Patient Managment System Requirements Specification

Version 1.0

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• Executive Summary

•.1 *Project Overview*

- *As a group, we collectively decided to undertake a topic for our project, focusing on hospital management systems. Our decision stemmed from a thorough consideration of various factors, each contributing to the richness and complexity of this particular domain.*
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- Firstly, the diverse nature of hospital management systems presents an excellent opportunity for our team to delve into a diverse array of functionalities and requirements. From live care, emergency services, personal file, book appointments, lab results, online payment, blood donation, medicine prescription, personal appointments, home healthcare, sick leave, monthly report, reviewing medical staff, asking your doctor, my family, help(clinking smart devices, etc. this platform seamlessly integrates all essential hospital management tools and features into one cohesive system, ensuring all your needs are efficiently met.
- The integration of various functionalities within the hospital management system optimizes administrative workflows by automating tasks like appointment scheduling, record-keeping, and billing. This significantly reduces manual data entry and paperwork, freeing up valuable time and effort for healthcare staff. By consolidating and digitizing these processes, the system eliminates the need for patients and staff to navigate multiple systems or handle physical paperwork separately. This streamlined accessibility ensures a smoother healthcare journey for all parties involved. Additionally, the integration of communication tools fosters seamless interaction among medical staff, patients, and their families. The enhanced communication promotes better coordination and ultimately leads to improved care delivery without unnecessary repetition.
- *In essence, our decision to focus on hospital management systems for our software engineering modeling and design project reflects our commitment to optimizing healthcare delivery, enhancing patient experiences, and staying at the forefront of advancements in the field. By embarking on this journey together, we are committed to tackling the challenges ahead with*

Stakeholders

The real-world relevance of healthcare underscores the importance of our project. The opportunity to develop software solutions that can directly impact patient care, operational efficiency, and administrative processes is both intellectually stimulating and socially significant. By engaging with stakeholders and understanding their needs, we aim to craft a solution that not only meets the technical requirements but also aligns with the broader goals of improving healthcare delivery. Now that we have addressed stakeholders, let's identify a few specific ones:

- Patients
- Medical Staff
- Hospital administration
- Healthcare regulatory bodies
- Blood banks and donor organizations
- Emergency service providers

- Legal advisors
- Government Health Department
- Quality Assurance Organizations
- Health Information Exchanges
- Patient family members /caregivers
- Emergency Response Teams
- Health Information Technology Vendors
- Medical Ethics Board
- Technology Providers
- *enthusiasm, creativity, and a shared sense of purpose.*

●.2 *Purpose and Scope of this Specification*

In Scope This document addresses requirements related to the initial phase of the patient management system project, specifically focusing on:

Emergency Services: Development of modules to manage immediate healthcare responses, including real-time updates and patient tracking.

Personal and Medical File Management: Implementation of secure and comprehensive records management for personal and medical information.

Appointment Booking and Scheduling: Systems for managing patient appointments, including scheduling, rescheduling, and cancellation processes. Lab Results Management: Integration of laboratory services within the system to ensure timely and secure access to medical test results.

Blood Donations Management: Functionalities to handle blood donation processes, including donor registration, donation tracking, and inventory management. Out of Scope The following items are out of scope for the initial phase of the project but may be considered for future development: Advanced **Home Healthcare Modules:** Development of extensive in-home healthcare functionalities, including remote monitoring and home care staff management. Extensive Custom Reporting Tools: While basic reporting like monthly reports is in scope, advanced customizable reporting tools for analytics will be considered in later phases. Integration with External Healthcare Systems: Interfacing with other healthcare systems and third-party services is planned for subsequent phases to ensure initial focus on core functionalities.

Sick Leave Management: Systems to process and track patient sick leave requests and approvals, including integration with employer systems where applicable.

out of scope

Pregnancy tracker This feature is designed to assist expectant mothers in monitoring and tracking various aspects of their pregnancy journey. It may include tools for tracking prenatal appointments, fetal development milestones, symptoms, nutrition, weight gain, and contractions. Additionally, it might offer educational resources, tips, and personalized insights to support women throughout their pregnancy and prepare them for childbirth.

Water Tracker functionality allows patients to monitor their daily water intake and set hydration goals. It may include features such as setting reminders to drink water at regular intervals, tracking different types of beverages consumed, and providing insights into the importance of adequate hydration for overall health.

Vital Signs Tracking: This feature allows monitoring and recording of key patient physiological parameters, including heart rate, blood pressure, temperature, respiratory rate, and oxygen saturation. It helps healthcare providers track condition changes over time and intervene when necessary. Users can view charts showing vital signs trends and historical data for easy interpretation and comparison. Additionally, a built-in BMI calculator computes Body Mass Index from user-entered height and weight, offering instant feedback on weight status and health classification.

Health Calculators The system should offer patients personalized insights into various aspects of their health. Patients can input relevant information such as weight, height, age, and activity level to generate useful metrics like BMI, BMR, calories, ideal body weight, body fat, and carbohydrate-protein fat.

For female patients, there is a category that provides features to keep track of their pregnancy and also their ovulation.

My tracker The system should allow the patient to have a tracker that is connected to the the hospital containing any relevant information regarding their health

The system should provide patients access to manually input their health information any time they deem fit

The system should also allow users to give relevant doctors access to their health tracker so they can view it

• Product/Service Description

The Hospital Management System (HMS) is a comprehensive solution designed to manage all aspects of a hospital's operations, including patient care, administrative processes, and medical records management. Inspired by the functionalities of the Dr. Sulaiman Al Habib Medical Group's application, this system aims to enhance the efficiency, accuracy, and quality of healthcare delivery. This section outlines the general factors influencing the

product and its requirements, providing background information essential for understanding the rationale behind the specific requirements defined later in the document.

●.1 *Product Context*

The Hospital Management System (HMS) is not a standalone product; it is designed to interface with a variety of related systems and external entities to ensure seamless healthcare delivery and administrative efficiency. Below is an overview of the product context, illustrating its relationships with other systems and external interfaces:

Relationship with Other Products

Electronic Health Record (EHR) Systems: The HMS integrates with existing EHR systems to streamline patient data management. This integration ensures that patient records are updated in real-time, enhancing the accuracy and availability of critical medical information.

Laboratory Information Management Systems (LIMS): The system interfaces with LIMS to manage and track laboratory tests and results. This connection ensures that test results are efficiently communicated to healthcare providers and incorporated into patient records.

Pharmacy Management Systems: Integration with pharmacy systems allows for efficient prescription management, inventory control, and medication dispensing processes. This reduces medication errors and ensures timely patient care.

Billing and Insurance Systems: The HMS connects with billing and insurance systems to automate the billing process, insurance claims, and payment tracking. This integration facilitates financial management and improves the accuracy of billing operations.

Self-Containment

While the HMS relies on integrations with various systems, it is designed to be self-contained in terms of core hospital management functionalities. This includes patient registration, appointment scheduling, medical history management, resource allocation, and administrative tasks.

External Interfaces

Patient Portals: Allow patients to access their medical records, schedule appointments, and communicate with healthcare providers.

Healthcare Providers: Enable doctors, nurses, and administrative staff to manage patient information, schedule resources, and perform their duties efficiently.

Insurance Companies: Facilitate the processing of insurance claims and payment tracking.

Regulatory Bodies: Ensure compliance with healthcare regulations and standards.

By integrating these components and systems, the HMS aims to create a cohesive and efficient environment for hospital management, ultimately improving patient care and administrative processes.

●.2 *User Characteristics (related to dashboard)*

The dashboard component of the Hospital Management System (HMS) is designed to cater to various types of users within the hospital environment. Each user group has distinct needs and characteristics that influence how they interact with the system. Below are the general customer profiles for each type of user who will be using the dashboard:

1. Medical Staff (Doctors, Nurses, Technicians)

- Role: Doctors, nurses, and medical technicians are primary users of the dashboard, utilizing it to access patient information, update medical records, and coordinate care.
- Experience: Most medical staff have several years of experience in their respective fields, with varying levels of familiarity with digital health records and hospital management systems.
- Technical Expertise: While they possess strong medical knowledge, their technical expertise may range from basic to intermediate. Training on the dashboard's functionalities is often necessary.
- General Characteristics:
- Need quick access to patient information and medical history.
- Require real-time updates on patient status and laboratory results.
- Value user-friendly and intuitive interfaces to reduce time spent on administrative tasks.

2. Administrative Staff

- Role: Administrative staff members handle patient registration, appointment scheduling, billing, and other non-medical tasks using the dashboard.
- Experience: These users typically have administrative or clerical backgrounds, with experience in healthcare settings.
- Technical Expertise: Generally possess intermediate technical skills, comfortable with office software and basic IT systems.
- General Characteristics:
- Require efficient tools for managing patient flow and administrative tasks.
- Need accurate and reliable data entry and retrieval systems.
- Prefer interfaces that streamline routine tasks to improve productivity.

3. IT Staff

- Role: IT staff manage the technical aspects of the HMS, ensuring system functionality, security, and integration with other systems.
- Experience: Highly experienced in IT and systems management, with specialized knowledge in healthcare IT.
- Technical Expertise: Advanced technical skills, including knowledge of system administration, cybersecurity, and software maintenance.

- General Characteristics:
- Focus on system reliability, data security, and integration capabilities.
- Require access to detailed system logs, configuration settings, and troubleshooting tools.
- Value systems that support easy maintenance and updates.

4. Patients

- Role: Patients use the dashboard to access their medical records, schedule appointments, and communicate with healthcare providers.
- Experience: Experience varies widely; some patients are familiar with digital health tools, while others may be new to using such systems.
- Technical Expertise: Ranges from novice to intermediate. Older patients or those less familiar with technology may require additional support.
- General Characteristics:
- Seek clear and straightforward interfaces.
- Need accessible and easy-to-understand information.
- Value features that allow for convenient interaction with healthcare providers.
- 5. Hospital Management
- Role: Hospital management includes executives and department heads who use the dashboard for oversight and strategic planning.
- Experience: Experienced in healthcare administration and management, with a focus on operational efficiency and quality of care.
- Technical Expertise: Intermediate to advanced, comfortable with data analytics and reporting tools.
- General Characteristics:
- Require comprehensive reports and analytics to inform decision-making.
- Need tools that support resource allocation, performance tracking, and compliance monitoring.
- Value dashboards that provide a high-level overview with the ability to drill down into specific details.
  By understanding the diverse needs and characteristics of these user groups, the HMS dashboard can be designed to meet the specific requirements of each, ensuring a more efficient and user-friendly experience for all stakeholders involved.

•.3 *Assumptions*

The development and implementation of the Hospital Management System (HMS) are based on several key assumptions. These assumptions affect the requirements and, if altered, could necessitate changes in the requirements specifications. Below are the critical assumptions:

1. Availability of Modern Equipment

- It is assumed that the hospital has access to modern computers, servers, and networking equipment to support the HMS.

- If this equipment is not available, the system's performance and functionality could be compromised, requiring adjustments in the requirements.

2. User Expertise

- It is assumed that the users, including medical staff, administrative staff, IT staff, and patients, possess a baseline level of technical proficiency appropriate for their roles.

- Training programs will be provided to bridge any gaps in expertise, especially for those less familiar with digital systems.

3. Internet and Network Connectivity

- It is assumed that the hospital has reliable internet and internal network connectivity to support the real-time operations of the HMS.

- In case of inadequate connectivity, requirements for offline functionalities and data synchronization would need to be specified.

4. Operating System and Software Environment

- It is assumed that the hospital's IT infrastructure supports the required operating systems and software environments necessary for the HMS.

- If specific operating systems or software are unavailable, the requirements would need to be adapted to the available technology stack.

5. Data Security and Privacy Compliance

- It is assumed that the hospital complies with relevant data security and privacy regulations (e.g., HIPAA, GDPR).

- Any changes in regulatory requirements would necessitate corresponding updates to the system’s security and privacy features.

6. Integration with Existing Systems

- It is assumed that the HMS can be integrated with existing hospital systems (EHR, LIMS, pharmacy management, billing systems) without major compatibility issues.

- If integration proves more complex than anticipated, additional requirements for custom interfaces or middleware may be needed.

7. Budget and Resource Availability

- It is assumed that there are adequate budgetary and human resources allocated for the development, implementation, and maintenance of the HMS.

- Any constraints in budget or resources could impact the scope and timelines of the project, requiring revisions to the requirements.

8. Stakeholder Support

- It is assumed that there is strong support from hospital management and key stakeholders for the implementation of the HMS.

- If stakeholder support is lacking, requirements for stakeholder engagement and change management processes would need to be included.

9. Training and Support Infrastructure

- It is assumed that there will be infrastructure in place to provide ongoing training and technical support to all users of the HMS.

- Without such infrastructure, additional requirements for user training modules and support services would be necessary.

10. Scalability and Future-Proofing

- It is assumed that the HMS will be designed to be scalable and adaptable to future technological advancements and increases in user load.

- If scalability cannot be ensured, requirements for system upgrades and capacity planning will need to be detailed.

These assumptions form the foundation for the requirements specifications of the HMS. Should any of these assumptions prove invalid, a re-evaluation of the requirements will be necessary to ensure the system meets the hospital's needs effectively.

•.4 *Constraints*

The design and implementation of the Hospital Management System (HMS) are subject to several constraints. These constraints limit the design options and must be carefully considered to ensure the system meets all necessary requirements and operates effectively within the given environment. Below are the key constraints:

1. Parallel Operation with an Old System

- Legacy System Integration: The HMS must operate in parallel with the existing hospital management system during the transition period. This requires seamless integration and data synchronization between the old and new systems.

- **Data Migration**: Efficient and accurate data migration processes must be established to transfer historical data from the old system to the new HMS without disrupting ongoing operations.

2. Audit Functions

- Audit Trail: The HMS must include comprehensive audit trail functionality to log all user activities, including access to patient records, modifications to data, and administrative actions.

- Log Files: The system must generate and maintain detailed log files for monitoring, troubleshooting, and compliance purposes. These logs should be easily accessible for review by authorized personnel.

3. Access, Management, and Security

- User Authentication and Authorization: Robust authentication and authorization mechanisms must be in place to ensure that only authorized users have access to sensitive data and system functionalities. This includes role-based access control (RBAC) to limit user permissions based on their roles within the hospital.

- Data Encryption: Sensitive patient data must be encrypted both in transit and at rest to protect against unauthorized access and data breaches.

- Compliance with Regulations: The HMS must comply with relevant data protection and privacy regulations (e.g., HIPAA, GDPR). This includes implementing necessary safeguards and obtaining required certifications.

4. Criticality of the Application

- High Availability: The HMS is a mission-critical application that must be highly available, with minimal downtime. This requires implementing redundant systems and failover mechanisms to ensure continuous operation.

- Real-time Performance: The system must provide real-time performance for critical operations such as patient data retrieval, appointment scheduling, and emergency response.

5. System Resource Constraints

- Hardware Limitations: The HMS must operate efficiently within the hardware constraints of the hospital's IT infrastructure. This includes limitations on disk space, memory, and processing power.

- Scalability: The system must be designed to scale with the hospital's needs, allowing for the addition of new users, departments, and functionalities without significant performance degradation.

6. Other Design Constraints

- Design Standards: The HMS must adhere to established design standards and best practices in software development. This includes following coding standards, using appropriate design patterns, and ensuring maintainability.

- Programming Language and Framework: The system must be developed using specific programming languages and frameworks as dictated by the hospital's IT strategy. This could include requirements to use languages such as Java, Python, or frameworks like Spring or Django.

- User Interface Design: The user interface must be designed with usability in mind, following principles of user-centered design to ensure it is intuitive and accessible for all user groups.

By considering these constraints, the design and development of the HMS can be guided to ensure that the final product meets all operational, regulatory, and user requirements while functioning effectively within the given limitations.

•.5 *Dependencies*

The development and implementation of the Hospital Management System (HMS) are influenced by several dependencies. These dependencies affect the requirements and must be managed carefully to ensure the successful completion and operation of the system. Below are the key dependencies:

1. Data Integration and Synchronization

- Daily Data Downloads: The HMS requires a daily download of data from existing systems such as the Electronic Health Record (EHR) system, Laboratory Information Management System (LIMS), and Pharmacy Management System. This ensures that patient information, lab results, and medication data are up-to-date.

- Real-time Data Synchronization: Continuous synchronization with external systems is necessary to maintain data consistency and availability across the HMS and other integrated systems.

2. Module Development Sequence

- Sequential Module Development: Certain modules of the HMS are dependent on the completion of others before they can be built. For example:

 - Patient Registration Module must be completed before the **Appointment Scheduling Module** can be fully developed, as scheduling relies on patient data.

- Medical Records Management Module needs to be developed before the **Billing Module**, as billing processes depend on accurate and complete patient records.

3. Third-Party Services and APIs

- External APIs: The HMS depends on third-party services and APIs for functionalities such as insurance verification, payment processing, and telemedicine services. These external dependencies must be reliable and well-documented.

- Service Level Agreements (SLAs): The performance and availability of third-party services are governed by SLAs, which need to be met to ensure the HMS operates smoothly.

4. Regulatory Compliance

- Compliance Requirements: The system must comply with healthcare regulations and standards (e.g., HIPAA, GDPR). This dependency requires ongoing monitoring of regulatory changes and timely updates to the system to maintain compliance.

- Certification Processes: Obtaining necessary certifications for data security and privacy is a dependency that must be addressed early in the development process.

5. Hardware and Infrastructure

- IT Infrastructure: The HMS is dependent on the availability and reliability of the hospital's IT infrastructure, including servers, network equipment, and storage solutions. Any upgrades or changes to this infrastructure need to be planned and executed before the deployment of the HMS.

- Hardware Compatibility: Ensuring that the HMS is compatible with existing hardware is essential. This includes verifying that the system can run efficiently on available computers and mobile devices used by staff and patients.

6. Staff Training and User Adoption

- Training Programs: Successful implementation of the HMS depends on the development and execution of comprehensive training programs for all user groups. Users need to be proficient with the new system to ensure a smooth transition and effective use.

- User Feedback: Collecting and incorporating user feedback during the development process is crucial to ensure the system meets the needs of its users. This dependency requires iterative testing and refinement based on user input.

7. Project Management and Coordination

- Project Milestones: The development of the HMS is dependent on meeting key project milestones and deadlines. Delays in any part of the project can affect subsequent stages and the overall timeline.

- Resource Allocation: Adequate allocation of resources, including personnel, budget, and time, is essential for the successful development and implementation of the HMS. This requires careful planning and coordination among project stakeholders.

By identifying and managing these dependencies, the development team can ensure that the Hospital Management System is built and implemented effectively, meeting all requirements and delivering the intended benefits to the hospital and its stakeholders.

• Requirements

1. ***medical file***
    a. ***Patient Identification:*** *Patients must be properly identified and registered within the system before their electronic health records can be securely stored. This may involve collecting and verifying personal information such as name, surname, gender, and other identifying details.*
    b. ***Availability of System Resources****: The system must have sufficient resources, such as storage capacity and processing power, to securely store and manage electronic health records for each patient. Adequate backup and recovery mechanisms should also be in place to prevent data loss and ensure system availability.*
    c. ***User Authentication and Authorization:*** *Before accessing or updating patient records, healthcare providers must authenticate themselves through the system using valid credentials. They must also have appropriate permissions and authorization to view and modify patient information.*
    d. ***Data Integrity and Security Measures:*** *The system must have robust security measures in place to ensure the confidentiality, integrity, and availability of patient records.*
2. ***Blood donation managment***
    a. ***User Registration****-Patients, donors, healthcare professionals, and administrators must complete the registration process within the app*
    b. ***Database Population****-The app's database must be populated with relevant data, including patient records, donor information, blood inventory, and healthcare professional profiles.*
    c. *This information ensures that users can access accurate data when utilizing the blood donation feature.*
    d. ***Healthcare Provider Authorization****-Healthcare professionals must be authorized to access patient records, manage blood transfusions, and coordinate blood donation activities within the app.*
3. *lab resuslt msanagment*
    a. *Lab Test Order Placed: A healthcare provider has previously placed an order for lab tests for the patient.*
    b. *Results Available in the App: Once the testing process is completed, the results must be made available within the patient-facing app. This ensures that patients can access their lab test results through the Lab Results Management feature.*

4. *sick leave management*
    a. *User Authentication and Authorization-Users, including patients and healthcare providers, must be authenticated and authorized to access the system and submit/approve sick leave requests. This ensures that only authorized individuals can initiate or approve sick leave requests*
    b. *Medical Consultation-The patient may need to consult with a healthcare provider to assess their condition and determine the necessity of taking sick leave. This may involve visiting a doctor's office or consulting remotely through telemedicine services.*
5. *my family*
    a. ***ser Authentication**-The primary user must be authenticated and logged into the healthcare system to access the "My Family" feature. This ensures that only authorized individuals can manage health-related information for their family members.*
    b. ***Existing Patient Profile**-The primary user must have an existing patient profile within the system. This profile serves as the basis for managing health-related information for both the primary user and their family members.*
    c.
    d. ***Consent from Family Members**-The primary user must have consent from their family members to manage their health-related information within the system. This may involve obtaining explicit permission or consent from family members to access and manage their health records.*
6. *allergy list*
    a. *one or more conditions that must be true at the start of use case, from the perspective of this use case.*
7. *medical prescription*
    a. *the health care provider prescribing medication online should be logged in and authenticated*
    b. *The patient must give access must for the healthcare provider medical file to view past medical prescriptions and view any medical history*
    c. *The process should be approved by the legal bodies to abide by regulatory laws and procedures*
8. *staff performance evaluation*
    a. *The patient must authenticate themselves to avoid any misconduct or predujjus against healthcare provideors from outside the hospital patian scope*
    b. *The patient must have visted the doctor before given the option to give him an evaluation*
9. *emergamncy service integration*
    a. *The person requesting the ambulance should have a high priority request level before ordering*
    b. *They should have a medical file inside the hospital system*
10. *my vaccine list*
    a. *The person requesting the ambulance should have a high priority request level before ordering*
    b. *They should have a medical file inside the hospital system*
11. *radiology result*
    a. *Users must have an account on the system*
12. *health summary report*

   a. *1.The patient has a registered account within the app and is logged in.*
   b. *2.The patient has at least one visit recorded in the hospital management system within the past month.*
13. *my tracker*
   a. *1.The patient has a registered account on the app.*
   b. *2.The patient has a compatible health tracker connected to their smartphone.*
   c.
14. *home healthcare coordination*
   a. The patient must have access to the system.
   b. The system must have available doctors registered.
   c. There must be a list of services
15. home healthcare coordination
   a. The patient must have access to the system.
   b. The system must have available doctors registered.
   c. There must be a list of services
16. appointment scheduling
   a. 1.The patient must have access to the hospital management system.
   b. 2.Healthcare providers must have their schedules and availability updated in the system.
   c. 3.Clinics must be operational during the scheduling period.
17. ask your doctor
   a. .The patient has a registered account on the hospital management system's mobile app.
   b. 2.Doctors must be available for consultation
18. help and support integration
   a. .Support resources such as contextual help menus, knowledge base articles, tutorial videos, and patient forums must be available.
   b. 2.Technical providers and support staff must be available to respond to patient inquiries.
19. patirent account
   a. .Authentication services must be integrated into the system.
   b. 2.Biometric verification systems must be available and compatible with the app.
20. health calculator
   a. The patient has an active account on the app.
21. vital sign trackin
   a. *The patient's vital signs data is available (entered manually or via integrated medical devices).*
   b. *The patient's height and weight are documented in the app (for BMI calculation).*
22. *water tracker*
   a. *Patient has logged in in the app.*
   b. *Patient has an active internet connection.*
23. *comprehansive medical check up*
   a. *The patient has a registered account in the hospital system.*
   b. *The system has a defined set of tests included in the comprehensive check-up.*
24. *my todo list*
   a. *Users must have an account on the system.*
25. *privacy policy*

   a. *Users must have an account on the system.*
26. *terms and coonditions*
   a. *The user has launched the app for the first time or has not previously accepted the T&Cs.*
27. *apply for first aid*
   a. *User Authentication and Autherization*
28. *apply for medical refil prescription*
   a. *The patient has a registered account on the app.*
   b. *The patient has a valid prescription for the medication they are requesting a refill for.*
   c. *(Optional) The patient has a linked health card with valid insurance information.*
29. *health card*
   a. *The patient has a registered account on the app.*
   b. *The patient has a valid prescription for the medication they are requesting a refill for.*
   c. *(Optional) The patient has a linked health card with valid insurance information.*
30. *pregnancy tracker*
   a. *The user is a registered user of the hospital app.*
   b. *The user has logged in and their identity is verified.*
31. *apply for voulntary work*
   a. This functionality suggests that the app provides opportunities for users to engage in voluntary work related to healthcare or community service. It may offer a platform for users to discover volunteer opportunities, sign up for specific initiatives or events, coordinate volunteer activities, track their volunteer hours, and connect with other volunteers or organizations involved in charitable work. This feature promotes social responsibility and encourages users to contribute positively to their communities.

●.1 *Functional Requirements*

In the example below, the requirement numbering has a scheme - BR_LR_0## (BR for Business Requirement, LR for Labor Relations). For small projects simply BR-## would suffice. Keep in mind that if no prefix is used, the traceability matrix may be difficult to create (e.g., no differentiation between '02' as a business requirement vs. a test case)

The following table is an example format for requirements. Choose whatever format works best for your project.

For Example:

Requirement	Description	Priority	Date Rvwd
UC01 -View Medical File/Personal File	The system should securely store comprehensive electronic health records for each patient, including medical history, allergies,vital sign tracer , allergy list , lab result , radiology report ,health calculator , my tracer , medications,vaccines,medicine prescription ,monthly reports , sick leaves and treatment plans. It should allow authorized healthcare providers to update the patients information after every new data recorded in real time The system must collect and store users' personal information, including name, surname, gender, profile picture, phone number, nationality and birthday, at the beginning of interaction for identification and customization purposes.	1	23/05/24
UC02 - Blood Donation Management.	The system should manage the end-to-end process of blood donation campaigns in specific given cities,also including donor recruitment, eligibility screening . It responds to patient needs.	2	23/05/24
UC03 - Lab Results Management	The system should facilitate the ordering, tracking, and interpretation of laboratory tests, ensuring timely delivery of results to patients.Using the lab result option we are able to get information about the doctor name , the clinic , general results (its description , values and range) and also special results.	2	23/05/24

Requirement	Description	Priority	Date Rvwd
***UC04* - Sick Leave Management:**.	The system should provide an option for sick leave requests and approvals for patients . Each sick leave should contain the doctor , the clinic , the date and the reason of patient absence request .	5	23/05/24
UC05 - My Family	The system should enable patients to manage health-related information for their family members, including dependent profiles, emergency contacts, and caregiver permissions. It should support access controls, allowing designated individuals to view and manage health records on behalf of family members with appropriate consent.	3	23/05/24
***UC -06* Allergies list**	The system should provide a list of all allergy tests made for the patients a as that are manually imputed by the health care provider The system should also give a list of all the positive test results that the user received from the allergy list	3	23/05/24
***UC-07* Medicine Prescription**	Heathcare providers should be able to electronically prescribe medications with the system f.e dosage specification, route , frequency,duration,r	1	23/05/24

Requirement	Description	Priority	Date Rvwd
UC-08 staff performance evaluation	The system should provide a comprehensive staff performance evaluation module to assess the performance of medical staff. The system should facilitate the collection of feedback from patients through surveys, ratings, and comments.	3	23/05/24
UC - 09 Emergency service integration	The system should include features for prioritizing and managing emergency cases such as, requesting an ambulance , integrating with rapid emergency response systems,ED services (a medical treatment facility specializing in emergency medicine, the acute care of patients who present without prior appointment)	2	23/05/24
UC - 10 MyVaccinesList	*The system should maintain a comprehensive record of all vaccinations received by users, including both mandatory vaccinations administered since birth(early life immunizations) and optional vaccinations(prime immunization).*	3	23/05/24
UC -11 RadiologyResult	*The system should provide users with access to view and manage radiology reports and associated images, facilitating efficient retrieval and interpretation of diagnostic information.*	3	23/05/24

Requirement	Description	Priority	Date Rvwd
UC -12 Healthy Summary Report	*This use case allows patients to access a monthly report summarizing their health ndicators and analysis results from their latest visits, through the app.*	5	23/05/24
UC - 13 My Tracker	*This use case allows patients to manage their health information through a connected tracker and share it with authorized doctors.*	5	23/05/24
UC14 - Home Healthcare Coordination	The system should facilitate accessibility where doctors for specific services such as (laboratory analyzes - radiology - vaccinations -physical therapy), etc go to a patients house and do the procedures requested by this patient.Also the systems offers track of the order log of these requests .	1	23/05/24
JC -16 Ask your Doctor	Patients should have a secure option for asking medical questions and seeking advice from their primary care providers or specialists.This service provides three options : scheduling a consultation call , get consultation in chat , and inquiring information about medications . The system should allow doctors to view patient medical file and prescribe them specific medications for their concerns	2	23/05/24

Requirement	Description	Priority	Date Rvwd
C -17 Help and Support Integration	The system should offer comprehensive help from technical providers and support resources, including contextual help menus, knowledge base articles, tutorial videos, and patient forums.It should provide multi-channel support options, such as live chat, email ticketing, to address patient inquiries and technical issues promptly.	3	23/05/24
JC-18 Patient Account:	The system should implement robust authentication mechanisms, such as multi-factor authentication (MFA) and biometric authentication, to verify the identity of patients accessing sensitive data. patients can identify through Face ID , fingerprint , SMS , Whatsapp .	1	23/05/24
UC -19 Health Calculators	The system enables patients to access a suite of health calculators for personalized health insights. Patients can input data like weight, height, age, activity level, and gender (optional) to calculate metrics like BMI, BMR, ideal body weight, body fat percentage, and macronutrient intake (carbs, protein, fat).	5	23/05/24

Requirement	Description	Priority	Date Rvwd
***UC20-.*Vital Signs Tracking**	This use case allows healthcare providers to monitor and record a patient's vital signs (heart rate, blood pressure, temperature, respiratory rate, oxygen saturation) and view trends over time. It also enables patients to view their own vital signs and calculate their BMI.	5	23/05/24
UC21-.Water Tracker	This use case allows hospitalized patients to monitor their daily water intake and set personal hydration goals. It provides features to set reminders, track beverage types, and access educational content on the importance of hydration.	5	23/05/24

Requirement	Description	Priority	Date Rvwd
UC -15 Appointment Scheduling	This service provides three options : scheduling a consultation call , getting consultation immediately no matter the form, and booking an appointment for check up . The system should allow doctors to view patients' medical files and prescribe them specific medications for their concerns . If the patient wants a face to face consultation The system should allow patients to schedule appointments with specific healthcare providers in different clinics that the hospital provides , based on their availability and specialization. It should support recurring appointments, appointment reminders, and rescheduling/cancellation functionalities. If the patient wants online conversation then the system will provide ask your doctor feature. If the patient wants to book an appointment for check up then the system will provide a check up feature.	1	23/05/24

Requirement	Description	Priority	Date Rvwd
UC22-.Comprehensive Medical Check-Up	This use case describes the process for a patient to apply for a comprehensive medical check-up within the system. He first applies and gets the schedule of the checkup in place and after he finished the checkup he expects the results back.	2	23/05/24
UC -23 MyTodoList	*The system should feature a comprehensive task management module that allows users to create, organize, and track their to-do lists efficiently.*	2	23/05/24
UC -24 Privacy Policy	*This feature encompasses a set of guidelines and procedures governing the collection, use, storage, and disclosure of patient information within the system.*	1	23/05/24
UC -25 Terms & Conditions	*This use case allows a user to review and accept the Terms & Conditions (T&Cs) associated with using the hospital management system app.*	1	23/05/24

Requirement	Description	Priority	Date Rvwd
UC -26 Apply for First Aid Training	*This use case allows users to access educational resources about basic first aid and apply for a formal first aid training program offered by the hospital.*	5	23/05/24
UC -27 Apply for Medication Refill with Reimbursement	*This use case allows a patient to request a refill for a prescribed medication and indicate they would like to be reimbursed for the cost by their insurance provider.*	3	23/05/24
UC -28 Health Card	*This use case describes the functionality of the app's health card feature, which provides users with a digital representation of their medical information.*	1	23/05/24
UC -29 Pregnancy Tracker	*This feature allows expecting mothers to monitor and track various aspects of their pregnancy journey within the hospital app.*	5	23/05/24
UC -30 Applying for voluntary work	*This use case allows users to apply for voluntary work opportunities within the healthcare system or related community service programs.*	5	23/05/24

●.2 *Non-Functional Requirements*

UC01-.View Medical File/Personal File

Performance:

- *The system should have low latency and high availability to ensure healthcare providers can access patient records and personal information quickly and reliably.*
- *Real-time updates to patient information should occur within an acceptable timeframe to ensure healthcare providers have access to the latest data when making medical decisions.*
- *The system should be able to handle concurrent access from multiple healthcare providers without significant degradation in performance.*

Reliability:

- *The system must be highly reliable, with minimal downtime and data loss, to ensure continuous availability of patient records and personal information.*
- *Data backups should be performed regularly to prevent data loss in case of system failures or disasters.*

Usability:

- *The user interface should be intuitive and user-friendly, with clear navigation and easy access to patient records and personal information.*
- *Healthcare providers should be able to quickly locate and retrieve patient information without extensive training or technical expertise.*
- *The system should provide prompts or reminders to healthcare providers for updating patient information in real-time to ensure completeness and accuracy of records.?*

Compliance:

- *The system must comply with relevant healthcare regulations and standards, to ensure the privacy and security of patient records and personal information.*
- *Patient consent should be obtained for collecting and storing personal information, and appropriate measures should be taken to protect patient privacy and confidentiality.*
- *The system should undergo regular security assessments and audits to ensure compliance with regulatory requirements and industry best practices.*

Security:

- *The system must implement encryption mechanisms to ensure the confidentiality of stored electronic health records and personal information.*

UC02 - Blood Donation Management

Appointment Scheduling:
Integration with appointment scheduling to allocate time slots for blood donation sessions and manage donor appointments efficiently.
Lab Results Management:
Compatibility testing of donated blood with recipient blood types requires coordination with laboratory services. Lab results regarding blood compatibility should be accessible within the blood donation management system.
Medicine Prescription:
Blood donors may require specific medications or dietary supplements before or after donation to ensure their well-being.

User Authentication and Authorization:
Access controls should be implemented to manage permissions for blood donation staff, ensuring that only authorized personnel can manage donor recruitment, eligibility screening, and blood availability updates
My Vaccines List:
Donor eligibility screening may involve checking vaccination records to ensure compliance with donor health requirements, such as immunity status for infectious diseases.

Healthy Summary Report & Medical File: Generating health summary reports may depend on the availability and accuracy of data stored in the patient's medical file, including recent visits, test results, and treatments.

UC03 - Lab Results Management

Performance
-The system should respond to user requests for lab results within 5 seconds to ensure a satisfactory user experience.
-The system should be able to handle concurrent requests from multiple users without significant degradation in performance.
Security
-Lab test results must be stored and transmitted securely to protect patient confidentiality and comply with healthcare regulations
-Access to lab results should be restricted to authorized users only, with appropriate authentication and authorization mechanisms in place.
Reliability:
-The system should have a high level of reliability, ensuring that lab results are consistently available and accurate.
-The system should have backup mechanisms in place to prevent data loss in case of system failures or disruptions.
Usability:
-The user interface should be intuitive and easy to navigate, ensuring that patients can easily access and interpret their lab results without requiring extensive training.

UC04 - Sick Leave Management:

-Performance:-The system should process sick leave requests efficiently, with minimal delay, ensuring prompt responses to patient submissions.

-Response time for sick leave request approvals or denials should be within a reasonable timeframe to avoid unnecessary delays for patients and employees.

-Reliability:-The system should be reliable, with minimal downtime and robust error handling mechanisms in place to ensure continuous availability for submitting and processing sick leave requests.

-Sick leave request data should be accurately recorded and securely stored to prevent data loss or corruption.

Security:-Sick leave request data must be protected to ensure confidentiality and integrity. Access controls should be implemented to restrict unauthorized access to patient information.

Usability:-The system should have an intuitive user interface, making it easy for patients and healthcare providers to submit, review, and process sick leave requests.

UC05 - My Family

Performance:

Response Time: The system should respond to user actions within 5 sec, ensuring quick navigation and data retrieval within the "My Family" feature.

Scalability: The system should scale seamlessly to accommodate a growing number of users and family members without degradation in performance.

Reliability:

Availability: The "My Family" feature should be available 24/7, with minimal downtime for maintenance or upgrades.

Security:

Access Control: The feature should enforce role-based access control , ensuring that only authorized users can access and manage health-related information for family members.

Usability:

User Interface: The user interface of the "My Family" feature should be intuitive and user-friendly, allowing primary users to easily navigate and manage health-related information for family members.

UC -06 Allergies list

Performance:

Response Time: The system should respond promptly to patient requests for accessing and viewing vaccination records, ensuring a seamless user experience.

Reliability:

Availability: The system should be available and accessible to patients whenever they need to view their vaccination records, with minimal downtime for maintenance or upgrades.

