

Full Stack Development with MERN

Project Documentation: HealthPlum

1. Introduction

- **Project Title:** HealthPlum
- **Team Members:**
 - Muskan Kumari - Frontend Developer
 - Abhinav Anand - Backend Developer
 - Pranav Zhawar - Full Stack
 - Abhinav Anand - Database Architect

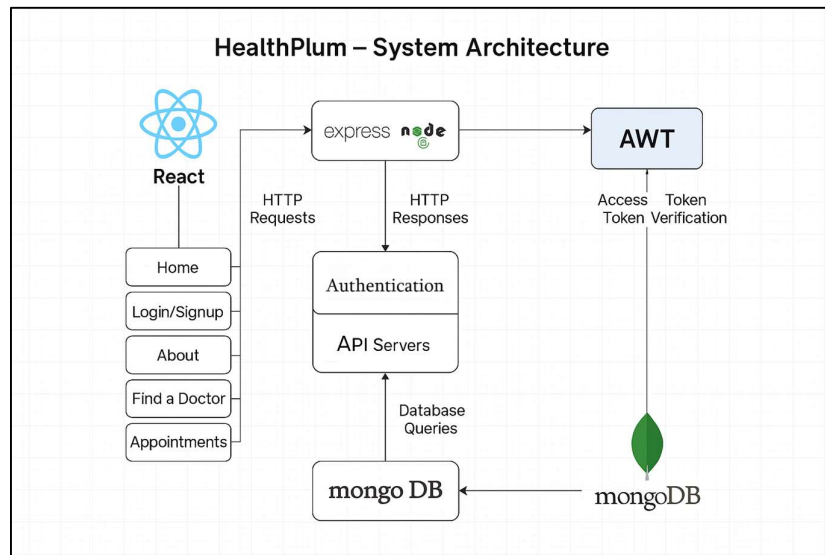
2. Project Overview

- **Purpose:** HealthPlum is a comprehensive healthcare appointment scheduling platform designed to streamline the process of connecting patients with healthcare providers. The application aims to solve the common frustrations associated with medical appointment booking, such as phone call requirements, limited availability information, and fragmented medical record management.
- **Features:**
 - User authentication for patients and doctors
 - Doctor search and filtering by specialty, location, and availability
 - Real-time appointment scheduling system
 - Patient medical profile management
 - Doctor profile and availability management
 - Appointment reminders and notifications
 - Review and rating system for doctors

3. Architecture

- **Frontend:**
 - Built with React.js for component-based UI development
 - Redux for state management across the application
 - React Router for seamless navigation between pages
 - Material UI and custom CSS for responsive design
 - Axios for API communication with the backend
- **Backend:**
 - Node.js with Express.js framework for the RESTful API
 - JWT-based authentication for secure user sessions
 - Middleware for request validation and error handling
 - Controllers organized by domain (users, appointments, doctors)
 - Integration with third-party services for notifications (Twilio/SendGrid)
- **Database:**
 - MongoDB as the primary NoSQL database
 - Mongoose ODM for schema definition and validation
 - Key collections:

- Users (with role-based differentiation)
- Doctors (with specializations and availability)
- Appointments
- Reviews



Architecture Diagram

4. Setup Instructions

- **Prerequisites:**
 - Node.js (v14.0.0 or higher)
 - MongoDB (v4.4 or higher)
 - NPM (v6.14.0 or higher)
 - Git

- **Installation:**

1. **Clone the repository**

```
git clone https://github.com/abhinav2823/HealthPlum.git
cd healthplum
```

2. **Install frontend dependencies**

```
cd frontend
npm install
npm run dev
```

3. Install backend dependencies

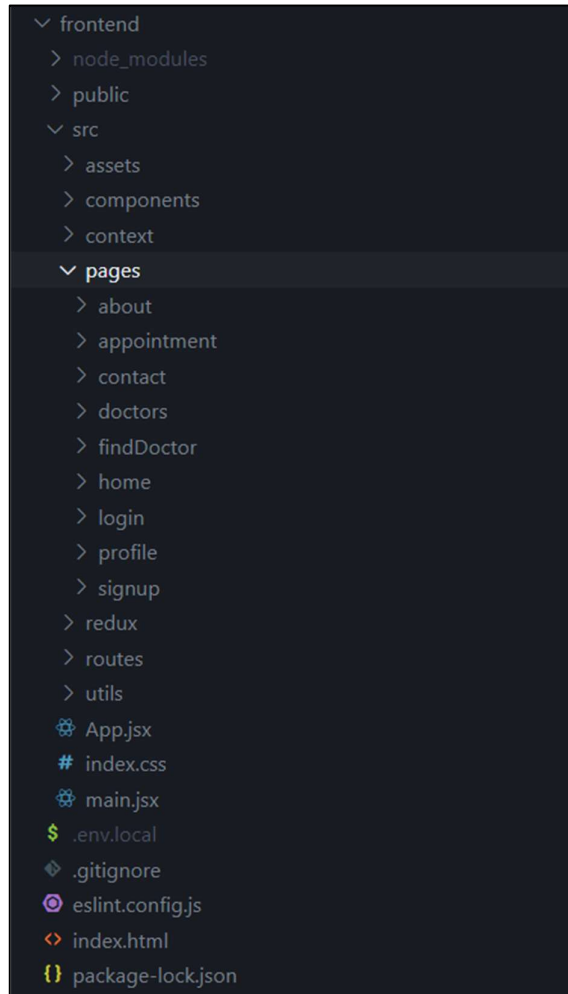
```
cd backend  
npm install  
npm run dev
```

