.Net Final Project Proposal

Project Title**: Hospital Queue & Appointment Booking System**

Database Name**: HospitalFlowDB**

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1. Introduction

In many hospitals and clinics, the process of managing patient queues and appointments is still done manually. This often leads to long waiting times, scheduling conflicts, and poor patient experience. The Hospital Queue & Appointment Booking System aims to solve this issue by digitizing and automating the process of booking, managing, and monitoring appointments and queues in a hospital or multi-clinic environment. The proposed system is scalable and will support multiple clinics, departments, and user roles such as Admin, Doctor, and Patient.

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2. Problem Statement

Patients and hospital staff face multiple challenges in traditional queue and appointment systems, including long wait times, double bookings, inefficient queue flow, and lack of communication. Manual handling of these operations creates room for errors and mismanagement. There is a clear need for a web-based system that offers efficiency, transparency, and better service delivery in hospital management.

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3. Objectives

- To design and implement a secure, scalable, and user-friendly web application for hospitals and clinics.
- To enable patients to book, cancel, and reschedule appointments.
- To enable doctors to manage their availability and view appointments.
- To allow real-time queue management and monitoring.
- To support multiple clinics and departments under one centralized system.
- To generate administrative reports and analytics for decision-making.

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4. Functional Requirements

- Patient registration and login.
- Doctor registration and login.
- Admin login and dashboard access.
- Clinic and department management.
- Booking, cancellation, and rescheduling of appointments.
- Doctor availability calendar.
- Queue management with real-time token display.
- Appointment history and visit notes.
- Notification system for appointment updates (simulated).
- Admin reports and analytics.

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5. Non-Functional Requirements

- Responsive and user-friendly UI.
- Secure authentication and role-based access.
- Scalable multi-clinic support.
- Fast and optimized database queries.
- Clean architecture using ASP.NET.
- Data validation and secure password handling.

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6. System Users and Roles

- **Admin:** Manages users, clinics, departments, and system settings.
- **Doctor:** Views and manages appointments, sets availability, and adds visit notes.
- **Patient:** Books appointments, views queue status, reschedules or cancels bookings.

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7. Use Case Diagram Overview

