



# Online Book Store

## Team Members

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## Overview

It is required to analyze, design and implement a database system to support the operations of a simplified online bookstore.

### Manager Operations:-

1. Add new books
2. Modify existing books
3. Place orders on books
4. Confirm orders
5. Search for books
6. Promote registered customers to have managers credentials
7. View the following reports on sales

### Manager / Customer Operations:-

1. Edit his personal information including his password
2. Search for books by any of the book's attributes
3. Add books to a shopping cart
4. Manage his shopping cart
5. Checkout a shopping cart
6. Logout of the system

## Database relations

For each book in the store, the system keeps the book's ISBN number, title, author(s), publisher, publication year, selling price, and category. The book's category can be one of the following: "Science", "Art", "Religion", "History" and "Geography". The system has to keep track of the names of publishers, their addresses and telephone numbers. Information about book orders is also maintained.

## Analysis

### Triggers

#### 1- **ON\_ORDERING\_BOOK\_FROM\_STOCK** trigger:

-- The manager cannot update the quantity of a book if this update will cause the quantity of a book in stock to be negative. By the same way, a user cannot add to their cart an out-of-stock book.

```
DELIMITER |
CREATE TRIGGER ON_ORDERING_BOOK_FROM_STOCK BEFORE UPDATE ON BOOK FOR EACH ROW
BEGIN
IF(NEW.Book_quantity < 0) THEN
    SIGNAL SQLSTATE '45000' SET MESSAGE_TEXT = 'ERROR: NEGATIVE BOOK QUANTITY ON STOCK IF UPDATED! UPDATE ABORTED.';
END IF;
END;
DELIMITER ;
```

#### 2- **CHECKING\_BOOK\_STOCK\_THRESHOLD** trigger:

-- Whenever a book on stock is updated, a trigger checks whether the book quantity on stock is less than the threshold. If so, there are two cases:

A- A Manager's already order such book and the order quantity will cover such gap.

B- Either manager's order can't cover the gap, or no order was placed for such book in the first place. Accordingly, an order is placed with the order quantity.

```

DELIMITER |
CREATE TRIGGER CHECKING_BOOK_STOCK_THRESHOLD AFTER UPDATE ON BOOK FOR EACH ROW
BEGIN
IF((NEW.Book_quantity < NEW.Book_threshold) AND EXISTS(SELECT *
FROM MANG_BOOK_ORDER
WHERE MANG_BOOK_ORDER.ISBN = NEW.ISBN AND (NEW.Book_quantity + MANG_BOOK_ORDER.Order_quantity)
< NEW.Book_threshold))THEN
IF (EXISTS(SELECT * FROM MANG_BOOK_ORDER WHERE MANG_BOOK_ORDER.ISBN = NEW.ISBN)) THEN
UPDATE MANG_BOOK_ORDER SET
ISBN = NEW.ISBN,
Order_quantity = MANG_BOOK_ORDER.Order_quantity + NEW.Order_quantity,
Order_timestamp = NOW()
WHERE MANG_BOOK_ORDER.ISBN = NEW.ISBN;
ELSE
INSERT INTO MANG_BOOK_ORDER(ISBN, Order_quantity, Order_timestamp) VALUES(NEW.ISBN, NEW.Order_quantity, NOW());
END IF;
END IF;
END;
DELIMITER ;

```

### 3- ORDER\_CONFIRMATION trigger:

- The user can confirm an order when receiving the ordered quantity from the book's publisher the quantity of the book in store automatically increases with the quantity specified in the order.
- Deleting the order means that the order is received from publisher.

```

DELIMITER |
CREATE TRIGGER ORDER_CONFIRMATION BEFORE DELETE ON MANG_BOOK_ORDER FOR EACH ROW
BEGIN
UPDATE BOOK SET Book_quantity = Book_quantity + OLD.Order_quantity WHERE OLD.ISBN = BOOK.ISBN;
END;
DELIMITER ;

```

## Procedures

We populated our database for reports generation using procedures.

