Hicksville County Library Database

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Proposal Phase

CINS 370 Project 1

February 15, 2021

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Team Members and Responsibilities

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Responsibilities:

Evan - putting everything together, helping each piece of the project except problem statement

Cole - ER Diagram, Requirements Definitions

Maxwell - Use Case Narrative Descriptions

John - Problem Statement, Requirements Definitions

Jeremiah - Use Case Diagram

Carson - ER Diagram, Formatting

Problem Statement/Requirements Definition

With tons of books being checked out and returned daily, modern libraries need reliable databases that give librarians and the library's members access to a plethora of important information. As the status of books are always changing, databases are necessary to keep track of the library's inventory and make sure books are brought back in a timely manner so as to keep the cycle of checking out and returning books going. If the cycle is broken, their member retention could be negatively affected as the selection of books gets smaller due to overdue or missing books. Without good member retention, the library will ultimately need to shut down, making databases that much more important for libraries.

A new public library, the Hicksville County Library, is being built, and they are in need of a database. They are counting on a startup database design firm to create a database that will fulfill their needs. The team decided that the database will have a three actor system consisting of the members, the librarians, and the head librarian. Members will have limited access to the information from the database, while librarians will have access to more information than the members and have the ability to change some of the database's information such as changing the status of a book. The head librarian will have full access to the database's information and is able to change all of the data such as adding or removing books from the database. The database will need to house tons of information on the thousands of books provided there, such as their genre, condition, and ISBN just to name a few examples. The database will also hold information on the

members of the library, such as their names, preferences, address, and overdue books. The database's queries should be relatively fast considering the fact that hundreds of people will be checking out or returning multiple books everyday. All in all, the database will store the information of the librarians, the books, the status of the books, the members, and the preferences of those members.

Member - A member of the library is crucial for the functioning of this database since it is built specifically for them. The database system must be accessible to the member, showing them relative and important information regarding their membership with the library. Members will be able to access the interface from the library or home, and be able to carry out multiple tasks such as seeing the total cost of books, overdue books, and the books they currently have checked out with a designated return date. The user will also be able to pay on their balance through the database and receive penalties upon failing to return a book before the designated date. If the member does not return their books on time, the member gets a strike. If the member hits three strikes, the member is banned from the library and can not check out any more books. It is important that the members have a good experience and all the useful information through the interface. Members have ID cards to identify themselves and preferences to help sort for books that might be of interest to them. Members also have the ability to renew a book that they have checked out so long as nobody else has reserved the book.

Librarians - A librarians task in managing the database is crucial for its function. They are required to keep the database as accurate as possible. This is crucial for making sure the

inventory of the library is logged so that books are not stolen and members can access the database to see real information about the quantity of different types of books being held at the library. Librarians sign in through their account to access the database to make sure that every librarian is accountable for human error. Librarians can change the status of many factors, such as updating availability of a book, the amount a member should be charged, and entering in the correct return date. Librarians also have access to changing a book's condition, such as whether the book is in bad (written in, missing pages), worn (written in, no missing pages), good (not written in, no missing pages, but slight wear), or perfect condition. When members have overdue books, a librarian can manage their overdue records, adding strikes to the member or removing their overdue book entries when their fees are paid. Librarians will also be able to have full access to the inventory of the books as well as all non-sensitive member information and books due.

