

ProfileBook – A Social Media Platform

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1. Problem Definition and Objectives

Problem Statement: Existing platforms are either complex or don't provide controlled admin monitoring for student/social communities. A secure, scalable, and user-friendly social media platform with administrative moderation is required.

Objectives:

- Enable secure login/registration for users and admins.
- Allow users to create posts, like, comment, and message.
- Provide admins with tools for approving posts, managing users, and monitoring reports.
- Implement a responsive frontend and scalable backend using Angular and ASP.NET Core Web API.

2. System Requirements

- **Frontend:** Angular-based UI for user interaction and routing.
- **Backend:** ASP.NET Core MVC with Web API endpoints, JWT authentication.
- **Database:** SQL Server with EF Core ORM.
- **File Storage:** Profile pictures and posts stored in server directories.
- **Notifications:** Optional real-time messaging using SignalR.
- **API Documentation:** Swagger UI for testing and documenting WebAPI.

3. Architecture Overview

Frontend (Angular): User interface for user actions (posting, messaging, liking, reporting), admin interface for managing posts, users, and reports. Consumes Web API endpoints for login, registration, posting, messaging, and user management. Routing is handled using Angular Router. State management via Context API or Redux.

Backend (ASP.NET Core MVC): Web API endpoints for data exchange. JWT token authentication for secure login/logout. Entity Framework Core (EF Core) to handle CRUD

operations on database entities. Web API endpoints support user authentication, post approval, reporting, and messaging.

Database (SQL Server): Tables for Users, Posts, Messages, Reports, and Groups.

Relationships: One-to-Many between Users and Posts, Users and Messages.

Image Uploads: Users can upload profile images and post-related images. Images are stored on the server, and file references are stored in the database.

API Documentation: Swagger UI is used for testing and documenting the Web API.

4. Component Breakdown & API Design

Frontend Components:

- Login/Register Component
- Post Feed Component
- Messaging Component
- Admin Dashboard (User Management, Post Approval, Report Handling)

API Design:

- /api/auth/register, /api/auth/login
- /api/posts/create, /api/posts/approve, /api/posts/view
- /api/messages/send, /api/messages/get
- /api/reports/create, /api/reports/view
- JWT token for authentication

5. Database Design & Storage Optimization

Entities: Users, Posts, Messages, Reports, Groups

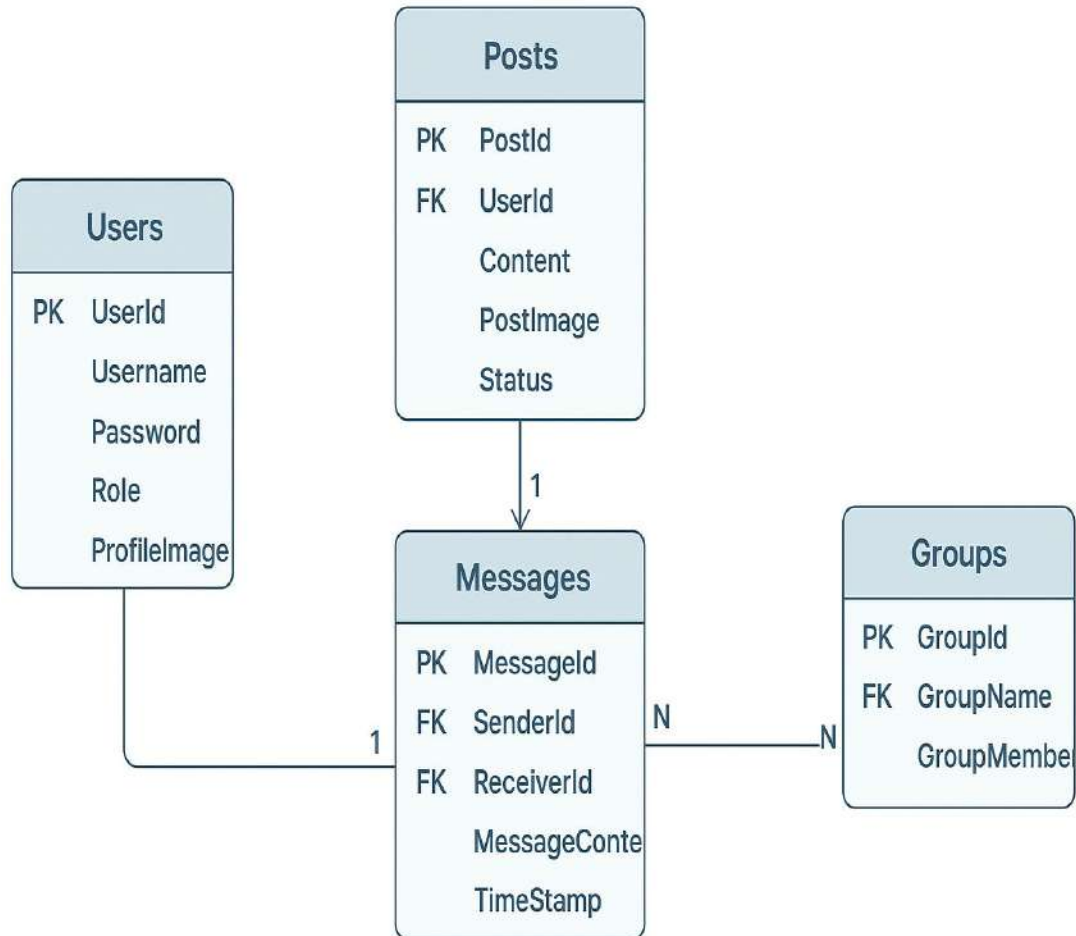
Relationships:

- One-to-Many: Users → Posts
- One-to-Many: Users → Messages
- Many-to-Many: Users ↔ Groups

Optimization Techniques:

- Proper indexing on primary and foreign keys
- Database normalization (3NF)

- Efficient EF Core LINQ queries



6. Sprint Plan

Sprint I: Use Cases, Database Schema, Static Frontend, MVC Views

Sprint II: Angular UI, Web API Endpoints, JWT Authentication, Messaging API

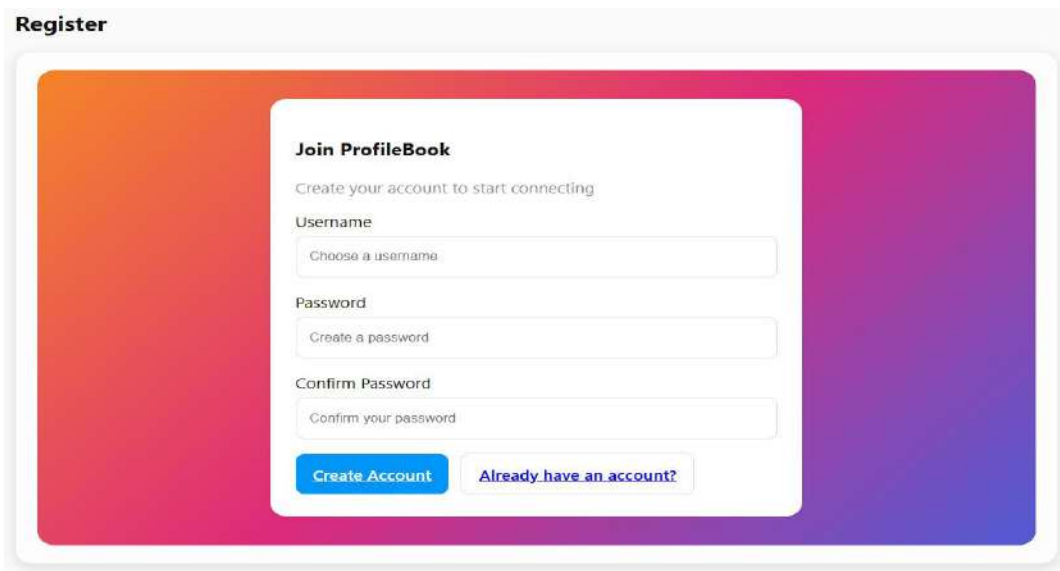
Sprint III: Search & Filter, Post Approval, Reported Users, Swagger, Final Integration

7. Key Points of Implementation

- Frontend: Angular Router for navigation, State Management via Context API or Redux, Axios/Fetch for API calls
- Backend: JWT authentication, EF Core ORM for database operations, Web API endpoints
- Image Uploads: Managed via IFormFile in ASP.NET Core
- Notifications: Optional SignalR for real-time messaging

8. Demonstration

Register



The register form is titled "Join ProfileBook" and includes a sub-header "Create your account to start connecting". It features three input fields: "Username" with placeholder text "Choose a username", "Password" with placeholder text "Create a password", and "Confirm Password" with placeholder text "Confirm your password". At the bottom, there is a blue "Create Account" button and a link "Already have an account?".