- PROCEDURE populate\_mang\_order\_hist: populating manager's orders for books.
- PROCEDURE populate\_bookstore: populating bookstore, publisher's information and author's personal data.
- PROCEDURE populate\_user\_order\_hist: populating users' order history.
- PROCEDURE populate\_users: populating managers'/ users' information and accounts.

## Indices

Table	Name	Unique	Index...	Index Comment	Column
book	PRIMARY	Yes	BTREE		ISBN
book	Title	Yes	BTREE		Title
book	BOOK_FK_PUB	No	BTREE		Publisher_id
book	BOOK_PUBYEAR_INDX	No	BTREE		Pub_year
book	BOOK_SELLPR_INDX	No	BTREE		Selling_price
book	BOOK_CATG_INDX	No	BTREE		Category
book	BOOK_QUANT_INDX	No	BTREE		Book_quantity
book	BOOK_THRESH_INDX	No	BTREE		Book_threshold
book	BOOK_ORDERQUAN_INDX	No	BTREE		Order_quantity
book_author	PRIMARY	Yes	BTREE		Author_name
book_author	PRIMARY	Yes	BTREE		ISBN
book_author	BOOK_AUTHOR_FK_ISBN	No	BTREE		ISBN
email_domain	PRIMARY	Yes	BTREE		Domain_ID
email_domain	Domain_name	Yes	BTREE		Domain_name
manager	PRIMARY	Yes	BTREE		Manager_id
mang_book_order	PRIMARY	Yes	BTREE		Order_id
mang_book_order	ISBN	Yes	BTREE		ISBN
publisher	PRIMARY	Yes	BTREE		Publisher_id
publisher	Publisher_name	Yes	BTREE		Publisher_name
publisher_contact	PRIMARY	Yes	BTREE		Publisher_id
publisher_contact	PRIMARY	Yes	BTREE		Phone_num
u_order	PRIMARY	Yes	BTREE		Order_id
user_contact	PRIMARY	Yes	BTREE		User_id
user_contact	PRIMARY	Yes	BTREE		Phone_num
user_info	PRIMARY	Yes	BTREE		User_id
user_info	Username	Yes	BTREE		Username
user_info	Domain_ID	Yes	BTREE		Domain_ID
user_info	Domain_ID	Yes	BTREE		Local_name
user_order_history	PRIMARY	Yes	BTREE		Order_id
user_order_history	PRIMARY	Yes	BTREE		User_id
user_order_history	PRIMARY	Yes	BTREE		ISBN
user_order_history	ORDER_HISTORY_FK_ID	No	BTREE		User_id
user_order_history	ORDER_HISTORY_FK_ISBN	No	BTREE		ISBN

