

School Management System - Documentation

1. Project Overview

Project Name: Barcode-Based Library Management System

Purpose: To automate book issuance and return processes using barcode technology for faster and more accurate tracking of library resources.

2. Tech Stack

Frontend: HTML, CSS, Bootstrap, JavaScript, Razor (for .NET)

Backend: ASP.NET Core MVC / Django / PHP

Database: SQL Server / MySQL

Barcode Library: ZXing.Net or JsBarcode

Others: jQuery, AJAX, Entity Framework

3. Modules / Features

Admin Panel:

- Register books with unique barcodes
- Manage users (members/librarians)
- Generate barcode labels for each book
- Track issues/returns with barcode scanning

Librarian Panel:

- Scan book and member barcodes for issuing/returning
- View issued book list
- Overdue notifications and fine management

Member Panel:

- Scan ID card barcode for login or self-service
- View book history
- Search catalog

4. Barcode Workflow

1. Each book is registered with a unique ISBN/barcode
2. Barcodes are printed and pasted on books
3. Member ID cards have unique barcodes
4. At the time of issue/return:
 - Librarian scans both book and member barcode
 - System records the transaction automatically
5. Overdue books are tracked by system and fines calculated accordingly

5. Project Structure

/BarcodeLibrarySystem

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```
|-- /Controllers
|   |-- BookController.cs
|   |-- MemberController.cs
|-- /Models
|   |-- Book.cs
|   |-- Member.cs
|   |-- Barcode.cs
|   |-- IssueRecord.cs
|-- /Views
|   |-- /Admin
|   |-- /Librarian
|-- /wwwroot (Barcode JS, CSS)
|-- appsettings.json
|-- Startup.cs
```

6. Installation Guide

1. Install barcode generation/reading library (ZXing.Net for .NET or JsBarcode for JS)
2. Configure DB and update appsettings.json
3. Run DB migrations
4. Connect scanner device (optional - most work as keyboard input)
5. Run the app and test book scan

7. Authentication Roles

Admin: System management, book and user registration

Librarian: Book issue/return via scanning

Member: Search and view book details

8. Barcode Libraries

- ZXing.Net: For barcode reading (supports C#)
- JsBarcode: JavaScript-based barcode generator
- QRCode.js: If QR code is used instead of barcode

9. Sample API Endpoints

POST /api/book/register - Register new book and generate barcode

GET /api/book/scan/{code} - Fetch book by barcode

POST /api/issue - Record issue/return transaction

10. Testing

Manual testing of barcode scan via scanner device

Unit testing of issue/return and book tracking logic

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11. Screenshots

Include screenshots of:

- Barcode label generator
- Book scan UI
- Issue/Return workflow
- Admin dashboard

12. FAQ

Q: Can barcode be scanned using phone?

A: Yes, using the camera and JS-based scanner (e.g., QuaggaJS).

Q: How to reprint barcode?

A: Go to book profile > Click 'Reprint Barcode'

13. Contribution Guide

1. Fork repo
2. Create feature branches for new modules
3. Submit pull requests with clear messages