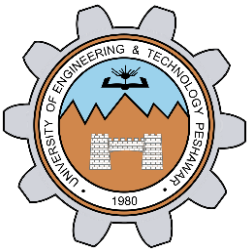
Database management system
Project: Library management system
Milestone: 01



Spring 2025

CSE-403L: Database management system

Submitted by:

Member names and their registration no:

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Class Section: A

"On my honor, as student of University of Engineering and Technology, I have neither given nor received unauthorized assistance on this academic work."

Submitted to:

Engr. Sumayyea Salahuddin

DATED: 5/25/2025

Department of Computer Systems Engineering

University of Engineering and Technology, Peshawar

Key Milestone 1: Conceptual Schema

Please submit the "**WORD Document**" containing the following **on or before 25th May 2025** :

1. Entity Description (in tabular form as given in Lecture 2b, Slide#3)
2. Detailed Business Rules (in numbered list form as given in Lecture 2b, Slide#4)
3. Entity Relationship Diagram (ERD) (drawn in draw.io and in form covered in Lecture 2)
4. Enhanced Entity Relationship Diagram (EERD) (drawn in draw.io and in form covered in Lecture 3)
5. References (It must contain all the references that you have taken help including AI Tools like ChatGPT, Bing AI, etc.)

NOTE:
1. The team lead must submit one document on behalf of a team to avoid duplication.
2. When submitting the required "WORD Document", the team lead must mention all the group members' names in a private comment.
3. Data and word document must be with all the group members.
4. **This is a hard deadline and will not be extended**.

Thank you.

Solution:

1. **Entity Description (in tabular form as given in Lecture 2b, Slide#3).**

📘 Entity Description Table

Entity	Attributes	Description
Books	`id`, `title`, `author`, `category_id`, `available`, `created_at`, `updated_at`	Stores information about each book in the library
Categories	`id`, `name`, `created_at`, `updated_at`	Represents book genres or categories (e.g., Science, Fiction)
Members	`id`, `name`, `email`, `phone`, `created_at`, `updated_at`	Stores details of library members/users
Loans	`id`, `book_id`, `member_id`, `borrow_date`, `return_date`, `status`, `created_at`, `updated_at`	Tracks the borrowing and return activity of books

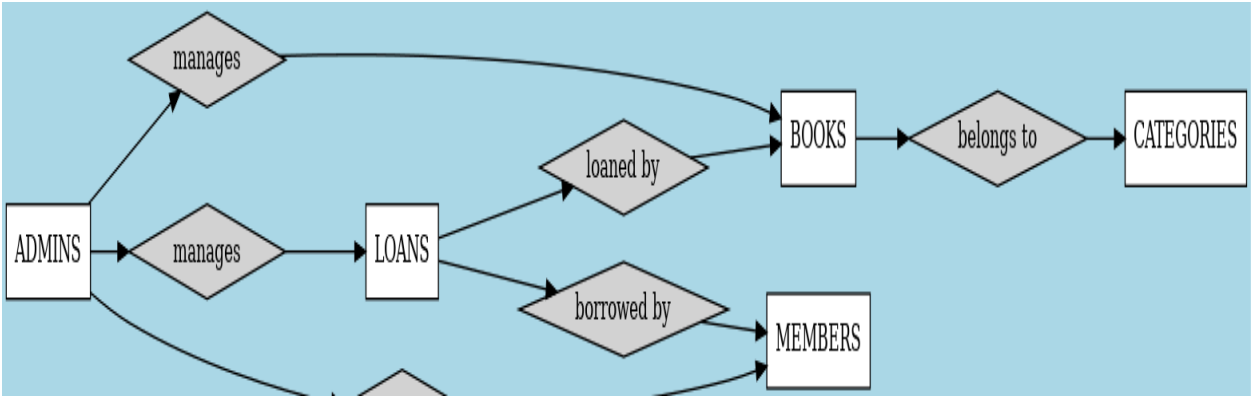
Entity	Attributes	Description
Admins	`id`, `name`, `email`, `password`, `created_at`, `updated_at`	Admin users who can manage books, members, and loans

