

Database Systems

Final Project

Order Processing System



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|-----------------------------|--------|
| 1. Islam Ahmed Abdel Aziz | ID: 11 |
| 2. Islam Mostafa Gaber | ID: 13 |
| 3. Islam Yousry | ID: 14 |
| 4. Andrew Adel Sanad | ID: 17 |
| 5. Omar Youssef Abdel Satar | ID: 45 |

- **Overview:**

Book Store offers you over one million titles across categories such as Science's Books, History & Art, Geography and Religion.

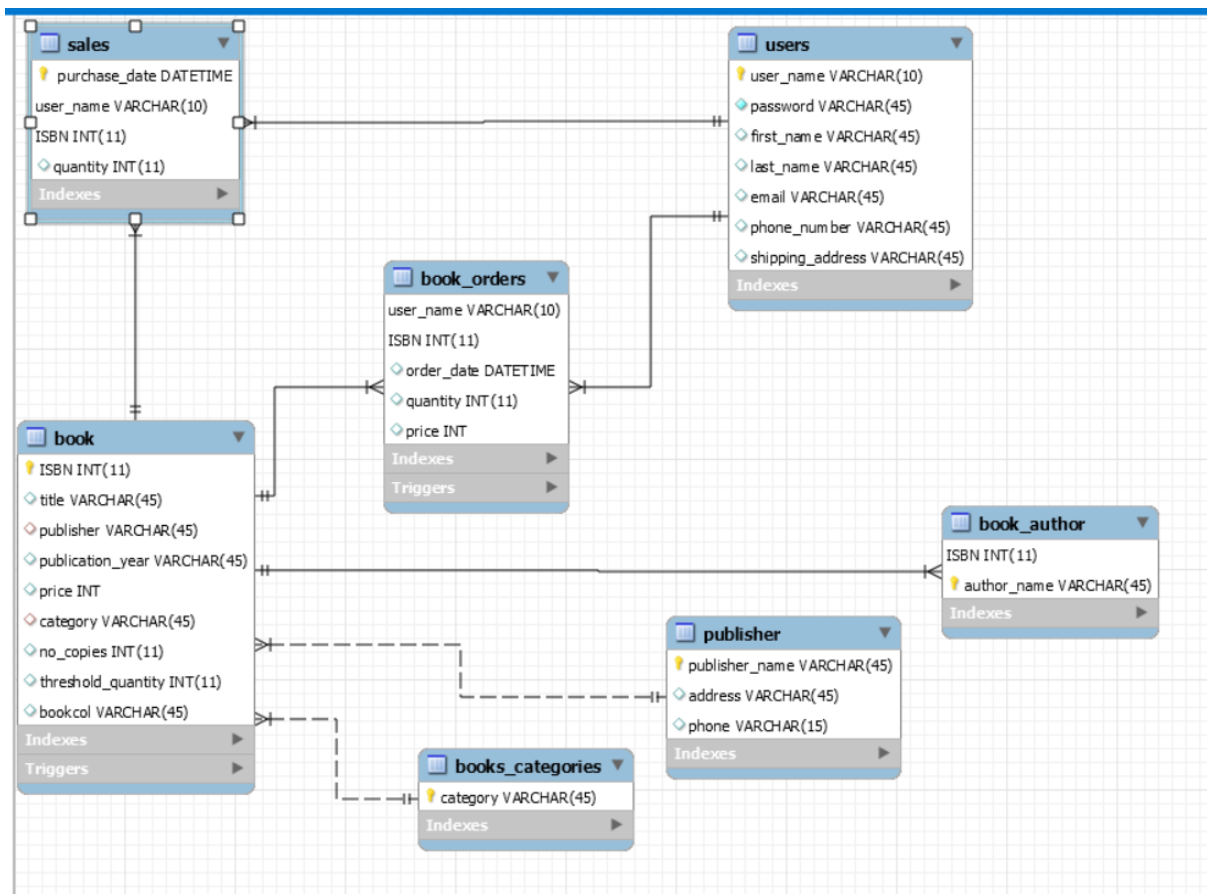
Reading books is the favourite pastime of many people. If you're bitten by the book-bug too, then there is a massive collection of books for you to read. From bestsellers to new & future releases, the choices are exhaustive when you visit Largest Bookstore.

