



Capital University of Science & Technology (CUST)

SEMESTER PROJECT

DEPARTMENT OF: SOFTWARE ENGINEERING

NAME: MUHAMMAD ASIF

REG NO: BSE233078

GROUP MEMBERS:

1. RANA HAMMAD MUSHTAQ-(BSE233041)
2. MUHAMMAD ABDULLAH KHALID-(BSE233051)
3. MUHAMMAD KHAN-(BSE233019)

DATE: 18-1-2025

SECTION: 2

COURSE: INTRO TO DATABASE SYSTEM

TOPIC: ONLINE BOOKSTORE DATABASE

SUMBITTIED TO: MAAM HINA RASHID

GITHUBLINK: <https://github.com/masif078>

Contents

1. Database Planning	3
2. System Definition	3
3. Requirements Collection and Analysis.....	4
4. Database Design	4
Entities and Attributes:	4
Relationships:	5
ER DIAGRAM:	5
NORMALIZATION.....	6
FIRST NORMAL FORM:	6
Tables in 2NF:	6
Third Normal Form (3NF)	7
5. DBMS Selection	7
6. Application Design.....	8
Interfaces Designed:	8
Functional Components:	8
7. Prototyping (Optional)	8
8. Implementation.....	11
Tools Used:	11
Steps Taken:	11
9. Data Conversion and Loading.....	11
PHPMYADMIN	11
SQL QUERIES	12
10. Testing.....	13
11. Operational Maintenance	13

ONLINE BOOKSTORE DATABASE PROJECT

Database Lifecycle for Online Bookstore

This document outlines the complete database lifecycle for the Online Bookstore project, following the standard phases of database development. The system supports login/registration, browsing books, managing a cart, placing orders, and confirming orders.

1. Database Planning

Purpose:

To create a scalable and efficient database for managing user accounts, book inventory, and order processing for the Online Bookstore.

Objectives:

- Ensure seamless user account management.
- Facilitate efficient book inventory tracking.
- Support order lifecycle from cart to confirmation.

Identified Entities:

1. **User** - Represents customers.
2. **Book** - Stores information about books.
3. **Order** - Captures order details.
4. **Order_Item** - Tracks items within an order.

Relationships:

- A user can place multiple orders.
- Each order can include multiple books.

2. System Definition

System Scope:

The Online Bookstore manages:

- **Login/Registration:** Secure user access.
- **Book Browsing:** Displaying available books.
- **Cart Management:** Allow users to add/remove books from their cart.

- **Order Formation:** Capturing cart details as an order.
- **Order Confirmation:** Generating and storing order details.

Target Users:

1. Customers: End-users of the bookstore.
2. Administrators: Manage inventory and process orders.

System Purpose:

To deliver an efficient and user-friendly platform for online book shopping.

3. Requirements Collection and Analysis

Fact-Finding Techniques:

1. **Interviews:** With potential users to understand expectations.
2. **Surveys:** Collected feedback on key features.
3. **Analysis:** Reviewed existing systems for inspiration.

Key Insights:

- A streamlined book display and ordering process is crucial.
- The cart feature must allow users to modify selections before checkout.

4. Database Design

Entities and Attributes:

1. **User:**
 - User_ID (Primary Key)
 - Name
 - Email
 - Password
2. **Book:**
 - Book_ID (Primary Key)
 - Title
 - Author
 - Genre
 - Price
 - Stock_Quantity
3. **Order:**
 - Order_ID (Primary Key)
 - User_ID (Foreign Key)
 - Order_Date

