Group 11
Ru Yang, Florence Tracy Wong
http://flip2.engr.oregonstate.edu:7002/

Executive Summary

Our project is to design a Management System for a new public library named Silver Star, in district 51 of Moon city. The library with 25,000 books provides lending service to 26,000 registered members who live in this area. It is a database driven website system that helps librarians to perform create, read, update and delete (CRUD) operations on books, members, borrow records, authors and book categories.

At the beginning of the course, our group has set out to include six entities for this database project. They are Books, Authors, Categories, Copies, BorrowDetails and Members. We have since changed the name of BorrowDetails to BorrowRecords to better reflect what the entity represents. This change was not influenced by the review or feedback from our peers but rather from the weekly online meeting conducted in the group. No major changes were conducted regarding entities and the relationship between the tables throughout the course.

However, there were some notable changes and updates on the specification of attributes. For instance, the "copyNumActual" and "copyNumCurr" have been removed from Books entity because we found that those two attributes were not useful as such set up brought a lot of work on the backend and easily caused data inconsistency. Moreover, we added constraints in Authors, Categories, Copies and Members to prevent the tables from storing duplicate data. The above attribute and constraints updates were conducted because we reviewed our work and re-evaluated what worked and what did not.

Nonetheless, feedbacks from our classmate Jason Mckeever and our T.A in Step 3 both pointed out that the intersect tables for M:M relationships were needed in the front end pages because intersect tables were considered tables per our schema, and we would have to display the data contained in those tables and that a select query of some sort was also expected to be viewable. As a result, additional web pages of BookCategories and BookAuthor were implemented to display the two intersect tables in step 4.

Toward the end of course, our T.A also provided feedback regarding the implementation of drop down lists with pre-populated data for the fields that require specific item IDs. As a result, drop down lists were implemented on the web pages for BookAuthors, BooksCategories, Manage Copies, and Manage Borrow Records. There was also a minor update on the bookCondition attribute in the Copies entity. We changed the size to Varchar 15 to better reflect the data size required. This change is a result of an error that occurs during testing due to the previous incompatible data size specified.

All in all, our project did not go through major changes regarding the overall set up with entities and their related relationships. Some minor changes and updates on attributes were made because we found better ways to define the attributes to improve the efficiency and integrity of the database. Most useful feedback came from the TA as he pointed out the requirements of the deliverables and reminded us how to achieve them with specific and helpful instructions.

Project and Database Outlines

Overview
The project plan aims to design a Management System for the new public library named Silver Star, in district 51 of Moon city. The library with 25,000 books will provide lending service to 26,000 registered members who live in this area. This database driven website system will help librarians in the following ways.
- Add new books or remove an existing book.
- Retrieve the details of existing books.
- Create a new member or delete an existing member.
- Handle the borrow and return events from student members.
- Maintain the records of the borrow and return events.

Note: This 1.0 Version will not include the managements on passing due penalty, damage penalty, and anything else related to accounting payable.

Database Outline

o Books: contains the details of all books that are available in the library.
- bookId: INT, Auto Increment, not NULL, Primary Key
- ISBN: VARCHAR (13), not NULL, UNIQUE
- publisher: VARCHAR (150), not NULL
- title: VARCHAR (255), not NULL
- publicationYear: YEAR, not NULL
- Relationship:
1. A M:M relationship between Books and Authors with an intersection table containing bookId as a foreign key that refers to Books and authorId as a foreign key that refers to Authors.
2. A M:M relationship between Books and Categories with an intersection table containing bookId as a foreign key that refers to Books and categoryId as a foreign key that refers to Categories.
3. A 1:M relationship between Books and Copies with bookId as a Foreign Key inside of Copies.