- **Problem statement:**

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

Also, you are required to create the necessary forms to perform these operations.

- **The Database EER diagram:**



- **Triggers:**

1. **Books before insert:** to ensure that the number of available copies of a certain book never goes below threshold, before inserting into the 'Book' relation.

```

DELIMITER ;;
CREATE TRIGGER books_BEFORE_INSERT BEFORE INSERT ON book
FOR EACH ROW BEGIN
IF ( NEW.no_copies < NEW.threshold_quantity) THEN
    SIGNAL SQLSTATE '45000'
    SET MESSAGE_TEXT = 'NO OF COPIES INSERTED CANNOT BE LESS THAN THE THRESHOLD';
END IF;
END ;;
DELIMITER ;
  
```

2. **Books before update:** to ensure that the number of available copies of a certain book never goes below 0, before updating the 'Book' relation.

```
DELIMITER ;;
CREATE TRIGGER books_BEFORE_UPDATE BEFORE UPDATE ON book
FOR EACH ROW BEGIN
IF (NEW.no_copies < 0) THEN
    SIGNAL SQLSTATE '45000'
    SET MESSAGE_TEXT = 'NO OF COPIES CANNOT BE NEGATIVE';
END IF;
END ;;
DELIMITER ;
```

3. **Books after update** places a new order to the 'Order' relation when the number of available copies of a certain book drops down below its specified threshold on updating the 'Book' relation.

```
DELIMITER ;;
CREATE TRIGGER books_AFTER_UPDATE AFTER UPDATE ON books
FOR EACH ROW BEGIN

if new.no_copies < new.threshold_quantity then
insert into book_orders (ISBN,order_date,quantity,price) values
    (NEW.ISBN,NOW(),NEW.threshold_quantity - new.no_copies, NEW.price * (NEW.threshold_quantity - new.no_copies));
end if;

END ;;
DELIMITER ;
```

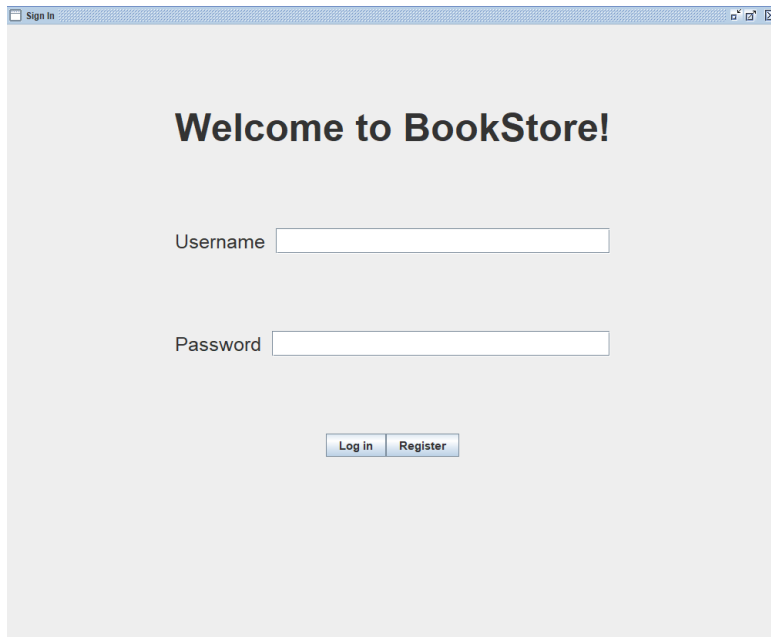
4. **book order before delete:** deletion of a record from the 'Order' relation indicates that this order has been received, so the quantity of books in the order are added to the available copies of the

```
DELIMITER ;;  
CREATE TRIGGER book_orders_BEFORE_DELETE BEFORE DELETE ON book_orders  
FOR EACH ROW BEGIN  
UPDATE book SET book.no_copies = (book.no_copies + OLD.quantity)  
where book.ISBN = OLD.ISBN;  
END ;;  
DELIMITER ;
```

specified book.

