Deliverable-4

Project Title: eMed-a complete pharmacy cart at your doorstep.

Group Team Name: Delta

Group Members:

S. No	Full Name	Student ID	Email
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REQUIREMENT SPECIFICATION

FUNCTIONAL REQUIREMENTS:

- User Authentication & Registration: The user should be able to create an account with personal details. Users should have data privacy and be able to change their credentials through an email ID verification.
- **Searching for Medication:** The user should be able to access the medicines list and choose the desired medication and should be able to purchase the medication.
- **Doctor Profiles and Appointment Scheduling:** The interface should have a detailed page that displays doctor profile and appointment scheduling information.
- **Blood Donation and Emergency needs:** The user should be able to access the blood donor's details. In case of an emergency, the user should be able to make an emergency blood request.
- Admin Control Center: The admin should be able to manage the user information and appointments and have overall control over the application.
- **User-Admin Communication:** The user should be able to access the live chat to resolve the queries, updates regarding scheduling the appointments medicine purchased.
- Ambulance Services and Emergency Assistance: The user should be able to make a request for an ambulance service in an emergency.
- **Payment Gateway and Checkout Options**: The payment gateway should be provided to pay the bill for a medicine purchase and provide the shipping details.
- Category Pages with SEO Optimization: The platform should be integrated with the SEO to enhance the user experience where patients can easily fetch the medication history, patient details.
- **Remote Wellness Monitoring:** The application should have a feature to give the summary of the patient details, medication and health conditions.

NON- FUNCTIONAL REQUIREMENTS:

• Performance:

- ➤ The e-health system shall serve each page to the user within 3 seconds of initiation under normal load conditions.
- The platform will support up to 10,000 concurrent users without performance degradation.

• Scalability:

➤ The system can scale horizontally to accommodate growing user numbers, especially during peak times like health emergencies.

• Security:

- > Sensitive data, such as patient information and payment details, will be encrypted both in transit and at rest.
- ➤ The system will use multi-factor authentication (MFA) for user login, especially for administrative users.

• Reliability:

➤ The website will ensure continuous availability for users to book appointments and request emergency services.

• Usability:

The website will provide a user-friendly interface accessible to users with minimal technical skills.

• Maintainability:

The website will have a modular architecture, making it easy to update individual components without affecting the entire system.

• Backup and Recovery:

In case of a system failure, a backup system will restore data within an hour to prevent data loss and minimize downtime.

USER INTERFACES:

Interfaces:

Readability should be good with all the devices.

Breaking main components of UI for our website:

- 1) Logo page with the title of our project.
- 2) Sign up and sign in options. Redirecting to forgot password if clicked on.
- 3) Medicine information page with a bar where we have options like:

Doctor	
Blood	

Contact Us

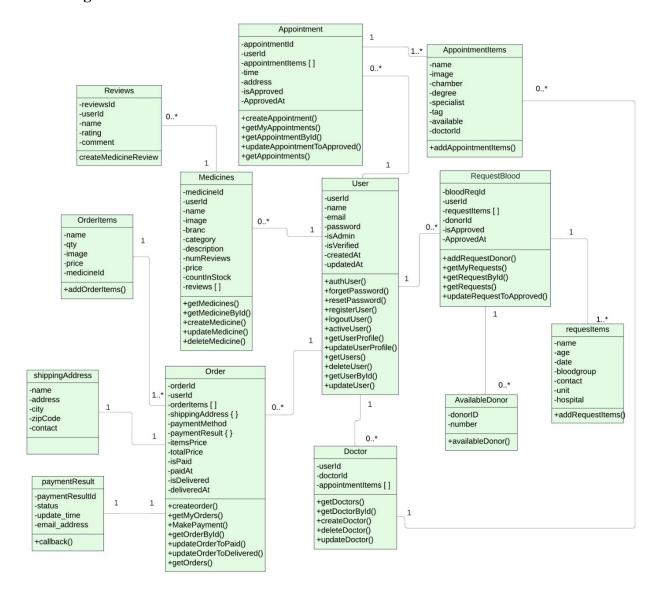
Medicine

Sign in

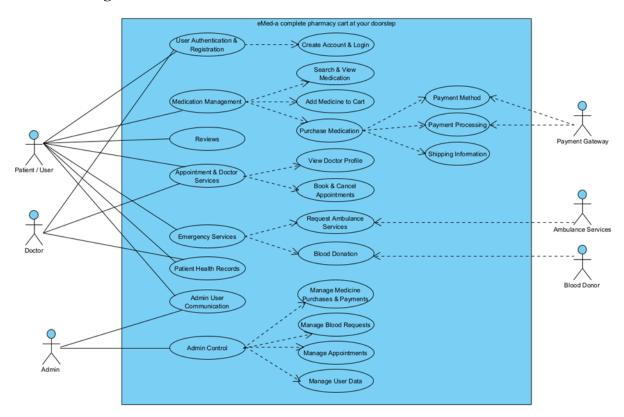
- 4) In that page of medicine, pictures of medicines along with some information to understand.
- 5) When clicked on a specific medicine we get a add to cart option with a reviews section
- 6) Shopping cart to check price and then shipping info, payment method
- 7) When selected doctor, doctors' information will get displayed
- 8) Booking an appointment page
- 9) Blood donors page with requesting blood
- 10) Admin pages for orders, appointments and blood requests.