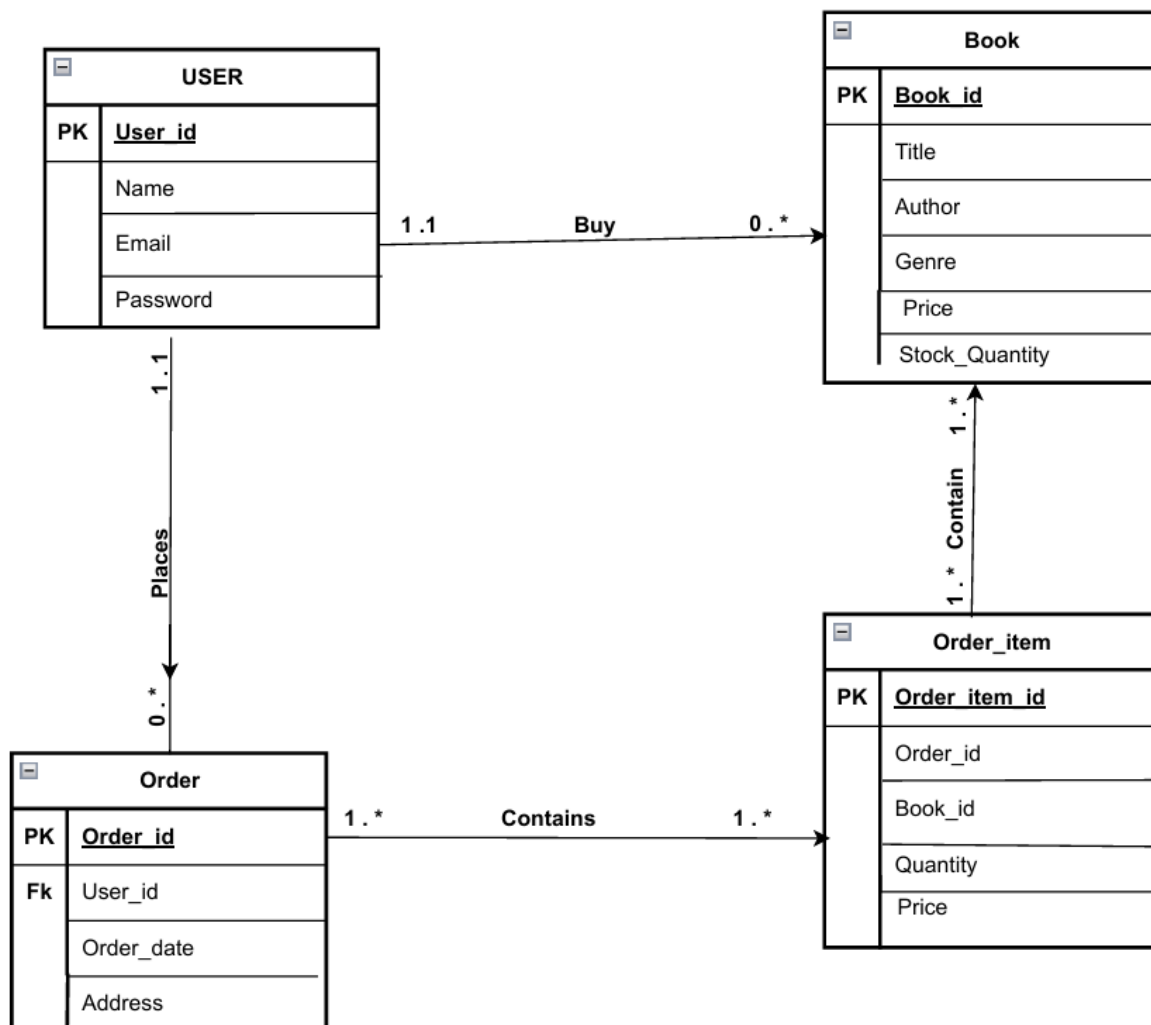
4. Order_Item:

- Order_Item_ID (Primary Key)
- Order_ID (Foreign Key)
- Book_ID (Foreign Key)
- Quantity
- Price

Relationships:

1. **User - Order:** One user can place multiple orders.
2. **Order - Order_Item:** One order can have multiple items.
3. **Order_Item - Book:** Each item references a single book.
4. **User-Book:** One user can but multiple books.

ER DIAGRAM:



NORMALIZATION

FIRST NORMAL FORM:

Order_ID	User_ID	User_Name	Email	Password	Book_ID	Title	Author	Genre	Price	Quantity	Stock_Quantity
1	101	Rana	rana@gmail.com	pass123	0	1984	George Orwell	Dystopian	599.00	2	30
1	101	Rana	rana@gmail.com	pass123	3	Harry Potter and the Sorcerer's Stone	J.K. Rowling	Fantasy	4797.00	1	200
2	102	khan	khan@gmail.com	pass456	6	The Da Vinci Code	Dan Brown	Mystery	6897.00	3	80
3	101	rana	rana@gmail.com	pass123	7	Mastering the Art of French Cooking	Julia Child	Cooking	6997.00	1	40