Security:

Access Control: Patient access to vaccination records should be restricted to authorized users only, with robust authentication mechanisms in place to prevent unauthorized access.

Usability:

User Interface: The patient interface for accessing vaccination records should be intuitive, user-friendly

UC-07 Medicine Prescription

1. *Performance: the system should be able to respond fast enough so that the patient can be updated as soon as possible*
2. *Reliability: The system should be highly reliable, since the doctors can prescribe strong medication that can be negative if an error had occurred.*

3. *Security: the system should be very strong and not be accessed by a lot of individuals to protect patient security and avoid tampering with individuals prescriptions*
4. *Scalability: the system should allow multiple users to use thing functionality. Each user should have their own personal prescription records.*
5. *Usability: The interface of the system should be simple and user friendly for the patients*
6. *Maintainability: the system should be written and organized very well to allow easier maintenance required*

UC-08 staff performance evaluation

1. *Performance: the system should be able to respond fearly quiiiickly to give the patient the notification inorder for them to rate their doctor visit*
2. *Reliability: The system should be reliable to present the correct doctor to rate not allow patients to rate the doctors that they havent visited*
3. *Security: the system should be fearly secure inorder to not allow just anyone to rate all the doctors in the system*
4. *Scalability: the system should be able to collect reviews about the same doctor from multiple patient profiles*
5. *Usability: The interface of the system should be simple and user friendly for the patients in order for them to feel at ease when writing their review*
6. *Maintainability: the system should be written and organized very well to allow easier maintenance required*

UC - 09 Emergency service integration

1. *Performance: the system should be able to respond fast to give the patient the notification so that the ambulace with the healthcare proidors can arrive as soon as possible*
2. *Reliability: The system should be reliable to present the correct doctor to rate not allow patients to order an invalid ambulance*
3. *Security: the system should be fearly secure inorder to not allow just anyone to order and cancel the ambulance requests*
4. *Scalability: the system should be able to allow a fair amount of people to ordar an ambulance*
5. *Usability: The interface of the system should be simple and user friendly for the patients in order for them to feel at ease when requesting an ambulance*
6. *Maintainability: the system should be written and organized very well to allow easier maintenance required*

UC - 10 MyVaccinesList

1. *Performance: The system should display vaccine records quickly, even with large datasets.*
2. *Scalability: The system should be able to handle increasing numbers of vaccine records without performance degradation.*
3. *Reliability: The system should maintain accurate and up-to-date vaccine records.*
4. *Security: User authentication and authorization mechanisms should ensure that only authorized users can access vaccination records.*
5. *Usability: The user interface should be intuitive and easy to navigate for viewing vaccination records.*

6. *Maintainability: The system should be modularized and well-documented for ease of maintenance.*

UC -11 RadiologyResult

1. *Performance: The system should display radiology reports and images quickly, even with large datasets.*
2. *Scalability: The system should be able to handle increasing numbers of radiology reports without performance degradation.*
3. *Reliability: The system should maintain accurate and up-to-date radiology reports.*
4. *Security: User authentication and authorization mechanisms should ensure that only authorized users can access radiology reports.*
5. *Usability: The user interface should be intuitive and easy to navigate for viewing radiology reports.*
6. *Maintainability: The system should be modularized and well-documented for ease of maintenance.*

UC -12 Healthy Summary Report

1. *Performance- The report should load quickly and be easy to access within the app.*
2. *Usability-The report format should be clear, concise, and easy to understand for patients.*
3. *Security-The app should ensure data security and patient privacy according to regulations.*
4. *Reliability-The app should be designed to gracefully handle unexpected errors or interruptions, providing informative error messages to users and minimizing disruptions to their workflow.*
5. *Scalability:-The app should be designed to accommodate an increasing number of users and data volume without experiencing degradation in performance or reliability.*
6. *Maintainability:-The app codebase should be well-organized and documented, following industry best practices and coding standards to facilitate ease of understanding and modification by developers.*

UC - 13 My Tracker

Security: *Patient health data must be encrypted and transmitted securely.*

Availability: *The app and data transmission should be highly available with minimal downtime.*

Performance: *The app should load data quickly and respond to user actions promptly.*

Usability: *The user interface for "My Tracker" should be intuitive and easy to navigate for patients of varying technical abilities.*

UC14 - Home Healthcare Coordination

-Security: Patient health information must be protected following data privacy regulations.
-Performance: The system should respond quickly to patient requests and appointment scheduling.
-Usability: The interface for scheduling home visits should be patient-friendly and easy to navigate for patients.

UC -15 Appointment Scheduling

-Performance: The system should respond promptly to appointment scheduling requests to ensure a seamless patient experience.

-Reliability: The system must accurately reflect the availability of healthcare providers and clinics.

-Security: Patient data should be securely stored and transmitted to maintain confidentiality.

-Usability: The interface should be intuitive and easy to navigate for patients scheduling appointments.

-Scalability: The system should be capable of handling a large number of appointment requests during peak times.

UC -16 Ask your Doctor

Security: Ensure patient data and communication with doctors are encrypted and secure.

-Reliability: The system should be available 24/7 to accommodate patient inquiries.

-Responsiveness: Prompt responses from doctors to patient inquiries.

-Scalability: Ability to handle multiple concurrent consultations and inquiries.

UC -17 Help and Support Integration

Availability: The help and support resources should be accessible 24/7 to accommodate patient inquiries.

-Responsiveness: Support staff should respond to patient inquiries promptly, aiming for minimal response times.

-Scalability: The system should be capable of handling multiple patient inquiries simultaneously across different support channels.

-patient-Friendly Interface: Ensure that help menus, knowledge base articles, and support channels are easily navigable and intuitive for patients.a

UC-18 Patient Account:

Security: Ensure that authentication mechanisms are robust and resistant to unauthorized access attempts.

-Reliability: Authentication processes should be reliable and available to patients whenever access to the system is required.

-Usability: Authentication methods should be patient-friendly and intuitive, providing a seamless patient experience.

-Compatibility: Authentication mechanisms should be compatible with a wide range of devices and operating systems.

UC -19 Health Calculators

Security: Patient data must be securely stored and transmitted using industry-standard encryption protocols.

Performance: The system should respond promptly to user actions and calculations.

Usability: The user interface should be intuitive and easy to navigate for patients of varying technical skills.

Accessibility: The interface should be accessible to users with disabilities, adhering to WCAG standards.

Scalability: The system should be able to handle a growing number of users and data without performance degradation.

UC20-.Vital Signs Tracking

- *The app interface should be user-friendly and accessible for patients with varying technical skills.*
- *The app should be responsive and function smoothly on different mobile devices.*
- *Data privacy: Patient water intake data should be stored securely within the app.*

UC22-.Comprehensive Medical Check-Up

- *The system should be available 24/7 for patients to schedule appointments.*
- *The system should ensure the security and confidentiality of patient data.*
- *The report should be clear, concise, and easy for patients to understand.*

UC -23 MyTodoList

1. *-Performance: The system should respond quickly to user interactions with the task management module.*
2. *-Scalability: The system should be able to handle increasing numbers of tasks without performance degradation.*
3. *-Reliability: The system should reliably store and track user tasks.*
4. *-Security: User authentication and authorization mechanisms should ensure that only authorized users can access task lists.*
5. *-Usability: The user interface should be intuitive and easy to navigate for managing tasks.*
6. *-Maintainability: The system should be modularized and well-documented for ease of maintenance.*

UC -24 Privacy Policy

The privacy policy should be easily accessible to all users. The privacy policy should be written in clear and concise language that is easy for users to understand.

UC -25 Terms & Conditions

- *The T&Cs document should be clear, concise, and easy to understand.*
- *The T&Cs screen should be user-friendly and accessible.*
- *The user's acceptance of the T&Cs should be securely stored.*

UC -26 Apply for First Aid Training

- *The system should be user-friendly and easy to navigate.*
- *The educational content should be up-to-date and accurate.*
- *The application process should be efficient and secure.*
- *The system should send confirmation messages promptly.*

UC -27 Apply for Medication Refill with Reimbursement

- *The system should be secure and protect patient privacy (refer to Privacy Policy).*
- *The system should be responsive and provide timely feedback to the user.*
- *The reimbursement claim process should be clear and transparent.*

UC -28 Health Card

- *The health card information should be displayed clearly and concisely.*
- *The app should ensure secure access and display of health information according to privacy policies (UC #28, UC #29).*
- *The health card should be easily accessible within the app.*

UC -29 Pregnancy Tracker

- *The pregnancy tracker should be user-friendly and easy to navigate.*
- *The app should securely store all pregnancy data in accordance with privacy policies.*

  The data visualization should be clear and easy to understand.

UC -30 Applying for voluntary work

- *The system should be user-friendly and easy to navigate for users applying for volunteer positions.*
- *The application process should be efficient and allow for quick submissions.*
- *The system should securely store user data collected during the application.*

●.2.1 Product Requirements

– Requirements which specify that the delivered product must behave in a particular way e.g. execution speed, reliability, etc.

●.2.1.1 User Interface Requirements

UC01-.Medical File/Personal File

- *1.Logging In: The patient logs in to the patient portal using their credentials, such as a username and password, or through other authentication methods such as biometric authentication (e.g., fingerprint or face recognition).*
- *2.Navigating to Personal Information: Once logged in, the patient navigates to the section of the patient portal where they can view and manage their personal information.*
- *3.Viewing Personal Information: The system displays the patient's personal information, including their name, surname, gender, date of birth, contact information (phone number, email address), nationality, and profile picture.*
- *4.Reviewing Health Information: The patient also has access to their comprehensive electronic health records (EHR) through the patient portal. They can view their medical history, allergies, medications, eye measurements, vaccines, and any past doctor-patient chats.*
- *5.Reviewing Treatment Plans and Reports: Additionally, the patient can review any treatment plans, monthly reports, sick leaves, and appointment timelines associated with their healthcare.*

UC02 - Blood Donation Management

as patients, donors, healthcare professionals, or administrators, access the patient management app.

Users are prompted to authenticate themselves by providing their credentials (username and password) or using biometric authentication methods if available.

Upon successful authentication, users are logged into the app and directed to the appropriate dashboard based on their role.

2.Blood Donation Form Submission

Once logged in, the patient navigates to the blood donation feature within the app.
The patient fills out a form providing essential information for blood donation, including their blood type, any existing medical conditions, history of tattoos or recent surgeries, and other pertinent details

3.Hospital Approval and Notification

The submitted request is received by the hospital or blood donation center staff for review.
Hospital personnel assess the patient's eligibility based on the provided information and blood donation guidelines.
Upon approval of the donation request, the hospital notifies the patient through the app, indicating that their request has been approved and providing further instructions for donation.

4.Donor Appointment Scheduling

Upon receiving the approval notification, the patient can schedule a donation appointment through the app.
The app presents available donation slots based on the hospital's schedule and the patient's preferences.
The patient selects a convenient appointment time and confirms the donation appointment.

5.Blood Donation Process(NOT PART OF APP)

On the scheduled donation date and time, the patient arrives at the designated blood donation center within the hospital.

Hospital staff guide the patient through the blood donation process, ensuring their comfort and safety throughout.
The patient undergoes the blood donation procedure, which typically involves a health screening, blood collection, and post-donation refreshments.
6.Post-Donation Care and Follow-Up
After donating blood, the patient receives post-donation care instructions and advice from healthcare professionals.
The patient's donation status is updated in the app's database, indicating the successful completion of the donation process.
The patient may receive follow-up notifications or reminders for future donation opportunities or health checks, as applicable.

UC03 - Lab Results Management

1.Patient Accesses the App: *The main sequence begins when the patient accesses the healthcare app on their device.*

2.Lab Results Management Selection *Once logged in, the patient navigates to the Lab Results Management section of the app, where they can view their lab test results.*

3.View Available Results: *The patient sees a list of available lab test results.*

4.Select Result for Viewing: *The patient selects a specific lab test result from the list to view more details.*

5.Option to Download or Share Results: *The patient may have the option to download or share the lab test result from within the app, allowing them to keep a copy for their records or share it with their healthcare provider if needed.*

6.Return to Results List or Log Out: *After reviewing the selected lab test result, the patient can choose to return to the list of available results to view additional tests or log out of the app.*

UC04 - Sick Leave Management:

1.Patient Initiates Sick Leave Request*: The main sequence begins when a patient, experiencing illness or medical reasons preventing them from attending an appointment or fulfilling work obligations, initiates a sick leave request through the system.*
2.Submission of Request Details:*The patient provides necessary details for the sick leave request, including the date(s) of absence, reason for the request, and any supporting documentation or justification required.*
3.Routing to Healthcare Provider: *The system routes the request to the designated healthcare provider responsible for approving sick leave requests, typically the patient's attending physician or primary care provider.*
4.Healthcare Provider Review:*The healthcare provider reviews the sick leave request, evaluates the patient's condition, and determines the validity of the absence based on medical grounds. They may consult the patient's medical history or conduct a telemedicine consultation if necessary.*

5.Approval or Rejection:*Based on their assessment, the healthcare provider approves or rejects the sick leave request within the system. If approved, they may specify the duration of the sick leave and any additional instructions for the patient.*
6.Notification to Patient:*The system notifies the patient of the status of their sick leave request, informing them whether it has been approved or rejected. If approved, the notification may include details such as the approved duration of absence and any instructions provided by the healthcare provider.*
7.Documentation and Recordkeeping:*The system records the details of the approved sick leave request, including the doctor's name, clinic, date(s) of absence, reason for the request, and any supporting documentation provided. This information is stored securely for reference and audit purposes.*
8.Update of Patient Records:*The approved sick leave request is updated in the patient's medical records within the system, ensuring that all relevant healthcare providers and administrative staff have access to accurate information regarding the patient's absence.*

UC05 - My Family

1.Family Member Management:
-The primary user selects the option to manage family members' health-related information.
-They have the option to add new family members by providing their demographic details, medical history, allergies, medications, and other pertinent health information.
-Alternatively, they can select existing family members from a list if previously added.
2.Emergency Contacts Designation:
-The primary user designates emergency contacts for each family member by providing their contact information and specifying their role as emergency contacts.
-They may designate multiple emergency contacts for each family member, prioritizing them based on preference or proximity.
3.Caregiver Permissions Assignment:
-The primary user assigns caregiver permissions to designated individuals, allowing them to access and manage health records on behalf of family members.
-Caregivers may include other family members, healthcare professionals, or designated caregivers responsible for providing care and support.
4.Access and Management:
-With the family member profiles updated, the primary user and authorized caregivers can now access and manage health-related information for family members within the system.
-This includes viewing health records, scheduling appointments, requesting medication refills, and communicating with healthcare providers on behalf of family members.

UC -06 Allergies list

1.Authentication and Access:*The patient logs into the healthcare system's patient portal or mobile application using their credentials, such as username and password or biometric authentication.*
2.Navigating to Vaccine List:*Once logged in, the patient navigates to the section of the patient portal or app where vaccination records are accessible, labeled as "Vaccine List"*
3.Viewing Existing Vaccination Records:*The system retrieves and displays existing vaccination records for the patient, presenting details such as vaccine names, administration dates, and any notes provided by healthcare providers.*

*4.**Reviewing Vaccination History:**The patient reviews their vaccination history, examining past vaccinations they have received and noting any upcoming vaccinations recommended by healthcare providers.*
*5.**Navigating Back or Continuing Tasks:**After reviewing their vaccination history, the patient can choose to navigate back to the main menu of the app or continue with other tasks, such as scheduling appointments or accessing medical reports.*

UC-07 Medicine Prescription

- **Step 1:** the health care provider logs in
- **Step 2:** then they assign the patient a prescription
- **Step 3:** the patient receives a notification that their doctor has placed a prescription for them
- **Step 4:** the user logs in and authenticates themselves
- **Step 5:** the user navigates to the prescription and opens it
- **Step 6:** the user can then view all previous prescriptions that they have been assigned including details such as frequency, dosage and any notes

UC-08 staff performance evaluation

- **Step 1:** the user will receive a notification asking if they would like to evaluate the doctor or healthcare provider that they have recently visited
- **Step 2:** if the user chooses to rate him a menu appears
- **Step 3:** inside the menu the patient can choose how many stars out of 5 they would like to present them with
- **Step 4:** the patient is then given a textbox to add any comments or thoughts about the doctor they have visited during the stay in the hospital and discribe the reason they have given them such rating

UC - 09 Emergency service integration

- **Step 1:** the patient chooes which ambulance they would like request
- **Step 2:** the patient must specy the need of an ambulance
- **Step 3:** the patient needs to specify if they only need an ambulance for transportation, if they need it for normal treatment, or if they requare special ambulance fro intense care/disability clients
- **Step 4:** a notification is sent to the healthcare prodirs about the requested details
- **Step 5:** a notification is received by the patient to confirm the arrival of the ambulance

UC - 10 MyVaccinesList

1. User logs into the system.

2. User navigates to the "My Vaccines List" section.

3. The system displays a list of all vaccinations received by the user, including dates of administration, vaccine types, and administering healthcare providers.

UC -11 RadiologyResult

1. User logs into the system.

2. User navigates to the "Radiology Result" section.

3. The system displays a list of radiology reports, including essential details such as date, type of procedure, and interpreting radiologist's name.

4. User selects a report to view.

5. The system displays the report summary and associated images for interpretation.

UC -12 Healthy Summary Report

1.The patient opens the app and navigates to the "Health Reports" section.

2.The app displays a list of available reports, including an option for "Monthly Health Summary."

3.The patient selects "Monthly Health Summary."

4.The app retrieves and displays a report for the current month, including:

5.Demographics (name, date of birth)

6.Summary of vital signs for the past month (e.g., average blood pressure, heart rate) (if recorded during visits)

7,List of diagnoses from recent visits

8,Overview of key lab test results (e.g., cholesterol, blood sugar) (if available)

9.The patient can review the report and:

10.Download a PDF copy of the report for their records.

11.View detailed information about specific other months by tapping on them (if available).

UC - 13 My Tracker

1. *The patient logs in to the app.*
2. *The patient navigates to the "My Tracker" section.*
3. *The app displays the patient's health data retrieved from their connected tracker (if data is available).*
4. *The patient can manually input additional health information (e.g., symptoms, medication intake).*

5. *(Optional) The patient can select a doctor from their healthcare team and grant them access to view their health tracker data.*
6. *The system securely transmits the patient's health data to the app and the doctor's authorized interface (if access is granted).*

UC14 - Home Healthcare Coordination

1.The patient logs in to the Patient Management app.
2. The patient browses the available home healthcare services or searches for a specific service.
3. The patient selects the desired service and chooses a preferred date and time for the visit.
4. The system presents a list of available doctors for the chosen service and time slot.
5. The patient selects a doctor from the list and submits the request
6. The system sends a notification to the chosen doctor about the new home visit request.
7. The doctor receives the notification and reviews the patient's request details.
8. The doctor can either accept or reject the request within the system.
9. If the doctor accepts:
◦ The system confirms the appointment with the patient and sends them an appointment reminder.
The system updates the doctor's schedule and marks the slot as booked.
10. If the doctor rejects:
The system notifies the patient about the rejection and offers options to reschedule or choose a different doctor.
11. On the appointment date and time, the doctor travels to the patient's home for the visit
12. After the visit, the doctor documents the consultation and any procedures performed within the system.
13. The system updates the patient's medical record with the doctor's notes

UC -15 Appointment Scheduling

1.The patient logs into the hospital management system.

2.The patient selects the "Appointment Scheduling" option.

3.The patient checks which option(online,face to face and check up) does fit his/her need.

4.According to the selection the system will navigate the user to the interface required,if he is an undecided person then by default the system will show him to book an face to face appointment.

5.For that reason the system presents available healthcare providers and their respective clinics.

6.The patient searches for a preferred healthcare provider or clinic.

7.If the patient selects the clinic,then all the doctors available with respective information will appear.

8.The system displays the provider's available time slots.

9.The patient selects a suitable time slot.

10.The staff confirms the appointment and the system sends a notification to both the patient and the healthcare provider.

11.The appointment is added to the system's database.

12.If the patient selects the doctorName,the doctor that is being searched will appear.

13.The system displays the doctor’s available time slots.

14.The patient selects a suitable time slot.

15.The staff confirms the appointment and the system sends a notification to both the patient and the healthcare provider.

16.The appointment is added to the system's database.

UC -16 Ask your Doctor

1.The patient logs in to the mobile app.

2.The patient selects the "Ask Your Doctor" option.

3.The system displays a list of the patient's doctors

4.The patient selects the doctor they want to ask a question to.

5.The patient chooses one of three options:

-Schedule a consultation call: The patient selects a date and time for a phone or video call consultation. The system sends an appointment request to the doctor.

-Get consultation immediately: The patient types their question in a secure chat window. The doctor receives a notification and can respond within the chat window if available.

-Inquire information about medications: The patient enters the name of a medication or selects it from a list. The system displays relevant information from the patient's medical record (if prescribed previously) or general information about the medication.

+If scheduling a consultation call:

1.The doctor receives the appointment request and can accept or decline.

2.Upon acceptance, the system confirms the appointment time with both patient and doctor.

+If getting consultation immediately:

1.The doctor can choose to respond to the patient's question within the chat window or suggest scheduling a consultation call for a more detailed discussion.

+If inquiring about medications:

1.The patient can view the provided information.

alternative:

1.The doctor may not be available for immediate consultation. The system should inform the patient and offer the option to schedule a call or leave a message.

UC -17 Help and Support Integration

1.patient accesses the help and support section within the hospital management system.

2.patient selects the type of assistance needed (e.g., technical support, general inquiries).

-If seeking technical support:

a. patient chooses the preferred support channel (e.g., live chat, email ticketing).

b. patient describes the technical issue or inquiry.

c. System assigns the request to available technical providers or support staff.

d. Technical providers or support staff respond to the patient's inquiry or issue through the selected support channel.

-If seeking general inquiries or assistance:

a. patient navigates through contextual help menus or searches for relevant knowledge base articles.

b. If further assistance is needed, patient may access tutorial videos or patient forums for additional guidance

alternative:

1.If live chat support is unavailable due to high demand or off-hours, the system prompts the patient to submit an email ticket, ensuring their inquiry is addressed promptly once support staff becomes available.

UC-18 Patient Account:

1.patient attempts to access the hospital management system through the app.

2.System prompts the patient to authenticate their identity.

3.patient selects the preferred authentication method (e.g., Face ID, fingerprint, SMS, WhatsApp).

-If using biometric authentication:

a. patient provides biometric data (e.g., facial scan, fingerprint).

b. System verifies the biometric data against stored records.

c. If the verification is successful, patient gains access to the system.

-If using MFA:

a. System sends a verification code to the patient via SMS or WhatsApp.

b. patient enters the verification code.

c. If the code is correct, patient gains access to the system.

4.Upon successful authentication, the patient is granted appropriate access permissions based on their role and authorization level.

UC -19 Health Calculators

1.The patient logs in to the hospital management system.

2.The patient navigates to the "Health Calculators" section.

3.The system presents a list of available calculators:

-BMI Calculator

-BMR Calculator

-Ideal Body Weight Calculator

-Body Fat Percentage Calculator

-Macronutrient Calculator (Carbs, Protein, Fat)

4.The patient selects the desired calculator.

5.The system displays an input form for relevant data (weight, height, age, activity level, gender for some calculators).

6.The patient enters their information.

7.The system validates the input data (e.g., ensuring weight and height within reasonable ranges).

8.Upon valid input, the system calculates the selected metric and displays the result in a clear, easy-to-understand format.

9.The system may offer additional information or resources related to the calculated metric (e.g., healthy BMI ranges, BMR interpretation, ideal body weight considerations).

UC20-.Vital Signs Tracking

1.HCP/Patient opens the Vital Signs Tracking feature in the app.
2.The system displays a list of patients (for HCP) or the patient's own vital signs (for patient).
3.HCP selects a specific patient (if applicable).
4.The system displays the patient's current vital signs data and historical trends in charts.
5.(Optional) HCP enters new vital sign readings for the patient.
6.The system stores the newly entered data and updates the charts.
7,(For Patients only) The system prompts for height and weight information (if not already entered).
8.(For Patients only) The patient enters their height and weight.
9.The system calculates and displays the patient's BMI.

alternative:

If no historical data exists, the system displays a message indicating this.

If the HCP attempts to enter data for a patient they are not authorized to access, the system displays an error message.

UC21-.Water Tracker

1. *Patient opens the "Water Tracker" section within the app.*
2. *The app displays the patient's current water intake for the day.*
3. *The patient can set a daily hydration goal based on their needs.*
4. *The patient can choose to set reminders to drink water at specific intervals.*
5. *The patient can manually log the amount and type of beverage consumed (e.g., water, juice).*
6. *The app updates the patient's daily water intake progress towards their goal.*
7. *The patient can access educational content within the app about the importance of hydration and its impact on health.*

alternative:

If the patient does not set a daily hydration goal, the app defaults to a recommended daily intake.

The patient can choose to ignore reminder notifications.

UC22-.Comprehensive Medical Check-Up

- *The patient logs in to the system.*
- *The patient selects the "Comprehensive Medical Check-up" option.*
- *The system displays available dates and times for appointments.*
- *The patient selects a preferred date and time for the check-up.*
- *The system confirms the appointment and provides instructions (if any) for preparing for the check-up (e.g., fasting requirements).*
- *On the appointment date, the patient arrives at the hospital for the check-up.*
- *Medical staff perform the various tests included in the check-up.*
- *After the tests are completed, the patient may have a consultation with a doctor (optional).*
- *The system processes the test results and generates a comprehensive report.*
- *The system notifies the patient when the report is ready.*
- *The patient logs in to the system and accesses the report.*
- *The report includes details of the performed tests, results, and any necessary next steps or recommendations based on the findings.*

alternative:

During the appointment, if additional tests are deemed necessary based on initial findings, the system prompts for approval and reschedules those tests if needed.
The patient may cancel the appointment before the date through the system.

UC -23 MyTodoList

1. User logs into the system.

2. Users access the "Todo List" section.

3. The system displays a centralized dashboard with two sections: "Appointments" and "Orders".

4. In the "Appointments" section, users can view all scheduled appointments.

5. In the "Orders" section, users can track pending prescription orders and medication refills.

UC -24 Privacy Policy

The system displays the privacy policy to the user upon request. The user can review the privacy policy and agree to its terms before proceeding to use the app

UC -25 Terms & Conditions

1. *The app displays a welcome screen with a button or link to access the T&Cs.*

2. *The user clicks the button/link.*
3. *The app displays the full text of the T&Cs.*
4. *The user reads and understands the T&Cs.*
5. *The user selects an option to either "Accept" or "Decline" the T&Cs.*

- ***Accept:***
  - *The user clicks the "Accept" button.*
  - *The app stores the user's acceptance of the T&Cs (e.g., date, timestamp).*
  - *The app grants the user full access to the system's functionalities.*
- ***Decline:***
  - *The user clicks the "Decline" button.*
  - *The app displays a message explaining the limitations of using the system without accepting the T&Cs.*
  - *The app may restrict access to certain functionalities (e.g., appointment booking).*

UC -26 Apply for First Aid Training

1.User selects the "First Aid Training" option within the app.

2.The app displays educational content about basic first aid techniques (e.g., CPR, wound care, emergency response).

3.User reviews the information and resources.

4.If interested in formal training, the user selects the "Apply for Training" option.

5.The app presents an application form.

6.User fills out the application form, including any required information (e.g., preferred date/time, contact details).

7.User submits the completed application.

8.The app sends the application electronically to the hospital's training department.

9.The system sends an automated confirmation message to the user acknowledging their application.

alternative:

1. *User decides not to apply for training after reviewing the educational content.*
2. *User exits the "First Aid Training" section.*

UC -27 Apply for Medication Refill with Reimbursement

- *The patient logs in to the app using their credentials (Use Case 13).*
- *The patient navigates to the section for medication refills.*

- *The patient selects the medication they need a refill for from their prescription history (Use Case 6).*
- *The patient chooses the desired quantity for the refill.*
- *The patient selects the option to request reimbursement for the medication cost.*
- *(Optional) The app prompts the patient to link their health card information if not already done (Use Case 23).*
- *(Optional) The app retrieves the patient's insurance information from the linked health card.*
- *The app displays an estimated cost for the medication and potential co-pay based on insurance coverage (if applicable).*
- *The patient confirms the refill request with reimbursement.*
- *The app transmits the refill request and reimbursement claim to the healthcare provider's system.*
- *The healthcare provider processes the request and sends the medication to the patient's preferred pharmacy.*
- *The healthcare provider initiates the reimbursement claim with the patient's insurance provider (if applicable).*
- *The patient receives a notification from the app confirming their medication refill request and estimated timeframe for fulfillment.*

alternative:

- *If the patient does not have a valid prescription for the medication, the app informs them and suggests scheduling an appointment (Use Case 1).*
- *If the patient encounters any errors during the process, the app provides clear error messages and instructions for troubleshooting.*

UC -28 Health Card

1. *The patient selects the "Health Card" option within the app.*
2. *The app retrieves the patient's medical information from their medical file.*
3. *The patient can view and navigate the different sections of their health card.*

UC -29 Pregnancy Tracker

1. *The user opens the pregnancy tracker within the app.*
2. *The app displays a dashboard with options for tracking various pregnancy data points (e.g., weight, fetal movement, symptoms).*
3. *The user selects a data point to track and enters the relevant information.*
4. *The app stores the entered data in the user's medical file.*

alternative:

1. *The user encounters an error message while trying to access the pregnancy tracker (e.g., due to internet connectivity issues).*
2. *The app provides options to contact app support or retry later.*

UC -30 Applying for voluntary work

1. *The user logs in to the app.*

2. *The user navigates to a section for volunteering opportunities.*
3. *The app displays a list of available voluntary positions with descriptions and requirements.*
4. *The user selects a volunteer opportunity they are interested in.*
5. *The app presents a detailed description of the position, including time commitment, responsibilities, and any training involved.*
6. *The user fills out an application form, potentially including contact information, availability, skills, and a motivation statement.*
7. *The user submits the application electronically.*
8. *The system sends an electronic notification to the hospital or program responsible for managing volunteers.*

alternative:

1. *The user follows steps 1-3 from the main sequence.*
2. *The user decides not to apply for any of the opportunities presented.*
3. *The user exits the volunteer opportunities section.*

●.1.1.1 Efficiency (table)

Use Case	Performance Metric	Response Time	Concurrency	Remarks
UC01 - View Medical File/Personal File	Low Latency, High Availability	< 2 seconds for data retrieval	Handle 1000 concurrent users	Ensure real-time updates and data integrity
UC02 - Blood Donation Management	Efficient Appointment Scheduling	< 3 seconds for slot booking	Handle 500 concurrent users	Real-time availability and conflict resolution
UC03 - Lab Results Management	Fast Access to Results	< 5 seconds for result retrieval	Handle 300 concurrent users	Ensure secure access and accurate results

UC04 - Sick Leave Management	Quick Request Processing	< 2 seconds for form submission	Handle 200 concurrent users	Ensure real-time status updates
UC05 - My Family	Fast Data Retrieval	< 2 seconds for profile loading	Handle 500 concurrent users	Efficient navigation between family member profiles
UC06 - Allergies List	Prompt Access to Allergy Information	< 1 second for list display	Handle 1000 concurrent users	Quick updates and alert highlighting
UC07 - Medicine Prescription	Immediate Prescription Updates	< 2 seconds for update	Handle 300 concurrent users	Ensure real-time prescription synchronization
UC08 - Staff Performance Evaluation	Quick Feedback Submission	< 2 seconds for rating submission	Handle 200 concurrent users	Provide instant feedback with minimal latency
UC09 - Emergency Service Integration	Immediate Emergency Request Handling	< 1 second for request submission	Handle 100 concurrent users	Real-time tracking and status updates

UC10 - My Vaccines List	Quick Display of Vaccination Records	< 2 seconds for record display	Handle 500 concurrent users	Efficient management of upcoming vaccinations
UC11 - Radiology Results	Fast Loading of Radiology Images	< 3 seconds for image loading	Handle 300 concurrent users	High-quality image rendering and quick navigation
UC12 - Health Summary Report	Fast Loading of Health Summary	< 2 seconds for report display	Handle 500 concurrent users	Comprehensive and quick access to consolidated health data
UC13 - My Tracker	Prompt Data Updates	< 1 second for data update	Handle 1000 concurrent users	Ensure real-time tracking and updates
UC14 - Home Healthcare Coordination	Quick Appointment Scheduling	< 3 seconds for booking	Handle 200 concurrent users	Efficient coordination and scheduling
UC15 - Appointment Scheduling	Fast Appointment Management	< 2 seconds for scheduling	Handle 1000 concurrent users	Real-time slot availability and conflict resolution

UC16 - Ask your Doctor	Immediate Response to Inquiries	< 5 seconds for inquiry submission	Handle 300 concurrent users	Ensure prompt and secure communication
UC17 - Help and Support Integration	Fast Access to Support Resources	< 3 seconds for resource access	Handle 500 concurrent users	Provide instant help and support
UC18 - Patient Account	Quick Authentication Process	< 2 seconds for login	Handle 1000 concurrent users	Ensure secure and fast authentication
UC19 - Health Calculators	Fast Calculation Results	< 1 second for calculation	Handle 500 concurrent users	Ensure accurate and quick health calculations
UC20 - Vital Signs Tracking	Immediate Data Sync	< 1 second for data sync	Handle 1000 concurrent users	Ensure real-time vital sign tracking
UC22 - Comprehensive Medical Check-Up	Fast Appointment Scheduling	< 3 seconds for booking	Handle 200 concurrent users	Ensure comprehensive and efficient check-up scheduling

UC23 - My ToDo List	Quick Task Management	< 2 seconds for task update	Handle 500 concurrent users	Efficient and reliable task management
UC24 - Privacy Policy	Immediate Access to Privacy Policy	< 1 second for document display	Handle 1000 concurrent users	Ensure clear and quick access to privacy policy
UC25 - Terms & Conditions	Immediate Access to Terms & Conditions	< 1 second for document display	Handle 1000 concurrent users	Ensure clear and quick access to terms and conditions
UC26 - Apply for First Aid Training	Fast Application Process	< 2 seconds for form submission	Handle 200 concurrent users	Ensure efficient and secure application processing
UC27 - Apply for Medication Refill	Quick Refill Requests	< 2 seconds for request submission	Handle 300 concurrent users	Ensure real-time processing and reimbursement handling
UC28 - Health Card	Immediate Display of Health Card	< 1 second for card display	Handle 1000 concurrent users	Ensure secure and quick access to health card information

UC29 - Pregnancy Tracker	Quick Access to Pregnancy Information	< 2 seconds for data display	Handle 500 concurrent users	Ensure secure and user-friendly tracking
UC30 - Applying for Voluntary Work	Fast Application Submission	< 2 seconds for form submission	Handle 200 concurrent users	Ensure efficient and secure volunteer application processing

●*.1.1.1.1 Performance Requirements (table)*

Use Case	Requirement	Target Metric	Remarks
UC01 - View Medical File/Personal File	Data Retrieval	< 2 seconds	Ensure low latency and high availability
UC02 - Blood Donation Management	Slot Booking	< 3 seconds	Efficient appointment scheduling and real-time availability

UC03 - Lab Results Management	Result Retrieval	< 5 seconds	Fast access with secure transmission
UC04 - Sick Leave Management	Form Submission	< 2 seconds	Quick request processing with real-time updates
UC05 - My Family	Profile Loading	< 2 seconds	Fast data retrieval and navigation between profiles
UC06 - Allergies List	List Display	< 1 second	Prompt access and quick updates
UC07 - Medicine Prescription	Prescription Update	< 2 seconds	Immediate updates with real-time synchronization
UC08 - Staff Performance Evaluation	Rating Submission	< 2 seconds	Quick feedback submission
UC09 - Emergency Service Integration	Emergency Request Handling	< 1 second	Immediate handling with real-time tracking
UC10 - My Vaccines List	Record Display	< 2 seconds	Efficient management of vaccination records

UC11 - Radiology Results	Image Loading	< 3 seconds	Fast loading with high-quality image rendering
UC12 - Health Summary Report	Report Display	< 2 seconds	Quick access to consolidated health data
UC13 - My Tracker	Data Update	< 1 second	Real-time tracking and updates
UC14 - Home Healthcare Coordination	Appointment Scheduling	< 3 seconds	Efficient coordination and scheduling
UC15 - Appointment Scheduling	Appointment Scheduling	< 2 seconds	Real-time availability and conflict resolution
UC16 - Ask your Doctor	Inquiry Submission	< 5 seconds	Prompt and secure communication
UC17 - Help and Support Integration	Resource Access	< 3 seconds	Fast access to help and support resources
UC18 - Patient Account	Authentication	< 2 seconds	Secure and fast authentication
UC19 - Health Calculators	Calculation Results	< 1 second	Accurate and quick health calculations

UC20 - Vital Signs Tracking	Data Sync	< 1 second	Real-time tracking of vital signs
UC22 - Comprehensive Medical Check-Up	Appointment Scheduling	< 3 seconds	Efficient check-up scheduling
UC23 - My ToDo List	Task Update	< 2 seconds	Reliable task management
UC24 - Privacy Policy	Document Display	< 1 second	Quick access to privacy policy
UC25 - Terms & Conditions	Document Display	< 1 second	Quick access to terms and conditions
UC26 - Apply for First Aid Training	Form Submission	< 2 seconds	Efficient and secure application processing
UC27 - Apply for Medication Refill	Refill Request Submission	< 2 seconds	Real-time processing of refill requests
UC28 - Health Card	Card Display	< 1 second	Secure and quick access to health card information
UC29 - Pregnancy Tracker	Information Display	< 2 seconds	User-friendly tracking of pregnancy information

UC30 - Applying for Voluntary Work	Application Submission	< 2 seconds	Efficient and secure volunteer application processing

●*.1.1.1.2 Space Requirements*

●.1.1.2 **Dependability**

Availability

Monitoring

Modularity: Design the system with modular components to simplify maintenance, allowing individual modules to be updated or replaced without affecting the entire system.

