Database Management System Mini Project on

Automated Library Management System

By

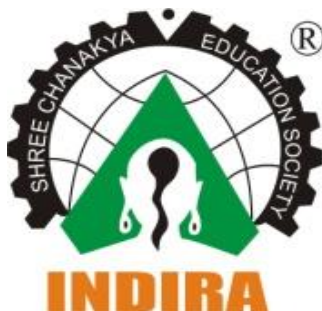**Mr. Aniket Ekshinge**   **Mr. Divesh Achhra**

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Front End Used: PHP, JAVA, CSS

Back End Used: MySQL

Abstract

A Library Management System (LMS) is a critical tool for modern libraries to efficiently organize, catalog, and provide access to their vast collections of books, digital resources, and other materials. This abstract provides an overview of the key features and benefits of a typical Library Management System.

A Library Management System offers a comprehensive solution for librarians and patrons alike. It enables librarians to streamline their administrative tasks, such as cataloging, acquisitions, circulation, and inventory management. Through a user-friendly interface, librarians can quickly add, update, and remove items from the library's catalog, making it easier to track and maintain the collection.
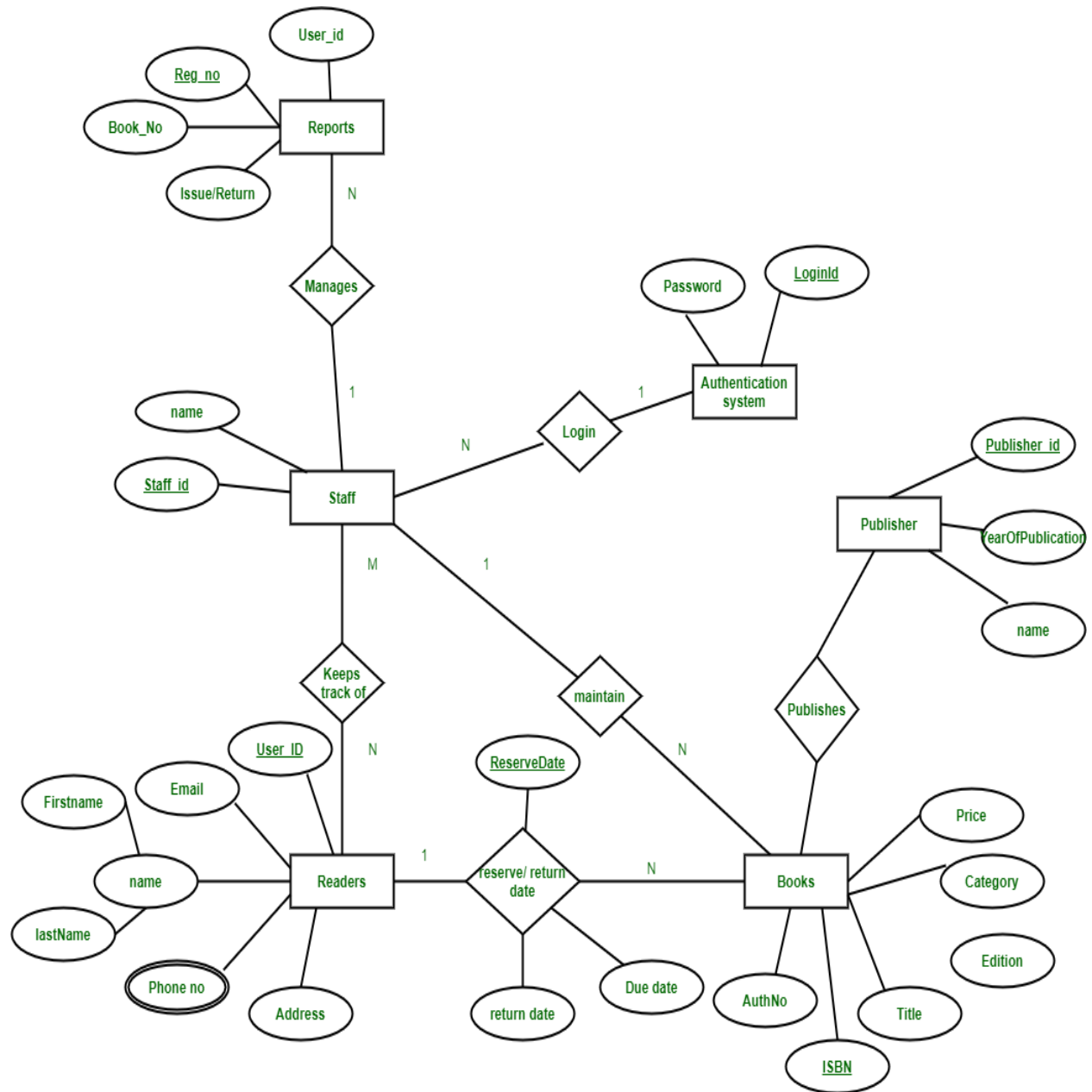
<u>Introduction</u>