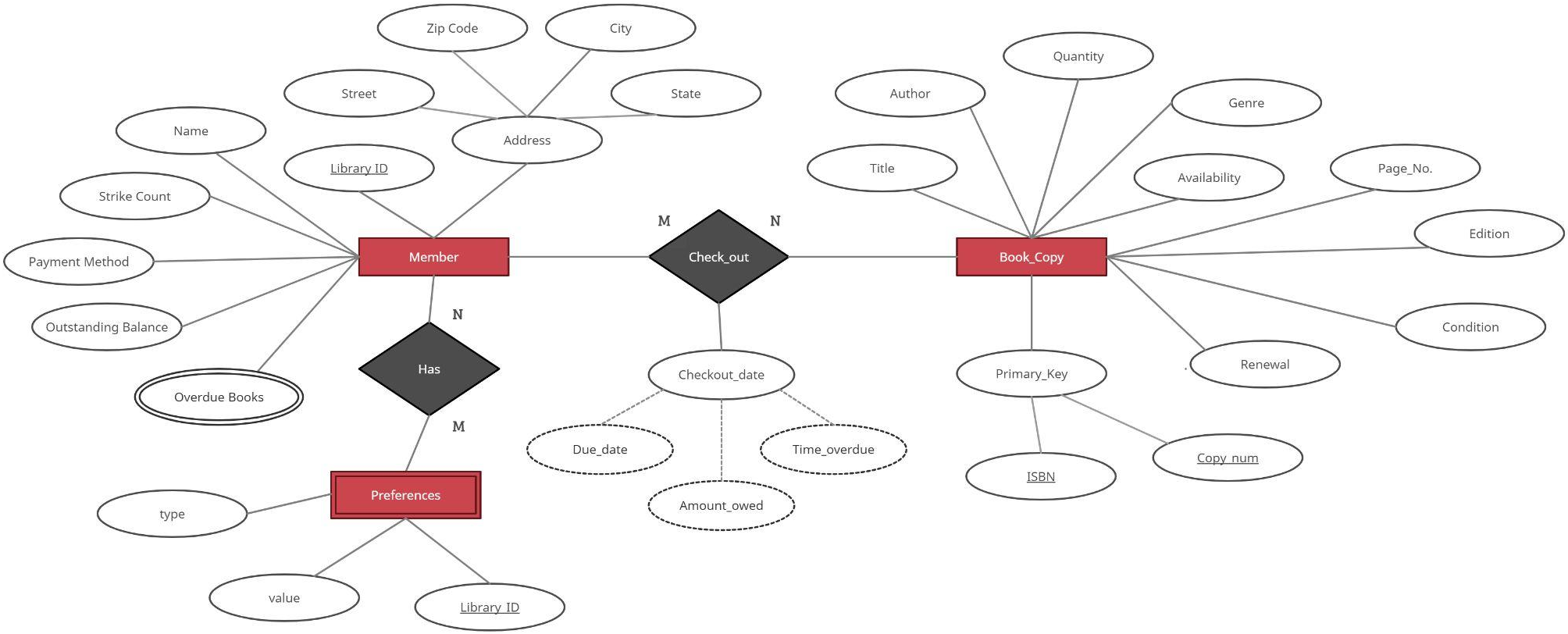
Head Librarian - There will also be a designated head librarian that is the database administrator. The head librarian is responsible for overseeing the database and changing information in it, such as adding or removing librarians and books. Like the librarians, the head librarian will have to sign in to their account before accessing the database. The head librarian has their own unique abilities but they also have access to everything the members and librarians can do too. For example, the head librarian can forgive a member's overdue record without the need for a fee payment or book return if necessary.

Book_Copy - Because the database is built for library usage, we must foremost make sure that the database has an effective way to store all books by a multitude of different fields. The

