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# **AL-Sahel Medical Management System**

**(No More Pen-Paper, Everything will be Digital!)**

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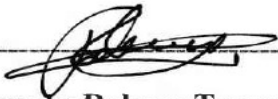
This thesis titled on “**Building Trust with Explainable AI in Lung Disease Detection Using Deep Learning**”, submitted by **JARIN SULTANA (ID: 212-35-742)** to the Department of Software Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of Bachelor of Science in Software Engineering and approval as to its style and contents.

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# DECLARATION

I hereby declare that, this project has been done by me under the supervision of **Mr. A.H.M Shahariarn Parvez (Associate Professor) Department of Software Engineering, Faculty of Science and Information Technology, Daffodil International University**. I also declare that neither this project nor any part of this project has been submitted elsewhere for the award of any degree or diploma.

  
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# ABSTRACT

In today's fast-paced world, healthcare centers need reliable and efficient systems to manage their day-to-day operations smoothly. The AL-Sahel Medical Center Management System is designed to replace the old-fashioned paper-based and partially digital methods with a fully integrated online platform. This system helps patients, doctors, and administrators work together more effectively by organizing appointments, medical records, prescriptions, billing, and even health-related content like blogs—all in one place.

For patients, the system offers a simple way to register, book appointments, and securely access their medical history and prescriptions anytime. Doctors get a user-friendly interface to manage their schedules, review patient details, and create prescriptions easily. Meanwhile, administrators have powerful tools to oversee appointments, manage user roles, update website content, and handle billing.

This project is more than just software; it's a step toward better healthcare delivery by reducing errors, saving time, and enhancing communication between patients and medical staff. It's built to be accessible on various devices, ensuring everyone can use it conveniently, whether on a computer, tablet, or phone.

Ultimately, the system aims to improve patient satisfaction and medical staff productivity while setting a foundation for future innovations like telemedicine and AI-assisted diagnostics. It's a practical, scalable solution tailored to meet the needs of the AL-Sahel Medical Center and its community.

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# CHAPTER 1: INTRODUCTION

## 1.1 Project Overview

I fixed my mind on developing the **AL-Sahel Medical Center Management System** as a full-stack Laravel web application in order to replace manual and semi-digital healthcare processes with automated platform. I developed the features for patient/admin/doctor registration and login, appointment scheduling with a visual calendar, secure medical record storage, automated billing, and a blogging area for health tips. I aimed to make the application responsive across desktop, tablet, and mobile, which ensured the accessibility for everyone. I wanted to streamline daily operations, reduce errors, and enhance both patient and staff experience.

## 1.2 Project Purpose

This project helps initially the patients and guests with its front facing website by introducing them with services, doctors and capabilities also a feature for emergency Appointment without registration. Then to streamline the daily operation for doctors and Admin I focused on Admin panel with medical patient/appointment/prescription management and CMS. Also included a Dashboard for Patients to view their records and info's.

## 1.3 Background

I observed that many medical centers still rely on paper forms and isolated digital tools, leading to misplaced records, appointment overlaps, and billing inaccuracies. AL-Sahel Medical Center, serving the general public, faced similar inefficiencies. Recognizing these challenges, I decided to create an integrated system that centralizes all core healthcare workflows in one platform.

### 1.3.1 Benefits and Beneficiaries

- Patients: I provided self-service registration, real-time appointment booking, and secure access to their own medical history.
- Doctors: I enabled quick retrieval of patient records, simplified schedule management, and easy handling of prescription with PDF generation.
- Administrators: I enabled full website content management, CMS, inventory tracking, and role-based user management.
- Overall Community: By reducing wait times and errors, I improved service quality and patient satisfaction.

### 1.3.2 Goal

My primary goal was to implement a reliable, scalable healthcare management system that:

1. Ensures data integrity through encryption and access controls.
2. Digitalize tasks to reduce staff workload.
3. Provides a stepping stone for future features (e.g., telemedicine, AI diagnostics).

### 1.4 Stakeholders

- 🏢 Project Sponsor: AL-Sahel Medical Center management.
- 🏢 End Users: Patients, doctors, administrative staff.
- 🏢 Development Team: Myself (lead developer, Designer).
- 🏢 Regulatory Bodies: Health data protection authorities.
- 🏢 Support & Maintenance: IT staff responsible for ongoing system updates.

## 1.5 Proposed System Development Model

System Development model outlines the systematic approach to build something. For the complete development of a project without chaos following a model is important too. So, This project of mine follows the Waterfall Model, as shown in Figure 1, due to its structured and sequential development process this was perfect fit for this project.

### 1.5.1 Waterfall Model

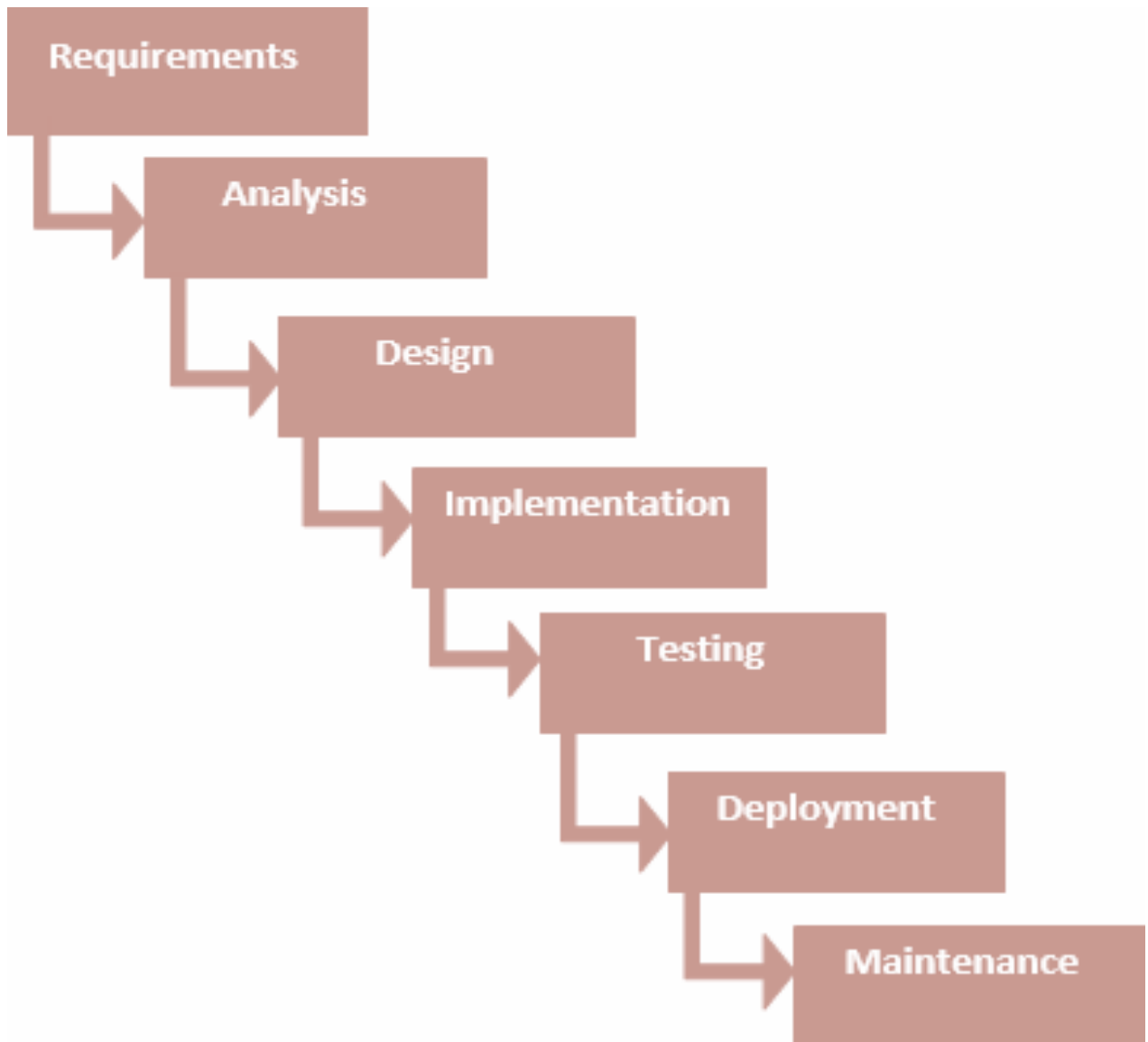
The **Waterfall Model** was chosen for this project based on the following reasons:

- The requirements of this project were well-defined, clear and fixed.
- This projects tasks can be easily organized and tracked.
- Each development stage in this model is clearly defined and structured.
- This model was optimized for a project of a single developer.
- The model is simple, easy to understand, and straightforward to implement.
- This model's simplicity makes the communication with non tech client easier.
- Provides a strong, disciplined approach to project development.

### 1.5.2 How I Used the Waterfall Model

- **Requirements & Analysis** (Feb 1 – Feb 14, 2025): I conducted stakeholder interviews, documented functional/non-functional requirements, and drafted the SRS.
- **System Design** (Feb 15 – Mar 15, 2025): I produced architectural diagrams, ER models, UI wireframes, and defined database schema.
- **Implementation** (Mar 16 – Jun 30, 2025): I developed modules in Laravel: authentication, patient management, appointments, records, billing, and blogging.
- **Testing** (Jul 1 – Jul 15, 2025): I performed unit, integration, and user-acceptance tests, logging and resolving defects.
- **Deployment** (Jul 16 – Jul 31, 2025): I set up the production environment, migrated data, and conducted final validation before handover.

- **Maintenance:** Fix bugs and update features post-launch.



**Figure 1:** Project proposed model

# 1.6 Project Schedule

On time completion was a challenge, so, I created a project timetable to reach my goal.

## 1.6.1 Gantt Chart

A structured schedule was tried to be maintained throughout the development cycle, in order to ensure the project completes with in a deadline. I used **Gantt chart** to visually track each phase, showing task durations and progress through horizontal bars. Phases started from down to up. This helped ensure timely delivery and efficient workflow management.

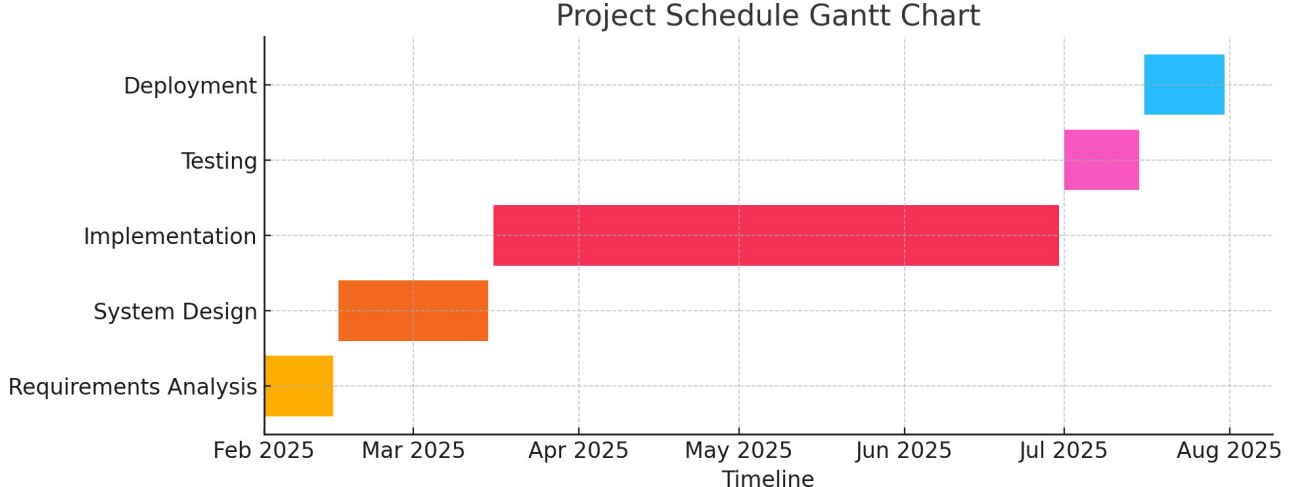
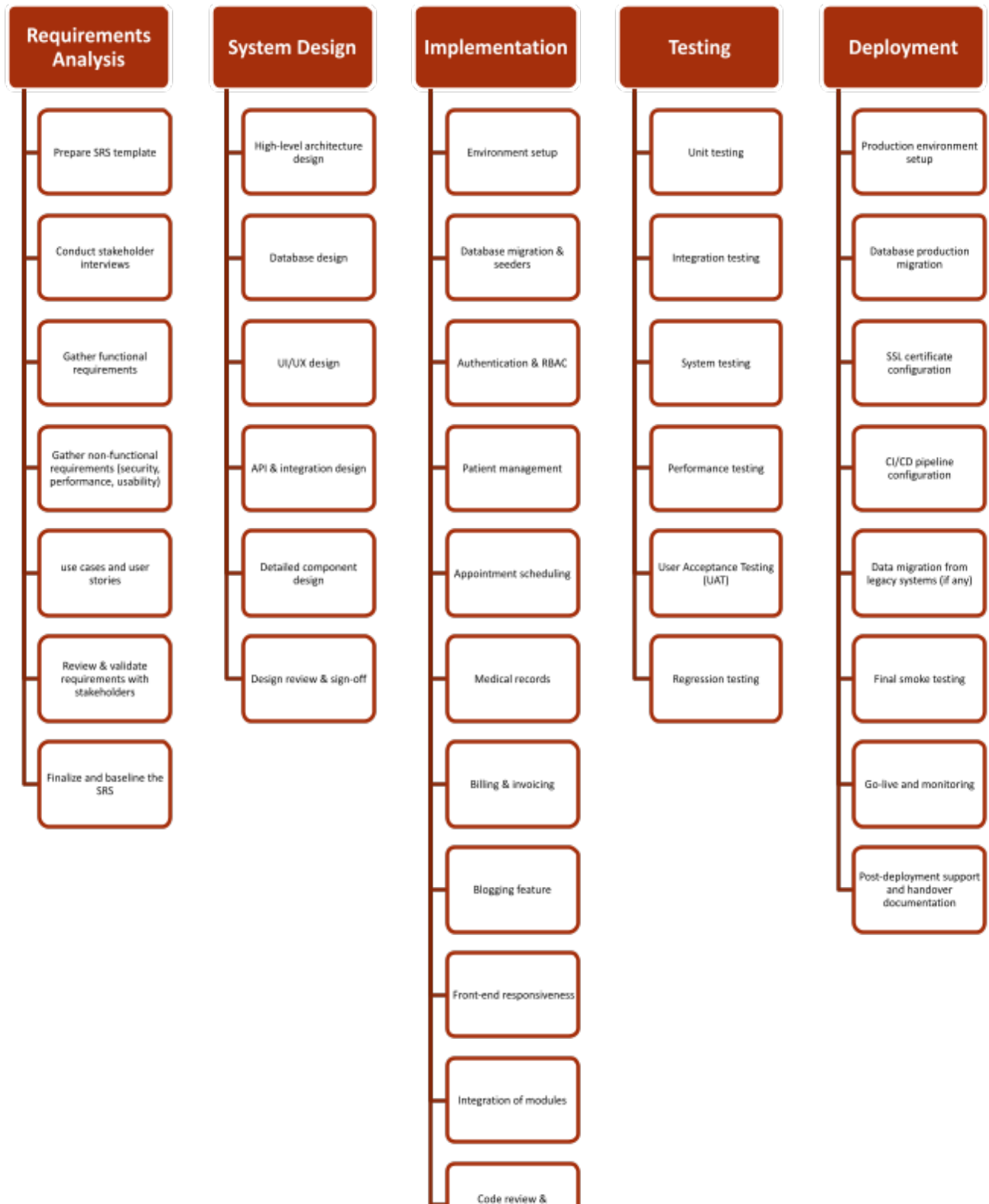


Figure 2: Gantt chart

## 1.6.2 WBS Planning for Development Phase

During implementation (Mar 16–Jun 30), I broke down tasks as follows:

| WBS Code | Task                                       | Start Date   | End Date     |
|----------|--------------------------------------------|--------------|--------------|
| 3.1      | Set up development environment             | Mar 16, 2025 | Mar 18, 2025 |
| 3.2      | Design and migrate database schema         | Mar 19, 2025 | Mar 25, 2025 |
| 3.3      | Build authentication & role-based access   | Mar 26, 2025 | Apr 5, 2025  |
| 3.4      | Develop patient registration module        | Apr 6, 2025  | Apr 15, 2025 |
| 3.5      | Implement appointment scheduling interface | Apr 16, 2025 | Apr 30, 2025 |
| 3.6      | Create medical records management module   | May 1, 2025  | May 20, 2025 |
| 3.7      | Integrate automated billing and invoicing  | May 21, 2025 | Jun 5, 2025  |
| 3.8      | Develop blogging feature                   | Jun 6, 2025  | Jun 15, 2025 |
| 3.9      | UI polishing and responsive adjustments    | Jun 16, 2025 | Jun 25, 2025 |
| 3.10     | Integration of all modules                 | Jun 26, 2025 | Jun 28, 2025 |
| 3.11     | Documentation and code review              | Jun 29, 2025 | Jun 30, 2025 |



## CHAPTER 2 : SOFTWARE REQUIREMENTS SPECIFICATION (SRS)

In order to figuring out user needs and to make sure that the system meets those needs is requirement analysis. One of the most important stages of system development and project management.

### 2.1 Functional Requirements

Functional requirements specifies the functions that the software/application must serve. The functional requirement table below highlights the major features of the medical management system, hence, laying the foundation for successful deployment.

