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**Final Project Cover Letter**  
**(Group Work)**

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Clarissa Audrey Fabiola Kusnadi



Jeffrey



Priscilla Abigail Munthe

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## Project Details

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Project Name: Literarium. Derived from the words “literary” and “-arium”. The term “literary” pertains to the realm of literature or written compositions, whereas the suffix “-arium” is commonly used to denote a place.

Project Topic: Book Management System

Group Name: AJA

Team Members:

- 2602118490 - Clarissa Audrey Fabiola Kusnadi - L3AC
- 2602118484 - Jeffrey - L3AC
- 2602109883 - Priscilla Abigail Munthe - L3AC

This project serves as a fundamental requirement for successfully completing the Database Technology course. Its core objective is to equip students with the skills necessary for designing and implementing a comprehensive database system that addresses a practical real-world challenge. Within the scope of this project, students are granted the freedom to choose their preferred topic. In our case, we have opted for the Book Management System as our project focus.

# Problem Descriptions and Work Division

## Summary

Our proposed solution "Literarium" Book Management System aims to change the way traditional bookstores manage their manual processes and keep their customer records. This manual approach is time-consuming for both customers and staff, leading to inconvenience and potential sales losses due to lengthy wait times. The reliance on traditional file systems for inventory management further escalates the problem, resulting in errors and additional costs.

To address these challenges effectively, our proposed database system offers a comprehensive solution. The automation provided by the database system will significantly reduce the operational duration, allowing customers to find and purchase books more quickly. The structured organization of data ensures accurate record-keeping, minimizing errors, eliminating the need for excessive personnel, and ultimately reducing the costs. The transition to a database system is essential for streamlining processes, improving efficiency, and enhancing the communication between both customers and administrators.

Our "Literarium" Book Management System stands as a transformative solution that provides comprehensive features and user-friendly UI. It leverages the power of a well-designed database to revolutionize the bookstore's operations. Customers can effortlessly search for books, read reviews, and make purchases, all while receiving real-time updates on availability and Purchase status. Meanwhile, administrators can manage book listings, customer accounts, and Purchases with ease, leveraging the system's reporting and analytics capabilities for data-driven decision-making.

## Task Division

	Database Design	Database Query	Programming	UI Design	Report
Abigail	✓	✓	✓		✓

Audrey	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Jeffrey	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>

