

# **Library Management System Project Report**

## **1. Introduction :**

The Library Management System is a structured SQL-based project designed to simplify the process of managing a digital library. It supports functionalities like managing books, authors, members, and loan records. This project automates borrowing operations and provides insights through views and triggers. It is ideal for understanding database schema design, relationships, and basic SQL functionalities.

## **2. Abstract**

This project focuses on developing a digital library database system that tracks books, authors, members, and their book loans. The system includes a relational schema with appropriate constraints, sample data, and advanced SQL features like views and triggers. The system can be extended to support overdue tracking and automatic updates of book availability.

## **3. Tools Used**

- MySQL Server
- MySQL Workbench
- SQL
- ER Diagram (Generated via MySQL Workbench)

## **4. Steps Involved in Building the Project**

1. Created the library\_db database.
2. Defined the main entities: books, authors, members, book\_authors, and loans.
3. Established relationships using foreign keys (e.g., book-author many-to-many).
4. Populated tables with sample data.
5. Created a trigger to automatically decrease book copies upon a loan.
6. Built a view (overdue\_books) to report books not returned after due date.
7. Generated and exported an ER diagram using MySQL Workbench.

8. Exported the SQL schema and queries as library\_management\_system.sql.

## **5. Conclusion**

The Library Management System project helped reinforce concepts of database design, relational integrity, and SQL programming. With practical features like overdue tracking and automatic copy updates, it simulates a real-world digital library. This project can be a foundation for developing a full-stack library management application in the future.

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