Hospital Management System Report

Introduction

This report documents the development of a Hospital Management Application built using ASP.NET Core MVC. The application aims to streamline hospital operations by providing a centralized platform for managing patients, doctors, appointments, and medical records.

Project Scope and Requirements

The application encompasses the following functionalities:

- **Patient Management:** Patients can register and log in to view their appointments, doctor details, and medical records.
- **Appointment Scheduling:** Patients can schedule appointments with doctors based on availability. Administrators can manage and modify appointment schedules.
- **Doctor Management:** Administrators can manage doctor profiles, including contact information and specialties.
- **Medical Records Management:** Doctors can view and update patient medical records.
- **Role-Based Access Control:** Different user roles (patients, doctors, and administrators) have access to specific features based on their permissions.
- **User Authentication:** Secure user login and authentication system.

Technology Stack

- **ASP.NET Core MVC:** Provides a framework for building web applications with clear separation of concerns.
- **Entity Framework Core:** Offers an Object-Relational Mapper (ORM) for data access and manipulation.
- **SQL Server:** Chosen for its robustness and scalability for data storage.
- **User Authentication:** Built-in ASP.NET Core Identity will be implemented for user authentication.

System Architecture

The application adheres to a three-tier architecture:

- **Presentation Layer:** ASP.NET Core MVC controllers handle user interactions and display views.
- **Business Logic Layer:** Business logic resides in separate services for data validation, security checks, and processing tasks.
- **Data Access Layer:** Entity Framework Core interacts with the SQL Server database to manage data access.

Key Features and Functionality

- **Patient Dashboard:** Patients can view upcoming appointments, doctor information for scheduled appointments, and a summary of their medical records.
- **Appointment Scheduling:** Patients can search for available appointment slots with preferred doctors and schedule appointments. Administrators have

full control over the appointment schedule, allowing them to modify or cancel appointments.

- **Doctor Management:** Administrators can add, edit, and delete doctor profiles, manage doctor schedules, and assign them to specific departments.
- **Medical Records Management:** Doctors can access and update patient medical records, including history, diagnoses, prescriptions, and lab results. Role-based access control ensures patient privacy.

Database Design

The application will utilize a relational database schema designed in SQL Server. Key entities include:

- Patients
- Doctors
- Appointments
- Medical Records

Relationships will be established between these entities to facilitate data retrieval and manipulation (e.g., Patients can have many Appointments, Doctors can have many Appointments).

Future Enhancements and Considerations

Potential improvements:

- Integration with other hospital information systems.
- Online payment functionality for patient fees.
- Mobile application for appointment booking and patient access.
- Artificial Intelligence (AI) Integration.

Conclusion

The Hospital Management Application offers a user-friendly and centralized platform for managing hospital operations. The application provides patients with convenient access to their information while streamlining tasks for doctors and administrators. The project will be continuously improved and expanded to meet the evolving needs of the hospital.