

## Introduction:

### Project Overview -

This project involves the design, implementation, and management of a relational database system for a small library. The system is intended to efficiently handle the library's collection of loanable items, manage different types of memberships, enforce borrowing policies, and generate insightful reports. By creating a well-structured database, the library can streamline operations, improve accessibility to resources, and ensure proper tracking of borrowed materials.

### Scope -

This project will include a user interface for both the library staff and their clients. The library staff interface will include the ability to check out items, process returns, add new items, and manage client accounts. The client side will allow for searching the catalog, reserving items, checking loan status, etc. This project will be structured using SQL RDBMS databases. We will have client IDs, staff IDs, and inventory IDs to keep track of all interactions between users, the material, and the library staff. The database will implement rules for borrowing, due dates, and fines, ensuring compliance with library policies. Additionally, the system will provide reporting features for analyzing borrowing trends and member activity.

## ER Modeling Components:

### User:

- *Attributes:* User\_Id(Str), Media\_Checked(Int), Name(Str), DOB(datetime), Email(Str), Password(Str), Phone(Str), Membership(Str), Date\_Registered(datetime), Current\_Fee\_Amount(Int)
- *Constraints:* Limited # of media a user can checkout depending on membership (5 for adult and 8 for youth), for youth account age must be less than 13, youth members will not be allowed to check out certain media, fees for overdue media, membership cheaper for seniors
- *Relationships:* Gets managed by one or more staff. Is a member of a single type. Reserves zero to eight books/movies/magazines/games. Pays zero or more fines.

### Staff:

- *Attributes:* Staff\_Id(Int), Name(Str), Email(Str), Password(Str)
- *Constraints:* works for the library, can be both a user and a staff member, must be an adult
- *Relationships:* Manages zero or more users. Manages zero or more reports.

### Magazine:

- *Attributes:* Magazine\_Id(Int), Title(Str), Issue\_Number(Int), Publication\_Date(datetime), Publisher(Str), Genre(Str), ISSN(Str), Date\_Lib\_Acquired(datetime), Availability(Str), User\_Id(Str), Checked\_Date(datetime), Due\_Date(datetime)
- *Constraints:* Can only be checked out by one user at a time

- *Relationships*: Is rented by zero or one users. Can be reserved by zero or more users. Is managed by one or more staff members.

#### Games:

- *Attributes*: Game\_Id(Int), Publication\_Date(datetime), Publisher(Str), Console(Str), UPC(int), Date\_Lib\_Acquired(datetime), Availability(Str), User\_Id(Str), Checked\_Date(datetime), Due\_Date(datetime)
- *Constraints*: Can only be checked out by one user at a time
- *Relationships*: Is rented by zero or one users. Can be reserved by zero or more users. Is managed by one or more staff members.

#### Books:

- *Attributes*: ISBN(Str), Title(Str), Author(Str), Release\_Date(datetime), Genre(Str), Publication\_Date(datetime), Date\_Lib\_Acquired(datetime), Availability(Str), User\_Id(Str), Checked\_Date(datetime), Due\_Date(datetime)
- *Constraints*: Can only be checked out by one user at a time
- *Relationships*: Is rented by zero or one users. Can be reserved by zero or more users. Is managed by one or more staff members.