4. Create a .env file

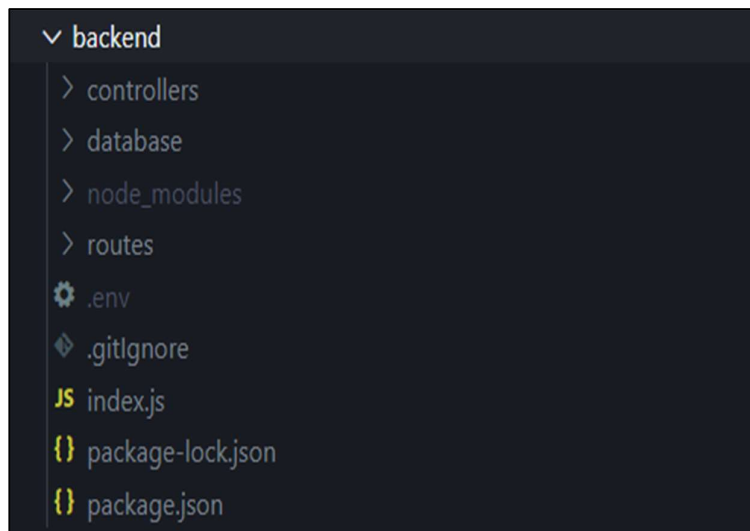
```
PORT=5000  
MONGO_URI=mongodb+srv://<username>:<password>@<cluster-name>.mongodb.net/<database-name>?retryWrites=true&w=majority  
JWT_SECRET=your_jwt_secret_key
```

5. Folder Structure

- Client:



- **Server:**



6. Running the Application

- **Backend:**

```
cd Backend  
npm run dev
```

This will start the server on port 3000 using nodemon for development.

- **Frontend:**

```
cd Frontend  
npm run dev
```

This will start the React development server on port 5173.

7. API Documentation

7.1 Authentication API

Base Path: /api/authentication

Endpoint	Method	Description	Body	Returns
/register	POST	Registers a new user (doctor/patient).	Form data	Registered user object + JWT
/login	POST	Authenticates a user.	Form data	Authenticated user + JWT

7.2 Doctor API

Base Path: /api/doctors

Endpoint	Method	Description	Returns
/get-doctors/	GET	Fetches the list of all doctors.	List of doctor objects
/get-doctors/:id	GET	Fetches the profile/details of a specific doctor.	Single doctor object
/get-trending-doctor/	GET	Fetches a list of trending/recommended doctors.	List of doctor objects
/get-appointment-by-doctor-id/:id	GET	Fetches all appointments for a specific doctor.	List of appointment objs

7.3 Patient API

Base Path: /api/patients

Endpoint	Method	Description	Returns
/book-appointment	POST	Books an appointment for the patient.	Confirmation + data
/get-appointments/:patientId	GET	Fetches all appointments of a patient.	List of appointment objs
/patient-details/:patientId	GET	Fetches detailed info of a patient.doctors.	Patient object

/cancel-appointment/:appointmentId	PUT	Cancels a specific appointment.	Status confirmation
/get-patient-profile/:patientId	GET	Retrieves the profile info of the patient.	Profile object

8. Authentication

- **JWT-based Authentication:**
 - JSON Web Tokens are used for maintaining user sessions
 - Tokens are generated upon login and stored in local storage on the client
 - Each protected API request includes the token in the Authorization header
 - Token expiration is set to 24 hours for security
- **Role-based Authorization:**
 - Middleware checks user roles before allowing access to specific routes
 - Three main roles: Patient, Doctor, and Admin
 - Each role has different permissions and access levels
- **Password Security:**
 - Passwords are hashed using bcrypt before storage
 - Password reset functionality via email with temporary tokens