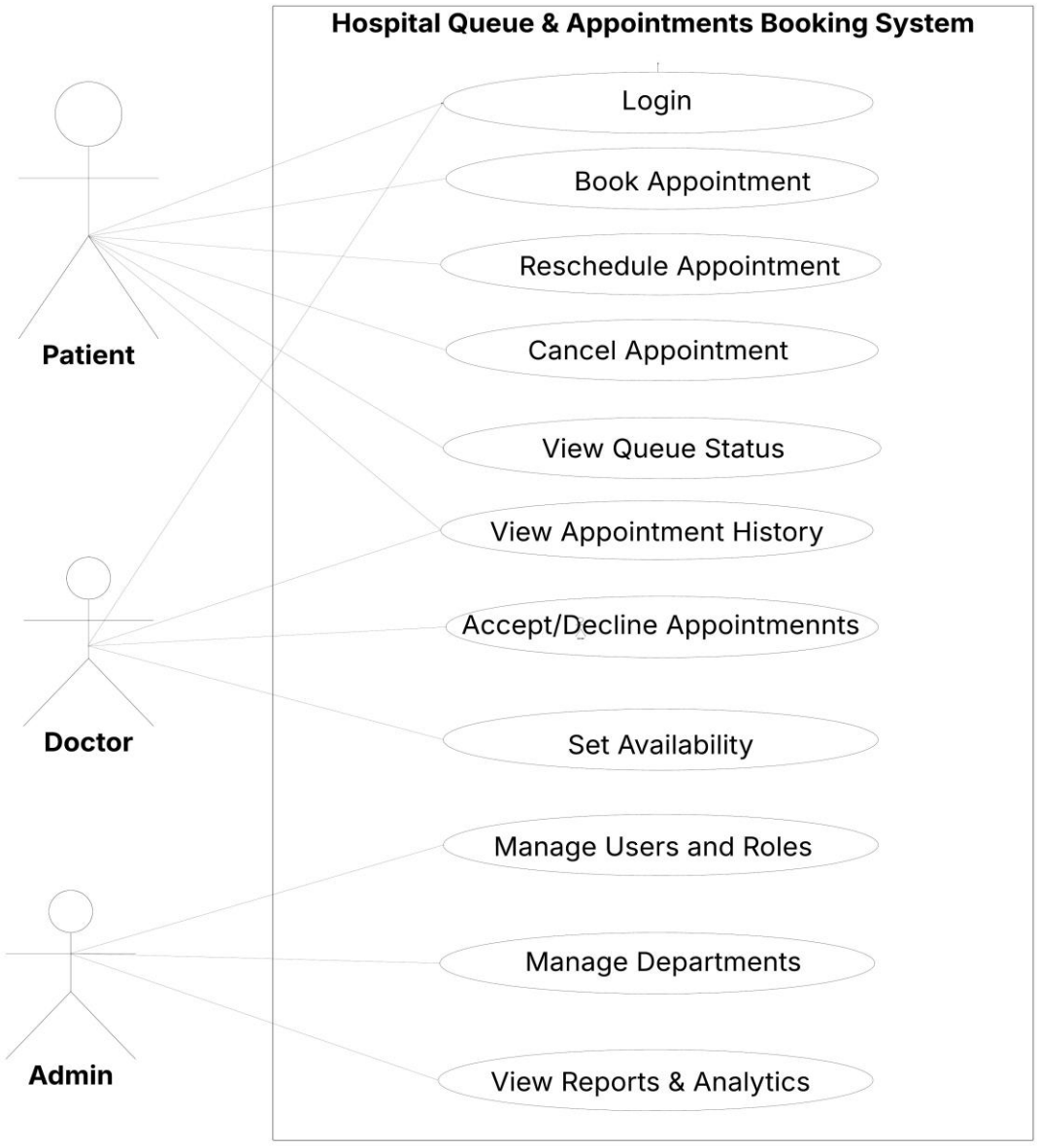
Actors:

- Patient.
- Doctor.
- Admin.

Main Use Cases:

- Book, Cancel or Reschedule Appointment.
- Set Doctor Availability.
- View Appointment History.
- Manage Users, Departments, Clinics (Admin).
- Generate Reports.
- Manage Queue.