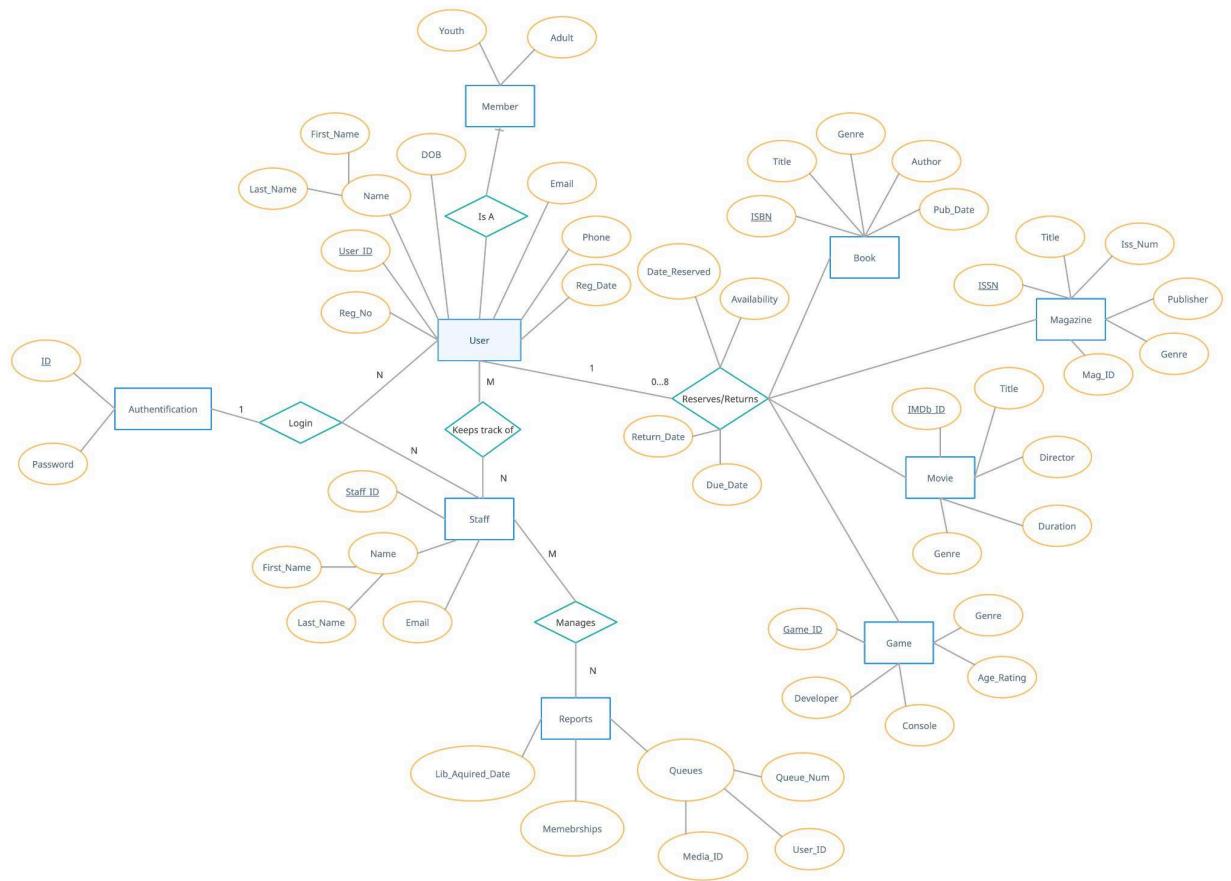
#### Movies:

- *Attributes*: IMDb\_Id(Int), Title(Str), Director(Str), Release\_Date(datetime), Availability(Str), Genre(Str), Duration(Str), Rating(Str), IMDb\_Score(Int), Metascore(Int), Date\_Lib\_Acquired(datetime), User\_Id(Str), Checked\_Date(datetime), Due\_Date(datetime)
- *Constraints*: Can only be checked out by one user at a time
- *Relationships*: Is rented by zero or one users. Can be reserved by zero or more users. Is managed by one or more staff members.

#### Reservation Queue:

- *Attributes*: Media\_Id(Int), User\_id(Int), Queue\_Number(Int)
- *Constraints*: A user can only be in the queue to check out some media once per item
- *Relationships*: Contains zero or more books/movies/magazines/games. Is managed by zero or more staff.

## ER Model:



## Meeting Notes:

Date: March 3, 2025

Time: 9:00 AM - 10:00 AM

Location: Discord Meeting

Objective: To discuss the 3rd part of the project.

Team Members Present: Carter, Christina, Elizabeth, Jaret, Ryan

## Task Completion Confirmation:

Chris: Yes

Carter: Yes

Christina: Yes

Elizabeth: Yes

Jaret: Yes

Ryan: Yes

#### Brainstorming Session:

- We started by deciding to work on the ER Diagram.
- Elizabeth volunteered to work on the ER Diagram.
- Christina then decided to work on the Introduction.
- Decided to meet up next week to discuss the ER Diagram.
- Once these details were decided, we decided to amend the meeting.

#### Tasks Allocated:

Chris: N/A

Carter: N/A

Christina: Work on Introduction.

Elizabeth: Create the ER diagram.

Jaret: N/A

Ryan: N/A

#### Follow-Up Actions:

- Work on Part 3 of the project.
- Next meeting we will look over the ER diagram and discuss if anything needs to be changed/edited.

Schedule the next meeting: 3/10/2025 @ 9:00AM