DocSpot: Seamless Appointment Booking for Health

1. Introduction

Project Title: DocSpot: Seamless Appointment Booking for Health

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Team member : Kotte Hemalatha

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Overview:

DocSpot is a full-stack healthcare web application that streamlines the process of booking medical appointments.

It provides a user-friendly interface for patients to book appointments online, doctors to manage their schedules,

and administrators to oversee system operations. The app includes secure role-based logins and integrated online payments.

2. Project Overview

Purpose:

To provide a centralized, convenient, and secure platform for healthcare appointment management accessible by patients, doctors, and administrators.

Key Features:

- User (Patient) registration, login, and appointment booking

- Doctor login and appointment management dashboard

- Admin panel to manage users and appointments

- Razorpay integration for online payments

- Secure authentication using JWT

3. System Architecture

Frontend (React.js):

- Built with React and React Router

- UI components from Material UI, Bootstrap, Ant Design

- Axios for HTTP requests

- Responsive design

Backend (Node.js + Express.js):

- RESTful API architecture

- Role-based access control

- Razorpay payment API integration

- JWT authentication

Database (MongoDB):

- Collections: users, doctors, appointments, admins, payments

- Mongoose for schema definitions and data modeling

4. Setup Instructions

Prerequisites:

- Node.js (v18+)

- MongoDB (Local or Atlas)

- npm, Git

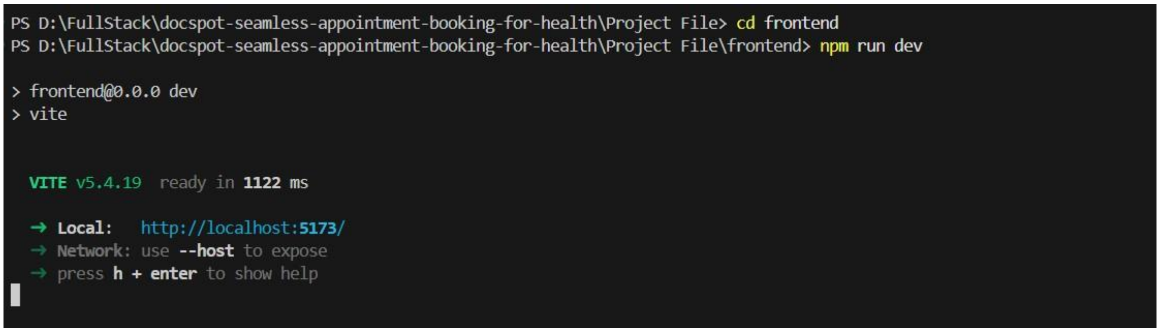
Setup:

git clone https://github.com/your-username/docspot.git

Frontend: cd

client npm

install

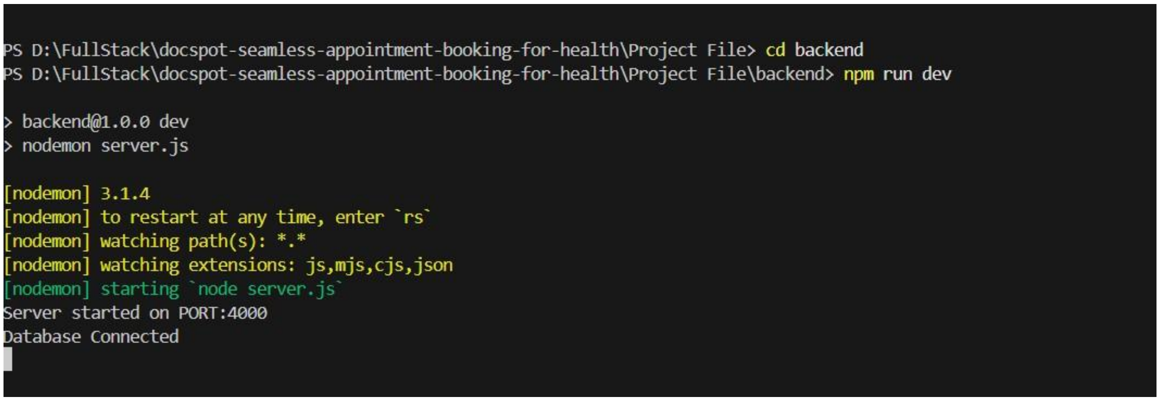


```
PS D:\FullStack\docspot-seamless-appointment-booking-for-health\Project File> cd frontend
PS D:\FullStack\docspot-seamless-appointment-booking-for-health\Project File\frontend> npm run dev

> frontend@0.0.0 dev
> vite


  VITE v5.4.19  ready in 1122 ms

  ➜  Local:   http://localhost:5173/
  ➜  Network: use --host to expose
  ➜  press h + enter to show help
```

