

# CLINIC MANAGEMENT

## **Team Members:**

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## INTRODUCTION

Healthcare facilities require an efficient and secure system to manage patient records, schedule appointments, handle billing, and streamline administrative tasks. The **Clinic Management System (CMS)** is a web-based application designed to simplify and optimize clinic operations. This system enables doctors, patients, front desk staff, and administrators to interact seamlessly, ensuring smooth clinic workflow and enhancing patient care.

The project integrates Angular for a responsive and dynamic frontend, while Spring Boot and Hibernate ORM power the backend, providing secure data management. MySQL serves as the database, ensuring efficient storage and retrieval of patient records, appointments, and billing information.

The primary goal of this project is to automate routine tasks, reduce manual paperwork, enhance data security, and improve the overall healthcare experience for both medical professionals and patients.

## **ABSTRACT**

The Clinic Management System (CMS) is a full-stack web application designed to optimize hospital and clinic administration. This system ensures secure and role-based access for different users, streamlining various healthcare operations.

Doctors can efficiently manage patient records, set availability, and view appointments, allowing them to focus on providing quality care. Patients benefit from the system by being able to book appointments, check doctor availability, and view invoices with ease. Front Desk Staff play a crucial role in the system by handling patient registration, scheduling appointments, and managing billing operations. Additionally, Administrators have the authority to oversee system users, generate reports, and manage financial transactions, ensuring the clinic runs smoothly.

The system is designed with real-time updates, ensuring that changes in doctor availability, appointment bookings, and billing are reflected instantly. The Spring Boot backend guarantees data security and efficient business logic processing, while Angular powers the frontend, offering an interactive and user-friendly interface that enhances usability. By integrating these technologies, the CMS provides a seamless, automated, and efficient clinic management experience.

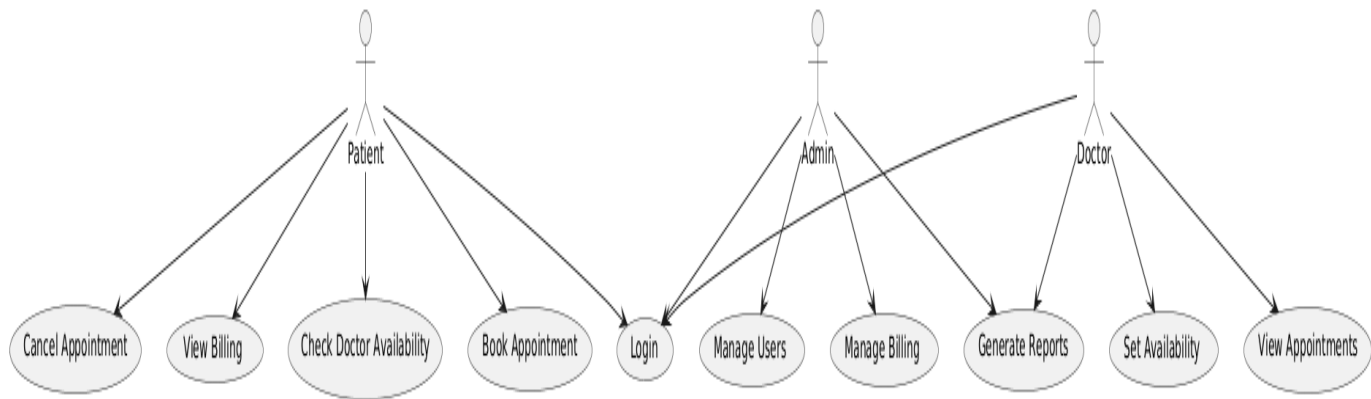
## **Key Features of the CMS:**

- **Appointment Scheduling:** Patients can book, reschedule, or cancel appointments based on real-time doctor availability.
- **Medical Records Management:** Doctors can view patient history, update treatment notes, and access diagnostic reports.
- **Billing and Invoicing:** Secure billing module that allows patients to view invoices and process payments.
- **User Role Management:** Different access levels for doctors, patients, and admins ensure data privacy and security.
- **Automated Reporting:** Admins can generate operational and financial reports for clinic management.

The Clinic Management System streamlines clinic operations, reduces manual effort, and enhances patient care by leveraging a secure and scalable architecture.