Libraries have been the cornerstone of knowledge preservation and dissemination for centuries, serving as repositories of books, information, and cultural heritage. In today's digital age, the role of libraries has expanded to encompass a wide array of resources, from traditional printed materials to digital content. To effectively manage and provide access to these diverse collections, modern libraries rely on Library Management Systems (LMS).
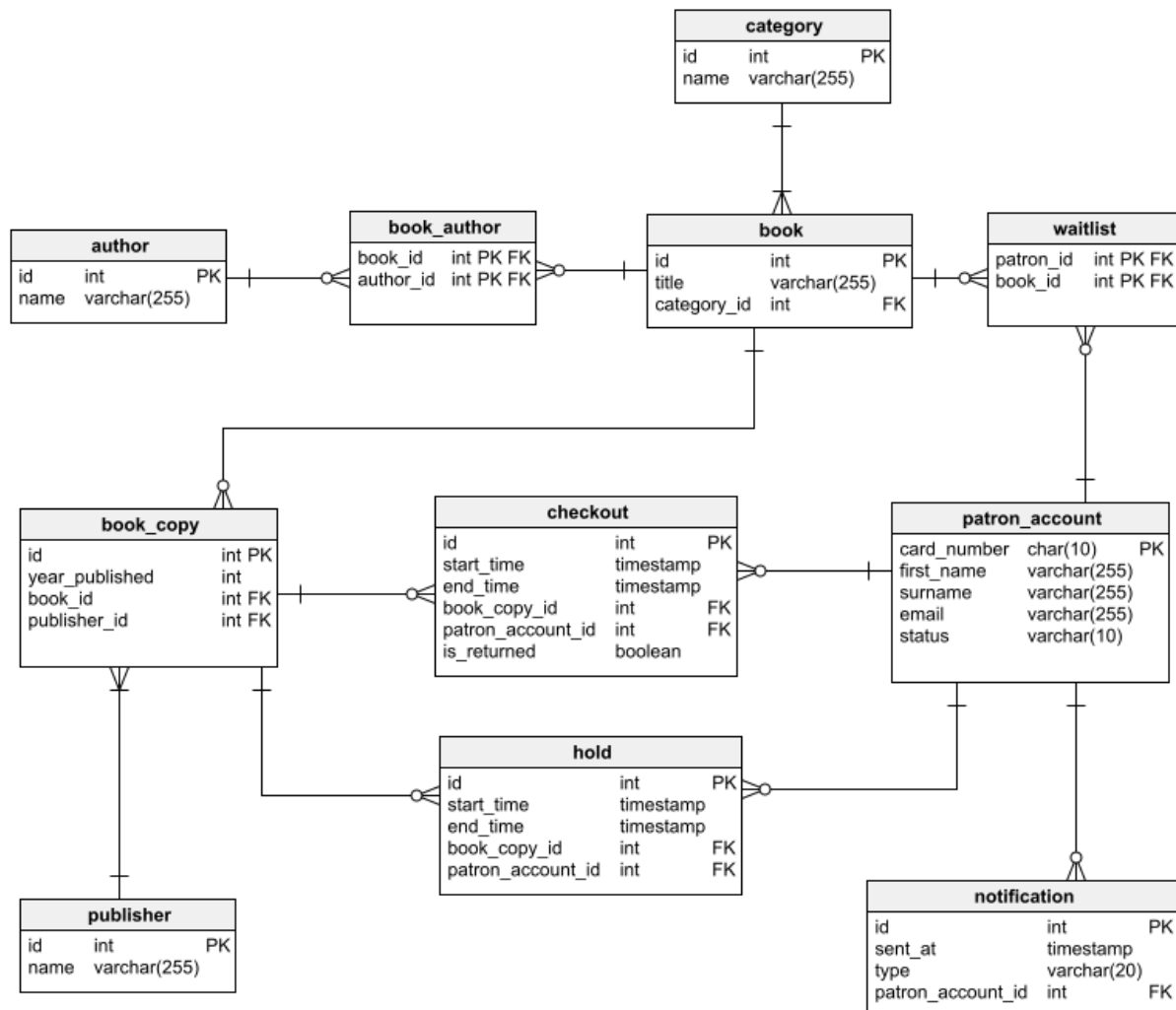
A Library Management System, often abbreviated as LMS, is a comprehensive software solution designed to facilitate the efficient organization, maintenance, and utilization of a library's resources. Whether in a school, university, public, or special library, the implementation of an LMS has become indispensable for librarians and patrons alike.