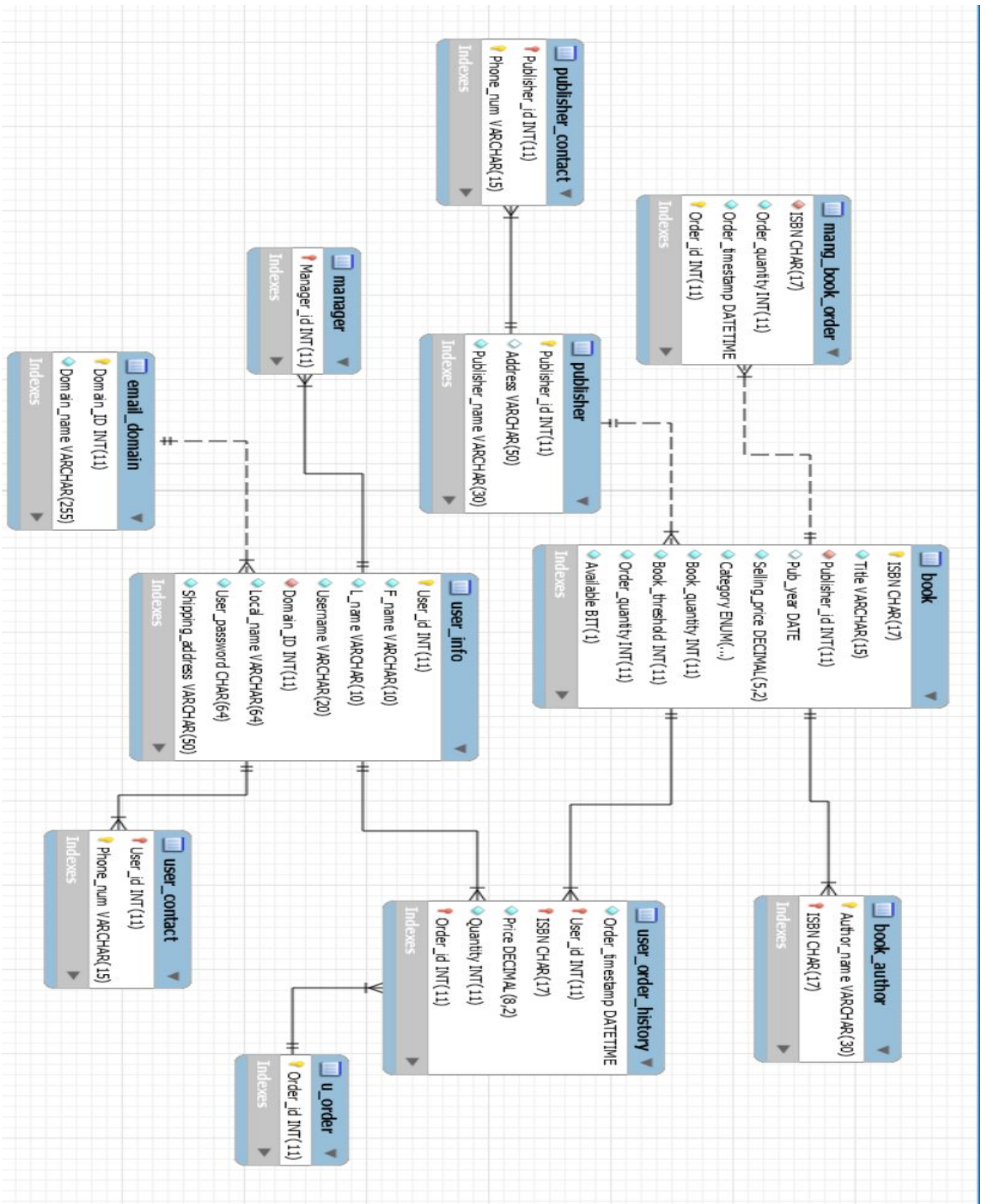
## Concurrency/ Transaction Control

-- We used transaction control in populating procedures, since such procedures would require inserting probably hundreds of records on calling them. For optimization measures, START TRANSACTION is stated before the insertion begins since it stops the database from committing every change (ie writing it back on disk with force writing), COMMIT enables the transaction to commit all the changes once and for all after insertion completes.

-- We used concurrency control in any interaction with the database using jdbc like inserting, updating, deleting,..... By using START TRANSACTION , COMMIT if no failure occurs and ROLLBACK if any failure occurs.

