

SQL commands for creating database and tables

“NOTE: To run the application/form it needs to connect to microsoft SQL server and create the following Database and Table unless it is valueless.”

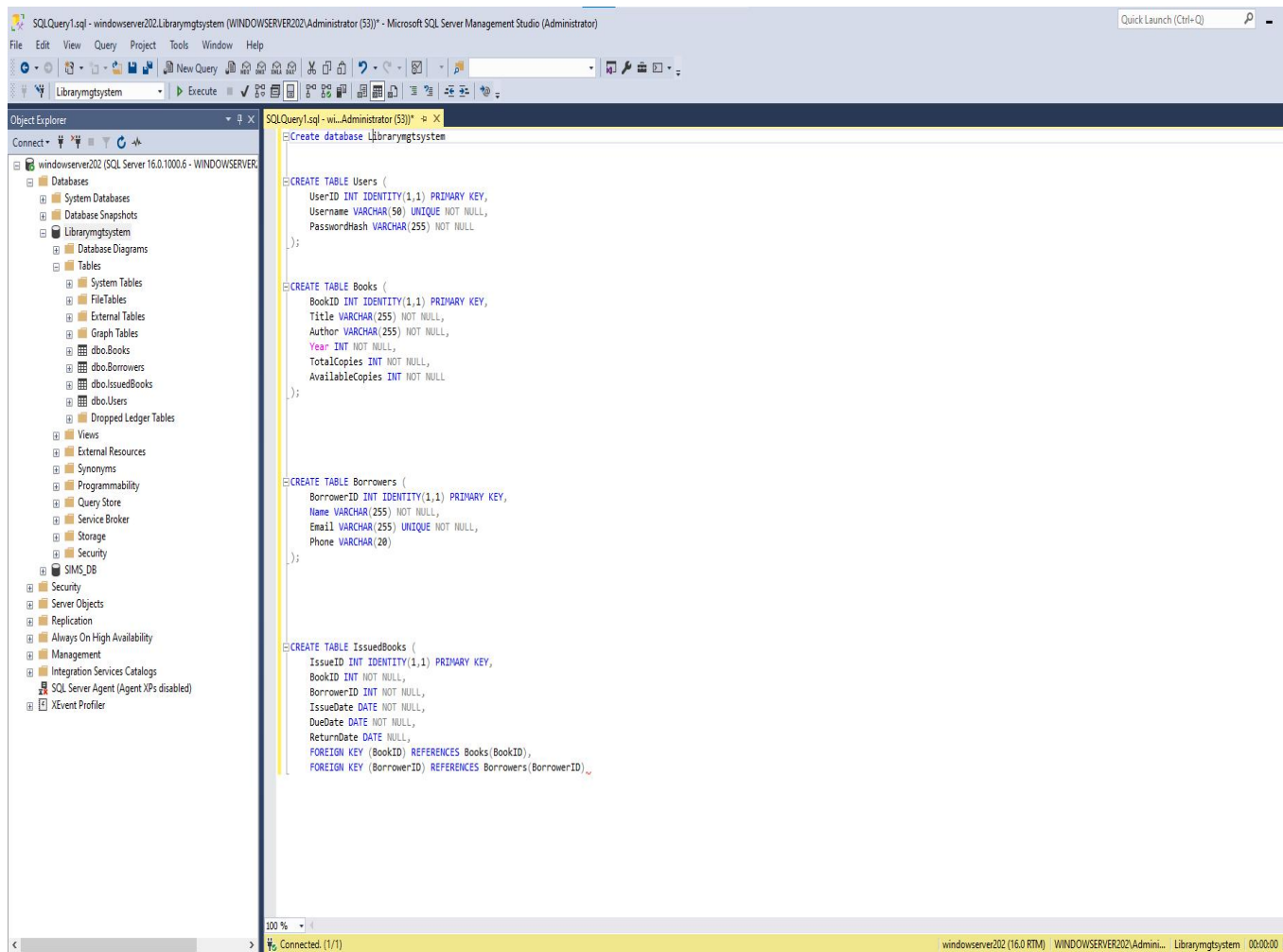
Create database Librarymgtsystem

```
CREATE TABLE Users (  
    UserID INT IDENTITY(1,1) PRIMARY KEY,  
    Username VARCHAR(50) UNIQUE NOT NULL,  
    PasswordHash VARCHAR(255) NOT NULL  
);
```

```
CREATE TABLE Books (  
    BookID INT IDENTITY(1,1) PRIMARY KEY,  
    Title VARCHAR(255) NOT NULL,  
    Author VARCHAR(255) NOT NULL,  
    Year INT NOT NULL,  
    TotalCopies INT NOT NULL,  
    AvailableCopies INT NOT NULL  
);
```

```
CREATE TABLE Borrowers (  
    BorrowerID INT IDENTITY(1,1) PRIMARY KEY,  
    Name VARCHAR(255) NOT NULL,  
    Email VARCHAR(255) UNIQUE NOT NULL,  
    Phone VARCHAR(20)  
);
```

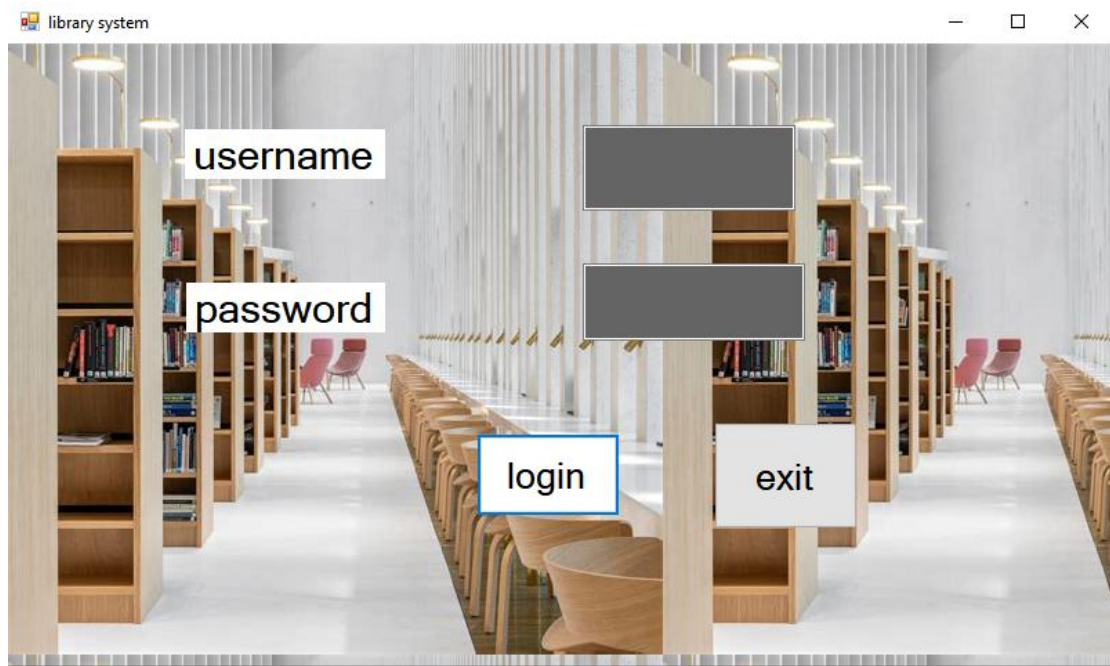
```
CREATE TABLE IssuedBooks (  
    IssueID INT IDENTITY(1,1) PRIMARY KEY,  
    BookID INT NOT NULL,  
    BorrowerID INT NOT NULL,  
    IssueDate DATE NOT NULL,  
    DueDate DATE NOT NULL,  
    ReturnDate DATE NULL,  
    FOREIGN KEY (BookID) REFERENCES Books(BookID),  
    FOREIGN KEY (BorrowerID) REFERENCES Borrowers(BorrowerID)  
);
```