o Authors: contains the author details of all books in the library.
- authorId: INT, Auto Increment, not NULL, Primary Key
- firstName: VARCHAR (50), not NULL
- lastName: VARCHAR (50), not NULL
- CONSTRAINT UNIQUE on the (firstName, lastName)
- Relationship: A M:M relationship between Books and Authors with an intersection table containing bookId as a foreign key that refers to Books and authorId as a foreign key that refers to Authors.
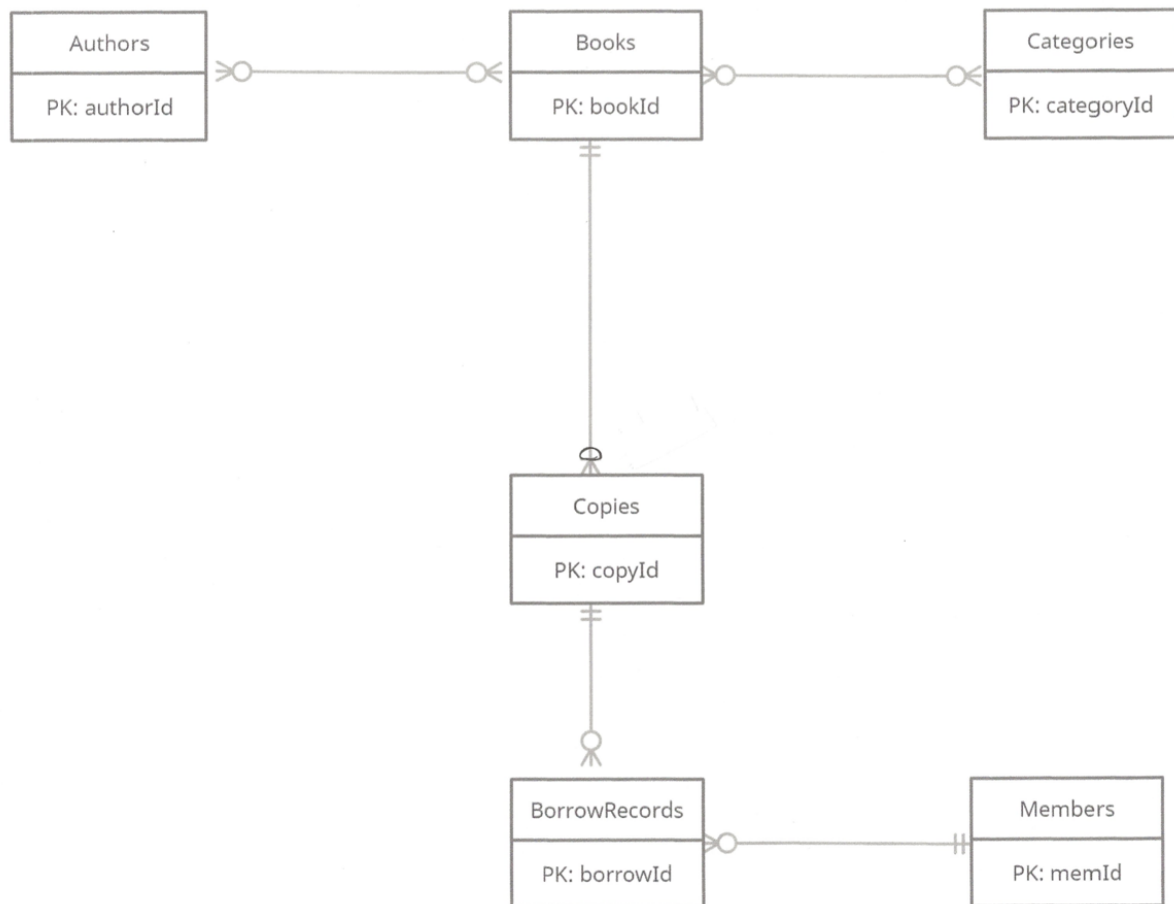
o Categories: contains the category information of all books in the library.
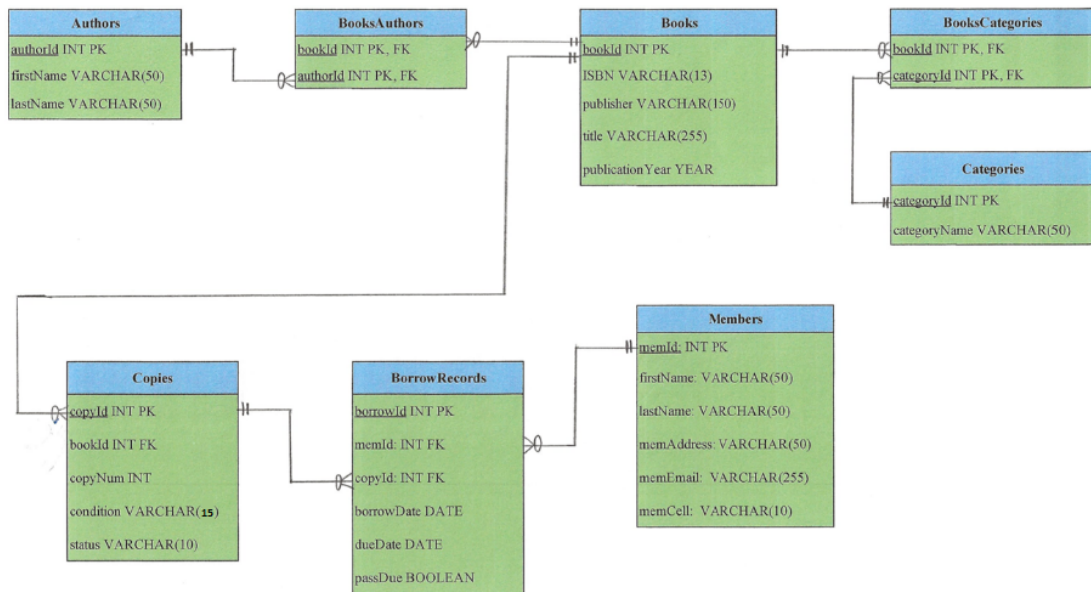- categoryId: INT, Auto Increment, not NULL, Primary Key

