

### Technologies Used:

- **Frontend:** Angular (HTML, SCSS, TypeScript)
- **Backend:** Spring-boot (Java)
- **Database:** MySQL

**Project GitHub Link:** [https://github.com/Kishan-Kumar-Zalavadia/FDB\\_Assignment-2](https://github.com/Kishan-Kumar-Zalavadia/FDB_Assignment-2)

### Database requirements:

1. **Books 5 points**
  - Each book has a unique ISBN, title, author, genre, and publication year.
  - Books can have multiple copies with different serial numbers.
  - The system should keep track of the availability status of each book copy.

Field	Type	Null	Key	Default	Extra
isbn	bigint	NO	PRI	NULL	
author	varchar(255)	YES		NULL	
available	bit(1)	NO		NULL	
genre	varchar(255)	YES		NULL	
publication_year	int	NO		NULL	
title	varchar(255)	YES		NULL	

isbn	author	available	genre	publication_ye...	title
9780143039439	Harper Lee	1	Fiction	1960	To Kill a Mockingbird
9780307248435	Markus Zusak	1	Historical Fiction	2005	The Book Thief
9780307271326	Napoleon Hill	1	Motivation	1937	Think and Grow Rich
9780307271327	Napoleon Hill	1	Motivation	1937	Think and Grow Rich
9780307271328	Napoleon Hill	1	Motivation	1937	Think and Grow Rich
9780307271329	Napoleon Hill	1	Motivation	1937	Think and Grow Rich
9780307271342	Erin Morgenstern	1	Fantasy	2011	The Night Circus
9780385341672	Paula Hawkins	1	Thriller	2015	The Girl on the Train
9780385504201	Khaled Hosseini	1	Historical Fiction	2007	A Thousand Splendid Suns
9780670030553	Donna Tartt	1	Fiction	2013	The Goldfinch
9780735219090	Delia Owens	1	Mystery	2018	Where the Crawdads Sing
9780739341163	Kathryn Stockett	1	Historical Fiction	2009	The Help
9781400033416	Khaled Hosseini	1	Historical Fiction	2003	The Kite Runner
9781594634024	Anthony Doerr	1	Historical Fiction	2014	All the Light We Cannot See
NULL	NULL	NULL	NULL	NULL	NULL

## 2. Borrowers 5 points

- Each borrower has a unique ID, name, email, and contact number.
- The system should maintain a record of the borrowing history for each borrower.

Field	Type	Null	Key	Default	Extra
userid	bigint	NO	PRI	NULL	auto_increment
contact_number	varchar(255)	YES		NULL	
emailid	varchar(255)	YES		NULL	
is_admin	bit(1)	NO		NULL	
password	varchar(255)	YES		NULL	
user_name	varchar(255)	YES		NULL	

userid	contact_number	emailid	is_admin	password	user_name
1	+1 (123) 456-7890	admin@example.com	1	123	Admin
2	+1 (234) 567-8901	bob@example.com	0	password456	Bob Johnson
3	+1 (345) 678-9012	charlie@example.com	0	password789	Charlie Brown
4	+1 (456) 789-0123	david@example.com	0	passwordabc	David Wilson
5	+1 (567) 890-1234	emily@example.com	0	passworddef	Emily Davis
6	+1 (678) 901-2345	frank@example.com	0	passwordghi	Frank Miller
7	+1 (789) 012-3456	grace@example.com	0	passwordjkl	Grace Taylor
8	+1 (890) 123-4567	henry@example.com	0	passwordmno	Henry Clark
9	+1 (901) 234-5678	isabel@example.com	0	passwordpqr	Isabel Martinez
10	+1 (012) 345-6789	jack@example.com	0	passwordstu	Jack Robinson
NULL	NULL	NULL	NULL	NULL	NULL

## 3. Borrowing Transactions 5 points

- Each borrowing transaction should have a unique ID, borrower ID, book ISBN, and borrowing date.
- The system should track the return date for each borrowed book.

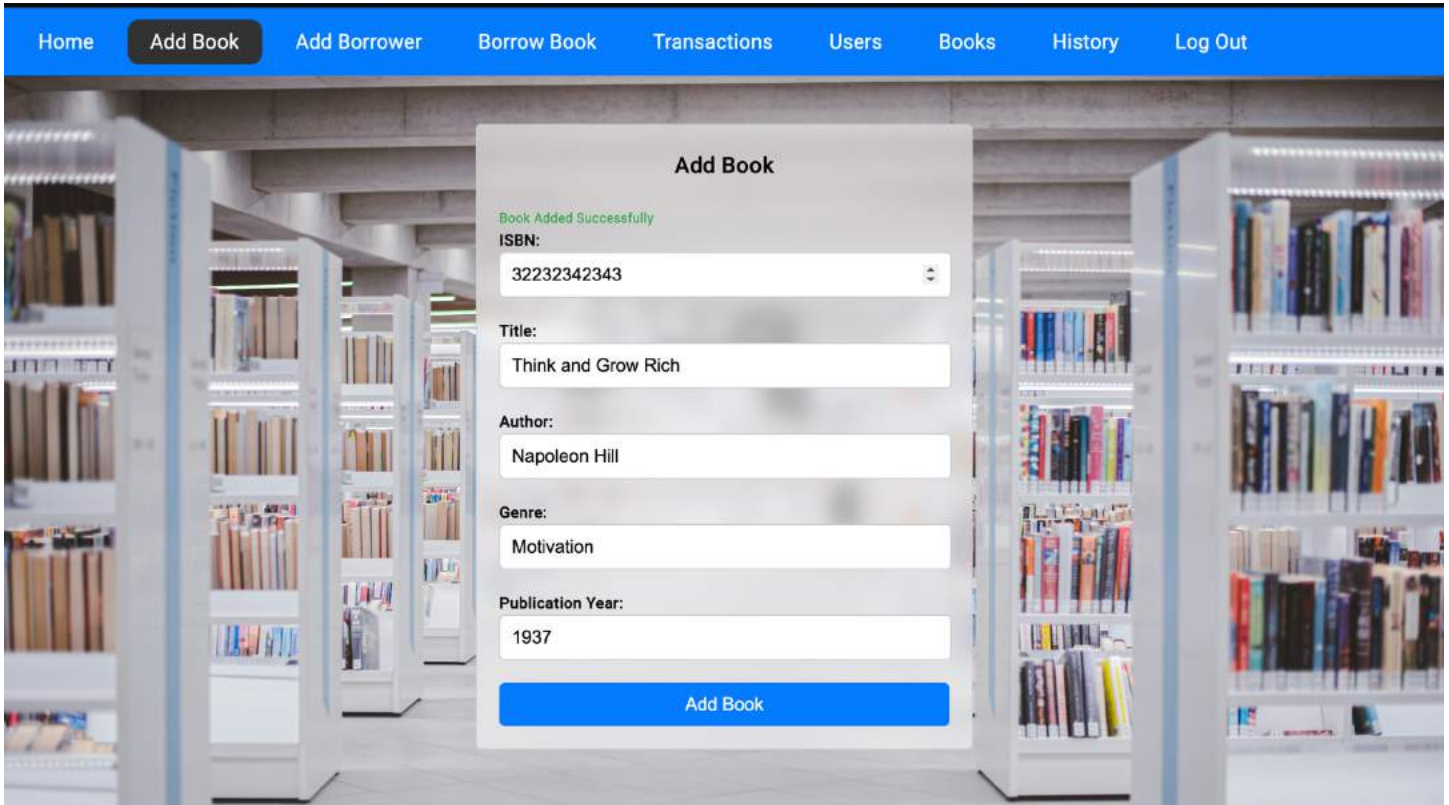
Field	Type	Null	Key	Default	Extra
id	bigint	NO	PRI	NULL	auto_increment
borrowing_date	date	YES		NULL	
return_date	date	YES		NULL	
book_isbn	bigint	YES	MUL	NULL	
user_id	bigint	YES	MUL	NULL	

id	borrowing_date	return_date	book_isbn	user_id
1	2024-03-01	2024-03-08	9780307248435	2
2	2024-03-02	2024-03-09	9780307271329	3
3	2024-03-06	2024-03-10	9780385341672	5
4	2024-03-08	NULL	9780739341163	6
5	2024-03-09	2024-03-11	9780307248435	3
6	2024-03-21	NULL	9781594634024	5
NULL	NULL	NULL	NULL	NULL

## Functionalities (implemented using a programming language):

### 1. Add Book **10 points**

- Librarians should be able to add new books to the system, specifying details such as ISBN, title, author, genre, and publication year.
- They should also be able to add multiple copies of the same book with different serial numbers.