UML Diagrams:

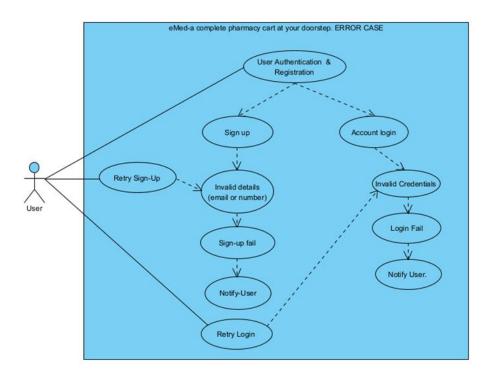
Class Diagram:



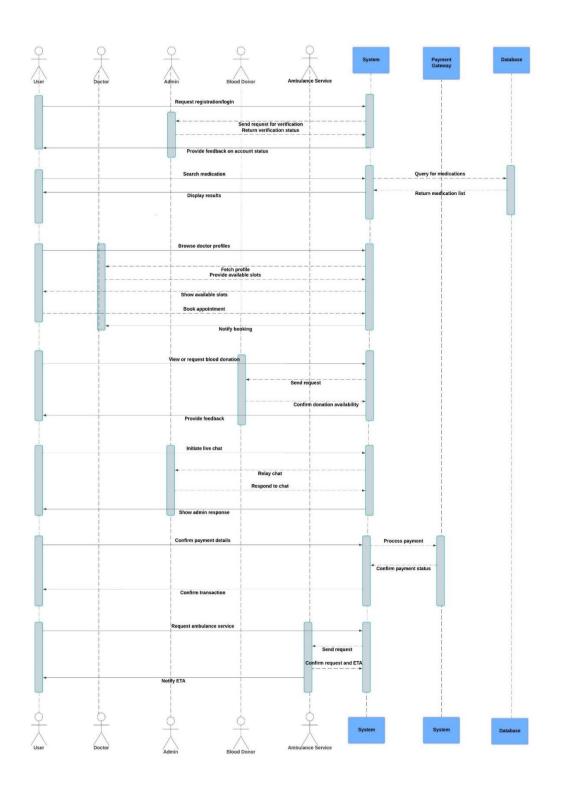
Use Case Diagram:



Use Case Error Diagram:



Sequence Diagram:



TEST CASES:

no.	Functionality	Input	Output	Expected Outcome	Pass/fail
1	Appointment Overlap Prevention	Schedule an appointment in an already booked slot	Booking error	Display error message indicating the time slot is unavailable	pass
2	Blood Donation Search	Search for blood donors by blood type (e.g., O+)	List of donors matching blood type	Display list of donors with matching blood types and contact option	pass
3	Appointment Status Update	Mark an appointment as completed	Appointment marked as completed	Appointment status updated to "Completed" and reflected in both user and admin views	pass
4	Testimonials Submission	Submit a testimonial as a patient	Testimonial submitted	Testimonial appears on patient testimonials page	pass
5	Prescription Order Placement	Order a prescription medicine	Order	Prescription order placed and confirmation email sent	pass

6	Real-time Health Monitoring	View real- time health data for a patient	Health data displayed	Patient's health data (e.g., vitals) displayed in real- time	pass
7	Doctor Dashboard Access	Log in as a doctor and access dashboard	Dashboard loaded	Doctor's dashboard displays upcoming appointments and patient interactions	pass
8	Secure Admin Controls	Admin attempts to modify restricted content	Access denied	Admin receives an error message if they lack permission to modify restricted data	pass
9	UI Enhancements Verification	Access the UI on different devices	UI loads appropriately	UI is responsive and displays correctly on desktop, tablet, and mobile	pass
10	MongoDB Connection Stability	Restart MongoDB and check platform functionality	continues to function	MongoDB restarts smoothly, and all data and functionality remain intact	pass
11	Git Pull and Deploy	Pull latest code and deploy	Platform updated	Platform successfully updates with the latest code changes from the repository	pass

12		Run npm audit to check for vulnerabilitie s	Audit report	No vulnerabilities found or vulnerabilities patched	pass
13	Test Coverage for New Features	Run test coverage for Phase 2 features	Coverage report generated	All new features in Phase 2 have passing test cases with adequate coverage	pass
14	Payment Processing	Process payment using mock	Payment success	Payment processed with Mock and transaction confirmation displayed	pass
15	Handling	Attempt payment with insufficient mock payment funds	Payment error	Error message displayed indicating insufficient funds or payment failure	pass

Description for Test Cases:

1. **Appointment Overlap Prevention**:

Ensures that the system prevents double-booking of doctor appointments. If a user attempts to book a time slot that is already taken, the system displays an error message indicating that the selected time slot is unavailable.