Complexity: Minimize system complexity by adhering to standardized design practices, ensuring that the system is easy to understand, modify, and expand.

Interface Design: Ensure that interfaces between modules are well-documented and follow consistent design principles to facilitate easier integration and maintenance.

Documentation Provide comprehensive documentation for system architecture, APIs, and maintenance procedures to support efficient troubleshooting and updates.

Reliability

Health Monitoring: Implement real-time health monitoring of all system components, including servers, databases, and network infrastructure.

Failure Conditions: Detect and log all failure conditions, categorizing them by severity and impact.

Error Detection: Use automated error detection mechanisms to identify and report issues within 5 minutes of occurrence.

Logging: Maintain detailed logs of all system activities, errors, and user interactions for audit and troubleshooting purposes.

Correction: Automated correction mechanisms should resolve minor issues within 10 minutes. Major issues should trigger immediate alerts to the technical support team.

Integrity

●.1.1.3 **Security**

Data Integrity: Implement robust mechanisms to ensure data accuracy, consistency, and reliability throughout all operations.

Encryption: All sensitive data should be encrypted both in transit and at rest using industry-standard encryption protocols (e.g., AES-256).

Access Control: Implement strict access control measures, ensuring that only authorized personnel can access or modify sensitive information.

Audit Trails: Maintain audit trails for all data access and modifications, allowing for thorough investigations in case of data breaches or integrity issues.

Data Validation: Use automated data validation checks to prevent and correct data entry errors, ensuring that all stored information is accurate and reliable.

●.2 *Domain Requirements*

Patient Management

Registration: Patients should be able to register themselves into the system by providing necessary personal and medical information.
Appointment Scheduling: Patients should have the ability to schedule appointments with healthcare providers based on availability and their medical needs.
Medical History: The system should maintain comprehensive medical records for each patient, including diagnosis, treatments, medications, and allergies.
Billing and Insurance: Patients should be able to view and manage their billing information, including insurance coverage and payment history.
Prescription Management: Patients should have access to their prescriptions, including the ability to request refills and view medication instructions.
Emergency Contact: Patients should be able to retrive emergency contacts within the system for quick access during emergencies.

Staff management:

Healthcare providers and administrative staff should be able to register themselves into the system, providing necessary credentials and permissions.
Role-based Access Control: The system should enforce role-based access control, ensuring that staff members have access to only the functionalities relevant to their roles.
Training and Certification Tracking: The system should track the training and certification status of staff members to ensure compliance with regulatory requirements.

Shift Management: Administrative staff should be able to manage staff schedules, including shifts, rotations, and time-off requests.

A.1.1.1.

Please provide all necessary non-functional requirements, similar to the requirements explained in the lesson slides or in the textbook.

- User Scenarios/Use Cases

Scenarios:

The Patient Management System (PMS) is an advanced platform designed to optimize and enhance the healthcare experience through a comprehensive suite of features. It facilitates seamless appointment scheduling, allowing patients to book consultations, immediate care, or check-ups, either in-person or online. The system supports recurring appointments, reminders, and rescheduling options to ensure flexibility and convenience. The PMS encompasses medical history, allergies, medications, insurance details, vaccination records, prescriptions, past consultations, and treatment plans, with real-time updates accessible to authorized healthcare providers.

In emergency scenarios, the PMS prioritizes and manages urgent cases, including ambulance requests and integration with emergency response systems. The system streamlines the management of lab results, from ordering and tracking to interpretation, ensuring patients receive timely and accurate information. Blood donation campaigns are efficiently managed, encompassing donor recruitment, eligibility screening, and real-time updates on blood availability. Healthcare providers can electronically prescribe medications, detailing dosage, frequency, and duration.

Home healthcare coordination is another key feature, enabling doctors to conduct procedures at patients' homes while maintaining a detailed log of requests. Patients can easily request and manage sick leave, and receive monthly health summary reports that reflect their latest health indicators and analyses. The "Ask Your Doctor" feature provides a secure channel for patients to seek medical advice directly from their healthcare providers.

The PMS also supports comprehensive family health management, allowing users to manage dependent profiles, emergency contacts, and caregiver permissions Additionally, the PMS includes functionalities for tracking allergies, managing personal health information, and maintaining a comprehensive vaccination record.

As for the business scenarios : The healthcare industry faces significant challenges in providing timely, efficient, and coordinated care. Patients often experience delays in scheduling appointments, receiving lab results, and managing their health records. There is a critical need for a system that enhances patient engagement, streamlines administrative processes, and improves overall healthcare delivery.

Business needs	***Desired Objectives***
Inefficient appointment scheduling	Improve appointment scheduling
Fragmented Health Records	Centralize health records
Delayed Lab Results	Enchance lab result management
Emergency Response Delays	Optimize emergency response
Complex Medication Management	Simplify medication Management
Inadequate HHC	Coordinate HHC
Limited Communication	Strengthen communication

Elaborating on the business needs

1. Inefficient Appointment Scheduling: Patients struggle with booking and managing appointments, leading to missed or delayed care.

2. Fragmented Health Records: Lack of a centralized system for storing and accessing comprehensive medical records.

3. Delayed Lab Results: Slow processing and communication of lab results.

4. Emergency Response Delays: Inefficient handling of emergency cases and ambulance requests.

5. Complex Medication Management: Challenges in prescribing and managing medications electronically.

6. Inadequate Home Healthcare Coordination: Difficulty in arranging and tracking home healthcare services.

7. Limited Patient-Provider Communication: Insufficient channels for secure, direct communication between patients and healthcare providers.

Elaborating on the desired Objectives

1. Improve Appointment Management: Enable seamless booking, reminders, and rescheduling.

2. Centralize Health Records: Provide a comprehensive and secure repository for all patient health data.

3. Enhance Lab Result Management: Streamline the process of ordering, tracking, and delivering lab results.

4. Optimize Emergency Response: Ensure prompt and efficient handling of emergency cases.

5. Simplify Medication Management: Facilitate electronic prescribing and management of medications.

6. Coordinate Home Healthcare: Efficiently arrange and track home healthcare services.

7. Strengthen Patient-Provider Communication: Offer secure channels for direct patient-provider interactions.

Actors and Their Roles

Patients: Schedule appointments, access health records, manage medications, and communicate with providers.

Healthcare Providers (Doctors, Nurses, Lab Technicians): Access and update patient records, prescribe medications, manage lab tests, and provide home healthcare services.

Staff(Including technical , emergency responders , system administrators): Manage scheduling, patient records, and coordinate care , respond to emergency cases,

manage ambulance requests but also oversee the technical operation of the PMS, ensuring security and compliance.

Metrics for Success

Appointment Efficiency: Reduce average appointment booking time by 50%.

Record Accuracy: Achieve a 95% accuracy rate in patient records.

Lab Result Turnaround: Deliver 90% of lab results within 24 hours.

Emergency Response Time: Decrease average emergency response time by 30%.

Medication Errors: Reduce prescription errors by 40%.

Home Healthcare Coordination: Increase on-time home healthcare visits by 60%.

Patient Satisfaction: Achieve a patient satisfaction rate of 85% or higher in feedback surveys.

Use case Table:

UC Name	***UC01-View* .Medical File/Personal File**
Summary	○ The system should securely store comprehensive electronic health records for each patient, including medical history, allergies,vital sign tracer , allergy list , lab result , radiology report ,health calculator , my tracer , medications,vaccines,medicine prescription ,monthly reports , sick leaves and treatment plans. It should allow authorized healthcare providers to update the patients information after every new data recorded in real time ○ The system must collect and store users' personal information, including name, surname, gender, profile picture, phone number, nationality and birthday, at the beginning of interaction for identification and customization purposes.
Dependency	*Lab Results Management:Lab test results should be stored in the medical file for reference by healthcare providers and patients. These results help in tracking health conditions and monitoring treatment effectiveness.* *Medicine Prescription:Prescription records, including medication details and dosage instructions, should be recorded in the medical file. This ensures accurate medication management and avoids potential drug interactions or allergies.* *My Family:The personal file include information about family members, such as dependent profiles, emergency contacts, and caregiver permissions. This information is essential for managing family health-related matters and ensuring appropriate access controls.* *My Vaccines List:Vaccination records should be stored in the medical file, providing a comprehensive history of received vaccinations, including dates, types, and administering healthcare providers. This information aids in assessing vaccination status and recommending appropriate immunizations.* *User Authentication and Authorization:Access to the personal file should be securely managed through authentication mechanisms and role-based access controls, ensuring that only authorized individuals can view or modify sensitive health information*

	Allergy list - including allergies information for the patient *My tracer - This feature empowers patients to monitor their health metrics or conditions over time. Users select specific parameters like blood pressure, weight, or exercise habits to track regularly.* *Radiology report - View all test result* *Health calculator- feature provides users with tools to assess various aspects of their health and well-being.* *Vital sign tracer-enables users to monitor and track key physiological parameters crucial for assessing overall health.* *Health summary report*
Actors	***Patient (primary Actor)*** *healthcare providers*
Preconditions	• ***Patient Identification:*** *Patients must be properly identified and registered within the system before their electronic health records can be securely stored. This may involve collecting and verifying personal information such as name, surname, gender, and other identifying details.* • ***Availability of System Resources****: The system must have sufficient resources, such as storage capacity and processing power, to securely store and manage electronic health records for each patient. Adequate backup and recovery mechanisms should also be in place to prevent data loss and ensure system availability.* • ***User Authentication and Authorization:*** *Before accessing or updating patient records, healthcare providers must authenticate themselves through the system using valid credentials. They must also have appropriate permissions and authorization to view and modify patient information.*

	• ***Data Integrity and Security Measures:*** *The system must have robust security measures in place to ensure the confidentiality, integrity, and availability of patient records.*
Description of the Main Sequence	*1.Logging In: The patient logs in to the patient portal using their credentials, such as a username and password, or through other authentication methods such as biometric authentication (e.g., fingerprint or face recognition).* *2.Navigating to Personal Information: Once logged in, the patient navigates to the section of the patient portal where they can view and manage their personal information.* *3.Viewing Personal Information: The system displays the patient's personal information, including their name, surname, gender, date of birth, contact information (phone number, email address), nationality, and profile picture.* *4.Reviewing Health Information: The patient also has access to their comprehensive electronic health records (EHR) through the patient portal. They can view their medical history, allergies, medications, eye measurements, vaccines, and any past doctor-patient chats.* *5.Reviewing Treatment Plans and Reports: Additionally, the patient can review any treatment plans, monthly reports, sick leaves, and appointment timelines associated with their healthcare.*
Description of the Alternative Sequence	*None*
Non functional requirements	***Performance:*** • *The system should have low latency and high availability to ensure healthcare providers can access patient records and personal information quickly and reliably.*

	• *Real-time updates to patient information should occur within an acceptable timeframe to ensure healthcare providers have access to the latest data when making medical decisions.* • *The system should be able to handle concurrent access from multiple healthcare providers without significant degradation in performance.* ***Reliability:*** • *The system must be highly reliable, with minimal downtime and data loss, to ensure continuous availability of patient records and personal information.* • *Data backups should be performed regularly to prevent data loss in case of system failures or disasters.* ***Usability:*** • *The user interface should be intuitive and user-friendly, with clear navigation and easy access to patient records and personal information.* • *Healthcare providers should be able to quickly locate and retrieve patient information without extensive training or technical expertise.* • *The system should provide prompts or reminders to healthcare providers for updating patient information in real-time to ensure completeness and accuracy of records.?* ***Compliance:*** • *The system must comply with relevant healthcare regulations and standards, to ensure the privacy and security of patient records and personal information.* • *Patient consent should be obtained for collecting and storing personal information, and appropriate measures should be taken to protect patient privacy and confidentiality.* • *The system should undergo regular security assessments and audits to ensure compliance with regulatory requirements and industry best practices.* ***Security:*** • *The system must implement encryption mechanisms to ensure the confidentiality of stored electronic health records and personal information.* • *Access to patient records and personal information should be restricted to authorized healthcare providers only, with appropriate authentication and authorization mechanisms in place.*

Postconditions	***1.Secure Storage of Electronic Health Records (EHR):*** *After the system securely stores comprehensive electronic health records for each patient, the postcondition is that all patient data, including medical history, allergies, medications, insurance card information, eye measurements, vaccines, medicine prescriptions, past doctor-patient chats, monthly reports, sick leaves, appointment timeline, and treatment plans, are accurately stored and accessible within the system.* ***2.Authorized Healthcare Providers Update Patient Information in Real-Time:*** *After authorized healthcare providers update patient information in real-time, the postcondition is that the patient's electronic health records are immediately updated with the new data. This ensures that all healthcare providers have access to the most up-to-date patient information when making medical decisions or providing treatment.* ***3.Collection and Storage of Users' Personal Information:*** *After the system collects and stores users' personal information, including name, surname, gender, profile picture, phone number, nationality, and birthday, at the beginning of interaction, the postcondition is that this information is securely stored and associated with the respective user accounts. This allows for identification and customization purposes throughout the user's interaction with the system.*

UC Name	**UC02 - Blood Donation Management**
Summary	The system should manage the end-to-end process of blood donation campaigns in specific given cities,also including donor recruitment, eligibility screening . It responds to patient needs.
Dependency	*Appointment Scheduling:* *Integration with appointment scheduling to allocate time slots for blood donation sessions and manage donor appointments efficiently.* *Lab Results Management:* *Compatibility testing of donated blood with recipient blood types requires coordination with laboratory services. Lab results regarding blood compatibility should be accessible within the blood donation management system.* *Medicine Prescription:* *Blood donors may require specific medications or dietary supplements before or after donation to ensure their well-being.* *User Authentication and Authorization:* *Access controls should be implemented to manage permissions for blood donation staff, ensuring that only authorized personnel can manage donor recruitment, eligibility screening, and blood availability updates* *My Vaccines List:* *Donor eligibility screening may involve checking vaccination records to ensure compliance with donor health requirements, such as immunity status for infectious diseases.* *Healthy Summary Report & Medical File: Generating health summary reports may depend on the availability and accuracy of data stored in the patient's medical file, including recent visits, test results, and treatments.*
Actors	***Patients/Donors (Primary Actor)*** *Healthcare Professionals*

	Laboratory Personnel *Ambulance Services/Emergency Responders?*
Preconditions	***User Registration**-Patients, donors, healthcare professionals, and administrators must complete the registration process within the app* ***Database Population**-The app's database must be populated with relevant data, including patient records, donor information, blood inventory, and healthcare professional profiles.* *This information ensures that users can access accurate data when utilizing the blood donation feature.* ***Healthcare Provider Authorization**-Healthcare professionals must be authorized to access patient records, manage blood transfusions, and coordinate blood donation activities within the app.*
Description of the Main Sequence	***1.User Authentication and Login**-The sequence begins when users, such as patients, donors, healthcare professionals, or administrators, access the patient management app.* *Users are prompted to authenticate themselves by providing their credentials (username and password) or using biometric authentication methods if available.* *Upon successful authentication, users are logged into the app and directed to the appropriate dashboard based on their role.* ***2.Blood Donation Form Submission*** *Once logged in, the patient navigates to the blood donation feature within the app.* *The patient fills out a form providing essential information for blood donation, including their blood type, any existing medical conditions, history of tattoos or recent surgeries, and other pertinent details* ***3.Hospital Approval and Notification*** *The submitted request is received by the hospital or blood donation center staff for review.* *Hospital personnel assess the patient's eligibility based on the provided information and blood donation guidelines.* *Upon approval of the donation request, the hospital notifies the patient through the app, indicating that their request has been approved and providing further instructions for donation.* ***4.Donor Appointment Scheduling***

	Upon receiving the approval notification, the patient can schedule a donation appointment through the app. *The app presents available donation slots based on the hospital's schedule and the patient's preferences.* *The patient selects a convenient appointment time and confirms the donation appointment.* ***5.Blood Donation Process(NOT PART OF APP)*** *On the scheduled donation date and time, the patient arrives at the designated blood donation center within the hospital.* *Hospital staff guide the patient through the blood donation process, ensuring their comfort and safety throughout.* *The patient undergoes the blood donation procedure, which typically involves a health screening, blood collection, and post-donation refreshments.* ***6.Post-Donation Care and Follow-Up*** *After donating blood, the patient receives post-donation care instructions and advice from healthcare professionals.* *The patient's donation status is updated in the app's database, indicating the successful completion of the donation process.* *The patient may receive follow-up notifications or reminders for future donation opportunities or health checks, as applicable.*
Description of the Alternative Sequence	1-4 are the same steps as provided in the main sequence. **4.Initial Donation Request Denial**-After the patient submits the blood donation form and request to the hospital, the hospital staff review the request. The hospital determines that the patient's current health condition or medical history does not meet the eligibility criteria for blood donation. The hospital denies the patient's donation request and provides a reason for the denial, which may include factors such as recent illnesses, medication usage, or travel history. **5.Notification of Donation Request Denial:** The patient receives a notification through the app indicating that their donation request has been denied by the hospital. The notification includes details regarding the reason for the denial and any additional instructions or recommendations provided by the hospital. **6.Appeal Process Initiation**

	Upon receiving the denial notification, the patient has the option to initiate an appeal process if they believe the denial was issued in error or if their circumstances have changed since the initial request. The patient can indicate their intention to appeal the decision through the app, providing any relevant additional information or documentation to support their case. **7.Hospital Review of Appeal(NOT SHOWED IN THE APP)** The hospital reviews the patient's appeal, considering any new information provided and reassessing the patient's eligibility for blood donation. Hospital staff may conduct further assessments or consultations with healthcare providers to make a final determination regarding the appeal. **8.Appeal Outcome Notification** After reviewing the appeal, the hospital notifies the patient of the outcome through the app. If the appeal is successful and the patient's eligibility for donation is confirmed, the hospital provides instructions for scheduling a donation appointment. Alternatively, if the appeal is denied, the hospital communicates the decision to the patient along with any additional explanations or recommendations.
Non functional requirements	***Performance*** ● *The app should respond to user interactions within two seconds under normal operating conditions.* ● *The system should support concurrent user interactions without significant degradation in performance.* ● *Blood donation appointment scheduling should be completed within three minutes of initiation.* ***Reliability*** ● *The system should have a minimum uptime of 99.9% to ensure availability for users.* ● *Data integrity should be maintained at all times, with backup and recovery mechanisms in place to prevent data loss.* ● *The app should handle errors gracefully, providing informative error messages and logging issues for analysis.* ***Security*** ● *User authentication should follow industry-standard protocols, to ensure secure access to the app.* ● *Personally identifiable information and medical data should be encrypted both in transit and at rest to prevent unauthorized access.*

	• *Role-based access control should be implemented to restrict access to sensitive features and data based on user roles.* ***Scalability*** • *The system should be able to handle a growing user base and increasing data volume without a significant decrease in performance.* • *Load balancing mechanisms should be implemented to distribute incoming traffic evenly across multiple servers or instances.* • *The app's architecture should be designed to scale horizontally and vertically as needed to accommodate future growth.* ***Usability*** • *The user interface should be intuitive and user-friendly, requiring minimal training for users to navigate and perform tasks.* • *Accessibility features should be implemented to ensure that users with disabilities can effectively use the app.* • *The app should support multiple languages to cater to users from diverse linguistic backgrounds.*
Postconditions	***Donation Request Approval*** • *After a patient submits a donation request, the postcondition is that the request is either approved or denied by the hospital.* • *If approved, the patient receives notification of approval and can proceed with scheduling a donation appointment.* • *If denied, the patient receives notification of denial along with any relevant explanations or recommendations for further action.* ***Appointment Scheduled*** • *After a patient successfully schedules a blood donation appointment, the postcondition is that the appointment is recorded in the system.* • *The appointment details, including date, time, location, and donor information, are stored in the database for future reference.* • *The patient and relevant healthcare personnel are notified of the scheduled appointment.* ***Blood Donation Process Completion*** • *After a donor completes the blood donation process, the postcondition is that the donated blood is collected, labeled, and stored appropriately.* • *Donor information, including donation history and any post-donation instructions, is updated in the system.* • *The donor receives acknowledgment of their donation and any necessary post-donation care instructions.* ***Post-Transfusion Follow-Up*** • *After the transfusion process is completed, the postcondition is that the patient's health status is monitored and documented.*

	• *Any adverse reactions or complications during or after the transfusion are recorded in the patient's medical records.* • *The patient receives post-transfusion care instructions and may be scheduled for follow-up appointments as needed.*

UC Name	**UC03 - Lab Results Management**
Summary	The system should facilitate the ordering, tracking, and interpretation of laboratory tests, ensuring timely delivery of results to patients.Using the lab result option we are able to get information about the doctor name , the clinic , general results (its description , values and range) and also special results.
Dependency	***Medical File***-*The interpretation and tracking of lab results rely on the patient's medical history, including past test results, medications, and allergies stored in the medical file.* ***Emergency Services Integration***- *In emergency situations, certain lab tests may be prioritized. The integration with emergency services ensures that urgent test requests are processed promptly and results are delivered quickly to aid in patient care.* ***User Authentication and Authorization***- *Access to lab test results needs to be securely managed through authentication and authorization mechanisms to ensure that only authorized individuals, such as healthcare providers and patients, can view sensitive health information.*

Actors	***Patients*** *Healthcare Providers* *Administrative Staff- Administrative staff members may be involved in scheduling appointments, managing test orders, and coordinating the delivery of lab results to patients.*
Preconditions	*Lab Test Order Placed: A healthcare provider has previously placed an order for lab tests for the patient.* *Results Available in the App: Once the testing process is completed, the results must be made available within the patient-facing app. This ensures that patients can access their lab test results through the Lab Results Management feature.*
Description of the Main Sequence	***1.Patient Accesses the App:*** *The main sequence begins when the patient accesses the healthcare app on their device.* ***2.Lab Results Management Selection*** *Once logged in, the patient navigates to the Lab Results Management section of the app, where they can view their lab test results.* ***3.View Available Results:*** *The patient sees a list of available lab test results.* ***4.Select Result for Viewing:*** *The patient selects a specific lab test result from the list to view more details.* ***5.Option to Download or Share Results:*** *The patient may have the option to download or share the lab test result from within the app, allowing them to keep a copy for their records or share it with their healthcare provider if needed.* ***6.Return to Results List or Log Out:*** *After reviewing the selected lab test result, the patient can choose to return to the list of available results to view additional tests or log out of the app.*

Description of the Alternative Sequence	None
Non functional requirements	*<u>Performance</u>* *-The system should respond to user requests for lab results within 5 seconds to ensure a satisfactory user experience.* *-The system should be able to handle concurrent requests from multiple users without significant degradation in performance.* *<u>Security</u>* *-Lab test results must be stored and transmitted securely to protect patient confidentiality and comply with healthcare regulations* *-Access to lab results should be restricted to authorized users only, with appropriate authentication and authorization mechanisms in place.* *<u>Reliability:</u>* *-The system should have a high level of reliability, ensuring that lab results are consistently available and accurate.* *-The system should have backup mechanisms in place to prevent data loss in case of system failures or disruptions.* *<u>Usability:</u>* *-The user interface should be intuitive and easy to navigate, ensuring that patients can easily access and interpret their lab results without requiring extensive training.*
Postconditions	***Lab Test Results Displayed****- After accessing the Lab Results Management feature, the patient can view the relevant lab test results within the application.* ***No Data Loss****- The system ensures that there is no loss of data or changes to the lab test results during the viewing process.*

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UC Name	***UC04* - Sick Leave Management:**
Summary	The system should provide an option for sick leave requests and approvals for patients . Each sick leave should contain the doctor , the clinic , the date and the reason of patient absence request .
Dependency	*Appointment Scheduling: The availability of doctors and clinics for sick leave approvals depends on the appointment scheduling system. If a patient needs a sick leave approval, they may need to consult with their doctor, which requires availability within the scheduling system.* *User Authentication and Authorization :Access to the sick leave request and approval feature must be controlled based on user roles and permissions. Only authorized users, such as patients, doctors, or administrative staff, should be able to initiate or approve sick leave requests.* *Medical File: The reason for the patient's absence, as well as any relevant medical history or conditions, may need to be referenced from the patient's medical file when requesting a sick leave. Additionally, details of the approved sick leave may need to be recorded in the patient's medical record.*

Actors	*Patients (Primary Actor)* *Doctors/Healthcare Providers* *Staff*
Preconditions	*User Authentication and Authorization-Users, including patients and healthcare providers, must be authenticated and authorized to access the system and submit/approve sick leave requests. This ensures that only authorized individuals can initiate or approve sick leave requests* *Medical Consultation-The patient may need to consult with a healthcare provider to assess their condition and determine the necessity of taking sick leave. This may involve visiting a doctor's office or consulting remotely through telemedicine services.*
Description of the Main Sequence	***1.Patient Initiates Sick Leave Request**: The main sequence begins when a patient, experiencing illness or medical reasons preventing them from attending an appointment or fulfilling work obligations, initiates a sick leave request through the system.* ***2.Submission of Request Details**:The patient provides necessary details for the sick leave request, including the date(s) of absence, reason for the request, and any supporting documentation or justification required.* ***3.Routing to Healthcare Provider**: The system routes the request to the designated healthcare provider responsible for approving sick leave requests, typically the patient's attending physician or primary care provider.* ***4.Healthcare Provider Review:**The healthcare provider reviews the sick leave request, evaluates the patient's condition, and determines the validity of the absence based on medical grounds. They may consult the patient's medical history or conduct a telemedicine consultation if necessary.* ***5.Approval or Rejection:**Based on their assessment, the healthcare provider approves or rejects the sick leave request within the system. If approved, they may specify the duration of the sick leave and any additional instructions for the patient.* ***6.Notification to Patient:**The system notifies the patient of the status of their sick leave request, informing them whether it has been approved or rejected. If approved, the notification may include details such as the approved duration of absence and any instructions provided by the healthcare provider.*

	*7.**Documentation and Recordkeeping:**The system records the details of the approved sick leave request, including the doctor's name, clinic, date(s) of absence, reason for the request, and any supporting documentation provided. This information is stored securely for reference and audit purposes.* *8.**Update of Patient Records:**The approved sick leave request is updated in the patient's medical records within the system, ensuring that all relevant healthcare providers and administrative staff have access to accurate information regarding the patient's absence.*
Description of the Alternative Sequence	*In case of rejection steps from 1-6 are the same and steps 7 and 8 will be omitted*
Non functional requirements	*-Performance:-The system should process sick leave requests efficiently, with minimal delay, ensuring prompt responses to patient submissions.* *-Response time for sick leave request approvals or denials should be within a reasonable timeframe to avoid unnecessary delays for patients and employees.* *-Reliability:-The system should be reliable, with minimal downtime and robust error handling mechanisms in place to ensure continuous availability for submitting and processing sick leave requests.* *-Sick leave request data should be accurately recorded and securely stored to prevent data loss or corruption.* *Security:-Sick leave request data must be protected to ensure confidentiality and integrity. Access controls should be implemented to restrict unauthorized access to patient information.* *Usability:-The system should have an intuitive user interface, making it easy for patients and healthcare providers to submit, review, and process sick leave requests.*
Postconditions	***Sick Leave Request Status Updated:**The status of the sick leave request is updated in the system to reflect whether it has been approved, denied, or is pending review.*

	Patient Informed:*The patient is informed of the decision regarding their sick leave request, providing clarity on their absence status and any next steps required.*

UC Name	**UC05 - My Family**
Summary	The system should enable patients to manage health-related information for their family members, including dependent profiles, emergency contacts, and caregiver permissions.

	It should support access controls, allowing designated individuals to view and manage health records on behalf of family members with appropriate consent.
Dependency	*User Authentication and Authorization-The "My Family" feature relies on user authentication and authorization mechanisms established in the system. This ensures that only authorized users can access and manage health-related information for their family members.* *Medical File-The "My Family" feature depend on the existence of comprehensive electronic health records for family members, as captured in the Medical File use case. This includes medical history, allergies, medications, and other relevant health information.* *Emergency Services Integration-In case of emergency, the "My Family" feature depend on integration with emergency services to ensure that designated emergency contacts are notified and provided with necessary health-related information about family members requiring assistance.* *Medicine Prescription-The "My Family" feature rely on electronic prescription functionalities to enable primary users to request and manage medication prescriptions for family members within the system* *Healthy Summary Report-The "My Family" feature depend on the generation and distribution of health summary reports for family members, as provided in the Healthy Summary Report use case, to keep primary users informed about the health status of their family members.*
Actors	*Patient* ***Family Member (Primary Actor)*** *Healthcare Providers* *System Administrator*

Preconditions	***User Authentication****-The primary user must be authenticated and logged into the healthcare system to access the "My Family" feature. This ensures that only authorized individuals can manage health-related information for their family members.* ***Existing Patient Profile****-The primary user must have an existing patient profile within the system. This profile serves as the basis for managing health-related information for both the primary user and their family members.* ***Consent from Family Members****-The primary user must have consent from their family members to manage their health-related information within the system. This may involve obtaining explicit permission or consent from family members to access and manage their health records.*
Description of the Main Sequence	***1.Family Member Management:*** *-The primary user selects the option to manage family members' health-related information.* *-They have the option to add new family members by providing their demographic details, medical history, allergies, medications, and other pertinent health information.* *-Alternatively, they can select existing family members from a list if previously added.* ***2.Emergency Contacts Designation:*** *-The primary user designates emergency contacts for each family member by providing their contact information and specifying their role as emergency contacts.* *-They may designate multiple emergency contacts for each family member, prioritizing them based on preference or proximity.* ***3.Caregiver Permissions Assignment:*** *-The primary user assigns caregiver permissions to designated individuals, allowing them to access and manage health records on behalf of family members.* *-Caregivers may include other family members, healthcare professionals, or designated caregivers responsible for providing care and support.* ***4.Access and Management:*** *-With the family member profiles updated, the primary user and authorized caregivers can now access and manage health-related information for family members within the system.*

	-This includes viewing health records, scheduling appointments, requesting medication refills, and communicating with healthcare providers on behalf of family members.
Description of the Alternative Sequence	None
Non functional Requirements	***Performance:*** *Response Time: The system should respond to user actions within 5 sec, ensuring quick navigation and data retrieval within the "My Family" feature.* *Scalability: The system should scale seamlessly to accommodate a growing number of users and family members without degradation in performance.* ***Reliability:*** *Availability: The "My Family" feature should be available 24/7, with minimal downtime for maintenance or upgrades.* ***Security:*** *Access Control: The feature should enforce role-based access control , ensuring that only authorized users can access and manage health-related information for family members.* ***Usability:*** *User Interface: The user interface of the "My Family" feature should be intuitive and user-friendly, allowing primary users to easily navigate and manage health-related information for family members.*
Postconditions	***Updated Family Member Profiles:****After making changes or updates to family member profiles, the system should reflect the updated information, including demographic details, medical history, allergies, medications, emergency contacts, and caregiver permissions.* ***Confirmation Messages:****Upon successfully submitting changes to family member profiles, the system should display confirmation messages or notifications to inform users that the updates have been saved.*

	Ongoing Maintenance Enabled:*The system should support ongoing maintenance and updates to family member profiles, allowing users to make further changes or adjustments as needed to ensure the accuracy and completeness of health-related information.*

UC Name	***UC -06* Allergies list**
Summary	The system should provide a list of all allergy tests made for the patients a as that are manually imputed by the health care provider The system should also give a list of all the positive test results that the user received from the allergy list
Dependency	***Medicine Prescription:*** *Healthcare providers may need to consider a patient's vaccination history when prescribing medications, especially if certain medications interact with vaccines or if vaccination status influences treatment decisions.* ***Emergency Services Integration:*** *Dependency: There may not be a direct dependency, but in emergency situations, healthcare providers may need access to a patient's vaccination history stored in the "Vaccine List" to inform treatment decisions or assess potential risks, especially if the emergency involves infectious diseases.*
Actors	***Patients (Primary Actor)*** *Healthcare Providers* *Authorized Personnel*
Preconditions	*One or more conditions that must be true at the start of use case, from the perspective of this use case.*

	Patient Registration: *The patient must be registered within the healthcare system, and their demographic information, including name, date of birth, and contact details, should be accurately recorded.* ***Access Authorization*** *Users, such as healthcare providers or authorized personnel, must have appropriate access authorization to view and manage vaccination records. Access rights should be configured based on user roles and responsibilities within the healthcare organization.* ***Data Entry Capability:*** *Healthcare providers or authorized personnel should have the capability to input vaccination data into the system. This may involve access to data entry forms or interfaces specifically designed for recording vaccination details.*
Description of the Main Sequence	***1.Authentication and Access:****The patient logs into the healthcare system's patient portal or mobile application using their credentials, such as username and password or biometric authentication.* ***2.Navigating to Vaccine List:****Once logged in, the patient navigates to the section of the patient portal or app where vaccination records are accessible, labeled as "Vaccine List"* ***3.Viewing Existing Vaccination Records:****The system retrieves and displays existing vaccination records for the patient, presenting details such as vaccine names, administration dates, and any notes provided by healthcare providers.* ***4.Reviewing Vaccination History:****The patient reviews their vaccination history, examining past vaccinations they have received and noting any upcoming vaccinations recommended by healthcare providers.* ***5.Navigating Back or Continuing Tasks:****After reviewing their vaccination history, the patient can choose to navigate back to the main menu of the app or continue with other tasks, such as scheduling appointments or accessing medical reports.*

Non functional requirements	***Performance:*** *Response Time: The system should respond promptly to patient requests for accessing and viewing vaccination records, ensuring a seamless user experience.* ***Reliability:*** *Availability: The system should be available and accessible to patients whenever they need to view their vaccination records, with minimal downtime for maintenance or upgrades.* ***Security:*** *Access Control: Patient access to vaccination records should be restricted to authorized users only, with robust authentication mechanisms in place to prevent unauthorized access.* ***Usability:*** *User Interface: The patient interface for accessing vaccination records should be intuitive, user-friendly*
Postconditions	***Updated Vaccine Records:*** *After viewing or making changes to their vaccination records, patients should see the most up-to-date and accurate information reflected in their vaccine list.* ***Privacy Protection:*** *Patient privacy should be protected throughout the interaction with vaccination records, with measures in place to safeguard sensitive health information and comply with privacy regulations.*

UC Name	***UC-07* Medicine Prescription**
Summary	Heathcare providers should be able to electronically prescribe medications within the system f.e dosage specification, route frequency,duration,r
Dependency	*user authentication and authorization: in order to have a personalized prescription for each patient and avoid excess drug use.* *Medical file: to allow the healthcare personal to access the patient's medical file to check if they any health issues may arise when assigning the medications also to be able to add the prescriptions to their file* *Allergy list: to allow healthcare providers to see if the patient may get any allergies from the medication*
Actors	***healthcare provider (Primary Actors)*** *Patient* *System admin*
Preconditions	• *the health care provider prescribing medication online should be logged in and authenticated* • *The patient must give access must for the healthcare provider medical file to view past medical prescriptions and view any medical history* • *The process should be approved by the legal bodies to abide by regulatory laws and procedures*

Description of the Main Sequence	• **Step 1:** the health care provider logs in • **Step 2:** then they assign the patient a prescription • **Step 3:** the patient receives a notification that their doctor has placed a prescription for them • **Step 4:** the user logs in and authenticates themselves • **Step 5:** the user navigates to the prescription and opens it • **Step 6:** the user can then view all previous prescriptions that they have been assigned including details such as frequency, dosage and any notes • **Step 7:** if the user has any questions or concerns they can contact the healthcare provider virtually
Description of the Alternative Sequence	***None***
Non functional requirements	1. *Performance: the system should be able to respond fast enough so that the patient can be updated as soon as possible* 2. *Reliability: The system should be highly reliable, since the doctors can prescribe strong medication that can be negative if an error had occurred.* 3. *Security: the system should be very strong and not be accessed by a lot of individuals to protect patient security and avoid tampering with individuals prescriptions* 4. *Scalability: the system should allow multiple users to use thing functionality. Each user should have their own personal prescription records.* 5. *Usability: The interface of the system should be simple and user friendly for the patients* 6. *Maintainability: the system should be written and organized very well to allow easier maintenance required*
Postconditions	*The user can show their prescription from their user account and show i to the pharmacist and be able to collect their medication.*