9. User Interface

The **HealthPlum** platform offers a modern, user-friendly interface that ensures a smooth experience for both patients and doctors. Below is a breakdown of all major pages and functionalities:

1. **Homepage:**
 - Showcases featured and trending doctors across various specialties.
 - Provides quick navigation to appointment booking and search features.
2. **Find a Doctor:**
 - Lists all registered doctors with profile previews.
 - Includes advanced filtering based on department/specialty.
 - Integrated search bar for quick look-up.
3. **Login / Signup:**
 - Separate flows for doctors and patients.
 - Secure registration and authentication using JWT tokens.
4. **About Page:**
 - Tab-based interface with the following sections:
 - i. Our Mission
 - ii. Our Team
 - iii. Achievements

5. Appointment Booking:

- Patients can view doctor schedules and available slots.
- Streamlined multi-step form to fill personal details and confirm bookings.

6. Appointments Page:

- Displays all booked appointments for a patient.
- Option to cancel appointments with confirmation.

7. Patient Dashboard:

- View and manage all upcoming and past appointments.

8. Doctor Dashboard:

- Doctors can view and manage their schedule.
- View patient details associated with upcoming appointments.
- Update appointment statuses and notes.

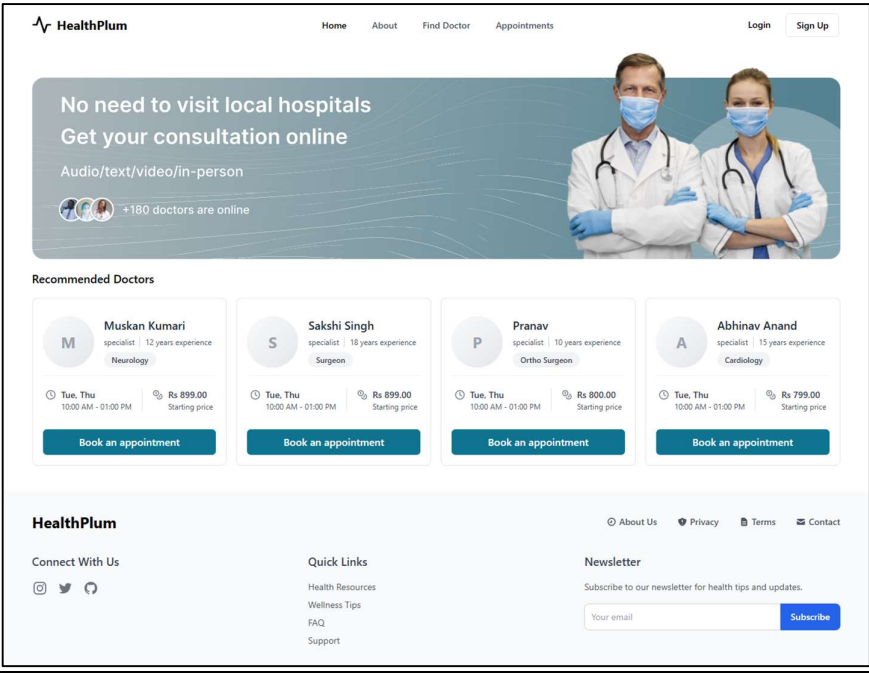
9. User Profiles:

- Separate profile pages for doctors and patients.
- Ability to update personal and professional information.
- Doctors can manage departments, ratings, and availability.