USE CASE DIAGRAM

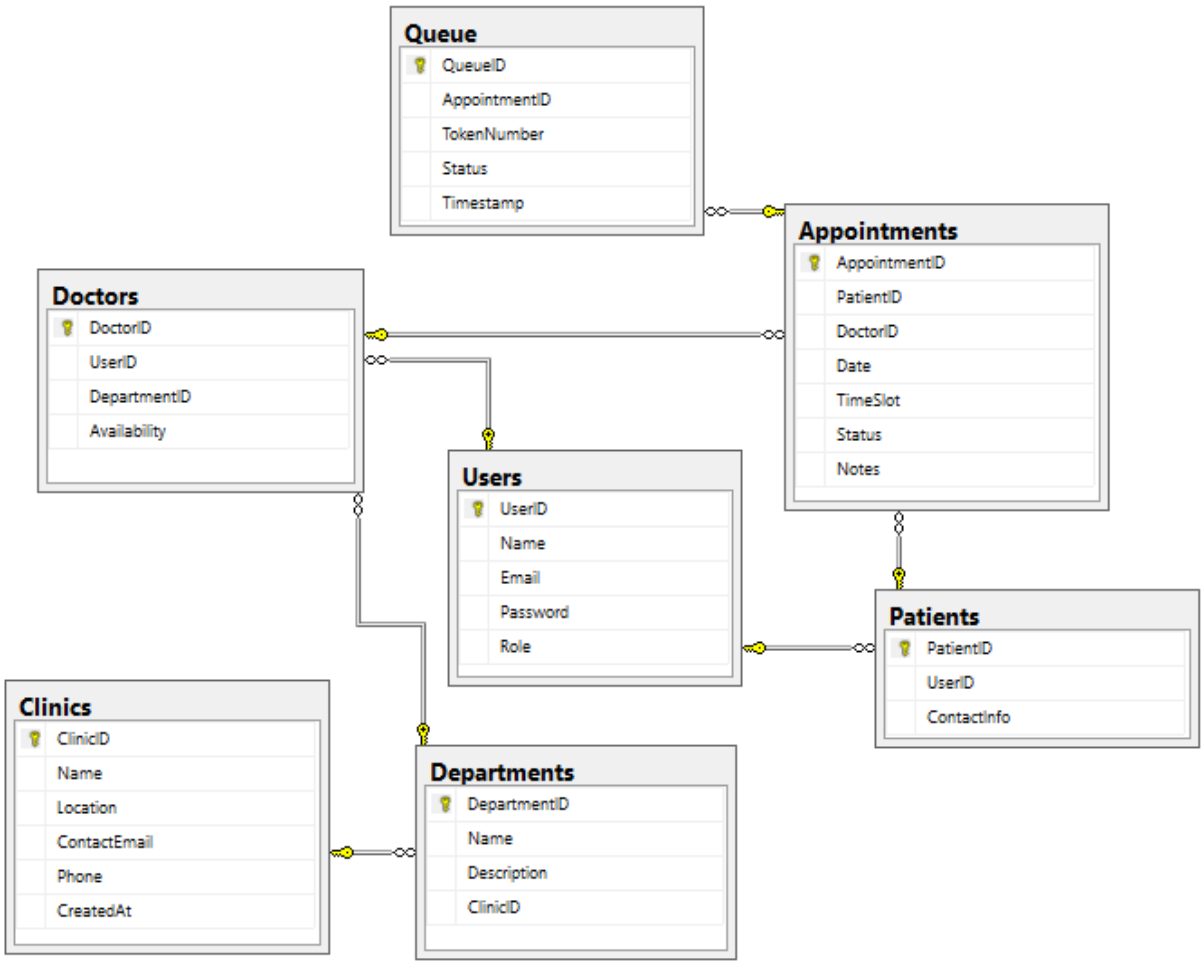


8. Database Design Overview

Main Tables:

- Clinics (ClinicID, Name, Location, ContactEmail, Phone, CreatedAt).
- Departments (DepartmentID, Name, Description, ClinicID).
- Users (UserID, Name, Email, Password, Role).
- Doctors (DoctorID, UserID, DepartmentID, Availability).
- Patients (PatientID, UserID, ContactInfo).
- Appointments (AppointmentID, PatientID, DoctorID, Date, TimeSlot, Status, Notes).
- Queue (QueueID, AppointmentID, TokenNumber, Status, Timestamp).

Database Diagram



9. Tools and Technologies

- ASP.NET Web Application (.Net Framework) (C#).
- Microsoft SQL Server (SSMS).
- Visual Studio 2022.
- Entity Framework.
- HTML, CSS, JavaScript, Bootstrap, JQuery.
- Git & GitHub for version control.

10.Project Timeline

Week	Activity
1	Requirement analysis, project planning.
1	Database schema design.
1	Setup ASP.NET project and database creation.
2	Implement authentication and clinic/department management.
2	Appointment booking and queue management features.
2	Doctor availability, history, and rescheduling features.
3	Admin reporting and dashboard completion.
3	Testing and documentation.

11.Expected Deliverables

- Fully functional web-based hospital queue and appointment system.
- ERD and Use Case diagrams.
- Complete SQL database script (**HospitalFlowDB**).
- System documentation.
- Final project presentation.

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12. Conclusion

The Hospital Queue & Appointment Booking System will streamline patient flow, reduce wait times, and improve the overall healthcare experience. By digitizing and automating clinic operations, the system brings structure, accountability, and efficiency to hospital queue and appointment handling. With multi-clinic support and role-based access, the system is suitable for small to medium-sized hospitals and can scale as needed.