Conceptual Modeling

Team: DataVerse

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Introduction

Project Overview

This is a library database that will provide an easy, efficient, user-friendly platform for managing book inventory, tracking checkouts and returns, and administering user access to library resources. The design will be implemented to improve organization and simplify library operations. It will enhance user experience by easily providing information such as book availability, due dates, and user activity. This will be done using MySQL.

Scope

Using a MySQL-based relational database, we are able to organize and categorize each book and digital media item by different attributes such as title, author or creator, ISBN, etc. We are able to use it for clients in the database using unique ID, name, contact information, membership type, and account status. We are also using a user-friendly interface for library staff and for clients as well. The UI will consist of searching for items, reserving, for the client side, while for the staff side being able to track transactions between customers and the status for the items.

Identifying ER Modeling Components

Identify Entities

- Book
- Check-out transaction
- Copies of Books
- Library Member
- Reservations

Defining Attributes

- Book: **ISBN**, Author, Title, Year of publication , Genre

- Check-out transaction: **Transaction ID**, *Member ID*, Check-Out Date, Due Date, Return Date, Fine Amount, Item ID
- Copies of Books: **Item ID**, *ISBN*, Availability
- Library Member: **Member ID**, Name, Contact Information, Membership Type, Account Status
- Reservations: **Reservation ID**, *Member ID*, Item ID, Date of Reservation, Status

Define Relationships

- Copies: One-to-many relationship from Book to Copies of Books
- Is_reserved: one-to-many relationship from Book to Reservations
- Borrows: One-to-many Relationship from Library Member to Check-out transaction
- Reserves: One-to-many Relationship from Library Member to Reservations
- Is_borrowed: One-to-many Relationship from Book to Check-out Transaction

ER Model