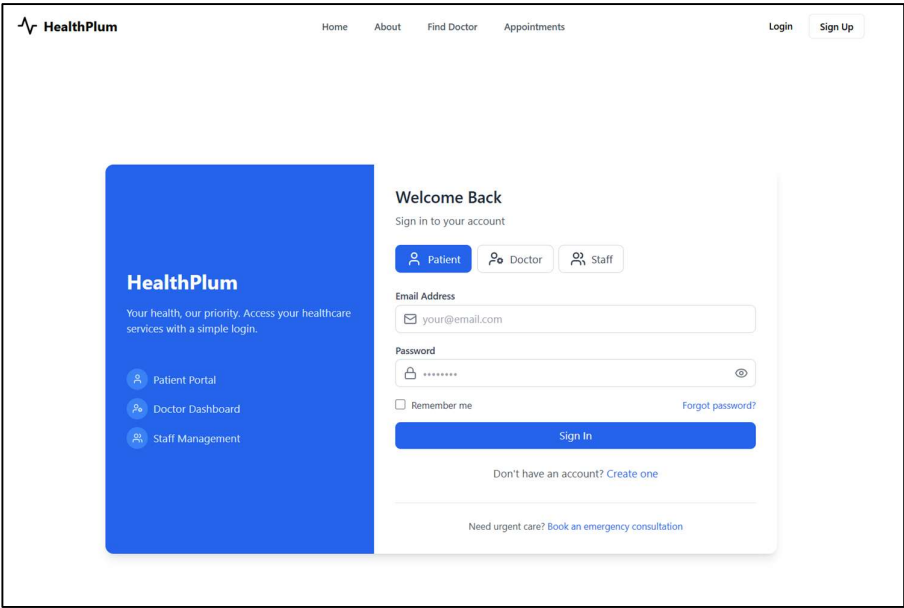
10. Testing

- **Frontend Testing:**
 - Jest and React Testing Library for component testing
 - Cypress for end-to-end testing of critical user flows
- **Backend Testing:**
 - Postman collections for API documentation and testing
- **Testing Strategy:**
 - Unit tests for individual components and functions
 - Integration tests for API endpoints
 - End-to-end tests for critical user journeys


11. Screenshots or Demo



Home Page



Login Page



[Home](#) [About](#) [Find Doctor](#) [Appointments](#)


[Login](#) [Sign Up](#)


HealthPlum


Join our healthcare platform for better care coordination and simplified appointment management.

- 24/7 Online Consultations
- Secure Medical Records
- Easy Appointment Scheduling


Create an Account

 Patient


 Doctor

 Staff


Full Name

 Enter your full name


Email Address

 email@example.com


Password

 Create a strong password


Confirm Password

 Confirm your password


Phone Number

 Enter phone number


Specialization

 E.g., Cardiology, Pediatrics


Qualifications

 E.g., MBBS, MD, MS

Experience (years)

 Years of experience

Consultation Fee

 Fee amount

Upload Profile Photo


Choose File

No file chosen

Create Account


[Already have an account? Sign in](#)

Signup Page



[Home](#) [About](#) [Find Doctor](#) [Appointments](#)

[Login](#) [Sign Up](#)



Processing ...

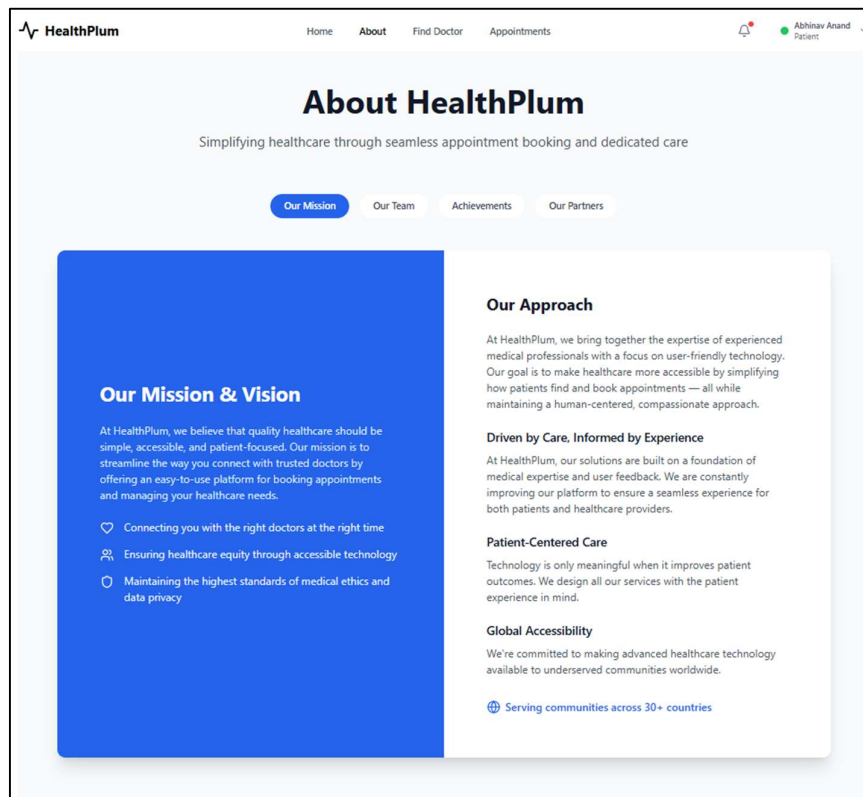
Please wait while we verify your credentials