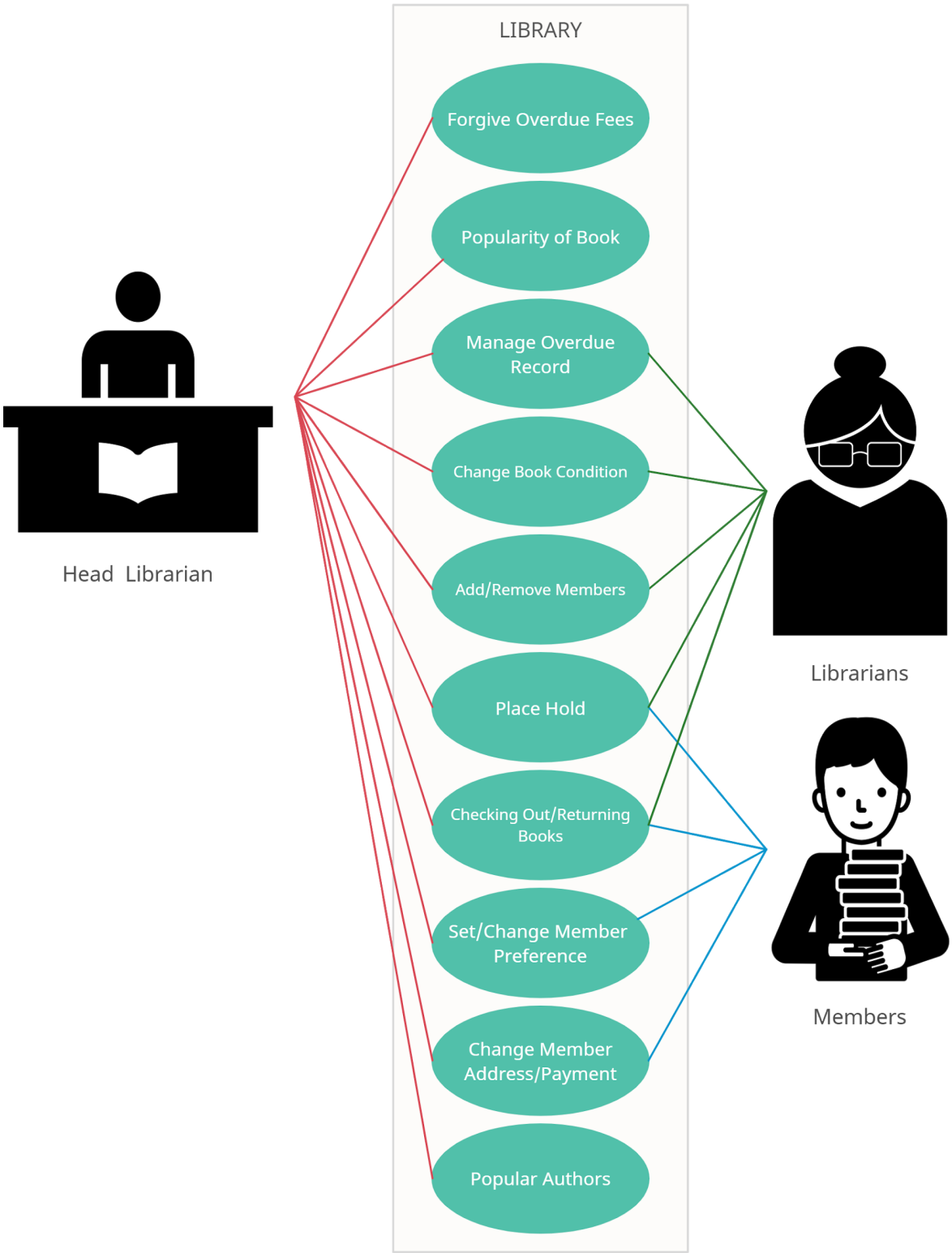
database will store every book's title, author, page amount, genre, edition, condition, and ISBN. To make a database as user friendly as possible, these fields will be able to be sorted, making the job of the librarian in finding if a book is in stock much more time effective. From these books, we can also obtain all books status, seeing when it will be in from the last member who rented it. Librarians will be able to access the checkout and return date of a book as well as its availability and the amount due by a member. Librarians can also see the overdue time, making it easier to contact members who have not returned the books by the designated time. This is important as it can let the librarians know where all their inventory is and allow them to update the status of their books accordingly. This is crucial for keeping the flow of traffic effective and to keep the inventory of the library from disappearing with no trace.

Preferences - Every members' favorite authors and genres will be stored in the database so that members can look up books pertaining to their interests. Type will hold the categories of their preferences like genres, authors, and hobbies. Value will hold the member's favorite thing pertaining to that type. For example, if the type is genre, the value will be the member's favorite genre. This feature could help the library's member retention because it makes it easier for members to find books that they will actually want to check out.

Entity-Relationship Model



Use Case Diagram



Narrative Description of Library Database Use-Cases

Use Case 1:	**Add/Remove Members**
Actor(s):	Head Librarian[1], Librarians
Description:	A Head Librarian or Librarian will have an option on their screen to 'Change Member', which returns a list of all the members. They can then select a member from the list and click the 'Delete' button to permanently remove that member from the database (a confirmation screen will be used to ensure that members are not deleted accidentally). Or, if they want to add a member, they can click the 'Add' button at the bottom of the list of current members. They will then be prompted for all the fields of a member with mandatory fields denoted by a red asterisk.
Use Case 2:	**Place Hold[2]**
Actor(s):	Head Librarian[1], Librarians, Members
Description:	Through the book inventory portion of this database, all listed users will have the option to place a hold on any individual book at a time. Effectively, this will disallow any further renewals of the book from the date the hold was placed. Since Members only have access to the book inventory, if this user group selects one or more books, only the 'Hold' option will be available, not choices that let them change the book's attributes.
Use Case 3:	**Manage Overdue Record**
Actor(s):	Head Librarian[1], Librarians
Description:	Under the list of Members, Librarians and Head Librarians will click on an individual member and view their overdue record, which lists the books that a member has overdue and for how long. Upon clicking the 'Manage' button, they will be able to remove these entries upon confirmation that the book was returned and a fee was paid or that the book's value was paid for in full. Librarians and Head Librarians can also add strikes to a Member's overdue record for egregious actions, with three resulting in a permanent ban from the library. (See "Forgive Overdue Fees" for administrative level actions.)