# Database Design

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## Table Description

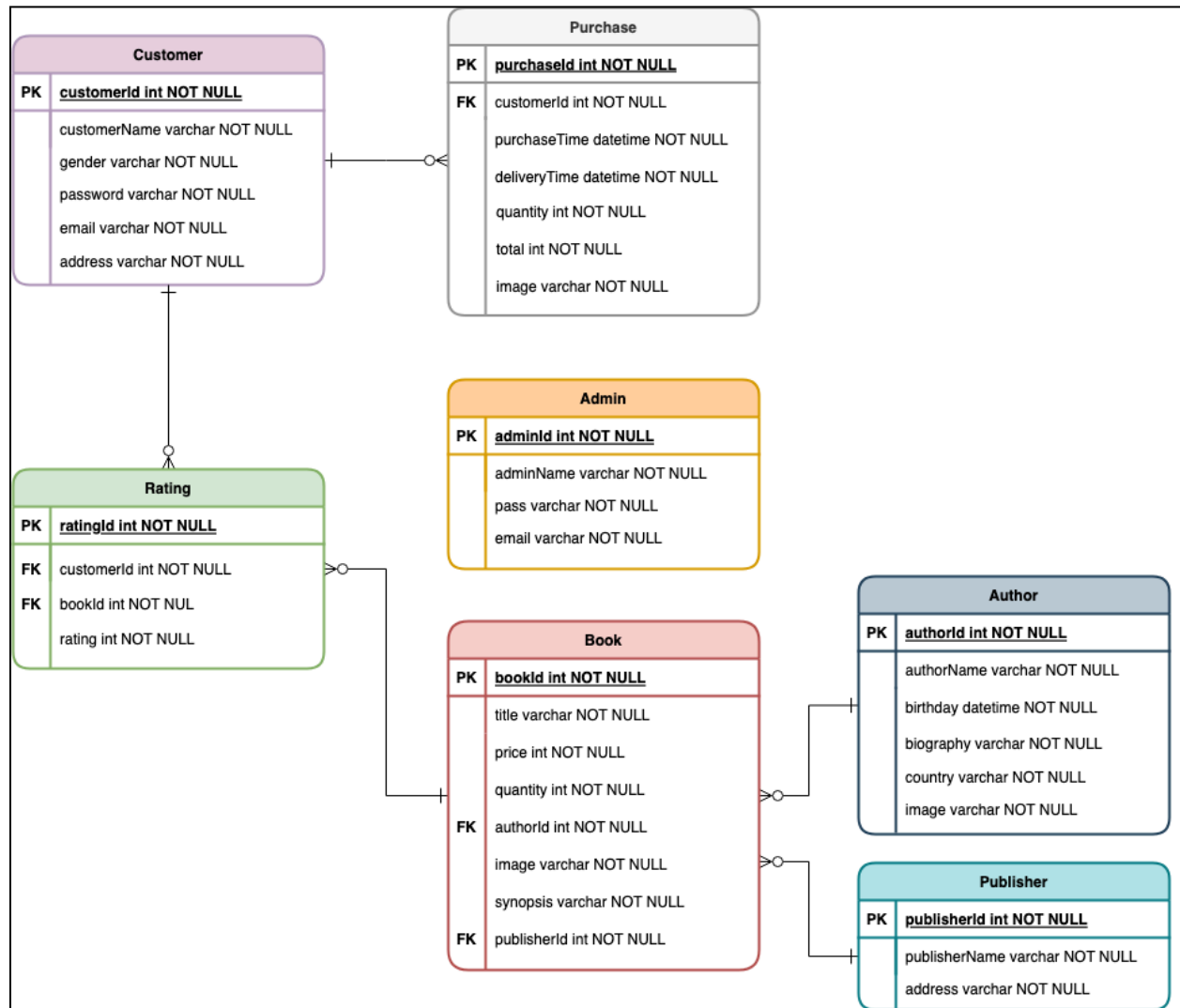
- Customer Table:
  - Attributes:
    - customerId: Unique identifier for each customer. (Primary Key)
    - customerName: Name of the customer - NOT NULL
    - gender: Gender of the customer.
    - pass: Customer's password (Note: For security reasons, it's advisable to store password hashes instead of plain text).
    - email: Email address of the customer. - unique constraints
    - address: Physical location or address of the customer.
  - Purpose: Stores information about customers who use the system, including their identification, personal details, and login credentials. Necessary for managing user accounts and authentication.
- Book Table:
  - Attributes:
    - bookId: Unique identifier for each book. (Primary Key)
    - title: Title of the book.
    - price: Price of the book.
    - quantity: Number of copies available.
    - authorId: References the id in the Author table (Foreign Key).
    - image: Image reference or path for the book cover.
    - synopsis: Brief overview or synopsis of the book.
    - publisherId: References the id in the Publisher table (Foreign Key).
  - Purpose: Stores details about available books in the system, including their pricing, availability, author information, and other descriptive data for display or purchase.
- Author Table:
  - Attributes:
    - authorId: Unique identifier for each author. (Primary Key)