UC Name	***UC-08 staff performance evaluation***
Summary	○ The system should provide a comprehensive staff performance evaluation module to assess the performance of medical staff. ○ The system should facilitate the collection of feedback from patients through surveys, ratings, and comments.
Dependency	*Medical file: to see if the patient actually visted the doctor in order to rate him* *Authentication: the person must authenticate and validate themselves before placing any comment to makesure they haave a file in the system*
Actors	*Health care providors* ***Patients (Primary Actor)*** *Admin staff* *HR*
Preconditions	• *The patient must authenticate themselves to avoid any misconduct or predujjus against healthcare provideors from outside the hospital patian scope* • *The patient must have visted the doctor before given the option to give him an evaluation*

Description of the Main Sequence	• **Step 1:** the user will receive a notification asking if they would like to evaluate the doctor or healthcare provider that they have recently visited • **Step 2:** if the user chooses to rate him a menu appears • **Step 3:** inside the menu the patient can choose how many stars out of 5 they would like to present them with • **Step 4:** the patient is then given a textbox to add any comments or thoughts about the doctor they have visited during the stay in the hospital and discribe the reason they have given them such rating
Description of the Alternative Sequence	*None*
Non functional requirements	1. *Performance: the system should be able to respond fearly quiiiickly to give the patient the notification inorder for them to rate their doctor visit* 2. *Reliability: The system should be reliable to present the correct doctor to rate not allow patients to rate the doctors that they havent visited* 3. *Security: the system should be fearly secure inorder to not allow just anyone to rate all the doctors in the system* 4. *Scalability: the system should be able to collect reviews about the same doctor from multiple patient profiles* 5. *Usability: The interface of the system should be simple and user friendly for the patients in order for them to feel at ease when writing their review* 6. *Maintainability: the system should be written and organized very well to allow easier maintenance required*
Postconditions	*The user has rated and commented on the behavior and satisfaction with their healthcare providor*

UC Name	***UC – 09 Emergancy service integration***
Summary	The system should include features for prioritizing and managing emergency cases such as, requesting an ambulance , integrating with rapid emergency response systems,ED services (a medical treatment facility specializing in emergency medicine, the acute care of patients who present without prior appointment)
Dependency	*Appointment scheduling* *Home healthcare coordination*
Actors	*ER personel* *Healthcare providers* *Emergency response teams* ***Patients (Primary Actors)***
Preconditions	• *The person requesting the ambulance should have a high priority request level before ordering* • *They should have a medical file inside the hospital system*
Description of the Main Sequence	• **Step 1:** the patient chooes which ambulance they would like request • **Step 2:** the patient must specy the need of an ambulance • **Step 3:** the patient needs to specify if they only need an ambulance for transportation, if they need it for normal treatment, or if they requare special ambulance fro intense care/disability clients • **Step 4:** a notification is sent to the healthcare prodirs about the requested details

	• **Step 5:** a notification is received by the patient to confirm the arrival of the ambulance
Description of the Alternative Sequence	*None*
Non functional requirements	1. *Performance: the system should be able to respond fast to give the patient the notification so that the ambulace with the healthcare proidors can arrive as soon as possible* 2. *Reliability: The system should be reliable to present the correct doctor to rate not allow patients to order an invalid ambulance* 3. *Security: the system should be fearly secure inorder to not allow just anyone to order and cancel the ambulance requests* 4. *Scalability: the system should be able to allow a fair amount of people to ordar an ambulance* 5. *Usability: The interface of the system should be simple and user friendly for the patients in order for them to feel at ease when requesting an ambulance* 6. *Maintainability: the system should be written and organized very well to allow easier maintenance required*
Postconditions	*The patient is then taken to the hospital by the ambulance and healthcare providors*

UC Name	***UC - 10 MyVaccinesList***
Summary	*The system should maintain a comprehensive record of all vaccinations received by users, including both mandatory vaccinations administered since birth(early life immunizations) and optional vaccinations(prime immunization).*
Dependency	• *Dependency on Medical File: It depends on the Medical File system to access and update the vaccination records within the comprehensive electronic health records.* • *Dependency on User Authentication and Authorization: The system requires user authentication and authorization to ensure that only authorized users can access and update vaccination records securely.*
Actors	***User (primary Actor)***
Preconditions	*Users must have an account on the system.*
Description of the Main Sequence	1. User logs into the system. 2. User navigates to the "My Vaccines List" section. 3. The system displays a list of all vaccinations received by the user, including dates of administration, vaccine types, and administering healthcare providers.
Description of the Alternative Sequence	• *None*

Non functional equirements	1. *Performance: The system should display vaccine records quickly, even with large datasets.* 2. *Scalability: The system should be able to handle increasing numbers of vaccine records without performance degradation.* 3. *Reliability: The system should maintain accurate and up-to-date vaccine records.* 4. *Security: User authentication and authorization mechanisms should ensure that only authorized users can access vaccination records.* 5. *Usability: The user interface should be intuitive and easy to navigate for viewing vaccination records.* 6. *Maintainability: The system should be modularized and well-documented for ease of maintenance.*
Postconditions	*User has viewed their complete vaccination history within the system.*

UC Name	***UC -11 RadiologyResult***
Summary	*The system should provide users with access to view and manage radiology reports and associated images, facilitating efficient retrieval and interpretation of diagnostic information.*
Dependency	• *Dependency on Medical File: So it can access relevant patient information, such as medical history and previous diagnostic procedures.* • *Dependency on User Authentication and Authorization: To ensure the confidentiality of radiology reports and patient information.*
Actors	***User (Primary Actor)*** *Secondary Actor: Radiologists (who interpret radiology reports and may interact with he system)*
Preconditions	*Users must have an account on the system.*
Description of the Main Sequence	*1. User logs into the system.* *2. User navigates to the "Radiology Result" section.* *3. The system displays a list of radiology reports, including essential details such as date, type of procedure, and interpreting radiologist's name.* *4. User selects a report to view.* *5. The system displays the report summary and associated images for interpretation.*

Description of the Alternative Sequence	• *None*
Non functional Requirements	1. *Performance: The system should display radiology reports and images quickly, even with large datasets.* 2. *Scalability: The system should be able to handle increasing numbers of radiology reports without performance degradation.* 3. *Reliability: The system should maintain accurate and up-to-date radiology reports.* 4. *Security: User authentication and authorization mechanisms should ensure that only authorized users can access radiology reports.* 5. *Usability: The user interface should be intuitive and easy to navigate for viewing radiology reports.* 6. *Maintainability: The system should be modularized and well-documented for ease of maintenance.*
Postconditions	*User has viewed radiology reports and associated images for diagnostic purposes.*

UC Name	***UC -12 Healthy Summary Report***
Summary	*This use case allows patients to access a monthly report summarizing their health indicators and analysis results from their latest visits, through the app.*
Dependency	*This use case depends on the app being linked to the patient management system and having access to a patient's medical file..* • *Dependency on Medical File: So it can access relevant patient information, such as medical history and previous diagnostic procedures.*
Actors	*Primary Actor: Patient*
Preconditions	*1.The patient has a registered account within the app and is logged in.* *2.The patient has at least one visit recorded in the hospital management system within the past month.*
Description of the Main Sequence	*1.The patient opens the app and navigates to the "Health Reports" section.* *2.The app displays a list of available reports, including an option for "Monthly Health Summary."* *3.The patient selects "Monthly Health Summary."* *4.The app retrieves and displays a report for the current month, including:* *5.Demographics (name, date of birth)* *6.Summary of vital signs for the past month (e.g., average blood pressure, heart rate) (if recorded during visits)*

	7,List of diagnoses from recent visits *8,Overview of key lab test results (e.g., cholesterol, blood sugar) (if available)* *9.The patient can review the report and:* *10.Download a PDF copy of the report for their records.* *11.View detailed information about specific other months by tapping on them (if available).*
Description of the Alternative Sequence	*If the patient has no visits within the past month, the app displays a message indicating this and allows them to choose a different timeframe for the report (if allowed by the system).*
Non functional requirements	1. *Performance- The report should load quickly and be easy to access within the app.* 2. *Usability-The report format should be clear, concise, and easy to understand for patients.* 3. *Security-The app should ensure data security and patient privacy according to regulations.* 4. *Reliability-The app should be designed to gracefully handle unexpected errors or interruptions, providing informative error messages to users and minimizing disruptions to their workflow.* 5. *Scalability:-The app should be designed to accommodate an increasing number of users and data volume without experiencing degradation in performance or reliability.* 6. *Maintainability:-The app codebase should be well-organized and documented, following industry best practices and coding standards to facilitate ease of understanding and modification by developers.*
Postconditions	*The patient has easy access to a summary of their recent health status.* *The report empowers patients to be more informed about their health and participate in shared decision-making with their healthcare providers.*

UC Name	***UC - 13 My Tracker***
Summary	*This use case allows patients to manage their health information through a connected tracker and share it with authorized doctors.*
Dependency	• *Dependency on Medical File: So it can access relevant patient information, such as medical history and previous diagnostic procedures.*
Actors	***Patient (Primary Actor)*** *Doctor*
Preconditions	*1.The patient has a registered account on the app.* *2.The patient has a compatible health tracker connected to their smartphone.*
Description of the Main Sequence	1. *The patient logs in to the app.* 2. *The patient navigates to the "My Tracker" section.* 3. *The app displays the patient's health data retrieved from their connected tracker (if data is available).* 4. *The patient can manually input additional health information (e.g., symptoms, medication intake).* 5. *(Optional) The patient can select a doctor from their healthcare team and grant them access to view their health tracker data.* 6. *The system securely transmits the patient's health data to the app and the doctor's authorized interface (if access is granted).*

Description of the Alternative Sequence	1. *The patient encounters issues connecting their health tracker to the app. The system provides clear instructions or troubleshooting steps to assist the patient.* 2. *The patient chooses not to share their health tracker data with any doctors.*
Non functional Requirements	***Security:*** *Patient health data must be encrypted and transmitted securely.* ***Availability:*** *The app and data transmission should be highly available with minimal downtime.* ***Performance:*** *The app should load data quickly and respond to user actions promptly.* ***Usability:*** *The user interface for "My Tracker" should be intuitive and easy to navigate for patients of varying technical abilities.*
Postconditions	*The patient has access to their health data through the app.* *The patient can monitor their health trends and input additional information.* *(Optional) Authorized doctors can view the patient's health tracker data to gain a more comprehensive understanding of their health.*

UC Name	**UC14 - Home Healthcare Coordination**
Summary	The system should facilitate accessibility where doctors for specific services such as (laboratory analyzes - radiology - vaccinations -physical therapy), etc go to a patients house and do the procedures requested by this patient.Also the systems offers track of the order log of these requests .
Dependency	Medical file ,Appointment Scheduling,Authentication
Actors	Patient Doctor hospital Administrators
Preconditions	• The patient must have access to the system. • The system must have available doctors registered. • There must be a list of services
Description of the Main Sequence	1.The patient logs in to the Patient Management app. 2. The patient browses the available home healthcare services or searches for a specific service. 3. The patient selects the desired service and chooses a preferred date and time for the visit. 4. The system presents a list of available doctors for the chosen service and time slot. 5. The patient selects a doctor from the list and submits the request 6. The system sends a notification to the chosen doctor about the new home visit request. 7. The doctor receives the notification and reviews the patient's request details. 8. The doctor can either accept or reject the request within the system. 9. If the doctor accepts: ◦ The system confirms the appointment with the patient and sends them an appointment reminder. The system updates the doctor's schedule and marks the slot as booked. 10. If the doctor rejects: The system notifies the patient about the rejection and offers options to reschedule or choose a different doctor. 11. On the appointment date and time, the doctor travels to the patient's home for the visit 12. After the visit, the doctor documents the consultation and any procedures performed within the system. 13. The system updates the patient's medical record with the doctor's notes

Description of the Alternative Sequence	• The patient might not find a suitable doctor or time slot for their request. The system should offer options to search for a different service, date, or time, or allow them to be added to a waiting list if available. • The doctor might need to reschedule the appointment due to unforeseen circumstances. The system should facilitate communication between the doctor and patient to reschedule the visit. • The patient might cancel the appointment beforehand. The system should allow cancellation and update the doctor's schedule accordingly.
Non functional requirements	-Security: Patient health information must be protected following data privacy regulations. -Performance: The system should respond quickly to patient requests and appointment scheduling. -Usability: The interface for scheduling home visits should be patient-friendly and easy to navigate for patients.
Postconditions	1.The patient receives the requested home healthcare service at their convenience 2.The doctor manages their home visit schedule effectively within the system A complete record of the home healthcare visit is documented in the patient's medical record.

UC Name	UC -15 Appointment Scheduling
Summary	This service provides three options : scheduling a consultation call , getting consultation immediately no matter the form, and booking an appointment for check up . The system should allow doctors to view patients' medical files and prescribe them specific medications for their concerns . If the patient wants a face to face consultation The system should allow patients to schedule appointments with specific healthcare providers in different clinics that the hospital provides , based on their availability and specialization. It should support recurring appointments, appointment reminders, and rescheduling/cancellation functionalities. If the patient wants online conversation then the system will provide ask your doctor feature. If the patient wants to book an appointment for check up then the system will provide a check up feature.
Dependency	Account
Actors	Patient Healthcare Provider Staff
Preconditions	1.The patient must have access to the hospital management system. 2.Healthcare providers must have their schedules and availability updated in the system. 3.Clinics must be operational during the scheduling period.

Description of the Main Sequence	1.The patient logs into the hospital management system. 2.The patient selects the "Appointment Scheduling" option. 3.The patient checks which option(online,face to face and check up) does fit his/her need. 4.According to the selection the system will navigate the user to the interface required,if he is an undecided person then by default the system will show him to book an face to face appointment. 5.For that reason the system presents available healthcare providers and their respective clinics. 6.The patient searches for a preferred healthcare provider or clinic. 7.If the patient selects the clinic,then all the doctors available with respective information will appear. 8.The system displays the provider's available time slots. 9.The patient selects a suitable time slot. 10.The staff confirms the appointment and the system sends a notification to both the patient and the healthcare provider. 11.The appointment is added to the system's database. 12.If the patient selects the doctorName,the doctor that is being searched will appear. 13.The system displays the doctor’s available time slots. 14.The patient selects a suitable time slot. 15.The staff confirms the appointment and the system sends a notification to both the patient and the healthcare provider. 16.The appointment is added to the system's database.

Description of the Alternative Sequence	-No available appointments match the patient's preference: 1.The system displays alternative options with different providers or dates. 2.The patient can choose an available option or refine their search criteria. -Patient needs to reschedule or cancel an existing appointment: 1.The system displays a list of the patient's upcoming appointments. 2.Patient selects the appointment they want to modify. 3.The system offers available slots for rescheduling or allows cancellation. 4.Patient confirms the change and receives an updated notification.
Non functional Requirements	-Performance: The system should respond promptly to appointment scheduling requests to ensure a seamless patient experience. -Reliability: The system must accurately reflect the availability of healthcare providers and clinics. -Security: Patient data should be securely stored and transmitted to maintain confidentiality. -Usability: The interface should be intuitive and easy to navigate for patients scheduling appointments. -Scalability: The system should be capable of handling a large number of appointment requests during peak times.

Postconditions	1.The appointment is successfully booked, rescheduled, or canceled in the system. 2.The patient receives a confirmation notification with details about the appointment. 3.The healthcare provider's schedule is updated accordingly.

UC Name	**UC -16 Ask your Doctor**
Summary	Patients should have a secure option for asking medical questions and seeking advice from their primary care providers or specialists.This service provides three options : scheduling a consultation call , get consultation in chat , and inquiring information about medications . The system should allow doctors to view patient medical file and prescribe them specific medications for their concerns
Dependency	Medical file and Authentication
Actors	Patient Staff Doctor
Preconditions	1.The patient has a registered account on the hospital management system's mobile app. 2.Doctors must be available for consultation
Description of the Main Sequence	1.The patient logs in to the mobile app. 2.The patient selects the "Ask Your Doctor" option. 3.The system displays a list of the patient's doctors

	4.The patient selects the doctor they want to ask a question to. 5.The patient chooses one of three options: -Schedule a consultation call: The patient selects a date and time for a phone or video call consultation. The system sends an appointment request to the doctor. -Get consultation immediately: The patient types their question in a secure chat window. The doctor receives a notification and can respond within the chat window if available. -Inquire information about medications: The patient enters the name of a medication or selects it from a list. The system displays relevant information from the patient's medical record (if prescribed previously) or general information about the medication. +If scheduling a consultation call: 1.The doctor receives the appointment request and can accept or decline. 2.Upon acceptance, the system confirms the appointment time with both patient and doctor. +If getting consultation immediately: 1.The doctor can choose to respond to the patient's question within the chat window or suggest scheduling a consultation call for a more detailed discussion. +If inquiring about medications: 1.The patient can view the provided information.
)escription of the Alternative Sequence	1.The doctor may not be available for immediate consultation. The system should inform the patient and offer the option to schedule a call or leave a message.

Non functional requirements	-Security: Ensure patient data and communication with doctors are encrypted and secure. -Reliability: The system should be available 24/7 to accommodate patient inquiries. -Responsiveness: Prompt responses from doctors to patient inquiries. -Scalability: Ability to handle multiple concurrent consultations and inquiries.
Postconditions	1.Patient receives medical advice, prescriptions, or scheduled consultation confirmation. 2.Doctor's response and prescriptions are recorded in the patient's medical file for future reference.

UC Name	**UC -17 Help and Support Integration**
Summary	The system should offer comprehensive help from technical providers and support resources, including contextual help menus, knowledge base articles, tutorial videos, and patient forums.It should provide multi-channel support options, such as live chat, email ticketing, to address patient inquiries and technical issues promptly.
Dependency	none
Actors	patient Technical Providers
Preconditions	1.Support resources such as contextual help menus, knowledge base articles, tutorial videos, and patient forums must be available. 2.Technical providers and support staff must be available to respond to patient inquiries.
Description of the Main Sequence	1.patient accesses the help and support section within the hospital management system. 2.patient selects the type of assistance needed (e.g., technical support, general inquiries). -If seeking technical support:

	a. patient chooses the preferred support channel (e.g., live chat, email ticketing). b. patient describes the technical issue or inquiry. c. System assigns the request to available technical providers or support staff. d. Technical providers or support staff respond to the patient's inquiry or issue through the selected support channel. -If seeking general inquiries or assistance: a. patient navigates through contextual help menus or searches for relevant knowledge base articles. b. If further assistance is needed, patient may access tutorial videos or patient forums for additional guidance.
)escription of the Alternative Sequence	1.If live chat support is unavailable due to high demand or off-hours, the system prompts the patient to submit an email ticket, ensuring their inquiry is addressed promptly once support staff becomes available.
Non functional equirements	-Availability: The help and support resources should be accessible 24/7 o accommodate patient inquiries. -Responsiveness: Support staff should respond to patient inquiries promptly, aiming for minimal response times. -Scalability: The system should be capable of handling multiple patient nquiries simultaneously across different support channels. -patient-Friendly Interface: Ensure that help menus, knowledge base rticles, and support channels are easily navigable and intuitive for patients.a

Postconditions	.patient receives assistance or resolution to their inquiry or technical ssue. 2.Feedback from patient interactions with support resources may be recorded for continuous improvement purposes.
UC Name	**UC-18 Patient Account:**
Summary	The system should implement robust authentication mechanisms, such as multi-factor authentication (MFA) and biometric authentication, to verify the identity of patients accessing sensitive data. patients can identify through Face ID , fingerprint , SMS , Whatsapp .
Dependency	none
Actors	Patient System administrators
Preconditions	.Authentication services must be integrated into the system. 2.Biometric verification systems must be available and compatible with he app.
Description of the Main Sequence	1.patient attempts to access the hospital management system through the app. 2.System prompts the patient to authenticate their identity. 3.patient selects the preferred authentication method (e.g., Face ID, fingerprint, SMS, WhatsApp). -If using biometric authentication: a. patient provides biometric data (e.g., facial scan, fingerprint). b. System verifies the biometric data against stored records.

	c. If the verification is successful, patient gains access to the system. -If using MFA: a. System sends a verification code to the patient via SMS or WhatsApp. b. patient enters the verification code. c. If the code is correct, patient gains access to the system. 4.Upon successful authentication, the patient is granted appropriate access permissions based on their role and authorization level.
Description of the Alternative Sequence	1.If biometric authentication fails due to technical issues or patient error, the system prompts the patient to retry or use an alternative authentication method, such as MFA via SMS or WhatsApp. 2.If MFA verification fails due to incorrect code entry or other issues, the system may prompt the patient to request a new verification code or use another authentication method.
Non functional Requirements	-Security: Ensure that authentication mechanisms are robust and resistant to unauthorized access attempts. -Reliability: Authentication processes should be reliable and available to patients whenever access to the system is required. -Usability: Authentication methods should be patient-friendly and intuitive, providing a seamless patient experience. -Compatibility: Authentication mechanisms should be compatible with a wide range of devices and operating systems.

Postconditions	.Upon successful authentication, the patient gains access to the hospital management system. 2.Unauthorized access attempts are detected and prevented, ensuring the security of sensitive data.
UC Name	**UC -19 Health Calculators**
Summary	The system enables patients to access a suite of health calculators for personalized health insights. Patients can input data like weight, height, age, activity level, and gender (optional) to calculate metrics like BMI, BMR, ideal body weight, body fat percentage
Dependency	Authentication
Actors	Medical File
Preconditions	.The patient has an active account on the app.
Description of the Main Sequence	1.The patient logs in to the hospital management system. 2.The patient navigates to the "Health Calculators" section. 3.The system presents a list of available calculators: -BMI Calculator -BMR Calculator -Ideal Body Weight Calculator -Body Fat Percentage Calculator -Macronutrient Calculator (Carbs, Protein, Fat)

	4.The patient selects the desired calculator. 5.The system displays an input form for relevant data (weight, height, age, activity level, gender for some calculators). 6.The patient enters their information. 7.The system validates the input data (e.g., ensuring weight and height within reasonable ranges). 8.Upon valid input, the system calculates the selected metric and displays the result in a clear, easy-to-understand format. 9.The system may offer additional information or resources related to the calculated metric (e.g., healthy BMI ranges, BMR interpretation, ideal body weight considerations).
Description of the Alternative Sequence	1.If the patient's medical history is unavailable for BMR adjustments, the system may offer an option to enter relevant conditions manually or provide a default BMR calculation.
Non functional requirements	-Security: Patient data must be securely stored and transmitted using industry-standard encryption protocols. Performance: The system should respond promptly to user actions and calculations. Usability: The user interface should be intuitive and easy to navigate for patients of varying technical skills. Accessibility: The interface should be accessible to users with disabilities, adhering to WCAG standards. Scalability: The system should be able to handle a growing number of users and data without performance degradation.
Postconditions	1. The patient has gained personalized insights into their health through calculated metrics.

	2.The patient has the option to save results for future reference or consult a healthcare professional for further guidance. 3.The system remains available for future use by the patient.

UC Name	***UC20*-.Vital Signs Tracking**
Summary	○ This use case allows healthcare providers to monitor and record a patient's vital signs (heart rate, blood pressure, temperature, respiratory rate, oxygen saturation) and view trends over time. It also enables patients to view their own vital signs.

Dependency	*Medical File*
Actors	***Healthcare Provider*** ***Patient***
Preconditions	• *The patient's vital signs data is available (entered manually or via integrated medical devices).* • *The patient's height and weight are documented in the app (for BMI calculation).*
Description of the Main Sequence	*1.HCP/Patient opens the Vital Signs Tracking feature in the app.* *2.The system displays a list of patients (for HCP) or the patient's own vital signs (for patient).* *3.HCP selects a specific patient (if applicable).* *4.The system displays the patient's current vital signs data and historical trends in charts.* *5.(Optional) HCP enters new vital sign readings for the patient.* *6.The system stores the newly entered data and updates the charts.* *7,(For Patients only) The system prompts for height and weight information (if not already entered).* *8.(For Patients only) The patient enters their height and weight.* *9.The system calculates and displays the patient's BMI.*

Description of the Alternative Sequence	*If no historical data exists, the system displays a message indicating this.* *If the HCP attempts to enter data for a patient they are not authorized to access, the system displays an error message.*
Non functional requirements	• *The system should be secure and protect patient health information (HIPAA compliant).* • *The system should display data accurately and in real-time (if integrated with medical devices).* • *The charts should be clear and easy to understand, with proper scaling and labeling.* • *The BMI calculation should be based on a standard formula.*
Postconditions	• *The patient's vital signs data is updated and stored securely.* • *The HCP has a clear view of the patient's condition and trends.* • *The patient can access and understand their own vital signs and BMI.*

UC Name	***UC21-.Water Tracker***
Summary	○ This use case allows hospitalized patients to monitor their daily water intake and set personal hydration goals. It provides features to set reminders, track beverage types, and access educational content on the importance of hydration.
Dependency	*Patient account on the app*
Actors	***Patient***
Preconditions	• *Patient has logged in in the app.* • *Patient has an active internet connection.*
Description of the Main Sequence	1. *Patient opens the "Water Tracker" section within the app.* 2. *The app displays the patient's current water intake for the day.* 3. *The patient can set a daily hydration goal based on their needs.* 4. *The patient can choose to set reminders to drink water at specific intervals.* 5. *The patient can manually log the amount and type of beverage consumed (e.g., water, juice).* 6. *The app updates the patient's daily water intake progress towards their goal.* 7. *The patient can access educational content within the app about the importance of hydration and its impact on health.*

Description of the Alternative Sequence	*If the patient does not set a daily hydration goal, the app defaults to a recommended daily intake.* *The patient can choose to ignore reminder notifications.*
Non functional requirements	• *The app interface should be user-friendly and accessible for patients with varying technical skills.* • *The app should be responsive and function smoothly on different mobile devices.* • *Data privacy: Patient water intake data should be stored securely within the app.*
Postconditions	• *The patient has monitored their daily water intake and set a hydration goal (if desired).* • *The patient has received reminders to drink water (if enabled).* • *The patient has access to educational content about the importance of hydration.*

UC Name	***UC22-.Comprehensive Medical Check-Up***
Summary	○ This use case describes the process for a patient to apply for a comprehensive medical check-up within the system. He first applies and gets the schedule of the checkup in place and after he finished the checkup he expects the results back.
Dependency	*appointment scheduling, lab result management, health ummary report, allergy list, my vacinne list, radiology report*
Actors	***Patient*** ***Staff*** ***HealthCare Provider***
Preconditions	• *The patient has a registered account in the hospital system.* • *The system has a defined set of tests included in the comprehensive check-up.*
Description of the Main Sequence	1. *The patient logs in to the system.* 2. *The patient selects the "Comprehensive Medical Check-up" option.* 3. *The system displays available dates and times for appointments.* 4. *The patient selects a preferred date and time for the check-up.* 5. *The system confirms the appointment and provides instructions (if any) for preparing for the check-up (e.g., fasting requirements).*

	6. *On the appointment date, the patient arrives at the hospital for the check-up.* 7. *Medical staff perform the various tests included in the check-up.* 8. *After the tests are completed, the patient may have a consultation with a doctor (optional).* 9. *The system processes the test results and generates a comprehensive report.* 10. *The system notifies the patient when the report is ready.* 11. *The patient logs in to the system and accesses the report.* 12. *The report includes details of the performed tests, results, and any necessary next steps or recommendations based on the findings.*
Description of the Alternative Sequence	*During the appointment, if additional tests are deemed necessary based on initial findings, the system prompts for approval and reschedules those tests if needed.* *The patient may cancel the appointment before the date through the system.*
Non functional requirements	• *The system should be available 24/7 for patients to schedule appointments.* • *The system should ensure the security and confidentiality of patient data.* • *The report should be clear, concise, and easy for patients to understand.*
Postconditions	• *The patient has a completed comprehensive medical check-up.* • *The patient has access to a detailed report with their test results and recommendations.* • *The hospital has a record of the patient's check-up and results for future reference.*

UC Name	***UC -23 MyTodoList***
Summary	*The system should feature a comprehensive task management module that allows users to create, organize, and track their to-do lists efficiently.*
Dependency	• *Dependency on User Authentication and Authorization: User authentication and authorization are essential for secure access to task management functionalities.*
Actors	***Patient(primary Actor)***
Preconditions	*Users must have an account on the system.*
Description of the Main Sequence	*1. User logs into the system.* *2. Users access the "Todo List" section.* *3. The system displays a centralized dashboard with two sections: "Appointments" and "Orders".* *4. In the "Appointments" section, users can view all scheduled appointments.* *5. In the "Orders" section, users can track pending prescription orders and medication refills.*
Description of the Alternative Sequence	*None*

Non functional requirements	1. *-Performance: The system should respond quickly to user interactions with the task management module.* 2. *-Scalability: The system should be able to handle increasing numbers of tasks without performance degradation.* 3. *-Reliability: The system should reliably store and track user tasks.* 4. *-Security: User authentication and authorization mechanisms should ensure that only authorized users can access task lists.* 5. *-Usability: The user interface should be intuitive and easy to navigate for managing tasks.* 6. *-Maintainability: The system should be modularized and well-documented for ease of maintenance.*
Postconditions	*User has managed their tasks efficiently using the system's task management module.*

UC Name	***UC -24 Privacy Policy***
Summary	*This feature encompasses a set of guidelines and procedures governing the collection, use, storage, and disclosure of patient information within the system.*
Dependency	*medical file* *blood donation management* *medical prescriptions* *home healthcare coordination* *healthy summary report* *allergy list* *my tracker* *my vaccine list* *radiology report* *pregnancy tracker* *vital sign tracking*

	check up
Actors	***Patient***
Preconditions	*Users must have an account on the system.*
Description of the Main Sequence	*The system displays the privacy policy to the user upon request. The user can review the privacy policy and agree to its terms before proceeding to use the app.*
Description of the Alternative Sequence	*None*
Non functional requirements	*The privacy policy should be easily accessible to all users. The privacy policy should be written in clear and concise language that is easy for users to understand.*
Postconditions	

	The user agrees to the terms of the privacy policy or exits the app.

UC Name	***UC -25 Terms & Conditions***
Summary	*This use case allows a user to review and accept the Terms & Conditions (T&Cs) associated with using the hospital management system app.*
Dependency	*Privacy Policy*
Actors	***Patient***
Preconditions	• *The user has launched the app for the first time or has not previously accepted the T&Cs.*

Description of the Main Sequence	1. *The app displays a welcome screen with a button or link to access the T&Cs.*
	2. *The user clicks the button/link.*
	3. *The app displays the full text of the T&Cs.*
	4. *The user reads and understands the T&Cs.*
	5. *The user selects an option to either "Accept" or "Decline" the T&Cs.*
	• ***Accept:***
	  ○ *The user clicks the "Accept" button.*
	  ○ *The app stores the user's acceptance of the T&Cs (e.g., date, timestamp).*
	  ○ *The app grants the user full access to the system's functionalities.*

	• ***Decline:***
	  ○ *The user clicks the "Decline" button.*
	  ○ *The app displays a message explaining the limitations of using the system without accepting the T&Cs.*
	  ○ *The app may restrict access to certain functionalities (e.g., appointment booking).*

Description of the Alternative Sequence	• *The user may choose to close the T&Cs screen without reading or accepting them.* ○ *The app may prompt the user to review the T&Cs when attempting to access certain functionalities.*
Non functional Requirements	• *The T&Cs document should be clear, concise, and easy to understand.* • *The T&Cs screen should be user-friendly and accessible.* • *The user's acceptance of the T&Cs should be securely stored.*
Postconditions	• *If the user accepts the T&Cs, they gain full access to the app's functionalities.* • *If the user declines the T&Cs, their access to the app may be limited.*

UC Name	***UC -26 Apply for First Aid Training***
Summary	*This use case allows users to access educational resources about basic first aid and apply for a formal first aid training program offered by the hospital.*
Dependency	*User Authentication and Autherization*
Actors	***Patient***
Preconditions	• *User has a valid account on the app and is logged in*
Description of the Main Sequence	*1.User selects the "First Aid Training" option within the app.* *2.The app displays educational content about basic first aid techniques (e.g., CPR, wound care, emergency response).* *3.User reviews the information and resources.* *4.If interested in formal training, the user selects the "Apply for Training" option.*

	5.The app presents an application form. *6.User fills out the application form, including any required information (e.g., preferred date/time, contact details).* *7.User submits the completed application.* *8.The app sends the application electronically to the hospital's training department.* *9.The system sends an automated confirmation message to the user acknowledging their application.*
Description of the Alternative Sequence	1. *User decides not to apply for training after reviewing the educational content.* 2. *User exits the "First Aid Training" section.*
Non functional requirements	• *The system should be user-friendly and easy to navigate.* • *The educational content should be up-to-date and accurate.* • *The application process should be efficient and secure.* • *The system should send confirmation messages promptly.*
Postconditions	• *User has access to educational resources about basic first aid.* • *User's application for formal training is submitted to the hospital (if applicable).* • *User receives confirmation regarding their application status.*

UC Name	***UC -27 Apply for Medication Refill with Reimbursement***
Summary	*This use case allows a patient to request a refill for a prescribed medication and indicate they would like to be reimbursed for the cost by their insurance provider.*
Dependency	*Medical Prescriptions, User Authentication and Authorization, Health Card*
Actors	***Patient***
Preconditions	• *The patient has a registered account on the app.* • *The patient has a valid prescription for the medication they are requesting a refill for.* • *(Optional) The patient has a linked health card with valid insurance information.*
Description of the Main Sequence	1. *The patient logs in to the app using their credentials (Use Case 13).* 2. *The patient navigates to the section for medication refills.* 3. *The patient selects the medication they need a refill for from their prescription history (Use Case 6).* 4. *The patient chooses the desired quantity for the refill.* 5. *The patient selects the option to request reimbursement for the medication cost.*

	6. *(Optional) The app prompts the patient to link their health card information if not already done (Use Case 23).* 7. *(Optional) The app retrieves the patient's insurance information from the linked health card.* 8. *The app displays an estimated cost for the medication and potential co-pay based on insurance coverage (if applicable).* 9. *The patient confirms the refill request with reimbursement.* 10. *The app transmits the refill request and reimbursement claim to the healthcare provider's system.* 11. *The healthcare provider processes the request and sends the medication to the patient's preferred pharmacy.* 12. *The healthcare provider initiates the reimbursement claim with the patient's insurance provider (if applicable).* 13. *The patient receives a notification from the app confirming their medication refill request and estimated timeframe for fulfillment.*
Description of the Alternative Sequence	1. *If the patient does not have a valid prescription for the medication, the app informs them and suggests scheduling an appointment (Use Case 1).* 2. *If the patient encounters any errors during the process, the app provides clear error messages and instructions for troubleshooting.*
Non functional requirements	• *The system should be secure and protect patient privacy (refer to Privacy Policy).* • *The system should be responsive and provide timely feedback to the user.* • *The reimbursement claim process should be clear and transparent.*
Postconditions	• *The patient has a medication refill request submitted with a request for reimbursement.* • *The healthcare provider has received the refill request and reimbursement claim (if applicable).* • *The patient has received confirmation and estimated timeframe for their medication refill.*

UC Name	***UC -28 Health Card***
Summary	*This use case describes the functionality of the app's health card feature, which provides users with a digital representation of their medical information.*
Dependency	*User Authentication and Authorization*
Actors	***Patient***
Preconditions	• *The patient has successfully logged in to the app (UC #13).* • *The patient has a medical file created in the system (UC #2).*
Description of the Main Sequence	*:* 1. *The patient selects the "Health Card" option within the app.* 2. *The app retrieves the patient's medical information from their medical file.* 3. *The patient can view and navigate the different sections of their health card.*
Description of the Alternative Sequence	*The patient selects the "Health Card" option.* *The system detects an incomplete medical file and prompts the patient to complete it*

Non functional requirements	• *The health card information should be displayed clearly and concisely.* • *The app should ensure secure access and display of health information according to privacy policies (UC #28, UC #29).* • *The health card should be easily accessible within the app.*
Postconditions	• *The patient has accessed and reviewed their health card information.* • *The patient may choose to navigate to other functionalities of the app based on the information displayed on the health card (e.g., schedule an appointment based on a medical history entry)*

UC Name	***UC -29 Pregnancy Tracker***
Summary	*This feature allows expecting mothers to monitor and track various aspects of their pregnancy journey within the hospital app.*
Dependency	*Medical File, Appointment Scheduling, Lab Result Management*
Actors	***Patient(Pregnant)***
Preconditions	• *The user is a registered user of the hospital app.* • *The user has logged in and their identity is verified.*
Description of the Main Sequence	1. *The user opens the pregnancy tracker within the app.* 2. *The app displays a dashboard with options for tracking various pregnancy data points (e.g., weight, fetal movement, symptoms).* 3. *The user selects a data point to track and enters the relevant information.* 4. *The app stores the entered data in the user's medical file.*
Description of the Alternative Sequence	1. *The user encounters an error message while trying to access the pregnancy tracker (e.g., due to internet connectivity issues).*

	2. *The app provides options to contact app support or retry later.*
Non functional requirements	• *The pregnancy tracker should be user-friendly and easy to navigate.* • *The app should securely store all pregnancy data in accordance with privacy policies.* *The data visualization should be clear and easy to understand.*
Postconditions	• *The patient has accessed and reviewed their health card information.* • *The patient may choose to navigate to other functionalities of the app based on the information displayed on the health card (e.g., schedule an appointment based on a medical history entry)*