Verifying credentials

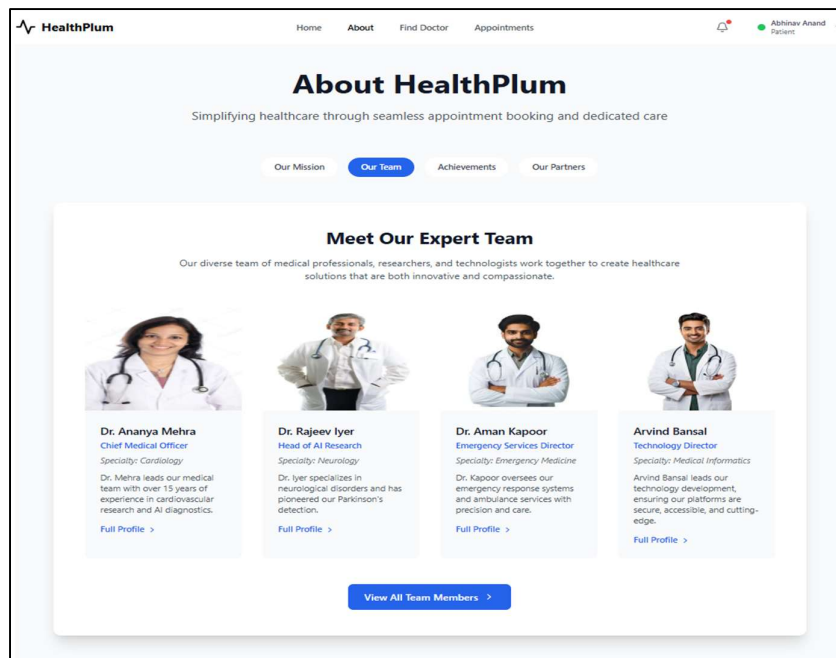
19%

This may take a moment. Please don't close your browser.