- authorName: Name of the author.
  - birthday: Birthdates of the author.
  - biography: Brief or detailed information of the author's background, achievements, or notable information.
  - country: The country where the author is from.
  - image: Image reference or path for the author.
- Purpose: Stores details about the author's information, including their names, images, and countries they originate from.
- Publisher Table
  - Attributes:
    - publisherId: Unique identifier for each publisher. (Primary Key)
    - publisherName: Name of the publisher.
    - address: Physical address or location details of the publisher's headquarters or office.
  - Purpose: Serves as a repository for details such as the publisher names and location.
- Purchase Table:
  - Attributes:
    - purchaseId: Unique identifier for each Purchase (Primary Key).
    - customerId: References the id in the Customer table (Foreign Key).
    - purchaseTime: Timestamp for when the Purchase was placed.
    - deliveryTime: Timestamp for when the Purchase is expected to be delivered.
    - quantity: Number of books bought.
    - total: Total price of the books bought.
    - image: Image reference or path for the purchase bill.
  - Purpose: Records information about customer Purchases, their status, and related details such as timing and any special notes.
- Rating Table:
  - Attributes:
    - ratingId: Unique identifier for each rating. (Primary Key)



- customerId: References the id in the Customer table (Foreign Key).
  - bookId: References the id in the Book table (Foreign Key).
  - rating: Rating given by the customer for a specific book.
  - Purpose: Records ratings provided by customers for books, allowing for feedback and potential recommendation systems based on user preferences.
- Admin Table:
  - Attributes:
    - adminId: Unique identifier for each admin user.
    - adminName: Name of the admin user.
    - pass: Password for admin login (Note: Similar to customer passwords, secure storage practices are crucial here).
    - email: Email address of the admin user.
  - Purpose: Stores information about admin users who manage the system, granting access control and administrative privileges to authorized users.

## Table Relational Schema in Entity-Relationship Diagram



### 1. Customer - Purchase (1:N relationship):

A customer can have multiple purchase transactions over time, but each purchase is made by a single customer. This relationship allows one customer (1) to be associated with multiple purchases (N).

### 2. Book - Author (N:1 relationship):

Each book (1) is authored by one author (1), but an author (1) can have authored multiple books (N). This relationship indicates that many books can be associated with one author, creating a many-to-one relationship between books and authors.

### 3. Book - Publisher (N:1 relationship):

Each book (1) is published by one publisher (1), but a publisher (1) can publish multiple books (N). This relationship indicates that many books can be associated with one publisher, creating a many-to-one relationship between books and publishers.

**4. Book - Rating (1:N relationship):**

A book can have many ratings from multiple users, which means one book (1) can be associated with multiple ratings (N).

**5. Customer - Rating (1:N relationship):**

A customer (1) can give multiple ratings (N) for different books. Each rating (N) is for one specific book (1). This relationship shows that customers rate multiple books while each rating belongs to a single book.

**Relational Schema**

Customer (

```
customerId INT NOT NULL AUTO_INCREMENT,  
customerName VARCHAR(55) NOT NULL,  
gender VARCHAR(15),  
pass VARCHAR(55),  
email VARCHAR(55),  
address VARCHAR(55),  
PRIMARY KEY (customerId)
```

);

Book (

```
bookId INT NOT NULL AUTO_INCREMENT,  
title VARCHAR(55) NOT NULL,  
price INT,  
quantity INT,  
authorId INT,  
image VARCHAR(55),  
synopsis VARCHAR(200),  
publisherId INT,
```

```
PRIMARY KEY (bookId),  
FOREIGN KEY (authorId) REFERENCES Author(authorId),  
FOREIGN KEY (publisherId) REFERENCES Publisher(publisherId)  
);
```

```
Author (  
    authorId INT NOT NULL AUTO_INCREMENT,  
    authorName VARCHAR(55) NOT NULL,  
    birthday DATETIME,  
    biography VARCHAR(200),  
    country VARCHAR(55),  
    image VARCHAR(55),  
    PRIMARY KEY (authorId)  
);
```

```
Publisher (  
    publisherId INT NOT NULL AUTO_INCREMENT,  
    publisherName VARCHAR(55) NOT NULL,  
    address VARCHAR(55),  
    PRIMARY KEY (publisherId)  
);
```

```
Purchase (  
    purchaseId INT NOT NULL AUTO_INCREMENT,  
    customerId INT,  
    purchaseTime DATETIME,  
    deliveryTime DATETIME,  
    quantity INT,  
    total INT,  
    image VARCHAR(55),  
    FOREIGN KEY (customerId) REFERENCES Customer(customerId),
```

```

        PRIMARY KEY (purchaseId)
    );

Rating (
    ratingId INT NOT NULL AUTO_INCREMENT,
    customerId INT,
    bookId INT,
    rating INT,
    PRIMARY KEY (ratingId),
    FOREIGN KEY (customerId) REFERENCES Customer(customerId),
    FOREIGN KEY (bookId) REFERENCES Book(bookId)
);

Admin (
    adminId INT NOT NULL AUTO_INCREMENT,
    adminName VARCHAR(55) NOT NULL,
    pass VARCHAR(55),
    email VARCHAR(55),
    PRIMARY KEY (adminId)
);