- categoryName: VARCHAR (50), not NULL, UNIQUE
- Relationship: A M:M relationship between Books and Categories with an intersection table containing bookId as a foreign key that refers to Books and categoryId as a foreign key that refers to Categories.

o Copies: contains the detail for each book under the same title.
- copyId: INT, Auto Increment, not NULL, Primary Key
- bookId: INT, not NULL, Foreign Key - corresponding to bookId in Books
- copyNum: INT (1 to 3), not Null, represents the Nth copy of the specified book. Each book is allowed to have 3 copies at most.
- condition: VARCHAR (15), not Null, domain (new, very_good, good, fair, need_replaced)
- status: VARCHAR (10), domain ('on loan', 'in library')
- CONSTRAINT UNIQUE on the (bookId, copyNum)
- Relationship:
1. A 1:M relationship between Books and Copies with bookId as a Foreign Key inside of Copies.
2. A 1:M relationship between BorrowRecords and Copies with copyId as a Foreign Key inside of BorrowRecords.

o BorrowRecords: contains all borrowed records from members.
- borrowId: Int, Auto Increment, not NULL, Primary Key
- memId: Int, not NULL, Foreign Key - corresponding to memId in Members
- copyId: INT, not NULL, Foreign Key - corresponding to copyId in copies
- borrowDate: DATE, not NULL
- dueDate: DATE, not NULL
- passDue: BOOLEAN, not NULL
- Relationship:
1. A 1:M relationship between BorrowRecords and Copies with copyId as a Foreign Key inside of BorrowRecords.
2. A 1:M relationship between Members and BorrowRecords with memId as a Foreign Key inside of BorrowRecords.

o Members: contains the details of all members of the library.
- memId: Int, Auto Increment, not NULL, Primary Key
- firstName: VARCHAR (50), not NULL
- lastName: VARCHAR (50), not NULL
- memAddress: VARCHAR (50), not NULL
  Address Format: House Num + Street Name + 51 District + Moon City (Ex. 1351 Luna Street, 51 District, Moon City). "House Num + Street Name" is the only Infor will be stored into the DB.
- memEmail: VARCHAR (255), not NULL
- memCell: VARCHAR (10), not NULL
- CONSTRAINT UNIQUE on the (firstName, lastName, memCell)

