Clinic Management System – Full Technical Documentation

1. Introduction

This document presents a full technical and architectural overview of the Clinic Management System...

2. System Overview

The system is an AI-enhanced clinic management platform providing appointment management, prescriptions, patient history, real-time chat, and AI assistance...

3. Architecture

The project follows Clean Architecture, Domain Driven Design (DDD), CQRS, Repository Pattern, and separation of concerns between layers...

4. Layers Description

Presentation Layer handles controllers and APIs. Application Layer contains use cases, commands, queries. Domain Layer contains entities, aggregates, value objects...

5. Technologies and Libraries

ASP.NET Core, EF Core, Identity, MediatR, FluentValidation, AutoMapper/Manual Mapping, SignalR, SQL Server/PostgreSQL...

6. Feature Breakdown

Authentication, Appointments, Prescriptions, AI treatment suggestions, Patient history, Real-time chat, VIP features...

7. AI Integration

AI is used for medical treatment suggestions, patient questions, symptom checking, speech-to-text prescriptions, queue prediction...

8. Database Schema Overview

Entities include Doctor, Patient, Appointment, Prescription, MedicalRecord, ChatMessage...

9. API Endpoints Summary

Auth endpoints, Appointment endpoints, Prescription endpoints, Patient history endpoints, Chat endpoints...

10. Security

JWT authentication, role-based authorization, input validation, encrypted communication...

11. Deployment

System can be deployed via Docker, CI/CD pipelines, Kubernetes, cloud hosting...

12. Testing Strategy

Unit testing with xUnit, integration testing, load testing, security testing, API automated tests...

13. Future Enhancements

AI diagnosis suggestions, video consultation, advanced analytics dashboard, notification center...