The screenshot shows a web application interface for a library management system. At the top, there is a blue navigation bar with the following links: Home, Add Book (highlighted), Add Borrower, Borrow Book, Transactions, Users, Books, History, and Log Out. The main content area features a modal form titled 'Add Book' overlaid on a background image of a library with bookshelves. The form contains the following fields and values:

- ISBN:** 32232342343
- Title:** Think and Grow Rich
- Author:** Napoleon Hill
- Genre:** Motivation
- Publication Year:** 1937

At the bottom of the form is a blue button labeled 'Add Book'. Above the ISBN field, a green message states 'Book Added Successfully'.

- The librarian can add books and it displays the message 'Book Added Successfully' when the book is added.



Home Add Book Add Borrower Borrow Book Transactions Users Books History Log Out

### Add Book

Book already exists

ISBN: 32232342343

Title: Think And Grow Rich

Author: Napoleon Hill

Genre: Motivation

Publication Year: 1973

Add Book

- Since the librarian is trying to add a book with the same ISBN that already exists, there is a message saying 'Book already exists'. Because the ISBN number is the primary key, it should be unique.
2. **Add Borrower 10 points**
- Librarians should be able to add new borrowers to the system, providing details like name, email, and contact number.

Home Add Book **Add Borrower** Borrow Book Transactions Users Books History Log Out

### Add Borrower

Email:

User Name:

Password:

Contact Number:

**Add Borrower**

- The librarian can add borrowers by giving their details.
- All the details must be included to add the borrower.

Home Books History Log Out

### Add Borrower

**Borrower Added Successfully**

Email:

User Name:

Password:

Contact Number:

**Add Borrower**

- Once the borrower is added it displays a message saying 'Borrower Added Successfully'

Home Books History Log Out

### Add Borrower

Borrower Already Exists

Email:  
prem@gmail.com

User Name:  
Prem 2

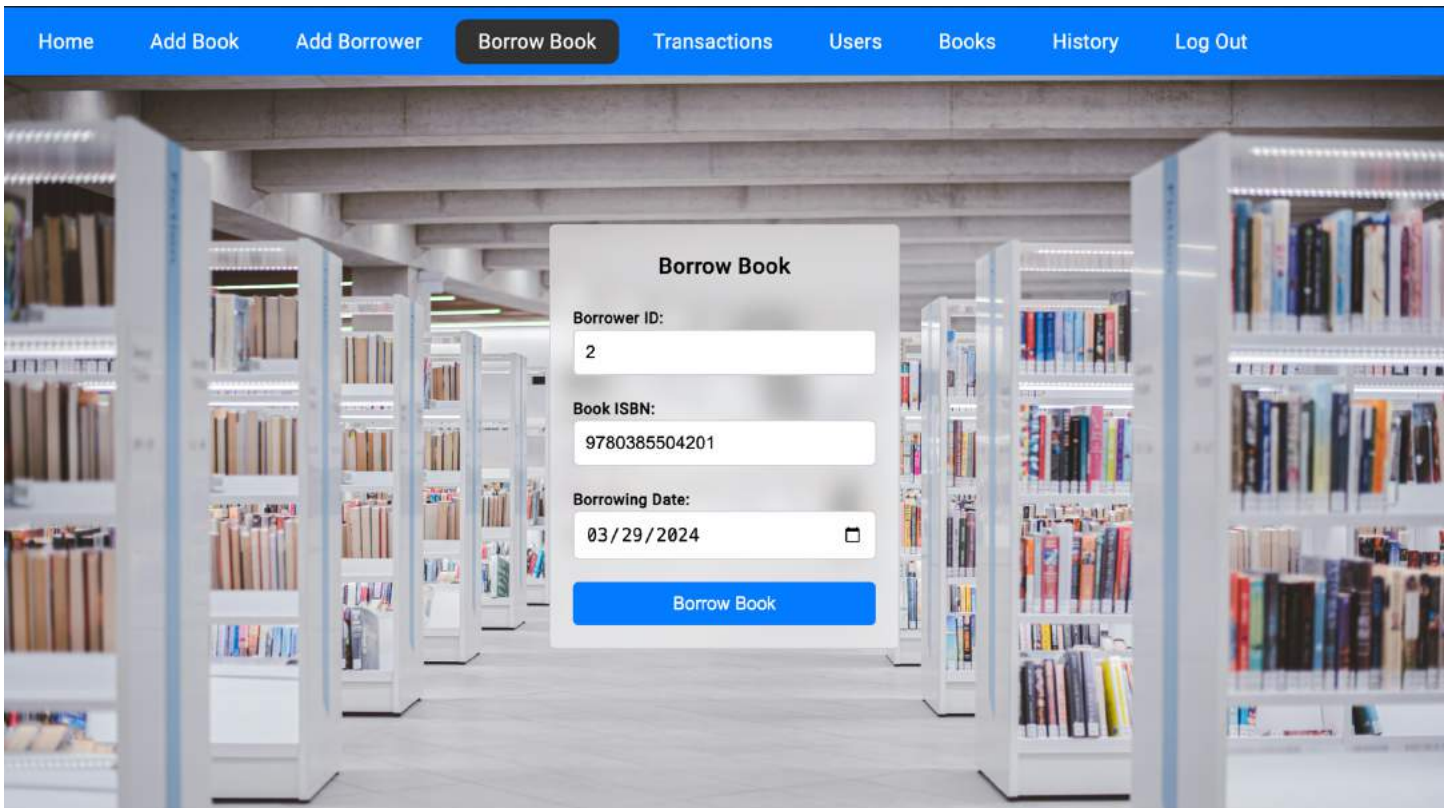
Password:  
\*\*\*

Contact Number:  
9384738473

Add Borrower

- If the borrower already exists, it displays an error message. Saying 'Borrower already Exists'
3. **Borrow Book 15 points**
- Librarians should be able to process borrowing transactions, recording the borrower ID, book ISBN, and borrowing date.
  - The system should update the availability status of the book copy accordingly.