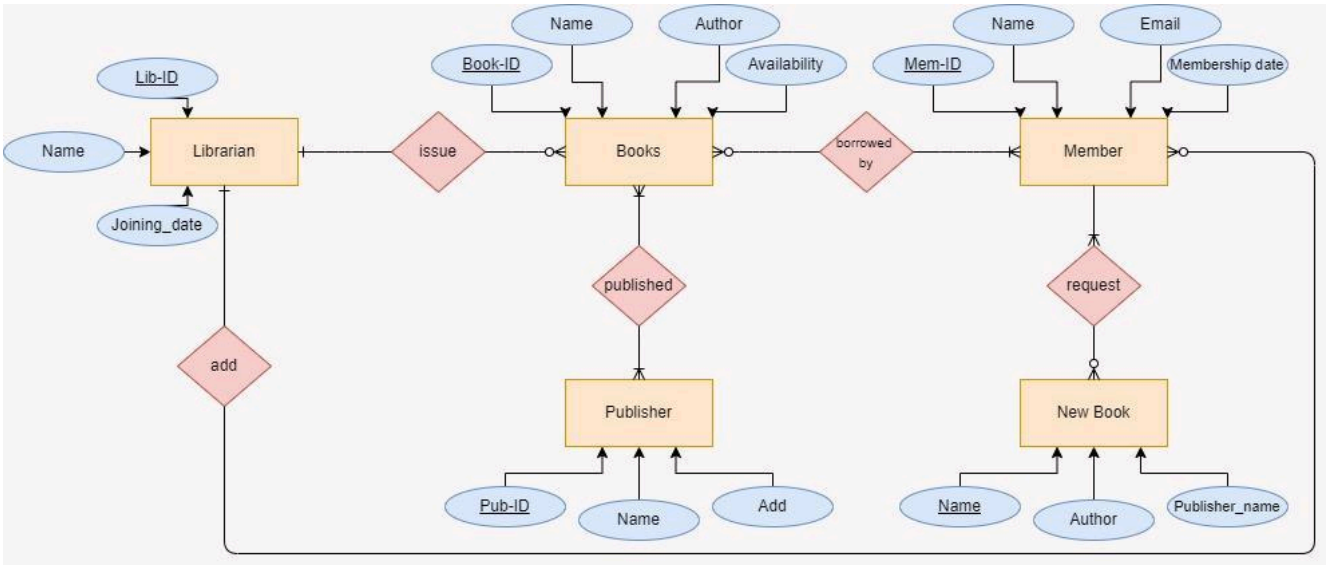
2. **Detailed Business Rules (in numbered list form as given in Lecture 2b, Slide#4)**