Join ProfileBook

Create your account to start connecting

Username

Choose a username

Password

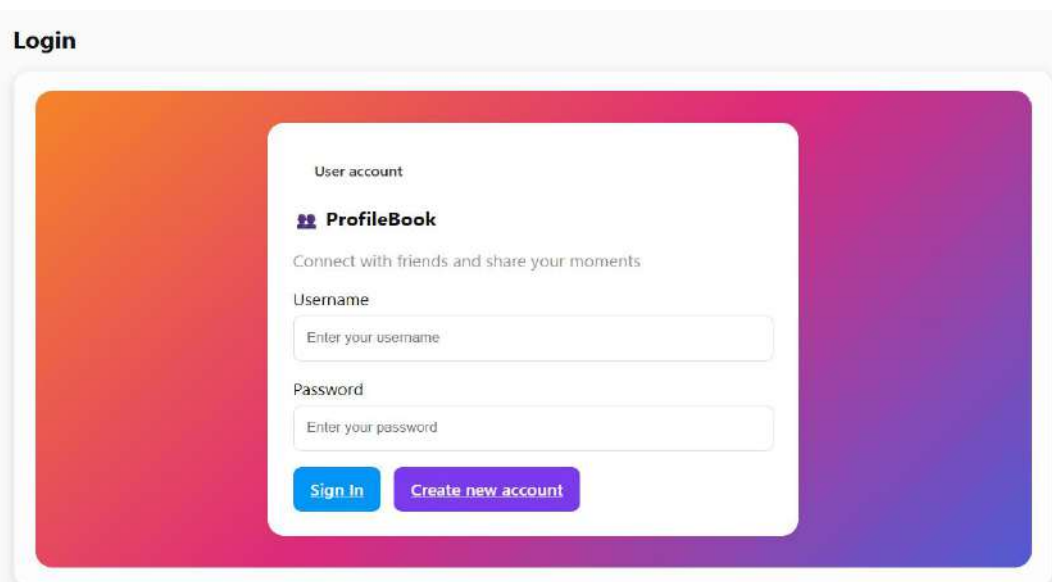
Create a password

Confirm Password

Confirm your password

Create Account [Already have an account?](#)

Login



The login form is titled "User account" and includes a sub-header "ProfileBook" with a logo. It features two input fields: "Username" with placeholder text "Enter your username" and "Password" with placeholder text "Enter your password". At the bottom, there are two buttons: a blue "Sign In" button and a purple "Create new account" button.

User account

ProfileBook

Connect with friends and share your moments

Username

Enter your username


Password

Enter your password

Sign In Create new account


Profile

Profile



john_doe
user
12 POSTS 9 PUBLISHED

Posts




Snowy mountains are breathtaking.


APPROVED

Jul 21, 2025


Dashboard




ProfileBook



**john_doe**
2h ago

Lovely day at the beach! 🌊



 Like  Share  Comment



jane
5h ago

Fresh brew and a good book ☕📖



👍 Like ➦ Share 💬 Comment



mike
Yesterday


Sunset vibes 🌅





👍 Like ➦ Share 💬 Comment


Messages


Messages

 **jane** 11:20
Hey! Are we meeting today?

 **mike** 00:05
Check this out 📸

 **alex** Yesterday
Sent you the files.

 **emma** Mon
Let's catch up!

 **lisa** Sun
New post is up 📸

Hi there!

Can you review my post?

Shared the link just now.

Hello! 📸

Sure, send it over.

Got it. Looks great!

Admin Dashboard

Admin Dashboard

1,234

Total Users

89

Posts Today


12

Pending Reviews


3

Reports


User Management

 **john_doe** Active
john@example.com • Joined 2 days ago

Approve Suspend Edit


 **jane_smith** Pending
jane@example.com • Joined 1 day ago

Approve Reject Edit

 **mike_wilson** Suspended
mike@example.com • Joined 1 week ago


Reactivate Delete Edit

Post Moderation


 **alex_jones** Under Review
Posted 1 hour ago


Approve Reject


Check out this amazing sunset! 🌅





Notifications


 Notifications Mark All Read


 **sarah_wilson** started following you
2 minutes ago Follow Back Remove

 **mike_chen** started following you
1 hour ago Follow Back Remove


 **jane_doe** liked your post "Amazing sunset today!"
3 hours ago Remove

 **alex_smith** commented on your post
5 hours ago Remove


 **System** Your post has been approved and published
1 day ago Remove


 **System** Welcome to ProfileBook! Complete your profile setup
2 days ago Complete


Followers Management

 Followers & Following Followers (234) Following (189)


Followers


 **sarah_wilson**
sarah@example.com Follow Back Remove


 **mike_chen**
mike@example.com Follow Back Remove

 **jane_doe**
jane@example.com Follow Back Remove

Following

 **alex_smith**
alex@example.com Unfollow Block

 **emma_jones**
emma@example.com Unfollow Block

 **david_brown**
david@example.com Unfollow Block

9. Future Enhancements

- Realtime notifications via SignalR
- Advanced search & filtering
- Improved UI/UX
- Automated testing & deployment

10. References

- Microsoft ASP.NET Core Documentation
- Angular Official Documentation
- TutorialsPoint – ASP.NET & Angular
- GeeksforGeeks – Entity Framework Core