- Relationship: A 1:M relationship between Members and BorrowRecords with memId as a Foreign Key inside of BorrowRecords.
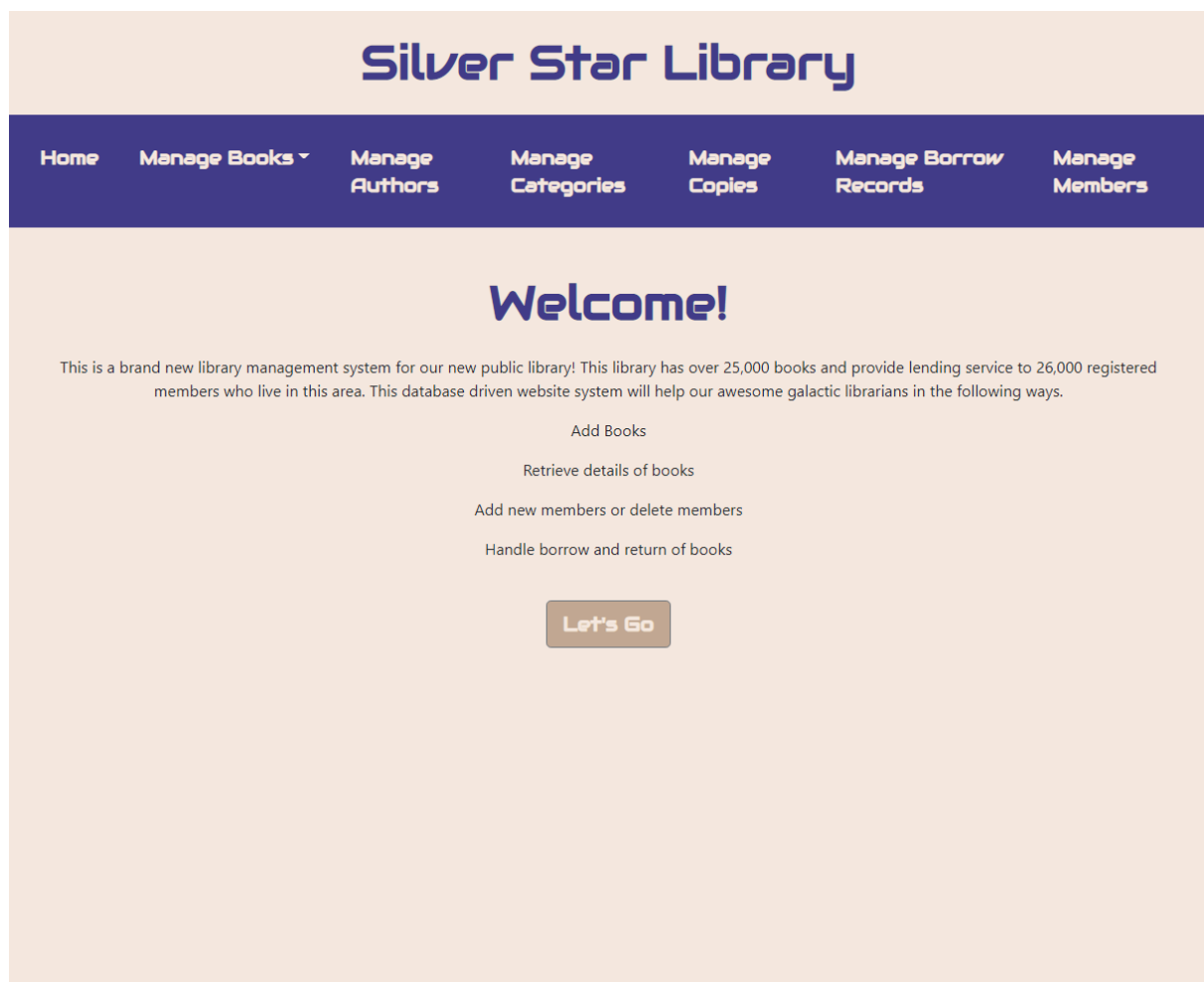
Entity-Relationship Diagram

Schema

UI Screenshots with Informative Titles

Home Page

READ/BROWSE/DISPLAY/CREATE/ DELETE/UPDATE Manage Books

Silver Star Library – Manage Books

| Home | Manage Books ▾ | Manage Authors | Manage Categories | Manage Copies | Manage Borrow Records | Manage Members |