📘 Detailed Business Rules

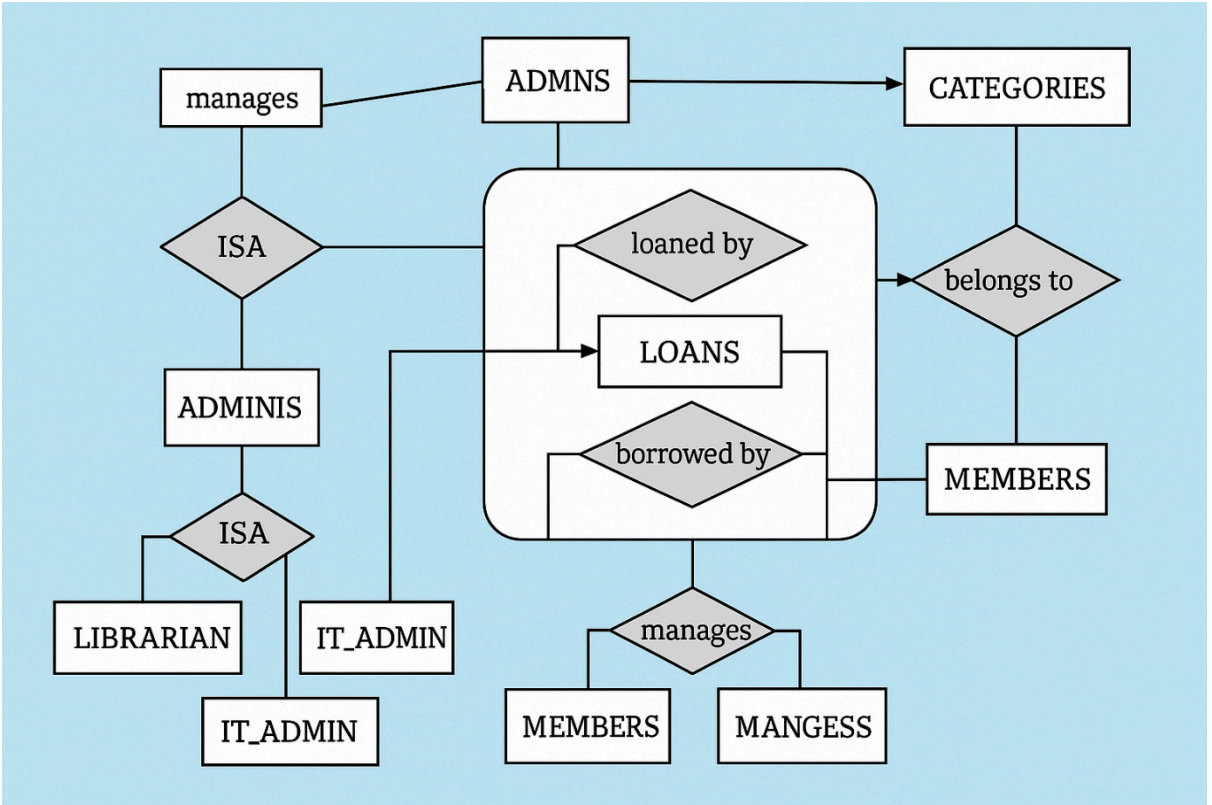
1. **Only registered members** can borrow books from the library.
2. **Each member can borrow a maximum of 3 books at a time**.
3. **Books must be returned within 14 days** from the borrow date.
4. If a book is **returned late**, it will be marked as **overdue**, and a **fine may be applied** (optional implementation).
5. **A book cannot be borrowed** if it is already loaned out (i.e., not available).
6. **Admins must log in** to access the dashboard and perform management tasks.
7. **Only admins** can add, edit, or delete books, members, and loan records.
8. Each book must belong to **one category** (e.g., Fiction, Science, History).
9. Members must provide a **valid email and phone number** when registering.
10. A **loan record is created** every time a book is borrowed, including member ID, book ID, borrow date, return date, and status.
11. **Search functionality** should be available to quickly find books by title, author, or category.
12. Members can view their **borrowing history** (list of books they have borrowed in the past).
13. The system should prevent **duplicate book titles and member emails**.
14. **Admin dashboard** should display summary statistics: total books, issued books, overdue books, and total members.
15. **Book availability** status should automatically update when a book is borrowed or returned.

3. **Entity Relationship Diagram (drawn in draw.io and in form covered in Lecture 2).**





4. **Enhanced Entity Relationship Diagram (EERD) (drawn in draw.io and in form covered in Lecture 3).**



5. References (It must contain all the references that you have taken help including AI Tools like ChatGPT, Bing AI, etc.)

YouTube videos:
https://www.youtube.com/watch?v=ncfg1WEwdkw&pp=ygUuaG93IHRvIGRyYXcgRVIgYW5kIEVFUiBkaWFncmFtIHRocm91Z2ggZHJhdy5pbw%3D%3D

https://www.youtube.com/watch?v=q9_5tb-HgTU&pp=ygUuaG93IHRvIGRyYXcgRVIgYW5kIEVFUiBkaWFncmFtIHRocm91Z2ggZHJhdy5pbw%3D%3D

https://www.youtube.com/watch?v=lucZPJgxBiw&pp=ygUuaG93IHRvIGRyYXcgRVIgYW5kIEVFUiBkaWFncmFtIHRocm91Z2ggZHJhdy5pbw%3D%3D

chat-Gpt, Claude, deep seek and Gemini.