The fundamental purpose of an LMS is to simplify the complex and multifaceted tasks associated with library operations. It automates and streamlines various administrative processes, allowing librarians to focus more on assisting library users and curating their collections. Additionally, it empowers library patrons by providing them with convenient tools to search, access, and borrow library materials.
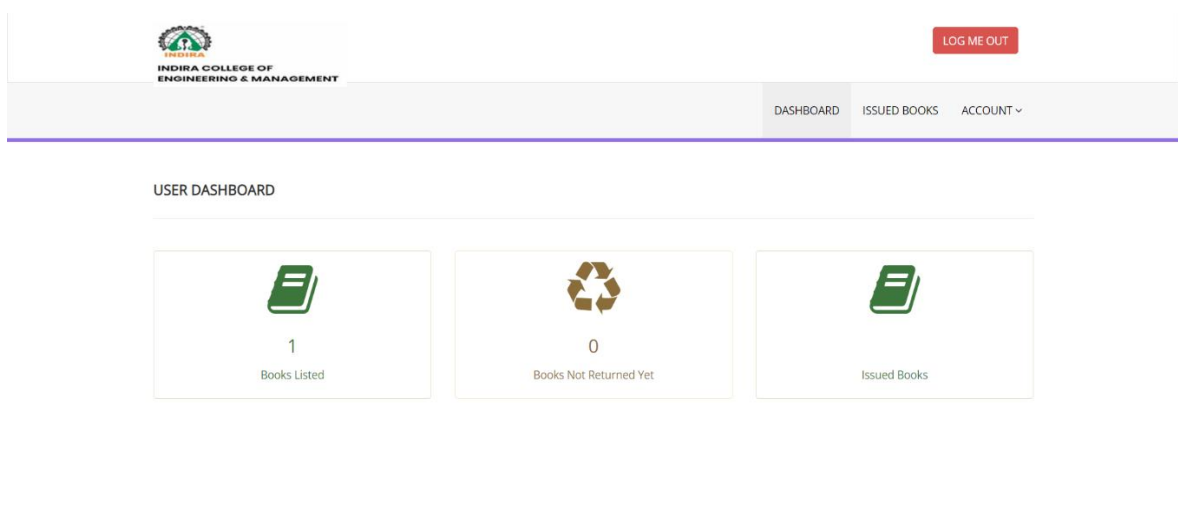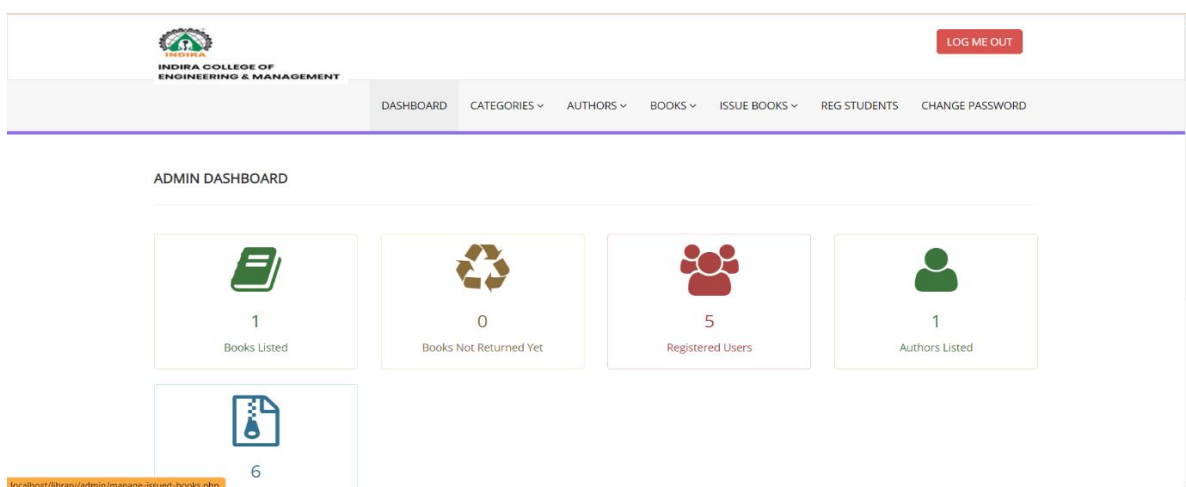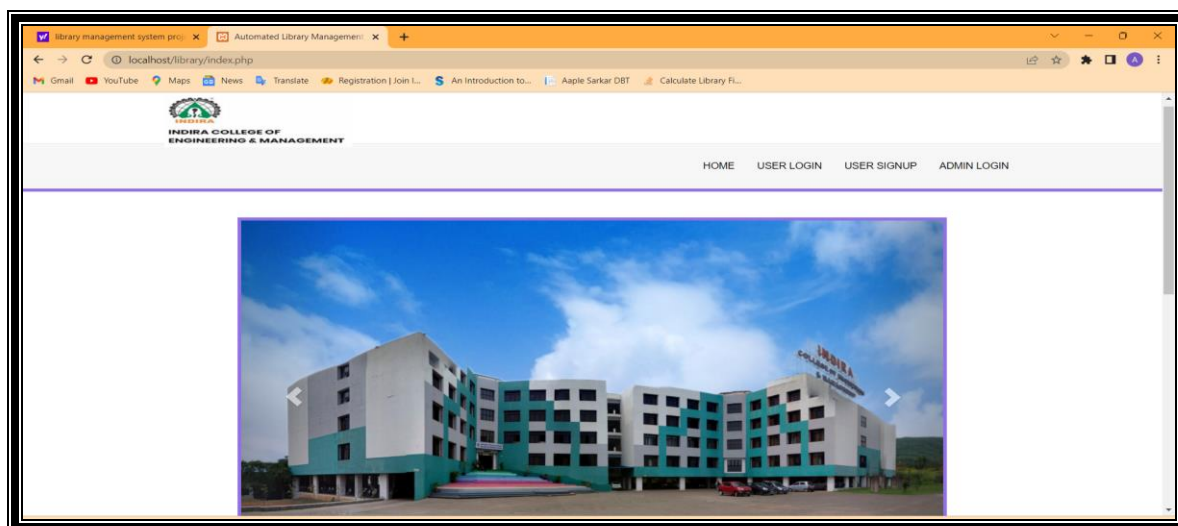
ER Diagram