Login page

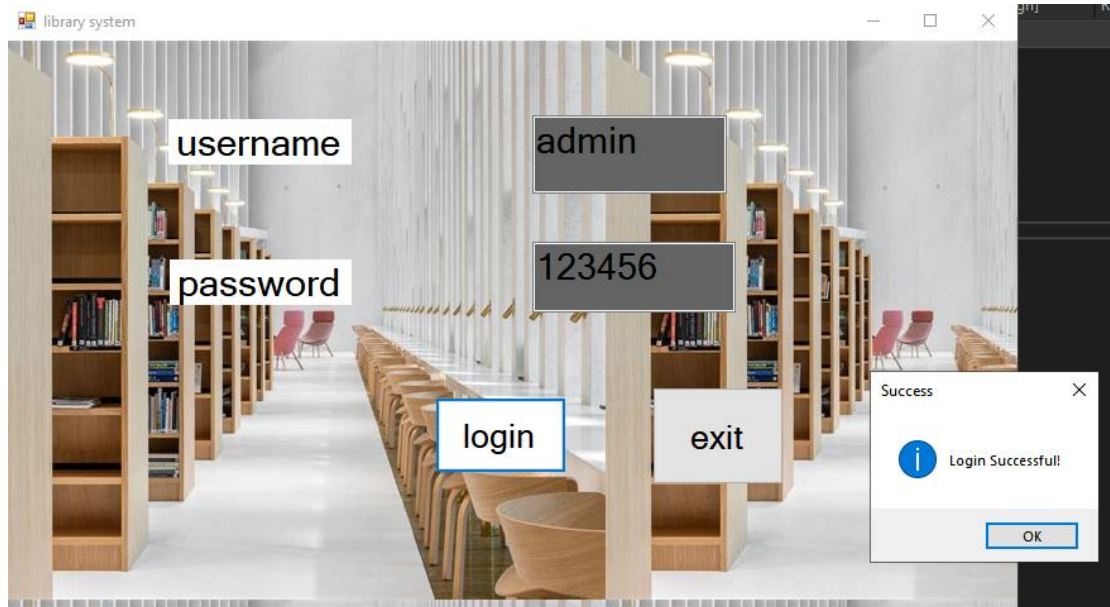
Default login (username=admin,password=123456)

- **UI:** Textboxes for "Username" and "Password", "Login" button, "Exit" button.

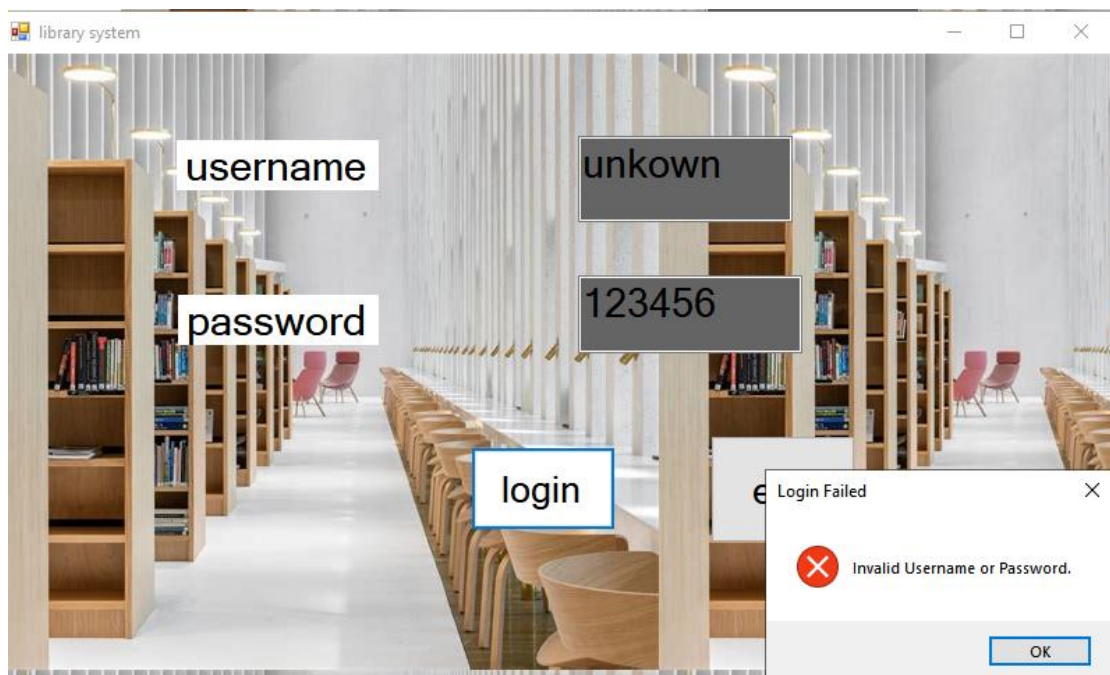


• **Authentication:**

- On "**Login**" button click event:
 - Retrieve username and password.
 - Hash the entered password (e.g., using BCrypt.Net or SHA256).
 - Query Users table for the username and compare the hashed password.
 - If credentials match: Hide LoginForm, open MainWindow.
 - If credentials do not match: Display error message (MessageBox.Show).
- Use parameterized queries to prevent SQL injection.
- Implement try-catch for database operations.
- On "**Exit**" when click exit it close Form.