FR-01

|              |                                                                    |
|--------------|--------------------------------------------------------------------|
| <b>FR-01</b> | Admin Registration                                                 |
| Description  | Admin registers into the system to monitor and manage all modules. |
| Stakeholder  | Admin                                                              |

FR-02

|              |                                                                        |
|--------------|------------------------------------------------------------------------|
| <b>FR-02</b> | Patient Registration                                                   |
| Description  | Patient creates an account to access appointment and medical features. |
| Stakeholder  | Patient                                                                |

FR-03

|              |                                                                       |
|--------------|-----------------------------------------------------------------------|
| <b>FR-03</b> | Doctor Registration                                                   |
| Description  | Doctor registers and is assigned roles by admin to manage treatments. |
| Stakeholder  | Admin, Doctor                                                         |

FR-04

|              |                                                                       |
|--------------|-----------------------------------------------------------------------|
| <b>FR-04</b> | Login/Authentication                                                  |
| Description  | All users log in with credentials to access role-specific dashboards. |
| Stakeholder  | Admin, Doctor, Patient                                                |

FR-05

|              |                                                                     |
|--------------|---------------------------------------------------------------------|
| <b>FR-05</b> | Create/View Appointment                                             |
| Description  | Patients book appointments; Doctors view and manage their schedule. |
| Stakeholder  | Patient, Doctor                                                     |

FR-06

|              |                                                        |
|--------------|--------------------------------------------------------|
| <b>FR-06</b> | Manage Appointment                                     |
| Description  | Admin manages and oversees all scheduled appointments. |
| Stakeholder  | Admin                                                  |

## FR-07

|              |                                                                      |
|--------------|----------------------------------------------------------------------|
| <b>FR-07</b> | Manage Web CMS                                                       |
| Description  | Admin edits and updates content like announcements and general info. |
| Stakeholder  | Admin                                                                |

## FR-08

|              |                                                          |
|--------------|----------------------------------------------------------|
| <b>FR-08</b> | Edit Profile                                             |
| Description  | Users can update their personal details and preferences. |
| Stakeholder  | Admin, Doctor, Patient                                   |

## FR-09

|              |                                                                    |
|--------------|--------------------------------------------------------------------|
| <b>FR-09</b> | Manage Prescription                                                |
| Description  | Doctors create and edit prescriptions for patients after check-up. |
| Stakeholder  | Doctor                                                             |

## FR-10

|              |                                                 |
|--------------|-------------------------------------------------|
| <b>FR-10</b> | View Prescription                               |
| Description  | Patients view prescriptions prescribed to them. |
| Stakeholder  | Patient                                         |

## FR-11

|              |                                                                       |
|--------------|-----------------------------------------------------------------------|
| <b>FR-11</b> | Manage Invoice                                                        |
| Description  | Admin and Doctors generate billing records and invoices for services. |
| Stakeholder  | Admin, Doctor                                                         |

## FR-12

|              |                                               |
|--------------|-----------------------------------------------|
| <b>FR-12</b> | View Invoice                                  |
| Description  | Patients can view or download their invoices. |
| Stakeholder  | Patient                                       |

## FR-13

|              |                                                     |
|--------------|-----------------------------------------------------|
| <b>FR-13</b> | Manage Patient                                      |
| Description  | Admin manages patient profiles and medical records. |
| Stakeholder  | Admin                                               |

## FR-14

|              |                                                           |
|--------------|-----------------------------------------------------------|
| <b>FR-14</b> | Manage Blog                                               |
| Description  | Doctors and Admins can write or update health tips/blogs. |
| Stakeholder  | Admin, Doctor                                             |

## FR-15

|              |                                         |
|--------------|-----------------------------------------|
| <b>FR-15</b> | View Blog                               |
| Description  | Patients read health tips and articles. |
| Stakeholder  | Patient                                 |

## FR-16

|              |                                                                    |
|--------------|--------------------------------------------------------------------|
| <b>FR-16</b> | Manage Blog Category                                               |
| Description  | Admin defines and edits blog categories (e.g., nutrition, mental). |
| Stakeholder  | Admin                                                              |

## FR-17

|              |                                                              |
|--------------|--------------------------------------------------------------|
| <b>FR-17</b> | Manage Doctors                                               |
| Description  | Admin adds, edits, or removes doctor profiles and schedules. |
| Stakeholder  | Admin                                                        |

## FR-18

|              |                                           |
|--------------|-------------------------------------------|
| <b>FR-18</b> | Ask Question                              |
| Description  | Patients submit health-related questions. |
| Stakeholder  | Patient                                   |

## FR-19

|              |                                                 |
|--------------|-------------------------------------------------|
| <b>FR-19</b> | Answer Question                                 |
| Description  | Doctors respond to submitted patient questions. |
| Stakeholder  | Doctor                                          |

## FR-20

|              |                                                              |
|--------------|--------------------------------------------------------------|
| <b>FR-20</b> | Manage Q/A                                                   |
| Description  | Admin moderates Q&A content to ensure clarity and relevance. |
| Stakeholder  | Admin                                                        |

## 2.2 Non-Functional Requirements

Non-functional requirements describe how the system operates instead of what it does. These include aspects like performance, security, usability, availability, and maintainability.

| ID     | Requirement  | Description                                                             | Example                                                                                       |
|--------|--------------|-------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| NFR-01 | Usability    | Interface must be user-friendly and simple to navigate.                 | Patients can book an appointment within 2–3 clicks & even a Emergency Appointment in 1 Click. |
| NFR-02 | Performance  | All major operations should respond within 3 seconds.                   | Viewing a prescription loads within 2 seconds.                                                |
| NFR-03 | Security     | Sensitive data must be encrypted and accessed by authorized users only. | Role-based access, HTTPS, password hashing.                                                   |
| NFR-04 | Scalability  | System should support growth in number of users and features.           | Easily extendable to support telemedicine in future.                                          |
| NFR-05 | Portability  | System should run across multiple platforms without issues.             | Compatible with Linux/Windows servers.                                                        |
| NFR-06 | Localization | System should support tradition of local system.                        | Interface Familiar to local Users.                                                            |

## 2.3 Software Requirements

The software stack required for developing and running the Portfolio Website Builder is as follows:

| Component         | Details                                                   |
|-------------------|-----------------------------------------------------------|
| Operating System  | Windows 8 or later (Windows 10/11 recommended)            |
| Frontend          | HTML, CSS, Bootstrap, JavaScript, Blade Templating Engine |
| Backend Framework | Laravel, MVC                                              |
| Database          | MySQL, XAAMP server                                       |
| Code Editor / IDE | Visual Studio Code (VS Code)                              |

## 2.4 Hardware Requirements

The hardware specifications needed to run and test the system are:

| Component  | Minimum Requirement                                | Recommended                                   |
|------------|----------------------------------------------------|-----------------------------------------------|
| Processor  | Intel Pentium 4 or later                           | Dual-core processor or higher                 |
| RAM        | 2 GB                                               | 4 GB or more                                  |
| Storage    | 100 GB available hard disk space                   | SSD preferred for better performance          |
| Display    | 13” Monitor with 1366×768 resolution               | Full HD Monitor                               |
| Internet   | Required (for Firebase, GitHub, Heroku deployment) | High-speed internet connection                |
| Smartphone | Android 8.0+ / iOS 12+ (for responsive UI testing) | Latest Android/iOS version with Chrome/Safari |

## 2.5 Dependability Requirements

This section outlines the key dependability attributes necessary for the Portfolio Website Builder project.

### Reliability Requirements

| ID    | Title              | Description                                                                                          | Stakeholder            |
|-------|--------------------|------------------------------------------------------------------------------------------------------|------------------------|
| RR-01 | System Reliability | All appointment, patient, and prescription data must be stored securely and persist across sessions. | Admin, Doctor, Patient |
| RR-02 | Backup Mechanism   | Daily automated backups must be taken to prevent data loss.                                          | Admin                  |
| RR-03 | Error Logging      | System should log all unexpected errors for future debugging.                                        | Admin, Developer       |

### Availability Requirements

| ID    | Title              | Description                                                          | Stakeholder            |
|-------|--------------------|----------------------------------------------------------------------|------------------------|
| AR-01 | 24/7 Availability  | System should be accessible to users at any time with 99.9% uptime.  | Admin, Patient, Doctor |
| AR-02 | Appointment Uptime | Booking functionality must be always available during working hours. | Patient                |

### Maintenance Requirements

| ID    | Title                | Description                                                         | Stakeholder      |
|-------|----------------------|---------------------------------------------------------------------|------------------|
| MR-01 | System Maintenance   | Admin or developers should easily trace and fix issues in modules.  | Admin, Developer |
| MR-02 | Module Upgradability | New features like AI suggestions or telehealth should be pluggable. | Developer        |

### Supportability Requirements

| ID    | Title              | Description                                                        | Stakeholder            |
|-------|--------------------|--------------------------------------------------------------------|------------------------|
| SR-01 | User Documentation | Provide help guides for appointment booking, viewing records, etc. | Patient, Doctor, Admin |
| SR-02 | Admin Manual       | Detailed admin guide for managing blogs, doctors, and patients.    | Admin                  |

### Access Requirements

| ID     | Title                | Description                                                           | Stakeholder            |
|--------|----------------------|-----------------------------------------------------------------------|------------------------|
| ACR-01 | Authenticated Access | Only registered users can access personal or medical records.         | Admin, Doctor, Patient |
| ACR-02 | Role-Based Access    | Access to modules should differ between doctors, patients, and admin. | Admin, Developer       |

### Ease of Use Requirements

| ID     | Title              | Description                                                     | Stakeholder     |
|--------|--------------------|-----------------------------------------------------------------|-----------------|
| EUR-01 | User-Friendly UI   | Clean dashboard for each user type with minimal learning curve. | All Users       |
| EUR-02 | Visual Appointment | Calendar-based UI for scheduling appointments.                  | Patient, Doctor |

### Understandability and Politeness Requirements

| ID     | Title              | Description                                                               | Stakeholder            |
|--------|--------------------|---------------------------------------------------------------------------|------------------------|
| UPR-01 | Clear Instructions | Every page should contain tooltips, labels, and form validation messages. | Patient, Doctor, Admin |

### Accessibility Requirements

| ID     | Title                | Description                                                         | Stakeholder |
|--------|----------------------|---------------------------------------------------------------------|-------------|
| ACY-01 | Device Compatibility | The system must work well on desktops, tablets, and mobile devices. | All Users   |
| ACY-02 | Responsive Design    | Dynamic layout adjustments for different screen sizes.              | All Users   |

### Look and Feel Requirements (Style Requirements)

| ID     | Title             | Description                                                           | Stakeholder      |
|--------|-------------------|-----------------------------------------------------------------------|------------------|
| STR-01 | Frontend Styling  | Use Bootstrap, HTML, CSS, and Laravel Blade templates for uniform UI. | Developer        |
| STR-02 | Theme Consistency | Color and layout must align with healthcare branding.                 | Admin, Developer |

### Legal Requirements (Standard Requirements)

| ID    | Title                   | Description                                                               | Stakeholder      |
|-------|-------------------------|---------------------------------------------------------------------------|------------------|
| LR-01 | Data Privacy Compliance | System should comply with healthcare data protection standards.           | Admin, Developer |
| LR-02 | Consent Handling        | Patients must consent to data collection and storage during registration. | Patient, Admin   |

# CHAPTER 3 : SYSTEM ANALYSIS

## 3.1 USE CASE DIAGRAM

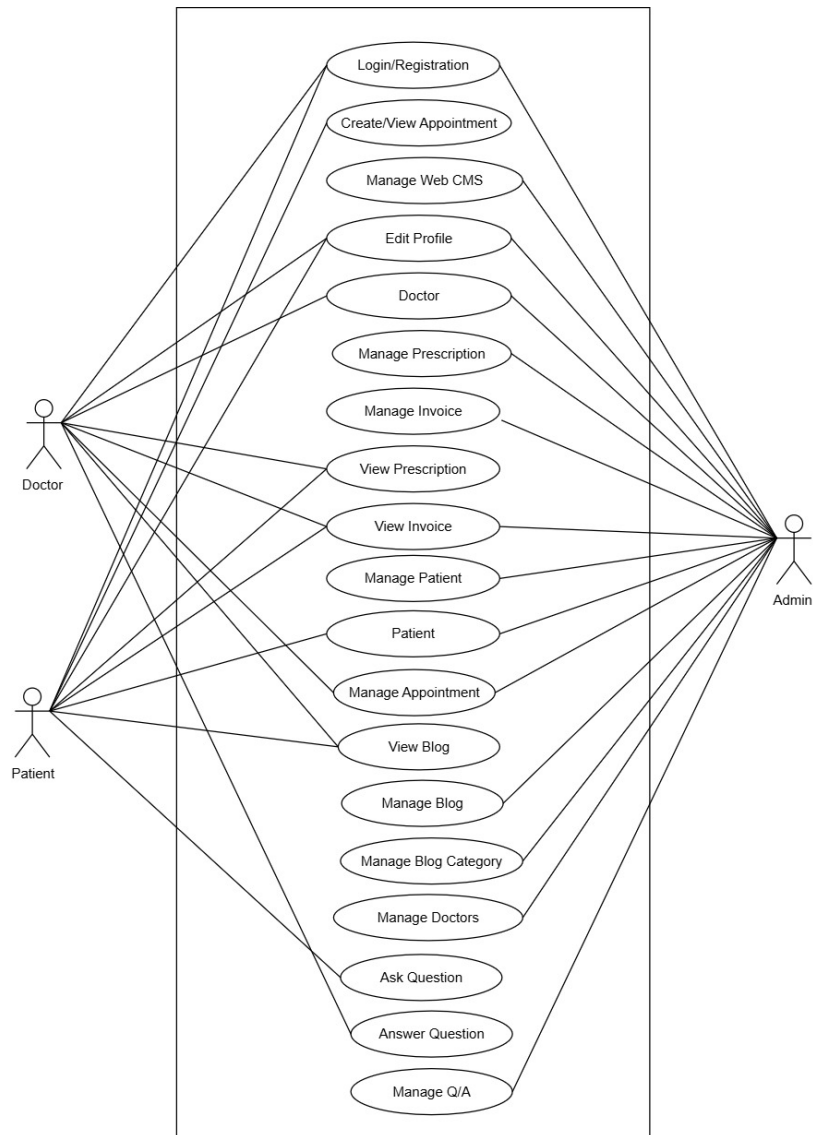
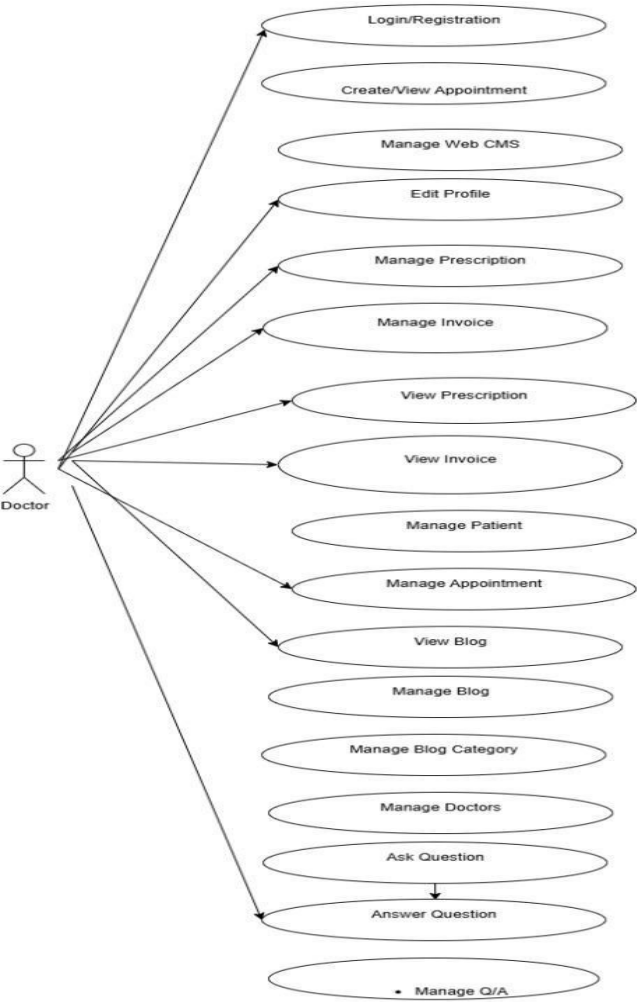
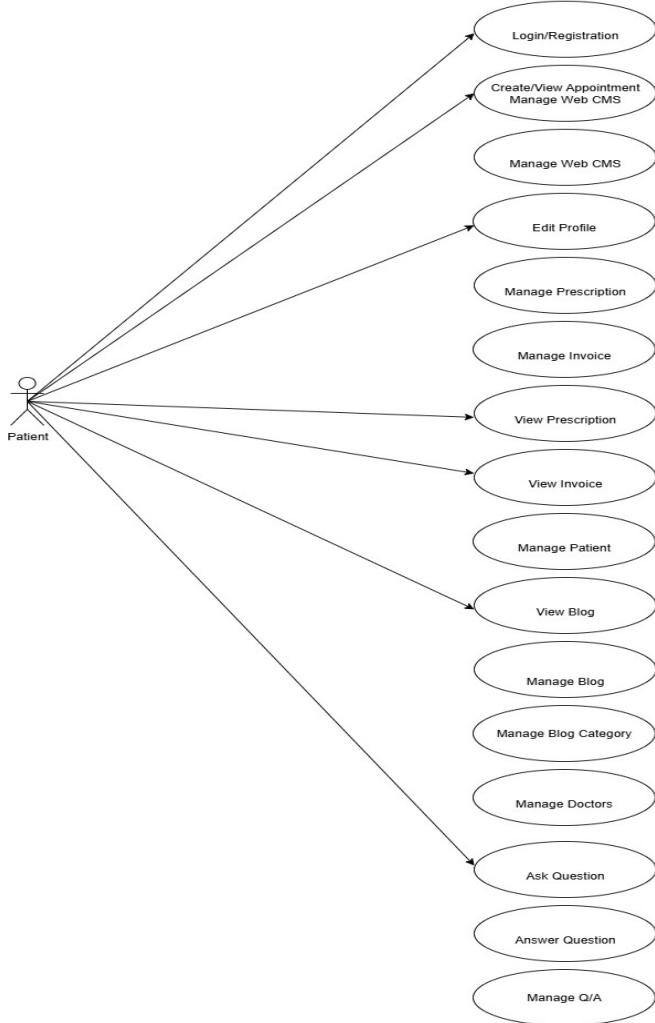


Figure 3: Use Case Diagram

# Stockholders Mapping with Functions:





## 3.2 USE CASE DESCRIPTION

### Use Case for FR-01: Admin Registration

|                                     |                                                                                                                                                                                                             |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Use Case Name                       | Admin Registration                                                                                                                                                                                          |
| Goal                                | Allow Admin to register into the system to monitor and manage all modules                                                                                                                                   |
| Preconditions                       | The Admin is not logged in and has not registered yet                                                                                                                                                       |
| Primary Actor                       | Admin                                                                                                                                                                                                       |
| Secondary Actor                     | None                                                                                                                                                                                                        |
| Trigger                             | Admin clicks on "Register" button                                                                                                                                                                           |
| Description / Main Success Scenario | 1. Admin navigates to registration page<br>2. Admin fills registration form with valid info<br>3. System validates data<br>4. System stores Admin credentials<br>5. System confirms successful registration |
| Post Condition                      | Admin account is created and ready for login                                                                                                                                                                |
| Alternative Flow                    | If any input is invalid, system shows error and prompts to re-enter data                                                                                                                                    |