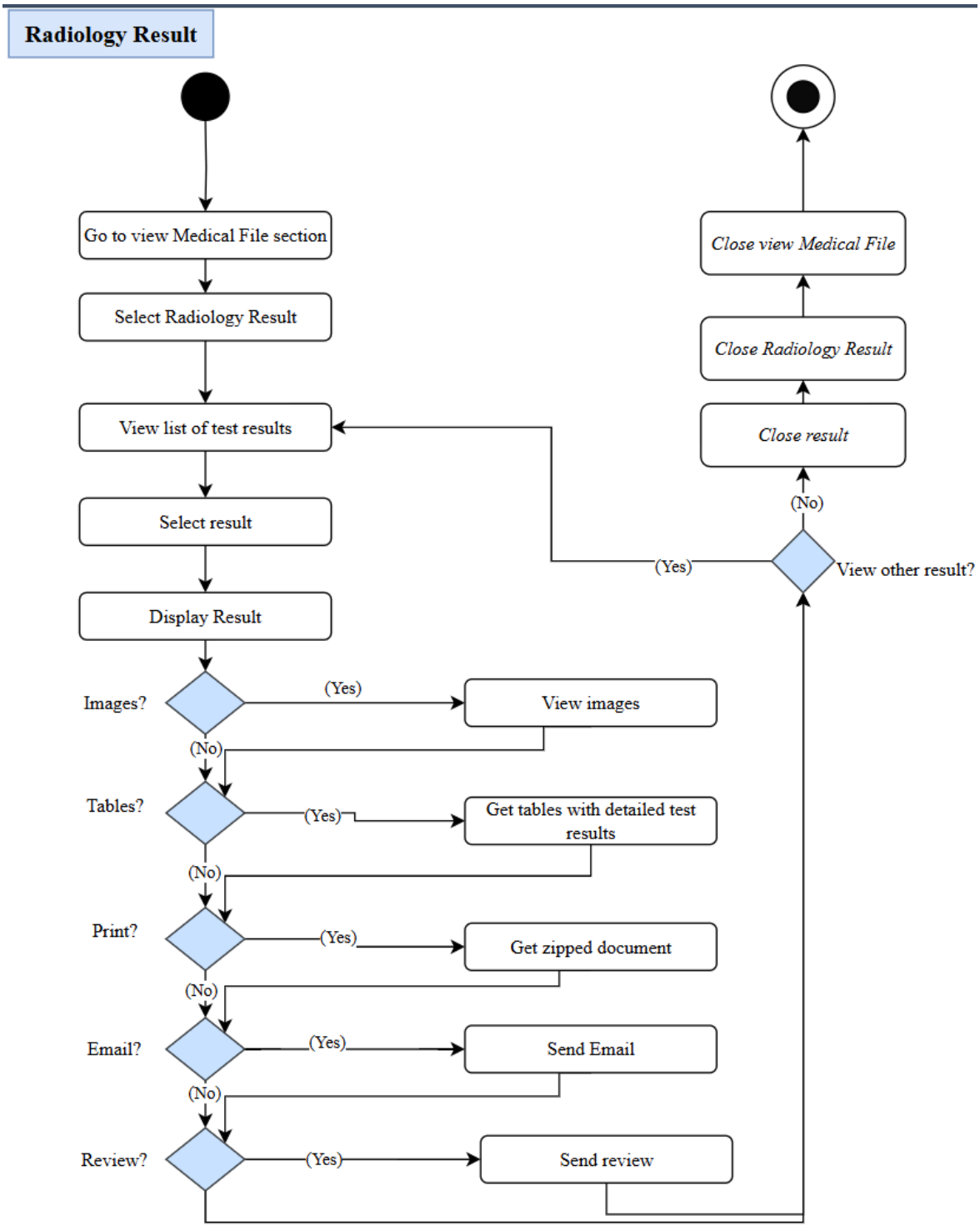
UC Name	***UC -30 Applying for voluntary work***
Summary	*This use case allows users to apply for voluntary work opportunities within the healthcare system or related community service programs.*
Dependency	*User Authentication and Autherization*
Actors	***Patient***
Preconditions	• *The user has a registered account on the app.* • *The app has a listing of available voluntary work opportunities.*
Description of the Main Sequence	1. *The user logs in to the app.* 2. *The user navigates to a section for volunteering opportunities.* 3. *The app displays a list of available voluntary positions with descriptions and requirements.* 4. *The user selects a volunteer opportunity they are interested in.* 5. *The app presents a detailed description of the position, including time commitment, responsibilities, and any training involved.* 6. *The user fills out an application form, potentially including contact information, availability, skills, and a motivation statement.* 7. *The user submits the application electronically.* 8. *The system sends an electronic notification to the hospital or program responsible for managing volunteers.*

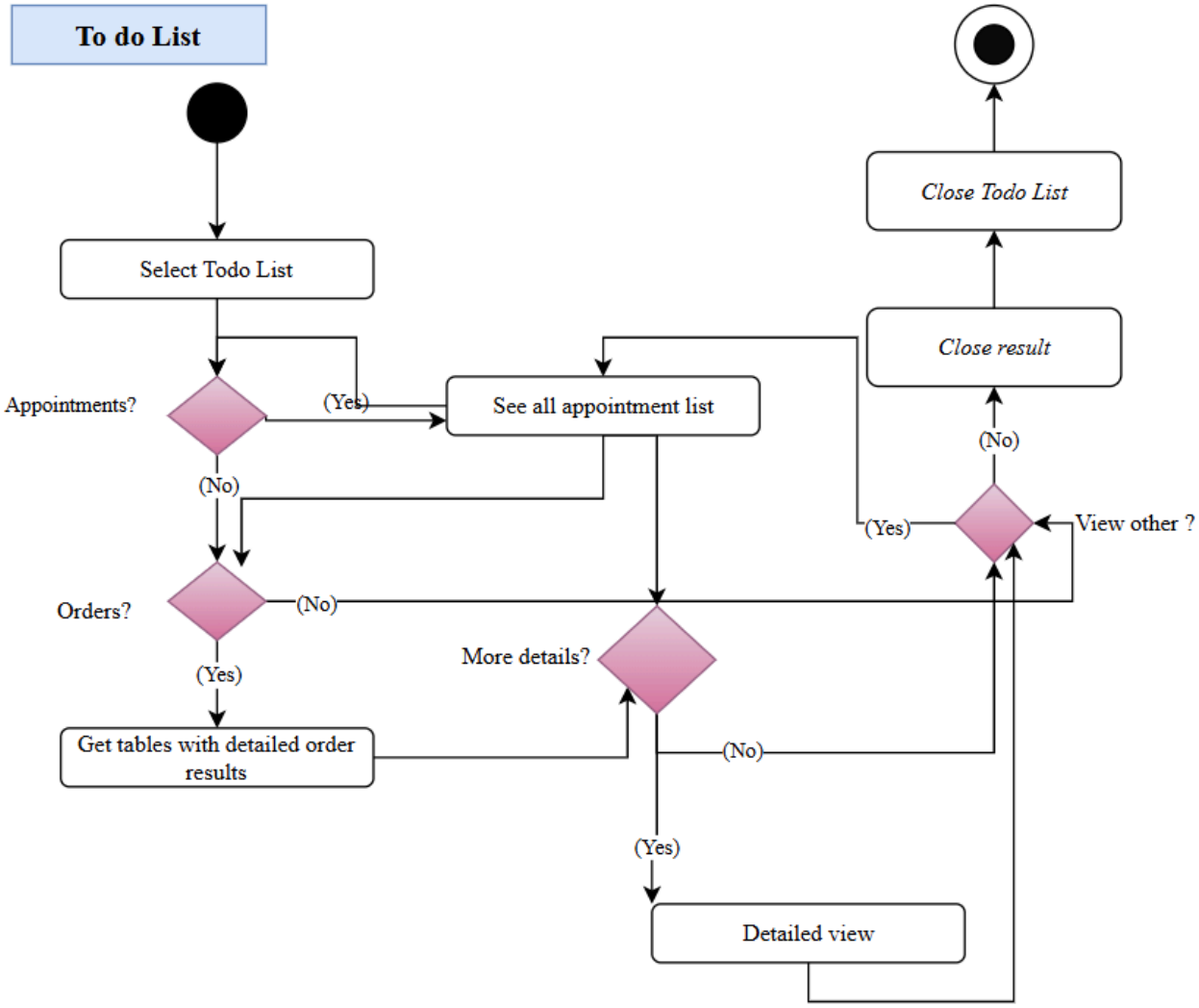
Description of the Alternative Sequence	1. *The user follows steps 1-3 from the main sequence.* 2. *The user decides not to apply for any of the opportunities presented.* 3. *The user exits the volunteer opportunities section.*
Non functional requirements	• *The system should be user-friendly and easy to navigate for users applying for volunteer positions.* • *The application process should be efficient and allow for quick submissions.* • *The system should securely store user data collected during the application.*
Postconditions	• *The user has submitted an application for a volunteer opportunity.* • *The hospital or program responsible for managing volunteers is notified about the application.*

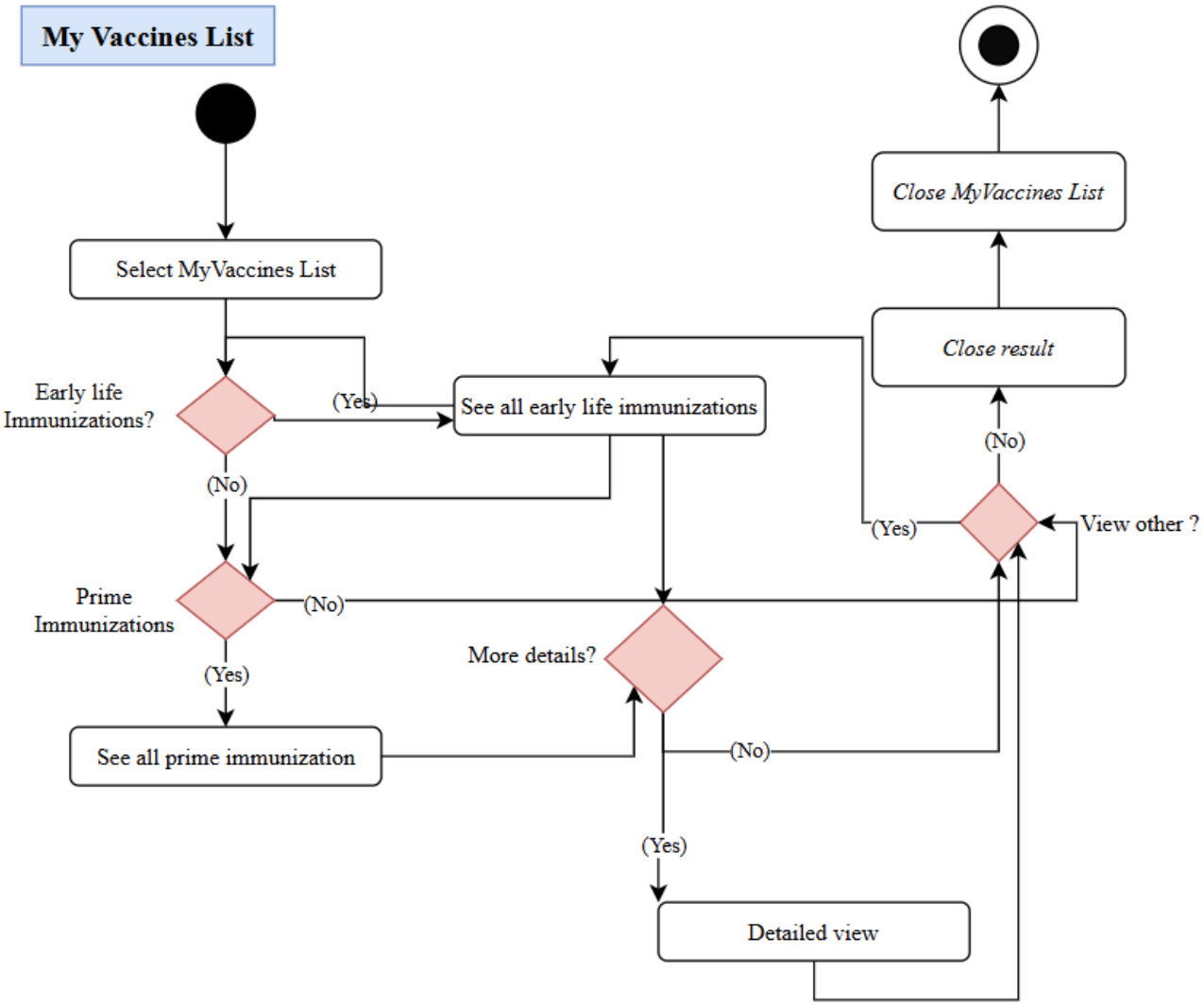
Diagrams:

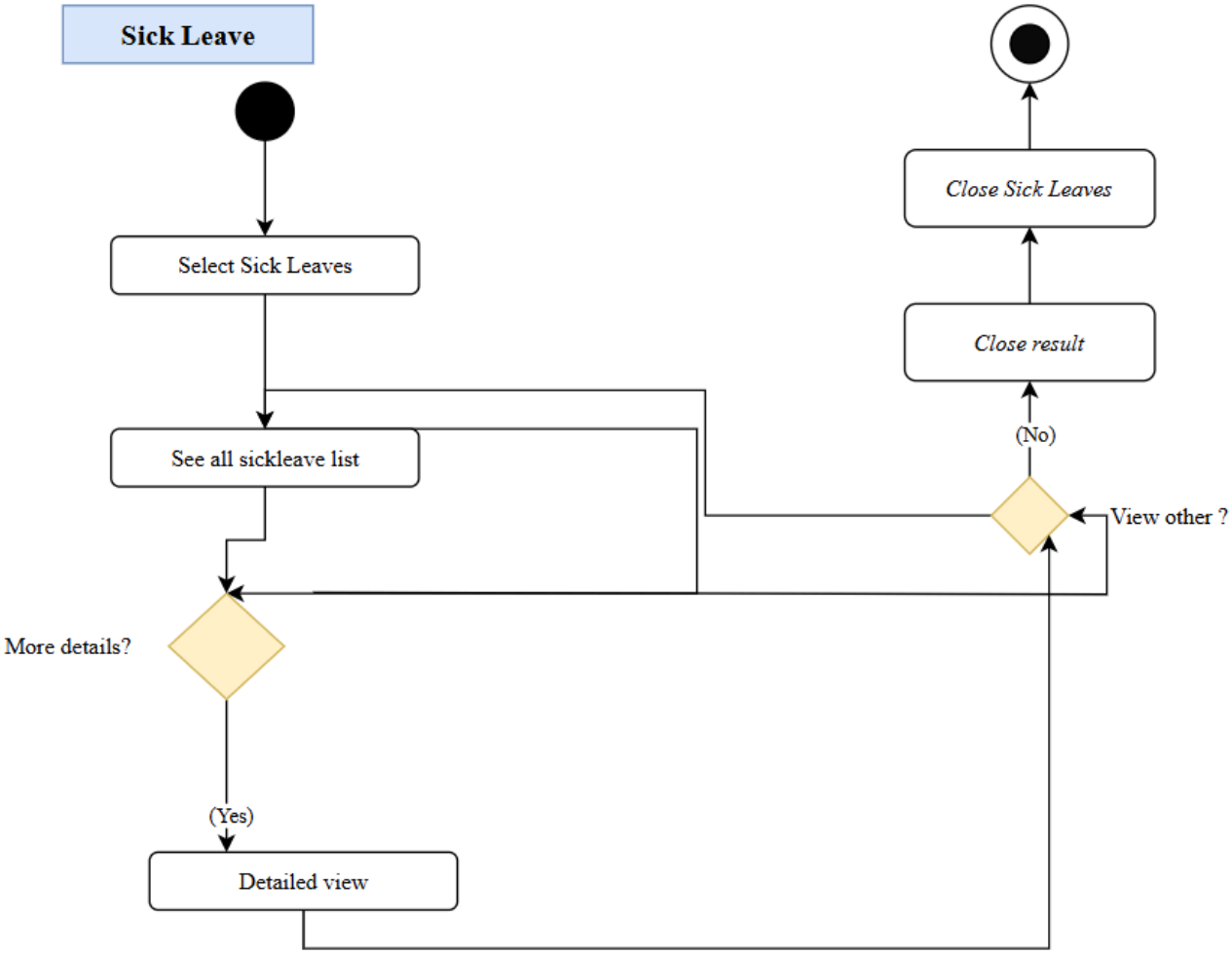
Activity Diagram:

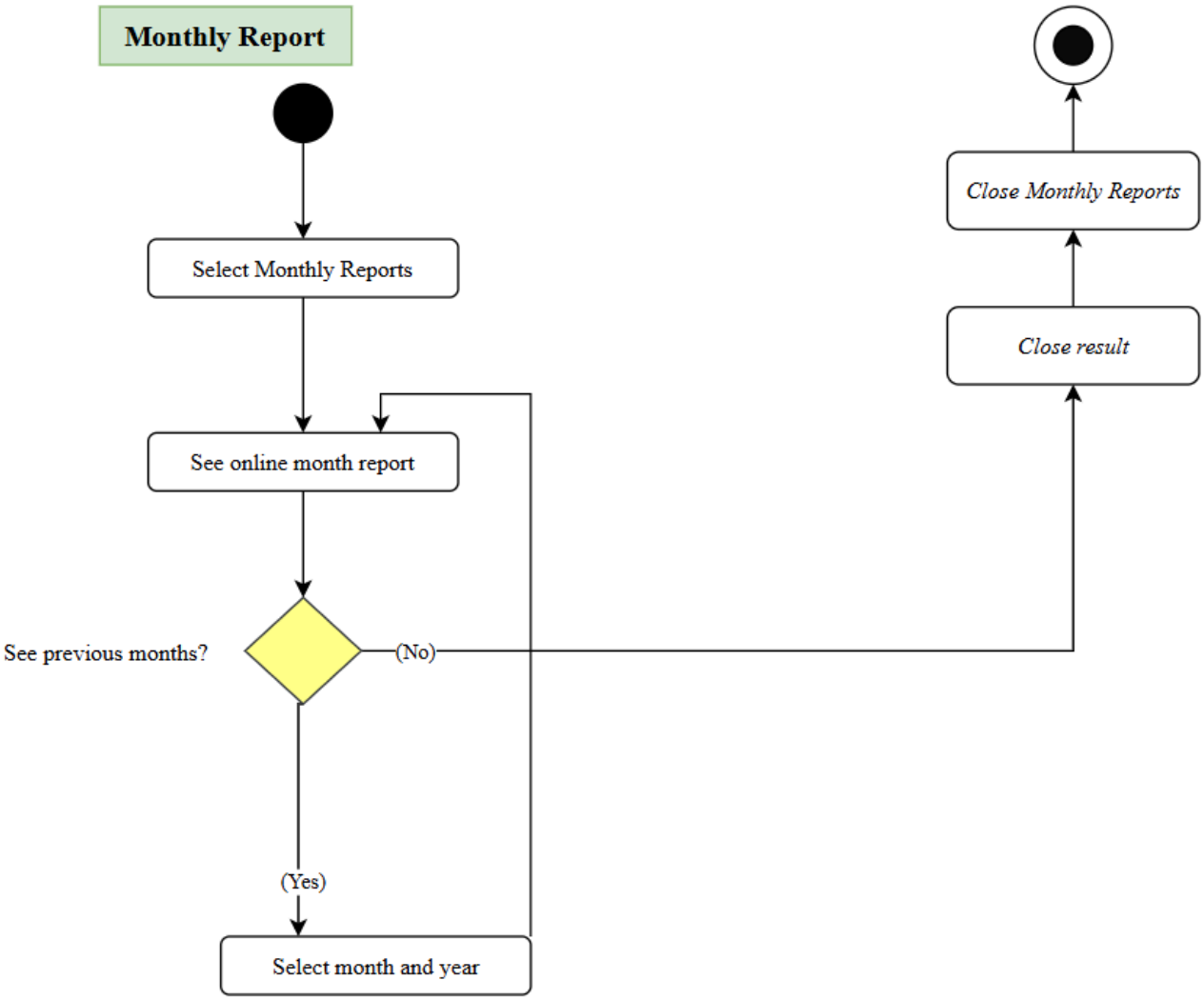
TEA DISHO:



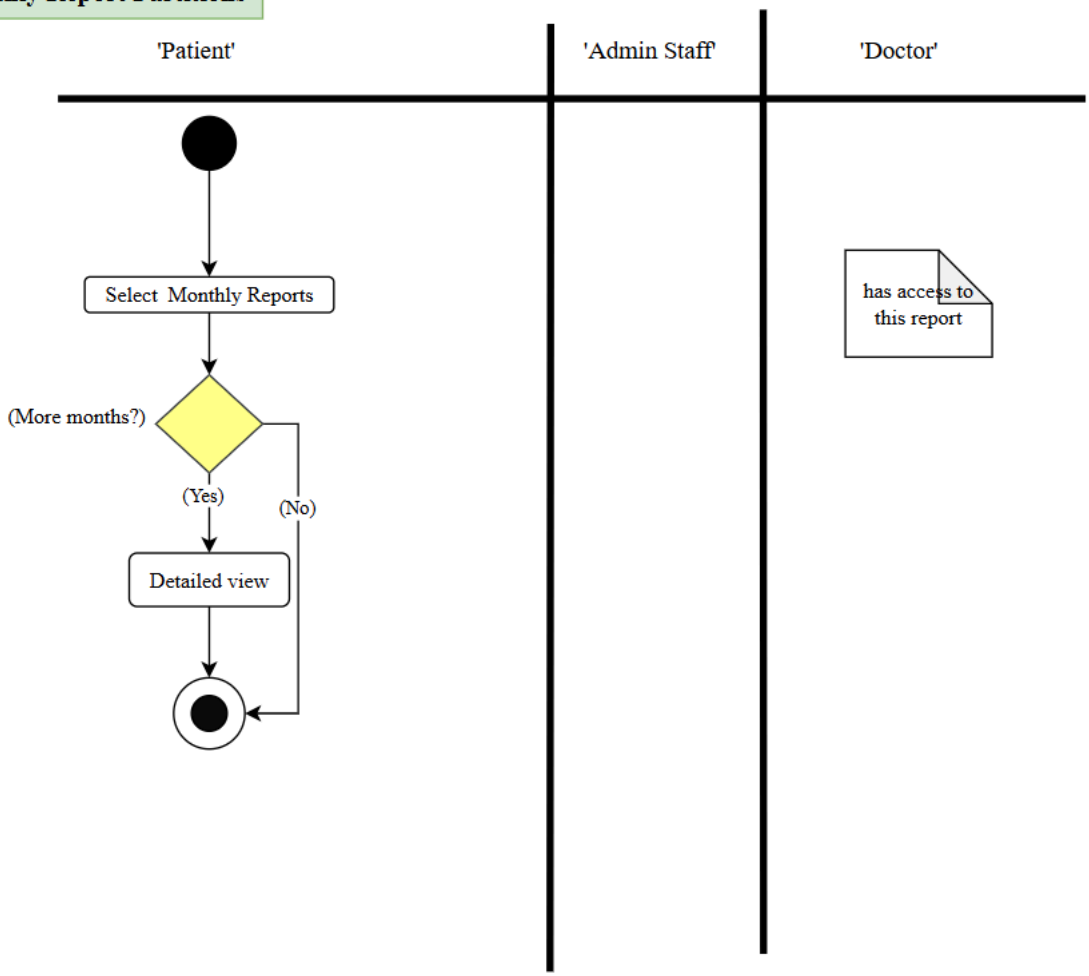

To do List
Select Todo List
Appointments?
(Yes)
See all appointment list
(No)
Orders?
(No)
(Yes)
Get tables with detailed order results
More details?
(No)
(Yes)
Detailed view
Close Todo List
Close result
(No)
(Yes)
View other ?

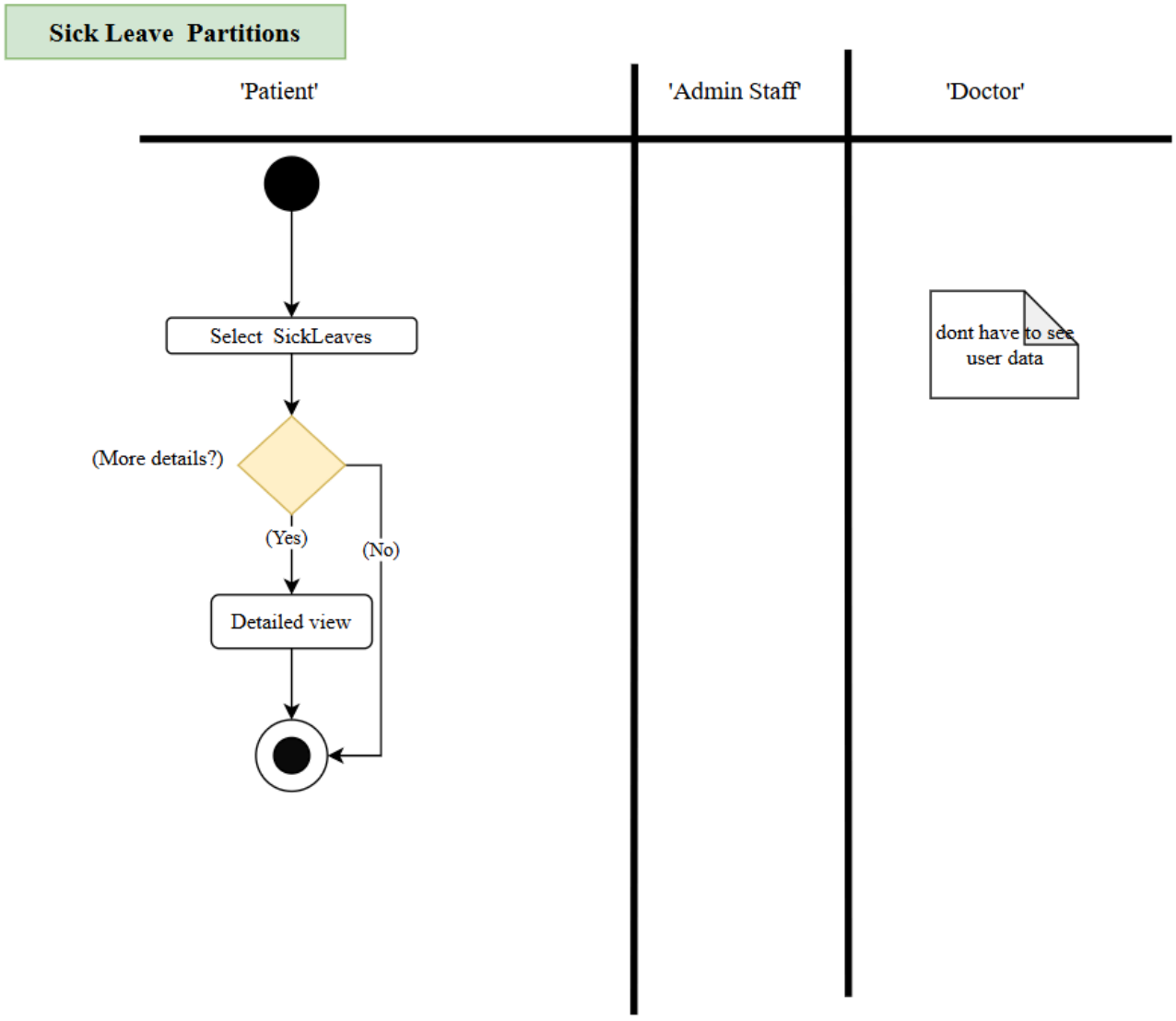

My Vaccines List
Select MyVaccines List
Early life Immunizations?
(Yes)
See all early life immunizations
(No)
Prime Immunizations
(No)
(Yes)
See all prime immunization
More details?
(No)
(Yes)
Detailed view
Close MyVaccines List
Close result
(No)
(Yes)
View other ?


Sick Leave
Select Sick Leaves
See all sickleave list
More details?
(Yes)
Detailed view
View other ?
(No)
Close result
Close Sick Leaves

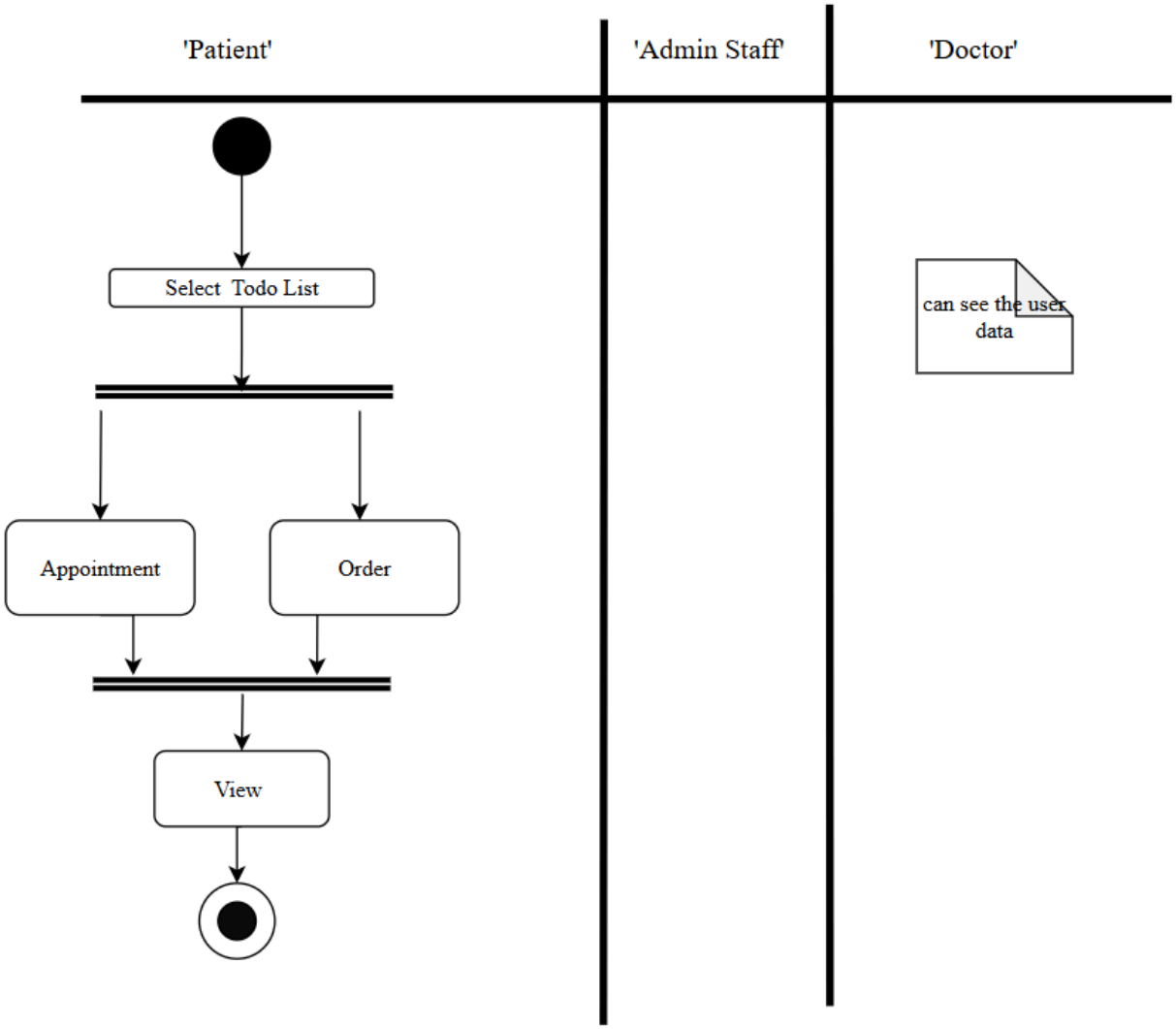

Monthly Report
Select Monthly Reports
See online month report
See previous months?
(No)
(Yes)
Select month and year
Close result
Close Monthly Reports

Monthly Report Partitions

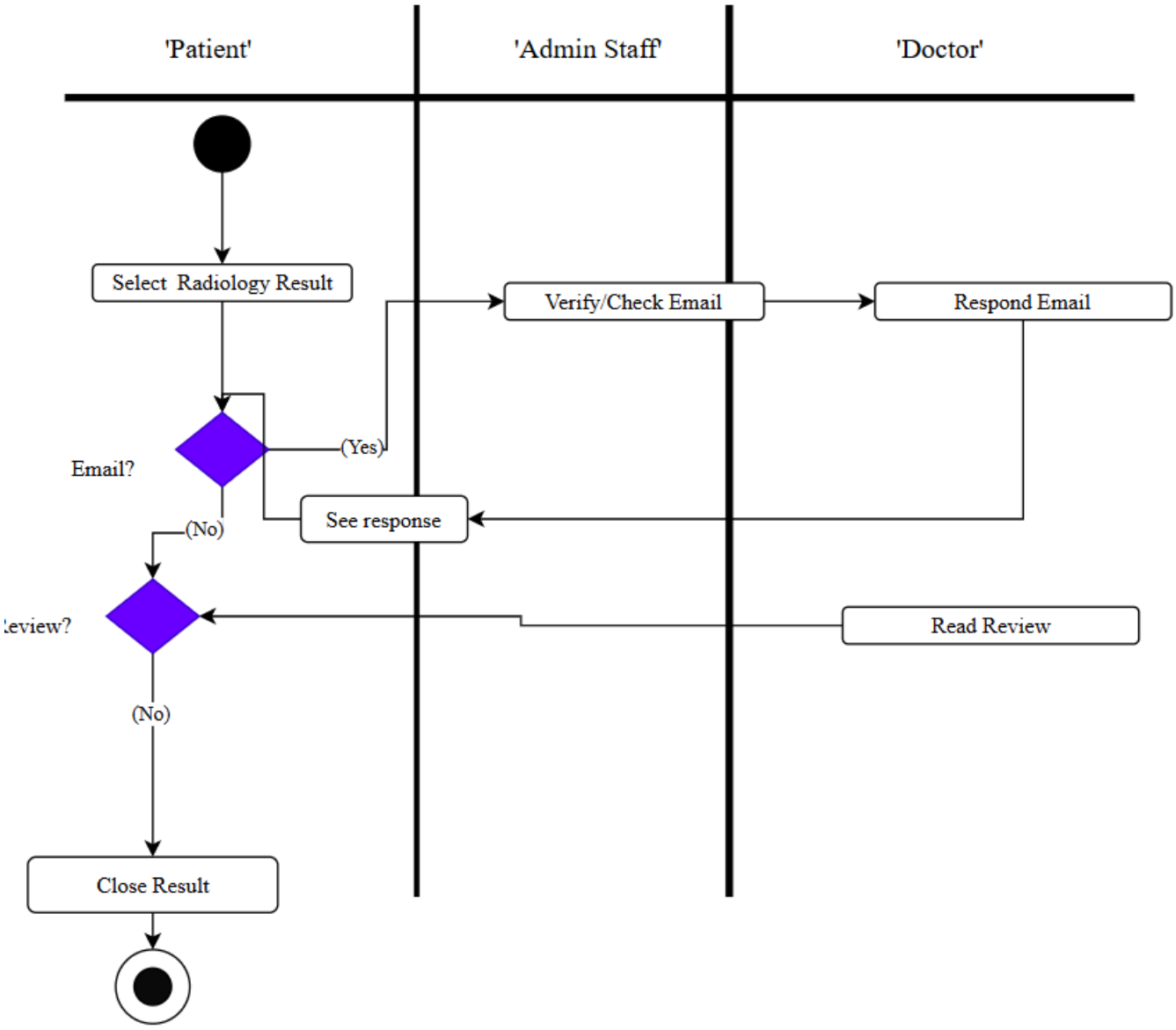



Sick Leave Partitions
'Patient'
'Admin Staff'
'Doctor'
Select SickLeaves
(More details?)
(Yes)
(No)
Detailed view
dont have to see user data