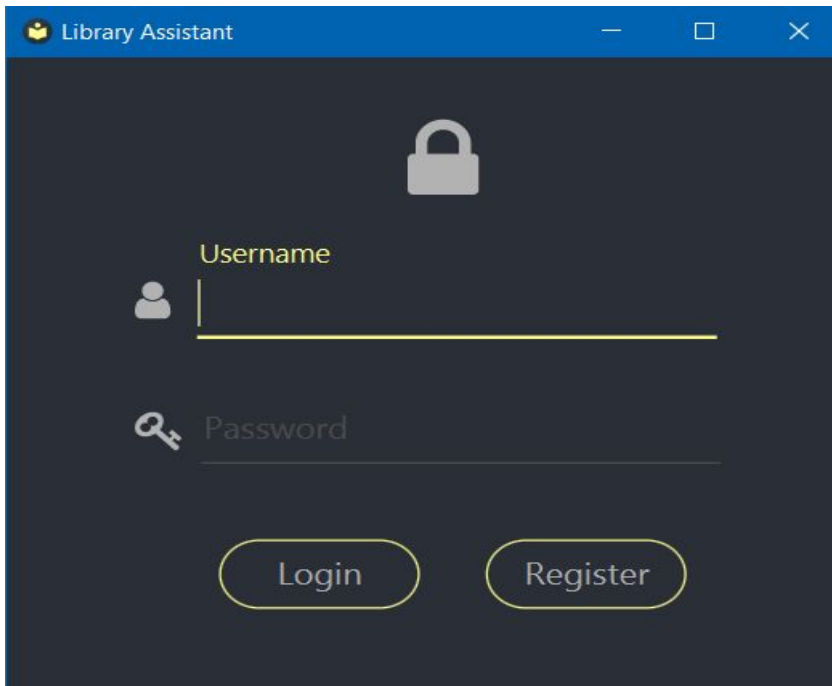


ER Diagram For better resolution, Please visit: [ER DIAGRAM LINK](#)