Backend: cd

../server

npm install



```
PS D:\FullStack\docspot-seamless-appointment-booking-for-health\Project File> cd backend
PS D:\FullStack\docspot-seamless-appointment-booking-for-health\Project File\backend> npm run dev

> backend@1.0.0 dev
> nodemon server.js

[nodemon] 3.1.4
[nodemon] to restart at any time, enter `rs`
[nodemon] watching path(s): *.*
[nodemon] watching extensions: js,mjs,cjs,json
[nodemon] starting `node server.js`
Server started on PORT:4000
Database Connected
```

.env file:

MONGO_URI=your_mongo_uri JWT_SECRET=your_jwt_secret

RAZORPAY_KEY=your_razorpay_key

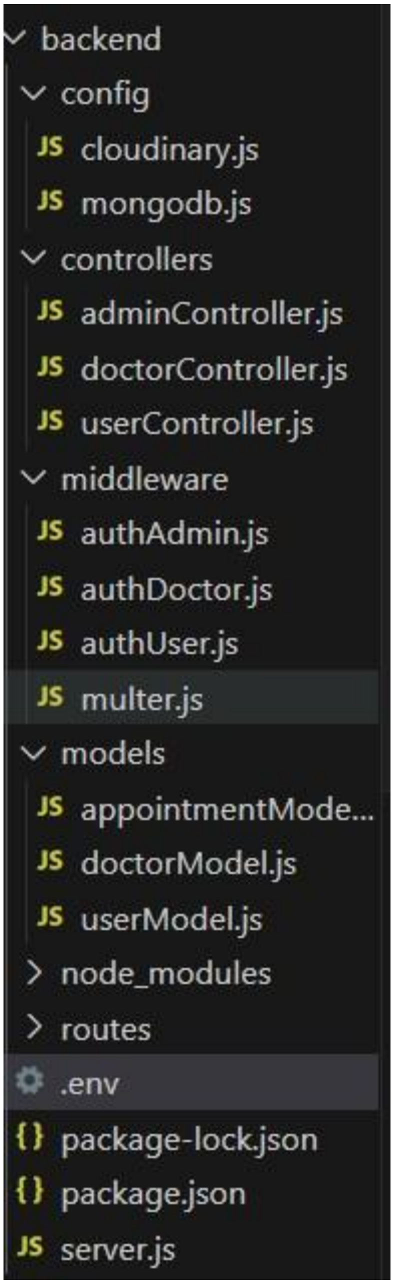
RAZORPAY_SECRET=your_razorpay_secret

```
PORT=5000
```

5. Folder Structure

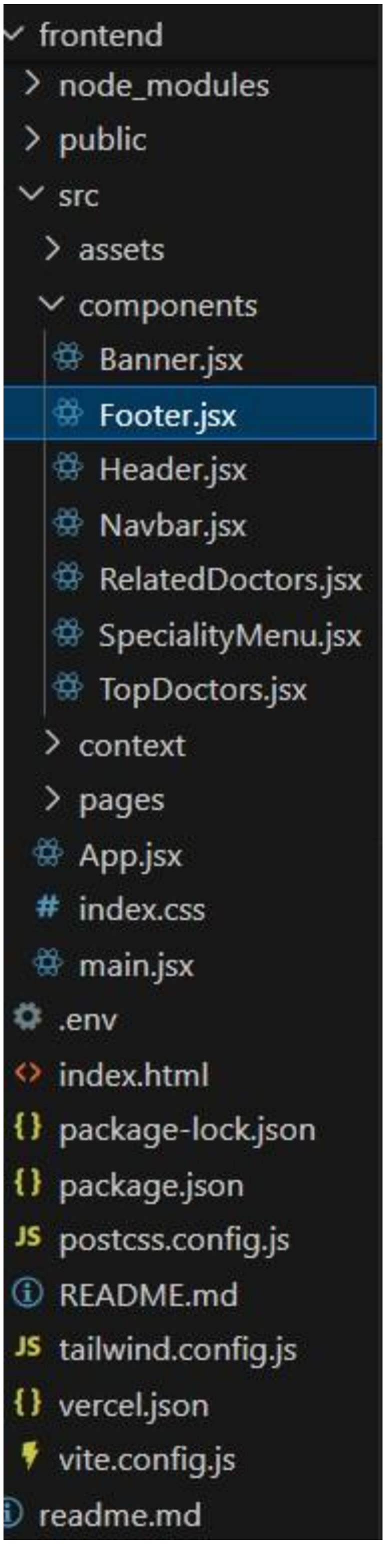
```
client/

├── public/

├── src/

│   ├── components/

│   ├── pages/

│   ├── context/

│   └── App.js, index.js


server/

├── controllers/

├── routes/

├── models/

├── config/

├── middlewares/

└── server.js
```