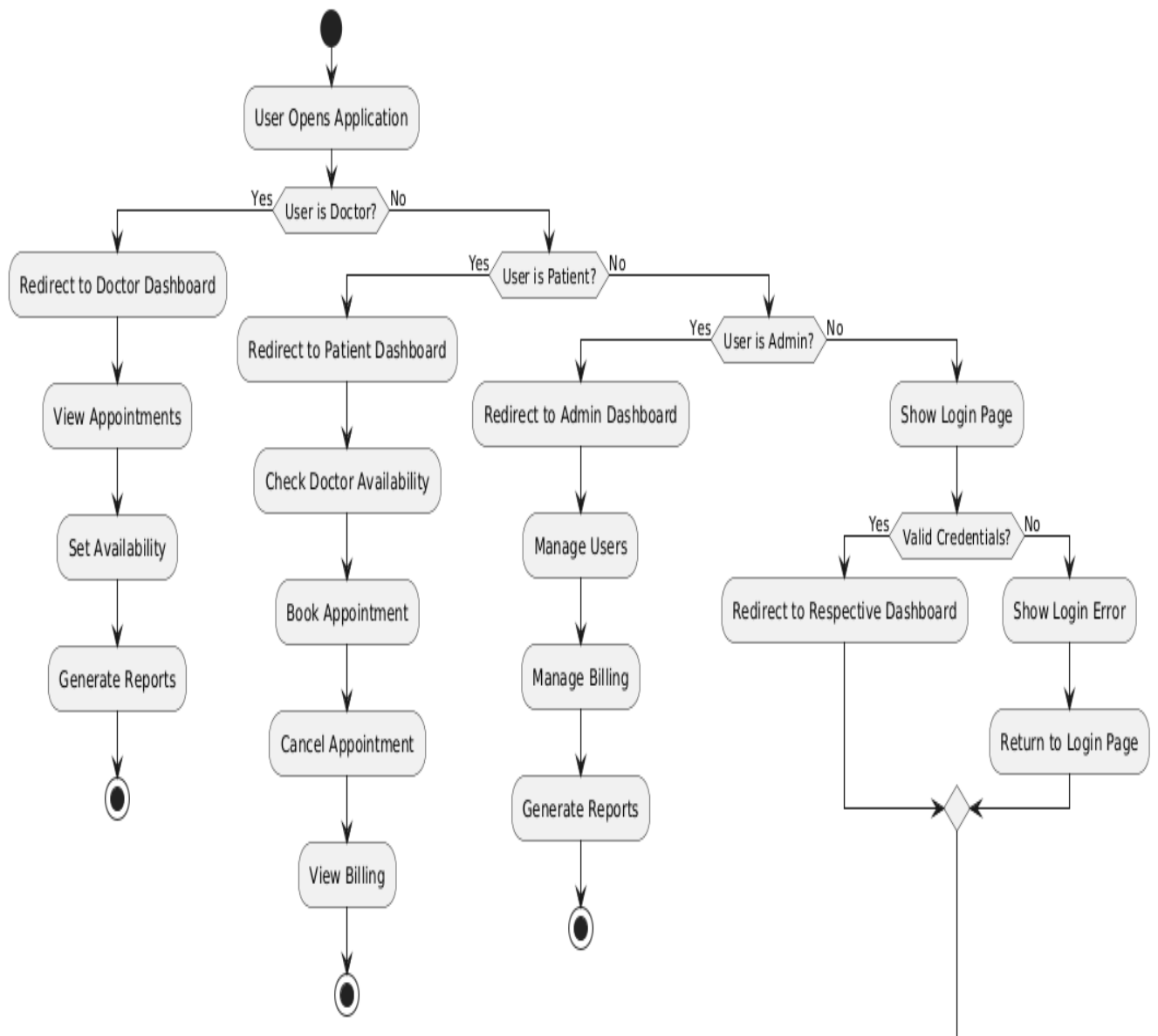
# DIAGRAMS

## 1) UseCase Diagram



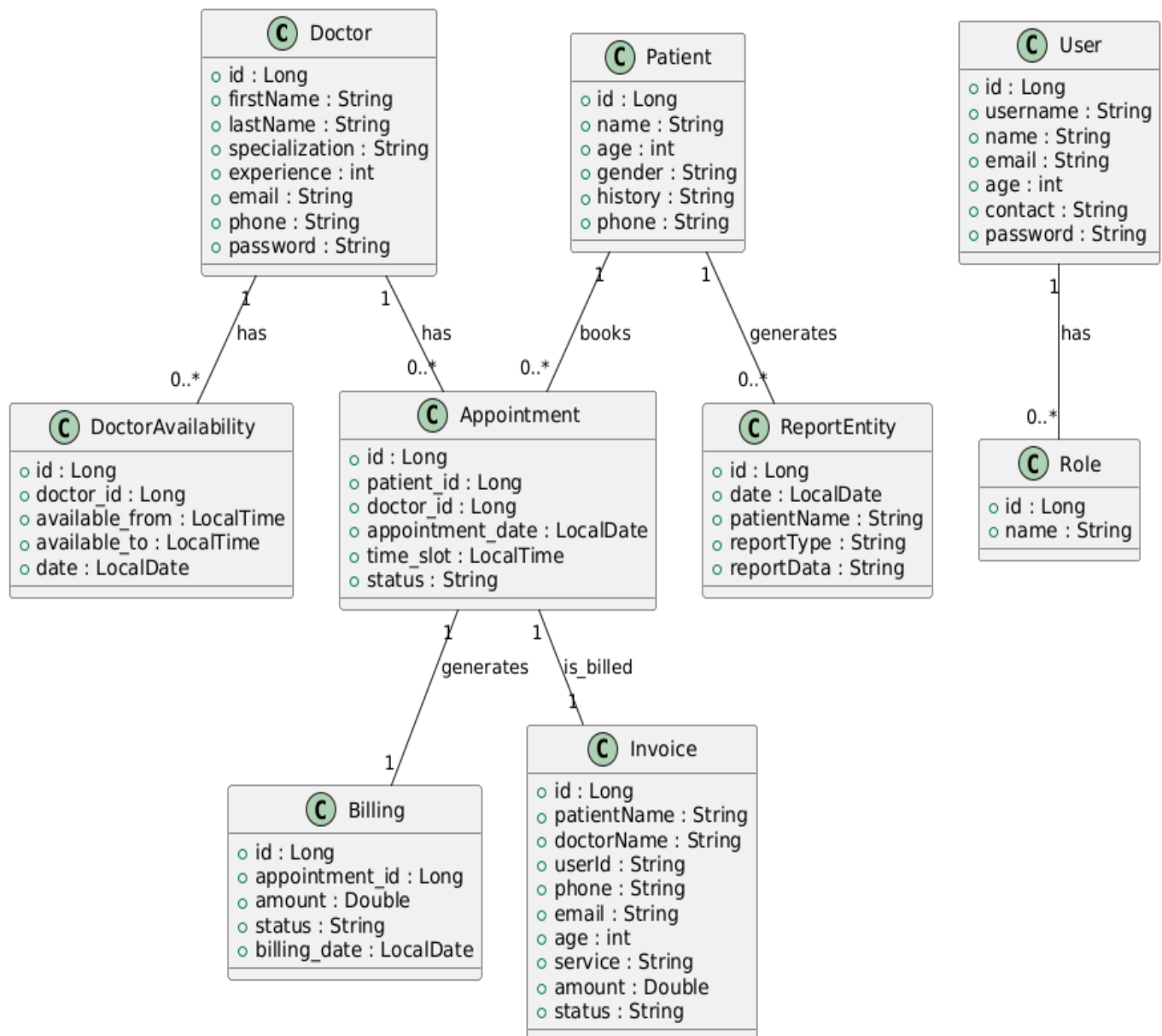
- **Doctors** manage availability and view appointments.
- **Patients** book, cancel appointments, and view bills.
- **Admins** handle user management, billing, and reports.

## 2)Flow Diagram



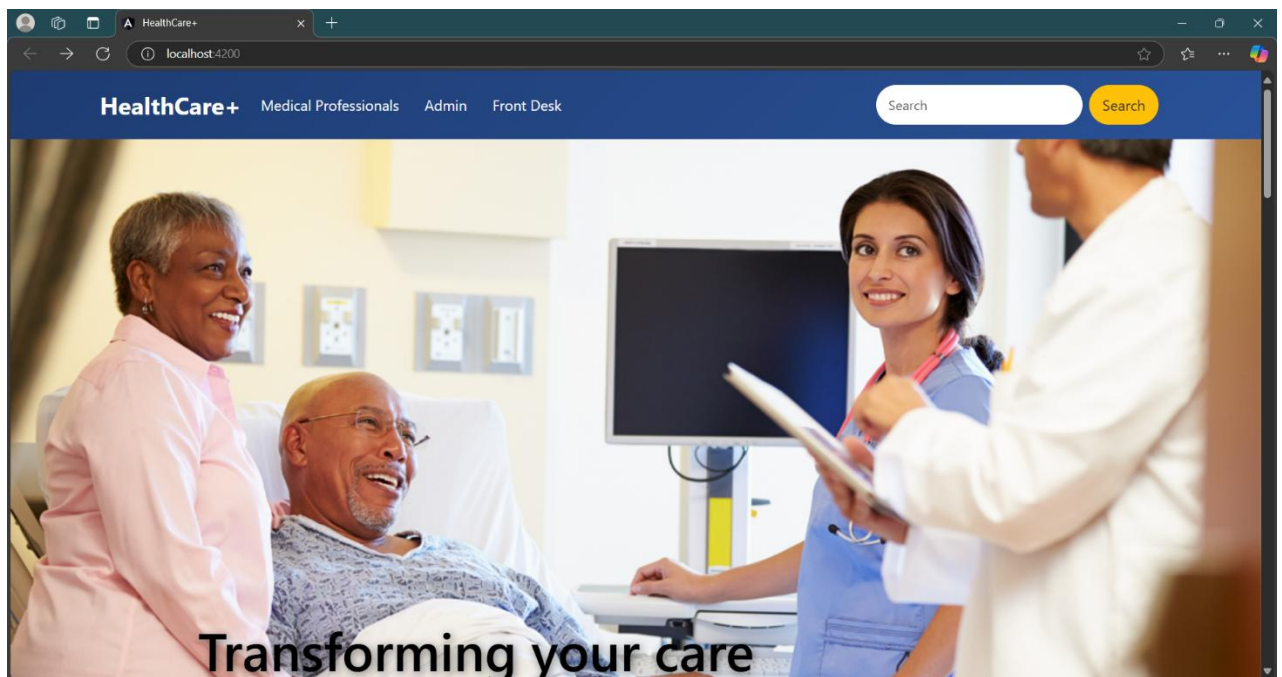
- **Login Page** redirects based on the role.
- **Doctors** manage availability, reports, and appointments.
- **Patients** check doctor availability, book/cancel appointments, and view bills.
- **Admins** manage users, billing, and reports.

### 3)ER Diagram



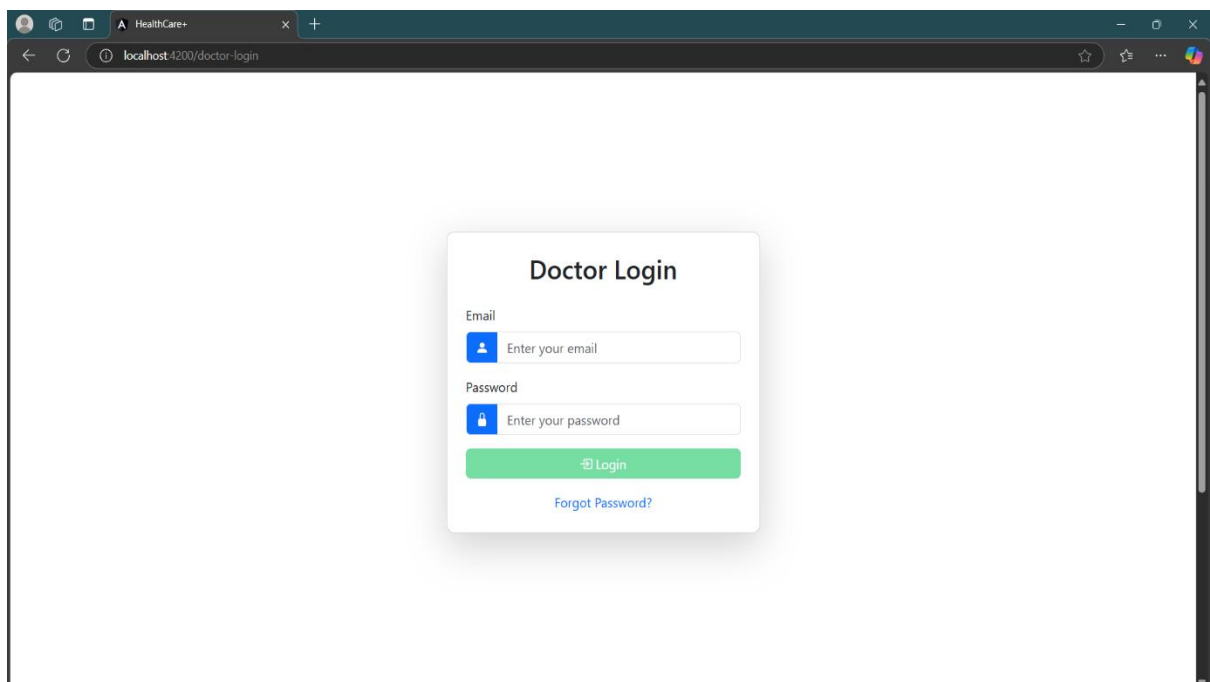
- **Doctors** have availability slots
- **Patients** book appointments with doctors
- **Appointments** generate billing and invoices
- **Reports** store patient medical records
- **Users & Roles** handle authentication