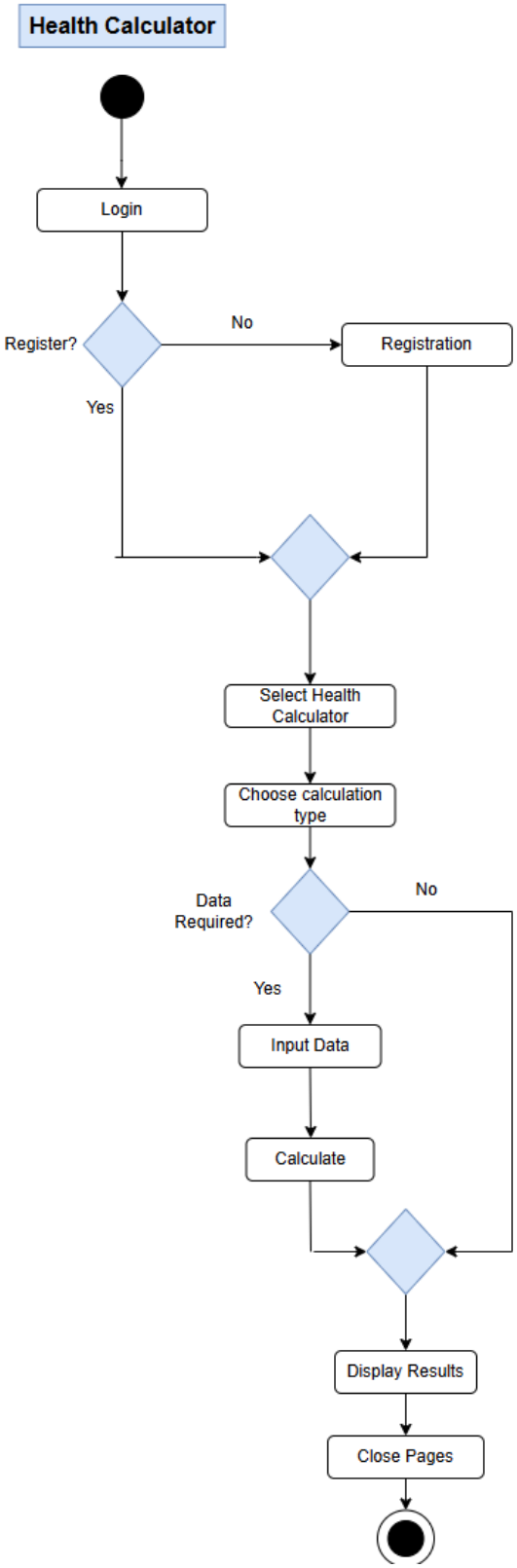
To do List Partitions

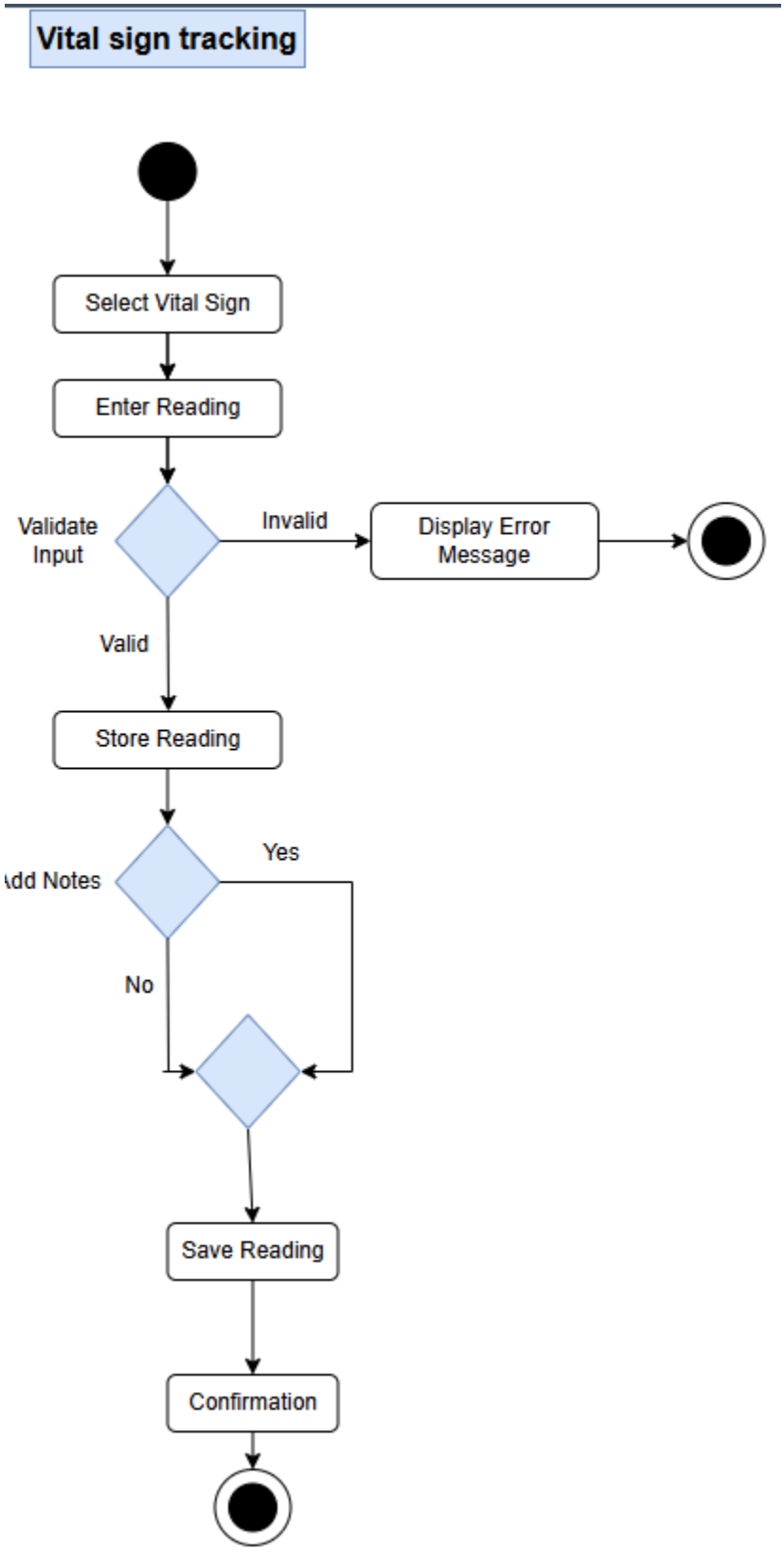


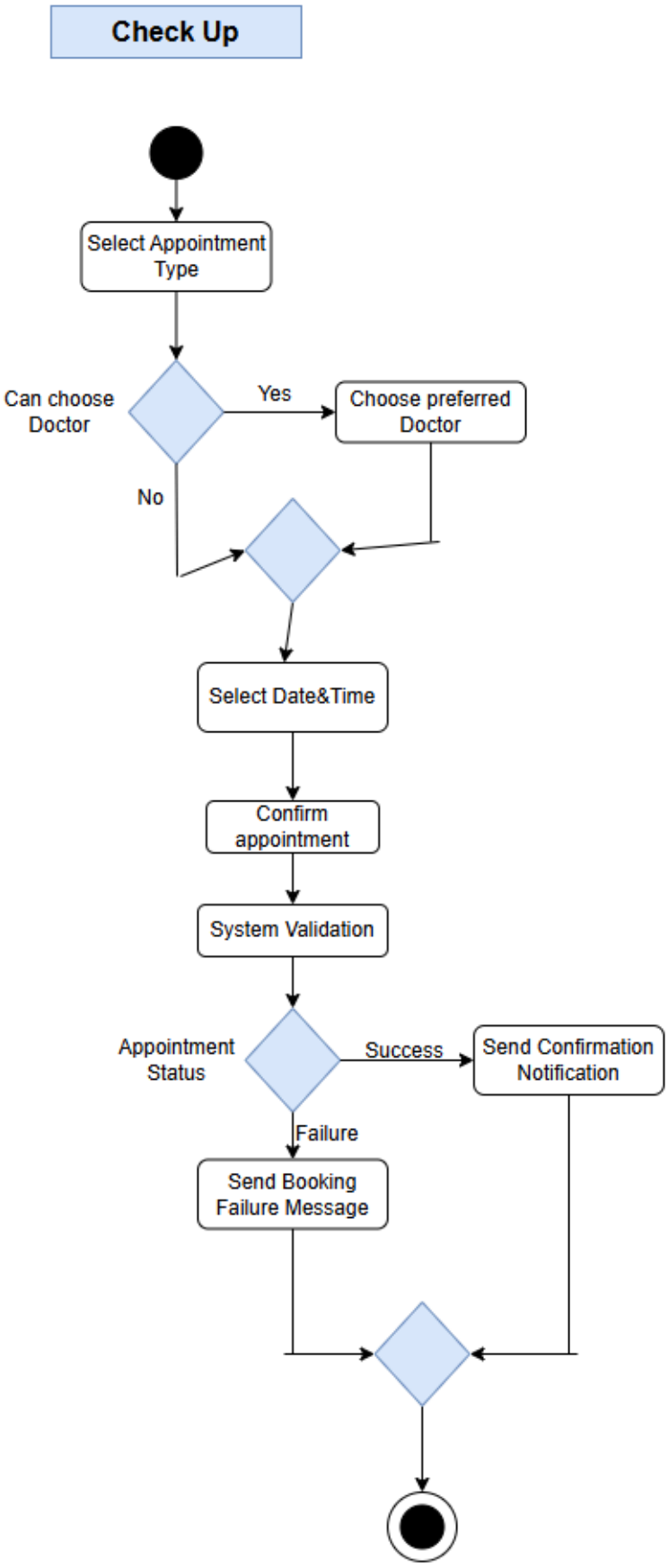
Radiology Result Partitions

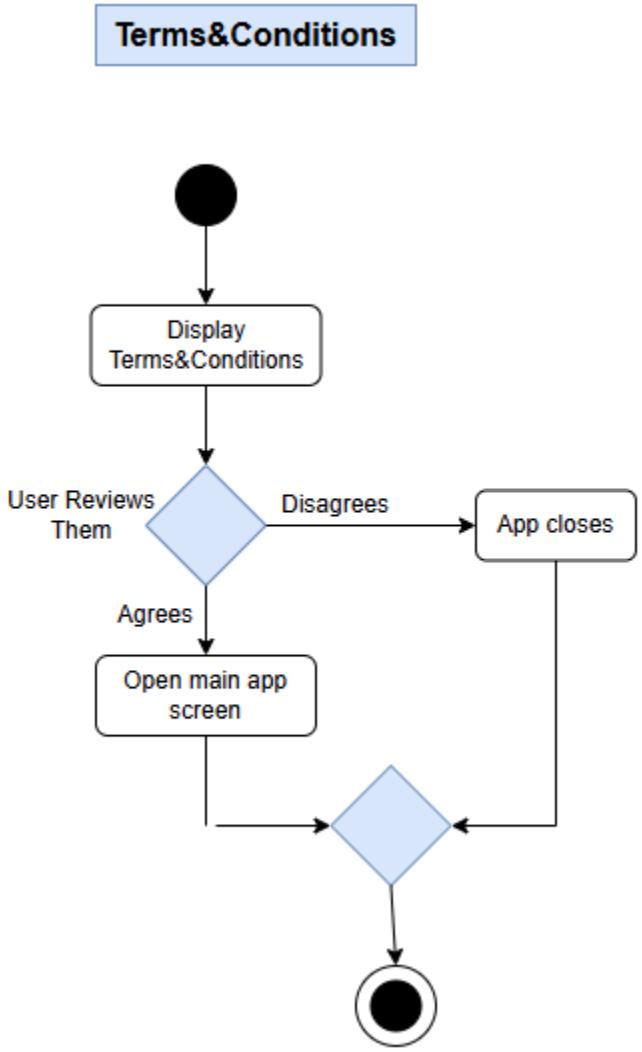


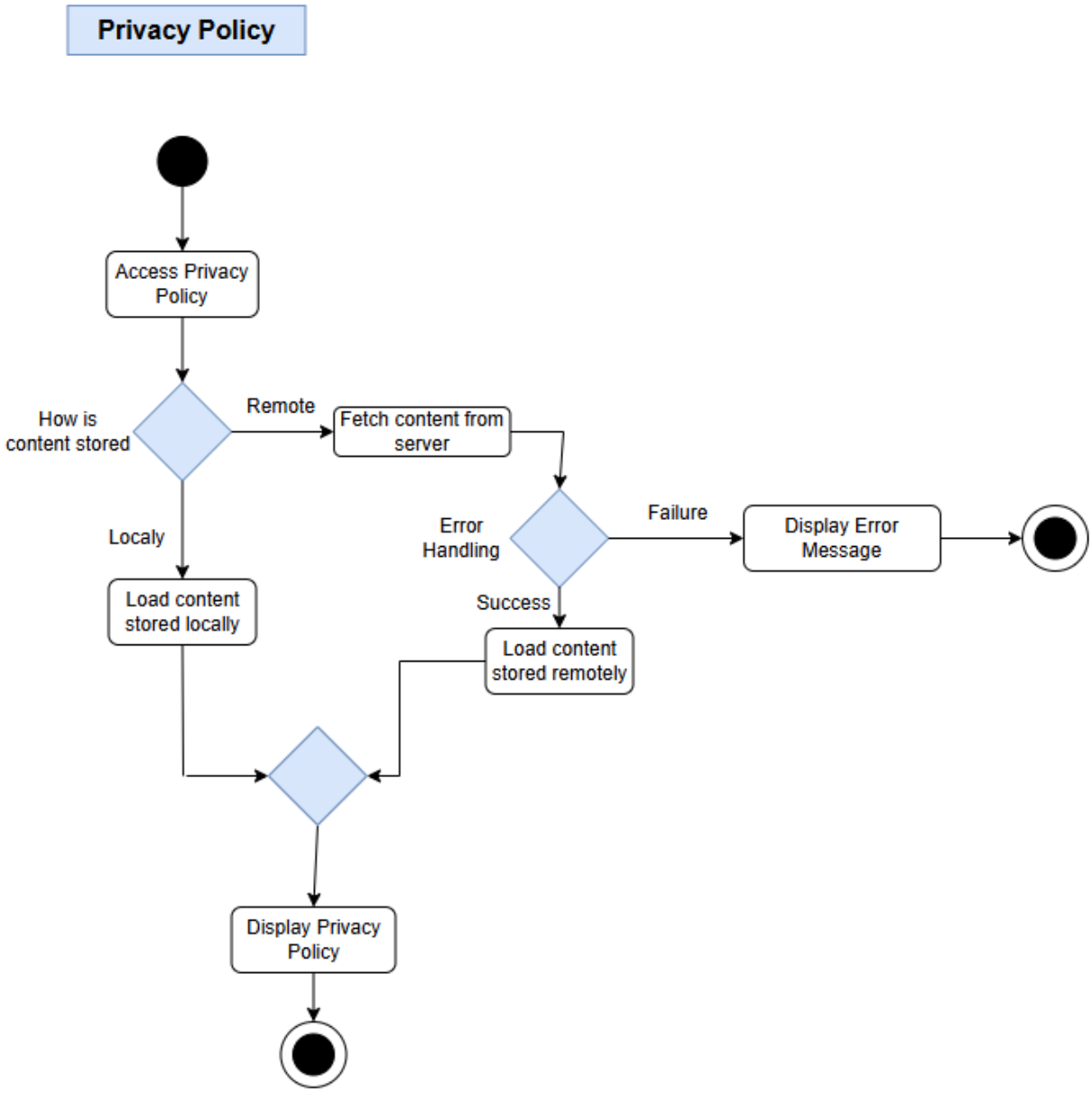
UNEJSI


Health Calculator
Login
Register?
No
Registration
Yes
Select Health Calculator
Choose calculation type
Data Required?
No
Yes
Input Data
Calculate
Display Results
Close Pages

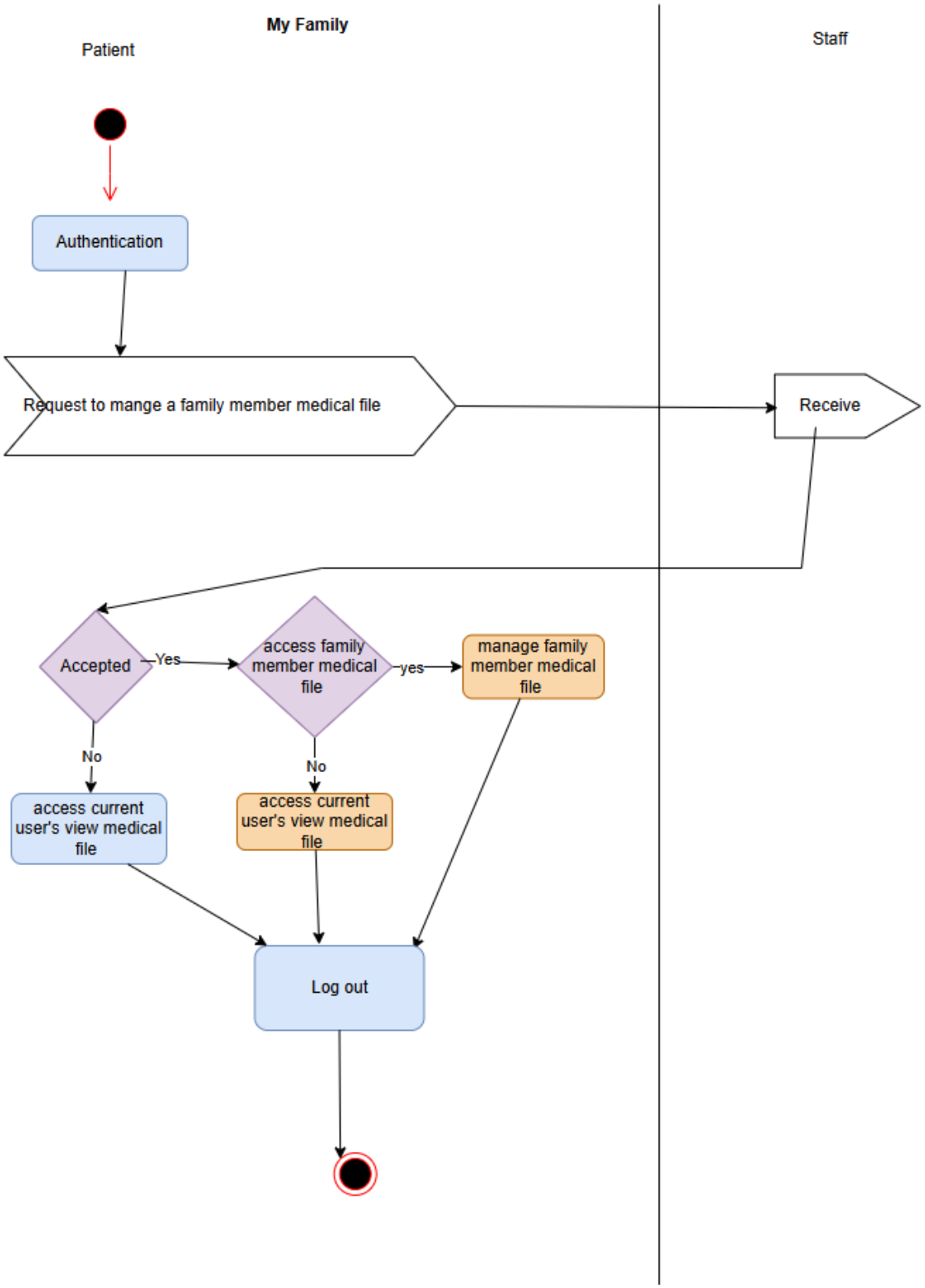

Vital sign tracking
Select Vital Sign
Enter Reading
Validate Input
Invalid
Display Error Message
Valid
Store Reading
Yes
No
Save Reading
Confirmation

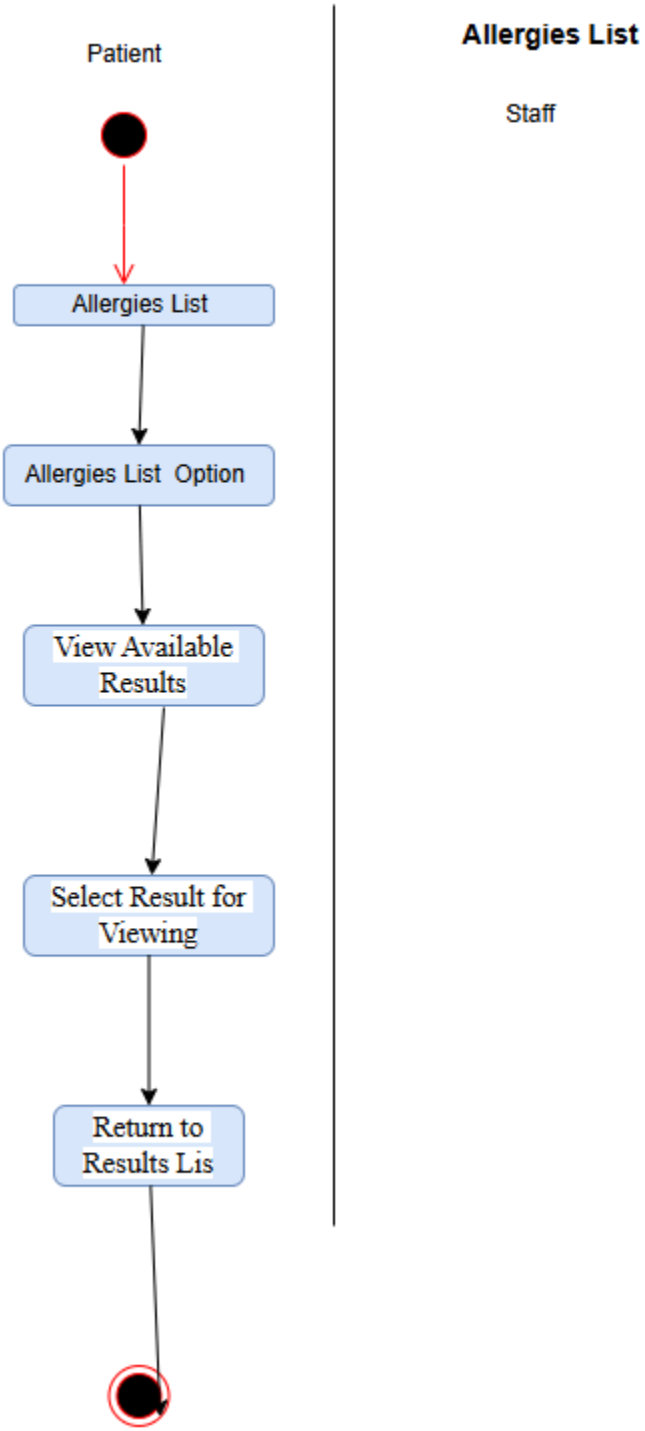

Check Up
Select Appointment Type
Can choose Doctor
Yes
Choose preferred Doctor
No
Select Date&Time
Confirm appointment
System Validation
Appointment Status
Success
Send Confirmation Notification
Failure
Send Booking Failure Message

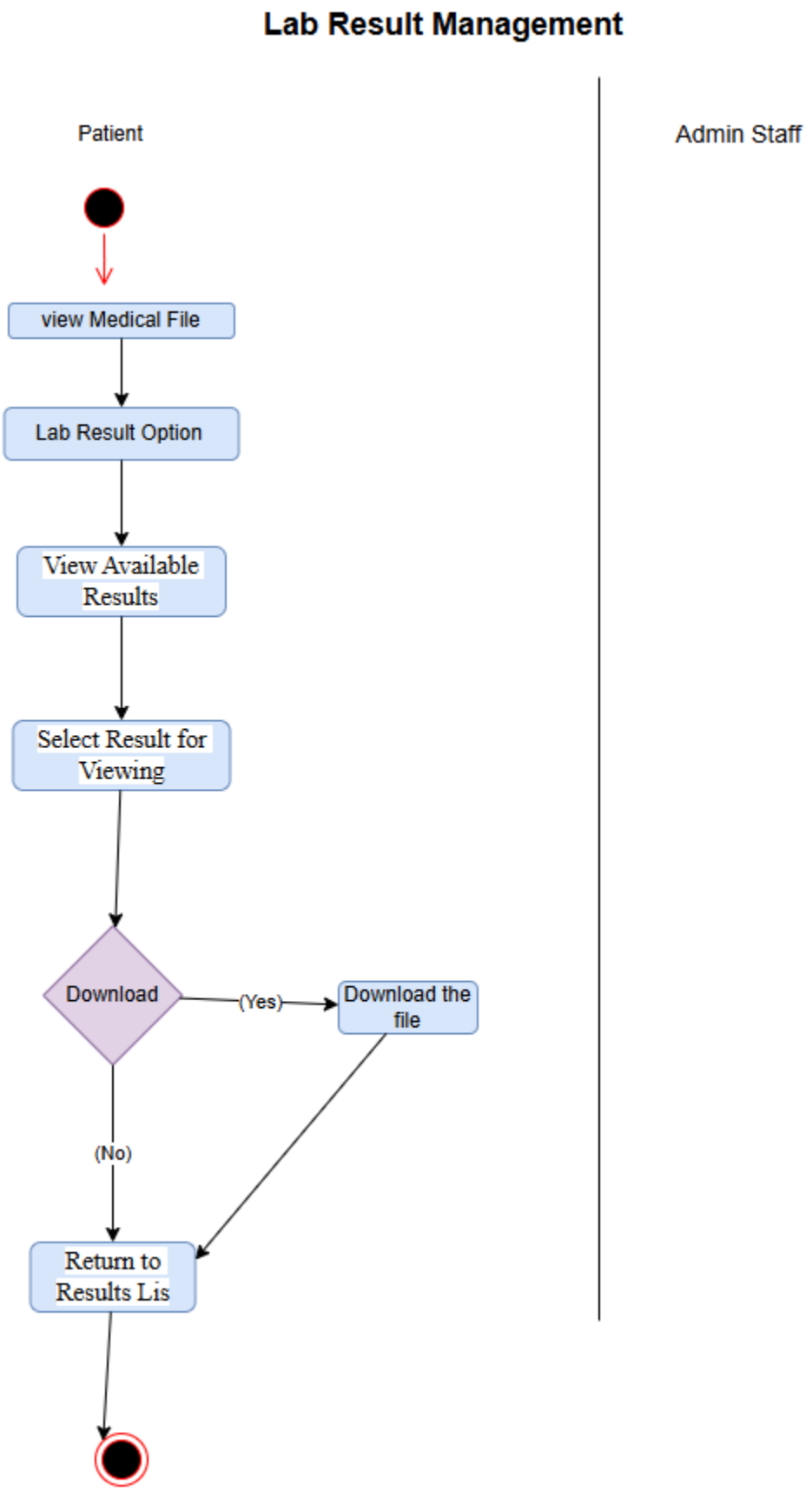

Terms&Conditions
Display Terms&Conditions
User Reviews Them
Disagrees
App closes
Agrees
Open main app screen

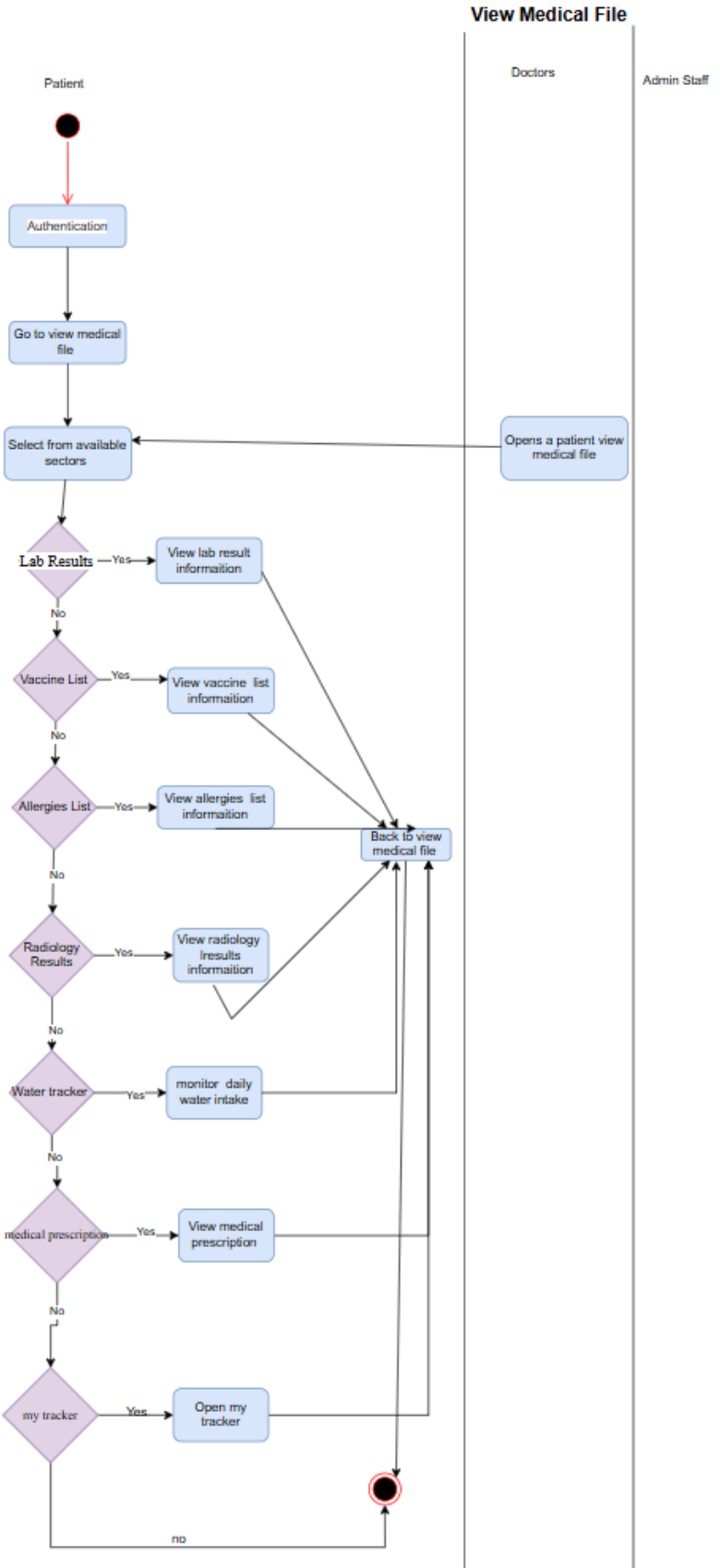

Privacy Policy
Access Privacy Policy
How is content stored
Remote
Fetch content from server
Localy
Error Handling
Failure
Display Error Message
Load content stored locally
Success
Load content stored remotely
Display Privacy Policy

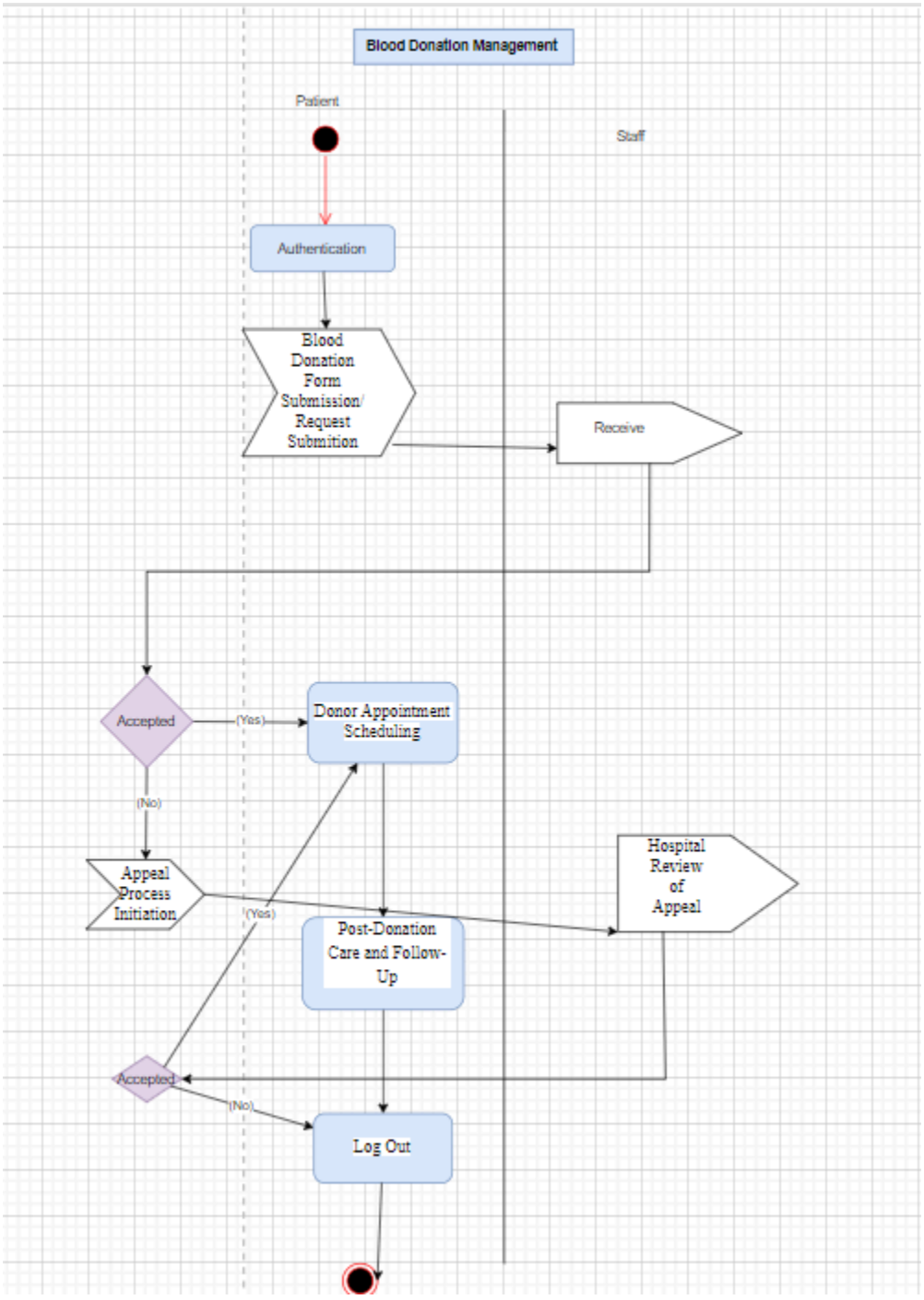
ORKIDA


My Family
Patient
Staff
Authentication
Request to mange a family member medical file
Receive
Accepted
Yes
access family member medical file
yes
manage family member medical file
No
No
access current user's view medical file
access current user's view medical file
Log out


Patient
Allergies List
Staff
Allergies List
Allergies List Option
View Available Results
Select Result for Viewing
Return to Results Lis

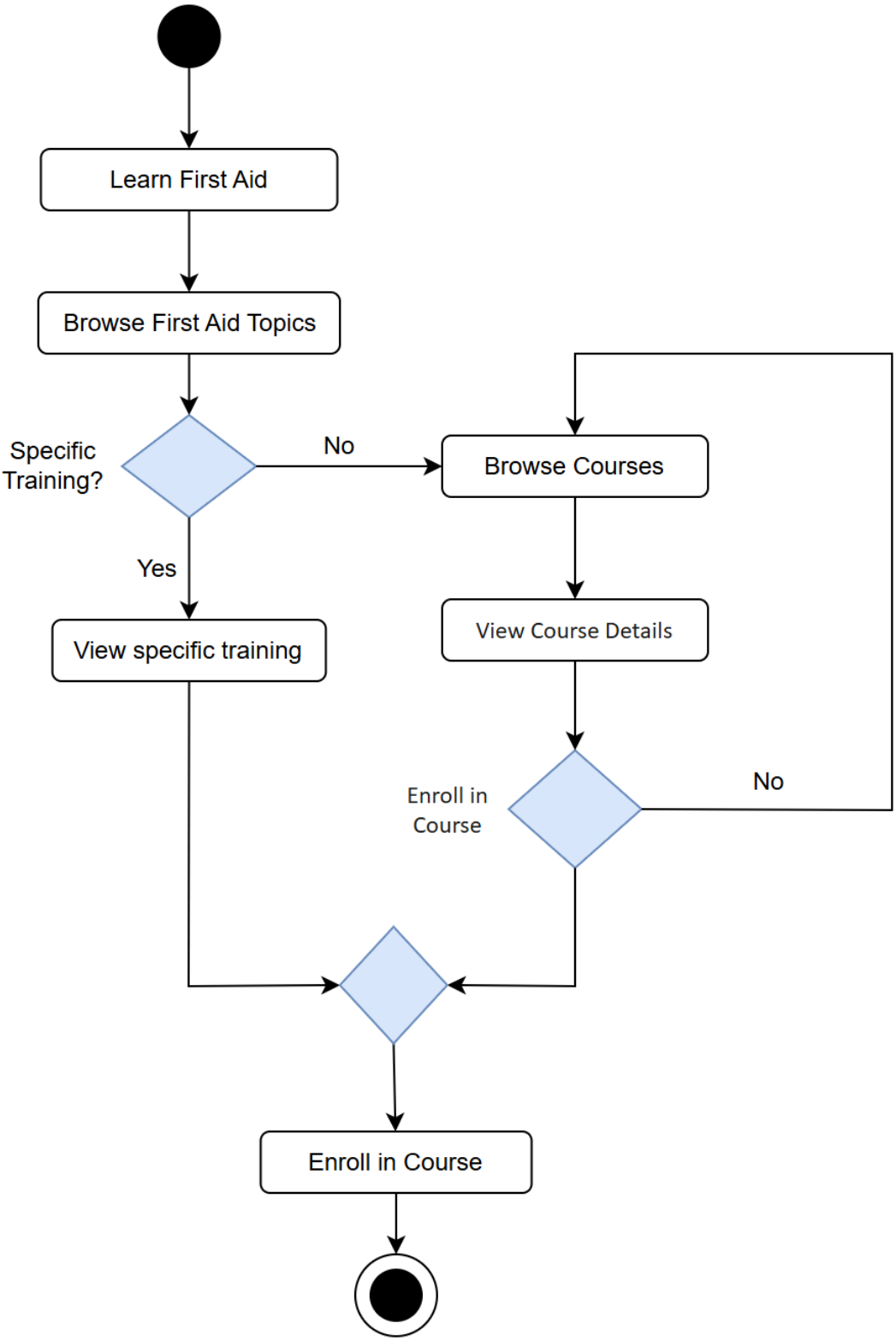

Lab Result Management
Patient
Admin Staff
view Medical File
Lab Result Option
View Available Results
Select Result for Viewing
Download
(Yes)
Download the file
(No)
Return to Results Lis


