Library Management System

Expernetic Software Engineering Internship Assignment
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Project Overview & Scope Delivered

I built a complete full-stack Library Management System exactly according to the provided Requirements Document.

Core Features (All Implemented)

- Full Book CRUD operations (Create, Read, Update, Delete)
- RESTful API with proper HTTP status codes
- Entity Framework Core 10 + SQLite database (auto-created)
- Public book catalog (GET endpoints are anonymous)
- Optional user authentication & registration (JWT + BCrypt)
- Strong password validation with real-time feedback
- Modern, fully responsive React + TypeScript frontend
- Beautiful UI with Tailwind CSS v4, modals, cards, loading states

Technology

Backend

- ASP.NET Core 10 (latest LTS)
- Entity Framework Core 10
- SQLite
- JWT Bearer Authentication
- BCrypt.Net-Next for password hashing
- Swagger + XML documentation comments

Frontend

- React + TypeScript
- Vite + Tailwind CSS v4 (zero-config via @tailwindcss/vite)
- React Query (TanStack Query) for server-state
- Axios with automatic JWT interceptor
- React Hot Toast for notifications

Key Implementation Highlights

- Clean folder structure and separation of concerns
- Swagger fully documented using XML comments (auto-generated descriptions)
- CORS configured for local development
- Strong password policy with live validation
- Responsive design works perfectly on mobile & desktop

Challenges Faced & Solutions

Challenge	Solution Implemented
CORS errors during development	Added proper AddCors() middleware with specific origin
Tailwind v4 migration	Used new @tailwindcss/vite plugin (zero-config)
JWT + Axios integration	Created Axios interceptor + AuthContext
Swagger showing no descriptions	Enabled GenerateDocumentationFile + IncludeXmlComments
Clean, professional UI	Modern cards, gradients, blurred modal backdrop

Additional Enhancements (Above Requirements)

- Strong password validation with real-time UI feedback
- Beautiful responsive design with Tailwind v4
- React Query for optimal data fetching
- Loading states and toast notifications
- Full XML documentation → professional Swagger UI

How to Run (Tested on macOS & Windows)

Prerequisites (one-time):

- .NET 10 SDK
- Node.js 20+

Commands:

```
# Backend

cd backend/LibraryApi

dotnet run

# Frontend

cd frontend

npm install

npm run dev
```

My Library

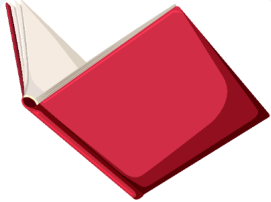Login   Create Account

EXPLORE THE CATALOG

Browse books without an account

Anyone can explore the collection. Sign in when you want to add, edit, or delete books.
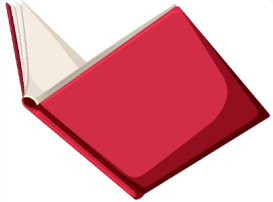
Login to manage   Create free account

At a glance

• Browse the library without signing in

• Secure actions require login

• Fast search-ready listing

new 3
by new 2n
new
Login to edit or delete

new one
by new
new
Login to edit or delete

Login

Email

Password

Login

No account? Register

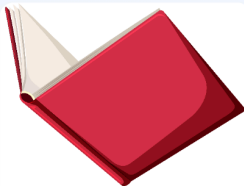**My Library**

Welcome, manu@gmail.com   Logout   + Add Book

Keep your library organized

Add new books, update details, and keep the catalog clean. You are signed in as manu@gmail.com.

+ Add Book

Next steps

• Add titles you own
• Edit details to stay accurate
• Remove books you no longer track

new 3
by new 2n
new

new one
by new
new

Register

Email

Password

Register

Already have an account? Login