# SCREENSHOTS

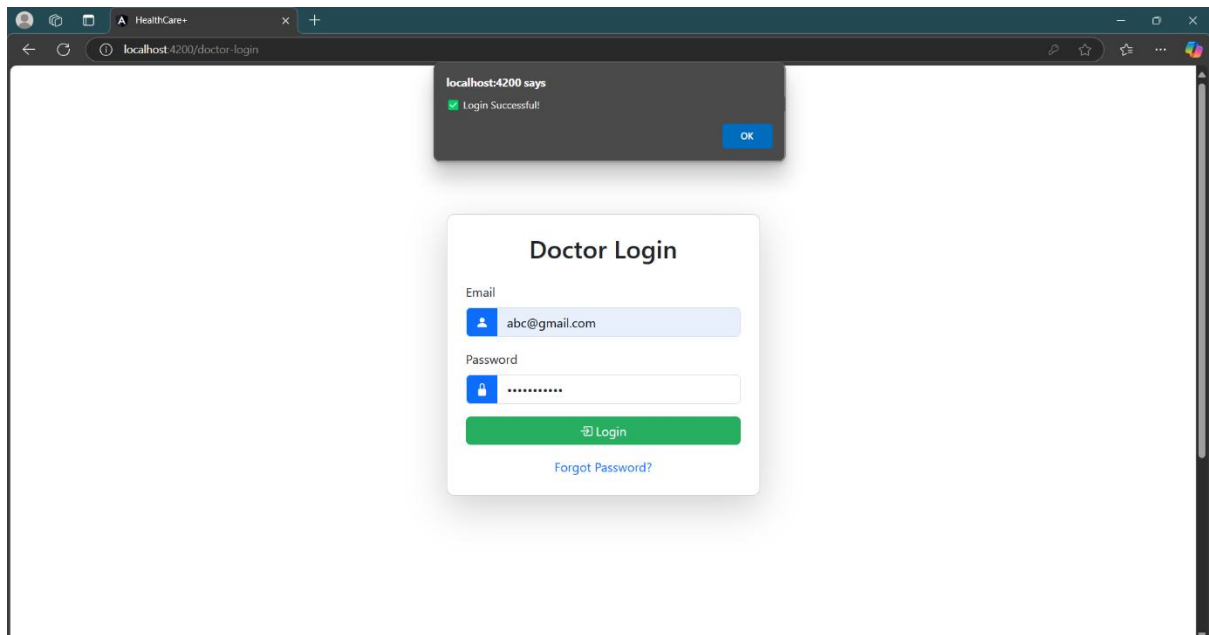


HomePage

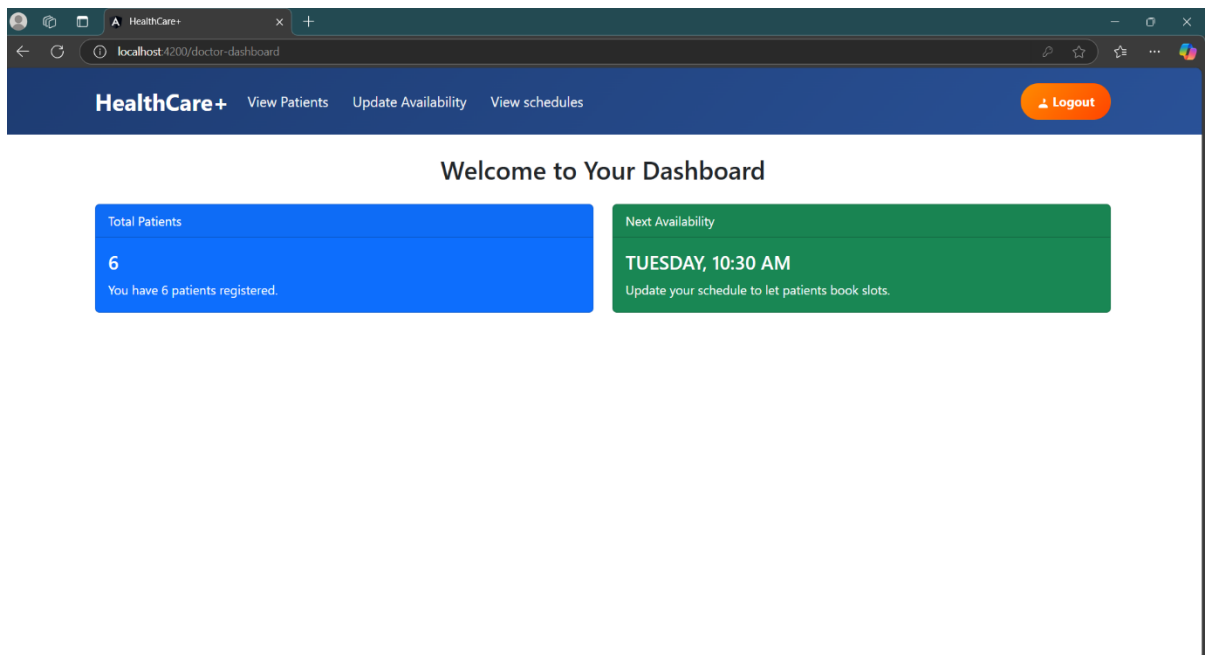
## DOCTOR MODULE



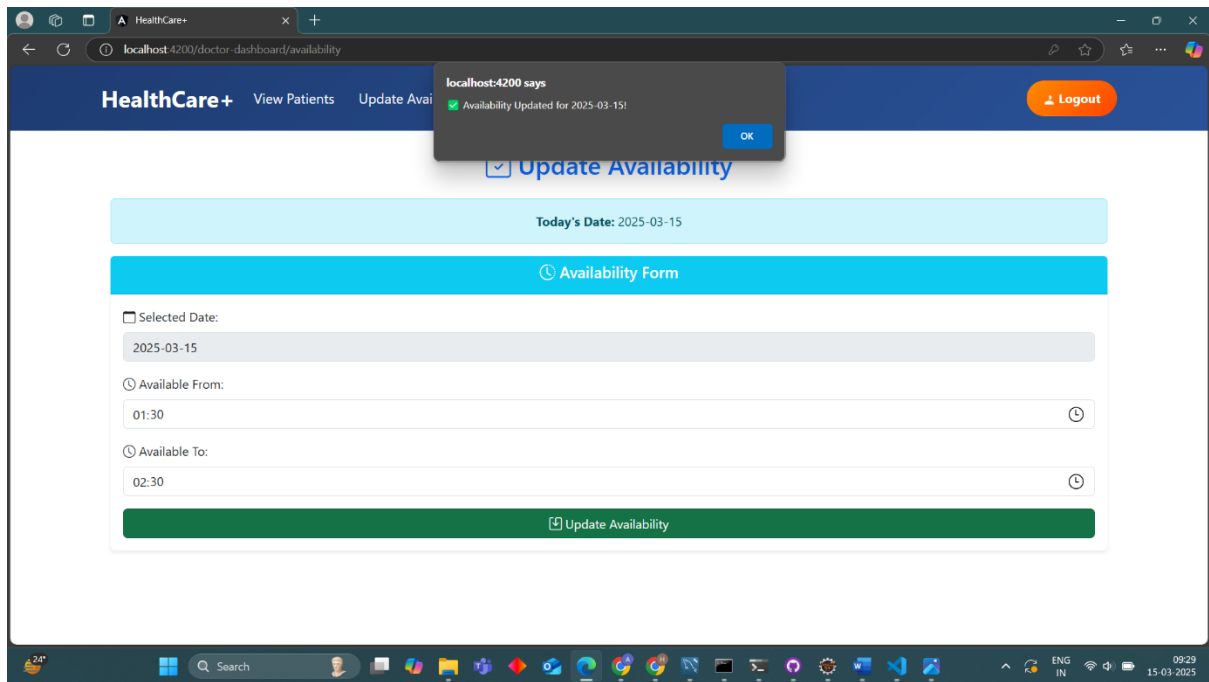




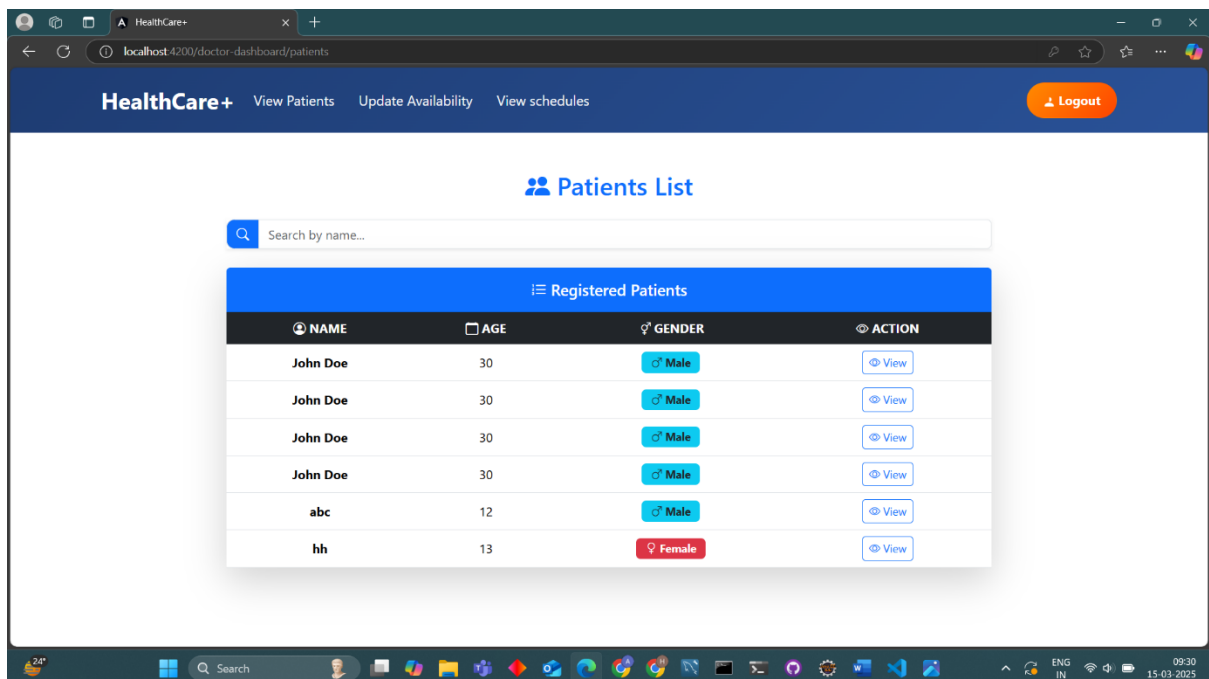
## Doctor Login



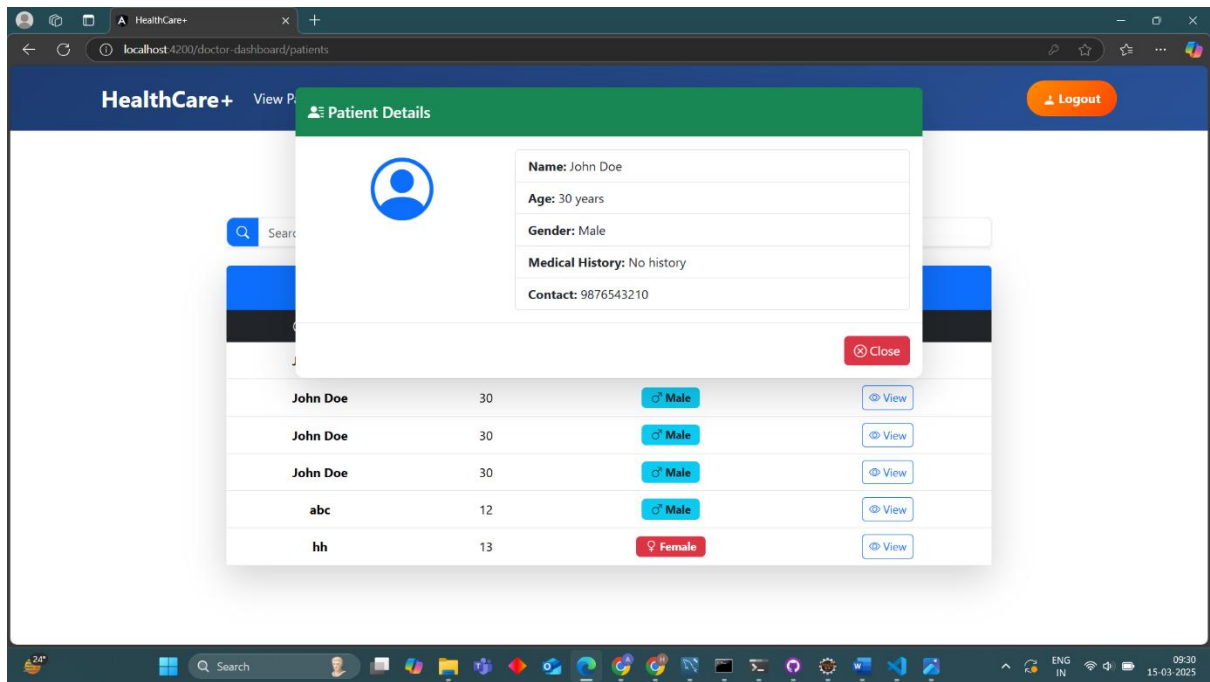
## Dashboard



## Updating Availability

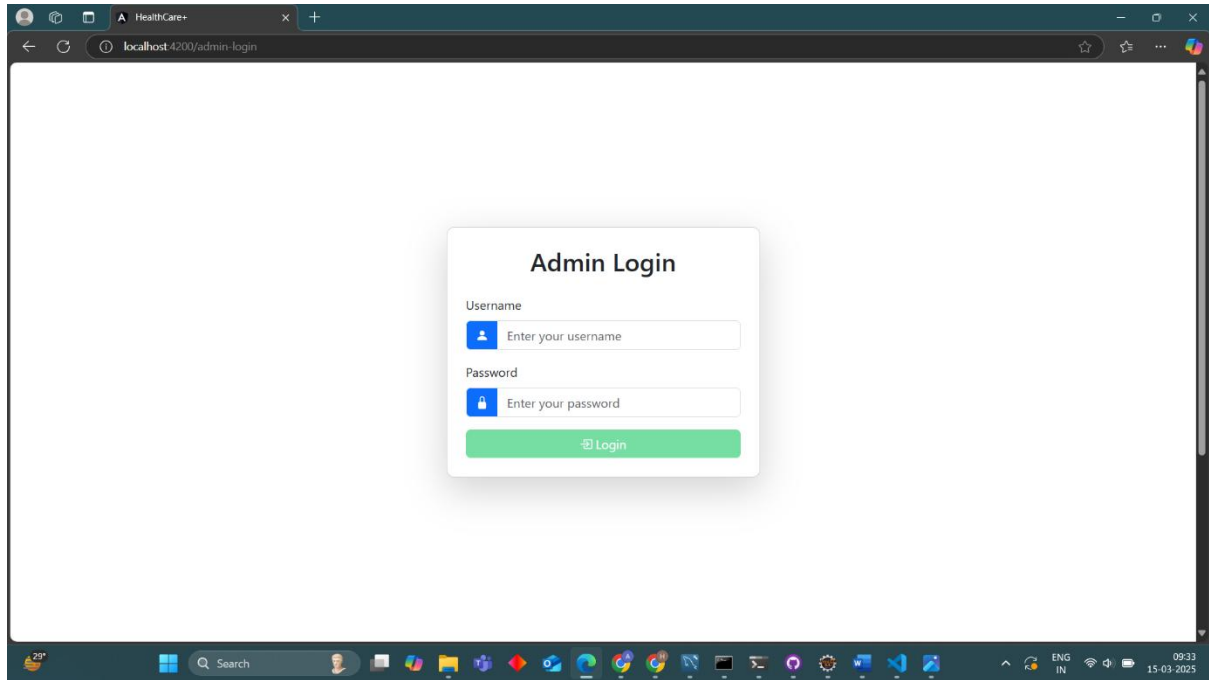


## View Patients(list of registered patients)

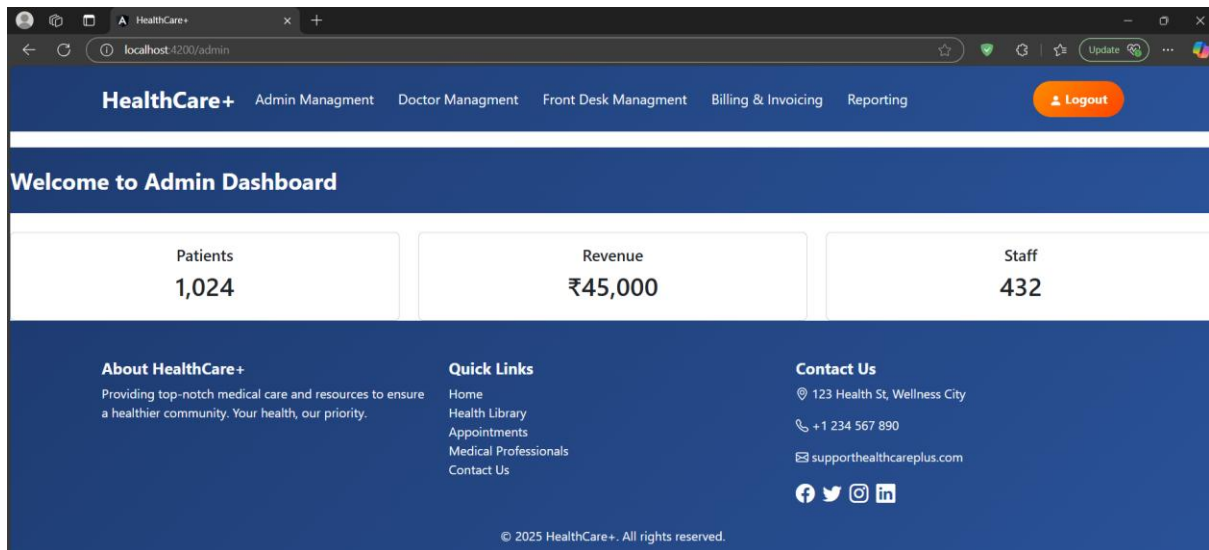


## Patient Details

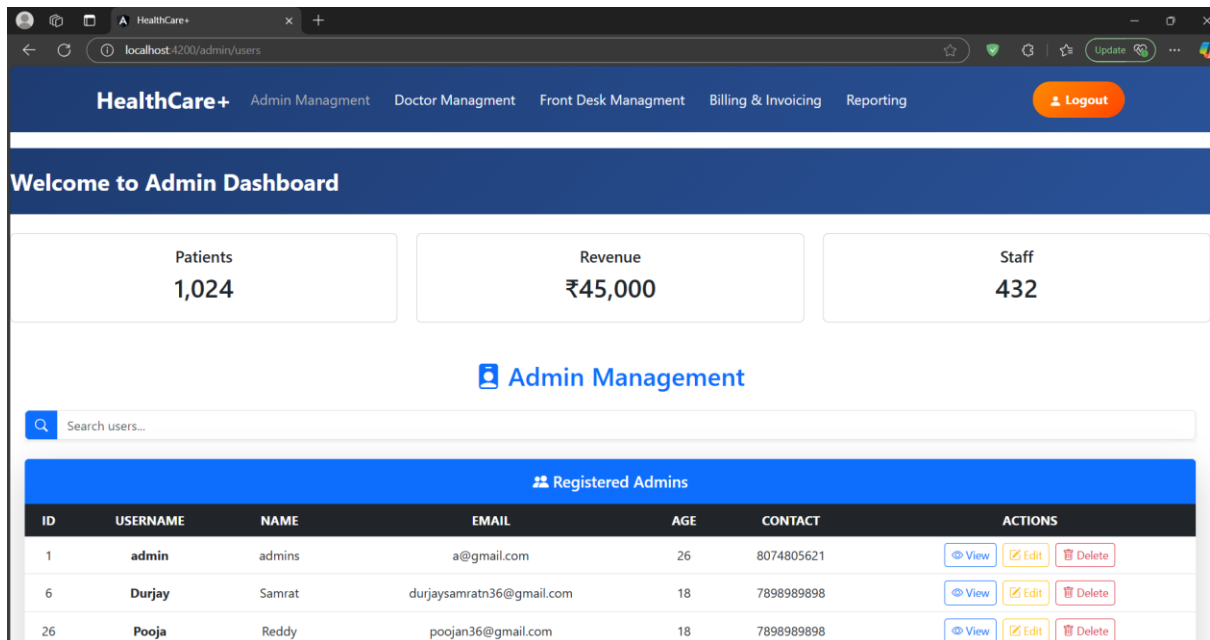
# ADMIN MODULE



## Admin Login



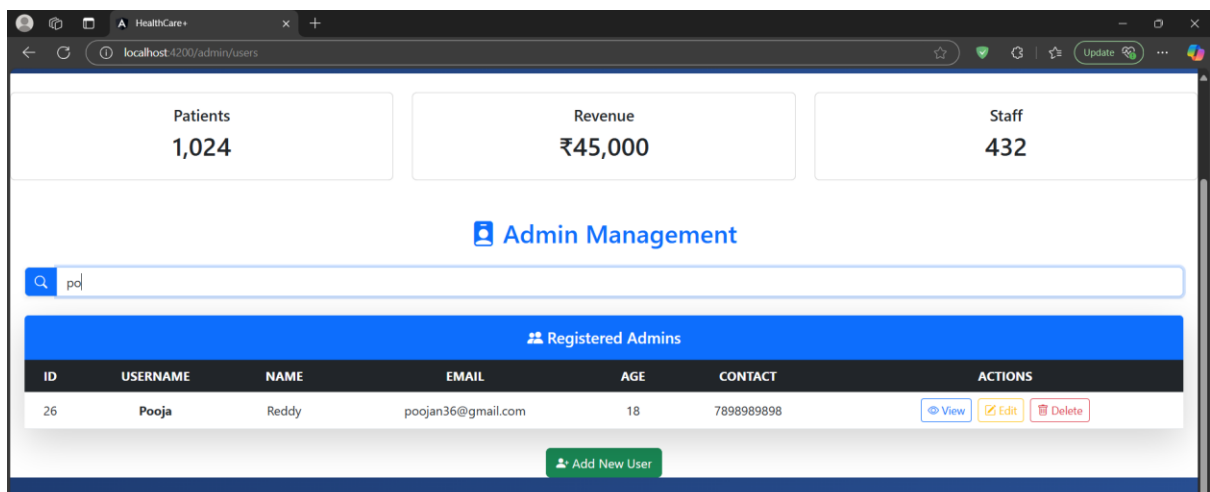
## Admin Dashboard



## Admin Management

The screenshot shows the 'Add New User' form. It has a title 'Add New User' and a green 'Add New User' button. The form contains several input fields with validation errors: 'Username' (required, min 3 characters), 'Name' (only letters allowed), 'Password' (must be at least 6 characters), 'Email' (invalid email format), 'Age' (must be greater than 0), and 'Contact' (must be a valid 10-digit contact number). The form also has 'Save' and 'Cancel' buttons at the bottom.