❖ Try with different password or username or both it will :

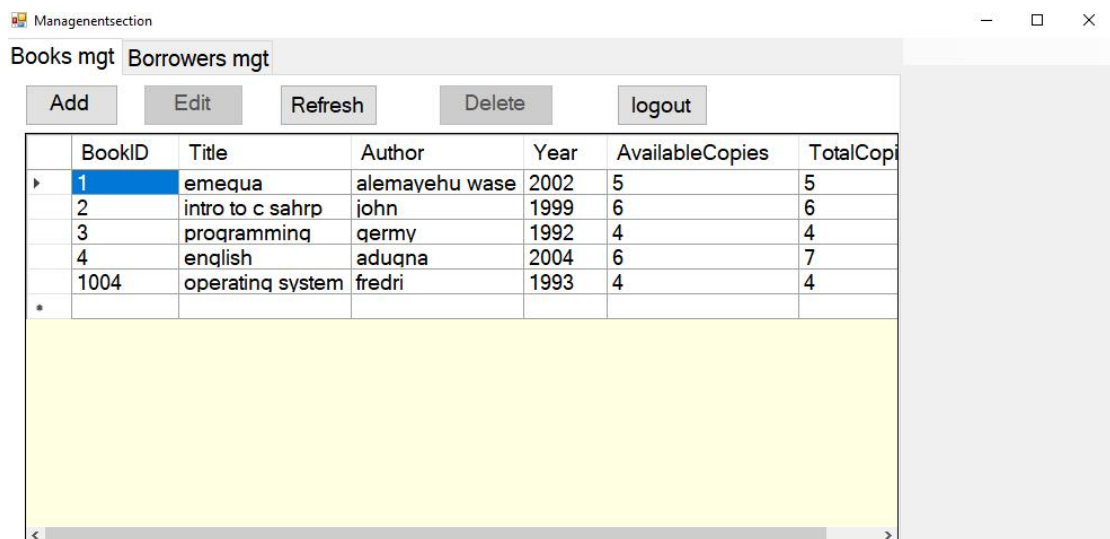


Main windows page contains

UI: TabControl with two tabs: "Books Management" and "Borrowers Management".

1.books management(To add,Edit,Refresh page,Delete book and logout(optional))

- **UI:** DataGridView to display books (BookID, Title, Author, Year, AvailableCopies). Buttons: "Add Book", "Edit Book", "Delete Book", "Refresh". (Bonus: Filter controls).
- DataGridView **Population:**
 - On tab/section load, fetch all books from the Books table and bind to DataGridView.

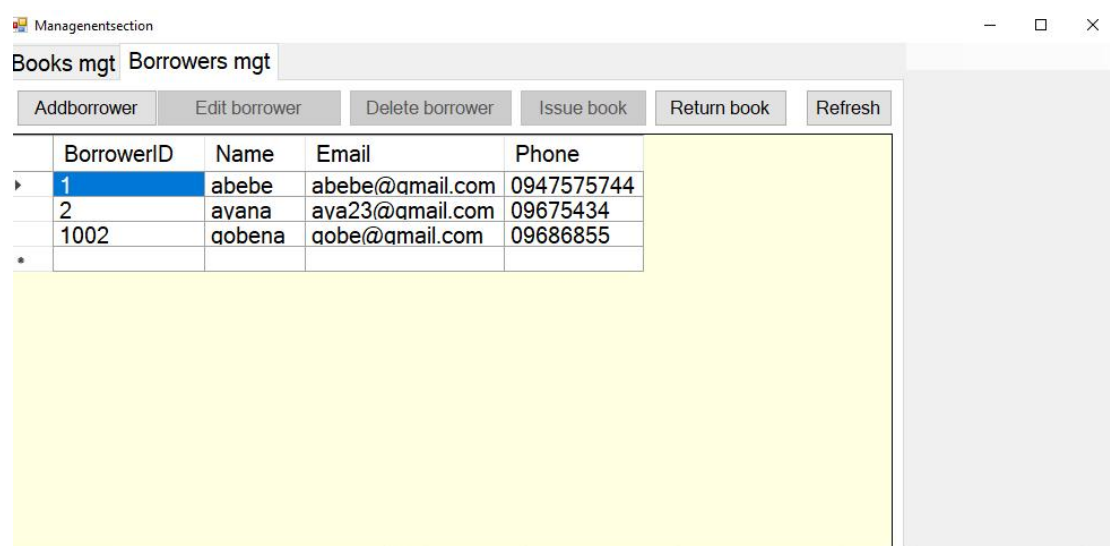


2. borrowers management(To add ,edit,delete borrower and Issue(borrow),return book)

· **UI:** DataGridView for borrowers (BorrowerID, Name, Email, Phone). Buttons: "Add Borrower", "Edit Borrower", "Delete Borrower", "Issue Book", "Return Book", "Refresh".

· DataGridView **Population:**

- On tab/section load, fetch all borrowers from Borrowers table and bind



Book recording page

Add Book:

- "Add Book" button click: Open BookDetailsForm in "Add" mode.
- BookDetailsForm (Add Mode):
 - Textboxes for Title, Author, numeric input for Year, TotalCopies.
 - "Save" button:
 - Validate input (not empty, year range, total copies > 0).

- Insert new record into Books table.
- Set AvailableCopies equal to TotalCopies.
- Close form and refresh DataGridView in MainWindow.

✓ E.g. Before add book named “Event Driven programming”

Managenentsection

Books mgt Borrowers mgt

Add Edit Refresh Delete logout

	BookID	Title	Author	Year	AvailableCopies	TotalCopies
▶	1	emequa	alemayehu wase	2002	3	5
	2	intro to c sahrp	john	1999	6	6
	4	english	aduqna	2004	6	7
	2005	Bebanya	Alemayehu Gelegay	2015	6	6
*						

< >

❖ After adding

Title:

Event Driven programming

Author:

E.kalbgja

Year:

2019

Total Copies:

5

Save

Cancel

Managementsection

Books mgt Borrowers mgt

Add

Edit

Refresh

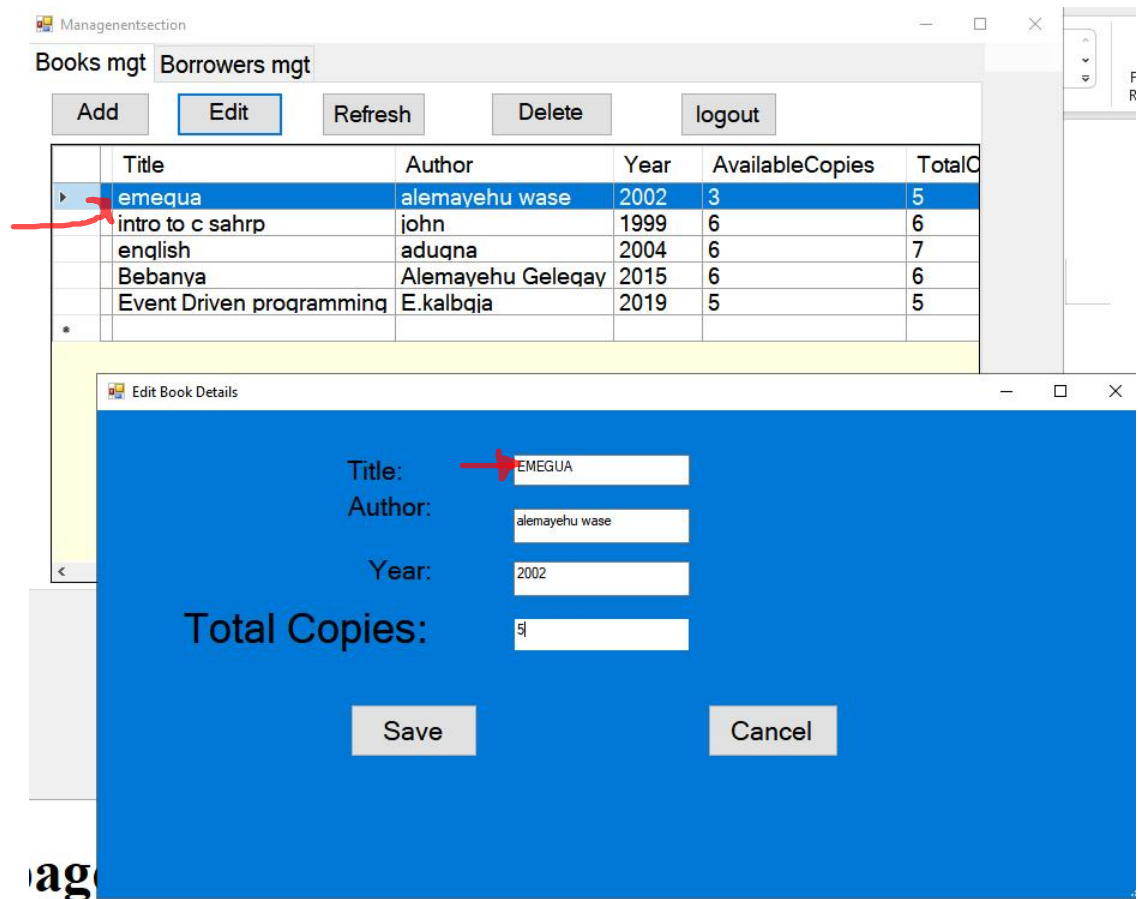
Delete

logout

	BookID	Title	Author	Year	AvailableCopies
▶	1	emequa	alemayehu wase	2002	3
	2	intro to c sahrp	john	1999	6
	4	english	aduqna	2004	6
	2005	Bebanya	Alemayehu Geleqay	2015	6
	2006	Event Driven proqramming	E.kalbgja	2019	5
*					

❖ Edit book button

When click “edit ” button it opens add book form as shown:



- Try to Edit “emegua” as “EMEGUA”

Add

Edit

Refresh

Delete

logout

	BookID	Title	Author	Year	AvailableCopies
▶	1	EMEGUA	alemayehu wase	2002	3
	2	intro to c sahrp	john	1999	6
	4	english	aduqna	2004	6
	2005	Bebanya	Alemayehu Geleqay	2015	6
	2006	Event Driven proqramming	E.kalbjja	2019	5
*					

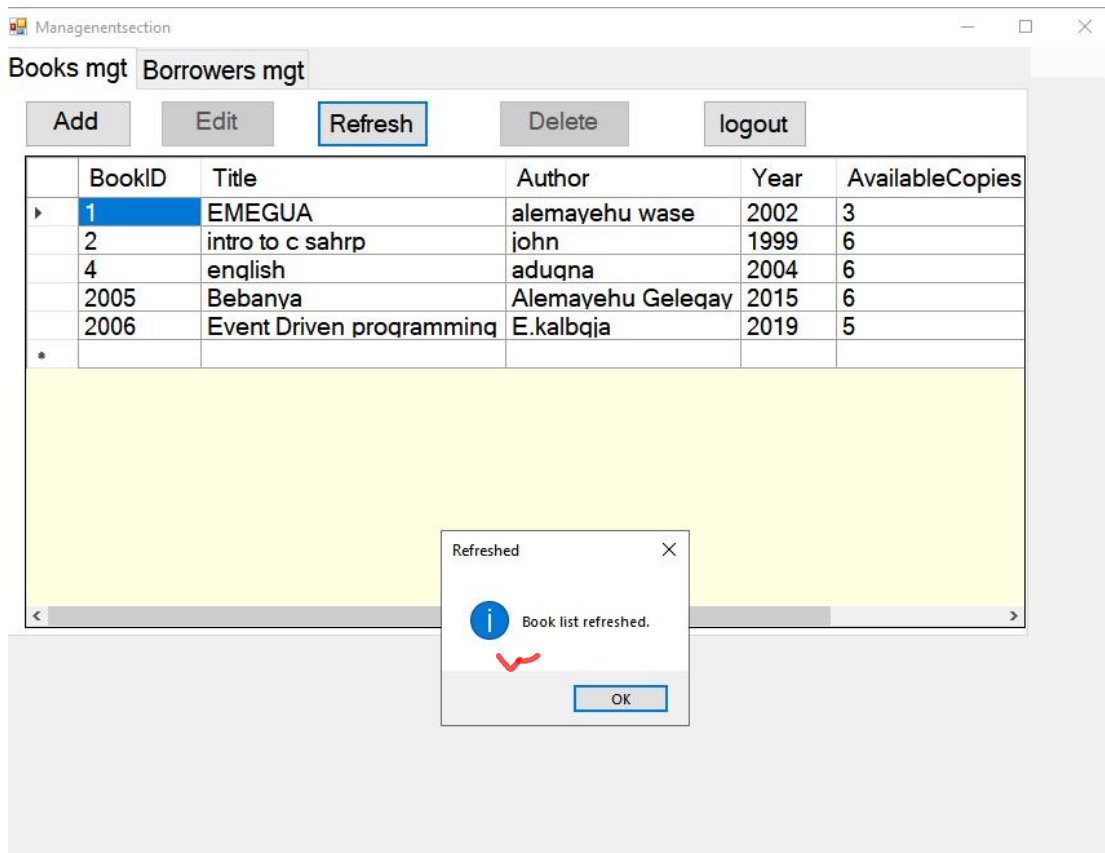
Success



Book updated successfully!

