MERN Healthcare System

A Web-Based Healthcare Appointment Platform

Submitted By
Mian Saad Tahir
2023-CS-62

Supervised by
Dr. Amjad Farooq

Course
CSC-415 Web Technologies

Department of Computer Science
University of Engineering and Technology, Lahore

Contents

1 Introduction **3**

2 Features **3**

3 Wireframes **3**

4 Technologies Used **5**
4.1 Backend 5
4.2 Frontend 5
4.3 Deployment 5

5 Prerequisites **5**

6 System Usage **6**
6.1 Clone the Repository 6
6.2 Install Dependencies 6
6.3 Environment Configuration 6
6.4 Run the Application 6

7 Conclusion **6**

1 Introduction

The MERN Healthcare System is a comprehensive web-based healthcare appointment booking platform developed using the MERN stack. The system provides an integrated environment where patients can book medical appointments online and doctors can manage schedules, profiles, and availability. The application focuses on usability, security, and scalability to models a real-world healthcare management solution.

2 Features

- Role-based system with separate dashboards for Patients and Doctors
- Online appointment booking and management
- Doctor profile and availability management
- Secure user authentication and authorization using JWT
- Responsive and user-friendly web interface

3 Wireframes

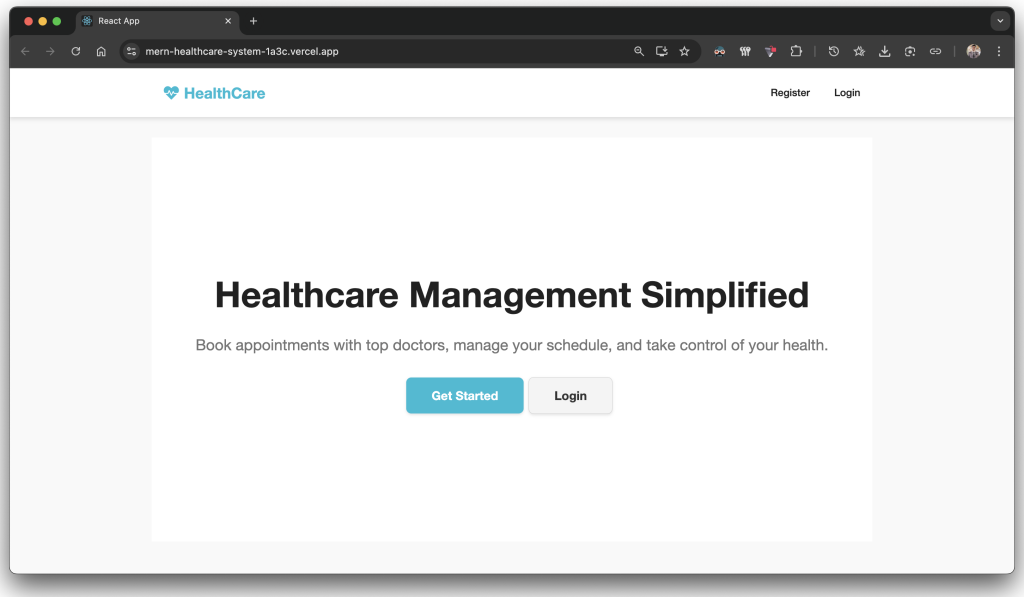

Figure 1: Patient Dashboard

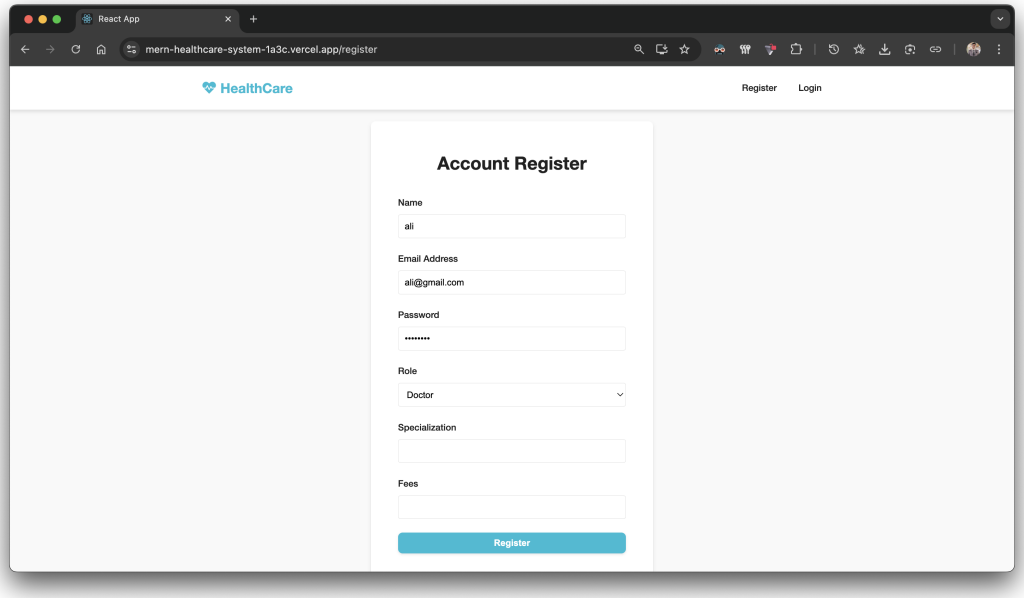

Figure 2: Doctor Listing and Appointment Booking

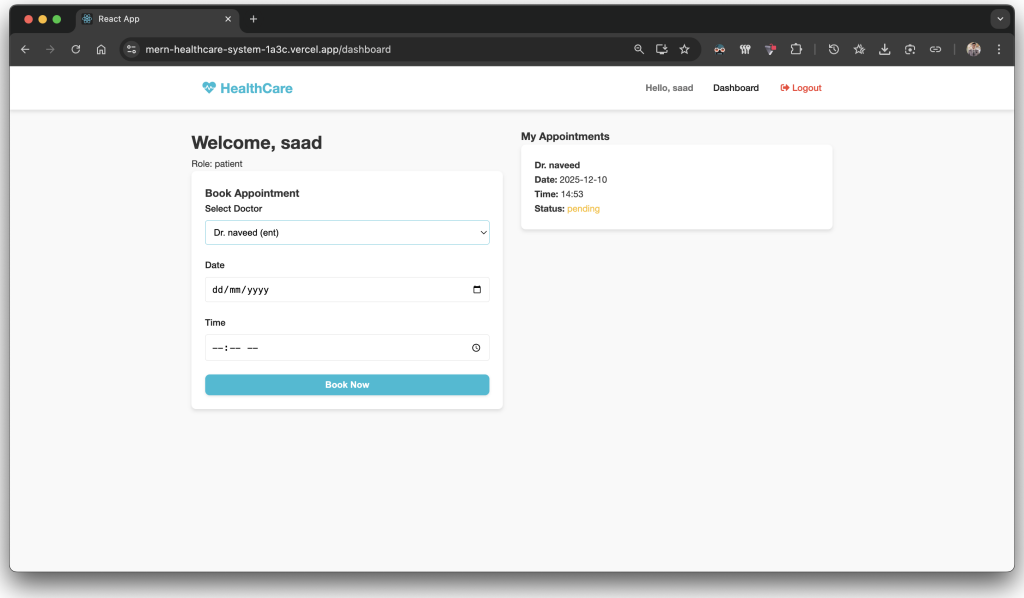