2. Blood Donation Search by Blood Type:

Tests the advanced search functionality, which allows users to search for blood donors based on blood type (e.g., O+). When a valid blood type is entered, the system displays a list of compatible donors along with an option to contact them.

3. Appointment Status Update (Mark as Completed):

Ensures that appointments can be marked as completed by the doctor or admin once they are fulfilled. The test verifies that the status update is reflected on both the doctor's and the user's dashboard.

4. Patient Testimonials Submission:

Verifies that patients can submit testimonials about their experience on the platform. Once submitted, the testimonial should appear on the patient testimonials page, allowing other users to read the feedback.

5. Prescription Order Placement:

Confirms that users can place an order for prescription medicine. The system should display an order confirmation and send a confirmation email to the user upon successful order placement.

6. Real-time Health Monitoring:

Tests the real-time health monitoring feature, which displays up-to-date health information for a patient (e.g., vitals). The test verifies that health data is displayed accurately and updates in real-time.

7. Doctor Dashboard Access:

Ensures that doctors can log in and access their dashboard. The doctor's dashboard should display essential information, including upcoming appointments and patient interactions.

8. Secure Admin Controls (Access Restriction):

Validates that admins have restricted access to certain system controls. If an admin attempts to modify restricted content, the system should deny access and display an error message indicating the lack of permissions.

9. UI Enhancements Verification (Responsiveness):

Confirms that the platform's user interface is responsive and displays correctly on different devices, including desktop, tablet, and mobile. This test checks for proper formatting and functionality across device types.

10. MongoDB Connection Stability:

Tests the system's stability when MongoDB is restarted. After a MongoDB restart, the platform should continue to function normally without data loss or disruption to active sessions.

11. Git Pull and Deploy:

Verifies that the system updates correctly when the latest code changes are pulled from the repository and deployed. The test ensures that all updates are reflected on the platform without breaking any existing functionality.

12. NPM Audit Security Check:

Runs a 'npm' audit to identify potential security vulnerabilities in the project's dependencies. The test checks that there are no unresolved vulnerabilities or that vulnerabilities have been patched.

13. Test Coverage for New Features:

Confirms that all new features added in Phase 2 have been covered by test cases and meet the desired test coverage percentage. The test ensures that each feature functions as intended and reduces the likelihood of bugs.

14. Mock Payment Processing (Valid/Insufficient Funds):

Validates that users can complete a payment using PayPal when they have sufficient funds, and receive a transaction confirmation. Additionally, if there are insufficient funds in the PayPal account, the system should display an error message indicating the payment failure.

User Manual:

How to use our website.

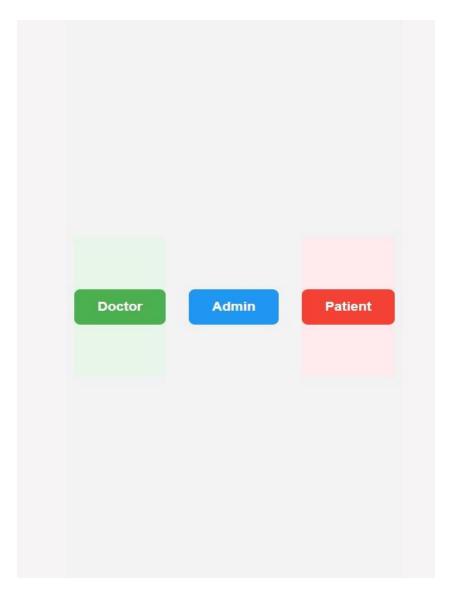
General:

Every new user or an existing user that interacts with our Emed pharmacy website will must and should have an account which is composed of unique credentials. This will consist of a completely unique username, or an email address provided by the user and that should come with a unique password.

In our website, our administrator or the one who manages of databases will be able to create the accounts of our current existing doctors while the patients / users will get to create their very own accounts. In addition, our users when logging in must specify their blood group so that whenever they choose to be a blood donor, the patients who require emergency blood could easily be mapped to those donors.

Front Option page:

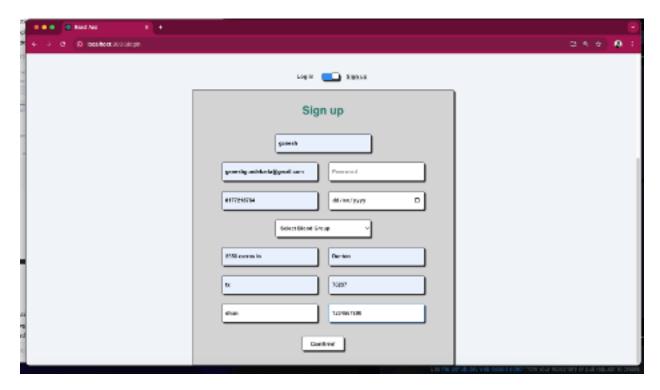
- a. Here, our page will be providing us with three options and user is allowed to pick his role.
- b. Here the user will be presented with options like admin, patient and doctor, which means that the website can be having three different types of persons that uses our website.
- c. Here, each role after logging in can be having his own use pages on the website, like the user gets the general page where he gets to order medicines or to book an appointment, whereas the doctor is taken to his page where he/she is being presented with the appointments he / she is being scheduled with.
- d. Each different type of user will be containing their own features which are very important in our project.
- e. Admin page will be composed of listing all the number appointments and number of donors we currently have and also the number of patients and doctors.
- f. This admin page will allow us to gain valuable insights on how many patients we have recieved and how many doctors we have to keep those all patients occupied.
- g. In the doctors side, the page will have all the appointments the doctor is currently being appointed with and we can also have the option where the doctor can cancel the appointments.
- h. The patient page is completely as described which has all options to buy medicine or make appointments or have a checkout on the medicine.