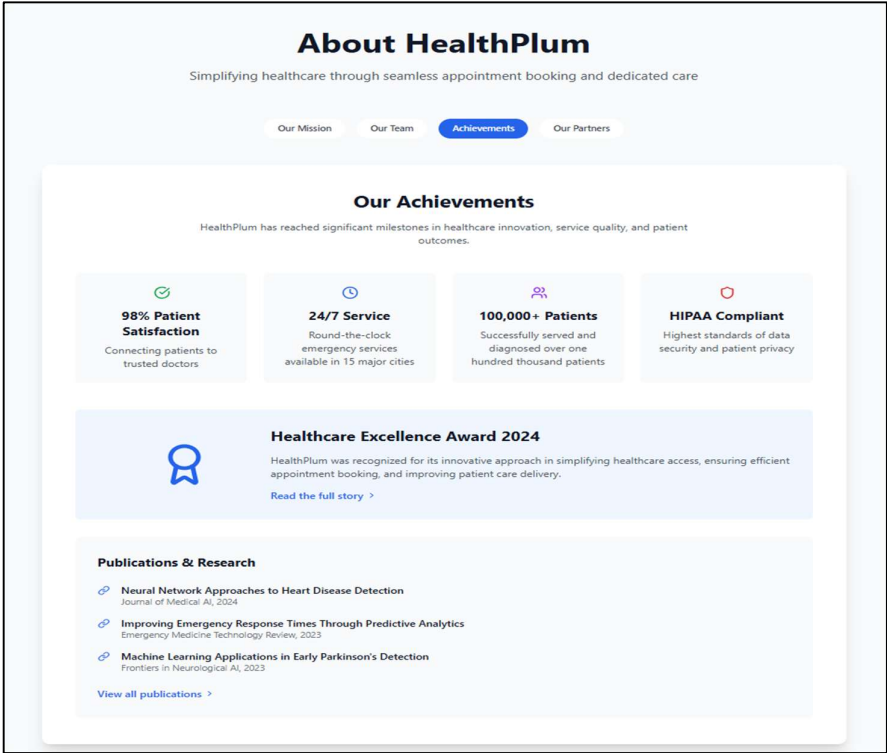
Loading Screen



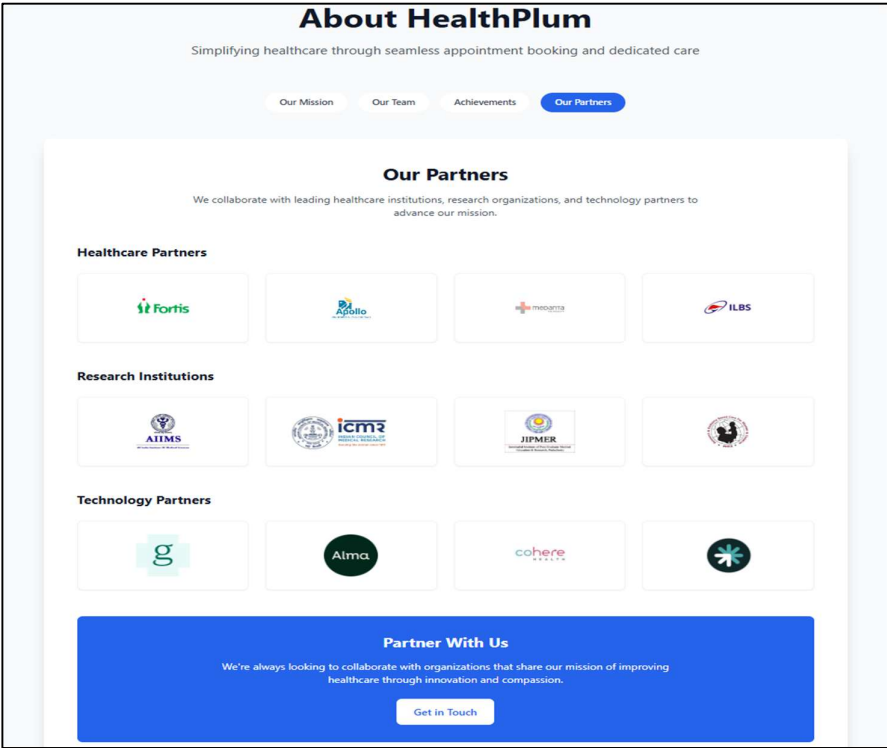
Our Mission - About Page




Our Team - About Page




Achievements - About Page



Our Partners - About Page

HealthPlum


HomeAboutFind DoctorAppointments





Abhinav AnandPatient


Contact Us

Have questions or need assistance? We're here to help. Reach out to our team.

Address
123 Health Lane, MediCity, India

Phone
+91 98765 43210

Email
support@healthcare.com

Working Hours
Mon - Fri: 9 AM - 6 PM

Send Us a Message

Full Name

John Doe

Email Address

johndoe@example.com

Phone (optional)

+91 98765 43210

Subject

Booking Help

Message

Write your message here...

☐ I agree to the [Privacy Policy](#)

Send Message

Contact Us Page

Frequently Asked Questions

How do I schedule an appointment?

You can schedule an appointment through our website by using the Find a Doctor tool, or by calling our office directly.

What insurance plans do you accept?


We accept most major insurance plans. Please contact our office to verify that we accept your specific insurance plan.

How can I access my medical records?

You can access your medical records through our patient portal. If you need assistance, please contact our support team.

Need Urgent Care?

For emergencies or urgent care needs, our specialists are available 24/7. Don't hesitate to reach out.

 Call Emergency Line

Learn About Urgent Care

Contact Us

[Home](#)
[About](#)
[Find Doctor](#)
[Appointments](#)

Abhinav Anand
Patient

Find Your Perfect Doctor

Connect with top-rated healthcare professionals in your area and book appointments instantly.

Neurology

Surgeon

Ortho Surgeon

Cardiology

All Specialties

Sort by: Recommended

Muskan Kumari Trending
Neurology
MD

☆ ☆ ☆ ☆ ☆

12 years exp

₹999.00 fee

Availability

Available Today

Book Appointment

