

Introduction:

The core objective of our database project is to design a user-friendly and efficient library management system tailored for students and the public. This system supports searching, reserving, and checking out both physical and digital resources, such as e-books and PDFs, through a centralized and digitized ticketing model. By modernizing core library operations, the project aims to enhance user accessibility, reduce manual processes, and create a more responsive and resource-efficient environment.

This project includes tracking the full media catalog—covering books, movies, magazines, and digital formats—along with managing user roles, reservations, checkouts, returns, and renewals. Each transaction is recorded with a unique ID to ensure accuracy and accountability. When a user checks out an item, a digital ticket is created and remains active until the item is returned. Renewals require a new ticket, providing clear history and tracking. The system focuses on media access and circulation within the library and does not cover third-party integrations or advanced analytics.

Project Glossary :

- Patron : An individual who uses the library service and/or checks out item from the library
- Ticketing/Ticket System : A digital system where a new ticket is generated for each checkout; the ticket remains active until the book is returned and then gets closed.
- Unique ID : A uniquely distinct identification number assigned to each book and user (patron) in the system to ensure accurate tracking and management.
- Reservation System : This allows users to search for and reserve available books or digital resources in advance.
- Renewal : The process of checking out the same book again after the initial ticket is closed, instead of extending the existing ticket.
- E-Book : An electronic version of a printed book, accessible digitally.
- PDFs : Portable Document Format

Relational dictionary:

User		
Attribute Name	Data Type	Description
<u>User_id</u>	INT	Unique ID for every patreon in our database
Username	VARCHAR	Name of library person
has_checked_out	VARCHAR	Media patreon has checked out
role	CHAR(10)	Descriptor of who the patreon is i.e student or professor

Book		
Attribute Name	Data Type	Description
<u>media_id</u>	INT	Identifies each individual media item
title	VARCHAR	Title of the book
genre	VARCHAR	Genre of the book
author	VARCHAR	Book's author
publisher	VARCHAR	Publisher of Book
is_reserved	BOOL	T if reserved F if available

Movie		
Attribute Name	Data Type	Description
<u>media_id</u>	INT	Identifies each individual media item
title	VARCHAR	Title of the movie
genre	VARCHAR	Genre of the movie
director	VARCHAR	Movie's director
publisher	VARCHAR	Publisher of movie
is_reserved	BOOL	T if reserved F if available

Magazine		
Attribute Name	Data Type	Description
<u>media_id</u>	INT	Identifies each individual media item
volume_no	INT	Volume number
issue_no	INT	Issue number
title	VARCHAR	Title of the media
genre	VARCHAR	Genre of the magazine
publication	VARCHAR	Publisher of magazine
is_reserved	BOOL	T if reserved F if available

DigitalMedia		
Attribute Name	Data Type	Description
<u>media_id</u>	INT	Identifies each individual media item
title	VARCHAR	Title of the media
genre	VARCHAR	Genre of the media
publisher	VARCHAR	Publisher of the media
file_type	VARCHAR	Type of file the media is

Media		
Attribute Name	Data Type	Description
<u>media_id</u>	INT	Identifies each individual media item
date_published	timestamp	Date the media was published

Reserves		
Attribute Name	Data Type	Description
<u>media_id</u>	INT	Identifies each individual media item
user_id	INT	Unique ID for every user in our database

Checks_out		
Attribute Name	Data Type	Description
<u>checkout_id</u>	INT	Unique ID for every instance of a check out
user_id	INT	Unique ID for every user in our database
media_id	INT	Identifies each individual media item
checkout_date	timestamp	Date the check out took place
due_date	timestamp	Date the media needs to be returned

Downloads		
Attribute Name	Data Type	Description
<u>download_id</u>	INT	Unique ID for every instance of a download
media_id	INT	Identifies each individual media item
user_id	INT	Unique ID for every user in our database
download_date	timestamp	Date the media was downloaded

Return		
Attribute Name	Data Type	Description
media_id	INT	Identifies each individual media item
user_id	INT	Unique ID for every user in our database
<u>checkout_id</u>	INT	Date the check out took place