## Add Admin and Validation



## Search function

Add New User

User Details

Username: joe

Name: Joe Doe

Email: joe@gmail.com

Age: 28

Contact: 9876543210

Close

## View function

Add New User

Edit User

Username

smith

password

hashedpassword2

Name

Smith

Email

smith1212@gmail.com

Age

25

Contact

8765432109

Update

Cancel

## Edit function

Add New User

Confirm Deletion

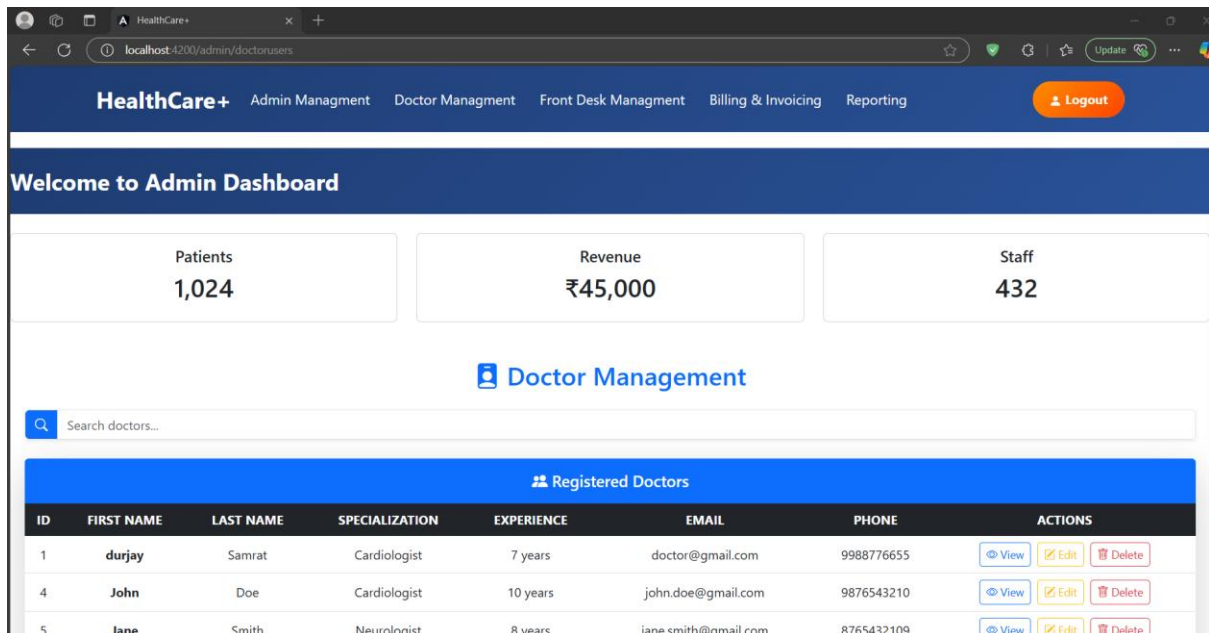
Are you sure you want to delete **nikhil\_reddy**?

Yes, Delete

Cancel

ID	USERNAME	NAME	EMAIL	AGE	CONTACT	ACTIONS
1	admin	admins	a@gmail.com	26	8074805621	<a href="#">View</a> <a href="#">Edit</a> <a href="#">Delete</a>
6	Durjay	Samrat	durjaysamratn36@gmail.com	18	7898989898	<a href="#">View</a> <a href="#">Edit</a> <a href="#">Delete</a>
26	Pooja	Reddy	poojan36@gmail.com	18	7898989898	<a href="#">View</a> <a href="#">Edit</a> <a href="#">Delete</a>
27	joe	Joe Doe	joe@gmail.com	28	9876543210	<a href="#">View</a> <a href="#">Edit</a> <a href="#">Delete</a>
28	smith	Smith	smith1212@gmail.com	25	8765432109	<a href="#">View</a> <a href="#">Edit</a> <a href="#">Delete</a>
29	nikhil_reddy	nikhil	nikhil@gmail.com	32	7654321098	<a href="#">View</a> <a href="#">Edit</a> <a href="#">Delete</a>

## Delete Function



## Doctor Management

The screenshot shows the 'Add New Doctor' form. It includes a green 'Add New Doctor' button at the top. The form fields are: First Name, Last Name, Specialization, Experience (years), Email, Phone, and Password. Each field has a red border and a red error message. The 'Save' button is blue, and the 'Cancel' button is grey.

**Add New Doctor**

First Name  
First Name is required and must contain only letters.

Last Name  
Last Name is required and must contain only letters.

Specialization  
Specialization is required.

Experience (years)  
Experience is required (1-50 years).

Email  
Enter a valid email address.

Phone  
Phone number must be exactly 10 digits.

Password  
Password must be more than 6 digits.