### Use Case for FR-02: Patient Registration

|                                     |                                                                                                                                                                                                      |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Use Case Name                       | Patient Registration                                                                                                                                                                                 |
| Goal                                | Allow Patients to create an account to access appointment and medical features                                                                                                                       |
| Preconditions                       | Patient is not logged in and has not registered yet                                                                                                                                                  |
| Primary Actor                       | Patient                                                                                                                                                                                              |
| Secondary Actor                     | None                                                                                                                                                                                                 |
| Trigger                             | Patient clicks on "Register" button                                                                                                                                                                  |
| Description / Main Success Scenario | 1. Patient navigates to registration page<br>2. Patient fills form with valid info<br>3. System validates data<br>4. System stores Patient credentials<br>5. System confirms successful registration |
| Post Condition                      | Patient account created and ready for login                                                                                                                                                          |
| Alternative Flow                    | If any input invalid, system shows error and prompts re-entry                                                                                                                                        |

### Use Case for FR-03: Doctor Registration

|                                     |                                                                                                                                                                            |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Use Case Name                       | Doctor Registration                                                                                                                                                        |
| Goal                                | Allow Doctors to register; Admin assigns roles to manage treatments                                                                                                        |
| Preconditions                       | Doctor is not registered and not logged in                                                                                                                                 |
| Primary Actor                       | Doctor                                                                                                                                                                     |
| Secondary Actor                     | Admin                                                                                                                                                                      |
| Trigger                             | Doctor clicks on "Register" button                                                                                                                                         |
| Description / Main Success Scenario | 1. Doctor fills registration form<br>2. System validates data<br>3. Admin assigns roles<br>4. System stores Doctor credentials and role<br>5. System confirms registration |
| Post Condition                      | Doctor account created with assigned roles                                                                                                                                 |
| Alternative Flow                    | If invalid input, system shows error and requests correction                                                                                                               |

#### Use Case for FR-04: Login/Authentication

|                                     |                                                                                                                            |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| Use Case Name                       | Login / Authentication                                                                                                     |
| Goal                                | Allow all users to log in with credentials to access role-specific dashboards                                              |
| Preconditions                       | User/Admin/Doctor/Patient is registered but not logged in                                                                  |
| Primary Actor                       | User (Admin, Doctor, Patient)                                                                                              |
| Secondary Actor                     | None                                                                                                                       |
| Trigger                             | User submits login form                                                                                                    |
| Description / Main Success Scenario | 1. User enters username and password<br>2. System validates credentials<br>3. System grants access to respective dashboard |
| Post Condition                      | User is logged in with access based on their role                                                                          |
| Alternative Flow                    | If credentials invalid, system shows error and prompts retry                                                               |

#### Use Case for FR-05: Create/View Appointment

|                                     |                                                                                                                       |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Use Case Name                       | Create/View Appointment                                                                                               |
| Goal                                | Allow Patients to book appointments and Doctors to view/manage their schedule                                         |
| Preconditions                       | User is logged in as Patient or Doctor                                                                                |
| Primary Actor                       | Patient, Doctor                                                                                                       |
| Secondary Actor                     | None                                                                                                                  |
| Trigger                             | Patient clicks "Book Appointment" or Doctor accesses schedule view                                                    |
| Description / Main Success Scenario | 1. Patient selects appointment slot<br>2. System confirms booking<br>3. Doctor views and manages schedule accordingly |
| Post Condition                      | Appointment booked and visible to Doctor                                                                              |
| Alternative Flow                    | If slot unavailable, system prompts to select another time                                                            |

#### Use Case for FR-06: Manage Appointment

|                                     |                                                                                                                                   |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Use Case Name                       | Manage Appointment                                                                                                                |
| Goal                                | Allow Admin to manage and oversee all scheduled appointments                                                                      |
| Preconditions                       | Admin is logged in                                                                                                                |
| Primary Actor                       | Admin                                                                                                                             |
| Secondary Actor                     | None                                                                                                                              |
| Trigger                             | Admin accesses appointment management panel                                                                                       |
| Description / Main Success Scenario | 1. Admin views all appointments<br>2. Admin edits, cancels, or reschedules appointments<br>3. System updates appointment statuses |
| Post Condition                      | Appointments updated and status maintained                                                                                        |
| Alternative Flow                    | If conflicting schedule detected, system notifies Admin                                                                           |

#### Use Case for FR-07: Manage Web CMS

|                                     |                                                                                                       |
|-------------------------------------|-------------------------------------------------------------------------------------------------------|
| Use Case Name                       | Manage Web CMS                                                                                        |
| Goal                                | Allow Admin to edit and update website content like announcements and general info                    |
| Preconditions                       | Admin is logged in                                                                                    |
| Primary Actor                       | Admin                                                                                                 |
| Secondary Actor                     | None                                                                                                  |
| Trigger                             | Admin selects CMS management option                                                                   |
| Description / Main Success Scenario | 1. Admin edits content sections<br>2. Admin saves updates<br>3. System publishes updated content live |
| Post Condition                      | Website content updated and visible to users                                                          |
| Alternative Flow                    | If save fails, system shows error and prompts retry                                                   |

#### Use Case for FR-08: Edit Profile

|                                     |                                                                                                                       |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Use Case Name                       | Edit Profile                                                                                                          |
| Goal                                | Allow users (Admin, Doctor, Patient) to update personal details and preferences                                       |
| Preconditions                       | User is logged in                                                                                                     |
| Primary Actor                       | Admin, Doctor, Patient                                                                                                |
| Secondary Actor                     | None                                                                                                                  |
| Trigger                             | User clicks on "Edit Profile"                                                                                         |
| Description / Main Success Scenario | 1. User updates profile fields<br>2. System validates inputs<br>3. System saves updated data<br>4. Confirmation shown |
| Post Condition                      | User profile updated                                                                                                  |
| Alternative Flow                    | If invalid data, system prompts error and requests correction                                                         |

#### Use Case for FR-09: Manage Prescription

|                                     |                                                                                                                                      |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Use Case Name                       | Manage Prescription                                                                                                                  |
| Goal                                | Allow Doctors to create and edit prescriptions after patient check-up                                                                |
| Preconditions                       | Doctor is logged in and patient appointment completed                                                                                |
| Primary Actor                       | Doctor                                                                                                                               |
| Secondary Actor                     | None                                                                                                                                 |
| Trigger                             | Doctor selects patient and opts to create/edit prescription                                                                          |
| Description / Main Success Scenario | 1. Doctor enters prescription details<br>2. System validates and saves prescription<br>3. Prescription available for patient viewing |
| Post Condition                      | Prescription created or updated                                                                                                      |
| Alternative Flow                    | If validation fails, system requests correction                                                                                      |

Use Case for FR-10: View Prescription

|                                     |                                                                                                                |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------|
| Use Case Name                       | View Prescription                                                                                              |
| Goal                                | Allow Patients to view their prescribed prescriptions                                                          |
| Preconditions                       | Patient is logged in and has prescriptions available                                                           |
| Primary Actor                       | Patient                                                                                                        |
| Secondary Actor                     | None                                                                                                           |
| Trigger                             | Patient accesses prescription view section                                                                     |
| Description / Main Success Scenario | 1. System retrieves prescriptions<br>2. Patient views prescription details<br>3. Patient can download or print |
| Post Condition                      | Patient accesses prescription info                                                                             |
| Alternative Flow                    | If no prescriptions found, system displays appropriate message                                                 |

Use Case for FR-11: Manage Invoice

|                                     |                                                                                                                                                    |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| Use Case Name                       | Manage Invoice                                                                                                                                     |
| Goal                                | Allow Admin and Doctors to generate billing records and invoices for services                                                                      |
| Preconditions                       | Admin or Doctor is logged in                                                                                                                       |
| Primary Actor                       | Admin, Doctor                                                                                                                                      |
| Secondary Actor                     | None                                                                                                                                               |
| Trigger                             | Admin/Doctor selects invoice generation option                                                                                                     |
| Description / Main Success Scenario | 1. User inputs service details<br>2. System calculates billing<br>3. System generates invoice<br>4. Invoice stored and available for view/download |
| Post Condition                      | Invoice created and stored                                                                                                                         |
| Alternative Flow                    | If billing data incomplete, system prompts to complete info                                                                                        |

Use Case for FR-12: View Invoice

|                                     |                                                                               |
|-------------------------------------|-------------------------------------------------------------------------------|
| Use Case Name                       | View Invoice                                                                  |
| Goal                                | Allow Patients to view or download their invoices                             |
| Preconditions                       | Patient is logged in and has invoices available                               |
| Primary Actor                       | Patient                                                                       |
| Secondary Actor                     | None                                                                          |
| Trigger                             | Patient clicks on "View Invoice"                                              |
| Description / Main Success Scenario | 1. System retrieves patient invoices<br>2. Patient views or downloads invoice |
| Post Condition                      | Patient accesses invoice successfully                                         |
| Alternative Flow                    | If no invoices found, system displays notification                            |

Use Case for FR-13: Manage Patient

|                                     |                                                                                                                      |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| Use Case Name                       | Manage Patient                                                                                                       |
| Goal                                | Allow Admin to manage patient profiles and medical records                                                           |
| Preconditions                       | Admin is logged in                                                                                                   |
| Primary Actor                       | Admin                                                                                                                |
| Secondary Actor                     | None                                                                                                                 |
| Trigger                             | Admin selects patient management module                                                                              |
| Description / Main Success Scenario | 1. Admin views patient list<br>2. Admin edits or updates patient profile and medical data<br>3. System saves changes |
| Post Condition                      | Patient data updated                                                                                                 |
| Alternative Flow                    | If invalid data entered, system requests correction                                                                  |

Use Case for FR-14: Manage Blog

|                                     |                                                                                                        |
|-------------------------------------|--------------------------------------------------------------------------------------------------------|
| Use Case Name                       | Manage Blog                                                                                            |
| Goal                                | Allow Doctors and Admins to create or update health tips and blogs                                     |
| Preconditions                       | Doctor or Admin is logged in                                                                           |
| Primary Actor                       | Doctor, Admin                                                                                          |
| Secondary Actor                     | None                                                                                                   |
| Trigger                             | User selects "Manage Blog"                                                                             |
| Description / Main Success Scenario | 1. User creates or edits blog content<br>2. System validates and saves<br>3. Blog published or updated |
| Post Condition                      | Blog content updated and available                                                                     |
| Alternative Flow                    | If validation fails, system prompts correction                                                         |

Use Case for FR-15: View Blog

|                                     |                                                                  |
|-------------------------------------|------------------------------------------------------------------|
| Use Case Name                       | View Blog                                                        |
| Goal                                | Allow Patients to read health tips and articles                  |
| Preconditions                       | Patient or guest accesses website                                |
| Primary Actor                       | Patient                                                          |
| Secondary Actor                     | None                                                             |
| Trigger                             | Patient selects blog section                                     |
| Description / Main Success Scenario | 1. System retrieves blog posts<br>2. Patient reads blog articles |
| Post Condition                      | Blog content accessed                                            |
| Alternative Flow                    | If no blogs available, system shows appropriate message          |

Use Case for FR-16: Manage Blog Category

|                                     |                                                                                 |
|-------------------------------------|---------------------------------------------------------------------------------|
| Use Case Name                       | Manage Blog Category                                                            |
| Goal                                | Allow Admin to define and edit blog categories (e.g., nutrition, mental health) |
| Preconditions                       | Admin is logged in                                                              |
| Primary Actor                       | Admin                                                                           |
| Secondary Actor                     | None                                                                            |
| Trigger                             | Admin selects "Manage Blog Category"                                            |
| Description / Main Success Scenario | 1. Admin adds, edits, or deletes categories<br>2. System updates category list  |
| Post Condition                      | Blog categories updated                                                         |
| Alternative Flow                    | If category name invalid, system prompts correction                             |

Use Case for FR-17: Manage Doctors

|                                     |                                                                                                                                |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| Use Case Name                       | Manage Doctors                                                                                                                 |
| Goal                                | Allow Admin to add, edit, or remove doctor profiles and schedules                                                              |
| Preconditions                       | Admin is logged in                                                                                                             |
| Primary Actor                       | Admin                                                                                                                          |
| Secondary Actor                     | None                                                                                                                           |
| Trigger                             | Admin selects "Manage Doctors"                                                                                                 |
| Description / Main Success Scenario | 1. Admin views doctor list<br>2. Admin edits or removes profile<br>3. Admin updates doctor schedule<br>4. System saves changes |
| Post Condition                      | Doctor profiles and schedules updated                                                                                          |
| Alternative Flow                    | If invalid data entered, system requests correction                                                                            |

Use Case for FR-18: Ask Question

|                                     |                                                                                                            |
|-------------------------------------|------------------------------------------------------------------------------------------------------------|
| Use Case Name                       | Ask Question                                                                                               |
| Goal                                | Allow Patients to submit health-related questions                                                          |
| Preconditions                       | Patient is logged in or guest (if allowed)                                                                 |
| Primary Actor                       | Patient                                                                                                    |
| Secondary Actor                     | None                                                                                                       |
| Trigger                             | Patient selects "Ask Question"                                                                             |
| Description / Main Success Scenario | 1. Patient enters question details<br>2. System stores question for doctor review<br>3. Confirmation shown |
| Post Condition                      | Question submitted                                                                                         |
| Alternative Flow                    | If question incomplete, system prompts to complete details                                                 |

Use Case for FR-19: Answer Question

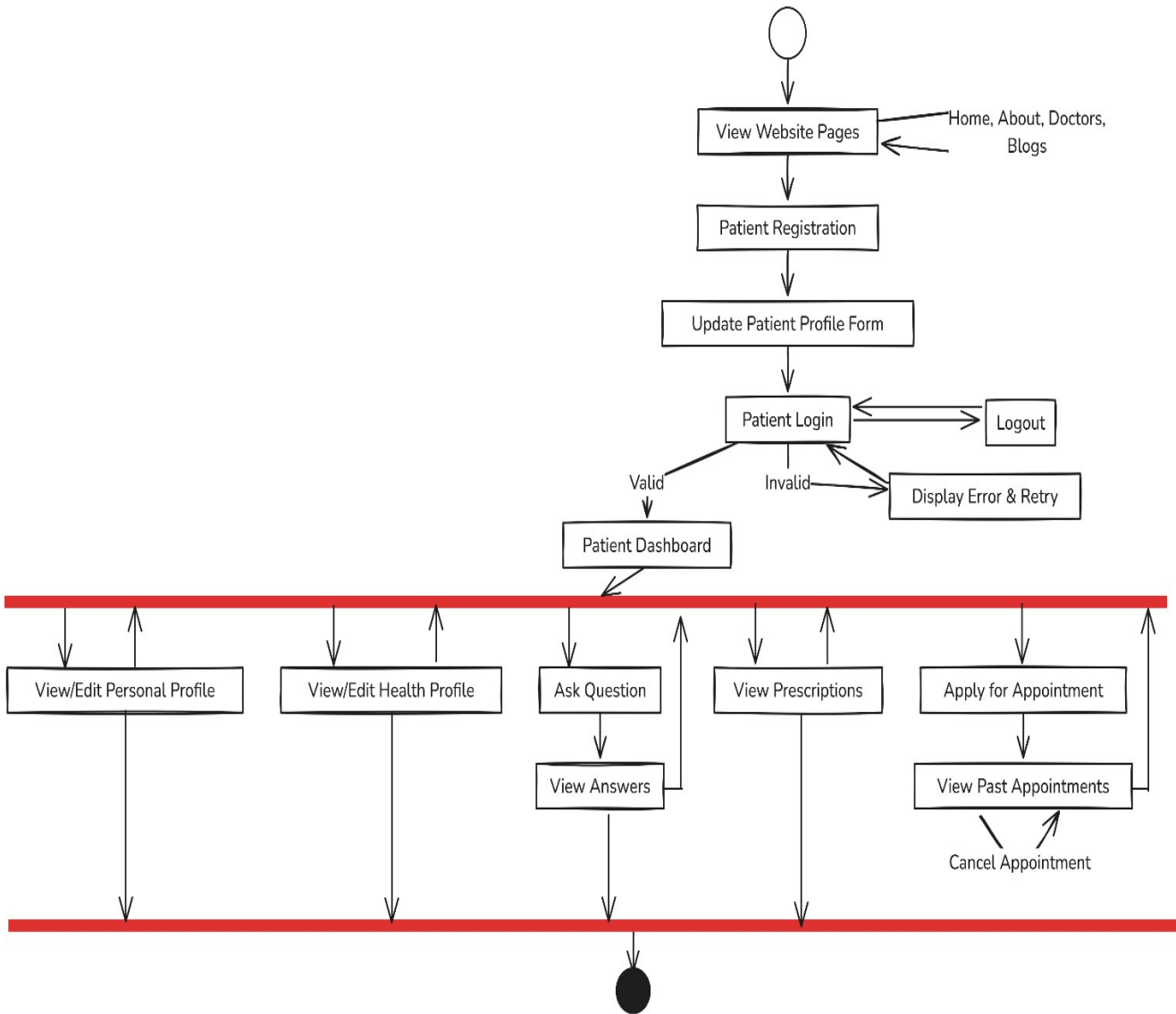
|                                     |                                                                                                           |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------|
| Use Case Name                       | Answer Question                                                                                           |
| Goal                                | Allow Doctors to respond to submitted patient questions                                                   |
| Preconditions                       | Doctor is logged in and questions are available                                                           |
| Primary Actor                       | Doctor                                                                                                    |
| Secondary Actor                     | None                                                                                                      |
| Trigger                             | Doctor selects a question to answer                                                                       |
| Description / Main Success Scenario | 1. Doctor reviews question<br>2. Doctor submits answer<br>3. System stores and displays answer to patient |
| Post Condition                      | Question answered and visible to patient                                                                  |
| Alternative Flow                    | If answer invalid or incomplete, system prompts correction                                                |