Relational Model

category
id	int	PK
name	varchar(255)	

author
id	int	PK
name	varchar(255)	

book_author
book_id	int	PK FK
author_id	int	PK FK

book
id	int	PK
title	varchar(255)	
category_id	int	FK

waitlist
patron_id	int	PK FK
book_id	int	PK FK

book_copy
id	int	PK
year_published	int	
book_id	int	FK
publisher_id	int	FK

checkout
id	int	PK
start_time	timestamp	
end_time	timestamp	
book_copy_id	int	FK
patron_account_id	int	FK
is_returned	boolean	

patron_account
card_number	char(10)	PK
first_name	varchar(255)	
surname	varchar(255)	
email	varchar(255)	
status	varchar(10)	

hold
id	int	PK
start_time	timestamp	
end_time	timestamp	
book_copy_id	int	FK
patron_account_id	int	FK

publisher
id	int	PK
name	varchar(255)	

notification
id	int	PK
sent_at	timestamp	
type	varchar(20)	
patron_account_id	int	FK

Screenshots of Output

Testing

- ✓ Functional Testing

- ✓ User Interface (UI) Testing

- ✓ Performance Testing

- ✓ Security Testing

- ✓ Integration Testing

- ✓ User Acceptance Testing (UAT)

- ✓ Regression Testing

- ✓ Load Testing

- ✓ Usability Testing

- ✓ Accessibility Testing:

<u>Conclusion</u>

In conclusion, a Library Management System (LMS) is a critical tool for modern libraries, serving as the backbone for efficiently organizing, maintaining, and providing access to their extensive collections of materials, both physical and digital. Throughout this discussion, we have explored the fundamental role of an LMS in streamlining library operations, improving user experiences, and adapting to the evolving demands of the digital age.

The solution to this is an online library management system which take care of all the work by automating and digitizing the whole process. Our application is based on Java and is linked to a relational database (sql). The frontend part has been coded using Java and its packages like awt and swing. The backend is supported and connected with database using java, its libraries and APIs. With the increase in the workload of the library, new features can be added to the existing application to make it relevant in the future as well.