Home Add Book Add Borrower **Borrow Book** Transactions Users Books History Log Out

### Borrow Book

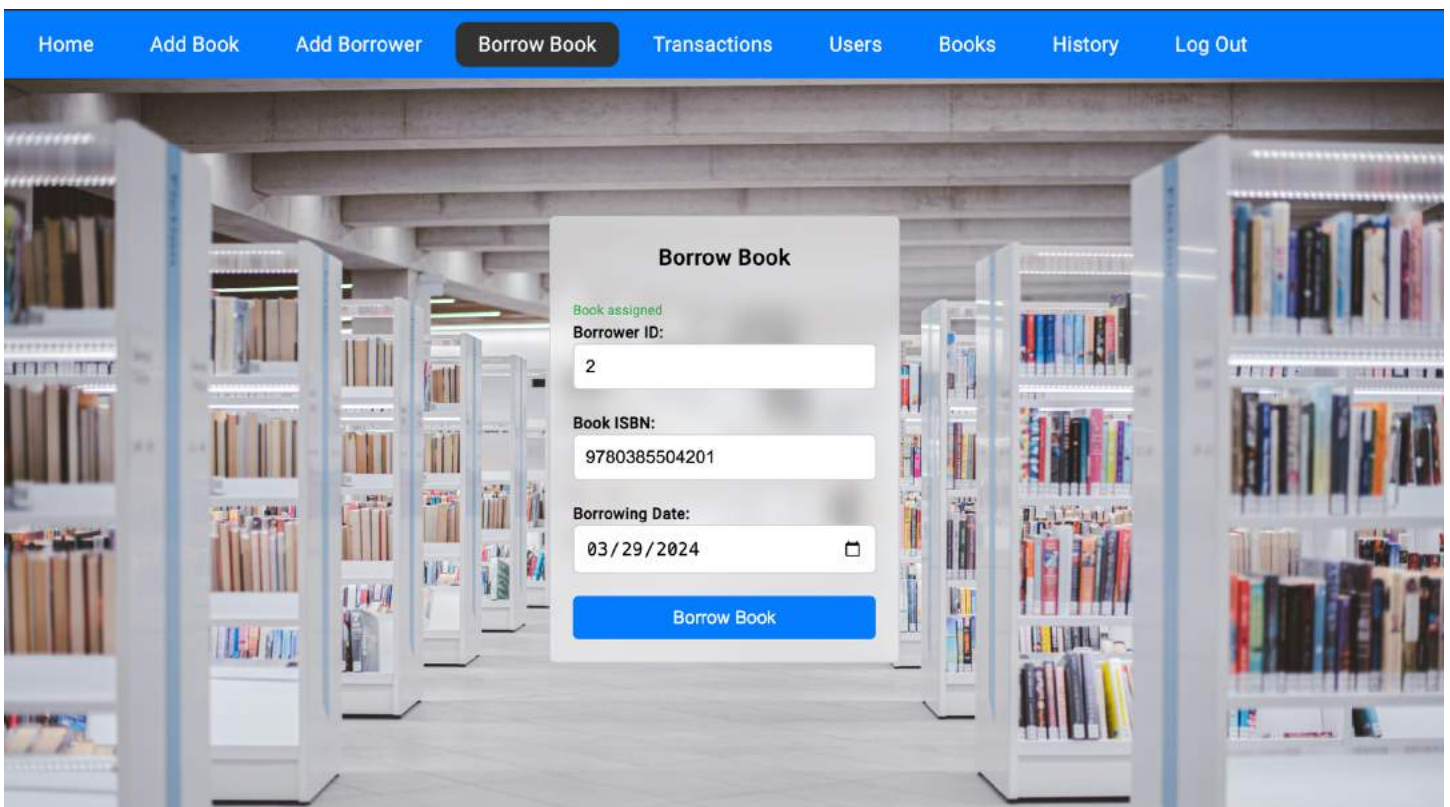
Borrower ID:  
2

Book ISBN:  
9780385504201

Borrowing Date:  
03/29/2024

Borrow Book

- The librarian can add a transaction, the above transaction means borrower 2 is borrowing a book with ISBN 9780385504201 on 03/29/2024.



Home Add Book Add Borrower **Borrow Book** Transactions Users Books History Log Out

### Borrow Book

Book assigned

Borrower ID:  
2

Book ISBN:  
9780385504201

Borrowing Date:  
03/29/2024

Borrow Book

- Once the transaction is successful, it shows a message 'Book assigned',

The screenshot shows a web application interface for borrowing books. The background is a blurred image of a library with bookshelves. A blue navigation bar at the top contains links: Home, Add Book, Add Borrower, Borrow Book (highlighted), Transactions, Users, Books, History, and Log Out. In the center, there is a white 'Borrow Book' form. The form has three input fields: 'Borrower ID:' with the value '22', 'Book ISBN:' with the value '9780385504201', and 'Borrowing Date:' with the value '03/29/2024' and a calendar icon. A red error message 'User not found' is displayed above the 'Borrower ID' field. A blue 'Borrow Book' button is at the bottom of the form.

Home Add Book Add Borrower **Borrow Book** Transactions Users Books History Log Out

**Borrow Book**

User not found

Borrower ID: 22

Book ISBN: 9780385504201

Borrowing Date: 03/29/2024

Borrow Book

- If the borrower does not exist, it gives an error saying 'User not found'

This screenshot is similar to the one above, showing the 'Borrow Book' form. However, the 'Borrower ID' field now contains the value '2'. The 'Book ISBN' field still contains '9780385504201' and the 'Borrowing Date' is '03/29/2024'. A red error message 'Book not found' is displayed above the 'Book ISBN' field. The 'Borrow Book' button remains at the bottom.

Home Add Book Add Borrower **Borrow Book** Transactions Users Books History Log Out