[1] The Administration
[2] Reserve book

Use Case 4: **Forgive Overdue Fees**

Actor(s): Head Librarian[1]

Description: Head Librarians can similarly manage overdue records to that of Librarians, but with extra administrative privileges. Unlike Librarians, Head Librarians can delete any entries in the overdue record section of a given Member without a confirmation of payment or book being returned. This will allow Head Librarians to exonerate Members from an overdue book's financial consequences if that action needs to be taken. Determining if a Member should be banned from the library is subject to the strike-system. Taken from baseball, this system allows for two overdue books for any Member at a given time. If a Member tacks on a third overdue book to the record before either the book is returned and a fee is paid, or the book's value is paid in full; then the system will automatically ban that Member, deactivating their library card number and disabling them from checking out books.

Use Case 5: **Change Book Condition**

Actor(s): Head Librarian[1], Librarians

Description: Within the book inventory, both Librarians and Head Librarians can select an individual book. This will bring up that book's entry with all its applicable information, including how many copies of the book the library carries and each copy's condition. The administration and Librarians are responsible for categorizing each copy of each book by its condition. Upon selecting a specific book and a particular copy of that book the library carries, Actors may choose the 'Condition' button and determine a condition from the following list: Damaged, Used, Good, & New.

Use Case 6: **Manage Member Preferences**

Actor(s): Head Librarian[1], Members

Description: Any cardholder of the library can access and edit their personal preferences. Such preferences include favorite genre, favorite author, favorite book, paperback/hardcover, etc. After a member logins into the library database, their page will appear with the option to edit through the 'Edit' button. Upon clicking this button, members can now erase current entries within their preferences and create new ones. Then they must click the 'Save' button to enable these

preferences. Since only members (and Head Librarians) know their login, for a Librarian to change a member's preferences, the member must be present and give consent. Head Librarians can remove preferences from a member if they need to suspend or ban a member from the library.

Use Case 7: **Checking Out/Returning Books**

Actor(s): Head Librarian[1], Librarians, Members

Description: While all actors have access to checkout and return books, this is done differently depending on their access level. For example, Members have to first enter their library ID and then enter the book's ISBN and ID to check out that book. A Librarian can perform similar actions for a Member given their Member ID. However, the administration can check out a book for any member and mark any book as returned at any time using an ISBN, but not requiring a MemberID.

Use Case 8: **Change Member Address/Payment Option**

Actor(s): Head Librarian[1], Members

Description: While Librarians may help Members with this process given their MemberID, only Members and Head Librarians can access a member's individual page with their preferences, address, and payment options. Head Librarians can remove a member's address and/or payment option without that Member's presence, allowing them to ban or restrict members from the library. Only Members can set a new address or new payment option for themselves in the Library Database. On a Member's page, users will see options to add preferences, address(es), and payment option(s).

Use Case 9: **Popularity of Book**

Actor(s): Head Librarian[1]

Description: To compute the data on which books are the most popular in the library and report that, the Head Librarian would need to extract and combine data from multiple points in the database. On their screen, they will see options to generate reports including popularity of book reports. This will match a specific book entity with its status entity and recover the history of that book's status. This will allow the Head Librarian to calculate popularity based on a book's historical availability attribute in the status entity.

Use Case 10:	**Popular Authors**
Actor(s):	Head Librarian[1]
Description:	The Head Librarians can aggregate data of all Members in the system, and their Preferences into a report. This will appear in the reports section of their screen as mentioned in use case twelve. From there, they will be able to see the most common favorite authors and the report will automatically include a list of authors ranked by Member choice.