CSCE 1040.001/002

Homework 4

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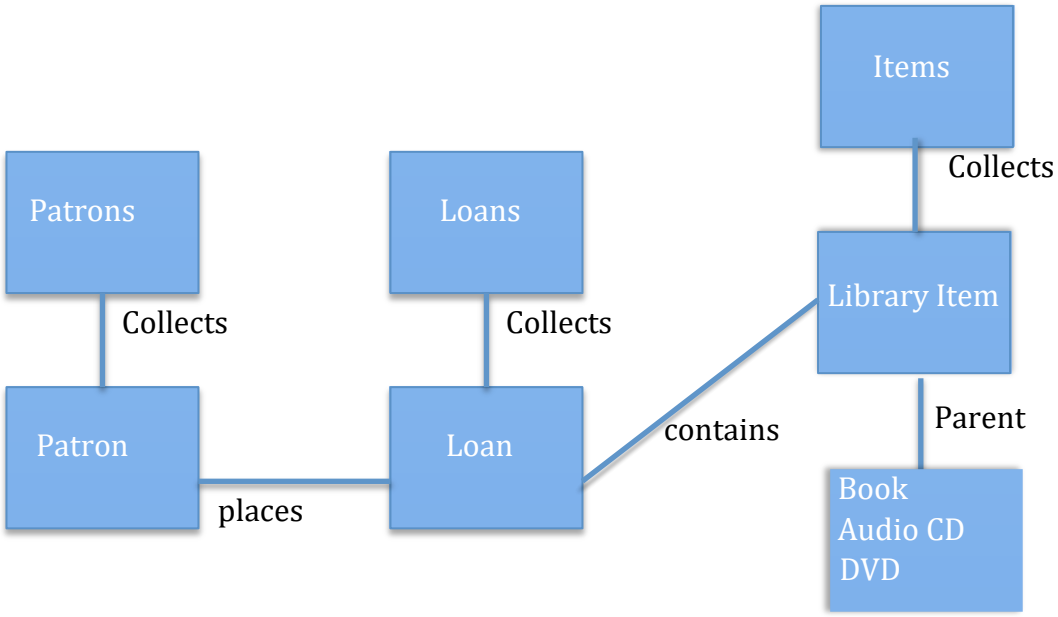
Class Relationships



Class Contents

Patron
Name (string) ID (int) Fine Balance (int) Num books out (int) Constructors Sets/Gets variables checkIfTheycanRecheck Print

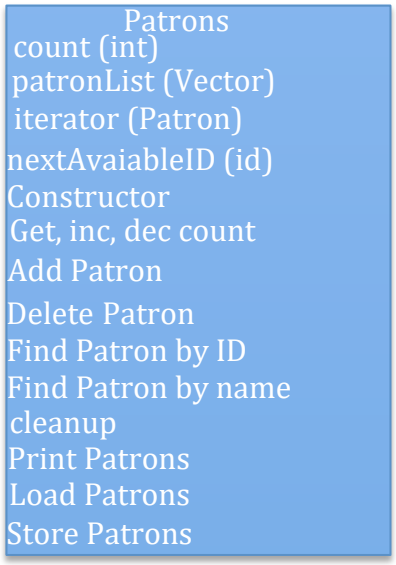
Loan
Loan ID (int) Book ID (int) Patron ID (int) Times Rechecked (int) Due date and time (time_t) Current Status (int) Constructor Sets/Gets variables Print

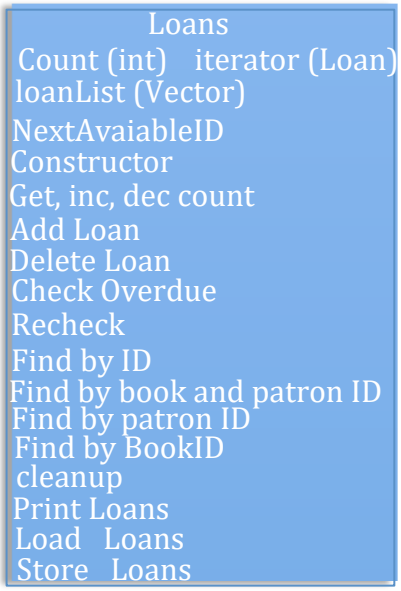
Library Item
Author (string) Title (string) ID (int) ISBN (string) Cost (float) Current status (int) Constructor Sets/Gets for variables Print

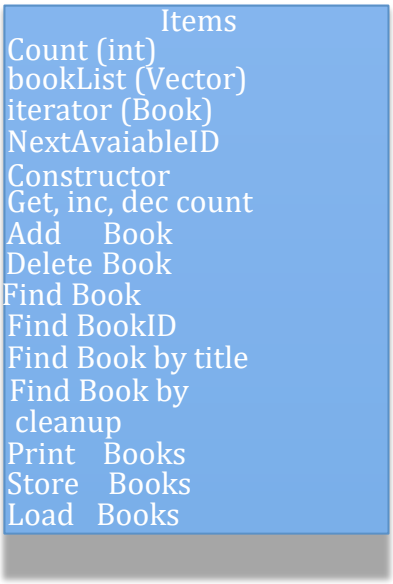
Book
Author (string) Title (string) ISBN (string) Category (int) Constructor Destructor Sets/Gets for variables Print