**Borrow Book**

Book not found

Borrower ID: 2

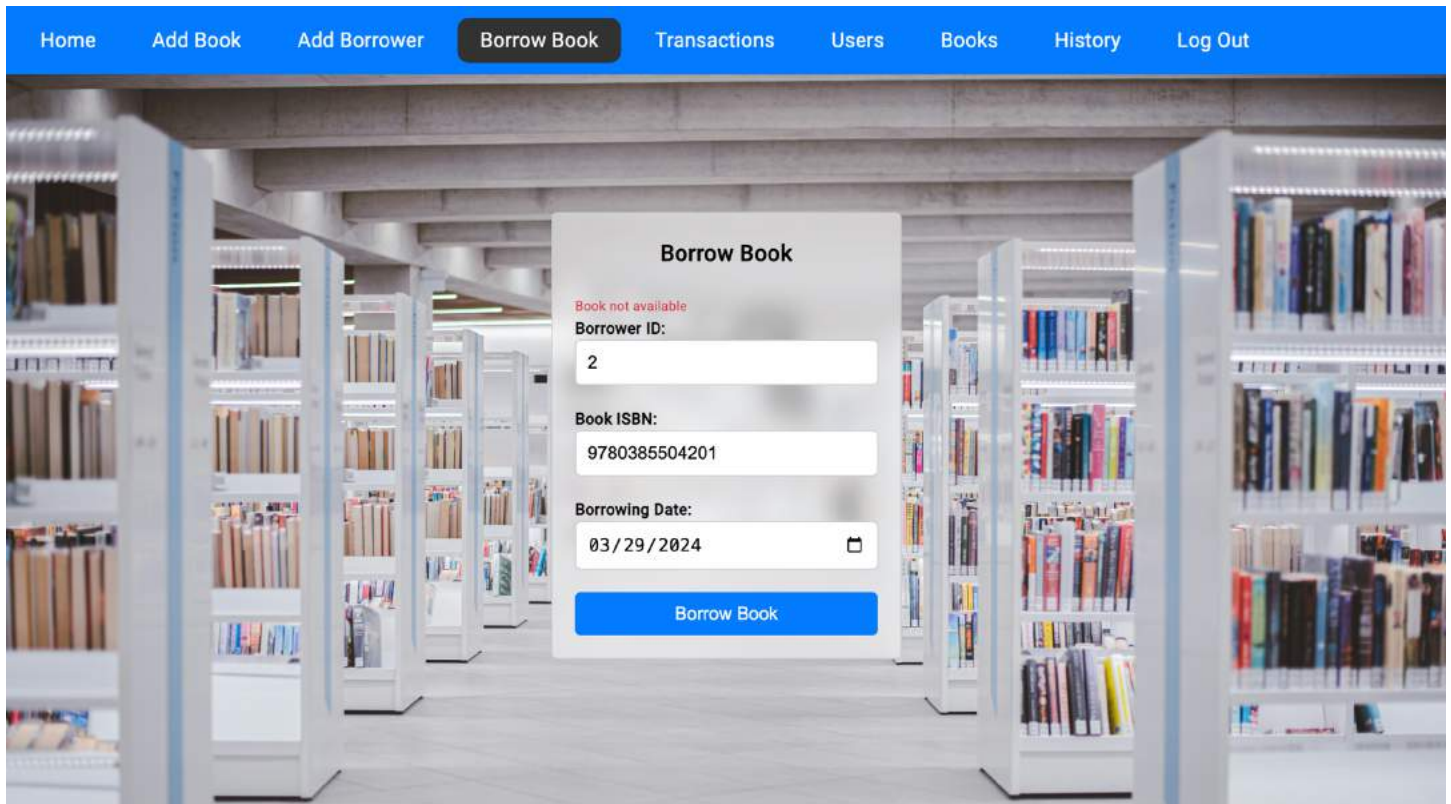
Book ISBN: 9780385504201

Borrowing Date: 03/29/2024

Borrow Book

- If the book ISBN is not found then it gives an error message saying 'Book not found'





- If the book is already borrowed by some other user, then it gives an error saying, 'Book not available'.

<b>Title:</b> Think and Grow Rich <b>Author:</b> Napoleon Hill <b>Genre:</b> Motivation <b>Publication Year:</b> 1937 <b>Availability:</b> Available	<b>Title:</b> The Night Circus <b>Author:</b> Erin Morgenstern <b>Genre:</b> Fantasy <b>Publication Year:</b> 2011 <b>Availability:</b> Available	<b>Title:</b> Think and Grow Rich <b>Author:</b> Napoleon Hill <b>Genre:</b> Motivation <b>Publication Year:</b> 1937 <b>Availability:</b> Available
<b>ISBN:</b> 9780385341672 <b>Title:</b> The Girl on the Train <b>Author:</b> Paula Hawkins <b>Genre:</b> Thriller <b>Publication Year:</b> 2015 <b>Availability:</b> Available	<b>ISBN:</b> 9780385504201 <b>Title:</b> A Thousand Splendid Suns <b>Author:</b> Khaled Hosseini <b>Genre:</b> Historical Fiction <b>Publication Year:</b> 2007 <b>Availability:</b> Not Available	<b>ISBN:</b> 9780670030553 <b>Title:</b> The Goldfinch <b>Author:</b> Donna Tartt <b>Genre:</b> Fiction <b>Publication Year:</b> 2013 <b>Availability:</b> Available
<b>ISBN:</b> 9780735219090 <b>Title:</b> Where the Crawdads Sing <b>Author:</b> Delia Owens <b>Genre:</b> Mystery <b>Publication Year:</b> 2018 <b>Availability:</b> Available	<b>ISBN:</b> 9780739341163 <b>Title:</b> The Help <b>Author:</b> Kathryn Stockett <b>Genre:</b> Historical Fiction <b>Publication Year:</b> 2009 <b>Availability:</b> Not Available	<b>ISBN:</b> 9781400033416 <b>Title:</b> The Kite Runner <b>Author:</b> Khaled Hosseini <b>Genre:</b> Historical Fiction <b>Publication Year:</b> 2003 <b>Availability:</b> Available
<b>ISBN:</b> 9781594634024 <b>Title:</b> All the Light We Cannot See <b>Author:</b> Anthony Doerr <b>Genre:</b> Historical Fiction <b>Publication Year:</b> 2014 <b>Availability:</b> Not Available		

- Once the book I assigned to a borrower, the status of the book changed from 'Available' to 'Not Available'.

#### 4. Return Book 15 points

- Librarians should be able to process return transactions, updating the return date for the borrowed book.
- The availability status of the book copy should be updated accordingly.

Home Add Book Add Borrower Borrow Book **Transactions** Users Books History Log Out

Transaction ID: 1

Borrowing Date: Mar 1, 2024

User ID: 2

Book ISBN: 9780307248435

View User

View Book

Return Date: Mar 8, 2024

Transaction ID: 2

Borrowing Date: Mar 2, 2024

User ID: 3

Book ISBN: 9780307271329

View User

View Book

Return Date: Mar 9, 2024

Transaction ID: 3

Borrowing Date: Mar 6, 2024

User ID: 5

Book ISBN: 9780385341672

View User

View Book

Return Date: Mar 10, 2024

Transaction ID: 4

Borrowing Date: Mar 8, 2024

User ID: 6

Book ISBN: 9780739341163

View User

View Book

Select return date:

Return Book

Transaction ID: 5

Borrowing Date: Mar 9, 2024

User ID: 3

Book ISBN: 9780307248435

View User

View Book

Return Date: Mar 11, 2024

Transaction ID: 6

Borrowing Date: Mar 21, 2024

User ID: 5

Book ISBN: 9781594634024

View User

View Book

Select return date:

Return Book

- The librarian can add a return date and take the book back from the borrower.