[Save](#) [Cancel](#)

## Add Doctor and Validation

The screenshot shows the 'User Details' form. It includes a green 'Add New Doctor' button at the top. The form displays the following information:

**User Details**

ID: 6

**First Name:** Mike

**Last Name:** Johnson

**Email:** mike.johnson@gmail.com

**Experience:** 12

**Specialization:** Orthopedic

**Contact:** 7654321098

[Close](#)

## View Doctor

HealthCare+ localhost:4200/admin/doctorusers

### Edit Doctor

First Name  
Jane

Last Name  
Smith

Specialization  
Neurologist

Experience (years)  
8

Email  
jane.smith@gmail.com

Phone  
8765432109

Password  
\*\*\*\*\*

Update

Cancel

## Edit Doctor

HealthCare+ localhost:4200/admin/doctorusers

ID	FIRST NAME	LAST NAME	SPECIALIZATION	EXPERIENCE	EMAIL	PHONE	ACTIONS
1	durjay	Samrat	Cardiologist	7 years	doctor@gmail.com	9988776655	<a href="#">View</a> <a href="#">Edit</a> <a href="#">Delete</a>
4	John	Doe	Cardiologist	10 years	john.doe@gmail.com	9876543210	<a href="#">View</a> <a href="#">Edit</a> <a href="#">Delete</a>
5	Jane	Smith	Neurologist	8 years	jane.smith@gmail.com	8765432109	<a href="#">View</a> <a href="#">Edit</a> <a href="#">Delete</a>
6	Mike	Johnson	Orthopedic	12 years	mike.johnson@gmail.com	7654321098	<a href="#">View</a> <a href="#">Edit</a> <a href="#">Delete</a>

[Add New Doctor](#)

**Confirm Deletion**

Are you sure you want to delete **durjay Samrat**?

Yes, Delete

Cancel

## Delete Doctor



HealthCare+

Admin ManagmentDoctor ManagementFront Desk ManagementBilling & InvoicingReporting

Logout

Welcome to Admin Dashboard

Patients1,024

Revenue₹45,000

Staff432

User Management - Front Desks

Search users...

Registered Front Desk Users

ID	USERNAME	NAME	EMAIL	AGE	CONTACT	ACTIONS
2	desk@243	Nandamudi	durjaysamratn36@gmail.com	18	7898989898	<div>ViewEditDelete</div>
6	fd_rahul	Rahul Sharma	rahul.sharma@gmail.com	29	9876543210	<div>ViewEditDelete</div>
7	fd_priya	Priya Iyer	priya.iyer@gmail.com	26	8765432109	<div>ViewEditDelete</div>

## Frontdesk users

Welcome to Admin Dashboard

Patients1,024

Revenue₹45,000

Staff432

User Management - Front Desks

pr

Registered Front Desk Users

ID	USERNAME	NAME	EMAIL	AGE	CONTACT	ACTIONS
7	fd_priya	Priya Iyer	priya.iyer@gmail.com	26	8765432109	<div>ViewEditDelete</div>

Add New User

## Frontdesk search

Add New User

Username

Username is required (min 3 characters).

Name

Only letters allowed.

Password

Password must be at least 6 characters.

Email

Invalid email format.

Age

Age must be greater than 0.

Contact

Enter a valid 10-digit contact number.

Save

Cancel

## Add New User Frontdesk with Validation


HealthCare+ x +


localhost:4200/admin/billing

Patients  
1,024

Revenue  
₹45,000

Staff  
432

 **Billing & Invoicing**

 **Generate Invoice**

Patient Name

Phone

Doctor Name


Email


User ID

Age


Service Provided


Amount



 **Pending Invoices**

## Billing and Invoicing

 **Billing & Invoicing**

 **Generate Invoice**

Patient Name

Patient Name is required

Phone

Enter a valid 10-digit phone number

Doctor Name

Doctor Name is required

Email

Enter a valid email

User ID

User ID is required

Age


Age must be between 1 and 120

Service Provided

Service is required

Amount

Amount must be greater than 0



## Invoice Validation

HealthCare+ | localhost:4200/admin/billing | Generate Invoice

### ⌚ Pending Invoices

Invoice Number	Patient Name	Patient Age	Doctor Name	Service	Amount	Contact	Action
3	Nandamudi	8	Nandamudi	8074805621	₹200	Nandamudi	<a href="#">Mark as Paid</a> <a href="#">Print</a>
62	sam	18	hg	hospital	₹230	9090	<a href="#">Mark as Paid</a> <a href="#">Print</a>
63	samrat	18	Durjay	hospital	₹230	9090909090	<a href="#">Mark as Paid</a> <a href="#">Print</a>
64	Ramesh Kumar	45	Dr. Rahul Sharma	General Checkup	₹1500	9876543210	<a href="#">Mark as Paid</a> <a href="#">Print</a>
66	Suresh Patil	55	Dr. Aman Verma	Cardiology Consultation	₹5000.75	7654321098	<a href="#">Mark as Paid</a> <a href="#">Print</a>
68	Maresh Iyer	60	Dr. Vikram Singh	Orthopedic Surgery	₹7500	9123456789	<a href="#">Mark as Paid</a> <a href="#">Print</a>
69	sam	23	sd	sd	₹223	4545554554	<a href="#">Mark as Paid</a> <a href="#">Print</a>

## Pending invoices

HealthCare+ | localhost:4200/admin/billing

### ✅ Paid Invoices

Invoice Number	Patient Name	Patient Age	Doctor Name	Service	Amount	Contact	Action
1	ds	12	sam	eg	₹2300	0909	<a href="#">Mark as Pending</a> <a href="#">Print</a>
2	jb	8	jj	jk	₹74	08074805621	<a href="#">Mark as Pending</a> <a href="#">Print</a>
44	samrat	18	Durjay	hospital	₹230	Durjay Samrat	<a href="#">Mark as Pending</a> <a href="#">Print</a>
65	Priya Verma	32	Dr. Priya Iyer	Dental Cleaning	₹2500.5	8765432109	<a href="#">Mark as Pending</a> <a href="#">Print</a>
67	Deepa Nair	29	Dr. Sneha Rao	Skin Treatment	₹1200	9988776655	<a href="#">Mark as Pending</a> <a href="#">Print</a>

