CS202 Project Report (Second Submission)
Library Management System (LMS)
1/17/2021

Group 15:

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Database Design

The database consists of 5 tables. The tables are as follows:

1. **Manager Table:**
   - manager_id is the **primary key**.

2. **Users Table:**
   - user_id is the **primary key**.

3. **Publishers Table:**
   - publisher_id is the **primary key**.

4. **Books Table:**
   - book_id is the **primary key**.
   - publisher_id is a **foreign key**.

5. **Borrower_details Table:**
   This table is used to store the information and keep a track of when and who borrowed a book and when it is returned.

   - user_id is a **foreign key.**
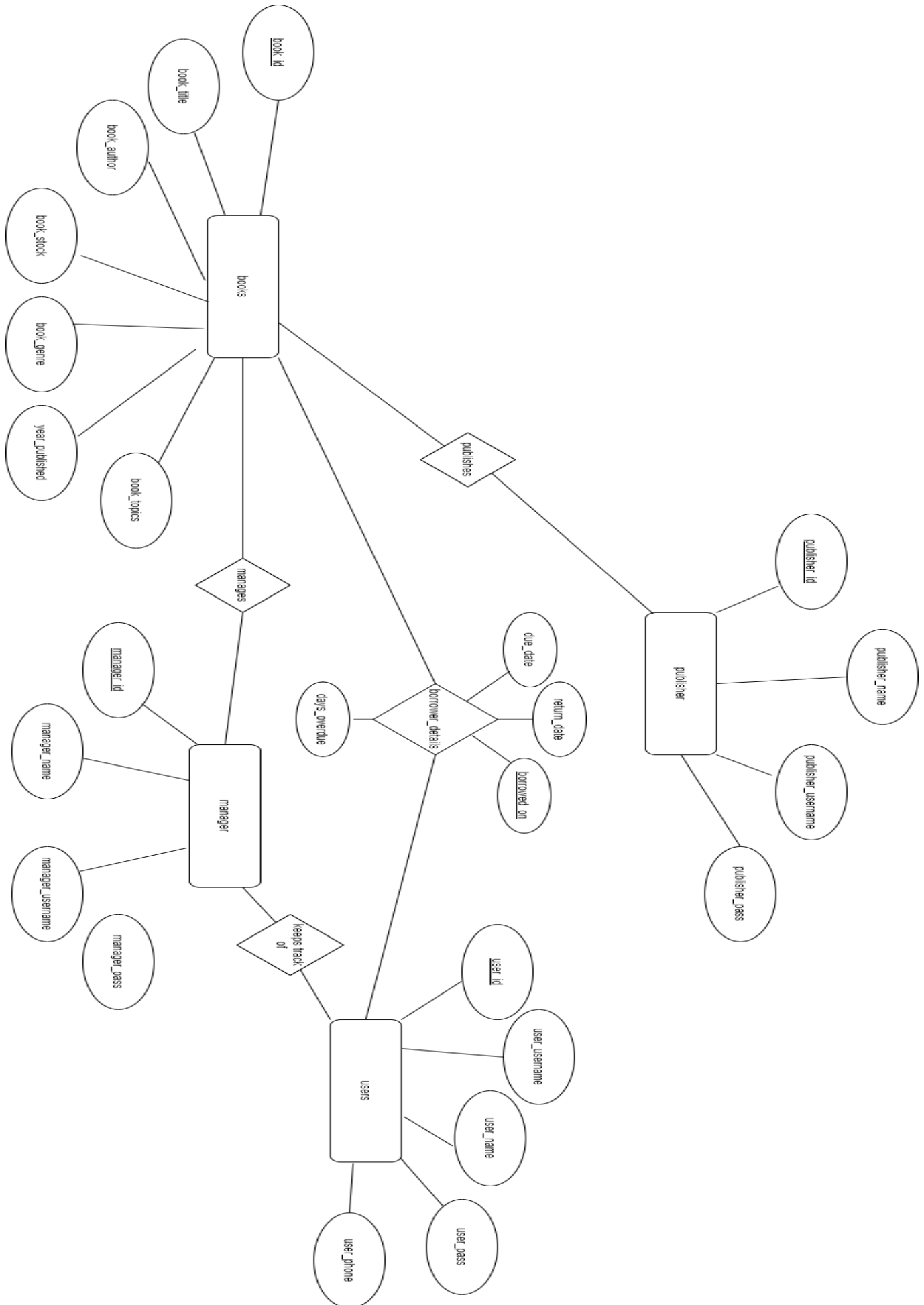   - book_id is a **foreign key.**

Relationships:
- **Manager** and **books** have a one to many relationship. A library manager can issue or return many books but a book can be issued or returned by one library manager.

- **Users** and **books** have a many to many relationship. A book can be borrowed by many users and multiple users can borrow multiple books.

- **Publisher** and **books** have a one to many relationship. A publisher can publish many books but a book can only have one publisher.

Entities:

- **manager** (<u>manager_id</u>, manager_name, manager_username, manager_pass)

- **users** (<u>user_id</u>, user_name, user_username, user_pass, user_phone)

- **publishers** (<u>publisher_id</u>, publisher_name, publisher_username, publisher_pass)

- **books** (<u>book_id</u>, book_title, book_author, book_genre, book_topics, publisher_id, year_published, book_available, status)

- **borrower_details** (<u>user_id</u>, <u>book_id</u>, borrowed_on, due_date, return_date, days_overdue, penalty_charged)

ER-Diagram:

Changes made after first phase:

1. A new column, "penalty_charged" is added to the borrower_details table.

2. A new column, "status" is added to books table to tell the users if the book is currently borrowed or not.