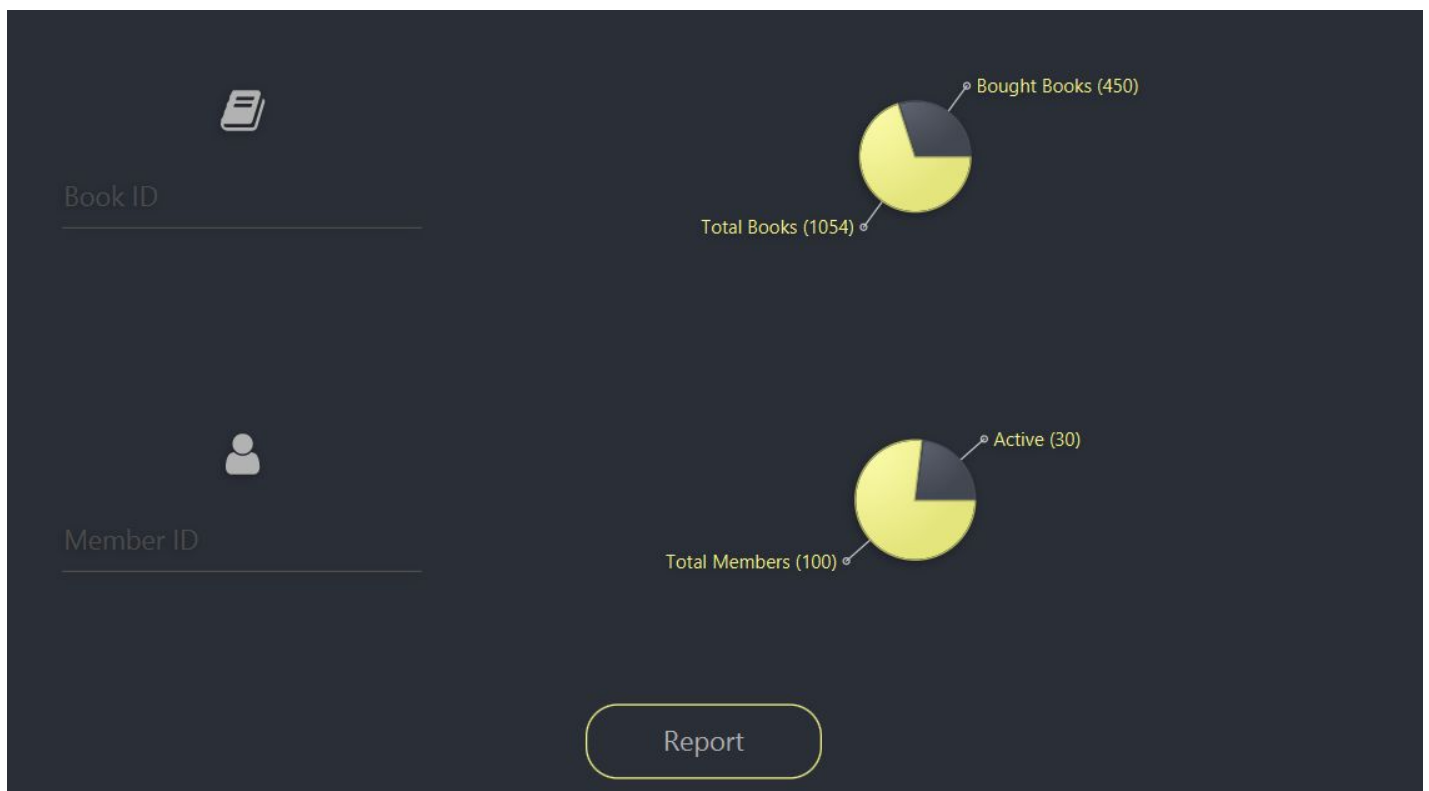
## Screenshots

### 1- login / sign up

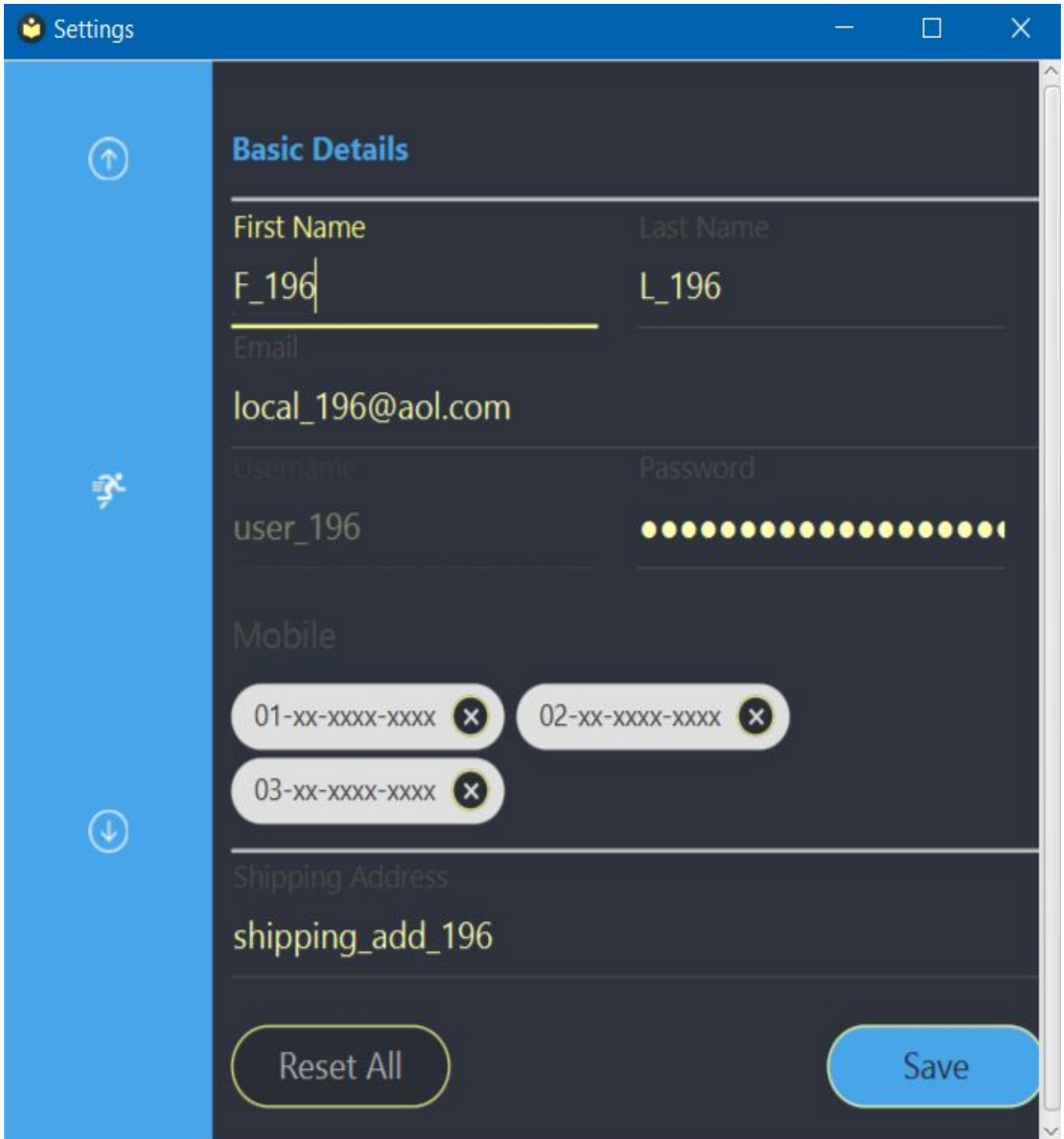


A screenshot of a web application window titled "Library Assistant". The window has a dark blue header with standard window controls. The main content area is dark blue and features a white padlock icon at the top center. Below the padlock, there are two input fields: "Username" with a person icon and "Password" with a key icon. At the bottom, there are two rounded buttons labeled "Login" and "Register".

### 2- home page



### 3- User profile



The screenshot shows a 'Settings' window with a blue header bar containing a user icon and the title 'Settings'. On the left is a blue sidebar with three icons: an upward arrow, a person icon, and a downward arrow. The main content area is dark gray and titled 'Basic Details'. It contains several input fields: 'First Name' (F\_196), 'Last Name' (L\_196), 'Email' (local\_196@aol.com), 'Username' (user\_196), and 'Password' (represented by 16 yellow dots). Below these is a 'Mobile' section with three input fields: '01-xx-xxxx-xxxx', '02-xx-xxxx-xxxx', and '03-xx-xxxx-xxxx', each with a delete icon. At the bottom is a 'Shipping Address' field (shipping\_add\_196). Two buttons are at the bottom: 'Reset All' and 'Save'.

Settings

**Basic Details**

First Name: F\_196

Last Name: L\_196

Email: local\_196@aol.com

Username: user\_196

Password: [16 dots]

Mobile:

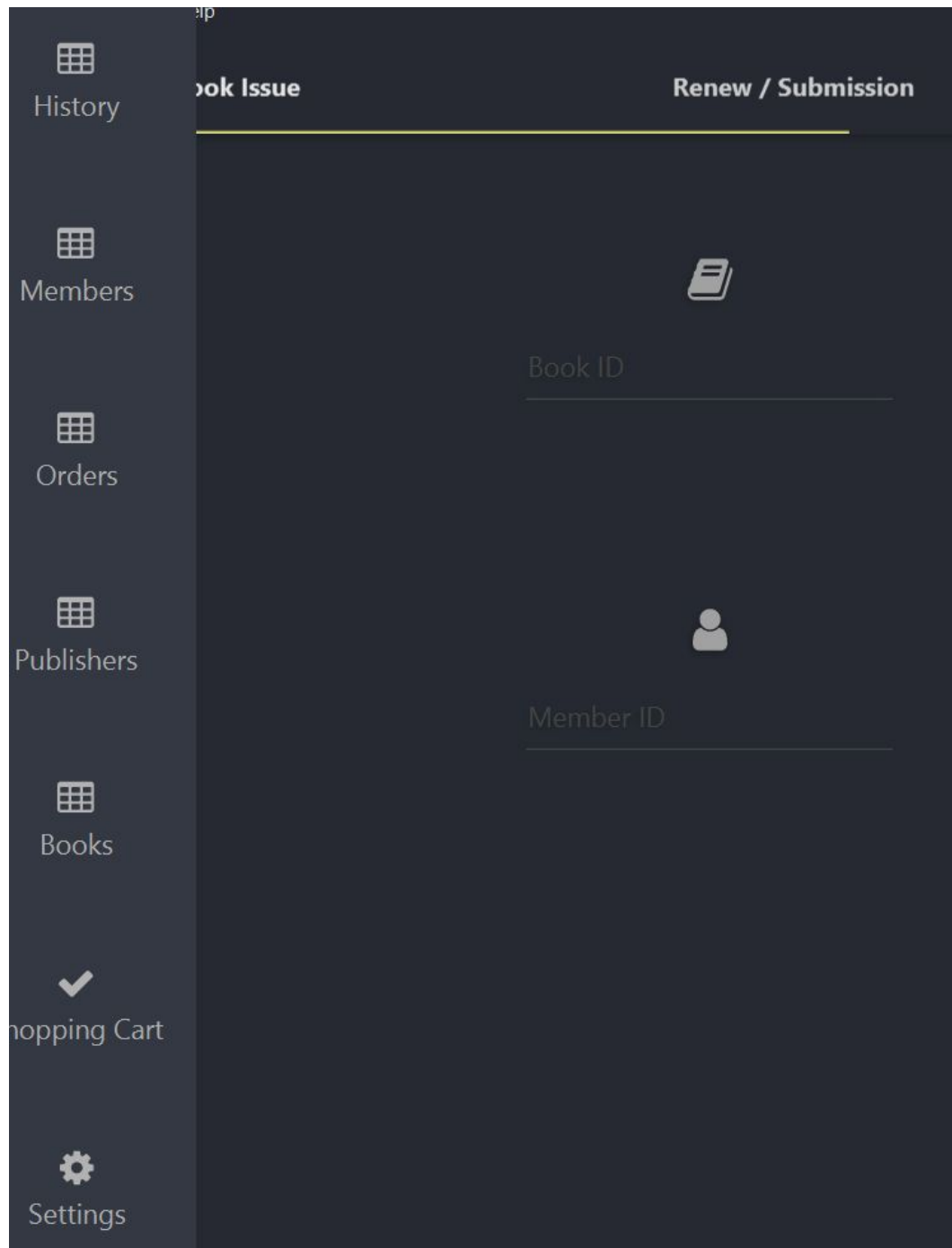
- 01-xx-xxxx-xxxx [X]
- 02-xx-xxxx-xxxx [X]
- 03-xx-xxxx-xxxx [X]

Shipping Address: shipping\_add\_196

Reset All Save



## 4- Selection menu



## 5- Book list

File

Filter... (20) Search

Title	ISBN	Author	Category	Price(\$)	Publisher	Publication Date	Quantity	Threshold	Order Quantity
Always beyond.	978-0-01-787...	Emily Harris	Art	91.9	Joseph Brown	1973-12-26	24	41	18
Wind.	978-0-277-35...	David Wilson	Religion	66.35	Cynthia John...	1989-01-11	17	20	12
Team civil.	978-0-304-81...	Veronica Davis	Religion	90.94	Desiree Rich...	1980-11-02	72	36	10
As ball.	978-0-306-37...	Craig Clark	Art	9.92	Kenneth Cain	2007-03-22	61	21	15
Collection.	978-0-310-22...	Robert Figueroa	Religion	73.94	Paula Patton	1990-02-07	73	1	22
Foreign.	978-0-389-07...	Sarah Potter	Geography	33.54	Joseph Brown	2005-03-01	11	34	8
For send.	978-0-467-62...	Joe Cobb	Religion	9.44	Mindy Holmes	1994-11-18	50	40	12
There.	978-0-476-42...	Julie Porter	History	43.43	Jeremy Medina	2007-06-13	59	31	5
Case sign.	978-0-496-86...	Christopher S...	Geography	10.86	Robert Black	1993-11-25	64	39	21
Model someone.	978-0-506-08...	Matthew How...	Religion	50.97	Gary Schultz	1978-05-23	30	41	20
Again expert.	978-0-601-82...	Thomas Mcda...	Science	67.17	John Klein Jr.	2013-01-08	66	14	11
Guess	978-0-638-51...	Billy Johnston	Science	34.4	Felicia Sims	2012-11-25	11	44	1