Tables in 2NF:

1. User Table:

User_ID	Name	Email	Password
101	Rana	rana@gmail.com	pass123
102	khan	khan@gmail.com	pass456

2. Book Table:

Book_ID	Title	Author	Genre	Price	Stock_Quantity	Image_URL
0	1984	George Orwell	Dystopian	599.00	30	Images url here
3	Harry Potter and	J.K.	Fantasy	4797.00	200	Images url

Book_ID	Title	Author	Genre	Price	Stock_Quantity	Image_URL
	the Sorcerer's Stone	Rowling				here
6	The Da Vinci Code	Dan Brown	Mystery	6897.00	80	Images url here
7	Mastering the Art of French Cooking	Julia Child	Cooking	6997.00	40	Images url here

3. Order Table:

Order_ID	User_ID	Order_Date
1	101	2025-01-18
2	102	2025-01-19
3	101	2025-01-20

4. Order_Item Table:

Order_Item_ID	Order_ID	Book_ID	Quantity	Price
1	1	0	2	599.00
2	1	3	1	4797.00
3	2	6	3	6897.00
4	3	7	1	6997.00

Third Normal Form (3NF)

- Remove transitive dependencies (ensure non-key attributes depend only on the primary key).

Tables in 3NF (No Changes):

- All tables already meet 3NF conditions. Attributes like User_Name, Email, and Password depend only on User_ID, and Title, Author, Genre, etc., depend only on Book_ID.

5. DBMS Selection

Chosen DBMS:

MySQL was selected for its support for relational databases, ease of use, and scalability. It ensures data consistency and performance.

6. Application Design

Interfaces Designed:

1. **Login/Registration Page:** Users can create accounts or log in.
2. **Home Page:** Displays a welcome message and links to the book page.
3. **Book Page:** Lists all books with title, price, and stock details.
4. **Cart Page:** Allows users to view, add, or remove items.
5. **Order Formation Page:** Captures the final cart details.
6. **Order Confirmation Page:** Confirms the order and shows a summary.

Functional Components:

- **Authentication:** Secure user login and registration.
- **Book Display:** Fetch and display books dynamically.
- **Cart Management:** Enable users to update selections.
- **Order Processing:** Save orders in the database.
- **Database Security:** Implement user authentication and authorization to manage data access.

7. Prototyping (Optional)

Prototypes were not developed. The final design was directly implemented based on the planned interfaces and database schema.

The image displays two side-by-side wireframe prototypes for an 'Online Bookstore' interface, set against a light blue background. Both prototypes are contained within white rectangular boxes with rounded corners.

The left prototype is for a registration form. It features the title 'Online Bookstore' at the top. Below the title are two buttons: 'Create Account' (dark blue) and 'Login' (light blue). Further down are three input fields labeled 'Full Name', 'Email Address', and 'Password'. At the bottom is a large dark blue button labeled 'Sign Up'.

The right prototype is for a login form. It also features the title 'Online Bookstore' at the top. Below the title are two buttons: 'Create Account' (light blue) and 'Login' (dark blue). Further down are two input fields labeled 'Email Address' and 'Password'. At the bottom is a large dark blue button labeled 'Login'.

ONLINE BOOKSTORE


HOMEBOOKSCARTCONTACT USLOGOUT

Welcome to the Online Bookstore!


Hello, **Muhammad Khan**. You are now logged in.

Browse our collection of books, check out our featured books, and start shopping!


Trending Books




The Alchemist
by Paulo Coelho
PKR 5997.00
Add to Cart



Harry Potter and the Sorcerer's Stone
by J.K. Rowling
PKR 4797.00
Add to Cart



Dune
by Frank Herbert
PKR 7487.00
Add to Cart




Pride and Prejudice
by Jane Austen
PKR 5697.00
Add to Cart


Online Bookstore

HomeBooksCartContact UsLogout


Welcome to the Online Bookstore




The Alchemist
by Paulo Coelho
PKR 5997.00
Stock: 100
Add to Cart




Harry Potter and the Sorcerer's Stone
by J.K. Rowling
PKR 4797.00
Stock: 200
Add to Cart