## Paid invoices

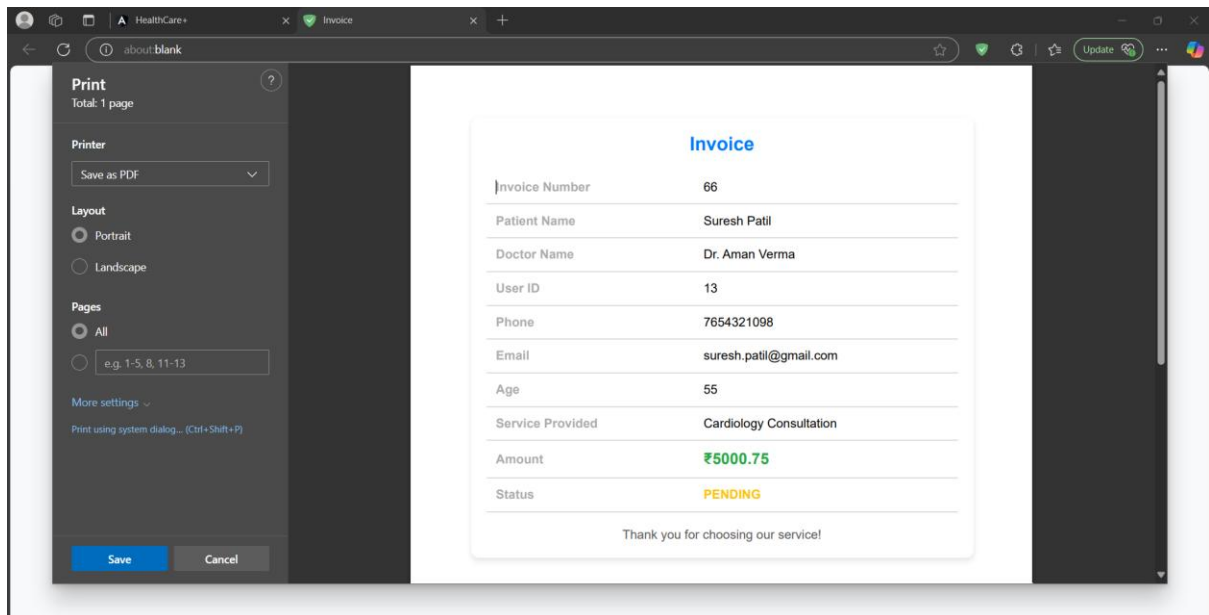
HealthCare+ | Invoice | about:blank

### Invoice

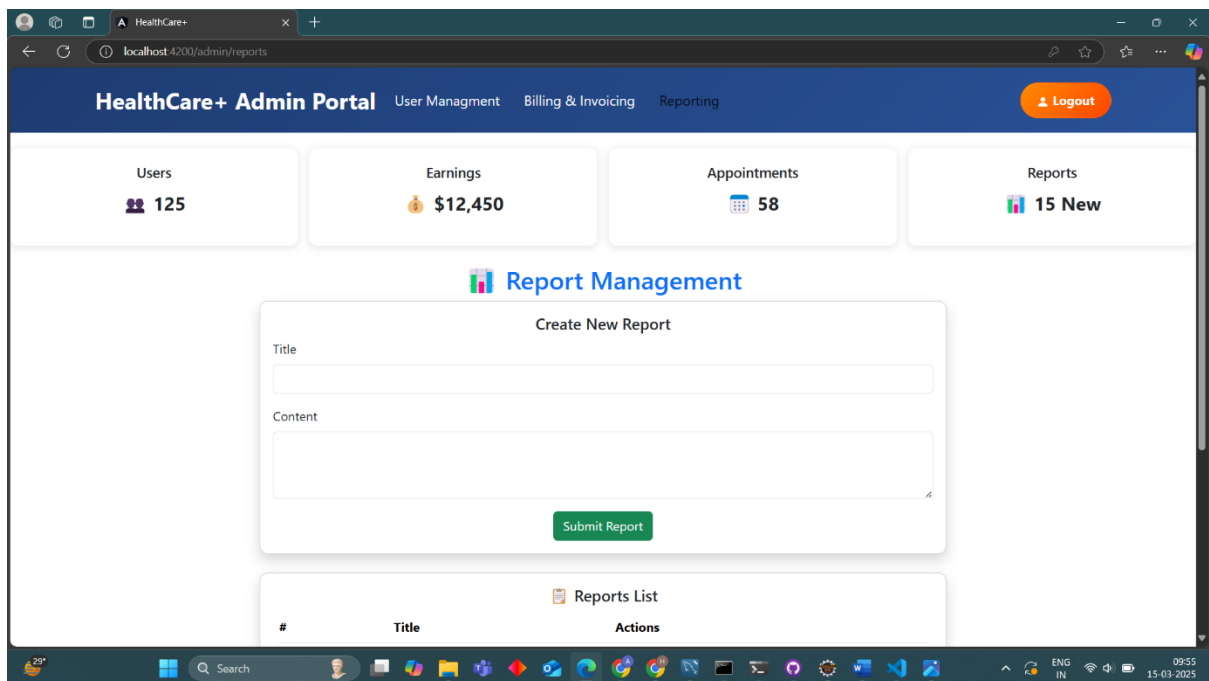
Invoice Number	68
Patient Name	Maresh Iyer
Doctor Name	Dr. Vikram Singh
User ID	15
Phone	9123456789
Email	maresh.iyer@gmail.com
Age	60
Service Provided	Orthopedic Surgery
Amount	₹7500
Status	PENDING

Thank you for choosing our service!

## View invoice



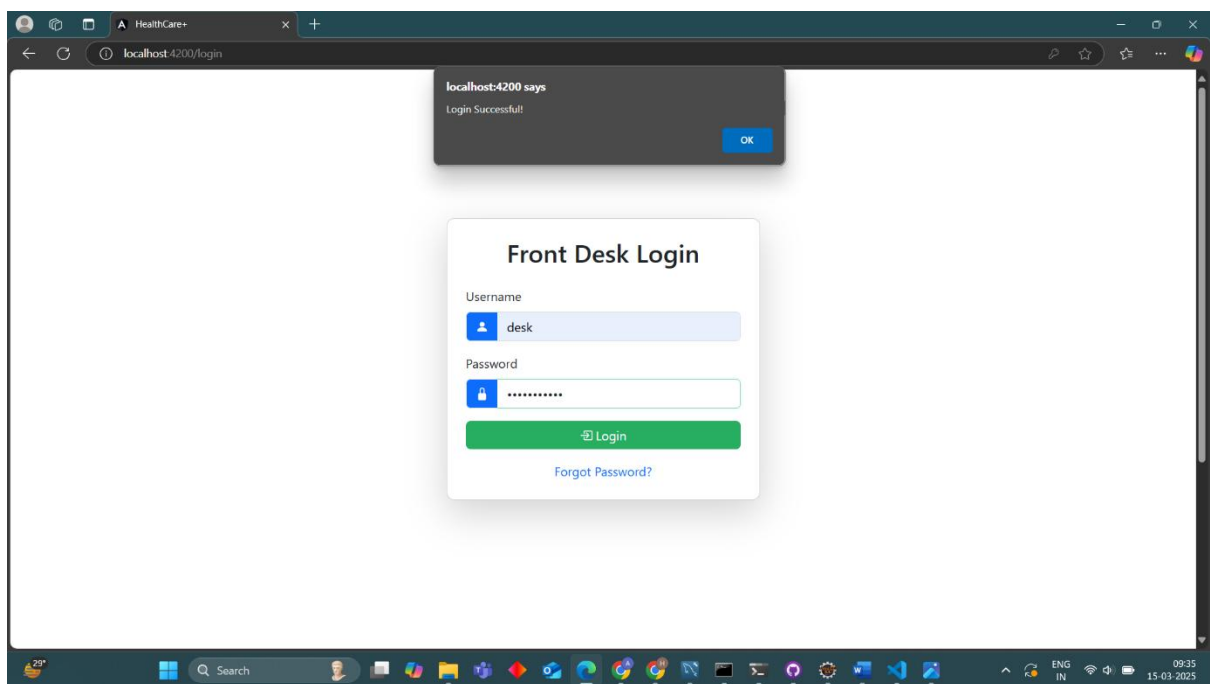
## Print invoice



## Report Management

## Invoice validation

## FRONT DESK MODULE



## Login Page

HealthCare+ Patient Registration Appointment Medical Records Logout

### Register New Patient

Name:

Age:

Gender: ☐ Male ☐ Female

Contact:

Medical History:

Register Patient

HealthCare+ Patient Registration Appointment Medical Records Logout

localhost:4200 says  
Patient Registered Successfully! OK

### Register New Patient

Name:

Age:

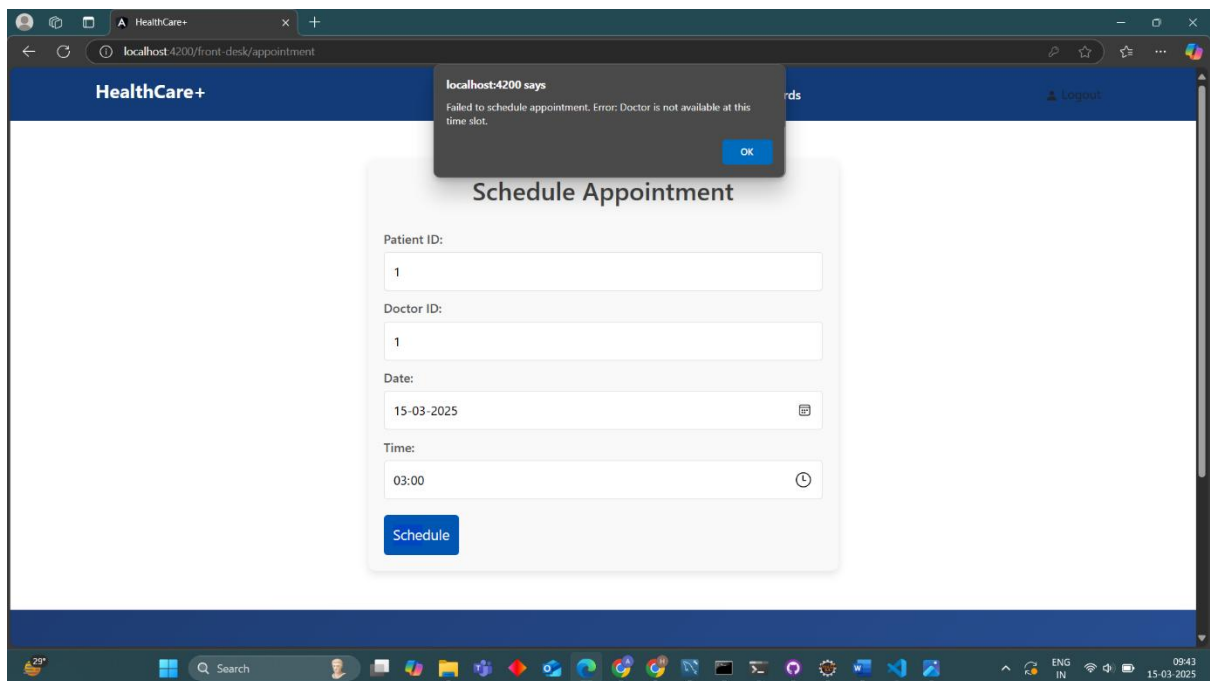
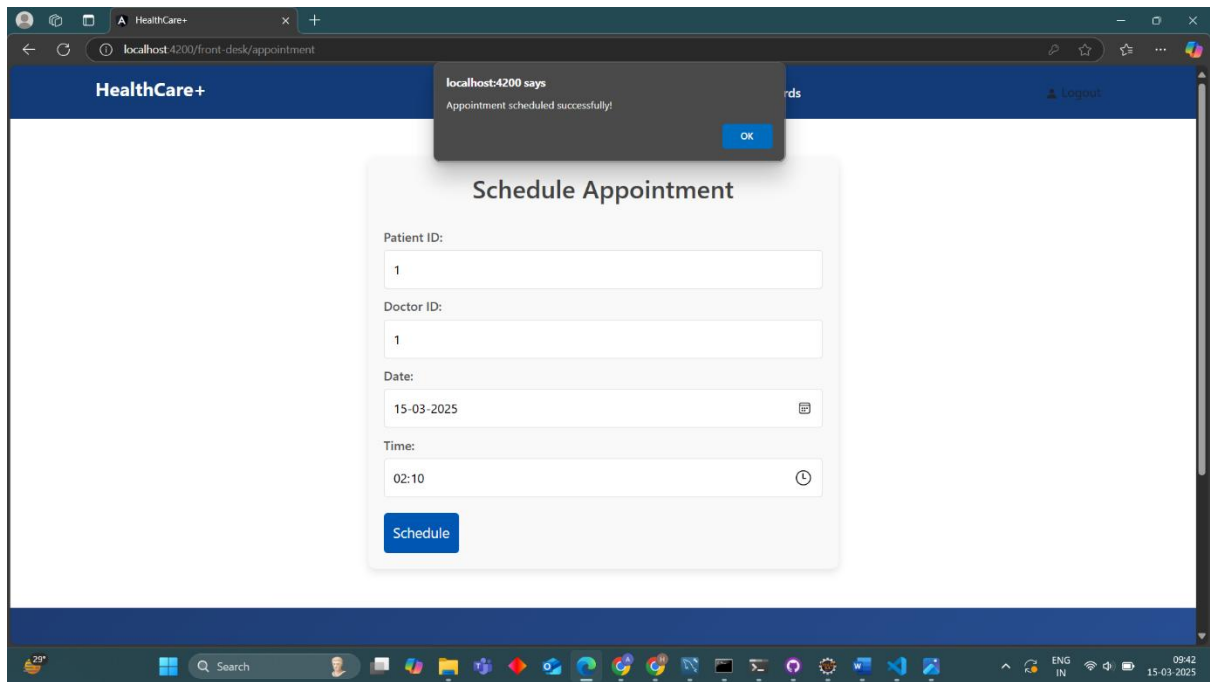
Gender: ☒ Male ☐ Female