```

## Normalisations

Our database system is already in the 3NF because it meets the following criteria:

1. Has no duplicate data in a single row.
2. The primary key uniquely identifies a single row.
3. The entire key uniquely identifies the row.
4. Eliminate any information in the table that doesn't have a direct relationship with the primary key.
5. Has simplified the data management process.

## Sample Queries

---

### SELECT

- To get the image string path and use it to be displayed on the page from the book with id equals to 10139.

```
SELECT image FROM Book WHERE bookId = 10139);
```

- To get the biography string path and use it to be displayed on the page from the author with id equals to 28.

```
SELECT biography FROM Author WHERE authorId = 28);
```

- To get information about books, including book ID, title, price, quantity, synopsis, and image, along with details about the corresponding author (author ID and name) and publisher (publisher ID and name) through inner joins on the Author and Publisher tables based on their respective IDs in the Book table.

```
SELECT Book.bookId, Book.title, Book.price, Book.quantity, Book.synopsis,  
Book.image, Author.authorId, Author.authorName, Publisher.publisherId,  
Publisher.publisherName  
FROM Book  
INNER JOIN Author ON Book.authorId = Author.authorId  
INNER JOIN Publisher ON Book.publisherId = Publisher.publisherId;
```

### UPDATE

- To modify a customer's information.

```
UPDATE Customer SET customerName = ?, gender = ?, pass = ?, email = ?, address = ?  
WHERE customerId = ?
```

- To modify a book's details.

```
UPDATE Book SET authorId = ?, title = ?, price = ?, quantity = ?, image = ?, synopsis =  
?, publisherId = ? WHERE bookId = ?
```

### INSERT

- To add a new record to the author table

```
INSERT INTO Author (authorName, birthday, image, biography, country) VALUES (?,  
?, ?, ?, ?)
```

- To add a new record to the publisher table

```
INSERT INTO Publisher (publisherName, address) VALUES (?, ?)
```

## **DELETE**

- To remove a record from the 'Rating' table where the 'bookId' matches any 'bookId' values obtained from a subquery selecting books with a specified 'authorId' from the 'Book' table.

```
DELETE FROM Rating WHERE bookId IN (SELECT bookId FROM Book WHERE  
authorId = ?)
```

## User Interfaces

**LITERARIUM**  
The Reading Haven  
Boundless Words  
Stories for All

**LOGIN**

Select Role: Admin

UID:

Password:

☐ Show Password

**Clear** **Login**

*Bookstore*

The above image shows our application's home page. Users can choose whether to log in as an admin or a customer by inserting their user ID and password.