View Medical File
Patient
Doctors
Admin Staff
Authentication
Go to view medical file
Select from available sectors
Opens a patient view medical file
Lab Results
Yes
View lab result information
No
Vaccine List
Yes
View vaccine list information
No
Allergies List
Yes
View allergies list information
Back to view medical file
No
Radiology Results
Yes
View radiology Iresults information
No
Water tracker
Yes
monitor daily water intake
No
medical prescription
Yes
View medical prescription
No
my tracker
Yes
Open my tracker
no

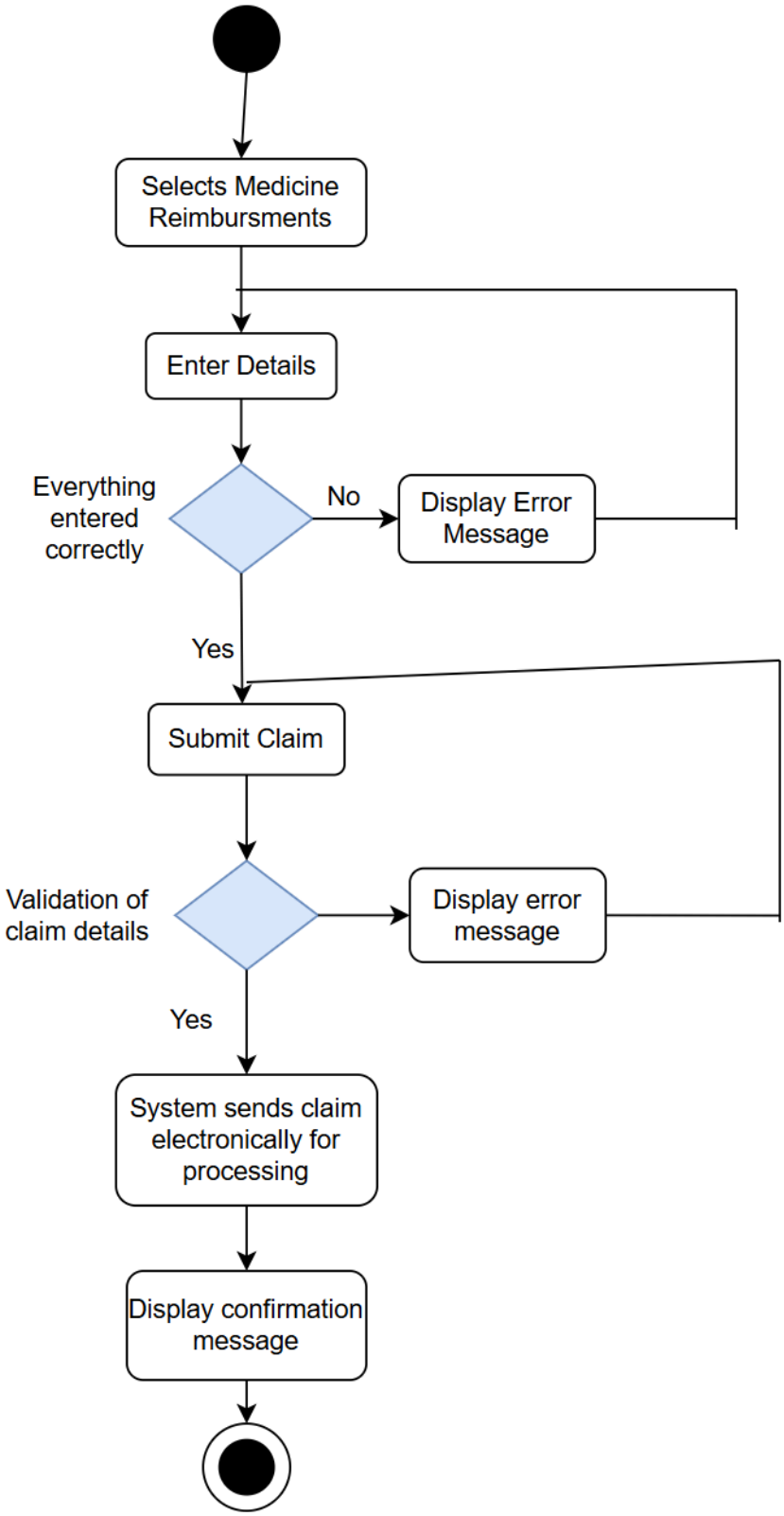

Blood Donation Management
Patient
Staff
Authentication
Blood Donation Form Submission/ Request Submition
Receive
Accepted
(Yes)
Donor Appointment Scheduling
(No)
Appeal Process Initiation
(Yes)
Hospital Review of Appeal
Post-Donation Care and Follow-Up
Accepted
(No)
Log Out

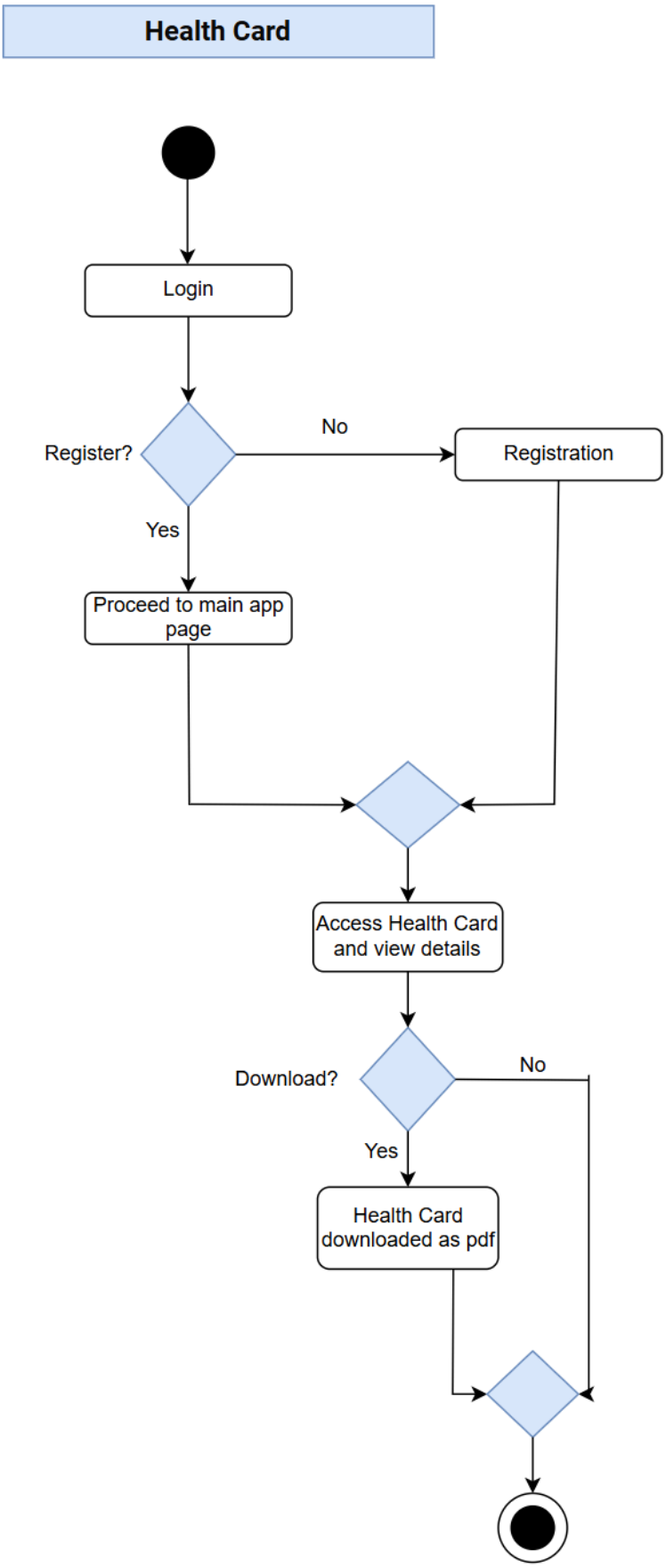
REDION

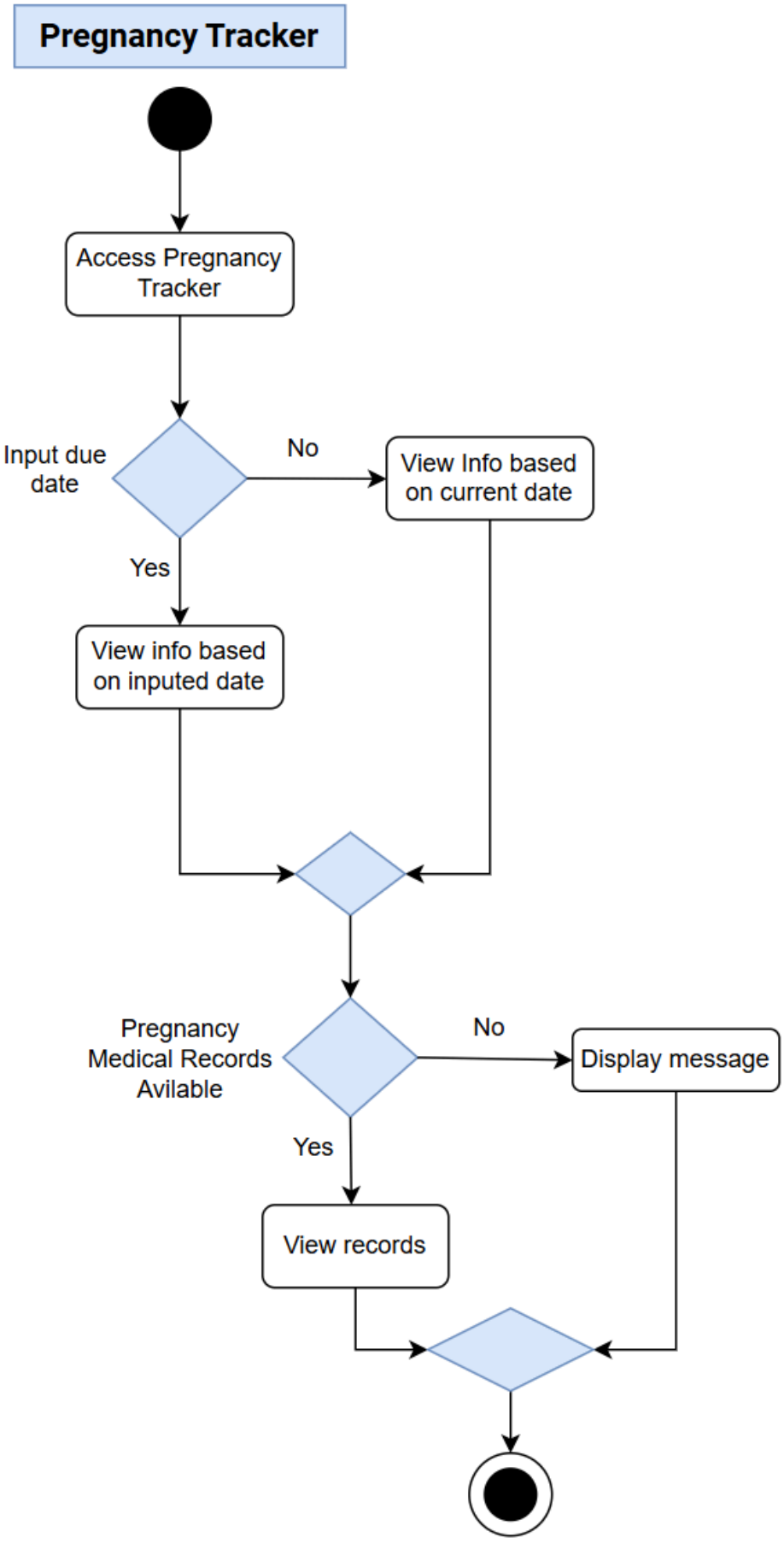
Application for training to learn about first aid



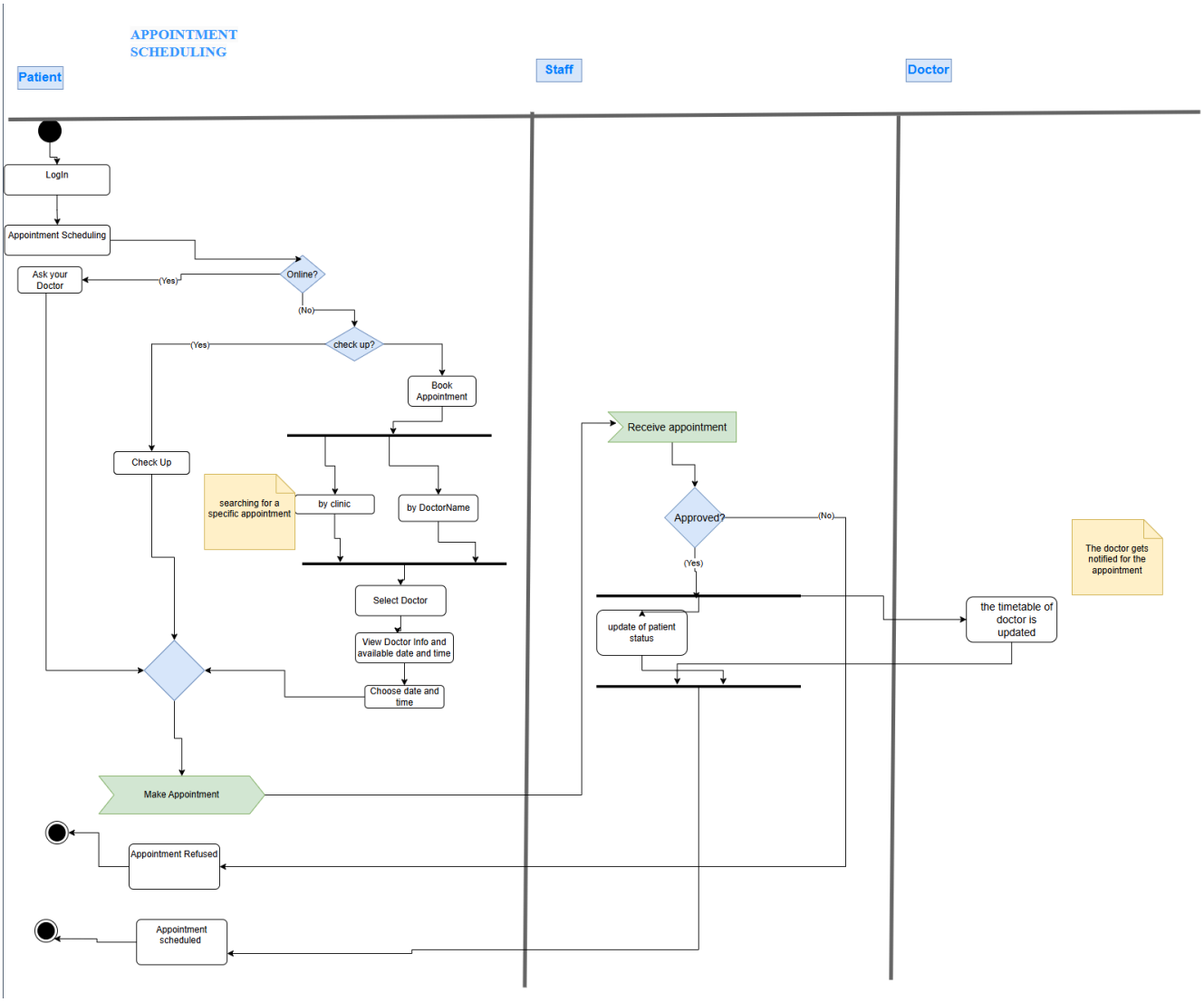
Application for medicine with reimbursement

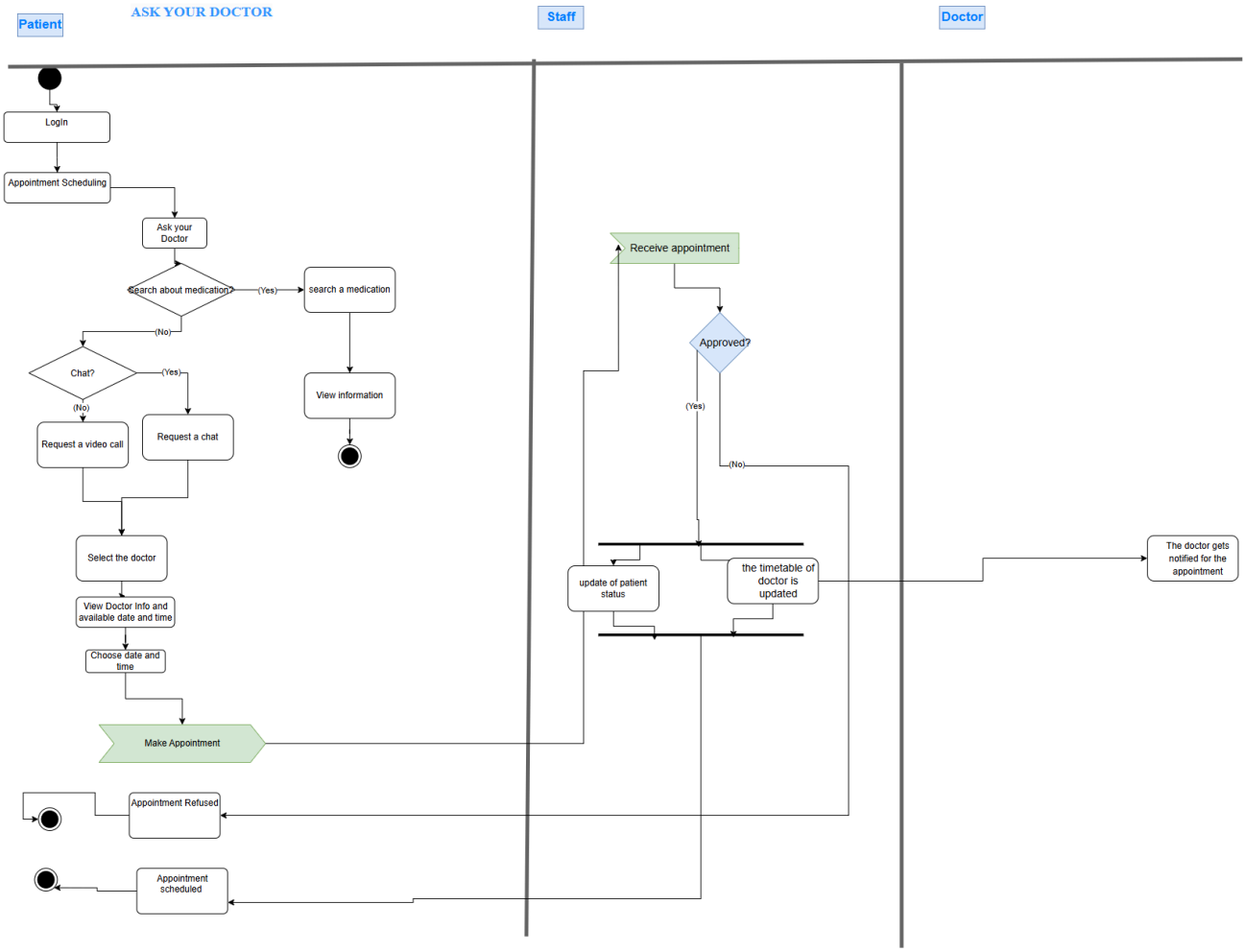


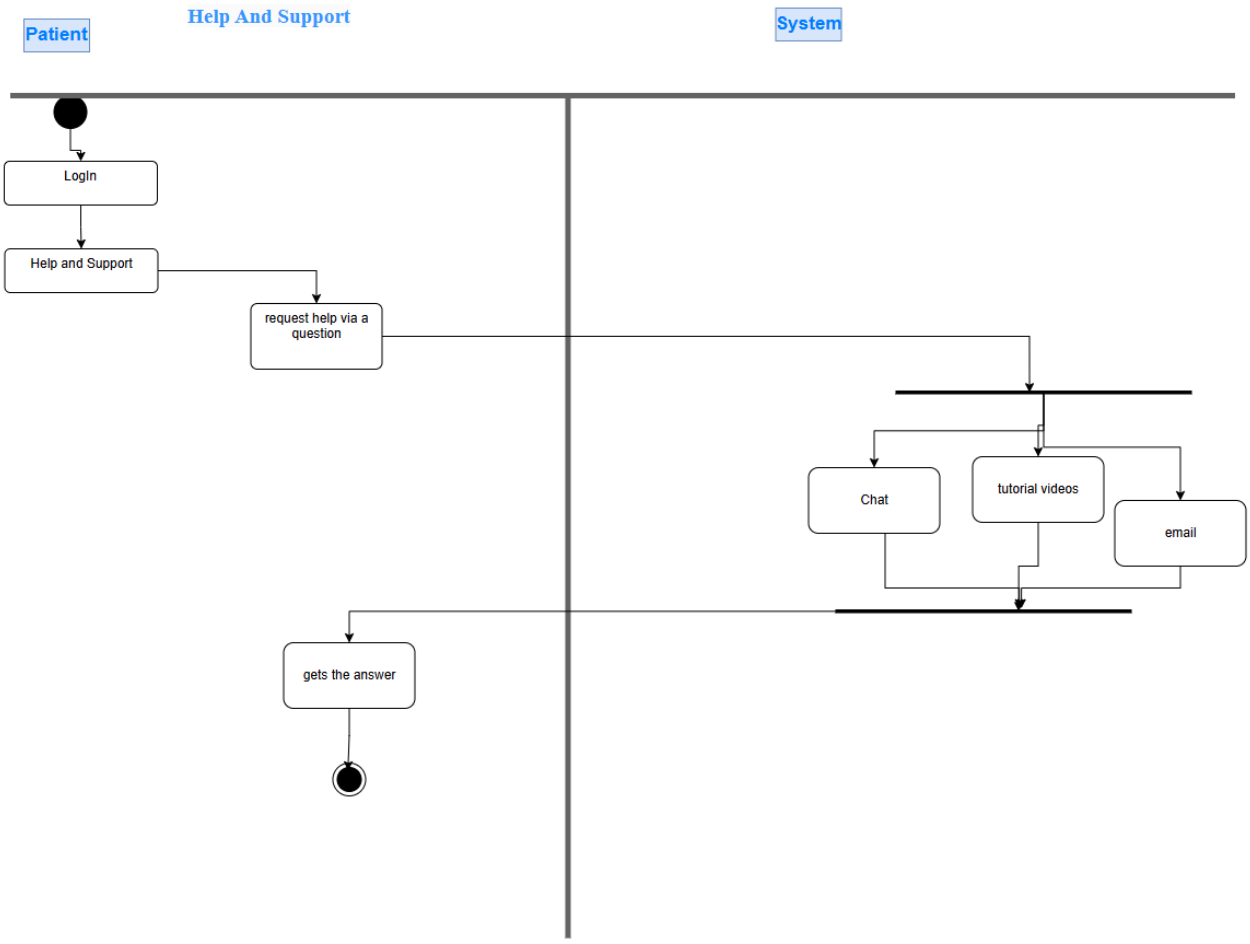

Health Card
Login
Register?
No
Registration
Yes
Proceed to main app page
Access Health Card and view details
Download?
No
Yes
Health Card downloaded as pdf

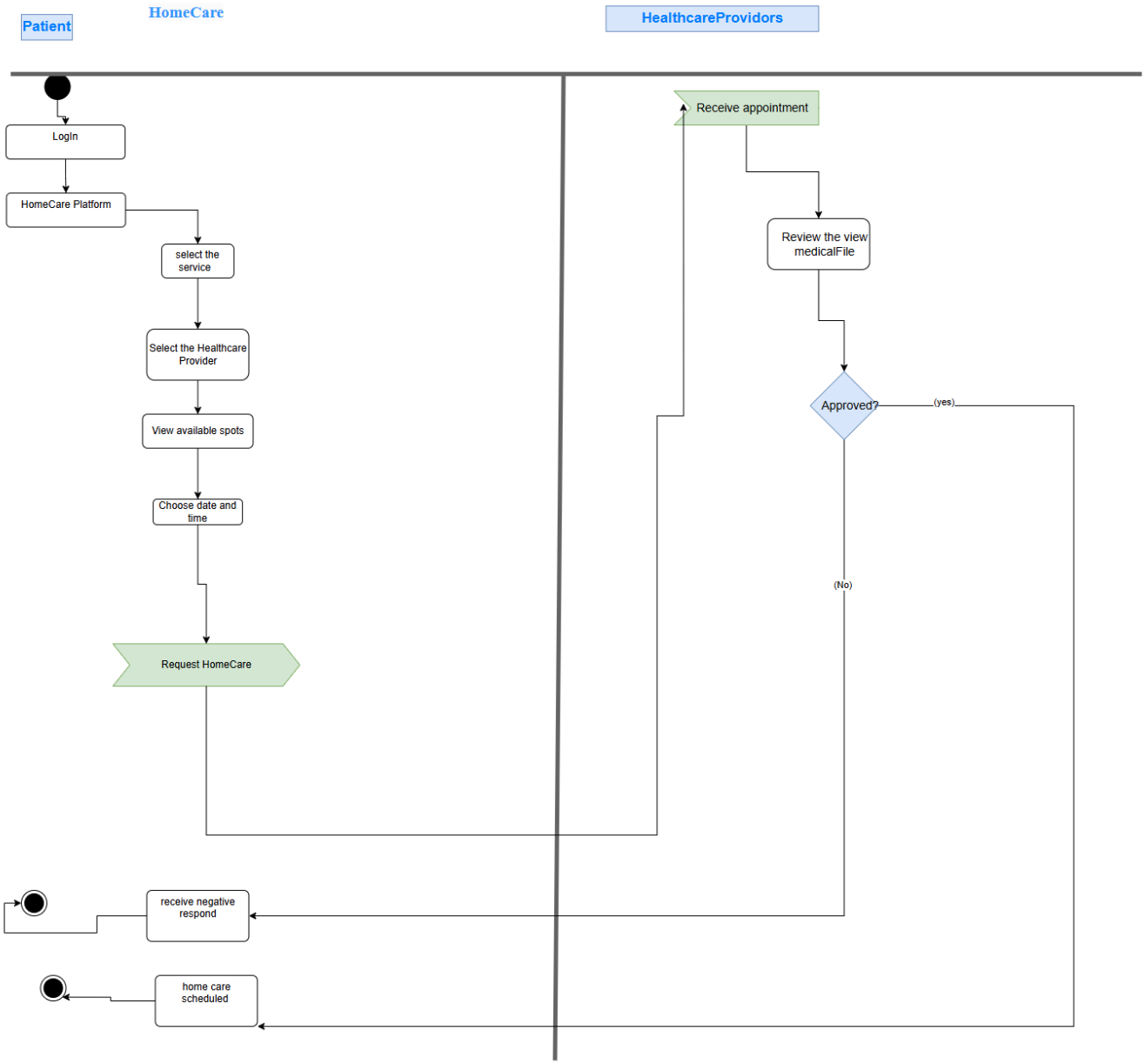

Pregnancy Tracker
Access Pregnancy Tracker
Input due date
No
View Info based on current date
Yes
View info based on inputed date
Pregnancy Medical Records Avilable
No
Display message
Yes
View records

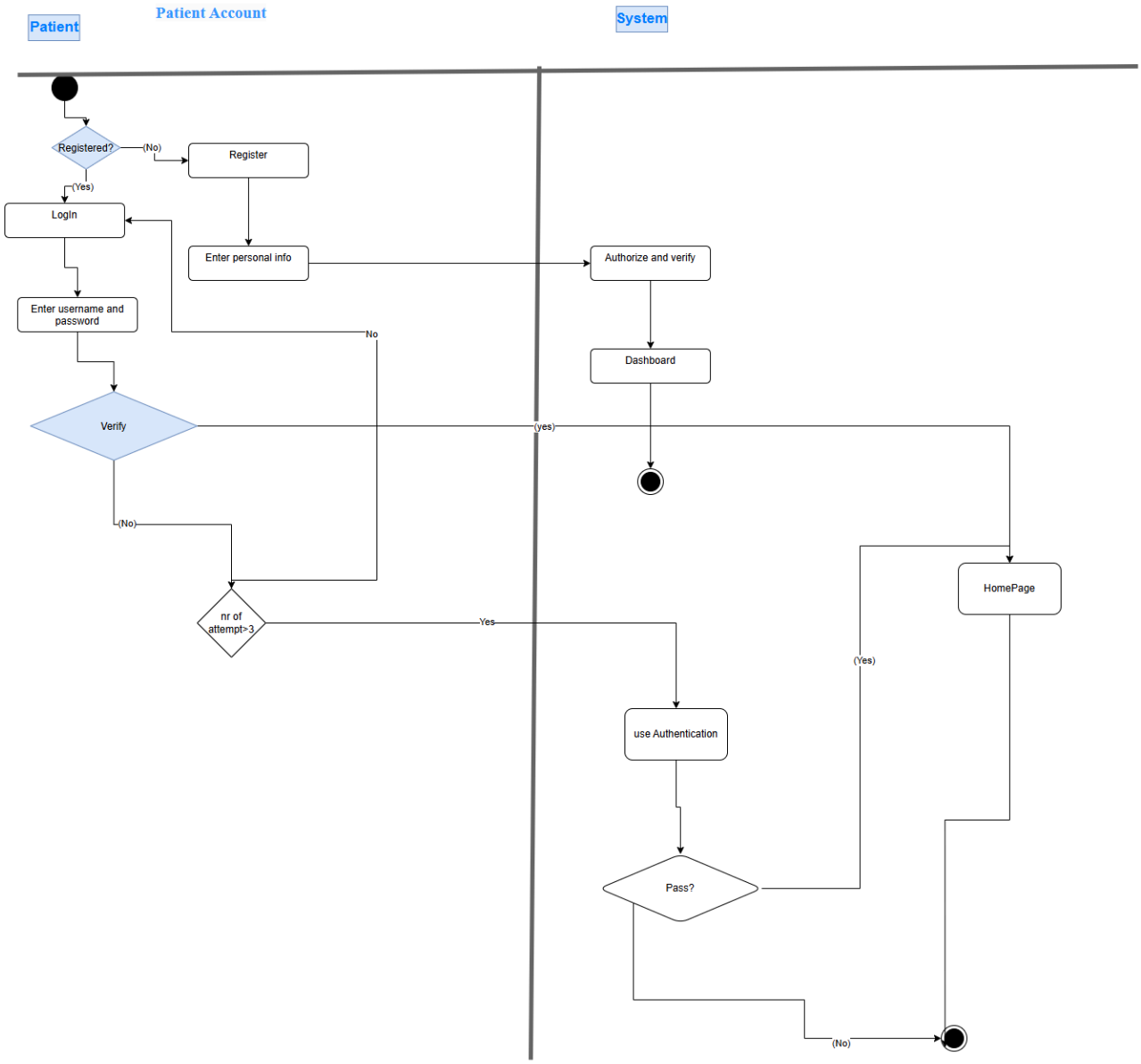
ZIKO


APPOINTMENT SCHEDULING
Patient
Staff
Doctor
LogIn
Appointment Scheduling
Online?
Ask your Doctor
(Yes)
(No)
check up?
(Yes)
Book Appointment
Check Up
searching for a specific appointment
by clinic
by DoctorName
Select Doctor
View Doctor Info and available date and time
Choose date and time
Make Appointment
Appointment Refused
Appointment scheduled
Receive appointment
Approved?
(No)
(Yes)
update of patient status
the timetable of doctor is updated
The doctor gets notified for the appointment


Patient
ASK YOUR DOCTOR
Staff
Doctor
LogIn
Appointment Scheduling
Ask your Doctor
Search about medication?
(Yes)
search a medication
(No)
Chat?
(Yes)
(No)
View information
Request a video call
Request a chat
Select the doctor
View Doctor Info and available date and time
Choose date and time
Make Appointment
Receive appointment
Approved?
(Yes)
(No)
update of patient status
the timetable of doctor is updated
The doctor gets notified for the appointment
Appointment Refused
Appointment scheduled

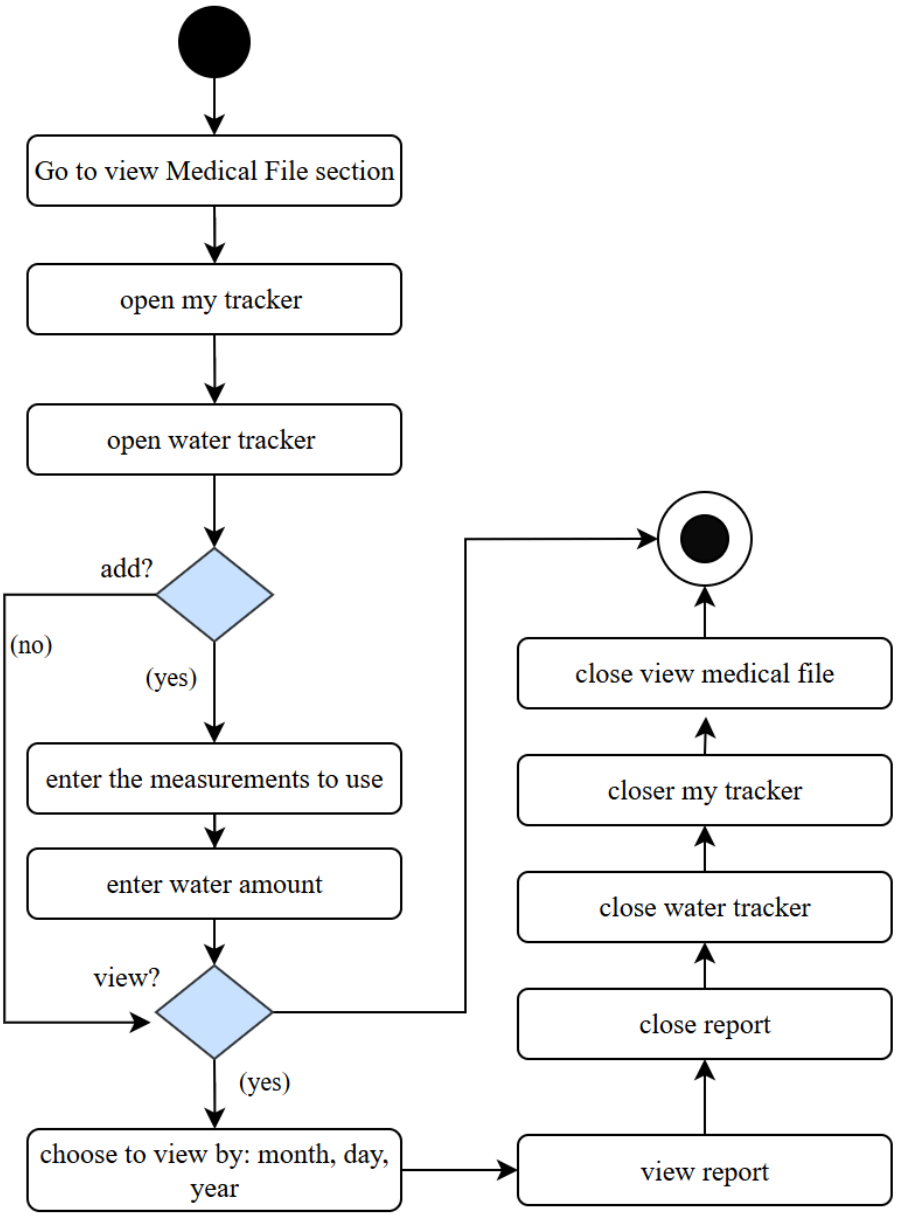

Patient
Help And Support
System
LogIn
Help and Support
request help via a question
Chat
tutorial videos
email
gets the answer