Screenshots:

1) Sign in or Register:



A screenshot of a web browser window titled "Sign In". The page has a light gray background and a blue border. At the top, it says "Welcome to BookStore!". Below this, there are two input fields: "Username" and "Password". At the bottom, there are two buttons: "Log in" and "Register".

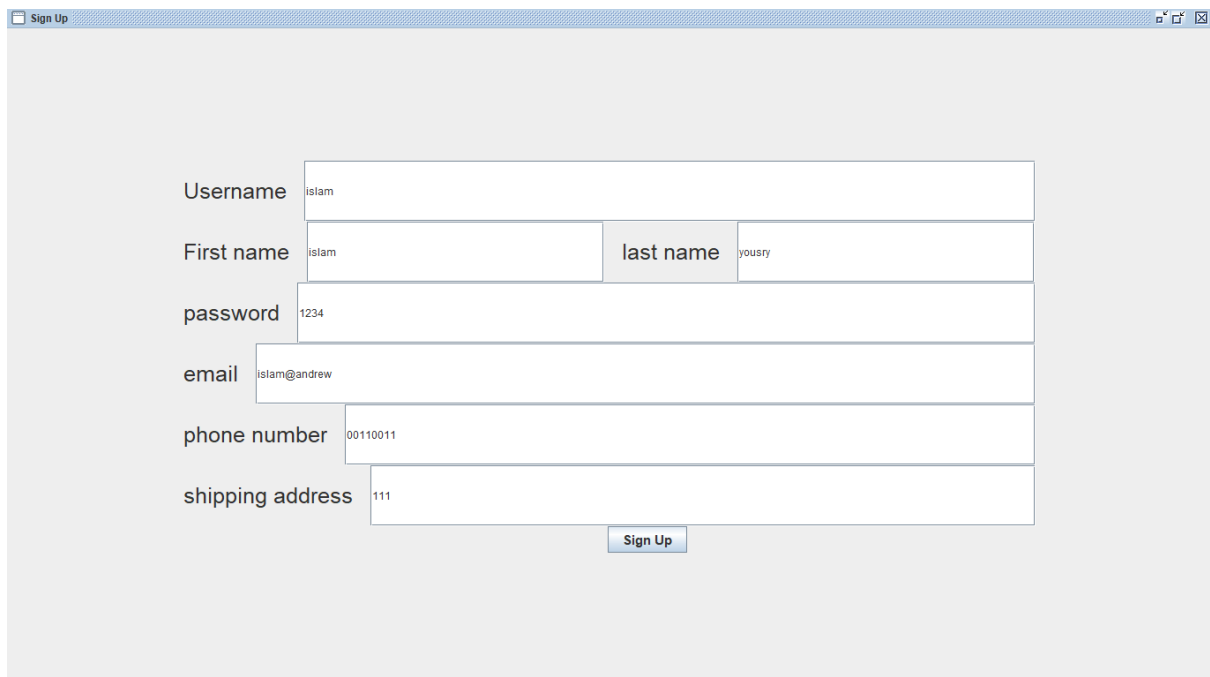
Sign In

Welcome to BookStore!

Username

Password

2) sign up(Register)



A screenshot of a web browser window titled "Sign Up". The page has a light gray background and a blue border. It contains several input fields for registration: "Username" (with "islam" entered), "First name" (with "islam" entered), "last name" (with "yousry" entered), "password" (with "1234" entered), "email" (with "islam@andrew" entered), "phone number" (with "00110011" entered), and "shipping address" (with "111" entered). At the bottom, there is a "Sign Up" button.