**BOOK MANAGEMENT**

BOOK ID: 10140

AUTHOR NAME: Gillian Flynn

BOOK TITLE: Gone Girl

BOOK PRICE: 50.0

BOOK QUANTITY: 7

PUBLISHER NAME: Crown Publishing Group

COVER IMAGE:  10012 **Upload**

SYNOPSIS:  **Upload**

**Add** **Update** **Delete** **Clear**

**Book Inventory**

bookid	authorName	title	price	quantity	synopsis	image	publisherName
10140	Gillian Flynn	Gone Girl	50.0	7	Who are you? What have we done to each other? These are the questions Nick Dunne finds himself asking on the morning of his fifth wedding anniversary when his wife Amy suddenly disappears. The police suspect Nick. Amy's friends reveal that she was afraid of him, that she kept secrets from him.	10012	Crown Publis...
10152	Andy Weir	The Martian	180.0	5	Six days ago, ...	10024	Crown Publis...
10154	Nita Prose	The Maid	96.0	9	Molly Gray is ...	10026	Crown Publis...
10139	Madeline Miller	The Song of A...	100.0	6	Achilles, "the ...	10011	Bloomsbury P...
10160	Rebecca Yarros	Fourth Wing	99.0	4	Enter the brut...	10013	Entangled Pu...
10142	David Levithan	Another Day	150.0	5	Every day is t...	10014	Knopf Books f...
10143	David Levithan	Every Day	148.0	3	Every day a d...	10015	Knopf Books f...
10144	Emma Donoghue	Room	50.0	6	To five-year-...	10016	Little, Brown ...
10147	Madeline Miller	Circe	100.0	8	In the house o...	10019	Little, Brown ...
10145	E. Lockhart	We Were Liars	30.0	80	A beautiful an...	10017	Delacorte Press

The above image shows the book management page, which helps manage book collections. It lets us (admins) add, update, delete, and track our books. It also allows us to see details like author, title, price, synopsis, etc.



**CUSTOMER MANAGEMENT**

CUSTOMER ID: 1      EMAIL: test@gmail.com      ADDRESS: Bintaro

NAME: Abi      GENDER: Female      PASSWORD: \*\*\*\*\*

**Buttons:** Add, Update, Delete, Clear

**Customer Inventory**

customerId	customerName	gender	pass	email	address
1	Abi	Female	*****	test@gmail.com	Bintaro
11110	Joh	Male	*****	johns0n@gmail.c...	Singapore
11111	Tyrone	Male	****	tyronee@gmail.co	Jakarta

The above image shows the customer management page, which helps manage customer inventory. It lets us (admins) edit customer information and view details like name, email, and address.

**AUTHOR DETAILS**

AUTHOR ID: 22      NAME: Emma Donoghue      BIRTHDAY: 1969-10-24      COUNTRY: Ireland/Canada

**Buttons:** Add, Update, Delete, Clear

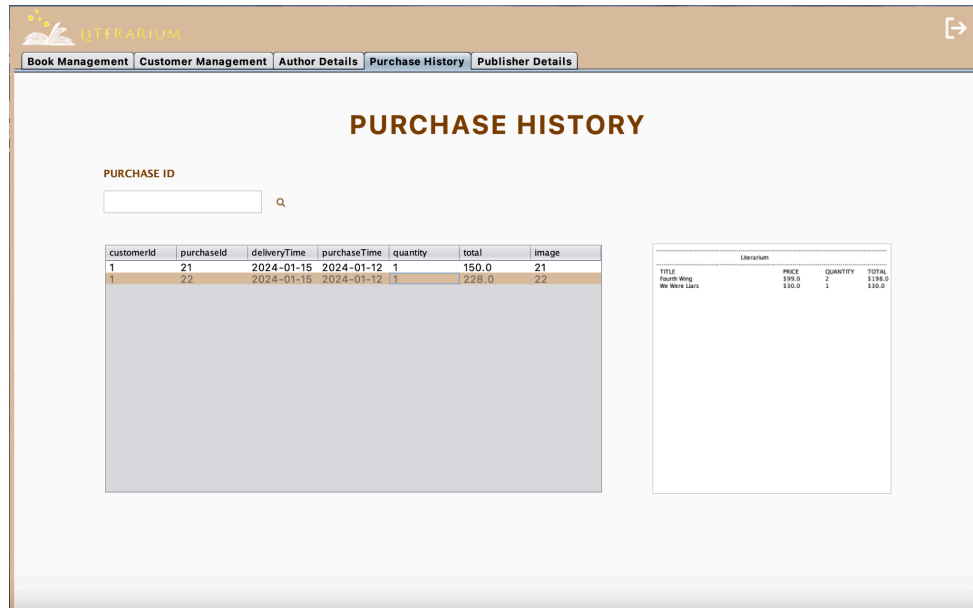
**Image:** [Photo of Emma Donoghue]