Use Case for FR-20: Manage Q/A

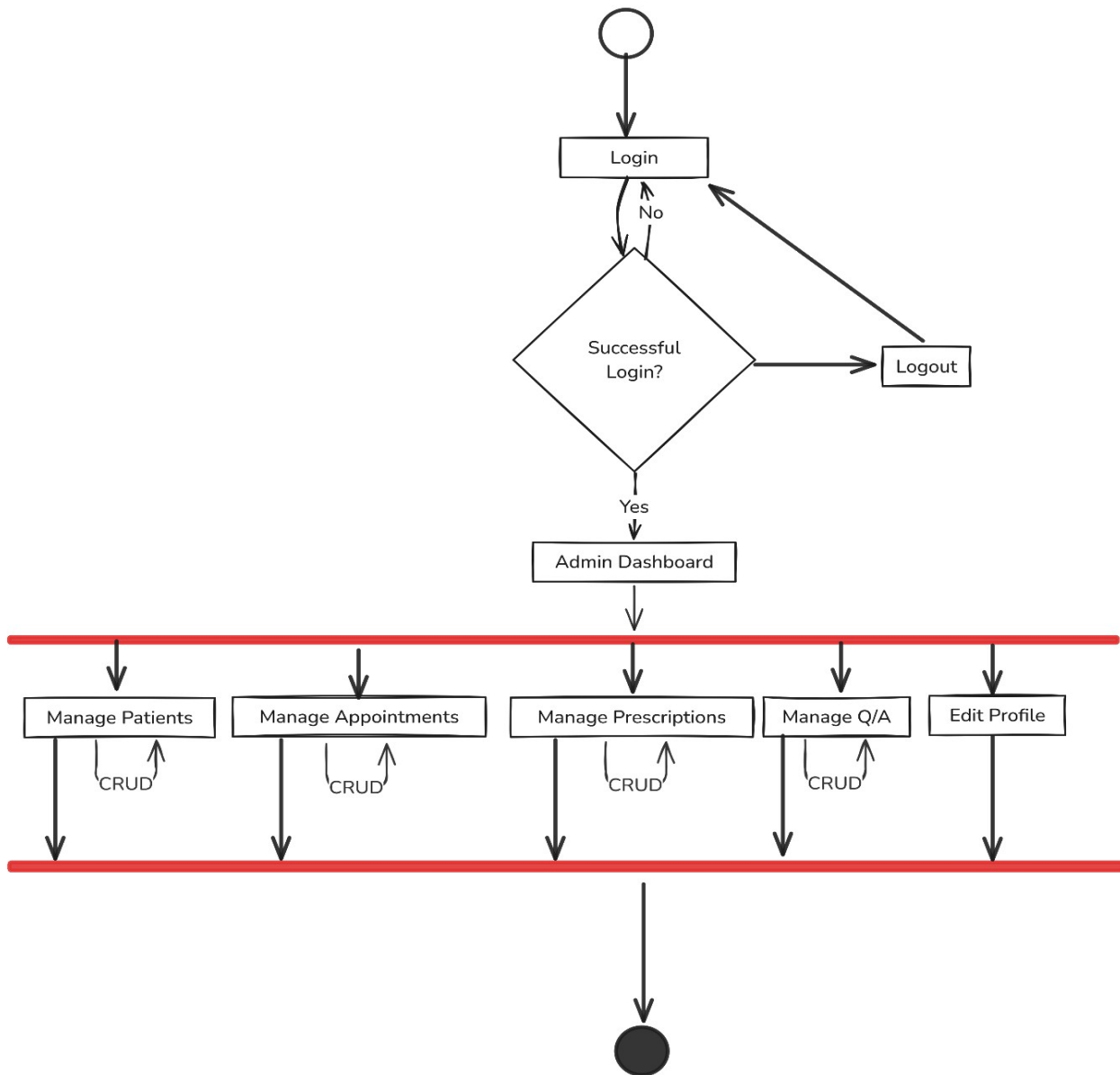
|                                     |                                                                                                               |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------|
| Use Case Name                       | Manage Q/A                                                                                                    |
| Goal                                | Allow Admin to moderate Q&A content to ensure clarity and relevance                                           |
| Preconditions                       | Admin is logged in                                                                                            |
| Primary Actor                       | Admin                                                                                                         |
| Secondary Actor                     | None                                                                                                          |
| Trigger                             | Admin selects Q&A management option                                                                           |
| Description / Main Success Scenario | 1. Admin reviews Q&A entries<br>2. Admin edits, approves or deletes content<br>3. System updates Q&A database |
| Post Condition                      | Q&A content moderated and updated                                                                             |
| Alternative Flow                    | If content flagged, system alerts Admin for action                                                            |