Backend Folder Structure:



```
backend
  config
    JS cloudinary.js
    JS mongodb.js
  controllers
    JS adminController.js
    JS doctorController.js
    JS userController.js
  middleware
    JS authAdmin.js
    JS authDoctor.js
    JS authUser.js
    JS multer.js
  models
    JS appointmentMode...
    JS doctorModel.js
    JS userModel.js
  node_modules
  routes
  .env
  {} package-lock.json
  {} package.json
  JS server.js
```

FRONTEND FOLDER STRUCTURE:



```
frontend
  node_modules
  public
  src
    assets
    components
      Banner.jsx
      Footer.jsx
      Header.jsx
      Navbar.jsx
      RelatedDoctors.jsx
      SpecialityMenu.jsx
      TopDoctors.jsx
    context
    pages
    App.jsx
    index.css
    main.jsx
  .env
  index.html
  package-lock.json
  package.json
  postcss.config.js
  README.md
  tailwind.config.js
  vercel.json
  vite.config.js
readme.md
```

6. Running the Application

Frontend:

cd client npm

start

Backend: cd

server npm

start

7. API Documentation

POST /api/users/register - Register a new user

POST /api/users/login - Login as user

POST /api/doctors/login - Doctor login

POST /api/admin/login - Admin login

POST /api/appointments/book - Book an appointment

GET /api/doctors/:id/appointments - Doctor views appointments

GET /api/admin/appointments - Admin views all appointments

POST /api/payments/order - Initiate Razorpay order

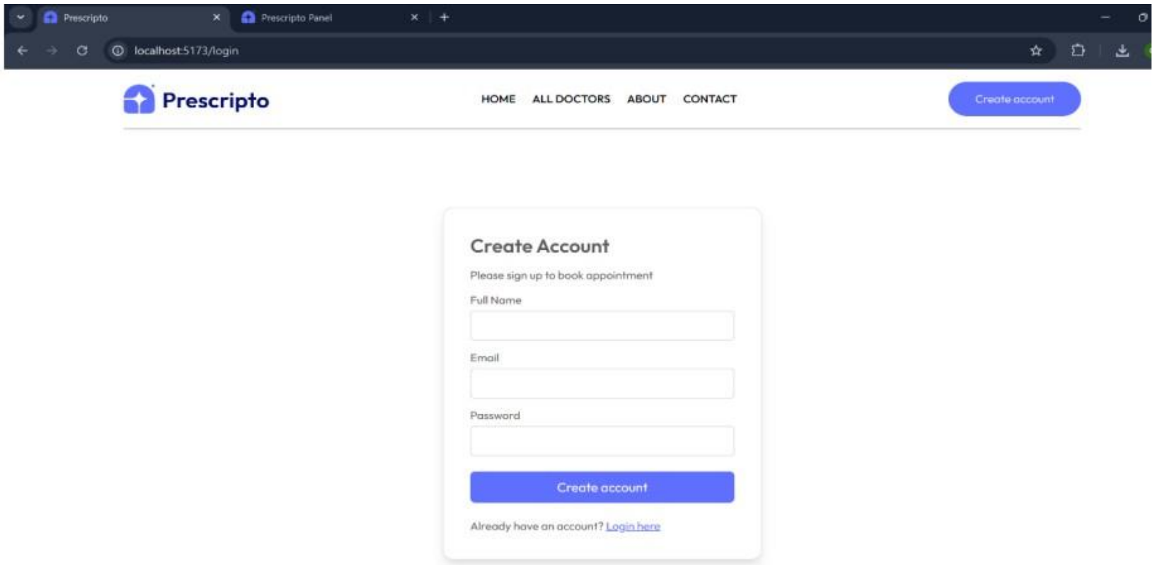
POST /api/payments/verify - Verify payment