Dune
by Frank Herbert
PKR 7487.00
Stock: 75
Add to Cart




Pride and Prejudice
by Jane Austen
PKR 5697.00
Stock: 120
Add to Cart




The Da Vinci Code
by Dan Brown
PKR 6697.00
Stock: 80
Add to Cart




Mastering the Art of French Cooking
by Julia Child
PKR 5697.00
Stock: 40
Add to Cart




A Brief History of Time
by Stephen Hawking
PKR 7797.00
Stock: 60
Add to Cart




The Hobbit
by J.R.R. Tolkien
PKR 4497.00
Stock: 150
Add to Cart




Clean Code
by Robert C. Martin
PKR 8697.00
Stock: 90
Add to Cart




To Kill a Mockingbird
by Harper Lee
PKR 5847.00
Stock: 110
Add to Cart




Atomic Habits
by James Clear
PKR 6597.00
Stock: 200
Add to Cart




Salt, Fat, Acid, Heat
by Samin Nosrat
PKR 7197.00
Stock: 130
Add to Cart




The Lord of the Rings
by J.R.R. Tolkien
PKR 5397.00
Stock: 250
Add to Cart




The Girl with the Dragon Tattoo
by Stieg Larsson
PKR 6697.00
Stock: 100
Add to Cart




Jared Diamond
Guns, Germs, and Steel
by Jared Diamond
PKR 6697.00
Stock: 100
Add to Cart




The Well
by David Almond
PKR 5847.00
Stock: 110
Add to Cart




Atomic Habits
by James Clear
PKR 6597.00
Stock: 200
Add to Cart



Salt, Fat, Acid, Heat
by Samin Nosrat
PKR 7197.00
Stock: 130
Add to Cart



The Lord of the Rings
by J.R.R. Tolkien
PKR 5397.00
Stock: 250
Add to Cart



1984
by George Orwell
PKR 4497.00
Stock: 150
Add to Cart

Your Cart

Product	Price	Quantity	Total	Remove
Harry Potter and the Sorcerer's Stone	PKR4,797.00	1	PKR4,797.00	Remove
Dune	PKR7,497.00	1	PKR7,497.00	Remove

Total: PKR12,294.00

[Place Order](#)

[Continue shopping](#)

Customer Information

Full Name:

Email:

Phone:

Address:

[Submit](#)

Please ensure that all details are correct before confirming your order.

Order Confirmation

Thank you for your order! Your order number is 31.

Customer Information:

Name: khan
Email: khamw212@gmail.com
Phone: 03216663485
Address: islamabad

Items in Your Order:

Harry Potter and the Sorcerer's Stone - Quantity: 1 - Price: PKR 4,797.00
Dune - Quantity: 1 - Price: PKR 7,497.00

Total Amount: PKR 12,294.00

[CONFIRM ORDER](#)

Please confirm your order details before finalizing.

Order Confirmed!

Your order has been successfully placed. Thank you for shopping with us!

You will be redirected to the homepage shortly. If not, [click here](#).

8. Implementation

Tools Used:

1. **MySQL:** For database creation and queries.
2. **PHP:** For server-side scripting.
3. **HTML/CSS:** For frontend design.

Steps Taken:

1. Designed tables and implemented relationships in MySQL.
2. Developed PHP scripts to connect the database to the application.
3. Created the login and registration functionality.
4. Built pages for browsing books and managing the cart.
5. Implemented the order placement and confirmation process.

9. Data Conversion and Loading

Data Source:

Initial data for books and users were added manually using SQL INSERT statements for testing. The database handling was done using **SQL** commands and the **phpMyAdmin** tool to streamline the management and visualization of data during development.