Sakshi Singh Trending
Surgeon
MD

☆ ☆ ☆ ☆ ☆

18 years exp

₹999.00 fee

Availability

Available Today

Book Appointment

Pranav Trending
Ortho Surgeon
MBBS

☆ ☆ ☆ ☆ ☆

Availability

Available Today

Book Appointment

Find Doctor Page

[Home](#)
[About](#)
[Find Doctor](#)
[Appointments](#)

Abhinav Anand
Patient

Dr. Abhinav Anand
Cardiology

☆ 4.8/5

Available

Profile Details

Experience

15 years

Consultation Fee

\$799

Qualifications

MBBS, PhD, FACC

Email

abhinav.anand@healthplum.com

Working Hours

Monday

9:00 AM - 5:00 PM

Tuesday

9:00 AM - 5:00 PM

Wednesday

9:00 AM - 5:00 PM

Thursday

9:00 AM - 5:00 PM

Friday

9:00 AM - 5:00 PM

Saturday

9:00 AM - 1:00 PM

Sunday

Closed

[Modify Schedule](#)

Today's Appointments

Monday, April 14, 2025

AK

Amit Kumar
Heart palpitations follow-up
🕒 9:30 AM

Start

Reschedule

DC

Dheeraj Chaudhary
Initial consultation
🕒 11:00 AM

Start

Reschedule


Upcoming Appointments


AV


Aditya Verma
Annual checkup
📅 April 15, 2025 🕒 2:15 PM

[View Full Schedule](#)

Doctor Profile Page


Home
About
Find Doctor
Appointments



Abhinav Anand Patient




Abhinav Anand
 Cardiology
 ☆☆☆☆

₹ 799.00 consultation fee
 MBBS
 15 years of experience

1 Date & Time
2 Appointment Details
3 Personal Info
4 Confirmation

 Select Date


15 Tue 15	16 Wed 16	17 Thu 17	18 Fri 18	19 Sat 19
20 Sun 20	21 Mon 21	22 Tue 22	23 Wed 23	24 Thu 24

 Select Time

9:00 AM	9:30 AM	10:00 AM	10:30 AM	11:00 AM	11:30 AM
1:00 PM	1:30 PM	2:00 PM	2:30 PM	3:00 PM	3:30 PM

Continue →

Appointment Booking Screen



Abhinav Anand
 Cardiology
 ☆☆☆☆

₹ 799.00 consultation fee
 MBBS
 15 years of experience

Date & Time
2 Appointment Details
3 Personal Info
4 Confirmation

Appointment Type

New Patient Visit	Follow-up
Annual Physical	Consultation

Reason for Visit

Please briefly describe the reason for your visit...