8. Authentication & Authorization

- JWT Tokens used for secure authentication
- Protected Routes: Based on roles (User, Doctor, Admin)
- Token Flow: On login, token is generated and stored in local storage. Every protected request includes this token in the headers.

9. User Interface Screenshots

User Login:



Create Account

Please sign up to book appointment

Full Name

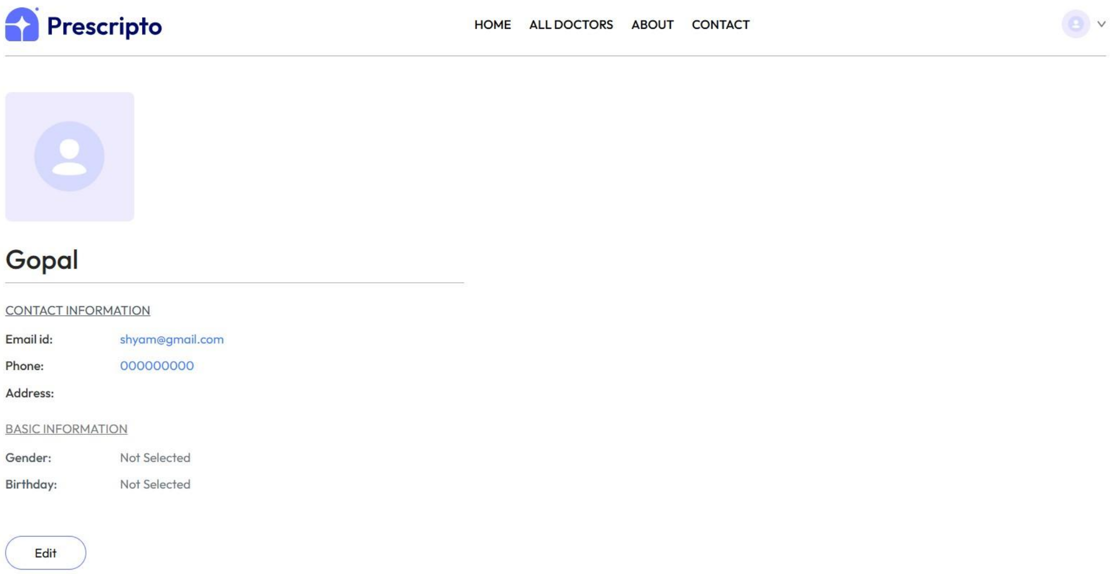
Email

Password

Create account

Already have an account? Login here

User Dashboard:



Gopal

CONTACT INFORMATION

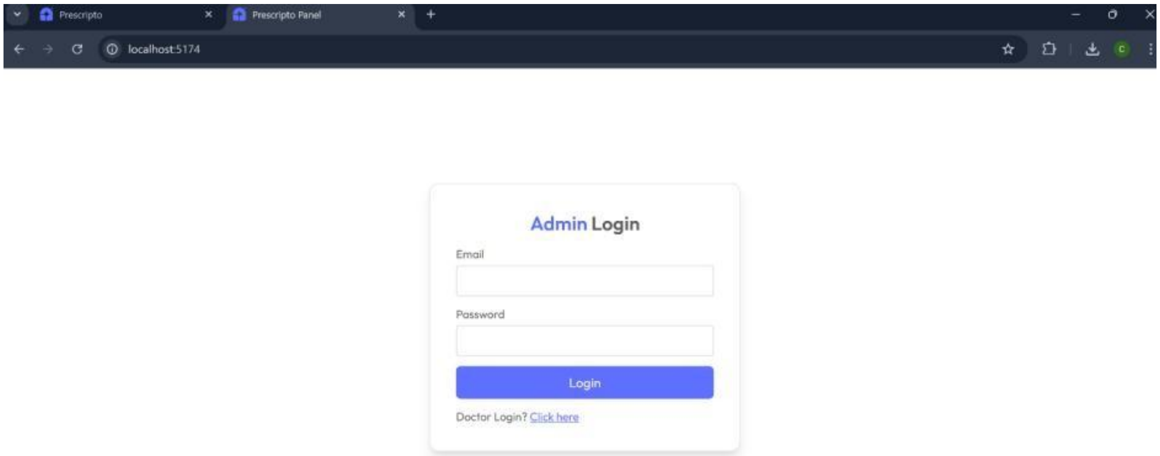
Email id:	shyam@gmail.com
Phone:	000000000
Address:	