Audio CD
Artist (string) Title (string) Number of Tracks (int) Release Date (undecided) Genre(string) Constructor Destructor Sets/Gets for variables Print

DVD
Title (string) Category (string) Run time (undecided) Studio (string) Release Date (undecided) Sets/Gets for variables Print







Function Pseudo Code (not all defined – examples only)

For this design there would be pseudo code for at least 17 methods

Patron's methods (No Pseudo code changed)

Add Patron ()

Prompt user for ID
Prompt user for name
Create Patron Object with information form the user
Populate Object
Add object to collection

Edit Patron

Prompt user for ID
Prompt user for what they want to edit
Call Find Patron
Call Sets for Patron

DeletePatron

Prompt user for ID
Call Find Patron
Checks if Find Patron returned a -1
    Call the destructor for Patron
    Move non-deleted Patrons over by 1 (leave no blanks in Patron's vector)
    Print success

Find Patron (ID)

For lop starting at 0 and going till count-1
    If statement to see if ID's match
        When match return index
    Else
        Print error
        Return -1

PrintPatron(ID)

Call Find Patron
Checks if Find Patron returned a -1
    Print to terminal Name, ID, Fine Balance, and number of books out

PrintPatrons()

For loop starting at 0 and going till count -1

    Print to terminal Name, ID, Fine Balance, and number of books out

Pay Fines

Prompt user for ID
Call Find Patron
Checks if Find Patron returned a -1
    Output how much they owe in fines
    Output / input how much they want to pay today
    Put the subtracted value into a temp int
    Call set Fine Balance to the temp int

Read Patrons

Create Ifstream object
Open file
Create Patrons object
While loop checking if something was read in each line
    Creating Patron object
    Input data into Patron object
    Increase count
Close file

Write Patrons

Create Ofstream object
Open file
For Loop from 0 to count-1

Writing data to the file
Close file

Loan's Methods (No Pseudo code changed)

AddLoan

Prompt user for book ID
Prompt user for Patron ID
Create a new loan in loans with information from the user
if statement that checks if the patron has more or equals to 6 books checked out (including the new book) and have no overdue books
    if Parton has fines greater than 0
        call Payfines
    Set due date and time
    Set times Rechecked to 0
    Update data for book and patron

DeleteLoan

Prompt user for loan ID
If Patrons fines are greater than 0
    Output that then need to pay their fines
Update data for book and patron
Call delete method in loans for loan

EditLoan

Prompt user for loan ID
If statement checking if the Patron has already rechecked the book before
    if statement that checks if the patron has more or equals to 6 books checked out (including the new book) and have no overdue books
        if Parton has fines greater than 0
            call Payfines
        Set due date and time
        Set rechecked to 1
        Update data for book and patron
    Else
        Output if Patron has to many books out or has an overdue book
Else
    Output error statement

UpdatesStatus

Prompt user for loan ID
Call get current status to Update current status of loan based on system clock

ReportLost Book

Prompt user for loan ID
Update current status of book to lost
Update Patron's Fine Balance to the price of the book

Print LoanedBooks

Call print books

Print Loan

Output data from loan in a suitable format to the user

Print Overdue

For loop the goes from 0 to count -1

    Checks if the loan at the index is overdue

        Prints data for the overdue book

Read Loans

Create Ifstream object
Open file
Create Loans object
While loop checking if something was read in each line
    Creating loan object
    Input data into loan object
    Increase count
Close file

Write Loans

Create Ofstream object
Open file
For Loop from 0 to count-1
    Writing data to the file
Close file

Library Item's Methods

Add Item

Prompt user for type of item
Switch case for each
    Prompt user for information relating to the Item
    Add new item to item list
Increase count

Delete Item

Prompt user for ID
Call Find Book
Call destructor for book of the index found

Count number of Specific Items

Prompt user for item type
Loop through the list
    Check if the type of item in the loop is the same
    Increase count
Pass back the count

Find Item

Prompts user for item ID
Loop Through the list
    Check if it matches the provided ID
        Pass back the Item
If none can be found pass back a null

Find Item with no return

Prompts user for item ID
Loop Through the list
    Check if the types match then if the ID matches
        Print

Find Item By other

Prompt user for type and what they want to change
Switch case for each item
    Switch case for each possible thing to change
        Change what they want accordingly

Clean up

Loop through the list and delete everything

Print Items

Loop that goes through the list

Checks the type of item

Calls the items print function

Read Items

Create Ifstream object
Open file
Create Books object
While loop checking if something was read in each line
    Creating book object
    Input data into book object
    Increase count
Close file

Write Items

Create Ofstream object
Open file
For Loop from 0 to count-1
    Writing data to the file
Close file