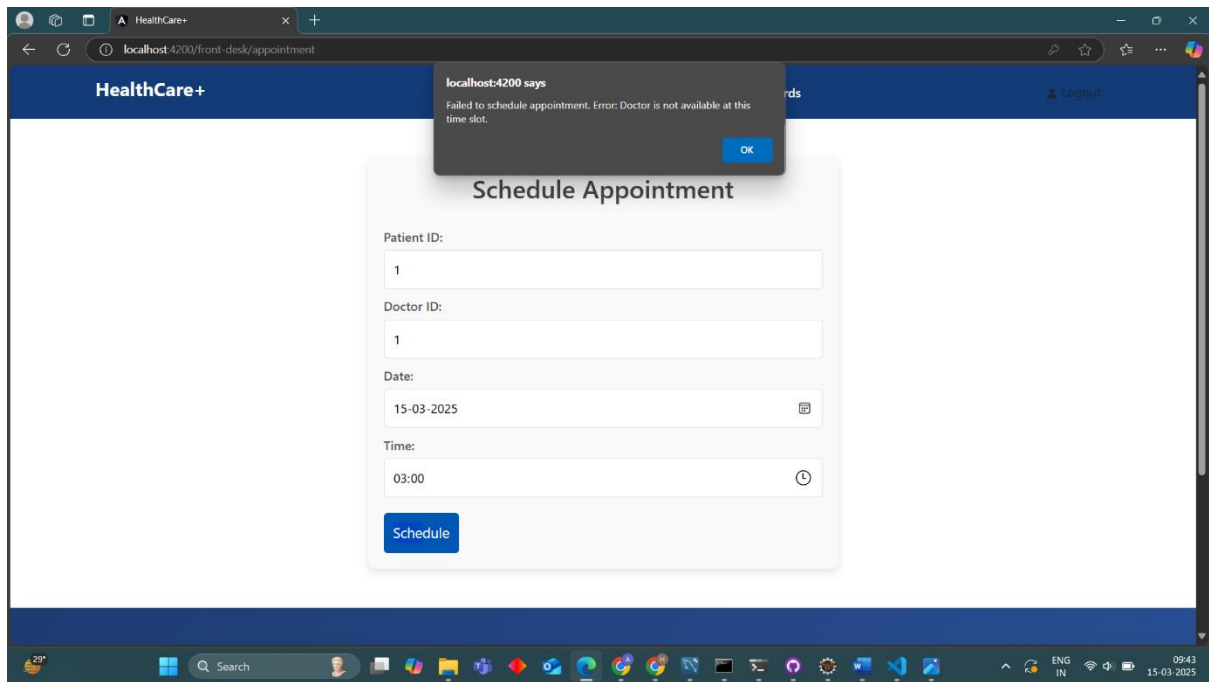
Contact:

Medical History:

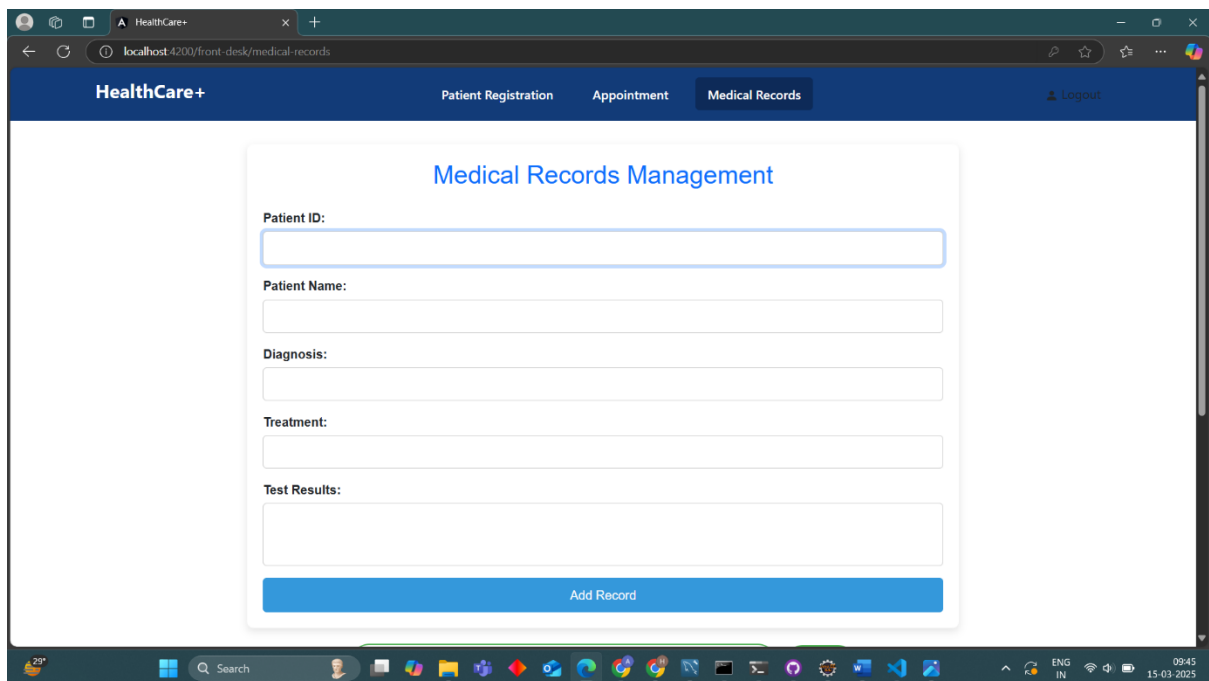
Register Patient

Patient Registration

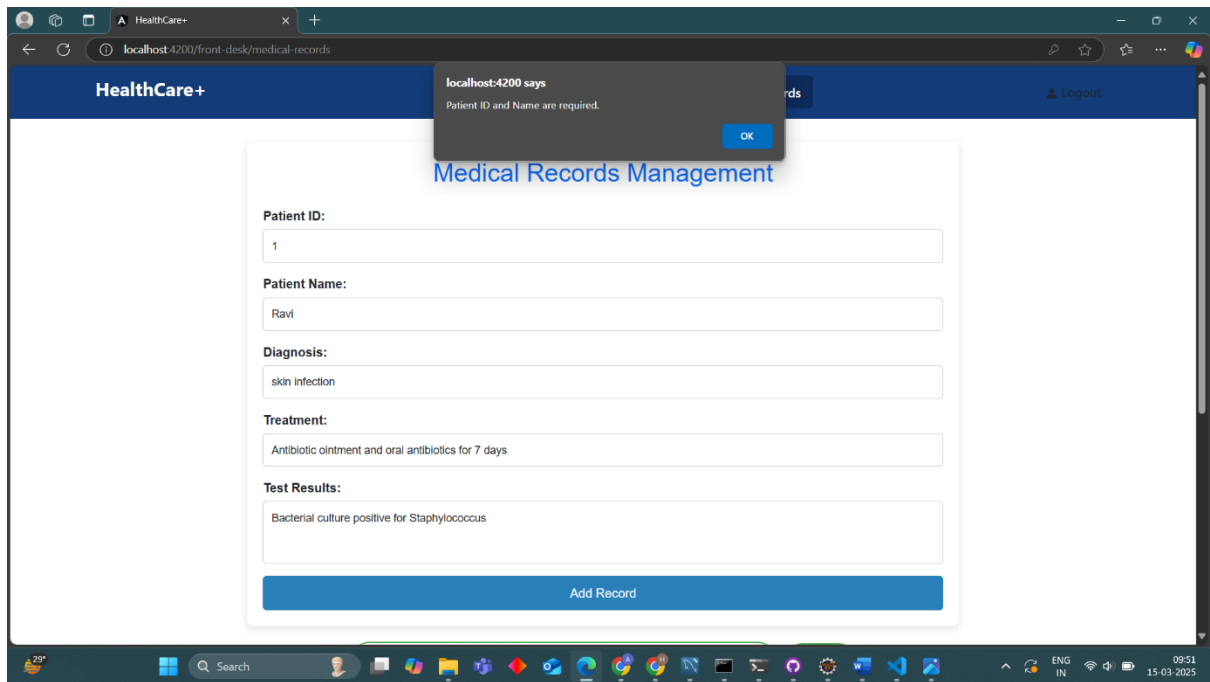




## Appointment Scheduling







## Medical Record Management