The User Signup:

A) How to sign up as a new user:

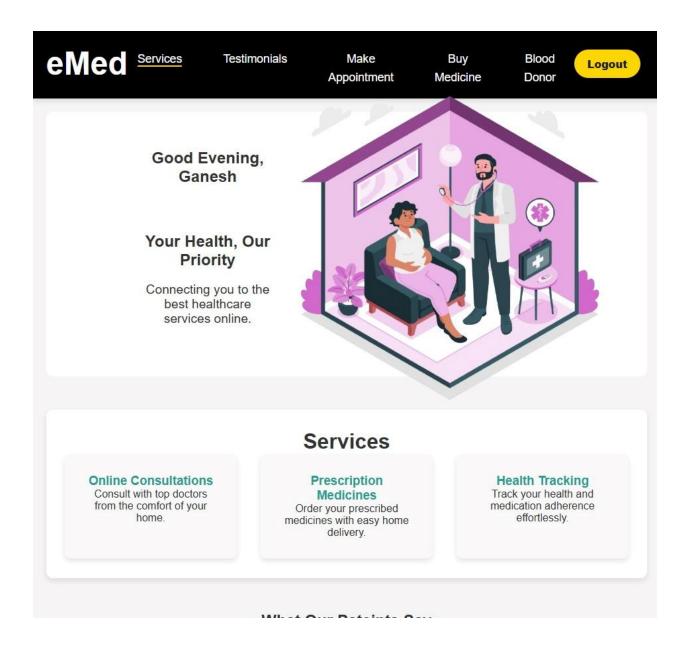
- 1. At the top right corner, we have a login/register to give both options to a new user or an existing user.
- 2.Click on the login/register button to get redirected into a new page where we can either sign up or login.
- 3. Now, fill in the required details and then enter confirm.
- 4. This now takes us to the landing home page with us signed in with a message saying welcome back [username]



B) How to login from an existing user:

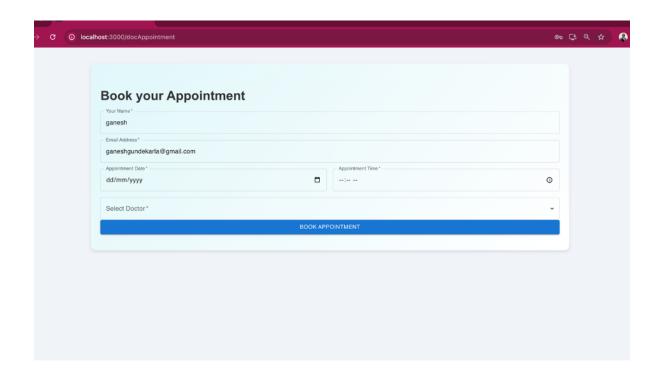
- 1. In the home page on the top right corner, click on the login/register button which directs us to login or signup page.
- 2. Now switch to login mode.
- 3.In the login page, enter your email address and password.
- 4. Now click on Let's go! Button.

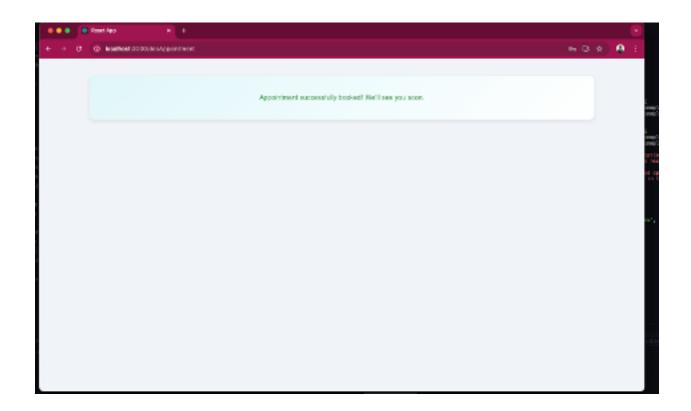
<u>Log in</u> Sign up
Log in Email Password Let's go!