BASIC INFORMATION

Gender:	Not Selected
Birthday:	Not Selected

Edit

Admin Login Page:



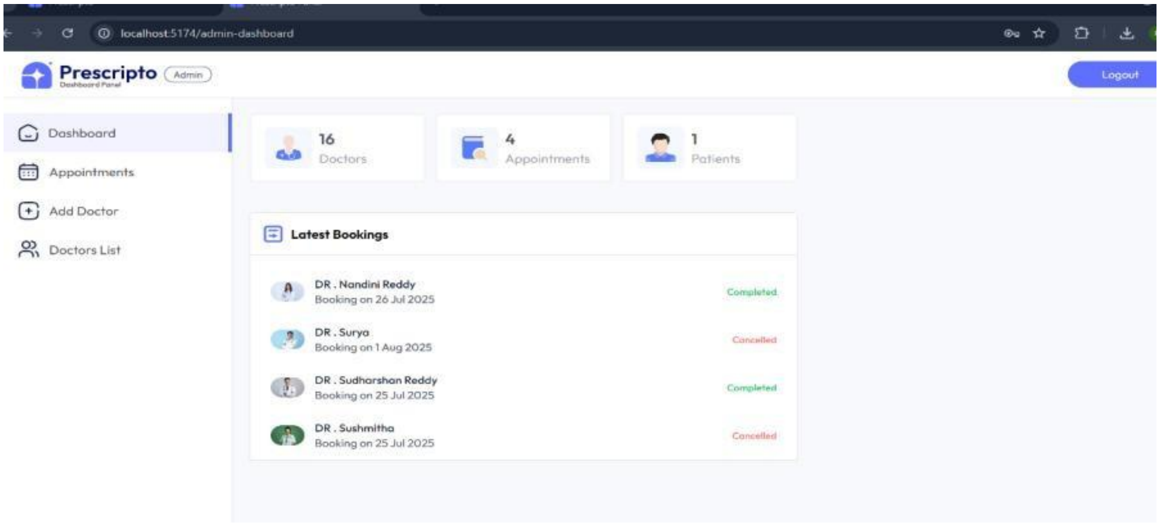
Admin Login

Email

Password

Doctor Login? Click here

Admin Dashboard Page:



16 Doctors

4 Appointments

1 Patients

Latest Bookings

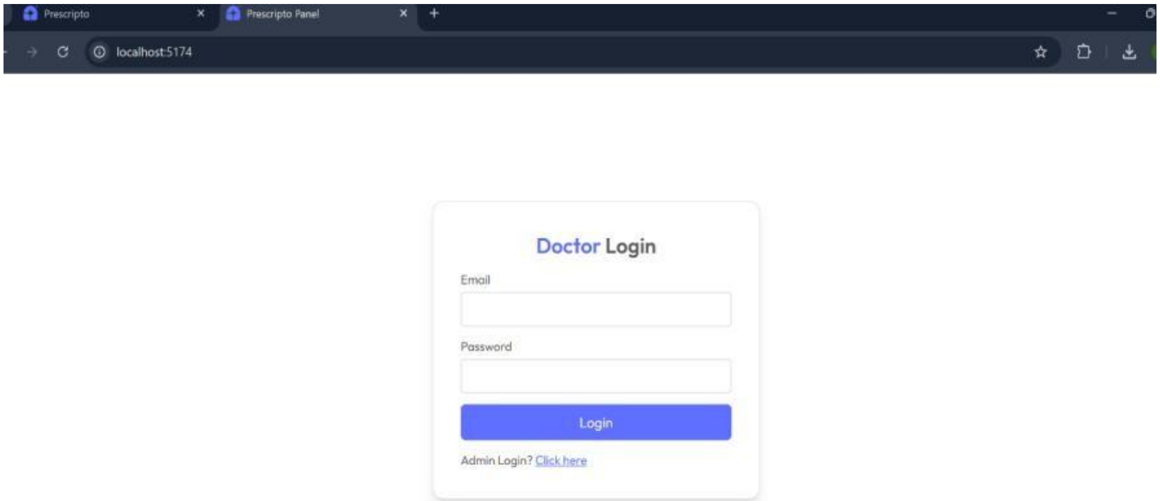
DR . Nandini Reddy
Booking on 26 Jul 2025
Completed