Sign Up

Username

First name last name

password

email

phone number

shipping address

3) Users

The screenshot shows the MySQL Workbench interface. The SQL editor contains the following queries:

```
173 INSERT INTO creditcard VALUES('1111', '2038-01-01');
174 INSERT INTO creditcard VALUES('0000', '2038-01-01');
175 INSERT INTO creditcard VALUES('1234', '2038-01-01');
176
177
178 INSERT INTO publisher VALUES('pub', 'abc', '123');
179 INSERT INTO books_categories VALUES('abc' );
180 INSERT INTO creditcard VALUES('1234', '2038-01-01');
181 INSERT INTO users VALUES('andrew', 'abcde', 'andrew', 'adel', 'andrew@islam', '0101', '000', 'manager');
182
183 SELECT * FROM users;
184
```

The Result Grid shows the following data:

user_name	password	first_name	last_name	email	phone_number	shipping_address	privilege
andrew	abcde	andrew	adel	andrew@islam	0101	000	manager
islam	1234	islam	yousry	islam@andrew	00110011	111	customer

The Output tab shows the following messages:

#	Time	Action	Message	Duration / Fetch
5	06:06:16	delete FROM users where user_name = 'islam'	1 row(s) affected	0.328 sec
6	06:06:35	delete from book	3 row(s) affected	0.219 sec
7	06:12:06	SELECT * FROM users LIMIT 0, 1000	2 row(s) returned	0.000 sec / 0.000 sec

4) Home page

The screenshot shows a web application home page. The search bar contains the text "ISBN". The "search" button is highlighted. The "add to shopping cart" button is also visible.

The table below shows the search results:

ISBN	title	publisher	author	publication_year	price	category	no_copies	threshold_quantity
1	title	pub	au	45	54	sd	57	57

5) Add

home page

find a book | profile | shopping cart | orders | promote users | reports

search by ISBN

search add to shopping card

ISBN	title	publisher	author	publication_year	price	category	no_copies	threshold_quantity
1	title	pub	au	2020	50	abc	50	10
2	titles	pub	aut	2021	60	abc	70	20
3	titling	pub	author	2022	100	abc	100	90

new Book add Book modify Book delete Book place order

MySQL Workbench

conn1 x

File Edit View Query Database Server Tools Scripting Help

Navigator project x

SCHEMAS

Filter objects

bookstore

Tables

Views

Stored Procedures

Functions

company

phonebook

sample17_14

Tables

book

book_authors

book_copies

book_loans

borrower

library_branch

publisher

Views

Stored Procedures

Functions

test

Limit to 1000 rows

```
173 • INSERT INTO creditcard VALUES('1111', '2030-01-01');
174 • INSERT INTO creditcard VALUES('0000', '2030-01-01');
175 • INSERT INTO creditcard VALUES('1234', '2030-01-01');
176
177
178 • INSERT INTO publisher VALUES('pub', 'abc', '123');
179 • INSERT INTO books_categories VALUES('abc');
180 • INSERT INTO creditcard VALUES('1234', '2030-01-01');
181 • INSERT INTO users VALUES('andrew', 'abcde', 'andrew', 'adel', 'andrew@islam', '0101', '000', 'manager');
182
183 x SELECT * FROM book;
184
```

Result Grid

ISBN	title	publisher	publication_year	price	category	no_copies	threshold_quantity	author
1	title	pub	2020	50	abc	50	10	au
2	titles	pub	2021	60	abc	70	20	aut
3	titling	pub	2022	100	abc	100	90	author