Title: Think and Grow Rich

Author: Napoleon Hill

Genre: Motivation

Publication Year: 1937

Availability: Available

Title: The Night Circus

Author: Erin Morgenstern

Genre: Fantasy

Publication Year: 2011

Availability: Available

Title: Think and Grow Rich

Author: Napoleon Hill

Genre: Motivation

Publication Year: 1937

Availability: Available

ISBN: 9780385341672

Title: The Girl on the Train

Author: Paula Hawkins

Genre: Thriller

Publication Year: 2015

Availability: Available

ISBN: 9780385504201

Title: A Thousand Splendid Suns

Author: Khaled Hosseini

Genre: Historical Fiction

Publication Year: 2007

Availability: Available

ISBN: 9780670030553

Title: The Goldfinch

Author: Donna Tartt

Genre: Fiction

Publication Year: 2013

Availability: Available

ISBN: 9780735219090

Title: Where the Crawdads Sing

Author: Delia Owens

Genre: Mystery

Publication Year: 2018

Availability: Available

ISBN: 9780739341163

Title: The Help

Author: Kathryn Stockett

Genre: Historical Fiction

Publication Year: 2009

Availability: Not Available

ISBN: 9781400033416

Title: The Kite Runner

Author: Khaled Hosseini

Genre: Historical Fiction

Publication Year: 2003

Availability: Available

ISBN: 9781594634024

Title: All the Light We Cannot See

Author: Anthony Doerr

Genre: Historical Fiction

Publication Year: 2014

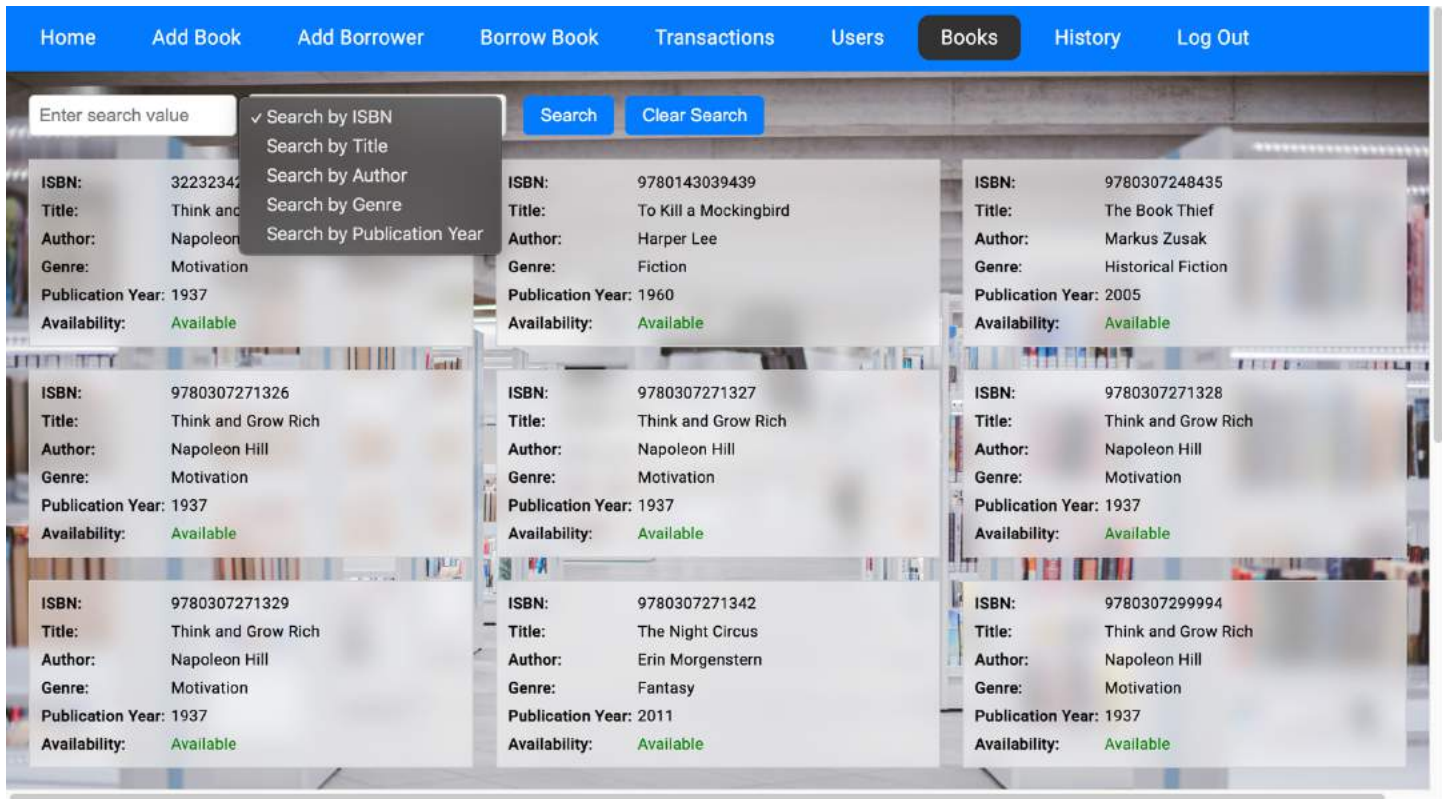
Availability: Not Available



- Once the book is returned, the booking status gets updated from 'Not Available' to 'Available'.

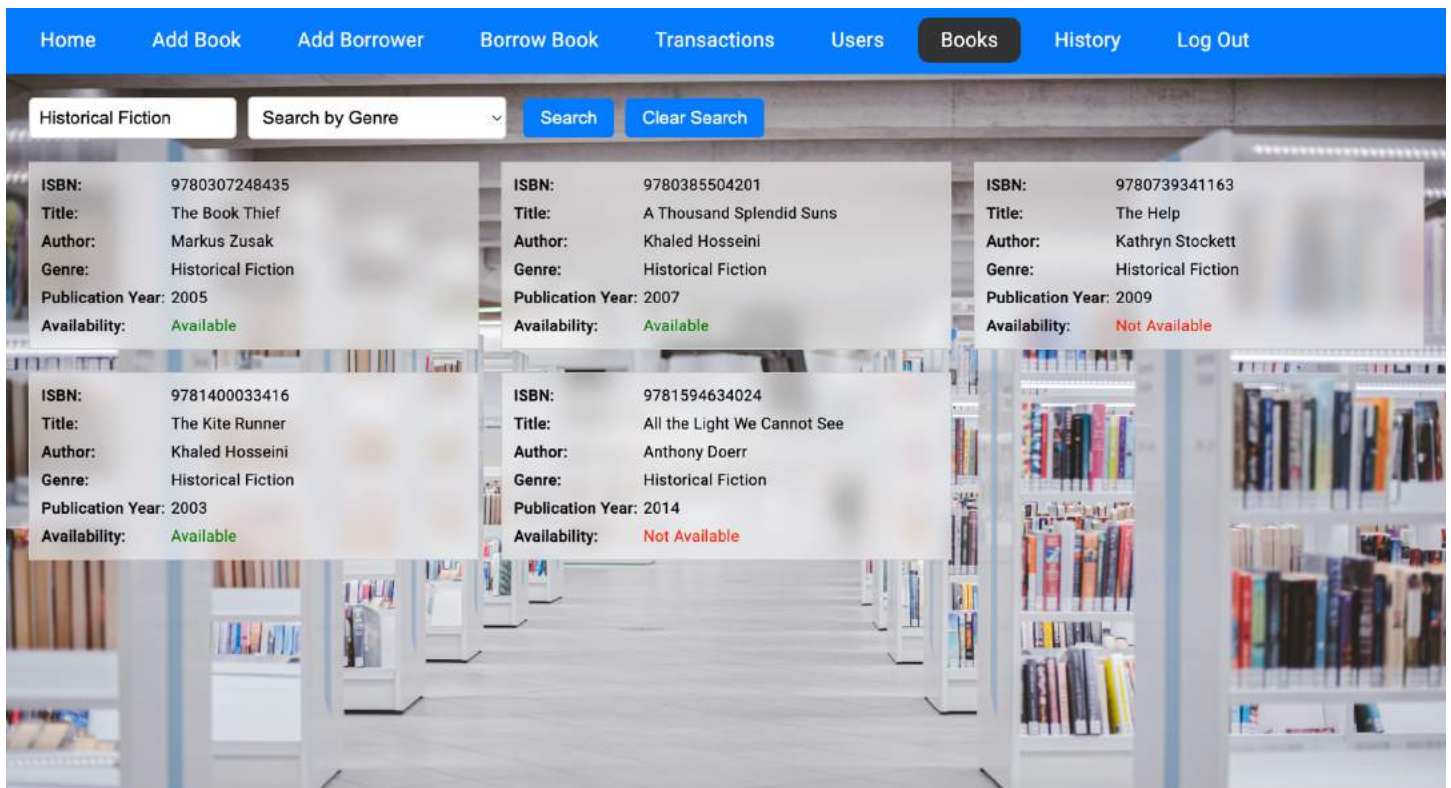
## 5. Search Books 15 points

- Users should be able to search for books by ISBN, title, author, genre, or publication year.
- The system should display all copies of the book along with their availability status.



- Users and librarians can search books with various attributes like ISBN, Title, Author, Genre, and Publication Year.