DR . Surya
Booking on 1 Aug 2025
Cancelled

DR . Sudharshan Reddy
Booking on 25 Jul 2025
Completed

DR . Sushmitha
Booking on 25 Jul 2025
Cancelled

Doctor Login Page:



Doctor Login

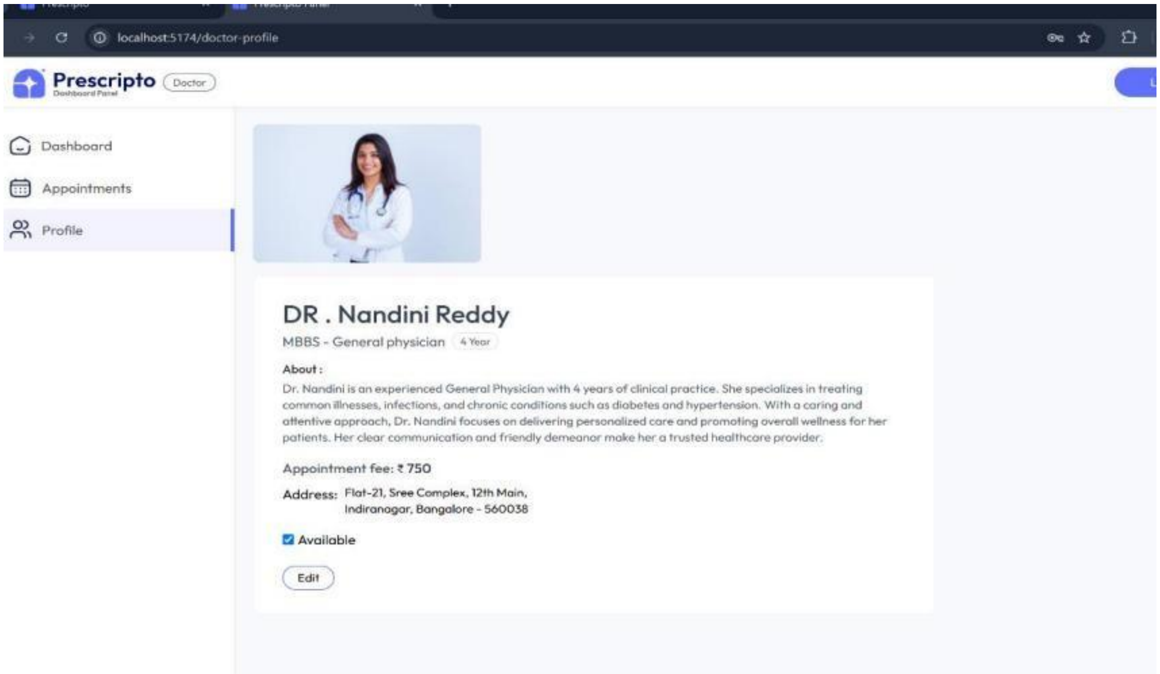
Email

Password

Login

Admin Login? Click here

Doctor Dashboard:



DR . Nandini Reddy

MBBS - General physician 4 Year

About :

Dr. Nandini is an experienced General Physician with 4 years of clinical practice. She specializes in treating common illnesses, infections, and chronic conditions such as diabetes and hypertension. With a caring and attentive approach, Dr. Nandini focuses on delivering personalized care and promoting overall wellness for her patients. Her clear communication and friendly demeanor make her a trusted healthcare provider.