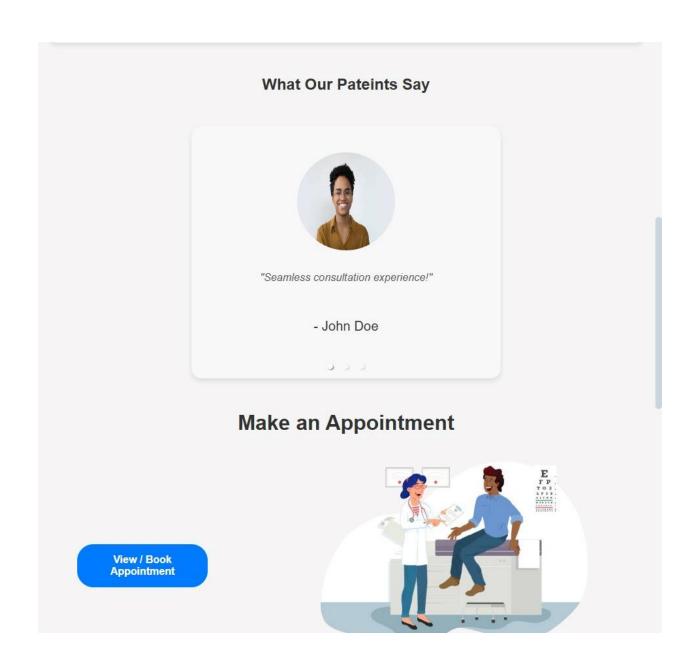


C)Steps on how to book an appointment:

- 1. In the home page, as you slide down, under the 'Make an Appointment 'section, select 'Book now 'to make an appointment.
- 2. Fill in the required details and enter your appointment date and time.
- 3. You are also presented with an option to select / choose your required doctor with his expertise in that field and press 'BOOK APPOINTMENT
- 4. Then, in our phase 2 we also added a view your appointment page where we can be able to view all our upcoming appointments.







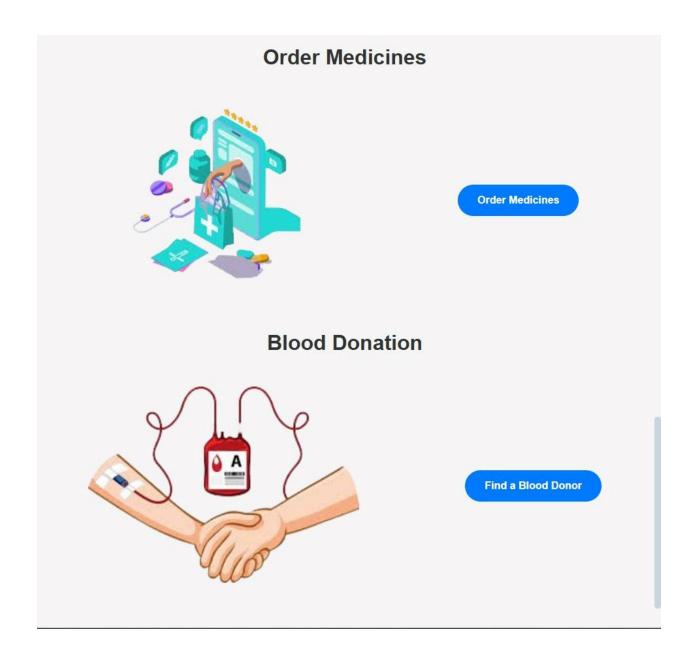
5. Here, we will be able to see all our appointments and then we can also schedule another appointment.

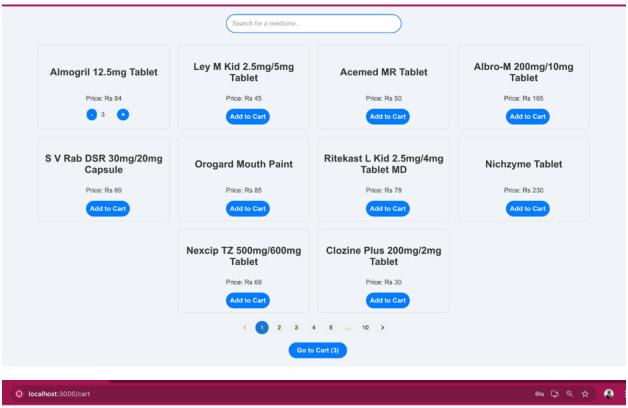
	Your Appointments	
Scheduled		
11/12/2024 Time: 09:59 Doctor: ganesh Doc		
Notes: Ear pian Scheduled Cancel		
Completed		
No completed appointments.		
Cancelled		
No cancelled appointments.		

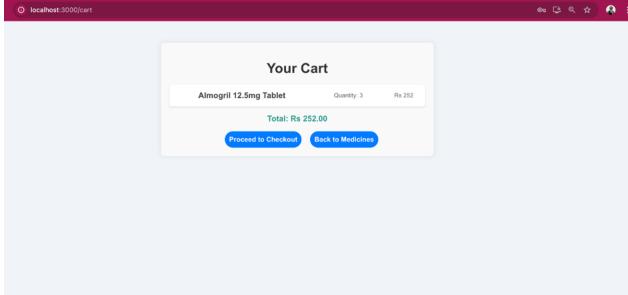
D) Steps on how to order medicines:

- 1. In the landing page at in the bottom we will be having a 'Order Medicines' section where we can order medicines which are available currently.
- 2. After this we get redirected from the landing page to the medicines page where we are presented with a wide variety of medicines.
- 3. Here, we can choose the medicine with the number of the number of tablets, and it can be added to the cart.
- 4. After we are done, we can press 'Go to Cart' which takes us to the cart page.