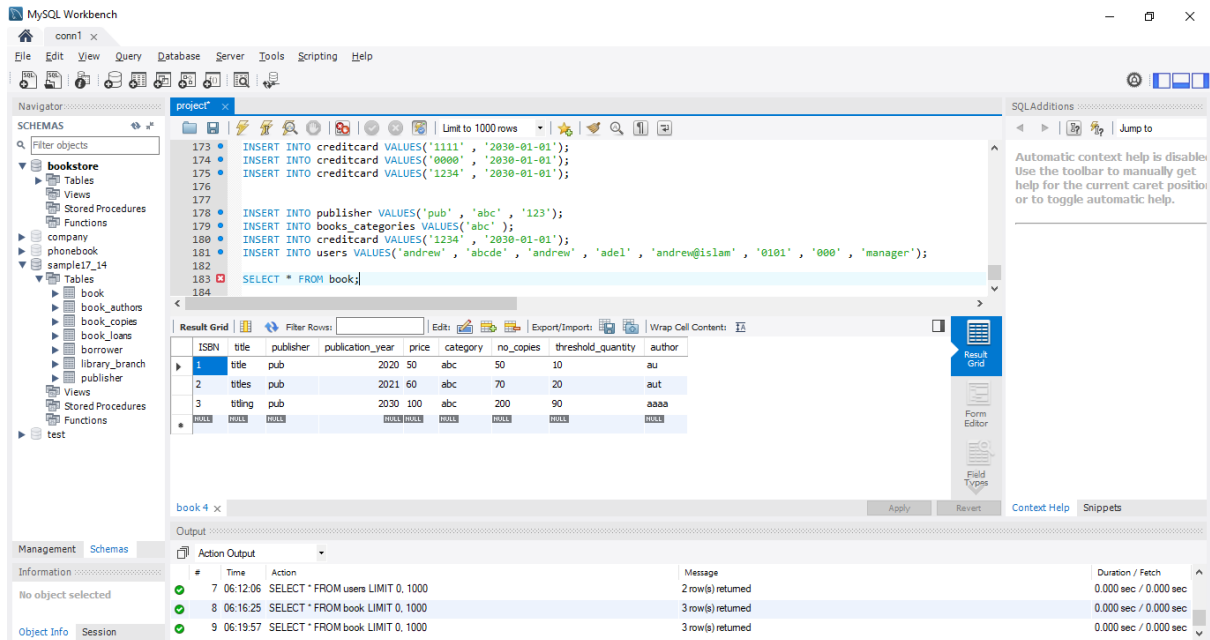
book 3 x

Apply Revert Context Help Snippets

Output

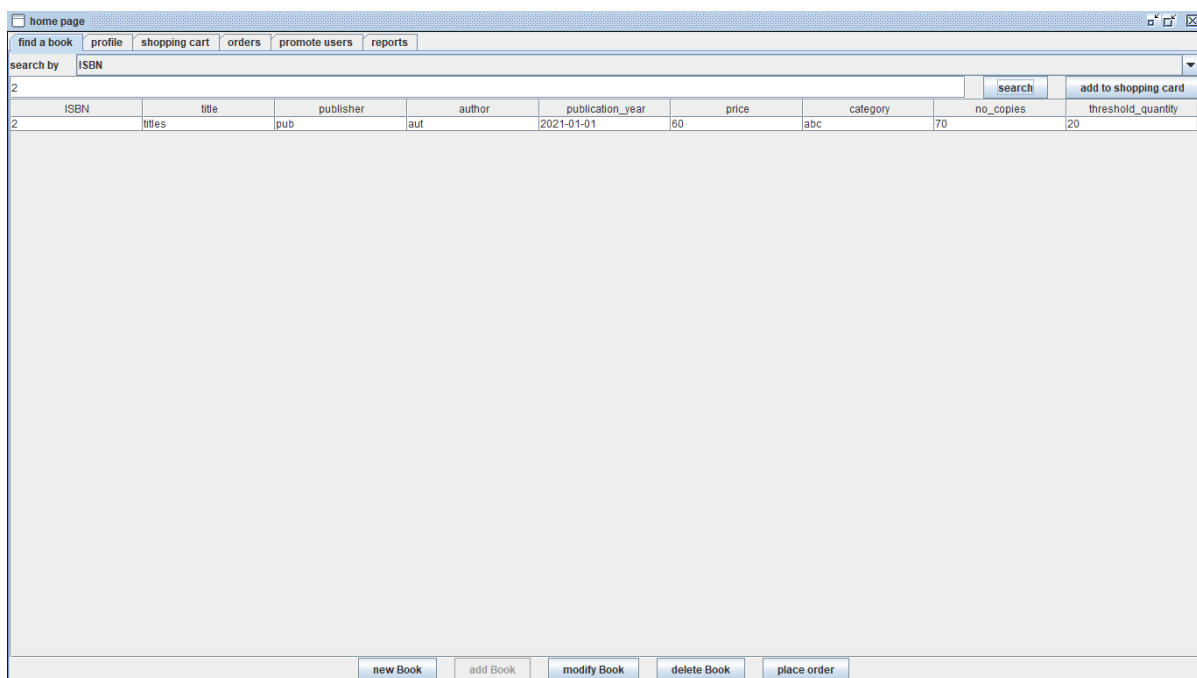
Action Output

#	Time	Action	Message	Duration / Fetch
6	06:06:35	delete from book	3 row(s) affected	0.219 sec
7	06:12:06	SELECT * FROM Users LIMIT 0.1000	2 row(s) returned	0.000 sec / 0.000 sec
8	06:16:25	SELECT * FROM book LIMIT 0.1000	3 row(s) returned	0.000 sec / 0.000 sec