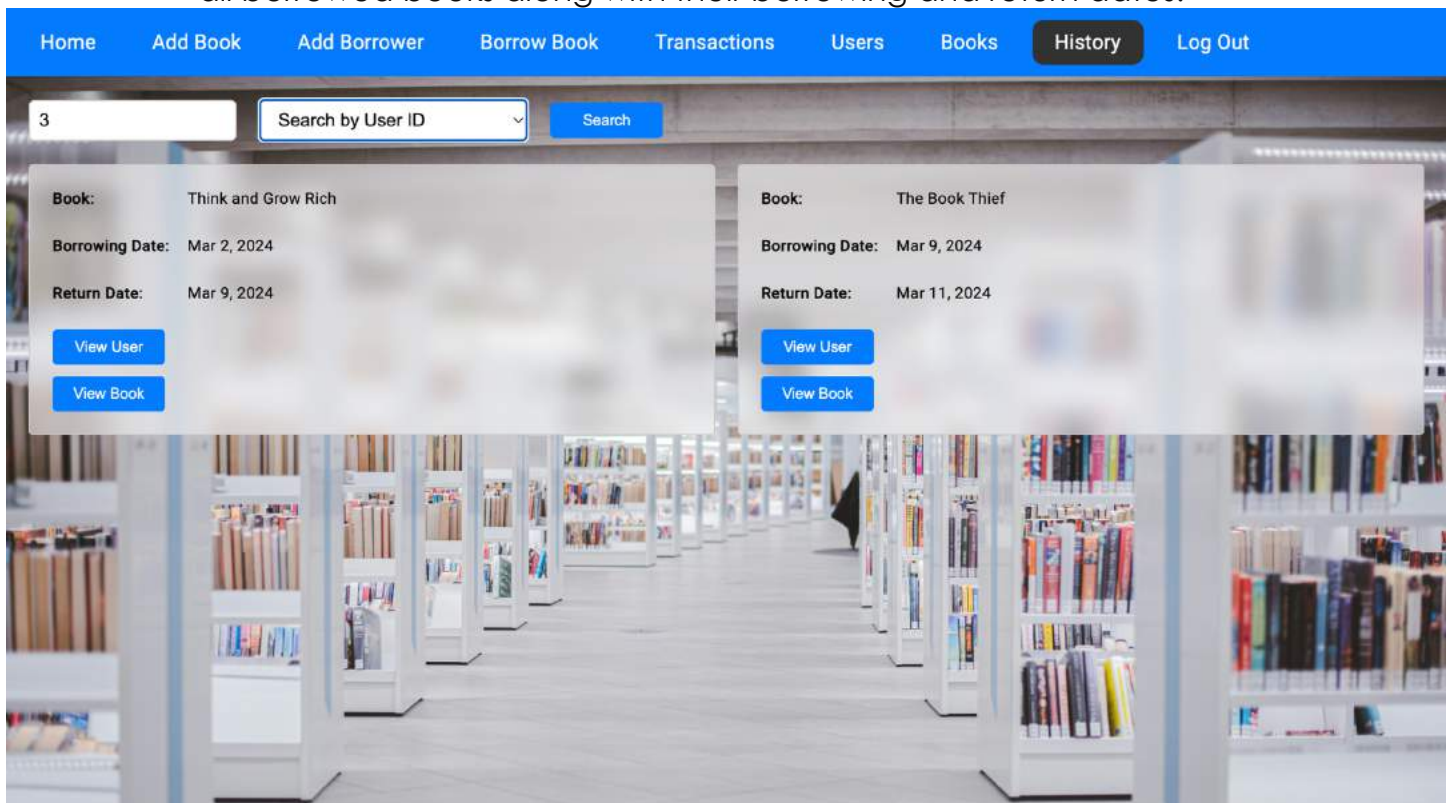




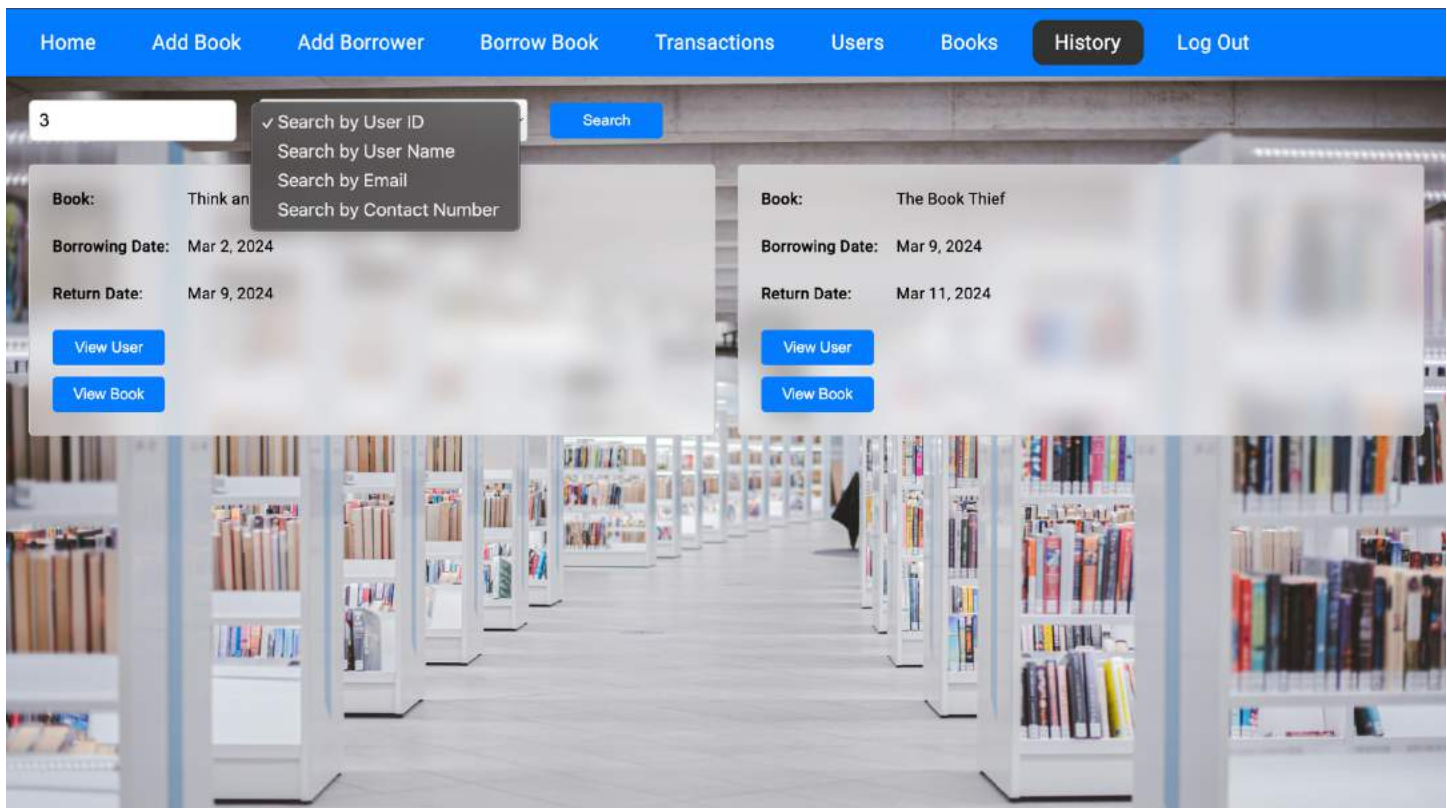
- It also displays the availability status of the book.

#### 6. View Borrowing History 5 points

- Users should be able to view the borrowing history of a specific borrower, listing all borrowed books along with their borrowing and return dates.