OK

❖ Refresh book



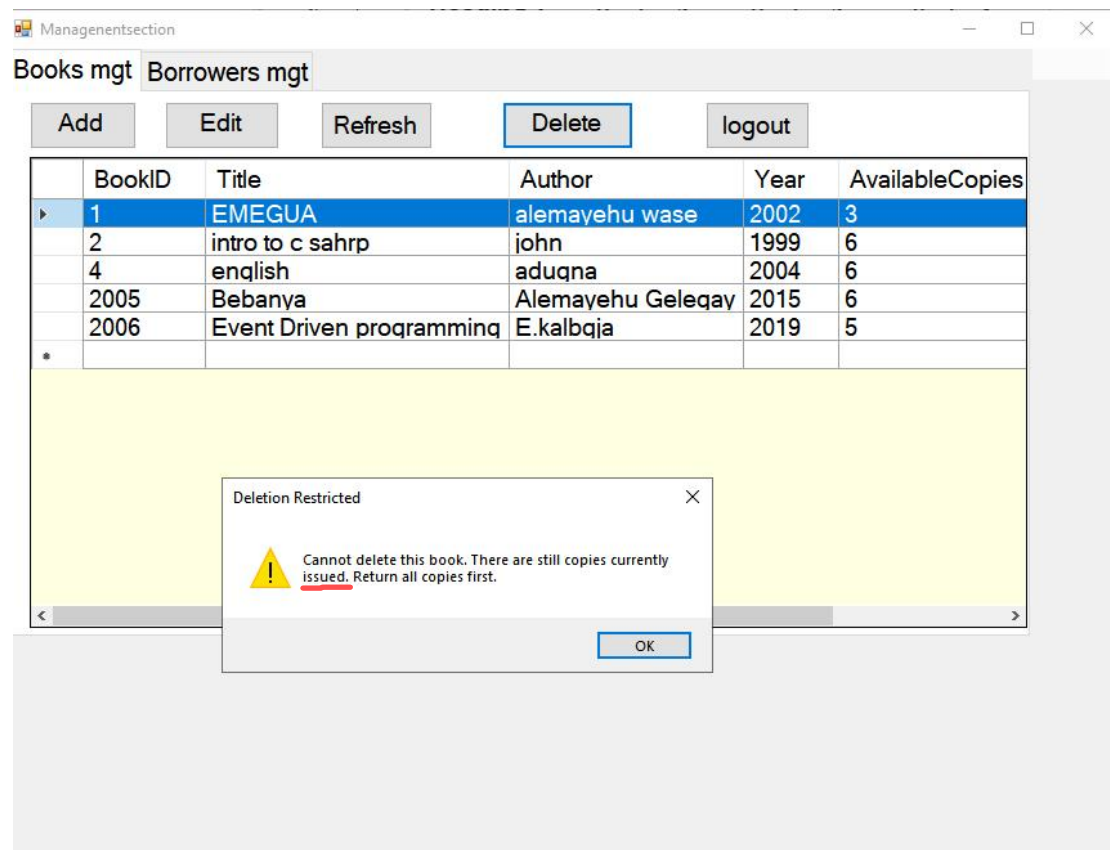
The screenshot shows a web application window titled 'Managementsection'. It has two tabs: 'Books mgt' (active) and 'Borrowers mgt'. Below the tabs are five buttons: 'Add', 'Edit', 'Refresh' (highlighted with a blue border), 'Delete', and 'logout'. The main area contains a table with the following data:

	BookID	Title	Author	Year	AvailableCopies
▶	1	EMEGUA	alemayehu wase	2002	3
	2	intro to c sahrp	john	1999	6
	4	english	adugna	2004	6
	2005	Bebanya	Alemayehu Geleqay	2015	6
	2006	Event Driven programming	E.kalbqja	2019	5
*					

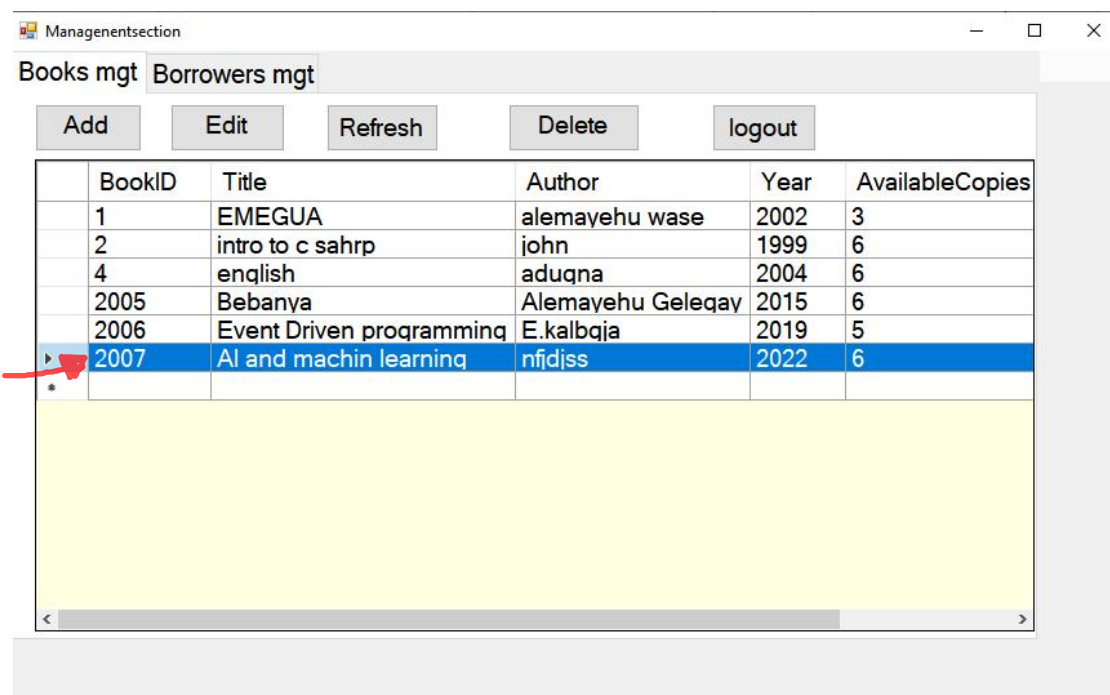
Below the table is a large yellow rectangular area. A small dialog box titled 'Refreshed' is open in the center, displaying an information icon, the text 'Book list refreshed.', a red checkmark, and an 'OK' button.

❖ Delete book

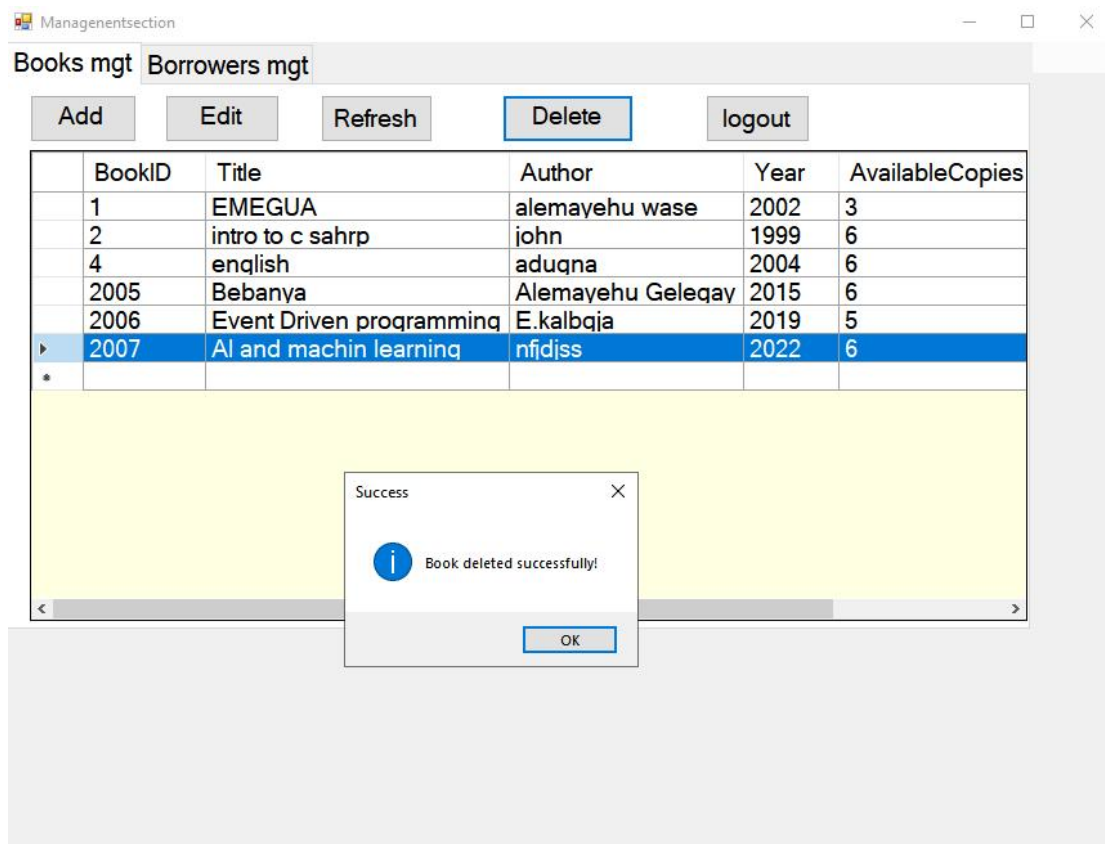
When try to delete issued book “EMEGUA” it denies as shown because it is **Issued**