### 3.3 ACTIVITY DIAGRAM

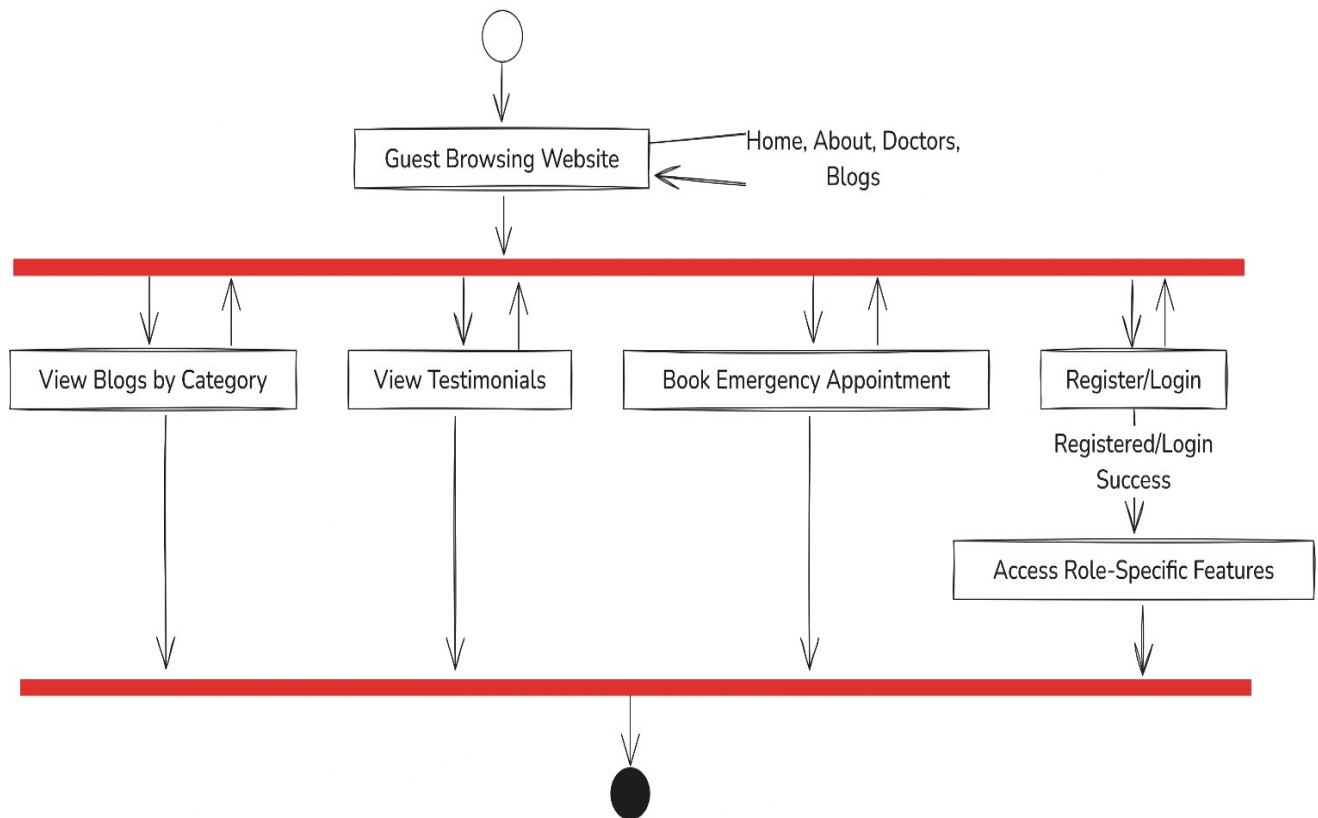
Patient Activity Diagram



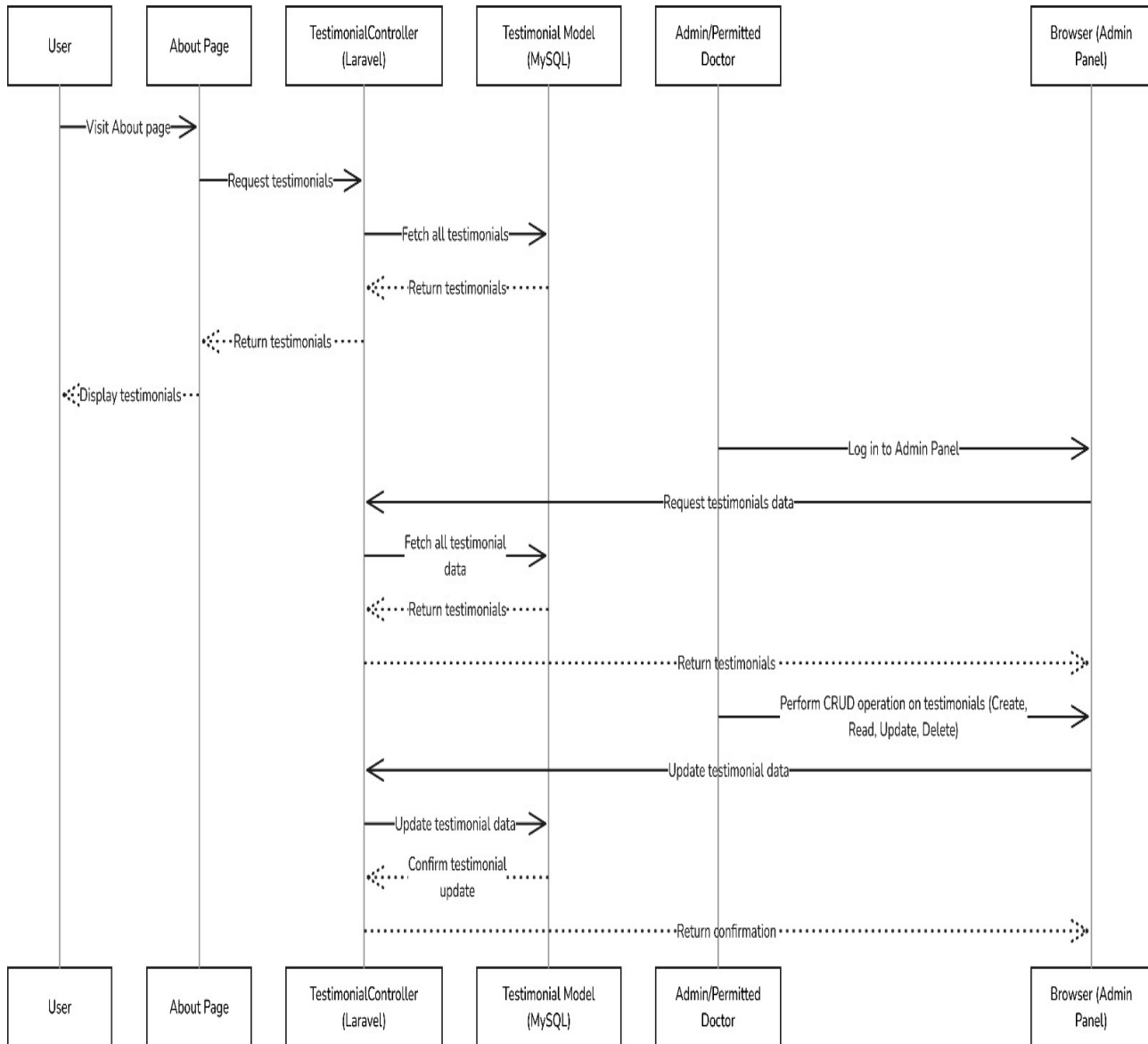
# Doctor Activity Diagram

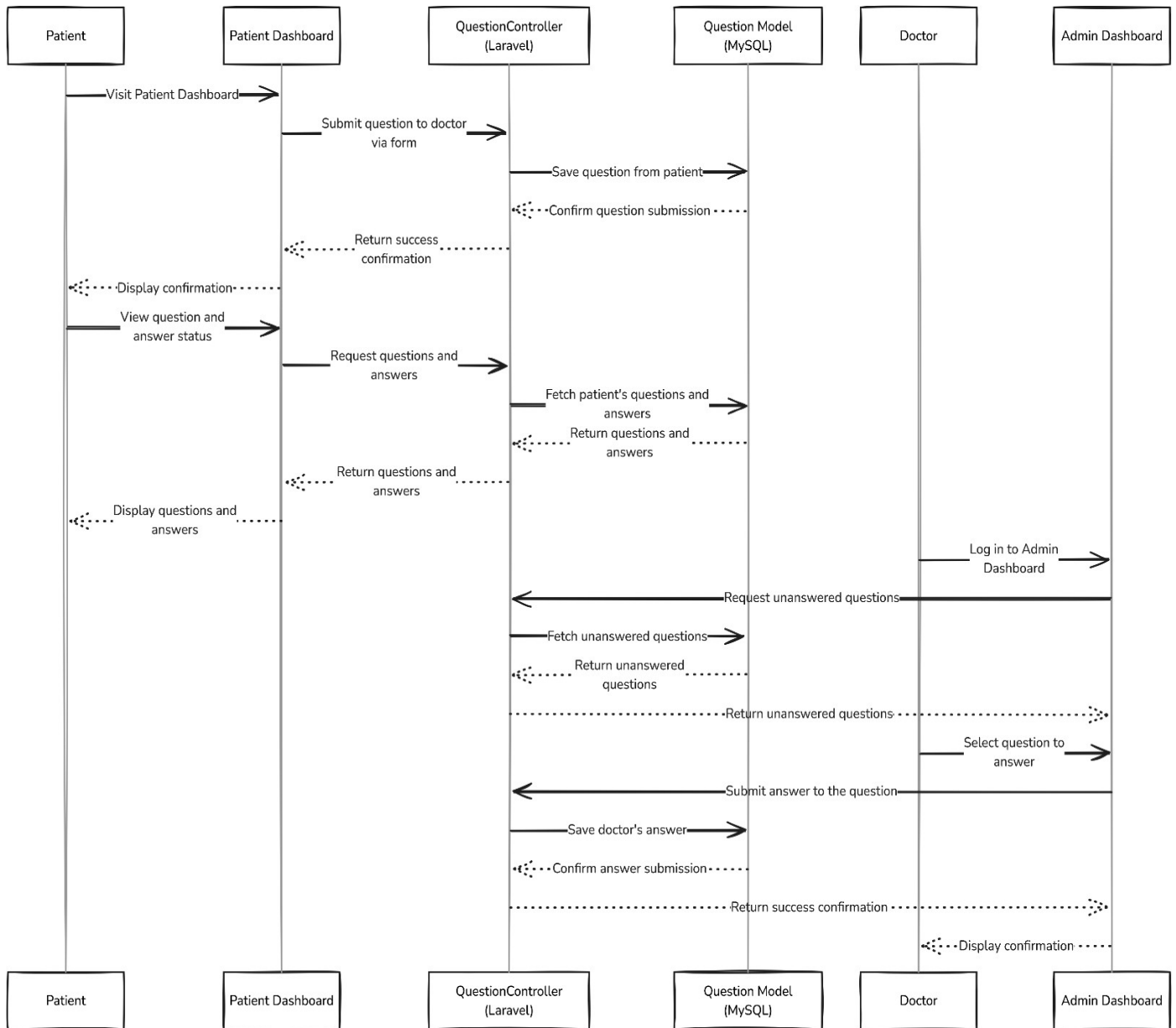


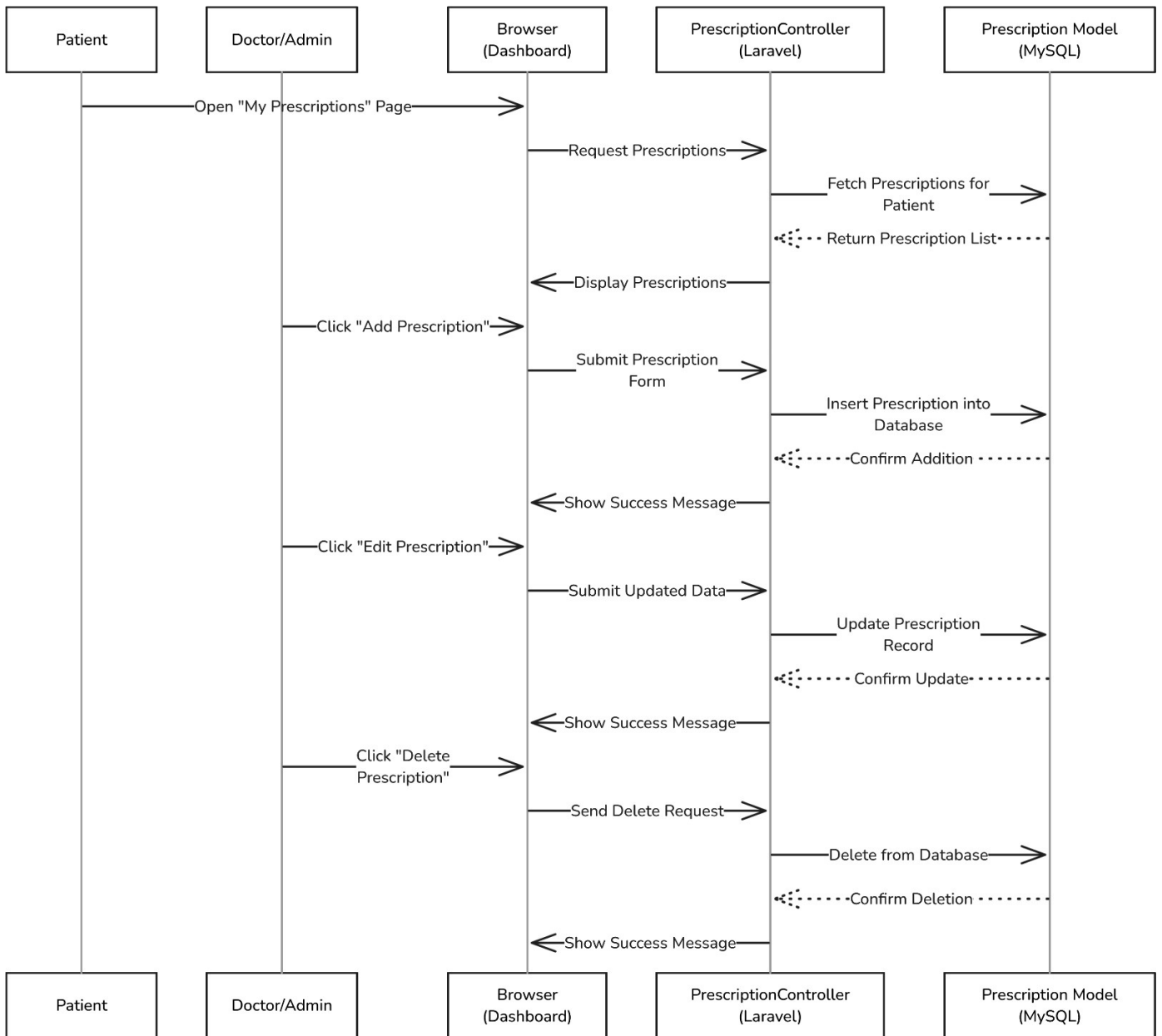
Guest User Activity Diagram

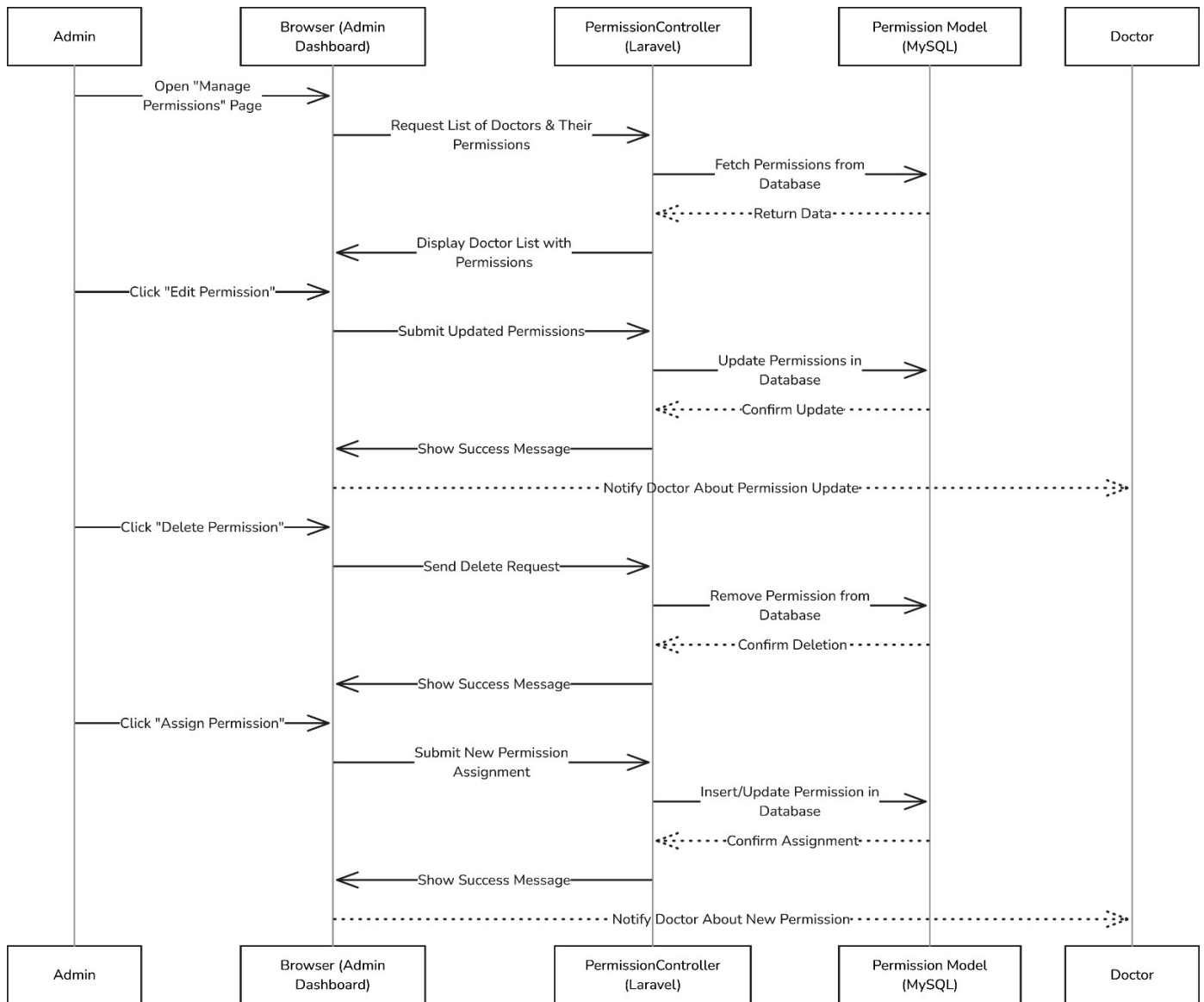


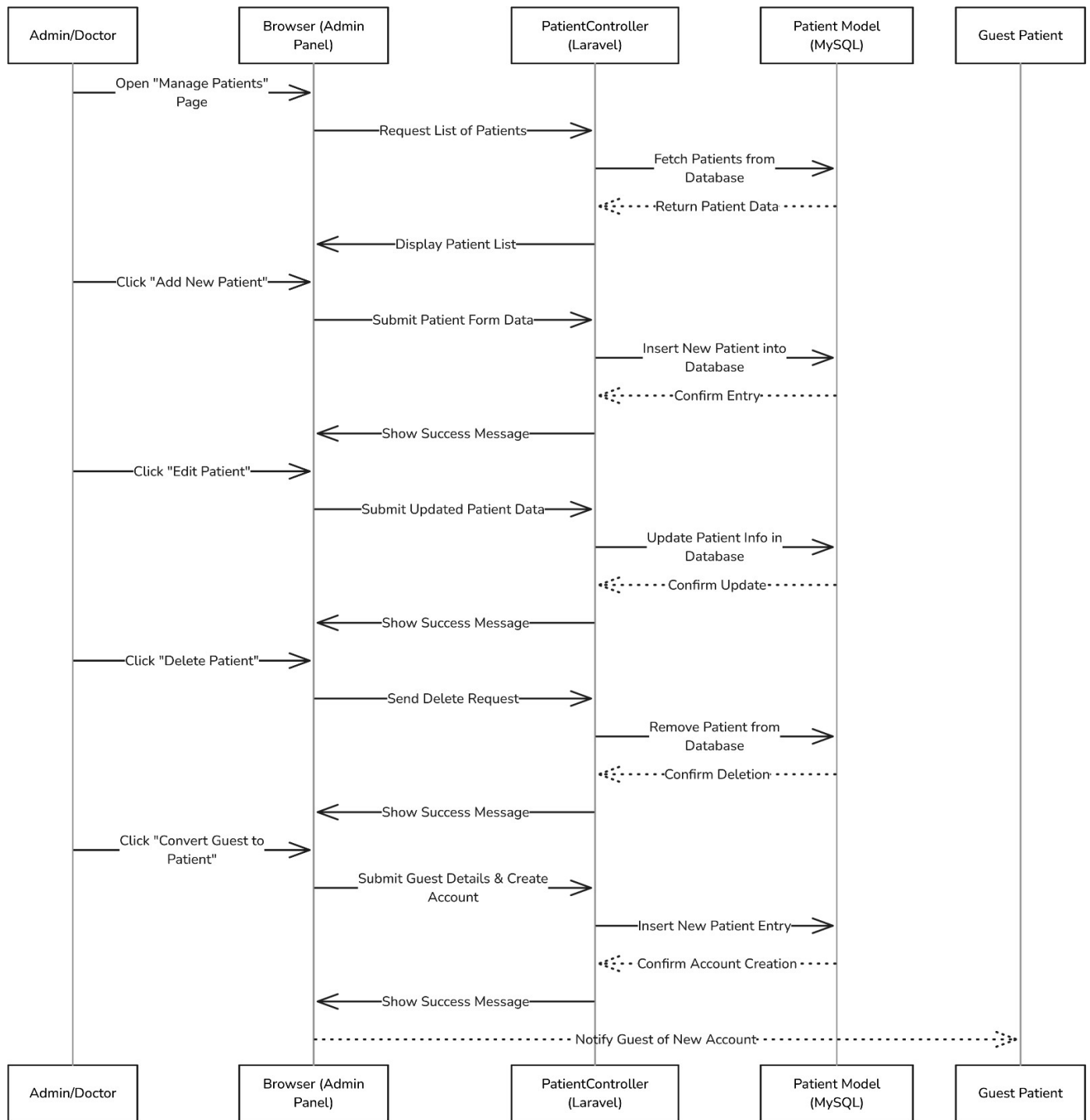
### 3.4 SEQUENCE DIAGRAM

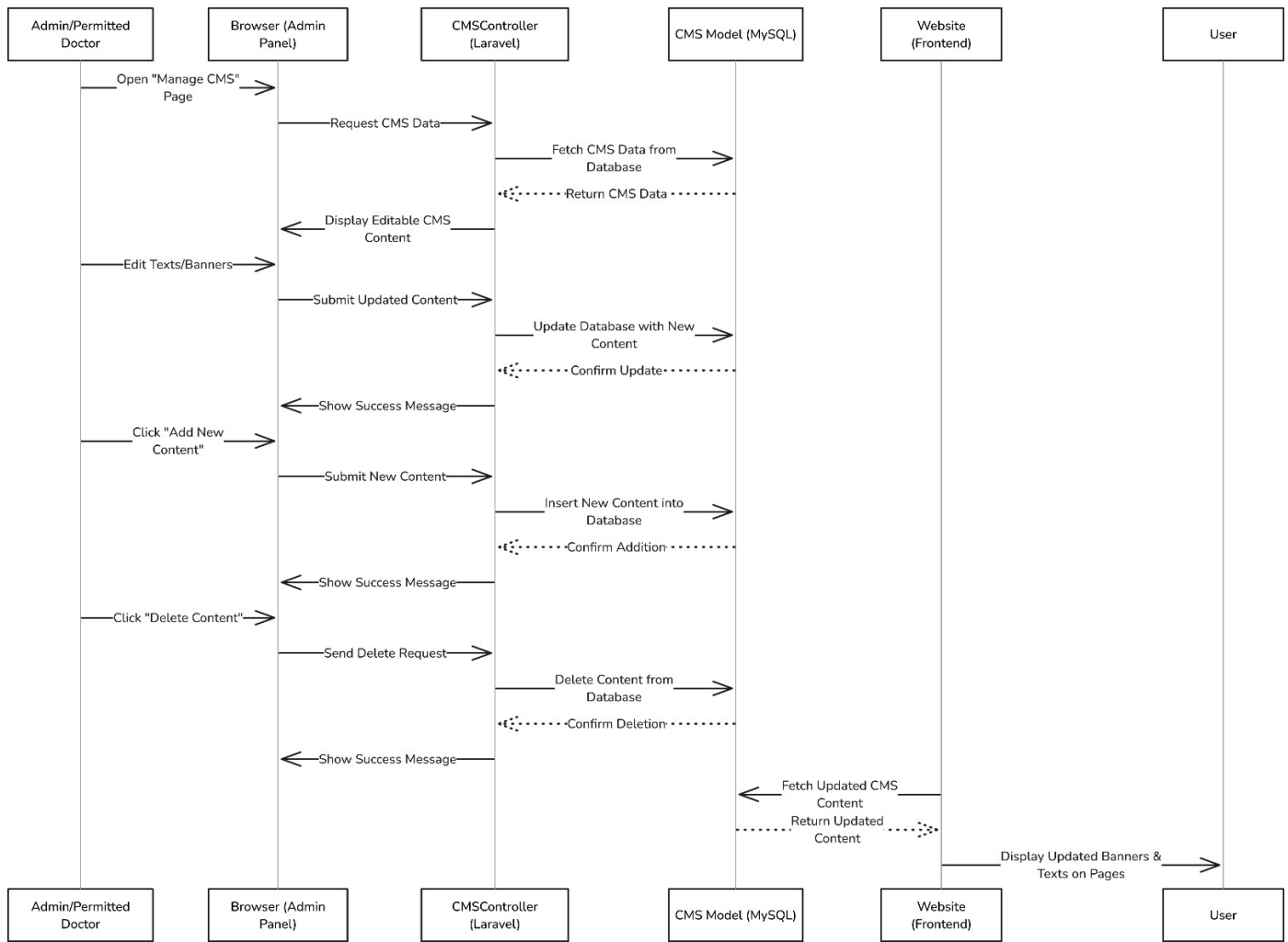


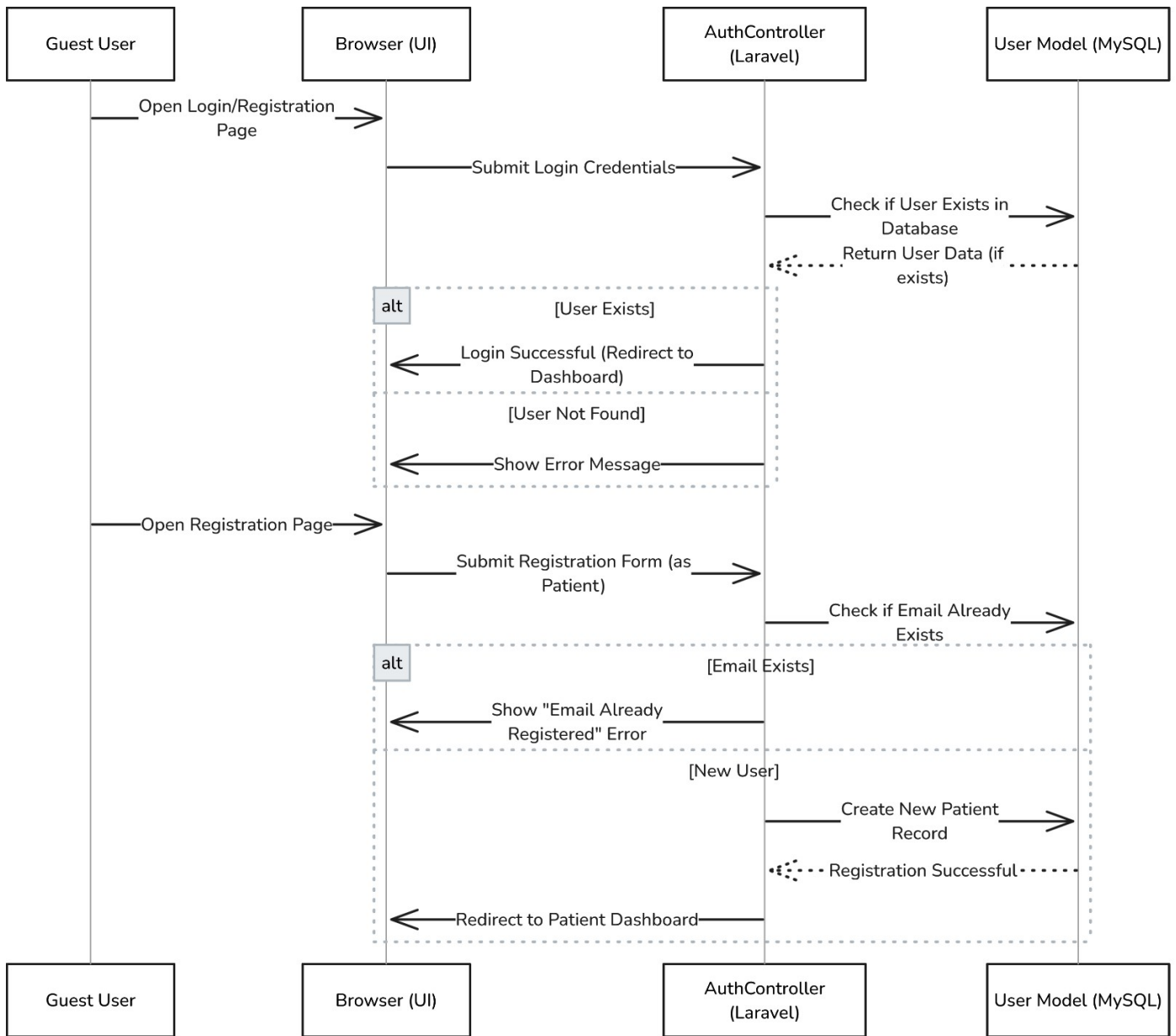


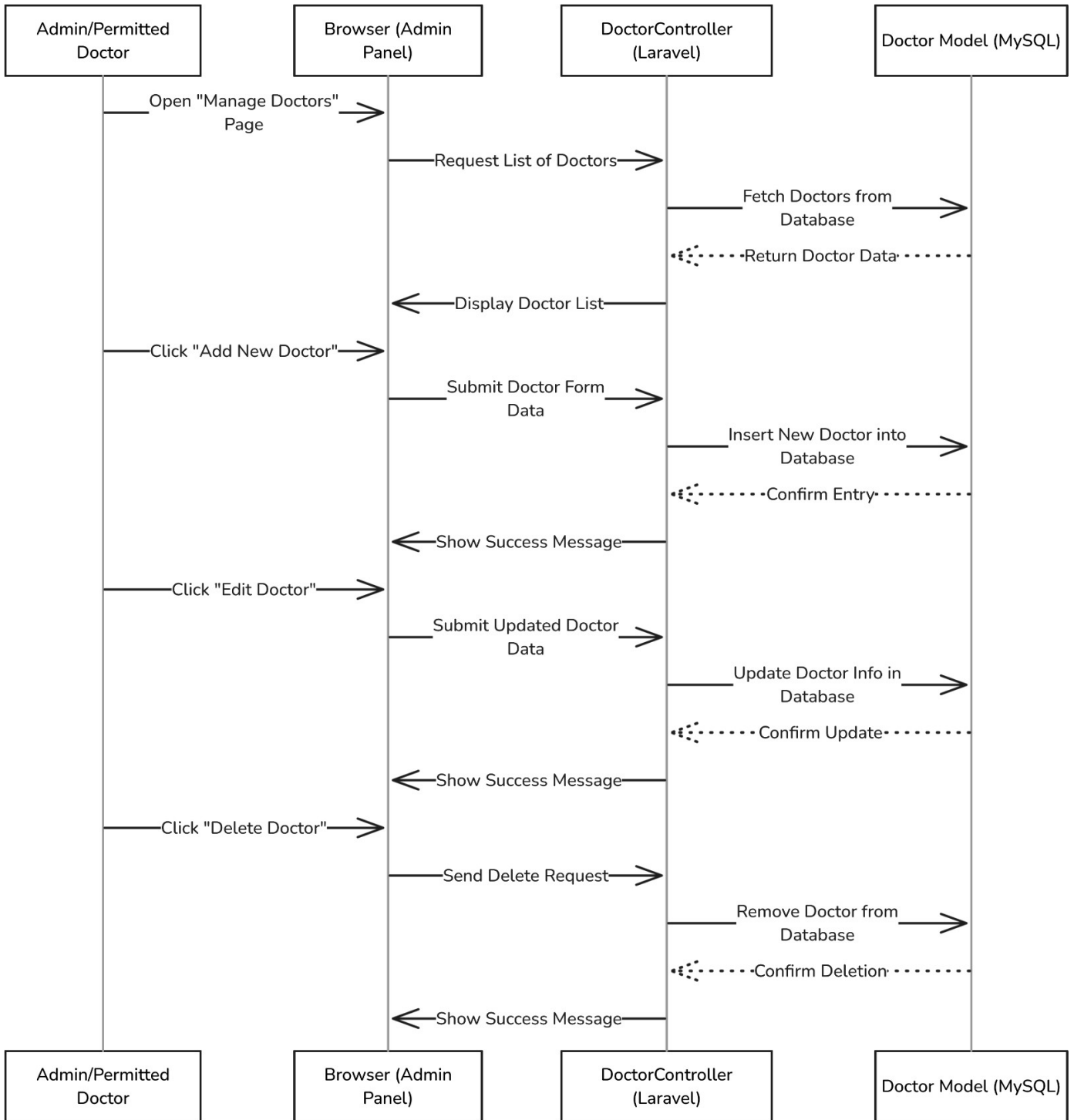


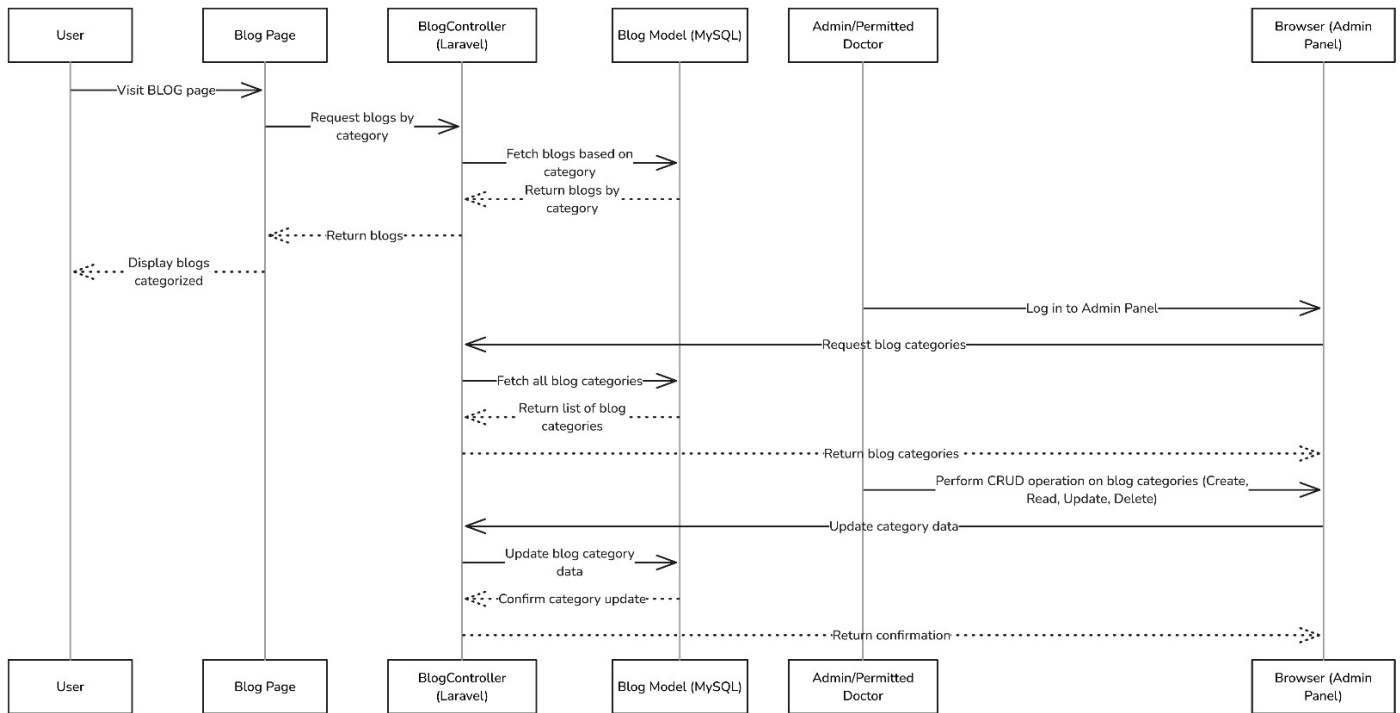


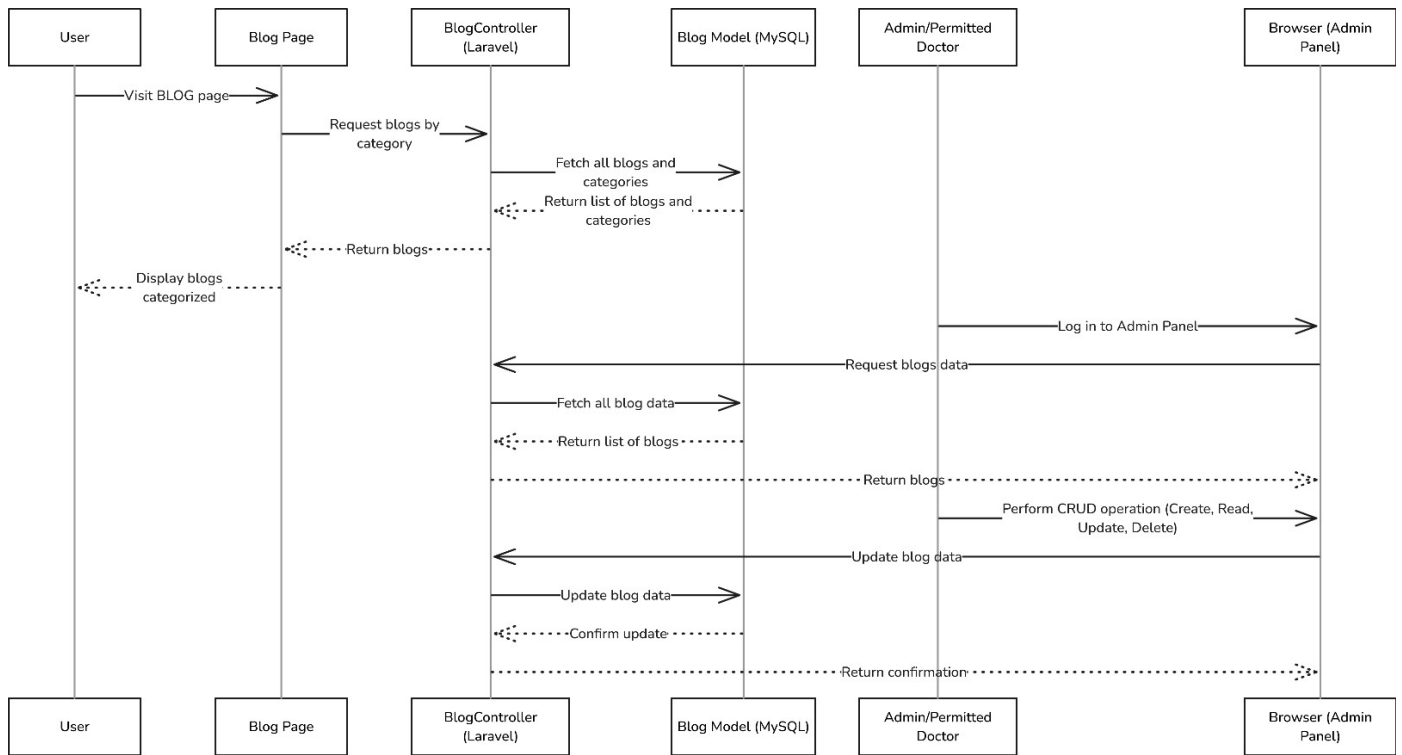


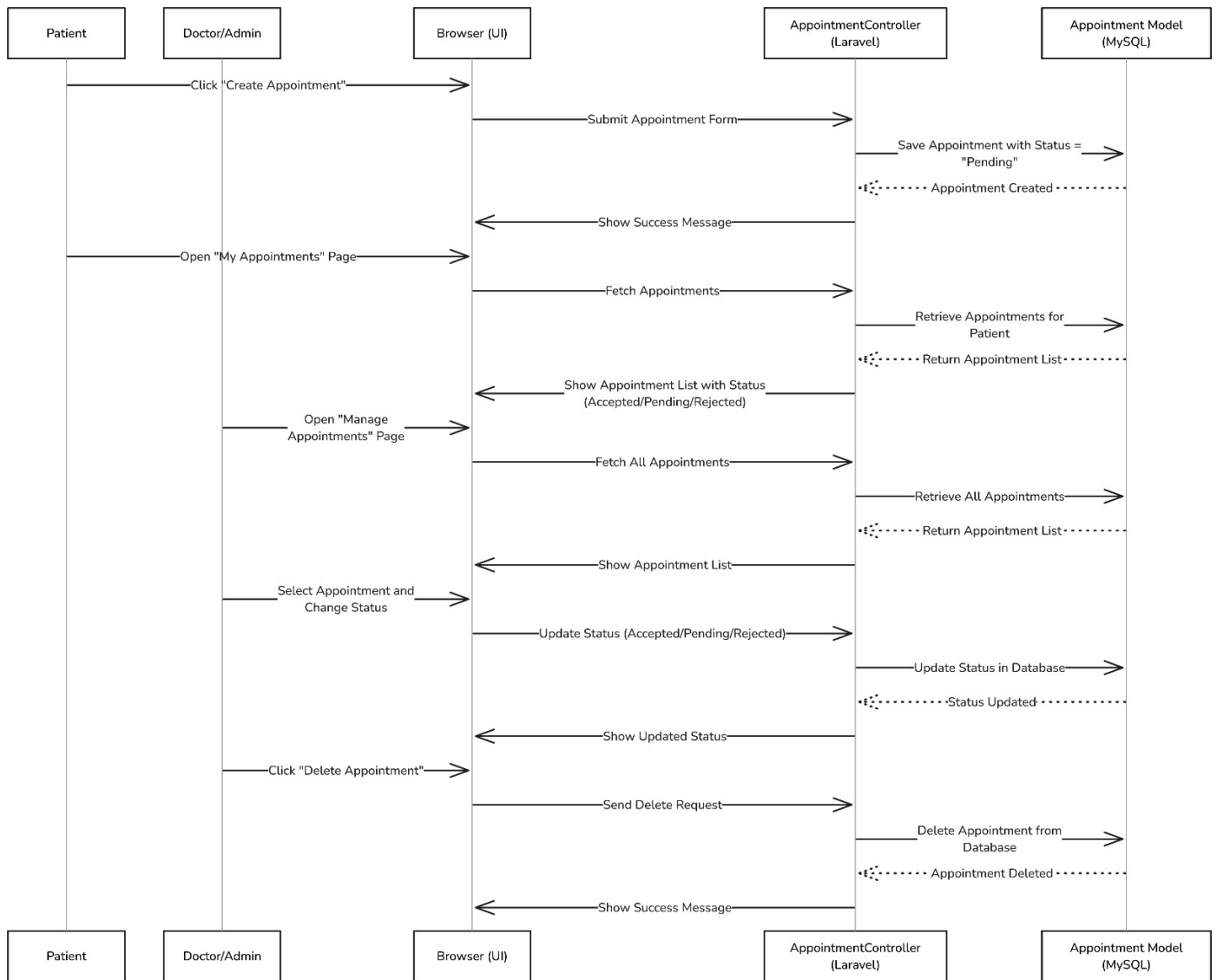






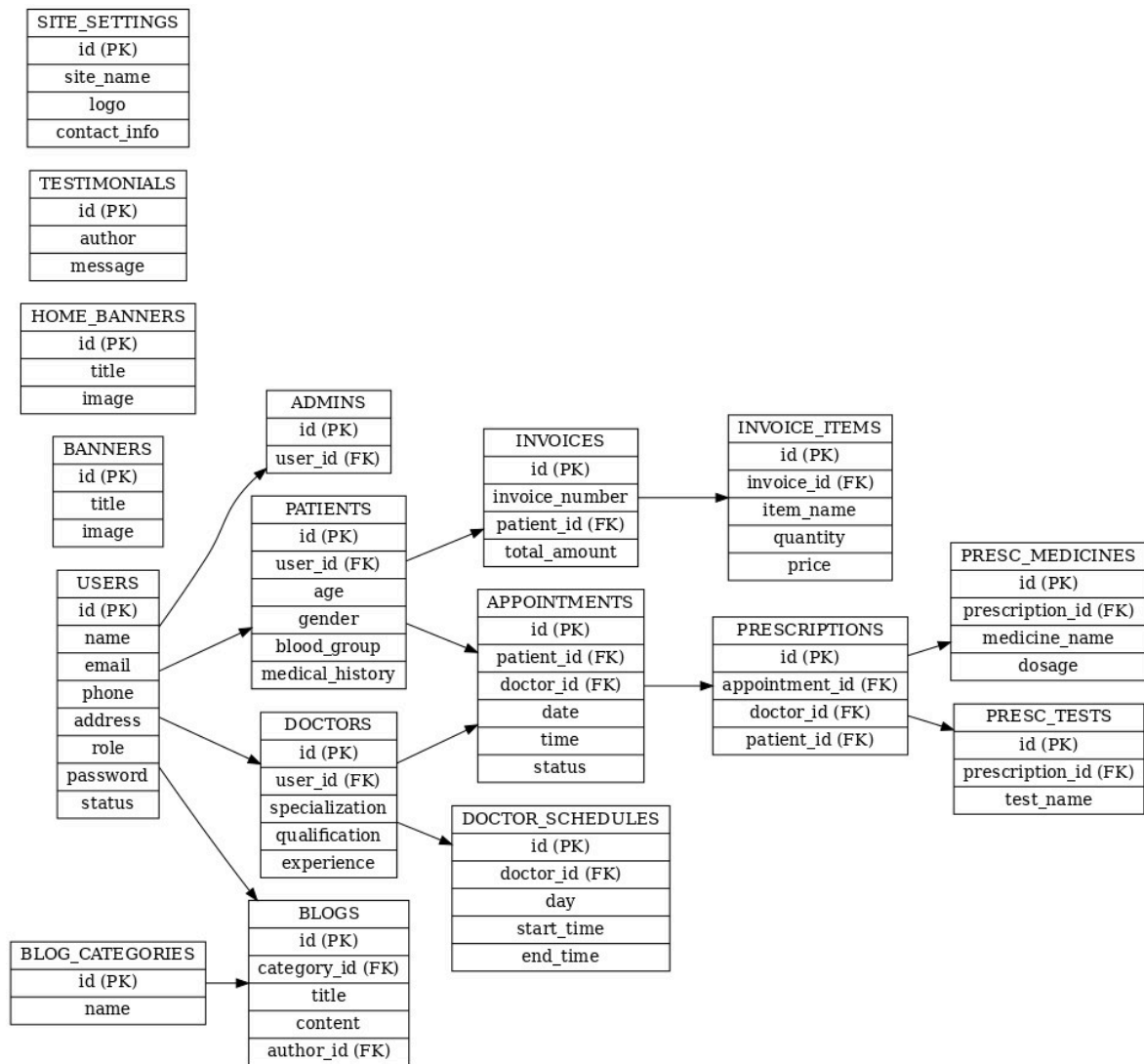






### 3.5 ENTITY RELATIONSHIP DIAGRAM

Entity Relationship Diagram



# CHAPTER 4 : SYSTEM TESTING

## 4.1 INTRODUCTION TO SYSTEM TESTING:

**System Testing** is a critical phase that involves validating the entire and fully integrated AL-Sahel **Medical Center** platform. The main objective is to ensure the system meets all specified requirements and functions correctly in a real-world environment.

Since the **AL-Sahel Medical Center** includes various interconnected modules—such as user registration, portfolio creation, Job notification, and Job search—system testing evaluates how these components work

together as a unified platform. This testing phase simulates real user scenarios to verify both functionality and performance across different devices and browsers, ensuring the end-to-end system behaves as expected.

## 4.2 Testing Strategies

### 4.2.1 Test Approach

■ The system will undergo **manual testing** to verify the functionality of all core features, including user registration, portfolio creation, Job notifications, and Job search.

■ Testing will be guided by **user acceptance criteria**, ensuring that the system meets real-world expectations and provides a smooth, intuitive experience for end users.

### 4.2.2 Pass /Fail Criteria

■ **Component Pass/Fail Criteria** – A component-level test will be marked as *pass* if it meets its defined design and functional requirements; otherwise, it will be marked as fail.

■ **Integration Pass/Fail Criteria** – Integration tests will pass if interconnected modules (e.g., Job Alert System, search functionality, portfolio manager) work together according to the system’s architectural design; they fail if inconsistencies or communication issues occur.

■ **System Pass/Fail Criteria** – The entire system will pass final testing if it meets all **functional** and **non-functional** requirements, including usability, performance, security, and reliability. A failure in any key requirement will result in a test fail.

### 4.3 Testing schedule

| Testing Phase                  | Time    | Owner       |
|--------------------------------|---------|-------------|
| Test Plan Creation             | 1 week  | Samiul Siam |
| Test Specification Creation    | 1 week  | Samiul Siam |
| Test Specification Team Review | 2 weeks | Samiul Siam |
| Component Testing              | 2 weeks | Samiul Siam |
| Integration Testing            | 1 week  | Samiul Siam |
| System Testing                 | 3 weeks | Samiul Siam |

### 4.4 System Test Cases

Phase 1

| Test Case              | Designed By | Design Date | Executed By | Executed Date | Pass/Fail | Expected Result                                               | Found Result                           | Comment                                     |
|------------------------|-------------|-------------|-------------|---------------|-----------|---------------------------------------------------------------|----------------------------------------|---------------------------------------------|
| 1.Admin Registration   | Sahel       | 1 Aug 2025  | Sahel       | 1 Aug 2025    | Pass      | Admin can register successfully with valid details            | Admin registered successfully          | Registration form works correctly           |
| 2.Patient Registration | Sahel       | 1 Aug 2025  | Sahel       | 1 Aug 2025    | Pass      | Patient can register successfully with valid details          | Patient registered successfully        | Registration form works correctly           |
| 3.Doctor Registration  | Sahel       | 1 Aug 2025  | Sahel       | 1 Aug 2025    | Pass      | Doctor registers and gets assigned roles by admin             | Doctor registered and roles assigned   | Registration and role assignment successful |
| 4.Login/Authentication | Sahel       | 1 Aug 2025  | Sahel       | 1 Aug 2025    | Pass      | All users (Admin, Doctor, Patient) can login with valid creds | Users logged in successfully           | Login system works correctly                |