6) Search

- Search by ISBN



- Search by Category

home page

find a book

profile

shopping cart

orders

promote users

reports

search bycategory

abc

search

add to shopping card

	ISBN	title	publisher	author	publication_year	price	category	no_copies	threshold_quantity
1		title	pub	au	2020-01-01	50	abc	50	10
2		titles	pub	aut	2021-01-01	60	abc	70	20
3		titling	pub	author	2022-01-01	100	abc	100	90

new Book

add Book

modify Book

delete Book

place order

- Search by Publisher

home page

find a book

profile

shopping cart

orders

promote users

reports

search bypublisher

pub

search

add to shopping card

	ISBN	title	publisher	author	publication_year	price	category	no_copies	threshold_quantity
1		title	pub	au	2020-01-01	50	abc	50	10
2		titles	pub	aut	2021-01-01	60	abc	70	20
3		titling	pub	aaaa	2030	100	abc	10	90

new Book

add Book

save

delete Book

place order

7) Modify

home page

find a book

profile

shopping cart

orders

promote users

reports

search by

category

abc

ISBN

title

publisher

author

publication_year

price

category

no_copies

threshold_quantity

1

title

pub

au

2020-01-01

50

abc

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titles

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2030

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new Book

add Book

save

delete Book

place order

MySQL Workbench

conn1 x

File Edit View Query Database Server Tools Scripting Help

Navigator

project x

Schemas

bookstore

company

phonebook

sample17_14

test

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8) Delete

home page

find a book

profile

shopping cart

orders

promote users

reports

search by publisher

pub

search

add to shopping card

	ISBN	title	publisher	author	publication_year	price	category	no_copies	threshold_quantity
1		title	pub	au	2020-01-01	50	abc	50	10
2		titles	pub	aut	2021-01-01	60	abc	70	20
3		titling	pub	aaaa	2030-01-01	100	abc	10	90

new Book

add Book

modify Book

delete Book

place order

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search

add to shopping card

	ISBN	title	publisher	author	publication_year	price	category	no_copies	threshold_quantity
1		title	pub	au	2020-01-01	50	abc	50	10
3		titling	pub	aaaa	2030-01-01	100	abc	10	90

new Book

add Book

modify Book

delete Book

place order

MySQL Workbench

conn1 x

File Edit View Query Database Server Tools Scripting Help

Navigator

project1 x

Limit to 1000 rows

177 INSERT INTO creditcard VALUES('1111', '2030-01-01');
178 INSERT INTO creditcard VALUES('0000', '2030-01-01');
179 INSERT INTO creditcard VALUES('1234', '2030-01-01');
180
181 INSERT INTO publisher VALUES('pub', 'abc', '123');
182
183 INSERT INTO books_categories VALUES('abc');
184 INSERT INTO creditcard VALUES('1234', '2030-01-01');
185 INSERT INTO users VALUES('andrew', 'abcde', 'andrew', 'adel', 'andrew@islam', '0101', '000', 'manager');
186
187 SELECT * FROM book;
188

Result Grid

	ISBN	title	publisher	publication_year	price	category	no_copies	threshold_quantity	author
1		title	pub	2020	50	abc	50	10	au
3		titling	pub	2030	100	abc	10	90	aaaa
*	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

book 11 x

Apply Revert Context Help Snippets

Output

Information

#	Time	Action	Message	Duration / Fetch
16	06:45:00	SELECT * FROM book_orders LIMIT 0, 1000	1 row(s) returned	0.031 sec / 0.000 sec
17	06:49:36	SELECT * FROM book LIMIT 0, 1000	3 row(s) returned	0.000 sec / 0.000 sec
18	06:54:06	SELECT * FROM book LIMIT 0, 1000	2 row(s) returned	0.000 sec / 0.000 sec

Object Info Session

SQLAdditions

Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help.