- Let me delete one which is not issued “AI and machine learning” it will be deleted successfully



Deleted popup



Add new borrower to Database page

Add Borrower / Edit Borrower / Delete Borrower: (Similar logic to Books Management)

- BorrowerDetailsForm for Add/Edit.
- Validation: Name (not empty), Email (valid format), Phone (optional, but if present, valid format).

Before “kebede” is added

Managenentsection

Books mgt Borrowers mgt

Addborrower Edit borrower Delete borrower Issue book Return book Refresh

	BorrowerID	Name	Email	Phone
▶	1	abebe	abebe@gmail.com	0947575744
	2	ayana	ava23@gmail.com	09675434
	1002	qobena	qobe@gmail.com	09686855
*				

➤ After “kebede” is added

Books mgt Borrowers mgt

Addborrower

Edit borrower

Delete borrower

Issue book

Return book

Refresh

	BorrowerID	Name	Email	Phone
▶	1	abebe	abebe@gmail.com	0947575744
	2	avana	ava23@gmail.com	09675434
	1002	qobena	qobe@gmail.com	09686855
✱	2002	kebede	kebede@gmail.com	09876543

Success

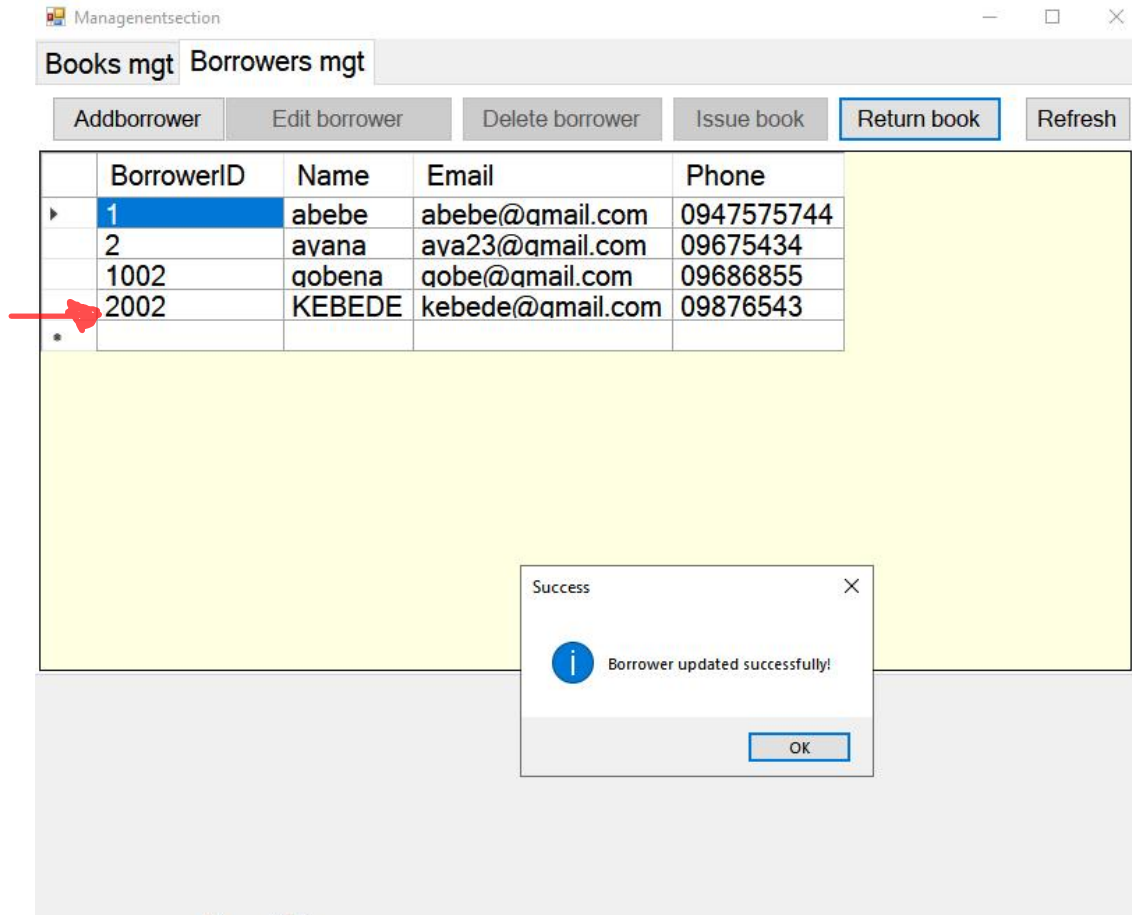


Borrower added successfully!