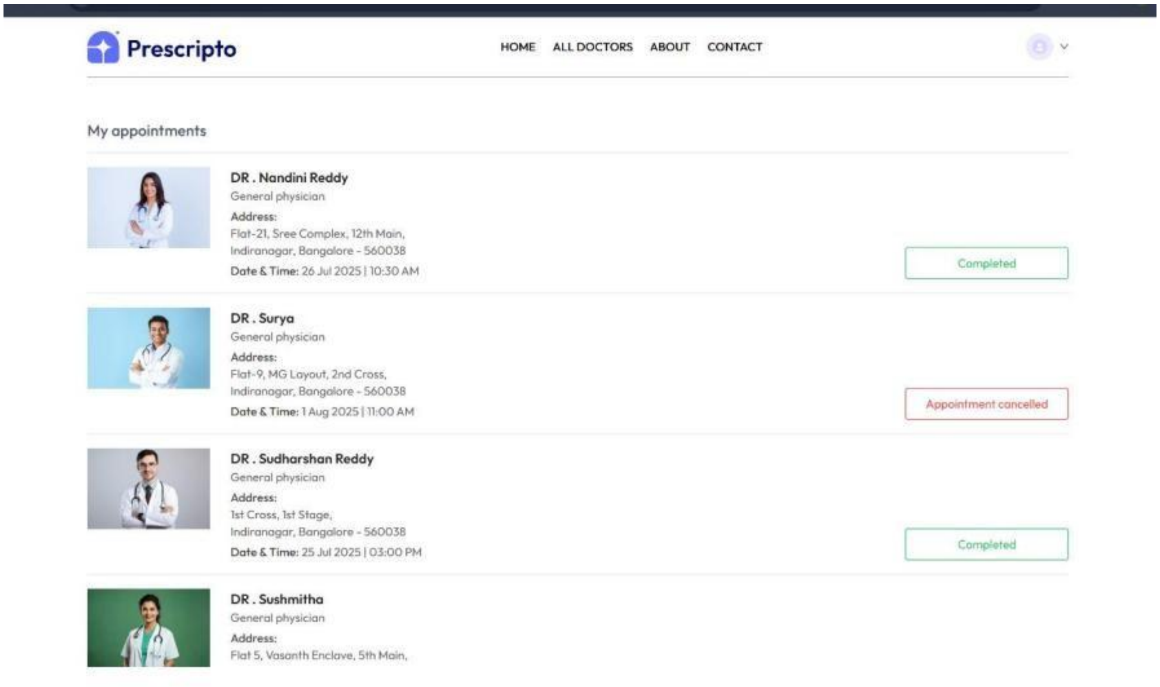
Appointment fee: ₹ 750

Address: Flat-21, Sree Complex, 12th Main,
Indiranagar, Bangalore - 560038

☑ Available

Edit

Appointment Booking:



My appointments

DR . Nandini Reddy
General physician
Address:
Flat-21, Sree Complex, 12th Main,
Indiranagar, Bangalore - 560038
Date & Time: 26 Jul 2025 | 10:30 AM

Completed

DR . Surya
General physician
Address:
Flat-9, MG Layout, 2nd Cross,
Indiranagar, Bangalore - 560038
Date & Time: 1 Aug 2025 | 11:00 AM

Appointment cancelled

DR . Sudharshan Reddy
General physician
Address:
1st Cross, 1st Stage,
Indiranagar, Bangalore - 560038
Date & Time: 25 Jul 2025 | 03:00 PM

Completed

DR . Sushmitha
General physician
Address:
Flat 5, Vasanth Enclave, 5th Main,

10. Testing

Tools Used:

- Postman (API testing)

- Lighthouse (Frontend performance)

- Browser DevTools

Coverage:

- User login/logout and protected routes

- Doctor and admin access control

- Appointment conflict handling

- Payment success/failure scenarios

11. Demo or Showcase

Screenshots: As listed above

Demo Video: [Insert YouTube/Google Drive demo link]

12. Known Issues

- No pagination for appointment list

- Doctor profile editing not implemented

- No email/SMS notifications yet

13. Future Enhancements

- Implement video consultations via WebRTC or Jitsi

- Add appointment filtering (by date/speciality)

- Notifications for appointment reminders

- Email confirmations for patients

- Real-time availability for doctors

14. Conclusion

DocSpot successfully integrates frontend and backend technologies to deliver a secure and user-friendly platform for medical appointment management.

With online payments and role-based control, it lays the groundwork for scalable future enhancements in digital healthcare.