## 6- Publisher list

Filter... (20)

PID	Name	Phone	Address
2	pub_1	01-xx-xxxx-xxxx	address_1
2	pub_1	02-xx-xxxx-xxxx	address_1
2	pub_1	03-xx-xxxx-xxxx	address_1
3	pub_2	01-xx-xxxx-xxxx	address_2
3	pub_2	02-xx-xxxx-xxxx	address_2
3	pub_2	03-xx-xxxx-xxxx	address_2
4	pub_3	01-xx-xxxx-xxxx	address_3
4	pub_3	02-xx-xxxx-xxxx	address_3
4	pub_3	03-xx-xxxx-xxxx	address_3
5	pub_4	01-xx-xxxx-xxxx	address_4
5	pub_4	02-xx-xxxx-xxxx	address_4
5	pub_4	03-xx-xxxx-xxxx	address_4
6	pub_5	01-xx-xxxx-xxxx	address_5

Filter...				Search
(20)				
ID	ISBN	Quantity	Timestamp	
3	978-3-16-002579-0	10615	2018-04-14 03:20:40.0	
4	978-3-16-000151-0	2035	2018-05-04 21:41:00.0	
5	978-3-16-002452-0	2461	2018-04-05 01:56:01.0	
6	978-3-16-002048-0	12807	2018-04-02 14:48:32.0	
7	978-3-16-007597-0	14961	2018-05-28 18:05:00.0	
8	978-3-16-002456-0	6473	2018-04-16 04:24:04.0	
9	978-3-16-001350-0	14867	2018-06-01 21:25:28.0	
10	978-3-16-001680-0	5812	2018-03-12 00:41:27.0	
11	978-3-16-007934-0	13140	2018-03-21 18:22:39.0	
12	978-3-16-009334-0	8906	2018-05-06 01:06:58.0	
13	978-3-16-002470-0	6822	2018-03-22 14:40:24.0	
14	978-3-16-005573-0	9084	2018-03-29 05:18:54.0	
15	978-3-16-009149-0	7998	2018-06-09 18:35:41.0	

Filter...

(10)

Search

OID	UID	ISBN	Quantity	Price(\$)	Timestamp
1	1912	978-3-16-000004-0	9	126549.0	2018-04-09 12:53:24.0
1	1912	978-3-16-000252-0	7	204568.0	2018-04-09 12:53:24.0
1	1912	978-3-16-000529-0	2	38738.0	2018-04-09 12:53:24.0
1	1912	978-3-16-000804-0	1	13594.0	2018-04-09 12:53:24.0
1	1912	978-3-16-002779-0	4	50960.0	2018-04-09 12:53:24.0
1	1912	978-3-16-005030-0	2	14006.0	2018-04-09 12:53:24.0
1	1912	978-3-16-007855-0	1	25177.0	2018-04-09 12:53:24.0
1	1912	978-3-16-008095-0	5	70335.0	2018-04-09 12:53:24.0
1	1912	978-3-16-009111-0	2	47212.0	2018-04-09 12:53:24.0
1	1912	978-3-16-009410-0	6	177870.0	2018-04-09 12:53:24.0

## 9- jasper reports examples



## Top Ten Selling Books Report

ISBN	Total Quantity
978-3-17-148410-2	68
978-3-17-148410-8	37
978-3-17-148410-1	35
978-3-17-148410-7	15
978-3-17-148410-9	10



## Monthly Book Sales Report

ISBN	Total Quantity	Total Price
978-3-16-007485-0	3	47418.00
978-3-16-007576-0	4	17864.00
978-3-16-008685-0	7	9170.00
978-3-16-009073-0	5	44080.00
978-3-16-009385-0	3	34968.00



## Top Five Customers Report

User Id	Username	Purchase
1750	user_1750	402159.00
869	user_869	375897.00
358	user_358	357834.00
867	user_867	349287.00
604	user_604	341537.00