Here we have a proceed to checkout page which takes us to the final billing stage which will be Implemented later.





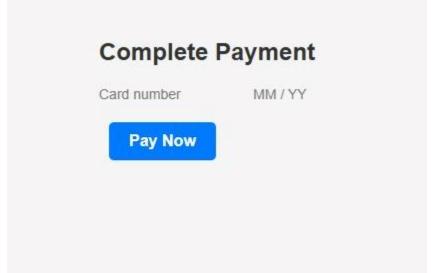


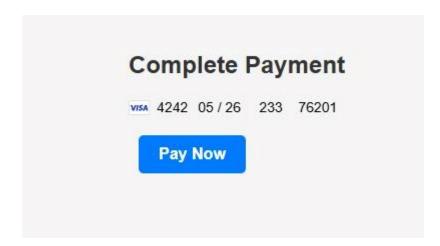
Proceed to Checkout page: using stripe:

- a. Here, after getting our order done and proceeding to our cart, then we are able to checkout through the order medicines page, and we can enter our details.
- b. Then, on this part, we need to enter the card details which includes our code with the month and year of expiration of our card.
- c. Then upon entry of successful card details and the month and the year, the order gets done and will be successfully submitted.

d. Stripe access and process payments using credit cards and it makes sure that it will securely handle payment information, it also provides us with a client side libs that help us tokenize some highly sensitive information, and encryption is being done which is then sent to the stripe which even stripe cannot be able to decode it.







Payment of 342.00 is successful! Redirecting to your dashboard... Your order will be delivered to 1155 union circle #311067, denton

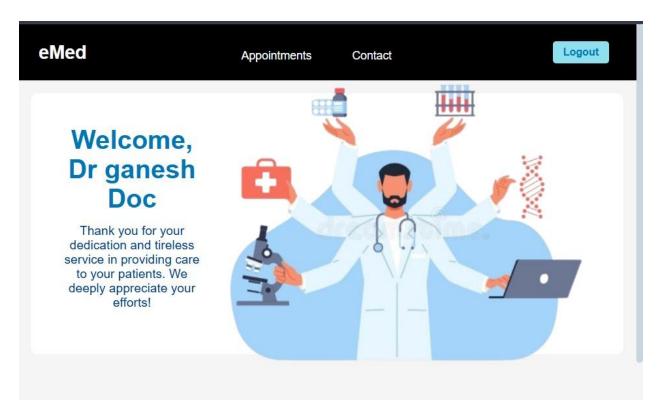
Doctor login / signup:

- a. After the user, what if a doctor will try to access our website and
- b. If he is new, he / she is required to sign up which takes you to a page where you are allowed to sign in with the qualifications and details of his previous qualifications.
- c. Then, he / she is logged into his page where he / she is presented with the details of his/her appointments.

Doctor Signup Name Email Password Phone Number Date of Birth mm/dd/yyyy Specialty License Number Qualifications Experience (Years)

Doo	ctor Login
Email	
Password	
	Login
Create ar	account SignU

d. Then, we will be able to login into the doctor's page as the doctor's side of our website which looks like this:



E. Then the doctor will be presented with a dashboard where he will be presented with all the upcoming events, and all will be presented in a summary view.

Total Appointments
2
0
1

Cancelled Appointments
1

Appointments

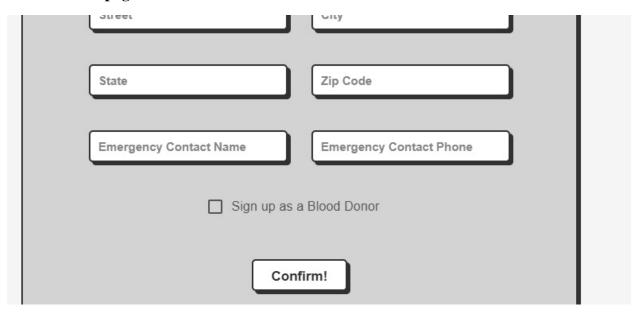
Manage your appointments and stay organized for better care.

View Appointments



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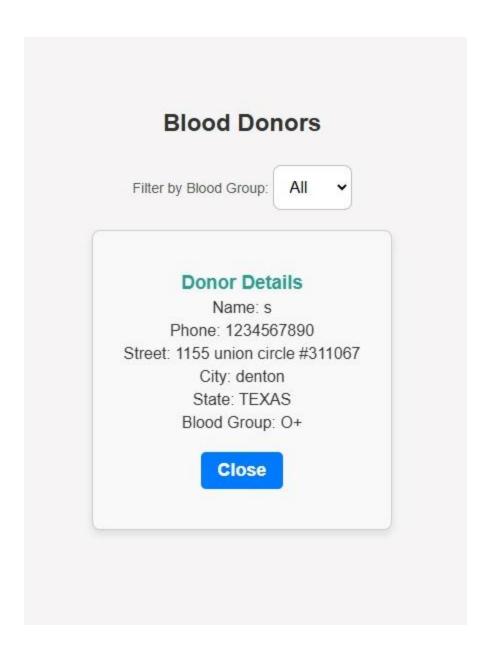
Blood Donors page:



- a. In our page, blood donors can be able to donate their blood by signing up for them in the signup page itself by clicking on the option that says 'sign in as a blood donor' which makes the patient as a blood donor as well.
- b. Then, we can show up with all the donors which are available to able to contact them and get some support on blood donation.