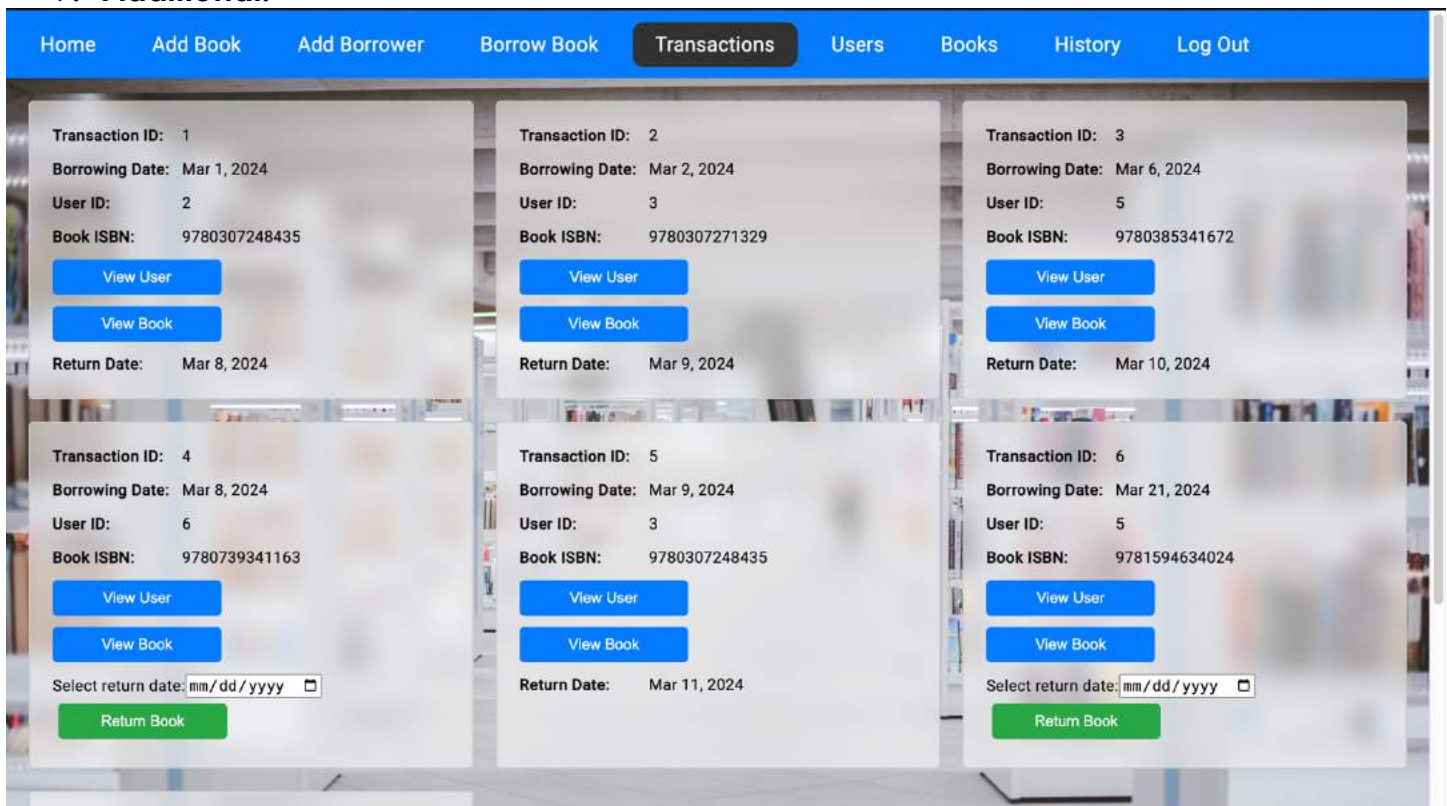


- Users and librarians can view the borrowing history of a specific borrower.



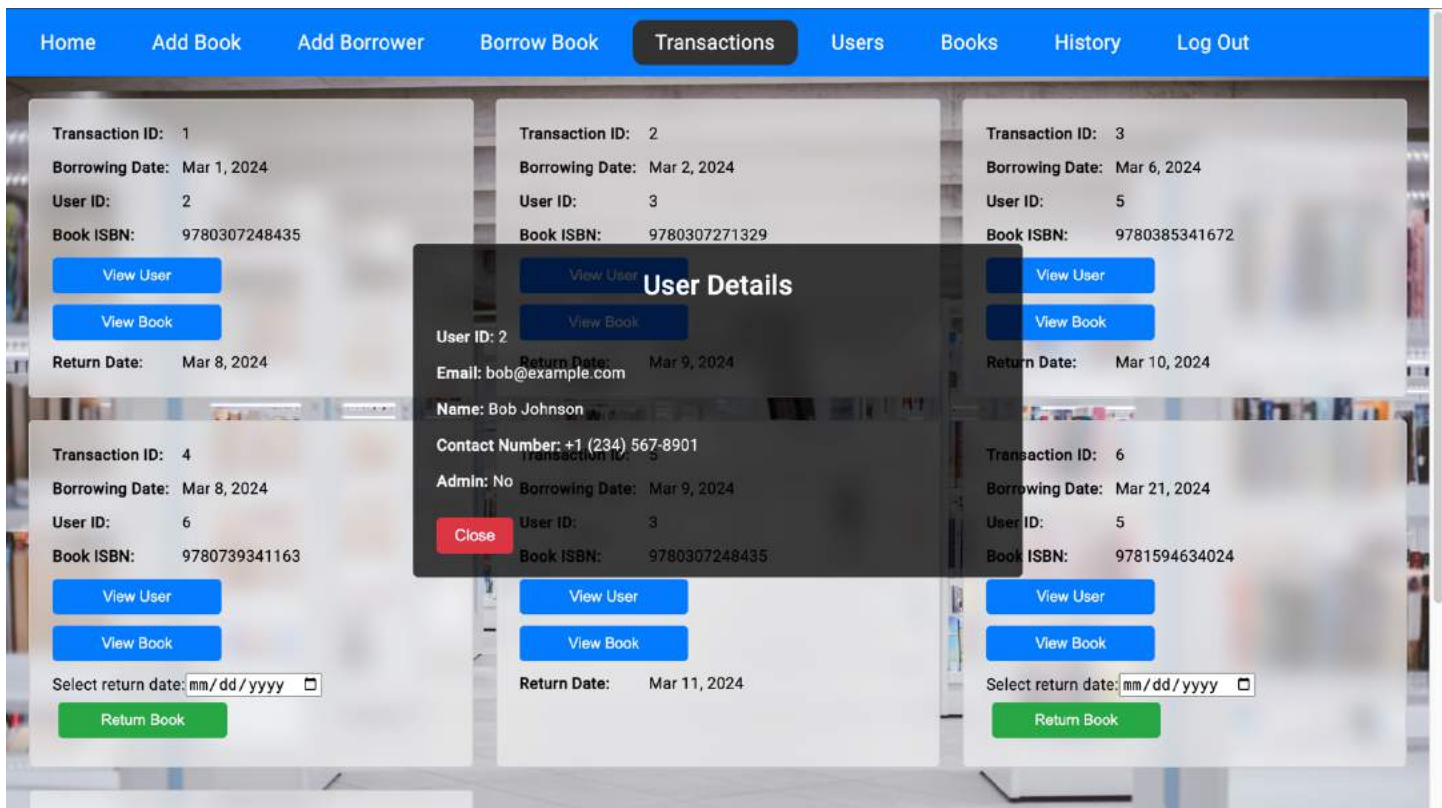
- The borrowing history can be checked by different attributes like user ID, User name, email, and Contact number.