PHPMYADMIN:

←T→	▼ Book_ID	Title	Author	Genre	Price	Stock_Quantity	image_url
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	0	1984	George Orwell	Dystopian	599.00	30	images/1984.jpg
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	1	The Alchemist	Paulo Coelho	Fiction	5997.00	100	IMAGES/1.jpeg
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	3	Harry Potter and the Sorcerer's Stone	J.K. Rowling	Fantasy	4797.00	200	IMAGES/3.jpeg
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	4	Dune	Frank Herbert	Science Fiction	7497.00	75	IMAGES/4.jpeg
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	5	Pride and Prejudice	Jane Austen	Romance	3897.00	120	IMAGES/5.jpeg
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	6	The Da Vinci Code	Dan Brown	Mystery	6897.00	80	IMAGES/6.jpeg
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	7	Mastering the Art of French Cooking	Julia Child	Cooking	5697.00	40	IMAGES/7.jpeg
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	8	A Brief History of Time	Stephen Hawking	History	7797.00	60	IMAGES/8.jpeg
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	9	The Hobbit	J.R.R. Tolkien	Adventure	4497.00	150	IMAGES/9.jpeg
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	10	Clean Code	Robert C. Martin	Technology	9897.00	90	IMAGES/10.jpeg
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	11	To Kill a Mockingbird	Harper Lee	Fiction	5847.00	110	IMAGES/11.jpeg
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	12	Atomic Habits	James Clear	Self-help	6597.00	200	IMAGES/12.jpeg
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	13	Salt, Fat, Acid, Heat	Samin Nosrat	Cooking	7197.00	130	IMAGES/13.jpeg
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	14	The Lord of the Rings	J.R.R. Tolkien	Fantasy	5397.00	250	IMAGES/14.jpeg
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	15	The Girl with the Dragon Tattoo	Stieg Larsson	Thriller	8697.00	100	IMAGES/15.jpeg
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	16	Guns, Germs, and Steel	Jared Diamond	History	5937.00	160	IMAGES/16.jpeg
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	17	Into the Wild	Jon Krakauer	Adventure	5547.00	90	IMAGES/17.jpeg
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	18	The Innovators	Walter Isaacson	Technology	10197.00	70	IMAGES/18.jpeg
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	19	Foundation	Isaac Asimov	Science Fiction	7647.00	50	IMAGES/19.jpeg
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	20	1984	George Orwell	Fiction	8397.00	60	IMAGES/20.jpeg

←T→	▼ order_id	full_name	email	phone	address	order_date
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	24	muhammad khan	f1c2345c@gmail.com	0311243543	pindi	2025-01-04 16:20:49
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	25	muhammad khan	f1c2345c@gmail.com	0311243543	pindi	2025-01-04 16:32:29
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	26	khan	rana@gmail.com	03216663485	islamabad	2025-01-04 16:37:23
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	27	khan	rana@gmail.com	03216663485	islamabad	2025-01-04 16:38:21
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	28	muhammad khan	malikhashir@gmail.com	0321 6663485	attock	2025-01-04 18:27:23

order_id	full_name	email	phone	address	order_date
24	muhammad khan	f1c2345c@gmail.com	0311243543	pindi	2025-01-04 16:20:49
25	muhammad khan	f1c2345c@gmail.com	0311243543	pindi	2025-01-04 16:32:29
28	muhammad khan	malikhashir@gmail.com	0321 6663485	attock	2025-01-04 18:27:23

3 rows in set (0.000 sec)

