here and understand better what to scope at this stage of design. I found the instructions for the assignment to be a bit confusing. I recognize that was the intent, but it was hard to tell what to do right now versus on the actual program. I still don’t fully understand why the functions of main and saving/loading information were not part of this design, as it feels like something I should be drafting and thinking of in advance. I hope for future assignments and proposals I will feel less lost on how to determine the scope.