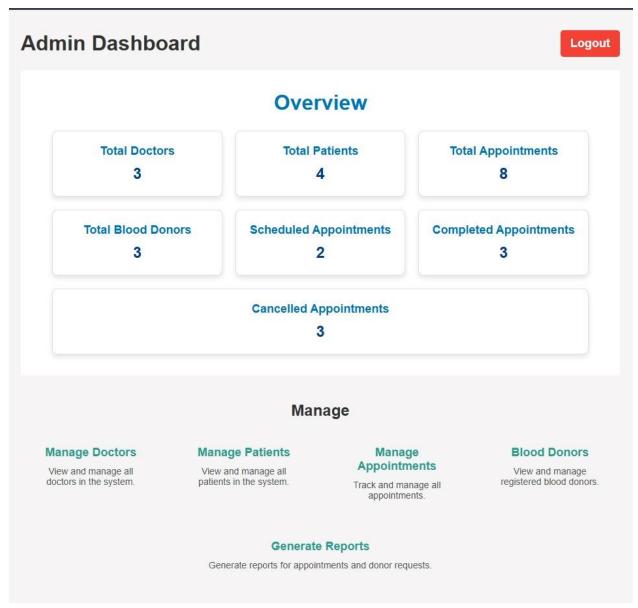


Blood Donors Filter by Blood Group: All S City: denton Phone: 1234567890 O+ Request



Admin Users page:

- a. Our website admin can be able to manage and view everything that has happened in the website.
- b. In our intro page, where we can be able to login into the admin page which is secured and only our admin can be able to do it.
- c. When the admin logs into the website, the admin gets presented with multiple logs on recent activity that's been going with the website.
- d. Here, the admin can be able to have an overview of everything going on with the donors, appointments and patients logged in and the number of doctors present.
- e. This way we are being presented with all the important information on the admin page like all the registered users and all the registered doctors.



F. We will be able to see all the registered number of users along with their important information and even the registered doctor's information is presented on a page properly.

All Registered Users

Kalyan Raju Keerthipati

Email: Kalyanraju90@gmail.com Phone: 6823550235

Address: DENTON, TX Blood Group: B+

Emergency Contact: awdjbax -

1234567890

ganesh

Email: ganeshgundekarla@gmail.com

Phone: 8177218764 Address: Denton, tx Blood Group: B+

Emergency Contact: dhan - 1234567890

ganes

Email: gnevercodes@gmail.com

Phone: 1234567890 Address: Denton, tx Blood Group: B+

Emergency Contact: aju - 1234567891

Email: s@gmail.com Phone: 1234567890 Address: denton, TEXAS Blood Group: O+

Emergency Contact: sefdgfv - 1234562343

Ganesh

Email: ganesh@gmail.com Phone: 1231231230 Address: denton, TEXAS Blood Group: O+

Emergency Contact: abc - 1234567890

All Registered Doctors

Kalyan Raju Keerthipati

Email: Kalyanraju9@gmail.com Specialty: Cardiologist Phone: 6823550235

Clinic Address: 1712 W HICKORY

ST

Experience: 10 years

ganesh Doc

Email: ganesh1@gmail.com

Specialty: ENT Phone: 6823550235

Clinic Address: Epochon Eagle

Experience: 10 years

Instructions:

Ensure **Node.js** and **MongoDB** are installed.

- Launch MongoDB with **MongoDB** if it's not running.
- As we are updating an existing setup, pull the latest code changes with the following command: git **pull origin main**
- Then navigate to project folder cd SOFTWARE_ENGINEERING_PROJECT_group7/src
- Then run the new dependencies **npm install.** This ensures that all the packages required are installed.
- Navigate to backend file location and start the server **node server.js**
- This will run on port 3000.
- In new terminal navigate to frontend directory and run **npm start**
- Finally, open browser and navigate to https://localhost:3000

Instructions to run test Cases:

- Ensure **Node.js** and **MongoDB** are installed, and the application is fully set up with all dependencies.
- Open a terminal and go to the project folder cd SOFTWARE_ENGINEERING_PROJECT_group7/src
- And then Install common testing libraries for backend testing, and **Jest** for frontend.
- Write testcases for each of the test files.
- Execute the following command to run backend tests npx mocha tests --timeout 10000
- Similarly for frontend run npm test this will start jest and detect and run all test files.
- After running all the test cases check which tests passed or failed in the terminal output and for any failing read the error messages and debug code accordingly.

Feedback received during the code inspection

Feedback Received:

- 1) Must implement more than 2 Functionalities.
- 2) Improve User Interface

Actions taken on the feedback:

- 1) Have implemented more than 2 functionalities.
- 2) Enhanced UI.