user_id	name	email	password	status
13	muhammad khan	khanw2f2@gmail.com	\$2y\$10\$p.6RsJrD2Vsr6fhG.Jj.9.RCQYTIwrmP1kXMsTEIeZ3Nf1EAcIQd6	active
14	muhammad khan	khanw2f2@gmail.com	\$2y\$10\$nVfoxt2HPQWUz.LXNucR9u9umowuwkn0/Rs4uSAwYADwB1FA7owW	active
15	ahmed	malikhashir@gmail.com	\$2y\$10\$tYXcWkTZND0JD1CenPNOGuzhem7CIWEsVxXftSJ92wRaRqV4Ph61i	active
16	ahmed	malikhashir@gmail.com	\$2y\$10\$4FVvNg3cdc9SVVkbYGNBuk3PkqrRr3kXtUjacGMPdwXnOgcYLG.	active
17	muhammad khan	f1c2345c@gmail.com	\$2y\$10\$9FHKm/9u0ovx0maInDmg90oxLAirGMwIp.3QKe6AanRTWkeHOI8ve	active
18	muhammad khan	f1c2345c@gmail.com	\$2y\$10\$TxiXmTuXD2MCcZr.VHxPVe.gLVw7NP2umGE0JQC8mGXJ6Xemx/VH8e	active
19	muhammad khan	f1c2345c@gmail.com	\$2y\$10\$7riIVPWEJi8wcIyete1X80CLl0RR7Q2aQSiN/j2YSE2/LnDXniqva	active
20	muhammad khan	f1c2345c@gmail.com	\$2y\$10\$8Rit0.051HGjblGed77y80f55nMheHqTGYD3iBefKpCNfomN4Su	active
21	muhammad khan	f1c2345c@gmail.com	\$2y\$10\$dT066Ght/2JWwhoBi0SY5u29csuP8vC3B48CHW0.p0B.xytGEmw3S	active
22	muhammad khan	f1c2345c@gmail.com	\$2y\$10\$lCMi0ZGE3iSFU/E0BkY.nehqZEMM6Nxs3MzxPTGxgRSzZfp/s6TuW	active
23	muhammad khan	malikhashir@gmail.com	\$2y\$10\$8j9GtDDPI87/DvEGT11ypuJG8X1rXWZ6h7e5g/pmSxDgves/wRB8a	active
24	SAQAM	f1c2345c@gmail.com	\$2y\$10\$8BtqHKKHqTCY1F87kmgCFw0r0mG9GdnVz7k21HXUCSQ7g.zB9Lunra	active
25	SAQAM	f1c2345c@gmail.com	\$2y\$10\$ALmWaRrdLtiJ8bD.4LqJ2e0v5kdZUnvcdW55Hm/g6ypIsByBXwLbG	active
26	SAQAM	f1c2345c@gmail.com	\$2y\$10\$w.jpbhtmC35qH3Kx/2nqrUG8bCXuClgAOKebTdFzXkRANrKY5G/e	active
27	4Him&Her	f1c2345c@gmail.com	\$2y\$10\$ItnBPPX4rgJbR0rKyUvBNuygHNxc/npRES4458J4TvExsUJ8Iss.6	active
28	muhammad khan	khanw2f2@gmail.com	\$2y\$10\$yDs4Inz4b1Wtfx0neu6Hf0yanf8ZuPH6e4TuKcpm38UwY81wnEzpC	active
29	muhammad khan	khanw2f2@gmail.com	\$2y\$10\$nmHq5N/kppQScH7E4IbDh.R9gscKbagntRgptCR1Qqm.jkuX2Vs/q	active
30	SAQAM	f1c2345c@gmail.com	\$2y\$10\$h0AE9fYO/HNKHjzVYBKzd.arFdJ8bYmvYOIBFDuRf.LaFpQ1FAZhS	active
31	muhammad khan	f1c2345c@gmail.com	\$2y\$10\$wKwuDZkg9HQHDXZiF8cWxubSkCEsd209EBE.qY087Lqx8iWgdGcZe	active
32	muhammad khan	khanw2f2@gmail.com	\$2y\$10\$SZ4PLQki9eBIW5.sTLC.veW/0bLIdrtEmo0.zvJay5SN/G1La4hwy	active
33	Rana Hammad Mushtaq	default302@gmail.com	\$2y\$10\$Iv3j9iBx0Lgc4vKLBrevN.RALF13KJS.MXIyTyKyeHep6UbF1BYq	active
34	Rana Hammad Mushtaq	default302@gmail.com	\$2y\$10\$lBrc6x5/vnorHH0ze5BN1e1WEn9YlWFBUZHmEV8m/6b20k/dRQaq6	active
35	muhammad khan	f1c2345c@gmail.com	\$2y\$10\$JydMGrLAyXSV775h.XsyZ.SGMUnTHUWQ4QuVFPKLRCLj3dwyIA16	active
36	khan	rana@gmail.com	\$2y\$10\$/SQ0ZjN8oidrW1Ewo.1WteW8EVvgMncqlui2PAPm76u5aeRkVlZzq	active

24 rows in set (0.002 sec)

10. Testing

Testing Process:

1. Verified login and registration functionality.
2. Ensured the book page displayed correct details.
3. Tested cart operations (add/remove items).
4. Confirmed orders were stored accurately in the database.

Results:

All features passed functional and integration testing.

11. Operational Maintenance

Ongoing Tasks:

- Update book inventory as needed.
- Monitor for system issues and bugs.
- Regular backups of the database for data safety.
- Establish database recovery procedures to ensure data integrity in case of failure.