OK

EDIT BUTTON

❖ Edit “kebede” to “KEBEDE”



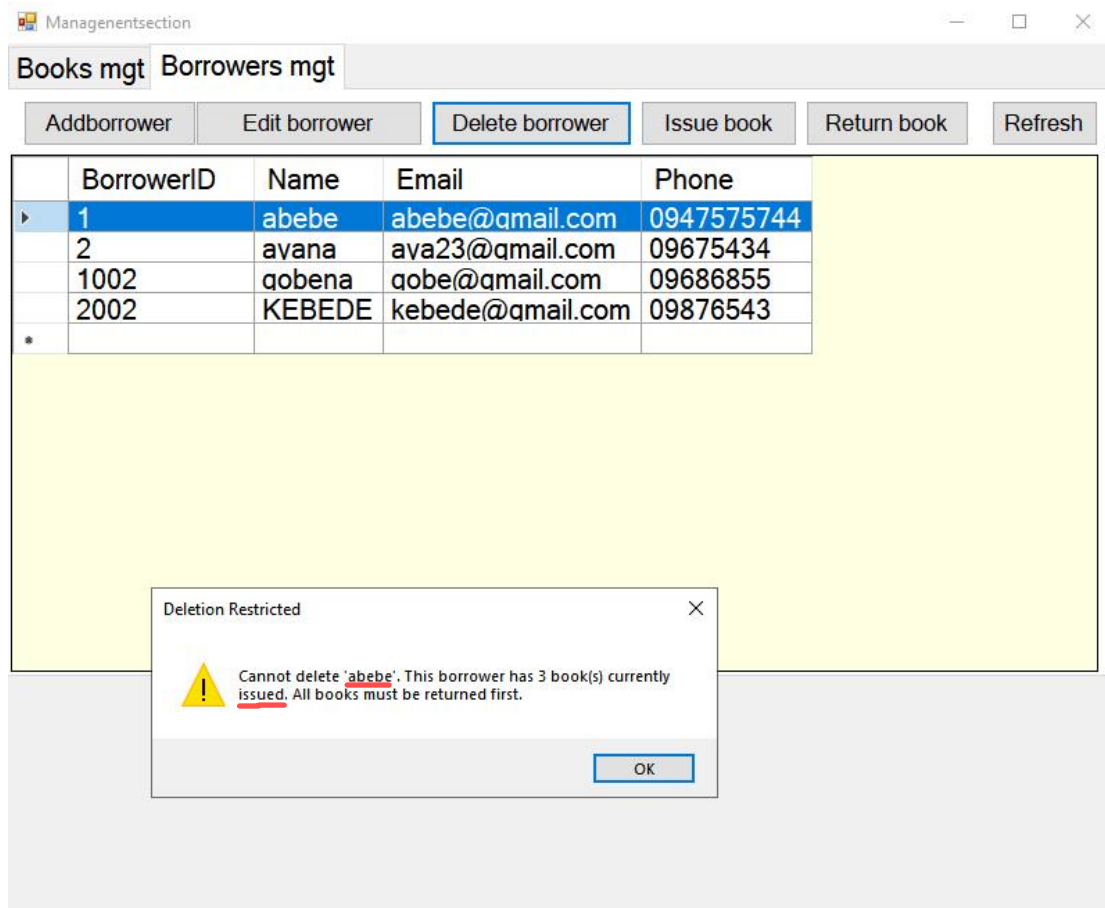
The screenshot shows a web application window titled 'Managenentsection' (sic). It has two tabs: 'Books mgt' and 'Borrowers mgt'. Below the tabs are several buttons: 'Addborrower', 'Edit borrower', 'Delete borrower', 'Issue book', 'Return book' (highlighted with a blue border), and 'Refresh'. A table with the following columns is displayed: BorrowerID, Name, Email, and Phone. The table contains five rows of data. A red arrow points to the row where BorrowerID is 2002 and Name is KEBEDE. Below the table is a large yellow rectangular area. At the bottom center, a 'Success' dialog box is open, displaying an information icon and the message 'Borrower updated successfully!'. An 'OK' button is at the bottom of the dialog.

BorrowerID	Name	Email	Phone
1	abebe	abebe@gmail.com	0947575744
2	avana	ava23@gmail.com	09675434
1002	qobena	qobe@gmail.com	09686855
2002	KEBEDE	kebede@gmail.com	09876543
*			

❖ Delete borrower

we can delete borrower if he/she has no issued book.

Let delete abebe but he issue 3 books,the system will popup in the screenshot below



Book issue(borrowing) page

IssueBookForm.cs:

- UI: Dropdown/ComboBox for selecting a Borrower and a Book. DatePickers for IssueDate and DueDate. "Issue" button.
- Populate book dropdown with books where AvailableCopies > 0.
- "Issue" button:
 - Validate selections.
 - Insert record into IssuedBooks table.
 - Decrement AvailableCopies in Books table.
 - Close form and refresh relevant DataGridViews (Books and Borrowers, or specifically for issued books if a report is implemented).

Implement try-catch with transaction for consistency

❖ Issue Book

I have added 5 copies of "Event Driven Programming" and let me issued to kebede looks like

The screenshot displays a web application interface for managing books and borrowers. The main window, titled 'Managementsection', has two tabs: 'Books mgt' and 'Borrowers mgt'. Below the tabs are buttons for 'Addborrower', 'Edit borrower', 'Delete borrower', 'Issue book' (highlighted), 'Return book', and 'Refresh'. A table lists borrowers with columns for BorrowerID, Name, Email, and Phone. The row for BorrowerID 2002, named KEBEDE, is selected. An 'IssueBookForm' dialog box is open in the foreground, featuring a blue background. It includes a 'search Books' input field, a dropdown menu showing 'Driven programming', and date pickers for 'IssueDate' (Thursday, May 29, 2025) and 'DueDate' (Thursday, June 12, 2025). The text 'Issuing to: KEBEDE' is displayed, and at the bottom are 'Issue' and 'cancel' buttons. The text 'ok pag' is partially visible at the bottom left of the image.

BorrowerID	Name	Email	Phone
1	abebe	abebe@gmail.com	0947575744
2	avana	ava23@gmail.com	09675434
1002	qobena	qobe@gmail.com	09686855
2002	KEBEDE	kebede@gmail.com	09876543

IssueBookForm

search Books

Driven programming

IssueDate: Thursday, May 29, 2025

DueDate: Thursday, June 12, 2025

Issuing to: KEBEDE

Issue cancel

ok pag

Managenentsection

Books mgt Borrowers mgt

Addborrower Edit borrower Delete borrower Issue book Return book Refresh

BorrowerID	Name	Email	Phone
1	abebe	abebe@gmail.com	0947575744
2	avana	ava23@gmail.com	09675434
1002	qobena	qobe@gmail.com	09686855
2002	KEBEDE	kebede@gmail.com	09876543

Success

Book issued successfully!

OK

➤ Now Available book of “Event Driven programming ” will be 4.

Managenentsection

Books mgt Borrowers mgt

Add Edit Refresh Delete logout

Title	Author	Year	AvailableCopies	TotalCo
emequa	alemayehu wase	2002	3	5
intro to c sahrp	john	1999	6	6
english	aduqna	2004	6	7
Bebanya	Alemayehu Gelegay	2015	6	6
Event Driven programming	E.kalbqja	2019	4	5

✧ Exeption with Issue book.