Reflection:

Accomplished Work:

Successfully completed implementation of functionalities described in phase 2.

We have successfully implemented medicine browsing and purchasing of it using a secure stripe payment option. We also made a significant product management improvement by giving the admin access and the ability to have an overview of our website. Our goal to improve the user experience is achieved and the goal towards implementing mobile responsiveness is challenging but we managed to do it till the end of our phase.

Work Done:

Teamwork made this deliverable 4 a whole complete one. All the team members gave their time and contributed their skills to this deliverable. Worked on phase 2 of our project and learnt how different functions operate.

Improvement which was needed:

Weather was a hurdle for us to have in-person meetings. But we tried our best. And we want to improve our in-person meetings more. So, we can complete our implementations earlier.

Peer review:

After starting off Phase 2, we immediately explored additional features like new integrations and UI enhancements. Over this conversation, we discussed the scope of our Phase 2, defined what each member was responsible for and estimated a time frame for those jobs to be completed.

About midway through Phase 2 we had a progress meeting to take stock at where the project was and how it was progressing. Each member uncovered their respective roles, ranging from front-end changes, backend modifications to testing victories.

During our final phase meeting, we tested the new features and ensured that they fulfilled our standards. Instead, we made sure that all issues were resolved, and every feature had been validated against the requirements. This allowed us to verify that our code was working, optimized and suitable for production.

Concerns and how we addressed those issues:

All the dependencies in the project were up to date, ensuring a secure code base.

In Phase 2, we added test coverage for all new functionalities. Doing so ensured that every feature behaved as we intended, therefore reducing the risks of bugs escaping mitigation.

Roles Assignment:

Task	Top preference
Project Management Lead	Rishika Kandrigal
Requirements Lead	Ganesh Gundekarla
Design Lead	Vivek Nelluri
Implementation Lead for front-end	Ganesh Gundekarla
Implementation Lead for back-end	Vishnu Priya Vulichi
Configuration Management Lead	Vivek Nelluri
Testing Lead	Shabana Syed
Documentation Lead	Ajay Kumar Reddy Sammeta
Demo and Presentation Lead	Pranav Chalasani
System Administrator Lead	Md Ariful Hasan

SKILLS ASSIGNMENT:

Language/Technology	Assigned to:	
Node.js with Express.js	Ganesh Gundekarla, Pranav Chalasani	
MongoDB (via Mongoose)	Vishnu Priya Vulichi, Shabana Syed	
React.js	Ganesh Gundekarla, Rishika Kandrigal, Pranav Chalasani	
Axios for API requests	Vishnu Priya Vulichi, Ajay Kumar Reddy Sammeta	
Stripe Payment option (client-side)	Ajay Kumar Reddy Sammeta, Ganesh Gundekarla	
JavaScript Object Notation	Md Ariful Hasan, Vivek Nelluri	
JavaScript	Vivek Nelluri, Md Ariful Hasan	
HTML5, CSS	Shabana Syed, Rishika Kandrigal	

Team members Description:

Member name	Contribution description	Overall Contribution (%)	Note (if applicable)
Shabana Syed	I have worked on front-end development part related to the blood donor page, admin dashboard page, doctors' information page and contributed to website carousal for an interactive website for a seamless user experience	12.5%	
Ganesh Gundekarla	Contributed myself on the backend part of our project which includes setting up all the most needed configs like the babel, jest for testing purposes. Then I developed core application functionality which is present in the server.js, apart from this i had also added the models and the test directories, whilst managing the project dependencies. Also, i had worked on the payment optioon which is implemented using stripe this time on our website. Apart from this I contributed myself on the user manual which is presented in our documentation file.	12.5%	
Rishika Kandrigal	Worked on front end part in which i developed login page for doctor, Signup, Login, medicines, user appointment pages. Along with that, i implemented the landing	12.5%	

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	page, role selection and swiper. Most of which deals with css.	
Md Ariful Hasan	In the eHealth project, I contributed by developing CSS files to enhance the design, served as system administrator led to manage system operations, and authored the reflection section, highlighting project insights and improvements.	12.5%
Vishnu Priya Vulichi	I have implemented frontend code for appointments interface to fetch & cancellation of the appointments by the user and the doctor as well and to display list of doctors to the end user, book the appointment by the user using axios API requests. Also worked on role selection navigation based on whoever logins either patient/doctor/admin.	12.5%
Vivek Nelluri	I have Implemented a doctor management interface and developed the dashboard to display key healthcare metrics created a secure login interface enabling restricted access to the admin dashboard and in addition I worked on instructions and Peer review.	12.5%
Pranav Chalasani	I contributed to the AdminUsers, BloodDonation,Card, and AdminBloodDonors components. I implemented the functionality to fetch and display data for users and blood donors, added filtering options, and ensured data visibility in the UI. Additionally, I worked on test cases.	12.5%
Ajay Kumar Reddy Sammeta	I contributed by building cart, checkout confirmation, landing and login page for doctors, and carousel, ensuring seamless user interactions and an intuitive flow through key parts of the application.	12.5%