Figure 3: Doctor Dashboard

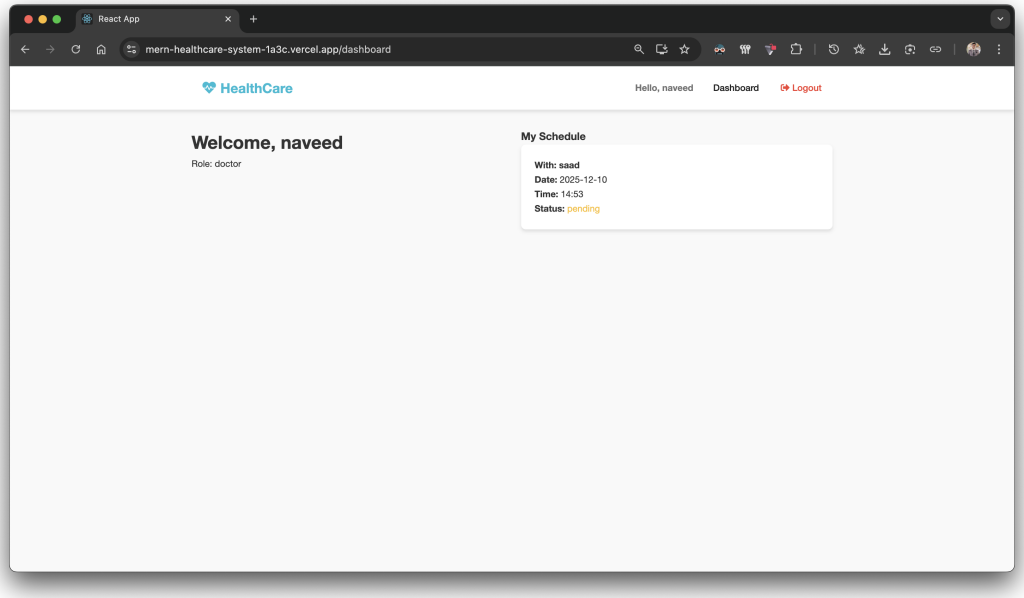

Figure 4: Authentication and User Management

4 Technologies Used

4.1 Backend

- Node.js
- Express.js
- MongoDB
- JWT Authentication

4.2 Frontend

- React.js

4.3 Deployment

- Frontend: Vercel
- Backend: Render
- Database: MongoDB Atlas

5 Prerequisites

- Node.js (v14 or above)
- MongoDB Community Edition or MongoDB Atlas account
- Git

6 System Usage

6.1 Clone the Repository

```
git clone https://github.com/MianSaadTahir/mern-healthcare-system.git
cd mern-healthcare-system
```

6.2 Install Dependencies

Backend:

```
cd server
npm install
```

Frontend:

```
cd ../client
npm install
```

6.3 Environment Configuration

Create a `.env` file inside the server directory:

```
PORT=5001
MONGO_URI=your_mongodb_connection_string
JWT_SECRET=your_jwt_secret
```

6.4 Run the Application

Terminal 1 (Backend):

```
cd server
npm run server
```

Terminal 2 (Frontend):

```
cd client
npm start
```

Frontend runs at: `http://localhost:3000`
Backend runs at: `http://localhost:5001`

7 Conclusion

The MERN Healthcare System demonstrates the practical implementation of a full-stack web application using modern technologies. By integrating secure authentication, real-time appointment management, and role-based dashboards, the system reflects real-world healthcare workflow automation and highlights core web engineering concepts such as REST APIs, database design, and frontend-backend integration.