| 5.Create Appointment   | Sahel       | 1 Aug 2025  | Sahel       | 1 Aug 2025    | Pass      | Patient can book an appointment without errors                | Appointment booked successfully        | Appointment creation is smooth              |
| 6.View Appointment     | Sahel       | 1 Aug 2025  | Sahel       | 1 Aug 2025    | Pass      | Doctor can view scheduled appointments                        | Doctor can view all appointments       | Appointment viewing works                   |
| 7.Manage Appointment   | Sahel       | 1 Aug 2025  | Sahel       | 1 Aug 2025    | Pass      | Admin can update, reschedule or cancel any appointment        | Admin managed appointments as expected | Appointment management works                |
| 8. Manage Web CMS      | Sahel       | 1 Aug 2025  | Sahel       | 1 Aug 2025    | Pass      | Admin can edit and update website content                     | CMS content updated successfully       | CMS management works correctly              |

| Test Case                | Designed By | Design Date | Executed By | Executed Date | Pass/Fail | Expected Result                                       | Found Result                           | Comment                                |
|--------------------------|-------------|-------------|-------------|---------------|-----------|-------------------------------------------------------|----------------------------------------|----------------------------------------|
| 9. Edit Profile          | Sahel       | 1 Aug 2025  | Sahel       | 1 Aug 2025    | Pass      | Users can update their profile information            | Profile updated without errors         | Profile edit feature works             |
| 10. Manage Prescription  | Sahel       | 1 Aug 2025  | Sahel       | 1 Aug 2025    | Pass      | Doctor can create and edit prescriptions              | Prescription managed correctly         | Prescription management works          |
| 11. View Prescription    | Sahel       | 1 Aug 2025  | Sahel       | 1 Aug 2025    | Pass      | Patient can view prescriptions prescribed to them     | Prescription displayed correctly       | Prescription viewing works             |
| 12. Manage Invoice       | Sahel       | 1 Aug 2025  | Sahel       | 1 Aug 2025    | Pass      | Admin and Doctor can generate billing invoices        | Invoices generated and saved           | Invoice management functions correctly |
| 13. View Invoice         | Sahel       | 1 Aug 2025  | Sahel       | 1 Aug 2025    | Pass      | Patient can view and download invoices                | Invoice viewed and downloaded          | Invoice viewing works                  |
| 14. Manage Patient       | Sahel       | 1 Aug 2025  | Sahel       | 1 Aug 2025    | Pass      | Admin can manage patient profiles and medical records | Patient profiles managed successfully  | Patient management works               |
| 15. Manage Blog          | Sahel       | 1 Aug 2025  | Sahel       | 1 Aug 2025    | Pass      | Doctors and Admin can create and update health blogs  | Blogs created and updated successfully | Blog management works                  |
| 16. View Blog            | Sahel       | 1 Aug 2025  | Sahel       | 1 Aug 2025    | Pass      | Patients can read blogs without errors                | Blogs displayed correctly              | Blog viewing works                     |
| 17. Manage Blog Category | Sahel       | 1 Aug 2025  | Sahel       | 1 Aug 2025    | Pass      | Admin can define and edit blog categories             | Blog categories managed successfully   | Blog category management works         |
| 18. Manage Doctors       | Sahel       | 1 Aug 2025  | Sahel       | 1 Aug 2025    | Pass      | Admin can add, edit, or remove doctors and schedules  | Doctor profiles managed correctly      | Doctor management works                |
| 19. Ask Question         | Sahel       | 1 Aug 2025  | Sahel       | 1 Aug 2025    | Pass      | Patients can submit health-related questions          | Questions submitted successfully       | Question submission feature works      |
| 20. Answer Question      | Sahel       | 1 Aug 2025  | Sahel       | 1 Aug 2025    | Pass      | Doctors can answer patient questions                  | Answers submitted and visible          | Answering feature works                |
| 21. Manage Q/A           | Sahel       | 1 Aug 2025  | Sahel       | 1 Aug 2025    | Pass      | Admin moderates Q&A content                           | Q&A content moderated without issues   | Q&A moderation works                   |