## 7. Additional:

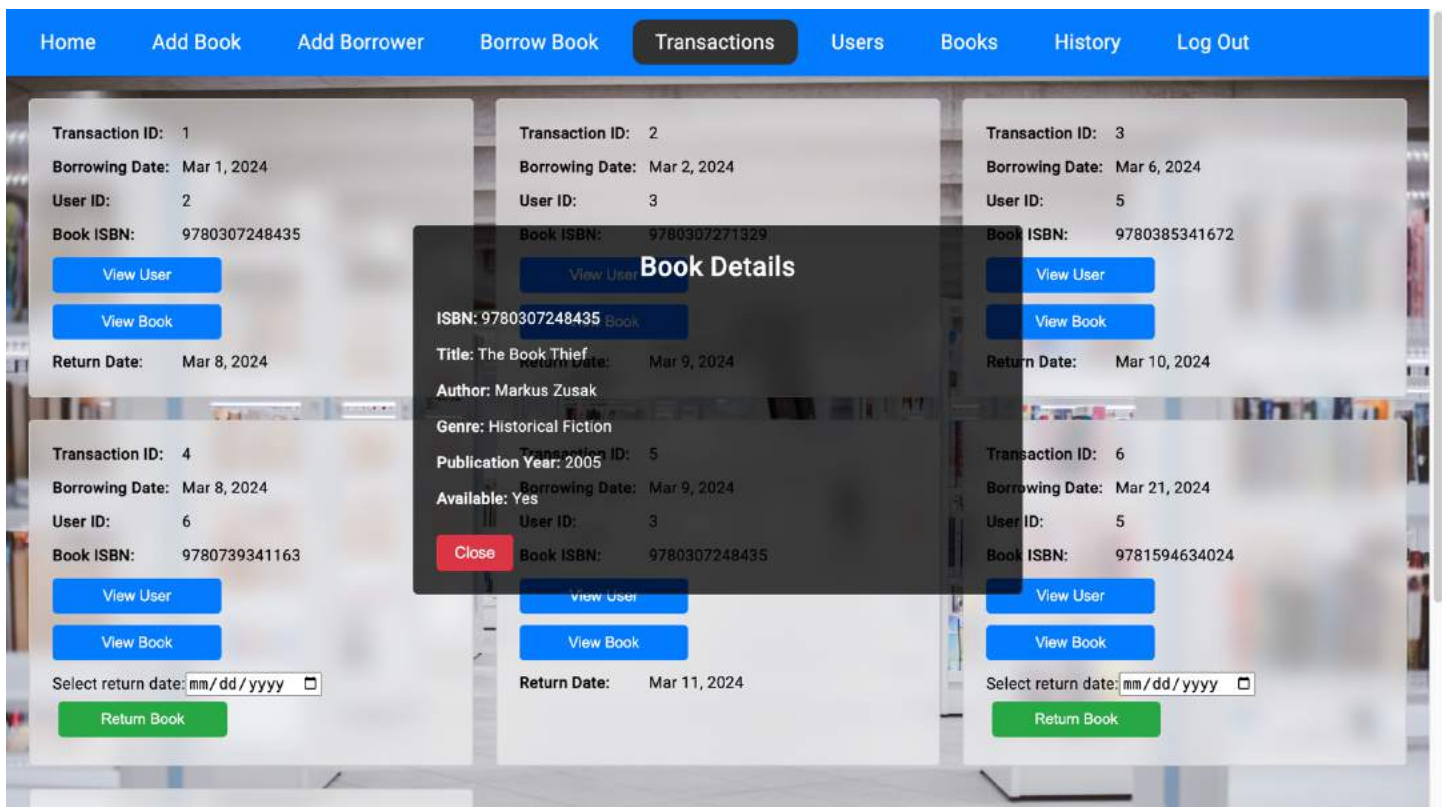


- Librarians can see all the transactions.



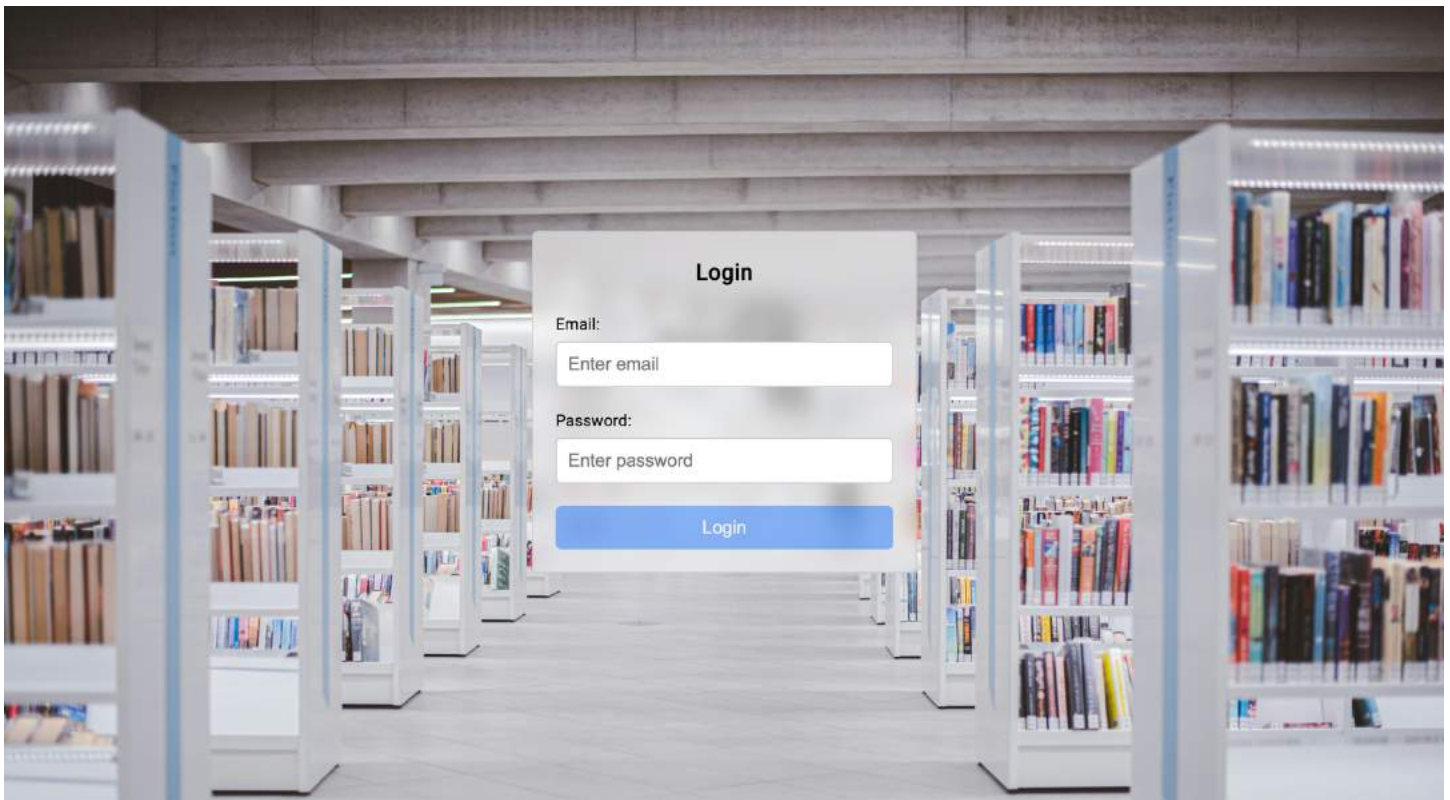


- The librarian can also see the user details for that particular transaction.



- The librarian can also see the book details for that particular transaction.





- The librarian and borrowers can log in using their email ID and password which were created by the librarian.



- The librarian can see all the various options like 'Add Book', 'Add Borrower', 'Borrow Book', 'Transactions', 'Users', 'Books', 'History', and 'Logout'.

# Welcome to Library Management System

## Developer Information:

**Name:** Kishan Kumar Zalavadia

**ID:** 11685261

**Email:** KishanKumarZalavadia@my.unt.edu

- The borrower has access to limited stuff like 'Books' (See all books), 'History' (Check the history of each user), And 'Logout'.