Insurance Information

Yes, I have insurance

Self-pay

Insurance Provider
e.g. Blue Cross


Insurance ID
e.g. ABC123456789

Please bring your insurance card to your appointment. We will verify your coverage before your visit.

← Back

Continue →

Appointment Booking Screen



Abhinav Anand
Cardiology
☆☆☆☆☆

₹ 799.00 consultation fee
MBBS
15 years of experience

✓ Date & Time

✓ Appointment Details

3 Personal Info

4 Confirmation

Patient Information

Full Name

Abhinav Anand

Email Address

abhinav@gmail.com

Phone Number

9560731970


ⓘ

By scheduling this appointment, you agree to our cancellation policy. Please arrive 15 minutes before your appointment time.

← Back

Confirm Booking ✓

Appointment Booking Screen



Abhinav Anand
Cardiology
☆☆☆☆☆

₹ 799.00 consultation fee
MBBS
15 years of experience

✓ Date & Time


✓ Appointment Details

✓ Personal Info

4 Confirmation

✓

Appointment Confirmed
Your appointment has been scheduled successfully.



Abhinav Anand
Cardiology

📅 Date

Thursday, April 17

🕒 Time

10:30 AM

• Appointment Type

New Patient Visit

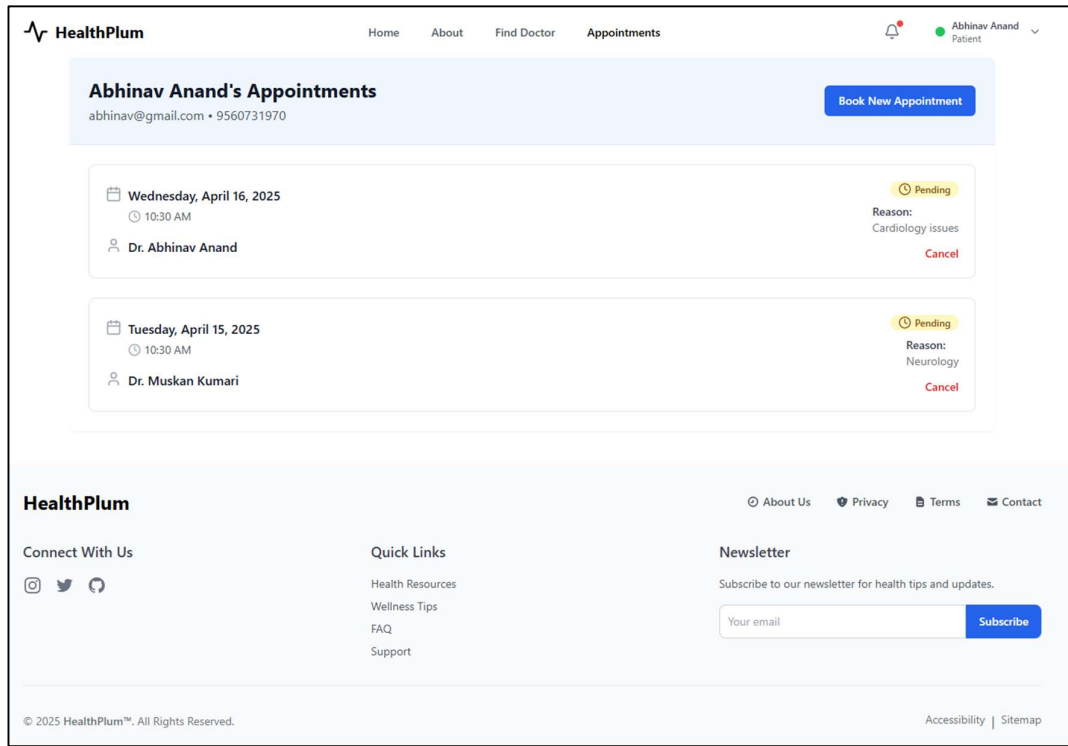
• Patient

Abhinav Anand

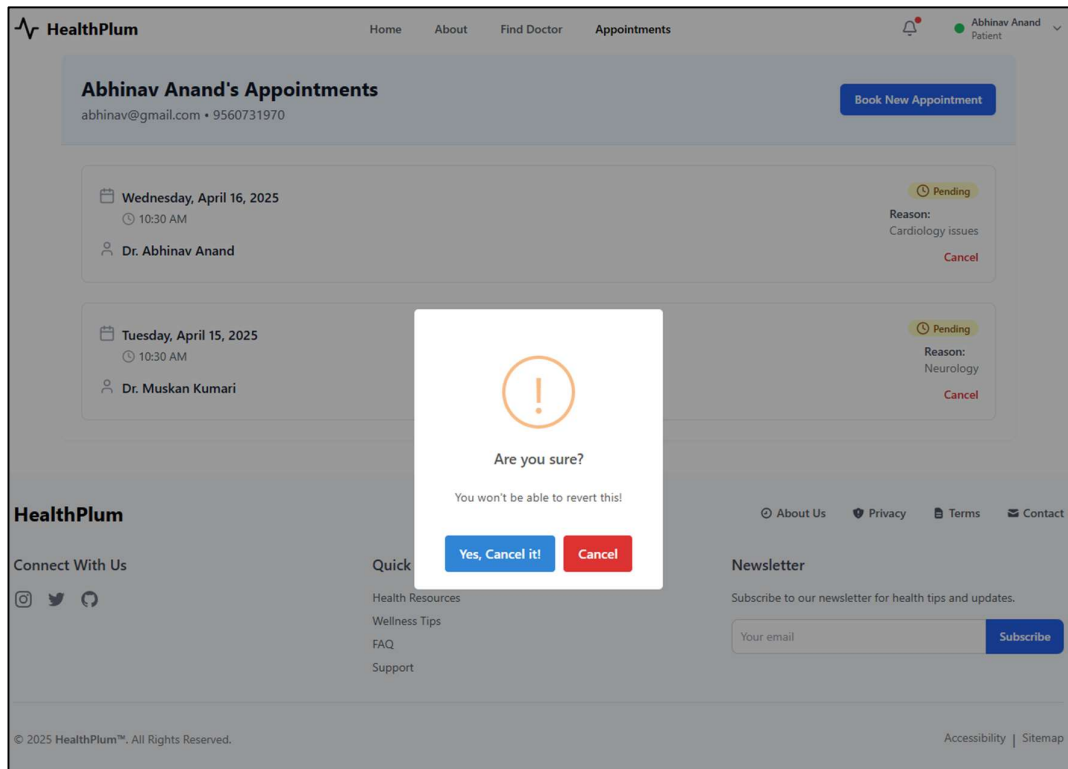
Consultation Fee

Rs 799.00

Appointment Confirmation Screen




Appointments Tab



Appointment Cancel Screen

HealthPlum



Abhinav Anand

Cardiology

Profile Information

Qualifications:

MBBS

Experience:

15 years

Consultation Fee:

₹799.00

Rating:

5

Status:

Available

Appointment Stats

0

Confirmed

1

Pending

0

Completed

0

Cancelled

Today's Appointments

Tomorrow

Upcoming

Q

Search patients...


All Status

No appointments found

You don't have any appointments scheduled for today.

Doctor's Dashboard

HealthPlum



Abhinav Anand

Cardiology

Profile Information

Qualifications:

MBBS

Experience:

15 years

Consultation Fee:

₹799.00

Rating:

5

Status:

Available

Appointment Stats

0

Confirmed

1

Pending

0

Completed

0

Cancelled

Today's Appointments

Tomorrow

Upcoming

Q

Search patients...

All Status

PATIENT	SCHEDULE	REASON	STATUS	ACTIONS
<div><div></div><div><div>Abhinav Anand</div><div>23 yrs. male</div></div></div>	<div><div></div><div>Wed, Apr 16</div><div>10:30:00</div></div>	Cardiology issues	Pending	<div><div></div><div></div><div></div></div>

Upcoming Appointment Tab

12. Known Issues

- Doctor availability updates may take up to 5 minutes to reflect in the search results.
- Mobile responsive design has minor layout issues on certain Android devices.
- Search functionality performance degrades with very large result sets.
- The department-based filter sometimes fails to return updated results after changing filters rapidly.
- User registration does not currently include email or phone verification, increasing the risk of fake accounts.

13. Future Enhancements

- Telemedicine integration for virtual appointments
- Insurance verification and coverage checking
- Advanced analytics for doctors to track patient patterns
- Multi-language support for international users
- Integration with wearable health devices for automatic health data sharing
- AI-powered symptom checker to guide patients to appropriate specialists
- Prescription management and refill requests
- Medical document management with OCR for paper records