Add Book

ISBN

Title

Publisher

Publish Year

Add

Search Book

○ Title   ● ISBN

Title/ISBN   Search

The 10 Most Recent Addings

bookId	ISBN	publisher	title	publicationYear	Action
5	9781451673319	Simon & Schuster	Fahrenheit 451	1953	🖉 🗑
4	9780451524935	Houghton Mifflin Harcourt	1984	1949	🖉 🗑
			The		

READ/BROWSE/DISPLAY/CREATE/ DELETE/UPDATE Manage BooksAuthors

Silver Star Library - Manage BooksAuthors

Home	Manage Books ▾	Manage Authors	Manage Categories	Manage Copies	Manage Borrow Records	Manage Members

Add Book & Author Relationship

| Authors ID: 3 - Name: Douglas Adams ∨ | Books ID: 4 - Title: 1984 ∨ | Add |

Search Book & Author Relationship By Id

◉ BookId   ○ AuthorId

| BookId/AuthorId | Search |

Note:Please search the Book Id or the Author Id before searching.

The Random 10 Addings

bookId	title	authorId	Action
3	The Hitchhiker's Guide to the Galaxy	3	✎ 🗑
3	The Hitchhiker's Guide to the Galaxy	4	✎ 🗑
4	1984	6	✎ 🗑
3	The Hitchhiker's Guide to the Galaxy	5	✎ 🗑
1	Dune	1	✎ 🗑
2	Ender's Game	2	✎ 🗑
5	Fahrenheit 451	7	✎ 🗑

READ/BROWSE/DISPLAY/CREATE/ DELETE/UPDATE Manage BooksCategories

Silver Star Library – Manage BooksCategories

| Home | Manage Books ▾ | Manage Authors | Manage Categories | Manage Copies | Manage Borrow Records | Manage Members |

Add Book & Category Relationship

| Categories ID: 3 – Name: Comedy ⌄ | Books ID: 4 – Title: 1984 ⌄ | Add |

Search Book & Category Relationship By Id

● BookId   ○ CategoryId

| BookId/CategoryId | Search |

Note:Please search the Book Id or the Category Id before searching.

The Random 10 Addings

bookId	title	categoryId	Action
3	The Hitchhiker's Guide to the Galaxy	3	✎ 🗑
1	Dune	1	✎ 🗑
5	Fahrenheit 451	4	✎ 🗑
3	The Hitchhiker's Guide to the Galaxy	2	✎ 🗑
5	Fahrenheit 451	2	✎ 🗑
2	Ender's Game	2	✎ 🗑
4	1984	4	✎ 🗑

READ/BROWSE/DISPLAY/CREATE/ DELETE/UPDATE Manage Authors

Silver Star Library – Manage Authors

| Home | Manage Books ▾ | Manage Authors | Manage Categories | Manage Copies | Manage Borrow Records | Manage Members |

Add Author By Name

| First Name | Last Name | Add |

Search Author By Name

| First Name | Last Name | Search |

The 10 Most Recent Addings

authorId	firstName	lastName	Action
7	Ray	Bradbury	✎ 🗑
6	George	Orwell	✎ 🗑
5	Eoin	Colfer	✎ 🗑
4	Thomas	Tidholm	✎ 🗑
3	Douglas	Adams	✎ 🗑
2	Orson Scott	Card	✎ 🗑
1	Frank	Herbert	✎ 🗑

READ/BROWSE/DISPLAY/CREATE/ DELETE/UPDATE Manage Categories

Silver Star Library – Manage Categories

| Home | Manage Books ▾ | Manage Authors | Manage Categories | Manage Copies | Manage Borrow Records | Manage Members |

Add Category

Category   [Add]

Search Category

Category   [Search]

The 10 Most Recent Addings

categoryId	categoryName	Action
4	Dystopian Fiction	✎ 🗑
3	Comedy	✎ 🗑
2	Science Fiction	✎ 🗑
1	Novel	✎ 🗑

READ/BROWSE/DISPLAY/CREATE/ DELETE/UPDATE Manage Copies

Silver Star Library – Manage Copies

| Home | Manage Books ˅ | Manage Authors | Manage Categories | Manage Copies | Manage Borrow Records | Manage Members |

Add Book Copies

Book ID   Select a Condition: New ˅   Add

Note: the status set default as 'in Library'. CopyNum range from 1-3 will increase automatically.