**BIOGRAPHY:** An Irish-Canadian author known for "Room," among other works, exploring complex human relationships and historical themes.

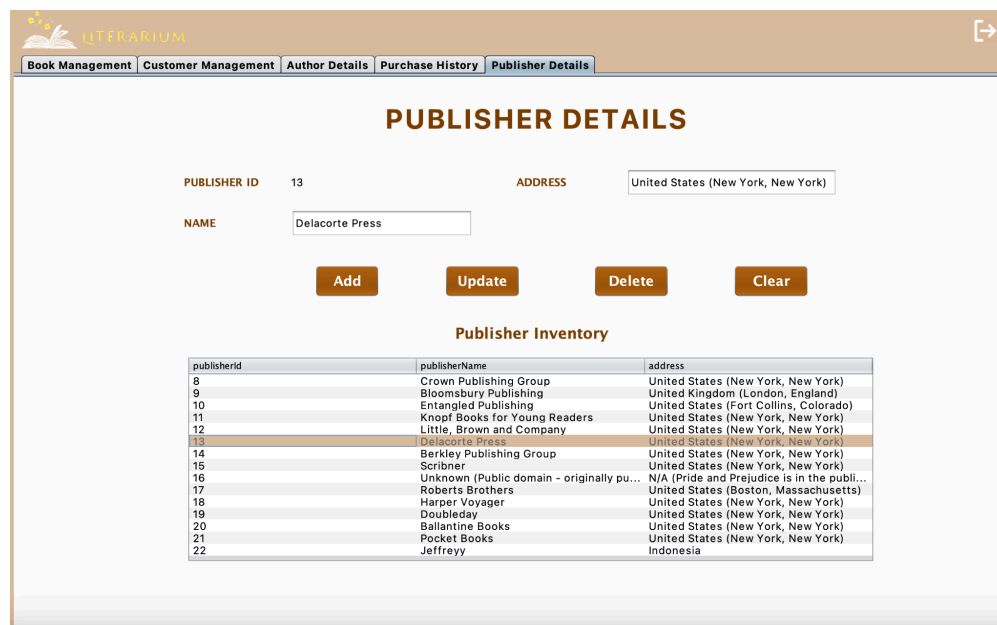
**Author Inventory**

authorId	authorName	birthday	image	biography	country
18	Madeline Miller	1978-07-24	2	An American nov...	US
19	Gillian Flynn	1971-02-24	3	An American aut...	US
20	Rebecca Yarros	1981-04-14	4	An American aut...	US
21	David Levithan	1972-09-07	5	An American aut...	US
22	Emma Donoghue	1969-10-24	6	An Irish-Canada...	Ireland/Canada
23	E. Lockhart	1967-09-13	7	An American aut...	US
24	Emily Henry	1990-01-01	8	An American aut...	US
25	Stephen King	1947-09-21	9	An iconic Americ...	US
26	Jane Austen	1775-12-16	10	An English novel...	UK
27	Louisa May Alcott	1832-11-29	11	An American aut...	US
28	R.F. Kuang	1996-06-29	12	A Chinese-Ameri...	US/China
29	Andy Weir	1972-06-16	13	An American aut...	US
30	John Grisham	1955-02-08	14	An American aut...	US

The above image shows the author details page, which helps manage the author list. It lets us (admins) add, update, delete, and track our authors. It also allows us to see details like authors' names, birthdates, biography, and country they originated from.