Phase 2

| Test Case                    | Designed By | Design Date | Executed By | Executed Date | Pass/Fail | Expected Result                                              | Found Result                                   | Comment                      |
|------------------------------|-------------|-------------|-------------|---------------|-----------|--------------------------------------------------------------|------------------------------------------------|------------------------------|
| 22. Password Reset           | Sahel       | 2 Aug 2025  | Sahel       | 2 Aug 2025    | Pass      | Users receive password reset link and can reset password     | Password reset email sent and password changed | Password reset process works |
| 23. Role-based Access        | Sahel       | 2 Aug 2025  | Sahel       | 2 Aug 2025    | Pass      | Users access only allowed dashboards and features            | Role restrictions enforced correctly           | Access control works         |
| 24. Emergency Appointment    | Sahel       | 2 Aug 2025  | Sahel       | 2 Aug 2025    | Pass      | Guests can book emergency appointments without registration  | Emergency appointment created successfully     | Emergency booking works      |
| 25. Upload Medical Reports   | Sahel       | 2 Aug 2025  | Sahel       | 2 Aug 2025    | Pass      | Patients can upload medical reports to their profile         | Reports uploaded and visible in profile        | Report upload feature works  |
| 26. Download Medical Reports | Sahel       | 2 Aug 2025  | Sahel       | 2 Aug 2025    | Pass      | Patients can download uploaded medical reports               | Reports downloaded successfully                | Report download works        |
| 27. Appointment Reminder     | Sahel       | 2 Aug 2025  | Sahel       | 2 Aug 2025    | Pass      | System sends appointment reminders via email/SMS             | Reminders sent on time                         | Reminder system works        |
| 28. Search Doctor            | Sahel       | 2 Aug 2025  | Sahel       | 2 Aug 2025    | Pass      | Patients can search doctors by specialty, name, or schedule  | Search results accurate and relevant           | Doctor search works          |
| 29. View Doctor Profile      | Sahel       | 2 Aug 2025  | Sahel       | 2 Aug 2025    | Pass      | Patients can view detailed doctor profiles                   | Profiles loaded with correct info              | Doctor profile view works    |
| 30. Patient Dashboard        | Sahel       | 2 Aug 2025  | Sahel       | 2 Aug 2025    | Pass      | Patients can see appointments, prescriptions, invoices       | Dashboard displays accurate data               | Patient dashboard works      |
| 31. Doctor Dashboard         | Sahel       | 2 Aug 2025  | Sahel       | 2 Aug 2025    | Pass      | Doctors see their schedule, patient questions, prescriptions | Dashboard data accurate                        | Doctor dashboard works       |

| Test Case                         | Designed By | Design Date | Executed By | Executed Date | Pass/Fail | Expected Result                                               | Found Result                     | Comment                          |
|-----------------------------------|-------------|-------------|-------------|---------------|-----------|---------------------------------------------------------------|----------------------------------|----------------------------------|
| 32. Admin Dashboard               | Sahel       | 2 Aug 2025  | Sahel       | 2 Aug 2025    | Pass      | Admin sees overview of appointments, patients, doctors, blogs | Dashboard data loads correctly   | Admin dashboard works            |
| 33. Notifications                 | Sahel       | 2 Aug 2025  | Sahel       | 2 Aug 2025    | Pass      | Users receive notifications for appointments and replies      | Notifications delivered promptly | Notification system works        |
| 34. Blog Commenting               | Sahel       | 2 Aug 2025  | Sahel       | 2 Aug 2025    | Pass      | Patients can comment on blogs                                 | Comments posted and visible      | Blog commenting works            |
| 35. Blog Comment Moderation       | Sahel       | 2 Aug 2025  | Sahel       | 2 Aug 2025    | Pass      | Admin moderates and approves/rejects blog comments            | Comments moderated successfully  | Comment moderation feature works |
| 36. Patient Medical History       | Sahel       | 2 Aug 2025  | Sahel       | 2 Aug 2025    | Pass      | Patients view full medical history                            | Medical history shown accurately | Medical history display works    |
| 37. Doctor Medical History Access | Sahel       | 2 Aug 2025  | Sahel       | 2 Aug 2025    | Pass      | Doctors access assigned patients' medical history             | Doctors view medical records     | Medical record access works      |
| 38. Logout                        | Sahel       | 2 Aug 2025  | Sahel       | 2 Aug 2025    | Pass      | Users can log out securely                                    | Logout works and session ends    | Logout process works             |
| 39. Password Change               | Sahel       | 2 Aug 2025  | Sahel       | 2 Aug 2025    | Pass      | Logged-in users can change their password                     | Password changed successfully    | Password change feature works    |
| 40. Session Timeout               | Sahel       | 2 Aug 2025  | Sahel       | 2 Aug 2025    | Pass      | Users are logged out after inactivity                         | Session expires as expected      | Session timeout works            |
| 41. Secure Data Access            | Sahel       | 2 Aug 2025  | Sahel       | 2 Aug 2025    | Pass      | Data encrypted and access restricted based on roles           | Data access controlled correctly | Security measures effective      |

# CHAPTER 5 : DEVELOPMENT TOOL AND TECHNOLOGY

## 5.1 Development Technology

### Technology Stack

- ❖ **Framework:** Laravel 11.x (MVC architecture, Eloquent ORM).
- ❖ **Frontend:** Blade templating, Bootstrap 5, jQuery (AJAX/FetchAPI for dynamic content).
- ❖ **Database:** MySQL (structured relational data).
- ❖ **Authentication:** Laravel Breeze with role-based guards (admin, doctor, patient) using Laratrust.

### Technical Advantages

- ❖ **Blade Templating:**
  - Server-side rendering for SEO-friendly pages
  - Reusable components.
- ❖ **Laravel Modularity:**
  - Separate modules for the website, Management and CMS part.
  - Easy integration with institutional APIs (e.g., university student databases) as needed.
- ❖ **Security:**
  - Laravel's built-in CSRF protection, encryption, and SQL injection prevention.
  - Laravel's built-in login/registration system.

## 5.2 Development Tools and Platforms

- **VS Code:** Main code editor with extensions and terminal support.
- **Google Chrome:** Used for testing and debugging with dev tools.
- **Command Line Terminal:** Run Artisan Commands.
- **GitHub:** Managed version control and project backups.
- **XAMPP/Laragon:** Provided a local testing server.

# CHAPTER 6 : USER INTERFACE

The screenshot displays the user interface for the Al-Sahel Medical Center website. At the top, there is a navigation bar with links for Home, Services, About, Doctors, Blog, and Admin Dashboard. The main header features a large image of medical staff and a text box stating: "Al-Sahel Medical Center is dedicated to the well-being of everyone in the community. Health is our top priority, and our well-equipped medical center is open to all. We operate 16 hours a day, from 8 am to 12 am, ensuring that emergency medical care and first aid are always available to anyone in need." Below this is a "Make An Appointment" button.

The middle section contains three service cards:
 

- Primary Care:** Comprehensive & accessible healthcare services for individuals and families, focusing on prevention and the treatment of common illnesses and conditions.
- Emergency Cases:** We provide immediate medical attention for emergency cases, ensuring rapid response and expert care when you need it most.
- Online Appointment:** Book your appointment online quickly and easily. Choose your doctor, select a date and time, and get confirmation instantly.

Below the service cards is a "Features" section with a list of services:
 

- First aid services for everyone in the community
- Prescription of medicines to all patients
- Health support for all individuals, including nebulization, sugar tests, blood pressure tests, and oxygen therapy
- Referral of serious patients to authorized hospitals as needed
- Preparation of health cards upon request
- Medical support during events such as sports tournaments, community gatherings, and other occasions
- General health check-ups
- Ensuring an acceptable standard of public health and sanitation across the community
- Organization of vaccination programs for the prevention of communicable diseases
- Arrangement of health camps, blood donation drives, and other healthcare-related campaigns
- Health education and awareness sessions for the community
- Basic laboratory investigations and diagnostic support
- Follow-up care and monitoring for chronic health conditions

The bottom section of the main content area features an "Emergency hotline" with the number **01114785223**. Contact information includes the email [emergency@alshahelmedical.com](mailto:emergency@alshahelmedical.com) and the ambulance number 01147999999.

A "Make An Emergency Appointment" form is shown, containing the following fields:
 

- Full Name (Your Name)
- Phone (Your Phone Number) and Email (Your Email)
- Select Doctor (Please select doctor to visit)
- Date (Appointment Date) and Time (Selectable time)
- Reason (Message)

 A "Make An Appointment" button is located at the bottom of the form.


The footer contains four columns of information:
 

- Contact Us:** Phone: +971 123 456 789, Email: [info@alshahelmedical.com](mailto:info@alshahelmedical.com), Location: Al-Sahel Medical Center, Savar, Dhaka, Contact Form, Feedbacks.
- Our Services:** General Medicine, Pediatrics, Gynecology, Dermatology, Laboratory, Radiology, Physiotherapy.
- Patient Resources:** Book Appointment, Insurance Partners, FAQ, Health Tips, News & Updates, Careers, Privacy Policy.
- Subscribe to Our Newsletter:** Stay updated with our latest news and offers. Enter email address: [input field]. Connect With Us: [social media icons].

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### Our Medical Services

Al-Sahel Medical Center provides comprehensive healthcare services with state-of-the-art facilities and experienced medical professionals dedicated to your health and wellbeing.




#### General Medicine

Our experienced general physicians provide comprehensive primary healthcare services, including routine check-ups, preventive care, diagnosis and treatment of common illnesses, chronic disease management, and health screenings for patients of all ages.




#### Pediatrics

Specialized medical care for infants, children, and adolescents. Our pediatric department offers vaccinations, growth monitoring, developmental assessments, treatment of childhood illnesses, and comprehensive child healthcare from birth to 18 years.




#### Gynecology

Complete women's healthcare services including routine gynecological examinations, prenatal care, family planning, menstrual disorders treatment, pregnancy monitoring, and reproductive health consultations by experienced female gynecologists.




#### Dentistry

Comprehensive dental care services including routine cleanings, dental examinations, cavity treatment, tooth extraction, dental restorations, teeth whitening, and oral health education to maintain optimal dental hygiene and oral health.




#### Laboratory

Modern diagnostic laboratory equipped with advanced technology for accurate blood tests, urine analysis, biochemical tests, microbiological examinations, and various diagnostic tests to support accurate diagnosis and treatment planning.



#### Radiology

Advanced imaging services including X-rays, ultrasound, CT scans, and other radiological examinations performed by certified radiologists using state-of-the-art equipment for accurate diagnosis and treatment monitoring.



#### Physiotherapy

Professional physiotherapy services for rehabilitation, pain management, mobility improvement, sports injury treatment, post-surgical recovery, and physical therapy programs designed to restore function and improve quality of life for patients with various conditions.

### Why Choose Our Services



#### Expert Doctors

Highly qualified and experienced medical professionals dedicated to providing the best healthcare.



#### 24/7 Emergency

Round-the-clock emergency services available for urgent medical care and critical situations.



#### Modern Facilities

State-of-the-art medical equipment and modern facilities for accurate diagnosis and treatment.



#### Compassionate Care

Patient-centered approach with compassionate care and personalized treatment plans.

### Ready to Get Our Medical Care?

Book an appointment with our experienced doctors and get the best medical care at Al-Sahel Medical Center.

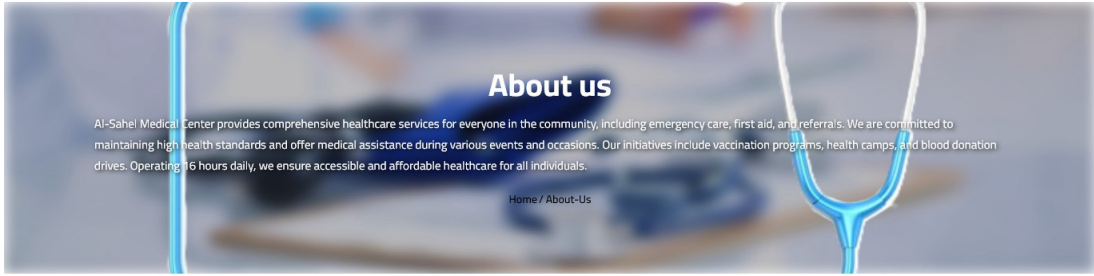
[Book Appointment](#)

### Want to Know More About Us?

Discover our story, mission, and the values that drive our commitment to quality healthcare.

[Visit About Us Page](#)





## About us

Al-Sahel Medical Center provides comprehensive healthcare services for everyone in the community, including emergency care, first aid, and referrals. We are committed to maintaining high health standards and offer medical assistance during various events and occasions. Our initiatives include vaccination programs, health camps, and blood donation drives. Operating 16 hours daily, we ensure accessible and affordable healthcare for all individuals.

[Home / About-Us](#)

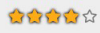


### Facilities

- Al-Sahel Medical Center is located at Hemayetpur, Savar, Dhaka
- General primary checkup for all community members
  - Blood pressure checkup
  - Blood sugar checkup
  - Primary surgery services
  - Emergency medicine and first aid
  - IV normal saline administration
  - Comprehensive wound dressing (massive and general)
  - Oxygen inhalation therapy
  - Nebulization support



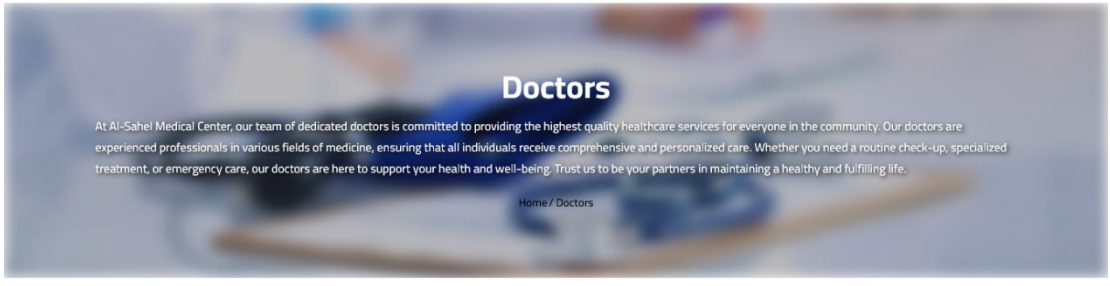
*"I had a great experience with the appointment system. Booking was easy and the staff were very supportive. I appreciate the follow-up after my visit."*



- Md. Imran Hossain -  
Patient



|                                                                                                                                                                                                                                           |                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Contact Us</b></p> <p>Phone: +971 123 456 789<br/>             Email: info@alsahelmedical.com<br/>             Location: Al-Sahel Medical Center, Savar, Dhaka<br/> <a href="#">Contact Form</a><br/> <a href="#">Feedbacks</a></p> | <p><b>Our Services</b></p> <p>General Medicine<br/>             Pediatrics<br/>             Gynecology<br/>             Dentistry<br/>             Laboratory<br/>             Radiology<br/>             Physiotherapy</p> | <p><b>Patient Resources</b></p> <p><a href="#">Book Appointment</a><br/> <a href="#">Insurance Partners</a><br/> <a href="#">FAQ</a><br/> <a href="#">Health Tips</a><br/> <a href="#">News &amp; Updates</a><br/> <a href="#">Careers</a><br/> <a href="#">Privacy Policy</a></p> | <p><b>Subscribe to Our Newsletter</b></p> <p>Stay updated with our latest news and offers.</p> <div style="border: 1px solid #ccc; padding: 5px; width: 100%;"> <input type="text" value="Enter email address"/> </div> <p style="text-align: center;">→</p> <p><b>Connect With Us</b></p> <p><a href="#">f</a> <a href="#">t</a> <a href="#">in</a> <a href="#">v</a> <a href="#">p</a> <a href="#">e</a></p> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



# Doctors

At Al-Sahel Medical Center, our team of dedicated doctors is committed to providing the highest quality healthcare services for everyone in the community. Our doctors are experienced professionals in various fields of medicine, ensuring that all individuals receive comprehensive and personalized care. Whether you need a routine check-up, specialized treatment, or emergency care, our doctors are here to support your health and well-being. Trust us to be your partners in maintaining a healthy and fulfilling life.

