RD INFRO TECHNOLOGY – SQL Internship Program

Task 1: Database Requirement Analysis

Project Title: Library Management System

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Submission Deadline: 19 November 2025

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1. Objective

The objective of this task is to understand and define the data requirements of a **Library Management System (LMS)**.
The system aims to manage the operations of a library — including book records, member registrations, borrowing and returning transactions, and fine calculations — in an efficient and structured manner.

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2. Project Overview

The Library Management System (LMS) is designed to automate and simplify the daily activities of a library.
It stores details of books, members, borrowing transactions, and librarians.
The system also keeps track of due dates, manages fines for late returns, and maintains book availability.

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3. Stakeholder Analysis

Stakeholder	Role	Data They Provide	Data They Need

Student / Member	Borrows and returns books	Member details, issued books	Book availability, due dates
Librarian	Manages issue and return process	Book issue and return details	Member and book information
Admin	Oversees overall system	Librarian and member details	Reports and system status

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4. Entities and Attributes

Entity	Attributes
Member	Member_ID *(Primary Key)*, Name, Email, Phone, Address, Join_Date
Book	Book_ID *(Primary Key)*, Title, Author, Publisher_ID *(Foreign Key)*, ISBN, Total_Copies, Available_Copies
Borrow	Borrow_ID *(Primary Key)*, Book_ID *(Foreign Key)*, Member_ID *(Foreign Key)*, Librarian_ID *(Foreign Key)*, Issue_Date, Due_Date, Return_Date, Fine
Librarian	Librarian_ID *(Primary Key)*, Name, Email, Phone
Publisher	Publisher_ID *(Primary Key)*, Name, Contact
Category	Category_ID *(Primary Key)*, Category_Name
Book_Category	Book_ID *(Foreign Key)*, Category_ID *(Foreign Key)*

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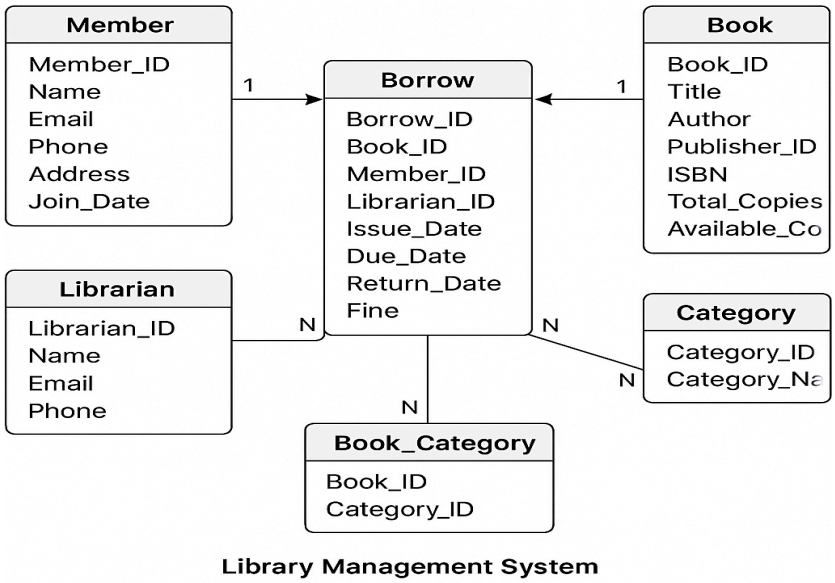
5. Relationships

- One **Member** can borrow many **Books** → (1:N)
- One **Book** can be borrowed many times by different **Members** → (1:N through Borrow)
- One **Publisher** can publish many **Books** → (1:N)
- One **Book** can belong to many **Categories** → (M:N through Book_Category)
- One **Librarian** can issue many **Borrow** records → (1:N)

6. ER Diagram



Library Management System

7. Conclusion

The **Library Management System** database design identifies all necessary entities, attributes, and relationships required for managing library operations.

This analysis forms the foundation for creating database tables in SQL, ensuring data integrity, minimizing redundancy, and enabling efficient data retrieval.