The above image shows a purchase history page. Admins can see the delivery time, purchase time, quantity, and total price of the books bought, and the image of the bill produced from all purchases made by all the customers in the bookstore.



The above image shows the publisher details page, which helps manage the publisher list. It lets us (admins) add, update, delete, and track our publishers. It also allows us to see details like publishers' names and their addresses.

[Book Store](#)
[Purchase History](#)
[Book Review](#)

### Book Available

auth...	boo...	auth...	title	price	qua...	syno...	image
18	101...	Ma...	Th...	100.0	6	Ac...	10011
19	101...	Gill...	Go...	50.0	7	Wh...	10...
20	101...	Re...	Fo...	99.0	4	Ent...	10...
21	101...	Da...	An...	150.0	4	Ev...	10...
22	101...	Em...	Ro...	50.0	6	To...	10...
23	101...	E...	We...	30.0	79	A b...	10...
24	101...	Em...	Be...	80.0	7	A r...	10...
18	101...	Ma...	Circe	100.0	8	In t...	10...
25	101...	Ste...	Fai...	120.0	5	Le...	10...
26	101...	Ja...	Pri...	120.0	2	Sin...	10...
27	101...	Lo...	Lit...	14...	10	Ge...	10...
28	10151	R.F...	Yel...	79.0	11	Aut...	10...

AUTHOR NAME

BOOK TITLE

PRICE

QUANTITY

A beautiful and distinguished family. A private island. A brilliant, damaged girl; a passionate, political boy. A group of four friends—the Liars—whose friendship turns destructive. A revolution. An accident. A secret. Lies upon lies. True love. The truth.

### Bill

Literarium		
TITLE	PRICE	QU
Yellowface	\$79.0	1

The above image shows the bookstore page. It allows customers to browse books, add books to a shopping cart, view shopping cart content (bill), and proceed to checkout.

[Book Store](#)
[Purchase History](#)
[Book Review](#)


## PURCHASE HISTORY

PURCHASE ID

customerid	purchaseid	deliveryTime	purchaseTime	quantity	total	image
1	21	2024-01-15	2024-01-12	1	150.0	21
1	22	2024-01-15	2024-01-12	1	228.0	22

Literarium			
TITLE	PRICE	QUANTITY	TOTAL
Another Day	\$150.0	1	\$150.0

The above image shows the purchase history page. It allows customers to view the purchase history that they have made and the bill image.

LITERARIUM

Book Store

Purchase History

Book Rating

BOOK RATING

AUTHOR NAME

BOOK TITLE

RATE

Add Rating

Your Ratings

bookTitle	authorName	price	rating
Room	Emma Donoghue	50.0	5
Every Day	David Levithan	148.0	1
Every Day	David Levithan	148.0	4

The above image shows the book review page. It allows customers to add a book rating and view the ratings from other customers as well.

## Database Security

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Our application has two roles: Admin and Customer, in which they have different database permissions as explained below:

### Admin Role

- Database Permissions
  - Full access to the book, customer, author, and publisher table.
  - Permissions to execute CRUD (Create, Read, Update, and Delete) operations on those tables.
- Purchase History
  - Access to view the purchase history made by all customers.

### Customer Role

- Database Permissions
  - Limited access to the book, customer, author, and publisher table.
  - Permissions to execute specific CRUD (Create, Read, Update, and Delete) operations, such as:
    - Read access to book information, including the author and publisher.
    - Create access to make purchases.
    - Read access to view their purchase history.
    - Create access to rate books.
- Purchase History
  - Access to view their purchase history.
- Ratings
  - Access to view ratings from all customers.

## Appendices

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### Link to the GIT Website

<https://github.com/audreyfabiola/Literarium-Database>

### Link to blog links

Abigail: <https://priscillabigaill.wordpress.com/>

Audrey: <https://clarissaudreyy.wixsite.com/blog>

Jeffrey: <https://sites.google.com/view/jeffreyyy/>