Home / Doctors

## Medcare Experience Doctors

We have 2 Doctors, one Physiotherapist, and 3 medical assistants

|                                                                          |                                                                              |                                                                                    |
|--------------------------------------------------------------------------|------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| <p><b>Dr Ayesha Akhter</b><br/>Medical Officer</p> <hr/> <p>555-9012</p> | <p><b>Sushanta Kumar Ghose</b><br/>Physiotherapist</p> <hr/> <p>555-9032</p> | <p><b>Dr. Md. Fazlay Rabbi Rakib</b><br/>Medical Officer</p> <hr/> <p>555-9027</p> |
|--------------------------------------------------------------------------|------------------------------------------------------------------------------|------------------------------------------------------------------------------------|

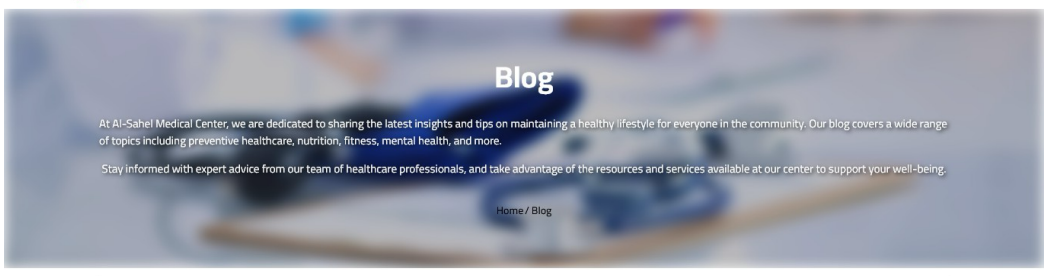
Emergency hotline

# 01114785223

Email: [emergency@alsahelmedical.com](mailto:emergency@alsahelmedical.com)  
Ambulance Hotline Number: 01147999999



|                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                        |                                                                                                                                                                                                                                       |                                                                                                                                                                                                                      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Contact Us</b></p> <p>Phone: +971 123 456 789<br/>Email: <a href="mailto:info@alsahelmedical.com">info@alsahelmedical.com</a><br/>Location: Al-Sahel Medical Center, Savar, Dhaka<br/><a href="#">Contact Form</a><br/><a href="#">Feedbacks</a></p> | <p><b>Our Services</b></p> <ul style="list-style-type: none"> <li>General Medicine</li> <li>Pediatrics</li> <li>Gynecology</li> <li>Dentistry</li> <li>Laboratory</li> <li>Radiology</li> <li>Physiotherapy</li> </ul> | <p><b>Patient Resources</b></p> <ul style="list-style-type: none"> <li>Book Appointment</li> <li>Insurance Partners</li> <li>FAQ</li> <li>Health Tips</li> <li>News &amp; Updates</li> <li>Careers</li> <li>Privacy Policy</li> </ul> | <p><b>Subscribe to Our Newsletter</b></p> <p>Stay updated with our latest news and offers.</p> <p><input type="text" value="Enter email address"/></p> <p>&gt;</p> <p><b>Connect With Us</b></p> <p>f t in 3 p 6</p> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



At Al-Sahel Medical Center, we are dedicated to sharing the latest insights and tips on maintaining a healthy lifestyle for everyone in the community. Our blog covers a wide range of topics including preventive healthcare, nutrition, fitness, mental health, and more.

Stay informed with expert advice from our team of healthcare professionals, and take advantage of the resources and services available at our center to support your well-being.

[Home / Blog](#)

- [All](#)
- [Health](#)
- [Skin](#)
- [Hair](#)
- [Heart](#)
- [General](#)
- [Kidney](#)

### All Blogs

**Heart Health Myths Debunked**  
Uncover the truth behind popular heart health myth...

22 Jul, 2024    Heart    33

**Kidney Care Essentials**  
Discover essential habits and lifestyle changes to...

22 Jul, 2024    Kidney    34

**Recognizing Early Signs of Stroke**  
Learn how to identify the early warning signs of s...

22 Jul, 2024    Heart    33

**Managing High Blood Pressure**  
Practical strategies and medical advice for contro...

22 Jul, 2024    Heart    33

**Hair Loss: Causes and Solutions**  
An in-depth look at the most common causes of hair...

22 Jul, 2024    Hair    33

**Healthy Eating for a Strong Heart**  
Explore heart-friendly diets, foods to avoid, and...

22 Jul, 2024    Heart    33

**General Wellness Tips for Busy People**  
Simple and effective wellness tips for maintaining...

22 Jul, 2024    General    33

**Understanding Cholesterol Levels**  
A beginner's guide to cholesterol, its impact on h...

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**Kidney Stones: Prevention and Treatment**  
Learn about the causes of kidney stones, preventin...

22 Jul, 2024    Kidney    33

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**Our Services**

General Medicine  
Pediatrics  
Gynecology  
Dentistry  
Laboratory  
Radiology  
Physiotherapy

**Patient Resources**

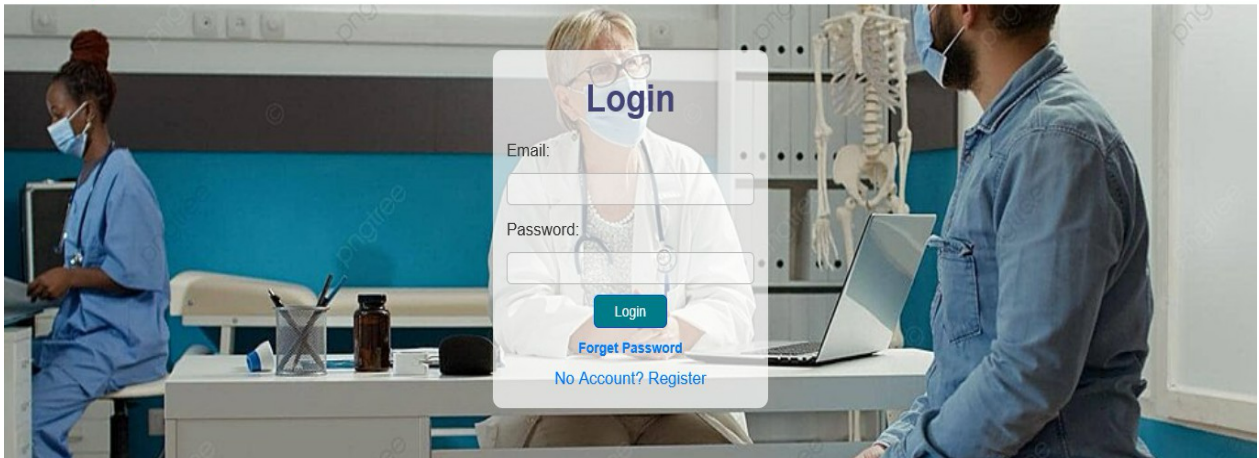
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[Health Tips](#)  
[News & Updates](#)  
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### Subscribe to Our Newsletter

Stay updated with our latest news and offers.



### Connect With Us



Hemayetpur, Savar, Dhaka    Everyday - 8:00AM - 11:59PM    [f](#) [t](#) [in](#) [v](#) [p](#) [globe](#)

**AL-SAHEL MEDICAL CENTER**    [Home](#) [Services](#) [About](#) [Doctors](#) [Blog](#) [Login](#)

### Register

Name:

Email:

Password:

[Register](#)

[Already have an account? Login](#)

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**Al-Sahel Medical Center**

- [Profile](#)
- [Health Profile](#)
- [Ask A Question](#)
- [Appointment](#)
- [Prescription](#)

[Logout](#)

## Patient Dashboard

Welcome, Patient!

PRFL

Home > Patient Dashboard > Profile

User Photo

**Patient!**  
Patient of Al-Sahel Health Center

[Website](#) patient!

[Twitter \(X\)](#) @\_patient!

[Instagram](#) patient!

[Facebook](#) patient!

|           |                   |
|-----------|-------------------|
| Full Name | Patient!          |
| Gender    | male              |
| Email     | patient@gmail.com |
| Mobile    | 0190000001        |
| Address   | Dhaka, Bangladesh |

[Edit](#)

AI-Sahel Medical Center

- Profile
- Health Profile
- Ask A Question
- Appointment
- Prescription

Logout

Home > Patient Dashboard > Health Profile

### Patient Health Profile [Edit](#)

|                                          |                                                 |
|------------------------------------------|-------------------------------------------------|
| <b>Age</b><br>25 years                   | <b>Weight</b><br>60 kg                          |
| <b>Height</b><br>160 cm                  | <b>Blood Pressure</b><br>220/120 mmHg           |
| <b>Blood Group</b><br>A+                 | <b>Allergy Condition</b><br>None                |
| <b>BML<sup>2</sup></b><br>Normal [23.44] | <b>BMR<sup>2</sup></b><br>1,605.00 calories/day |

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AI-Sahel Medical Center

- Profile
- Health Profile
- Ask A Question
- Appointment
- Prescription

Logout

Patient Dashboard  
Welcome, Patient1

PRFI

Home > Patient Dashboard > New Question

### Ask doctor a Question

Your name  Your Email

Please select doctor to Ask

Subject

Your Question

[Submit The Question](#)

AI-Sahel Medical Center

- Profile
- Health Profile
- Ask A Question
- Appointment
- Prescription

Logout

Patient Dashboard  
Welcome, Patient1

PRFI

Home > Patient Dashboard > Appointment > New

### Book an Appointment

Please select doctor to visit

Patient1  25

01900000001  patient@gmail.com

Appointment Date  Suitable time

Reason

[Make an Appointment](#)

**AI-Sahel Medical Center**

- [Profile](#)
- [Health Profile](#)
- [Ask A Question](#)
- [Appointment](#)
- [Prescription](#)

## Patient Dashboard

Welcome, Patient!

PRFL

Home > Patient Dashboard > Appointment > List

5 entries per page
Search:

| SL | Doctor           | Reason | Date          | Time        | Status  |  |
|----|------------------|--------|---------------|-------------|---------|--|
| 1  | Dr Ayesha Akhter |        | 22 15-07-2024 | 06:54:00 AM | Pending |  |

Showing 1 to 1 of 1 entry

« < 1 > »

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**AI-Sahel Medical**

- [Home Page](#)
- [Dashboard](#)
- HOSPITAL
  - [Doctors](#)
  - [Patients](#)
  - [Appointment List](#)
  - [Add New Appointment](#)
  - [List of Appointment](#)
  - [Invoices](#)
  - [Prescription](#)
  - [Settings](#)

user avatar  
Admin

Create Appointment | [Create Appointment](#)

BOOK APPOINTMENT

Patient

Doctor

Pick a Date

Time Picker

Reason

[Submit Form](#)

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# CHAPTER 7 : PROJECT SUMMARY

Sure! Here's a tailored version for your **AL-Sahel Medical Center Management System** project, following the same structure and headings:

## 7.1 Overview

The **AL-Sahel Medical Center Management System** is a comprehensive web application designed to automate and streamline the healthcare processes of the medical center. It replaces manual and semi-digital workflows with a centralized platform that manages patient registration, appointment scheduling, doctor management, prescription handling, billing, and content management. The system enhances accessibility by offering responsive interfaces suitable for desktops, tablets, and mobile devices, ensuring patients, doctors, and administrators have role-specific dashboards and features. Key features include:

- Multi-role user registration and authentication for Admins, Doctors, and Patients.
- Real-time appointment booking with a visual calendar for patients and doctors.
- Secure storage and access of medical records and prescriptions.
- Automated invoice generation and management.
- CMS for managing health blogs, Q&A, and website content.

## 7.2 Achievements

The project successfully implements all primary functional requirements, including:

- Role-based registration and login workflows for Admin, Doctor, and Patient.
- Appointment creation, viewing, and management with calendar integration.
- Secure prescription creation by doctors and patient access to prescriptions.
- Invoice generation and viewing for billing transparency.
- Admin panel for comprehensive management of patients, doctors, appointments, and website content.
- Responsive design ensuring usability across multiple devices.

## 7.3 Limitations

Despite meeting its core objectives, the system has some limitations:

- Limited advanced analytics and reporting features for Admin users.
- No integrated telemedicine or remote consultation capabilities yet.

- Role and permission management is basic and not fully dynamic.
- Minimal customization options for user dashboards and notifications.
- No integrated machine learning or AI for predictive health insights or appointment optimization.

## **7.4 Future Enhancement**

To improve system scalability, user experience, and functionality, the following enhancements are planned:

- Advanced Role and Permission Management allowing dynamic updates by Admin.
- Telemedicine integration for virtual patient-doctor consultations.
- Enhanced analytics dashboards with real-time data visualizations for Admin.
- Customizable notifications and reminders through email and SMS.
- Patient self-service portals with appointment rescheduling and detailed medical history.
- Integration with external health databases and insurance providers.
- Mobile app development for easier access and better offline capabilities.

## **7.5 Conclusion**

The AL-Sahel Medical Center Management System is a significant step toward digitizing healthcare operations at the center. By automating essential workflows and providing a unified platform for patients, doctors, and administrators, it improves efficiency, reduces errors, and enhances user satisfaction. While there is room for further improvements and advanced features, the system currently offers a reliable and scalable foundation for future growth and modernization in healthcare service delivery.

# REFERENCES

## 1. Laravel Framework

- **Official Documentation**

<https://laravel.com/docs>

Comprehensive guide covering routing, middleware, authentication, database, Eloquent ORM, and more.

- **Laravel Authentication (Breeze, Jetstream)**

<https://laravel.com/docs/9.x/starter-kits>

Useful for implementing role-based user authentication (Admin, Doctor, Patient).

- **Laracasts (Video Tutorials)**

<https://laracasts.com/>

Excellent resource for learning Laravel best practices and advanced techniques.

## 2. XAMPP (Local Development Environment)

- **XAMPP Official Website**

<https://www.apachefriends.org/index.html>

Popular local server for PHP and MySQL to run Laravel projects locally.

- **How to Install Laravel on XAMPP (Tutorial)**

<https://www.positronx.io/how-to-install-laravel-on-xampp-windows/>

## 3. GitHub Medical System Repositories (Open Source Examples)

- [Hospital Management System \(Laravel\)](#)

Open source Laravel-based hospital management system with appointment and user management.

- [Clinic Management System](#)

Simple clinic management system with patient registration, appointments, and billing.

- [Medical Appointment System](#)

Example of Laravel-based appointment scheduling and user role management.

## 4. Bootstrap (UI Framework)

- **Bootstrap Official Documentation**

<https://getbootstrap.com/docs/5.3/getting-started/introduction/>

For building responsive, mobile-first layouts and components.

- **Bootstrap Components for Medical Templates**

<https://bootstrapmade.com/bootstrap-medical-templates/>

Ready-made medical templates that can be adapted for your project UI.

## 5. W3Schools (General Web Dev Tutorials)

- **PHP and MySQL Tutorials**

<https://www.w3schools.com/php/>

<https://www.w3schools.com/mysql/>

- **HTML, CSS, JavaScript Basics**

<https://www.w3schools.com/html/>

<https://www.w3schools.com/css/>

<https://www.w3schools.com/js/>

- **Bootstrap Tutorials**

<https://www.w3schools.com/bootstrap5/>

## 6. Others

- **Laravel-Excel (Exporting Invoices/Reports as PDF/Excel)**

<https://laravel-excel.com/>

- **Full Calendar for Appointment Scheduling UI**  
<https://fullcalendar.io/>
- **Spatie Laravel Permissions Package** (Role & Permission management)  
<https://spatie.be/docs/laravel-permission/v5/introduction>
- **PDF Generation in Laravel (barryvdh/laravel-dompdf)**  
<https://github.com/barryvdh/laravel-dompdf>
- **Laravel Livewire** (For dynamic interfaces without much JS)  
<https://laravel-livewire.com/>

# PLAGIARISM REPORT

212-35-745

## ORIGINALITY REPORT

**11** %

SIMILARITY INDEX

**10** %

INTERNET SOURCES

**1** %

PUBLICATIONS

**8** %

STUDENT PAPERS

## PRIMARY SOURCES

|           |                                                                                                                |      |
|-----------|----------------------------------------------------------------------------------------------------------------|------|
| <b>1</b>  | <a href="https://dspace.daffodilvarsity.edu.bd:8080">dspace.daffodilvarsity.edu.bd:8080</a><br>Internet Source | 4 %  |
| <b>2</b>  | Submitted to Daffodil International University<br>Student Paper                                                | 4 %  |
| <b>3</b>  | Submitted to HELP UNIVERSITY<br>Student Paper                                                                  | <1 % |
| <b>4</b>  | <a href="http://docta.ucm.es">docta.ucm.es</a><br>Internet Source                                              | <1 % |
| <b>5</b>  | <a href="http://www.karunya.edu">www.karunya.edu</a><br>Internet Source                                        | <1 % |
| <b>6</b>  | <a href="http://123dok.com">123dok.com</a><br>Internet Source                                                  | <1 % |
| <b>7</b>  | Submitted to Institute of Technology, Nirma University<br>Student Paper                                        | <1 % |
| <b>8</b>  | Submitted to University of Essex<br>Student Paper                                                              | <1 % |
| <b>9</b>  | Submitted to Higher Education Commission Pakistan<br>Student Paper                                             | <1 % |
| <b>10</b> | Submitted to RMIT University<br>Student Paper                                                                  | <1 % |
| <b>11</b> | <a href="http://crackhow4.com">crackhow4.com</a><br>Internet Source                                            | <1 % |
| <b>12</b> | Submitted to University of Technology, Sydney<br>Student Paper                                                 | <1 % |
| <b>13</b> | <a href="http://www.bartleby.com">www.bartleby.com</a><br>Internet Source                                      | <1 % |
| <b>14</b> | <a href="http://gcris.lyte.edu.tr">gcris.lyte.edu.tr</a>                                                       |      |

|    |                                                                                           |      |
|----|-------------------------------------------------------------------------------------------|------|
|    | Internet Source                                                                           | <1 % |
| 15 | <a href="http://www.khalsacollege.edu.in">www.khalsacollege.edu.in</a><br>Internet Source | <1 % |
| 16 | <a href="http://www.scoop.it">www.scoop.it</a><br>Internet Source                         | <1 % |
| 17 | <a href="http://arxiv.org">arxiv.org</a><br>Internet Source                               | <1 % |
| 18 | <a href="http://technews.hisoft.pk">technews.hisoft.pk</a><br>Internet Source             | <1 % |
| 19 | <a href="http://tsecurity.de">tsecurity.de</a><br>Internet Source                         | <1 % |

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# LIBRARY CLEARANCE

# ACCOUNT CLEARANCE

The screenshot shows the student portal dashboard for Samrose Hossain Sahel (ID: 212-35-745). The dashboard displays financial summary cards for Total Payable, Total Paid, Total Due, and Total Other. Below these are sections for 'Today's Routine - Monday' and 'Semester Wise Result'.

| Category      | Amount     |
|---------------|------------|
| Total Payable | 745,200.00 |
| Total Paid    | 745,202.00 |
| Total Due     | -2.00      |
| Total Other   | 2,000.00   |

**Today's Routine - Monday**  
No routine available for today.

**Semester Wise Result**