

RFID Device Management System

Overview

The RFID Device Management System is a web-based application built using ASP.NET MVC for managing RFID devices, monitoring tag reads, and maintaining device status. This system provides functionalities such as registering RFID devices, viewing and updating their details, monitoring tag read events, and handling user authentication.

Main Features:

1. **Register RFID Devices:** Users can register new RFID devices with essential details like device name, type, unique identifier, and location.
2. **Manage RFID Devices:** Users can view, edit, and delete registered RFID devices.
3. **Monitor Tag Reads:** Simulate and view RFID tag reads, including details like device ID, timestamp, and location.
4. **User Authentication:** Basic authentication is implemented using Forms Authentication to restrict dashboard access.
5. **Device Status Monitoring:** Monitor real-time online/offline status of the RFID devices.

Project Structure

1. Application Structure

- **Controllers:** Contains the logic for handling user requests.
- **Models:** Contains data models for RFID devices, tag reads, and users.
- **Views:** Contains Razor views for the user interface.
- **Data Access Layer:**

RfidContext.cs – Handles communication with the SQL Server database.

2. Configuration Files

- **Web.config:** Contains application configuration settings.
- **Global.asax & Global.asax.cs:** Handles application-level events.

Technology Used:

- **Frontend:** Razor views, HTML5, CSS3, and JavaScript/jQuery for the front end. Bootstrap can be used for styling.
- **Backend:** ASP.NET MVC with C#.
- **Database:** SQL Server database is used to store device and tag read information.
- **Entity Framework:** Entity Framework is used to perform the database operations.

- **Real-Time Updates:** Implement real-time updates using SignalR for RFID tag reads and device status (optional, but will be considered a plus).
- **RFID Simulation:** You may simulate the RFID tag reads through mock data or random generation in the absence of actual hardware.
- **Version Control:** Provide the solution in a Git repository with clear commit messages

3. Key Functionalities

1. Device Management

Users can add new RFID devices through a form that collects details such as the device name, type, unique identifier, and location. Once registered, devices can be viewed, updated, or deleted via the interface.

2. RFID Tag Reads

The system allows the simulation of RFID tag reads. Users can view the history of tag reads for each device, including timestamps and the read location.

3. User Authentication

Authentication is implemented using ASP.NET MVC's Forms Authentication. Users must log in to access the dashboard and perform CRUD operations.

4. Device Status Monitoring

The system includes real-time monitoring of device status (online/offline). This allows users to quickly identify malfunctioning or disconnected devices.

4. Database Design

The system uses Entity Framework for database operations. The following tables are included:

RfidDevices: Stores RFID device information.

RfidTagReads: Stores RFID tag read events.

Users: Stores user credentials for authentication.

- ❖ **When the user logs in with authorized credentials (username and password), they will be redirected to the dashboard upon successful authentication.**

Username = Sakshi Dhandar

Password = pass@12