Let webdevelopment book available copies is 0,because it Issued to somebody and Try to Issue

Available copies=0

Managenentsection

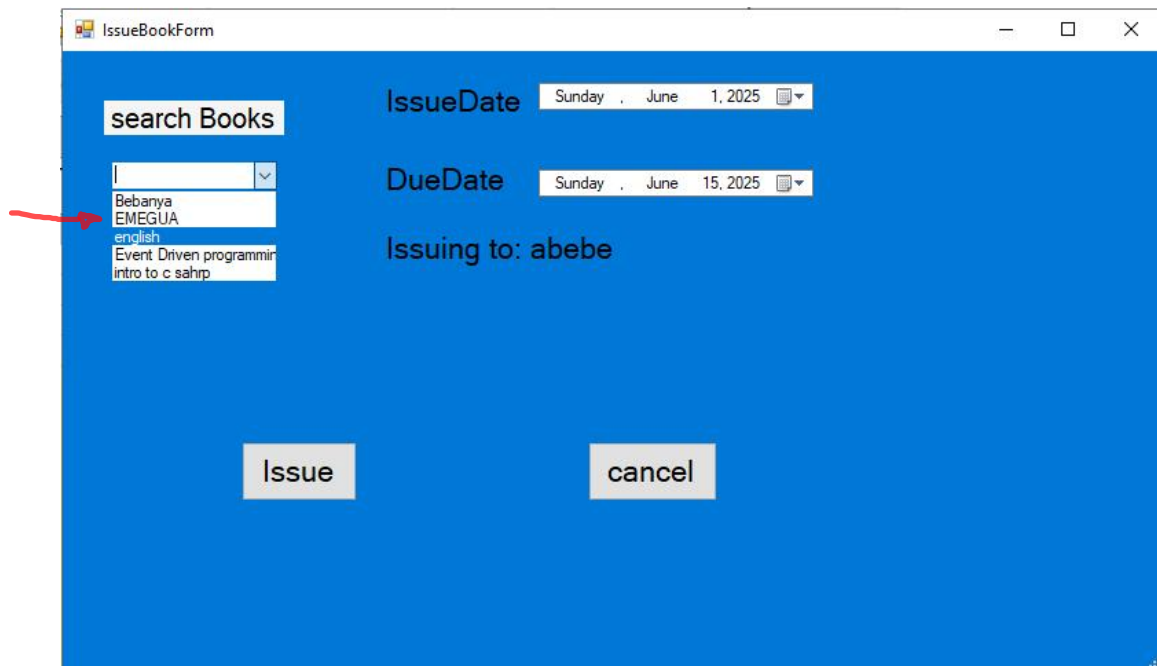
Books mgt Borrowers mgt

Add Edit Refresh Delete logout

	BookID	Title	Author	Year	AvailableCopies
▶	1	EMEGUA	alemayehu wase	2002	3
	2	intro to c sahrp	john	1999	6
	4	english	aduqna	2004	6
	2005	Bebanya	Alemayehu Gelegay	2015	6
	2006	Event Driven programming	E.kalbqja	2019	5
	3004	webdevelopment	dhebnkj	2012	0
*					

< >

Try to Issue “webdevelopment”



As you see in Dropdown is not found because no available to be issued.

Return book page

ReturnBookForm.cs:

- UI: DataGridView listing *currently issued* books (Book Title, Borrower Name, Issue Date, Due Date). "Return Selected" button.
 - Populate DataGridView by joining IssuedBooks, Books, and Borrowers tables, filtering for ReturnDate IS NULL.
 - "Return Selected" button:
 - Get IssueID and BookID from selected row.
 - Increment AvailableCopies in Books table.
 - Update ReturnDate in IssuedBooks table to GETDATE()/CURRENT_DATE().
 - Close form and refresh DataGridView.
 - Implement try-catch with transaction.
- Let KEBEDE RETURNS book, “Event Driven programming” available book will be 5

Managementsection

Books mgt Borrowers mgt

Addborrower

Edit borrower

Delete borrower

Issue book

Return book

Refresh

BorrowerID	Name	Email	Phone
1	abebe	abebe@gmail.com	0947575744
2	avana	ava23@gmail.com	09675434
1002	qobena	qobe@gmail.com	09686855
2002	KEBEDE	kebede@gmail.com	09876543
*			

ReturnBookForm

ReturnSelected

Cancel

IssueID	BookID	Book Title	BookAuthor	BorrowerID	BorrowerName	IssueDate	DueDate
2002	2006	Event Driven pro...	E.kalbgia	2002	KEBEDE	5/29/2025	6/12/2025
1002	1	emegua	alemayehu wase	1	abebe	5/24/2025	6/7/2025
1003	1	emegua	alemayehu wase	1	abebe	5/24/2025	6/7/2025
3	4	english	adugna	1	abebe	5/22/2025	6/5/2025
*							

- When click “ReturnSelected” it asks for verification as shows:

Managementsection

Books mgt Borrowers mgt

Addborrower Edit borrower Delete borrower Issue book Return book Refresh

BorrowerID	Name	Email	Phone
1	abebe	abebe@gmail.com	0947575744
2	avana	ava23@gmail.com	09675434
1002	qobena	qobe@gmail.com	09686855
2002	KEBEDE	kebede@gmail.com	09876543

ReturnBookForm

ReturnSelected Cancel

IssueID	BookID	Book Title	Book Author	BorrowerID	BorrowerName	IssueDate	DueDate
2002	2006	Event Driven pro...	E.kalbgja	2002	KEBEDE	5/29/2025	6/12/20
1002	1	emegua	alemayehu wase	1	abebe	5/24/2025	6/7/202
1003	1	emegua	alemayehu wase	1	abebe	5/24/2025	6/7/202
3	4	english	adugna	1	abebe	5/22/2025	6/5/202

Confirm Return

Are you sure you want to mark 'Event Driven programming' issued to 'KEBEDE' as returned?

Yes No

➤ Click “yes”

Managenentsection

Books mgt Borrowers mgt

Addborrower Edit borrower Delete borrower Issue book Return book Refresh

	BorrowerID	Name	Email	Phone
▶	1	abebe	abebe@gmail.com	0947575744
	2	avana	ava23@gmail.com	09675434
	1002	qobena	qobe@gmail.com	09686855
	2002	KEBEDE	kebede@gmail.com	09876543
*				

Success

Book returned successfully!

OK

- ✓ Finally “Event driven programming” will be returned and Available will increamente to 5 as shown below

Managenentsection

Books mgt Borrowers mgt

Add Edit Refresh Delete logout

	Title	Author	Year	AvailableCopies	TotalC
	emequa	alemayehu wase	2002	3	5
	intro to c sahrp	john	1999	6	6
	enqlish	aduqna	2004	6	7
	Bebanya	Alemayehu Geleqay	2015	6	6
▶	Event Driven proqramming	E.kalbqia	2019	5	5
*					

❖ Click “Refresh” button


Managenentsection

Books mgt Borrowers mgt

Addborrower Edit borrower Delete borrower Issue book Return book Refresh

	BorrowerID	Name	Email	Phone
▶	1	abebe	abebe@gmail.com	0947575744
	2	avana	ava23@gmail.com	09675434
	1002	qobena	qobe@gmail.com	09686855
	2002	KEBEDE	kebede@gmail.com	09876543
*				

Refreshed

 Borrower list refreshed.

OK