

Asset Management System in .NET 8.0 (Web API & MVC)

Objective

Develop an **Asset Management System** using **.NET 8.0** with a **Web API backend** and **MVC frontend** following the **Repository Pattern**. The system should support **user registration and authentication**, **asset placement in rooms and cupboards**, **image uploads**, **profile updates**, and **password management**. It should also include an **admin login** with fixed credentials.

Requirements

1. User Management

- **User Registration**
 - Fields: **Name**, **Email**, **Password**, **Gender** (Radio: **Male/Female/Other**), **Profile Image**.
 - Password must contain:
 - Minimum **6 characters**
 - At least **1 uppercase letter**
 - At least **1 lowercase letter**
 - At least **1 number**
 - At least **1 special character**
 - Store passwords securely (e.g., **BCrypt hashing**).
- **User Login**
 - Authenticate with **Email & Password**.
 - JWT Token-based authentication.
- **Profile Management**
 - Update **Profile Image**.
 - Change **Password**.

2. Asset Management

- Users can **place assets** with the following attributes:
 - **Asset Name**
 - **Description**
 - **Image Upload**
 - **Tags (Multiple)**
 - **Assigned Room & Cupboard (Nested Combo Box)**
- **CRUD Operations** for managing assets. (Display with Room and Cupboard)
- Assets should be linked to a **user**.

Table Example

Users Table (Users)

Id	Name	Email	Password	Gender	ProfileImage
1	Alice Smith	alice@example.com	P@ssW0rd	Female	alice.jpg
2	Bob Johnson	bob@example.com	P@ssW0rd	Male	bob.jpg

Rooms Table (Rooms) (Prefilled) (CRUD Optional)

Id	Name
1	Conference Room
2	IT Department
3	Storage Room

Cupboards Table (Cupboards) (Prefilled) (CRUD Optional)

Id	Name	RoomId
1	Cabinet A	1
2	Server Rack	2
3	Shelf A	3
4	Cabinet B	1
5	Cabinet B	1
6	Shelf B	3

Assets Table (Assets) (CRUD)

Id	Name	Description	Image	UserId	CupboardId	Tags
1	Laptop	Dell XPS 15	laptop.jpg	1	2	Electronics
2	Projector	Epson Projector	projector.jpg	2	1	Office Equipment, Electronics
3	Printer	HP LaserJet	printer.jpg	1	5	Electronics, Printer

Technical Implementation

1. Backend - Web API (.NET 8.0)

- Use **Repository Pattern** for data access.
- Implement **JWT Authentication**.
- Use **EF Core with PostgreSQL or SQL Server**.
- Use **Fluent Validation** for request validation.
- Implement **File Upload Handling** for images.
- Implement **Role-Based Authorization** (User & Admin).
- Use **DTOs (Data Transfer Objects)** for API responses.

2. Frontend - MVC (.NET 8.0)

- Use **Bootstrap and jQuery** for UI.
 - Implement **Login & Registration Forms**.
 - Implement **User Dashboard** (List & Manage Assets).
 - Implement **Admin Dashboard** (View all users & assets).
 - Use **AJAX for API calls**.
 - Implement **Nested Combo Box** for Room & Cupboard selection.
-