Search Book Copy by Book ID

Book ID   Search

Note: please search the Book Id before searching.

The 10 Most Recent Addings

copyId	bookId	copyNum	bookCondition	status	Action
14	5	3	new	in Library	✎ 🗑
13	5	2	very_good	on Loan	✎ 🗑
12	5	1	new	in Library	✎ 🗑
11	4	3	new	in Library	✎ 🗑
10	4	2	new	in Library	✎ 🗑
9	4	1	new	on Loan	✎ 🗑
8	3	2	new	in Library	✎ 🗑
7	3	1	new	on Loan	✎ 🗑
6	2	3	good	in Library	✎ 🗑
5	2	2	new	on Loan	✎ 🗑

Note:bookId & CopyNum cannot be changed. if any adding error please delete and re-input.

Silver Star Library – Manage Borrow Records

Home	Manage Books ▾	Manage Authors	Manage Categories	Manage Copies	Manage Borrow Records	Manage Members

Add Borrow Records

Member ID: 1 ▾   Copy ID: 2 ▾

mm/dd/yyyy 📅   mm/dd/yyyy 📅

Note: The copies on loan will not be showed.

Add

Search Borrow Records by Member ID

Member ID   **Search**

The 10 Most Recent Addings

borrowId	memId	copyId	borrowDate	dueDate	passDue	Action
6	1	5	2046-12-01	2047-12-14	1	✎ 🗑
5	3	9	2047-01-07	2047-01-21	0	✎ 🗑
4	4	7	2047-01-07	2047-01-21	0	✎ 🗑
3	5	13	2047-01-01	2047-01-14	0	✎ 🗑
2	2	3	2047-01-01	2047-01-14	0	✎ 🗑
1	1	1	2047-01-01	2047-01-14	0	✎ 🗑

Silver Star Library – Manage Members

Home	Manage Books ˅	Manage Authors	Manage Categories	Manage Copies	Manage Borrow Records	Manage Members

Add Member

First Name | Last Name

Home Address | Email

Phone Number

Add

Search Member By Name

First Name | Last Name | **Search**

The 10 Most Recent Addings

memId	FirstName	lastName	memAddress	memEmail	memCell	Action
5	James	Miller	32 King Drive, 51 District, Moon City	jMiller@mooncity.com	9991111115	✎ 🗑
4	Noah	Gracia	32 Edward Road, 51 District, Moon City	nGracia@mooncity.com	9991111114	✎ 🗑
3	Stephen	Jones	77 Universal Road, 51 District, Moon City	sking@mooncity.com	9991111113	✎ 🗑

CS 340 TEAM EVALUATION FORM
AUGUST 9, 2021

RATE YOUR TEAMS PERFORMANCE USING THE SCALE BELOW.

1 = Strongly Disagree   2 = Disagree   3 = Agree   4 = Strongly Agree

GROUP NUMBER	11	
NAME OF GROUP TEAM MEMBERS:	Yang Ru, Florence Tracy Wong	
SCALE AND COMMENTS	RATING	ADDITIONAL COMMENTS
HOW PREPARED WAS YOUR TEAM? Research, reading, and assignment complete	4	Good
HOW RESPONSIVE & COMMUNICATIVE WERE YOU BOTH AS A TEAM? Responded to requests and assignment modifications needed. Initiated and responded appropriately via email, Slack etc.	4	Good
DID BOTH GROUP MEMBERS PARTICIPATE EQUALLY Contributed best academic ability	4	Yes
DID YOU BOTH FOLLOW THE INITIAL TEAM CONTRACT? Were both team members both positive and productive?	4	Yes

Are there any suggestions for improvement for your team and what are your goals moving forward?

(Better communication, follow the contract better, modify the initial team contract, more contribution, etc?)? The timeline for the summer course is tight. I believe that both of us have put our best effort into this course.