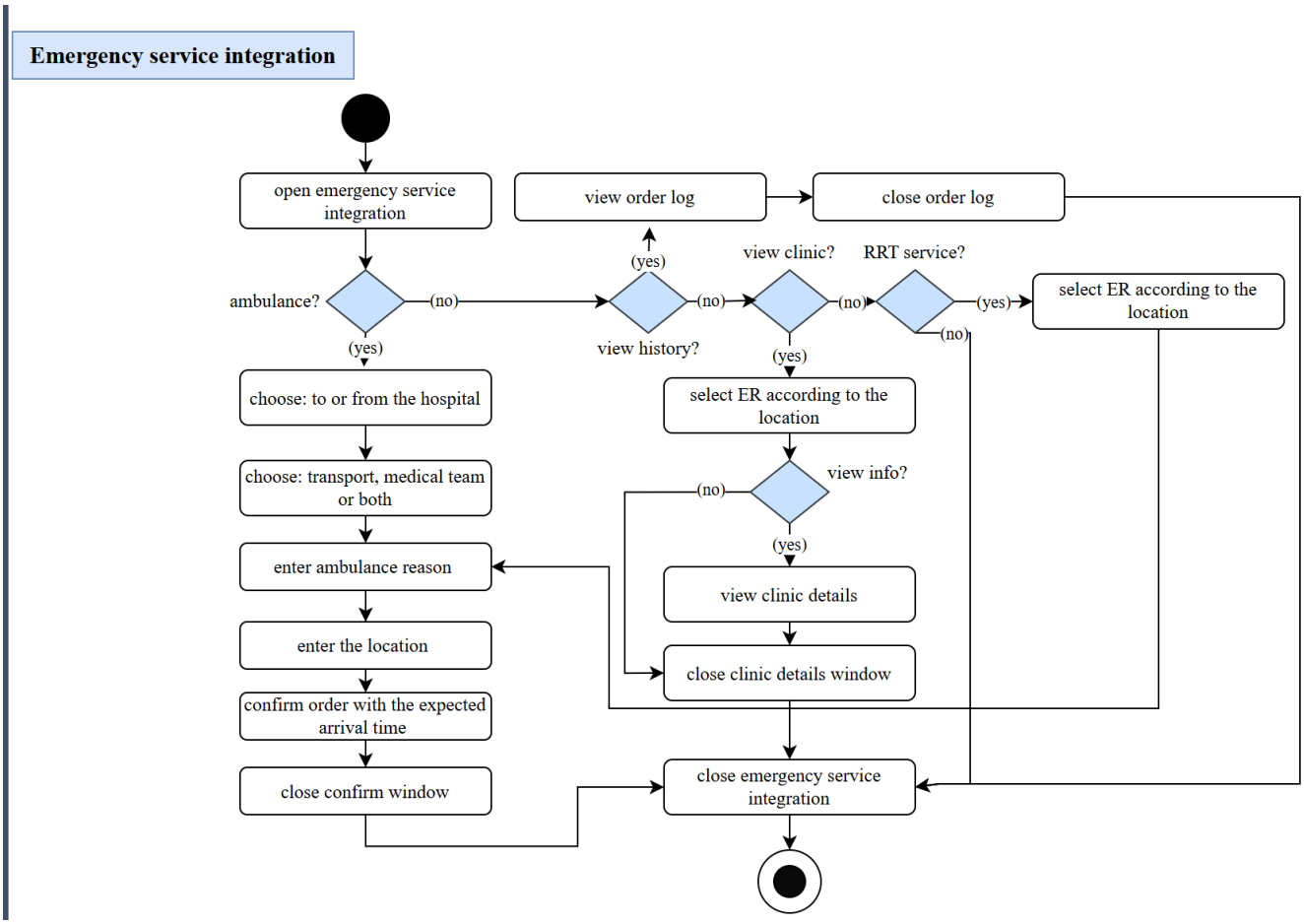

Patient
HomeCare
HealthcareProvidors
LogIn
HomeCare Platform
select the service
Select the Healthcare Provider
View available spots
Choose date and time
Request HomeCare
receive negative respond
home care scheduled
Receive appointment
Review the view medicalFile
Approved?
(yes)
(No)


Patient
Patient Account
System
Registered?
(No)
Register
(Yes)
LogIn
Enter personal info
Authorize and verify
Enter username and password
No
Dashboard
Verify
(yes)
(No)
HomePage
nr of attempt>3
Yes
(Yes)
use Authentication
Pass?
(No)

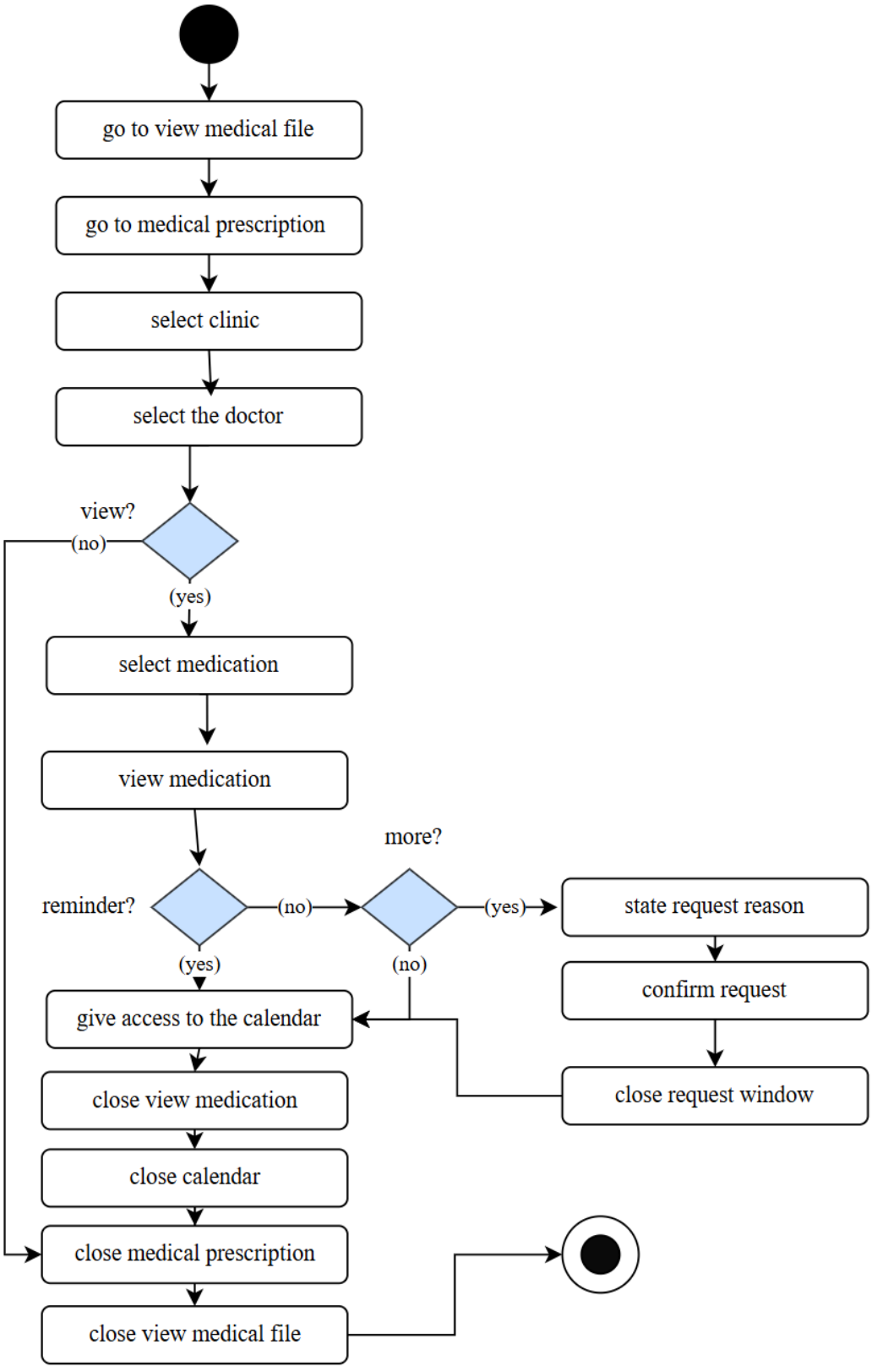
LAYAN

water tracker

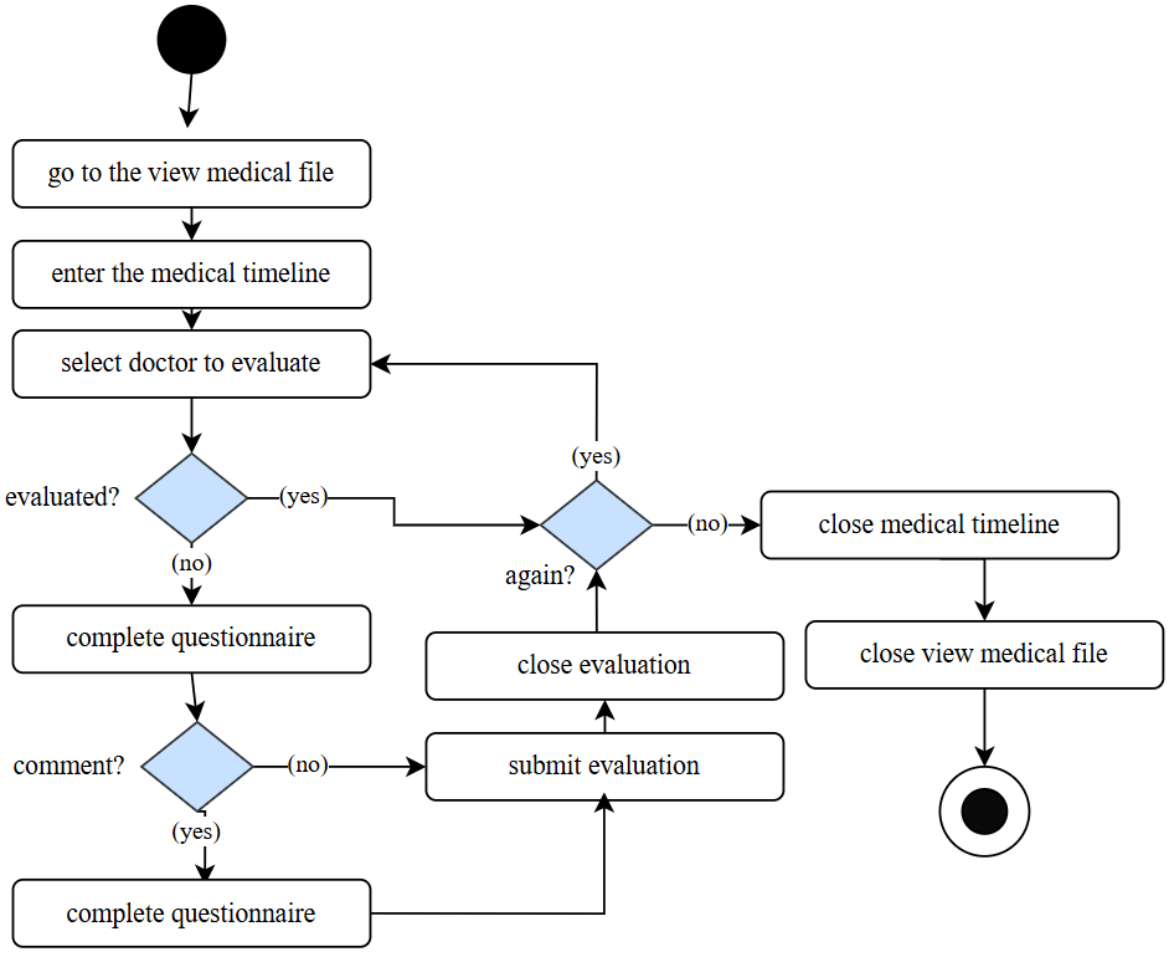


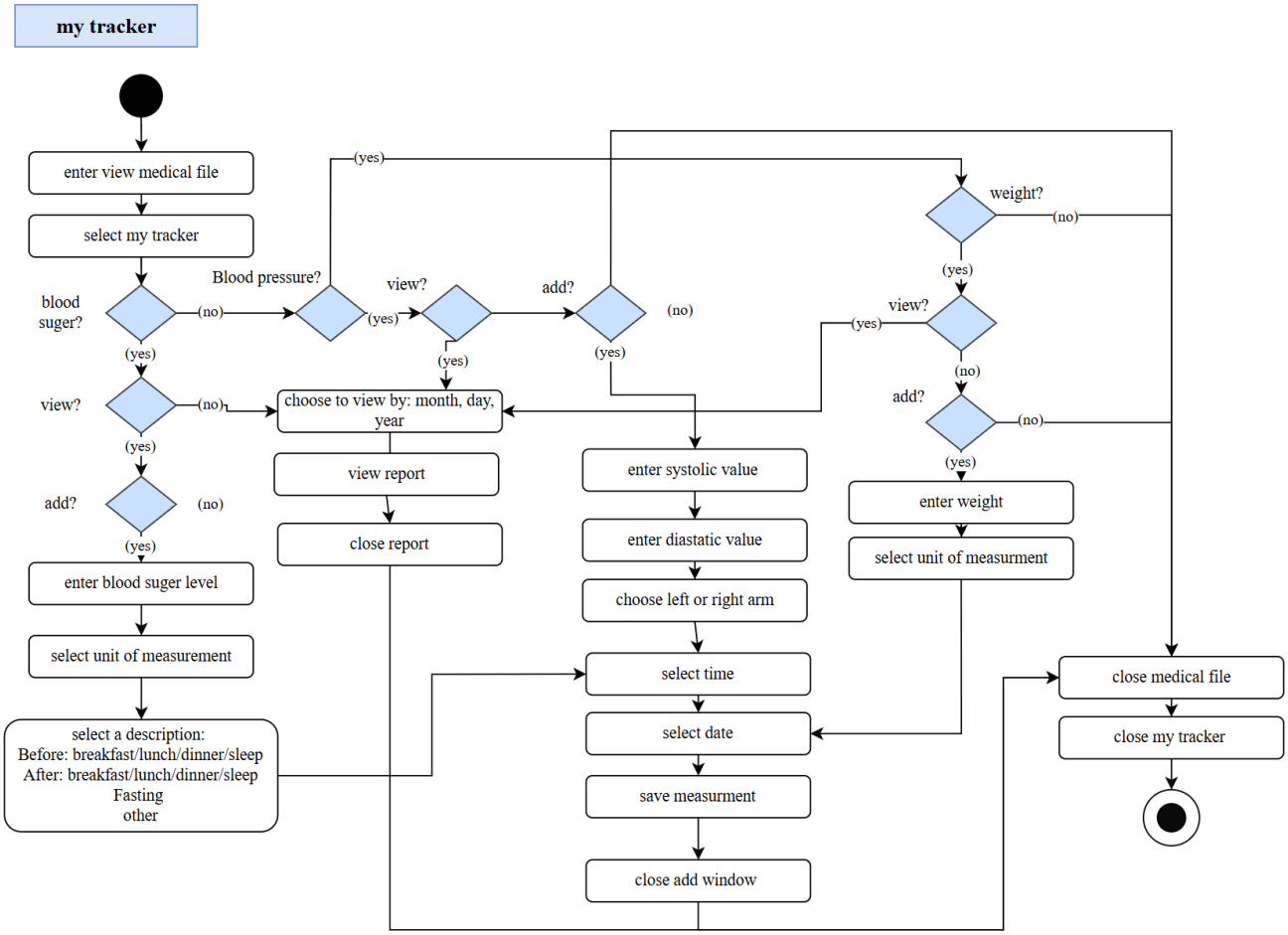

Emergency service integration
open emergency service integration
ambulance?
(no)
(yes)
choose: to or from the hospital
choose: transport, medical team or both
enter ambulance reason
enter the location
confirm order with the expected arrival time
close confirm window
view order log
close order log
(yes)
view history?
(no)
view clinic?
(no)
(yes)
select ER according to the location
view info?
(no)
(yes)
view clinic details
close clinic details window
RRT service?
(yes)
(no)
select ER according to the location
close emergency service integration

medicine prescription

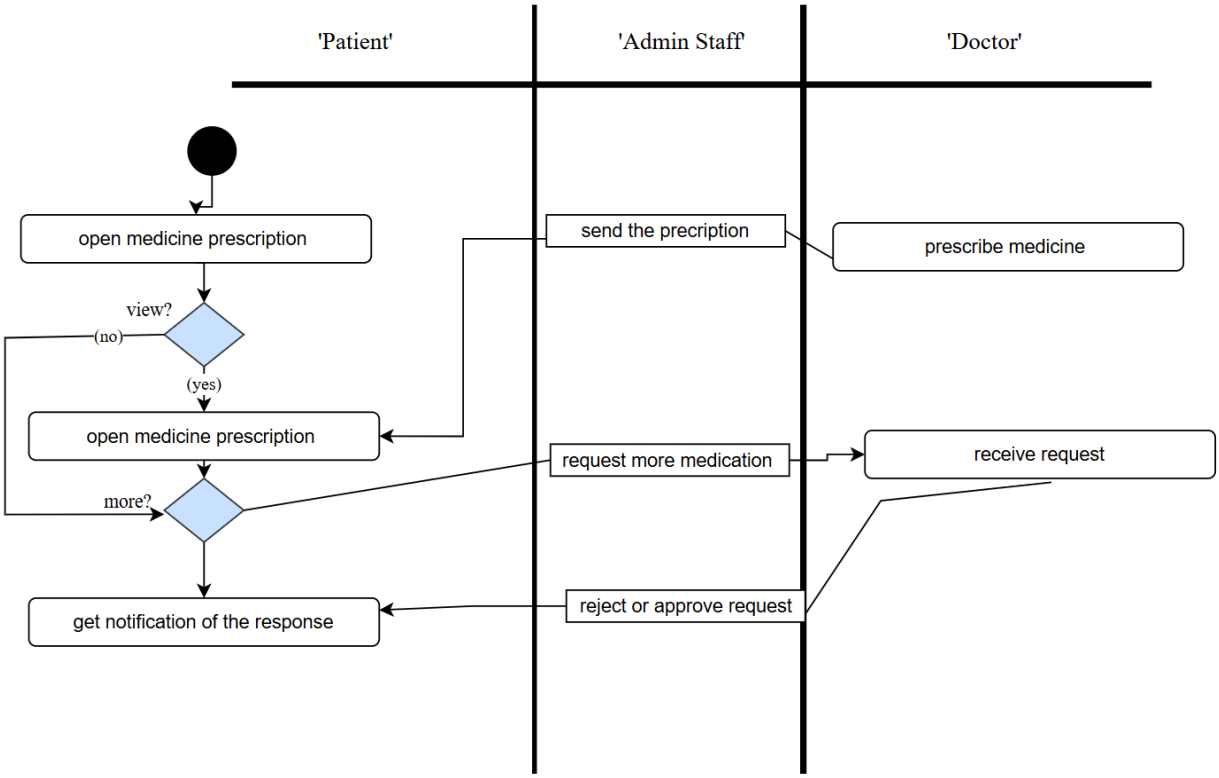


Doctor evaluation

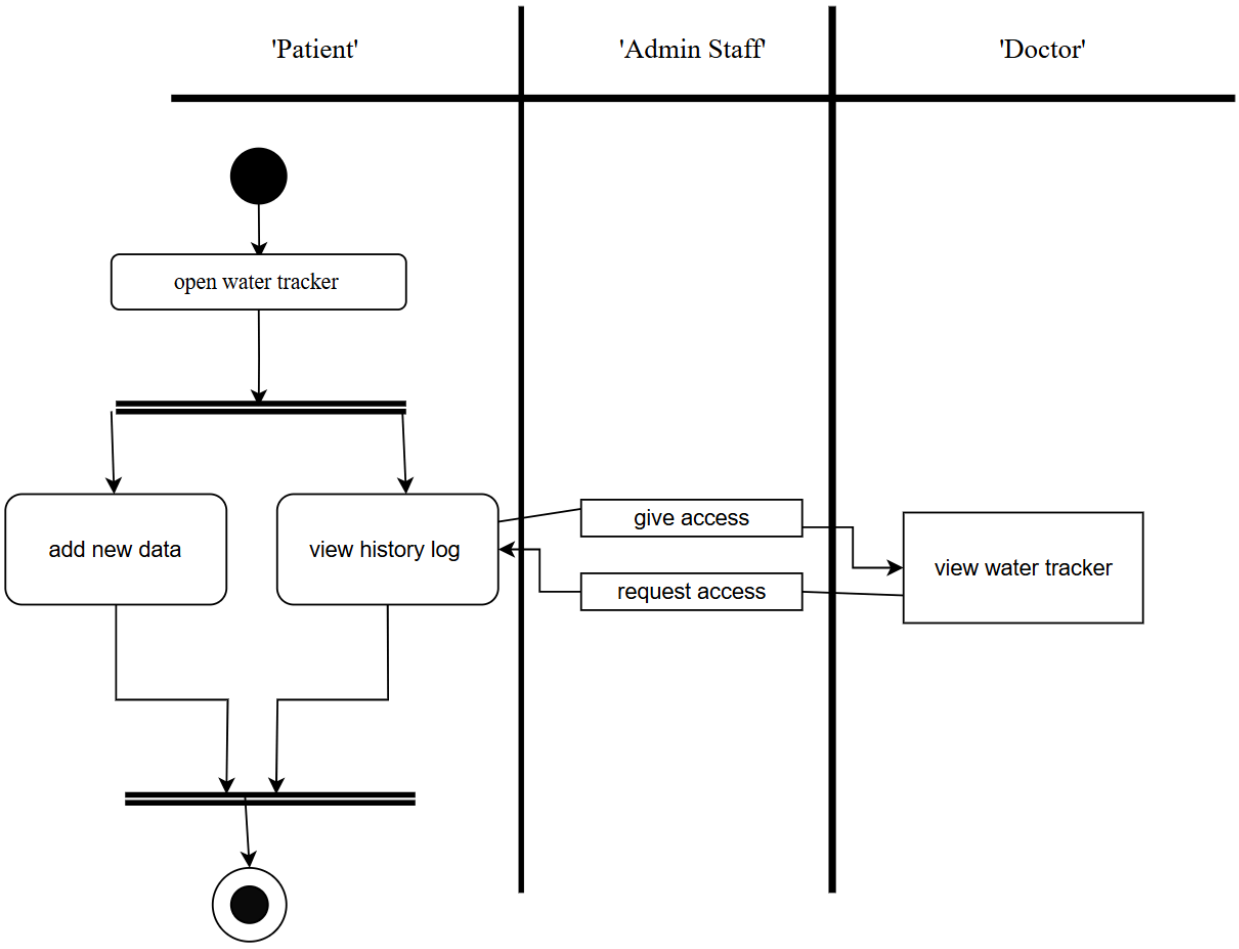



my tracker
enter view medical file
select my tracker
blood suger?
(no)
(yes)
Blood pressure?
(yes)
view?
(yes)
add?
(no)
(yes)
(yes)
weight?
(no)
(yes)
view?
(yes)
(no)
add?
(no)
(yes)
view?
(no)
(yes)
choose to view by: month, day, year
view report
close report
add?
(no)
(yes)
enter blood suger level
select unit of measurement
select a description:
Before: breakfast/lunch/dinner/sleep
After: breakfast/lunch/dinner/sleep
Fasting
other
enter systolic value
enter diastatic value
choose left or right arm
select time
select date
save measurment
close add window
enter weight
select unit of measurment
close medical file
close my tracker

Emergency service integration

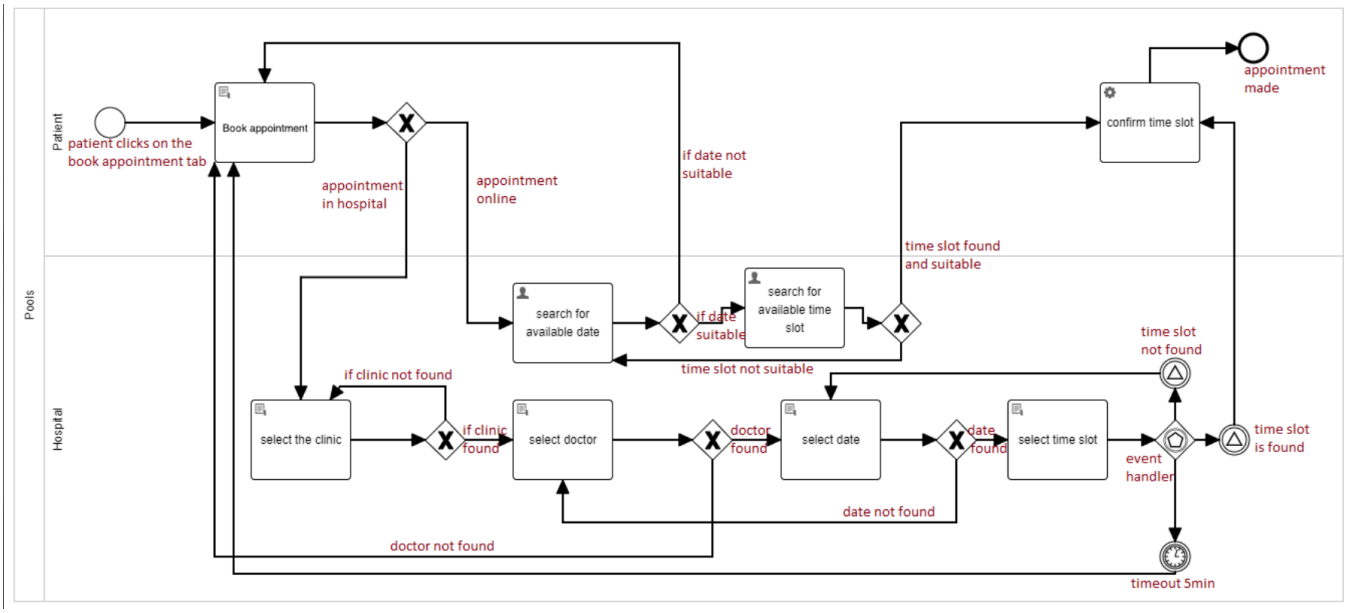


water tracker



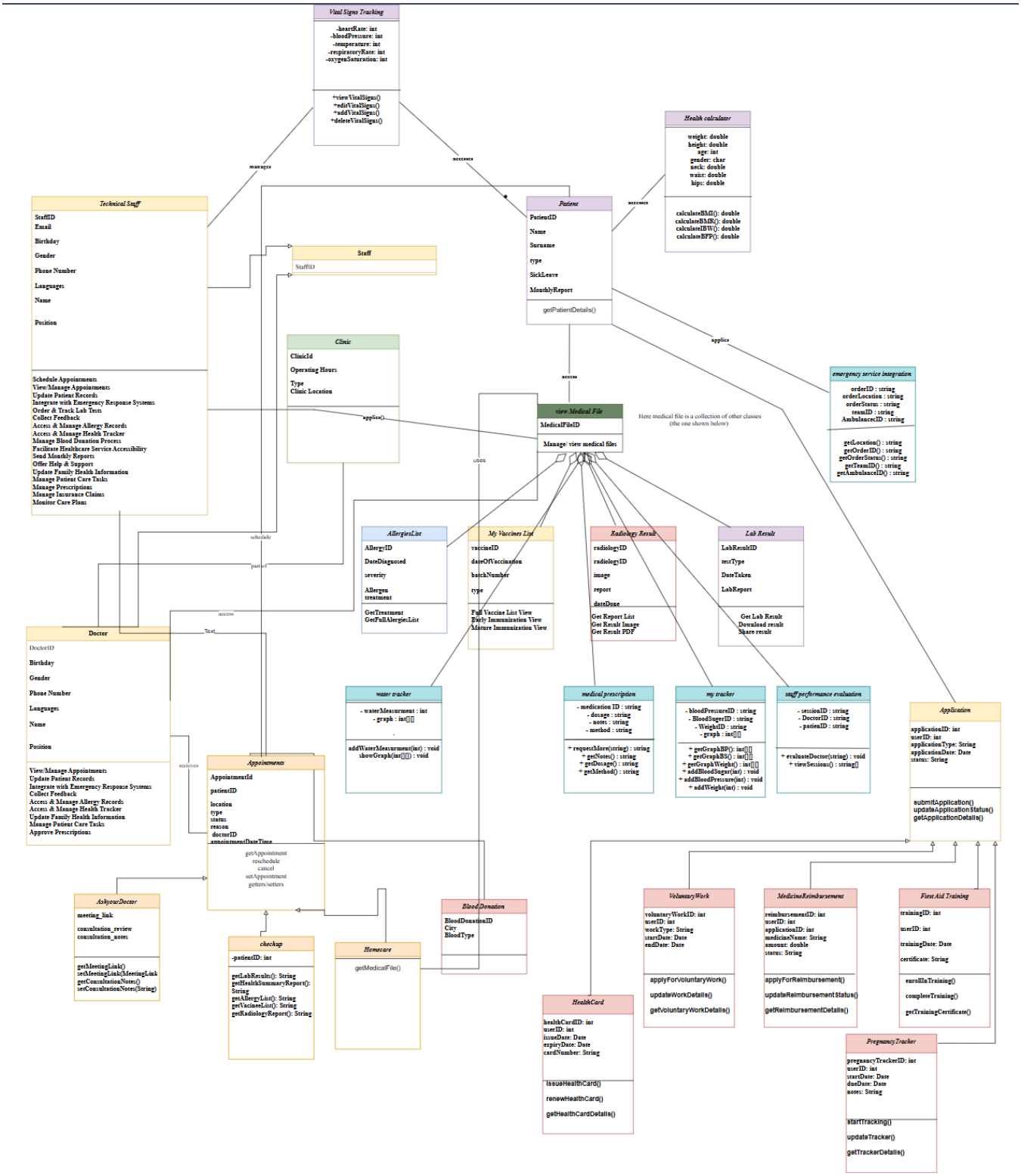
BPMN diagram:

LAYAN & UNEJSI



Class Diagram:

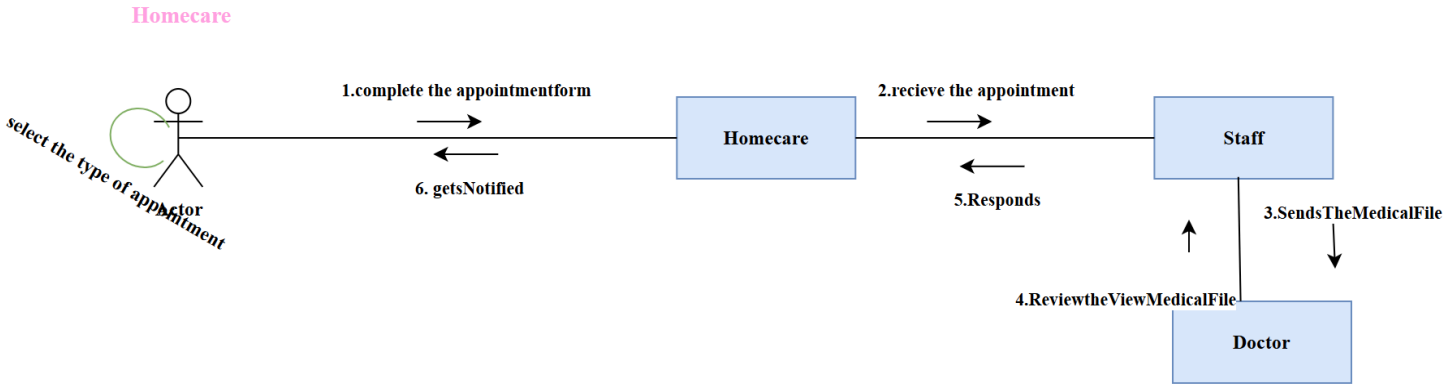
AS A GROUP

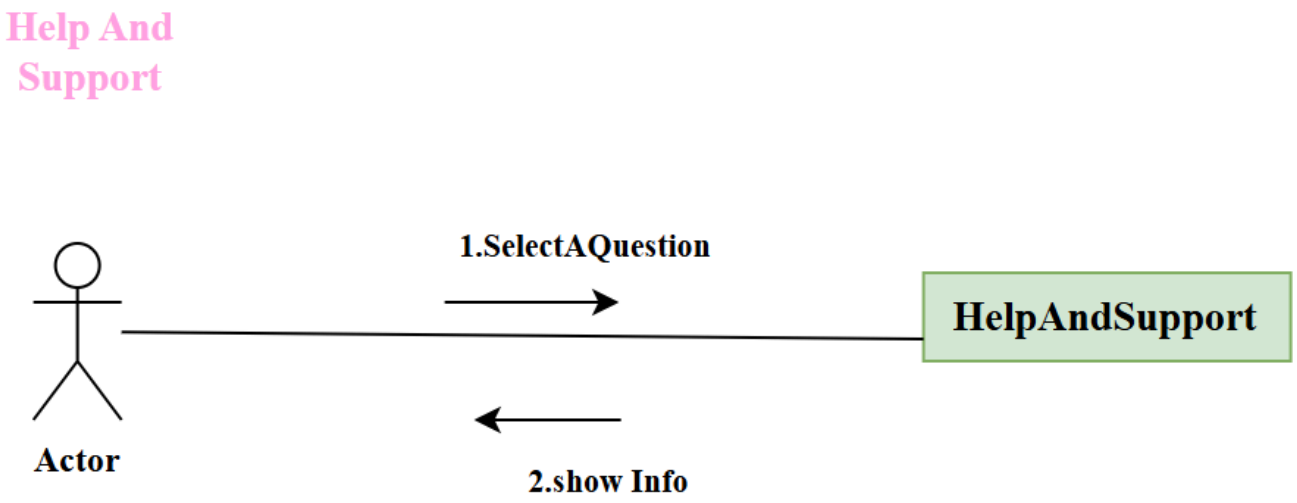


Collaboration Diagram:

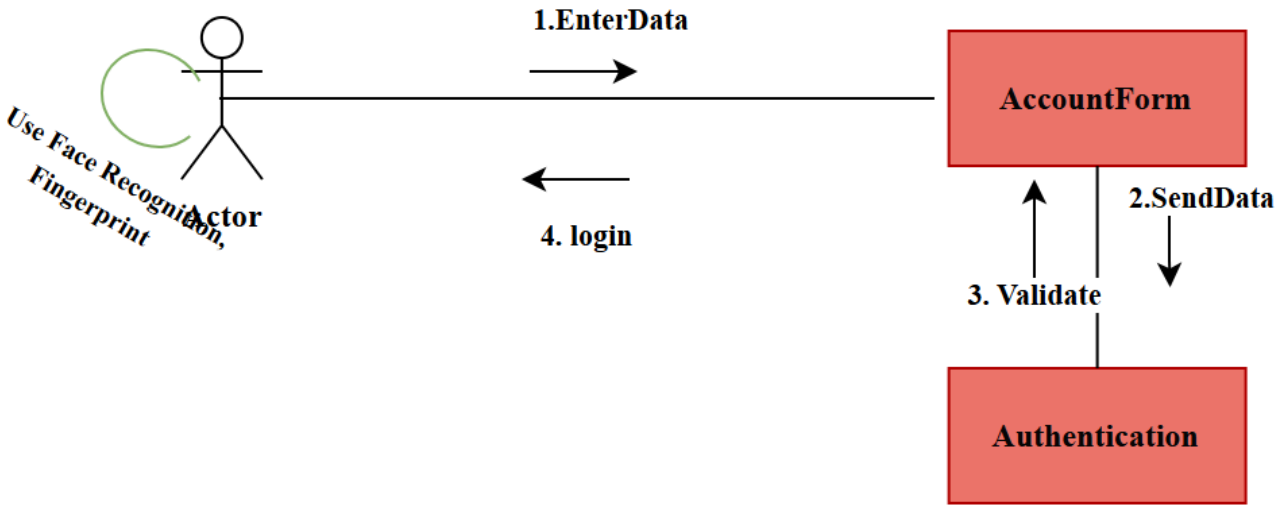
ZIKO

note that actors here are patients but the program used to create the diagram could not allow the name to change

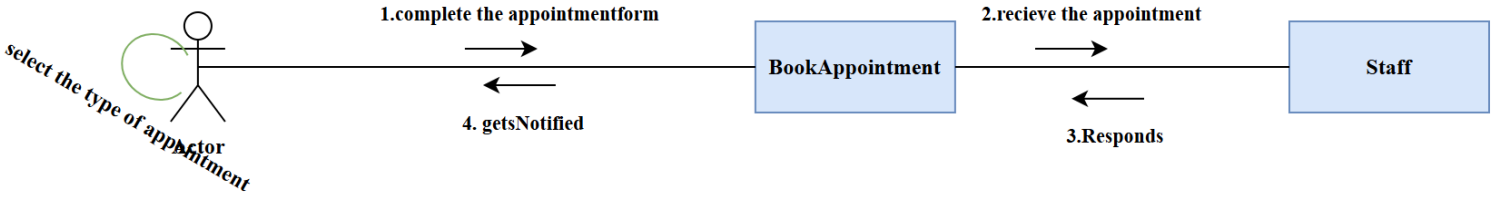




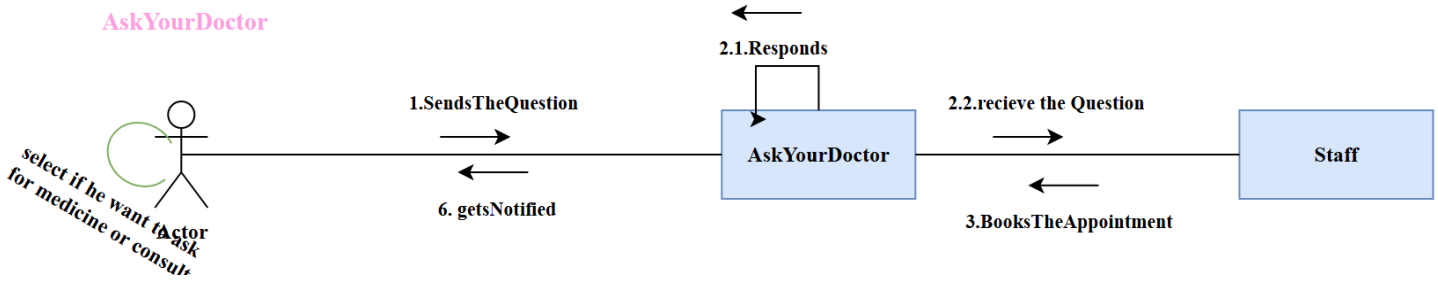
PatientAccont



Appointment
Scheduling

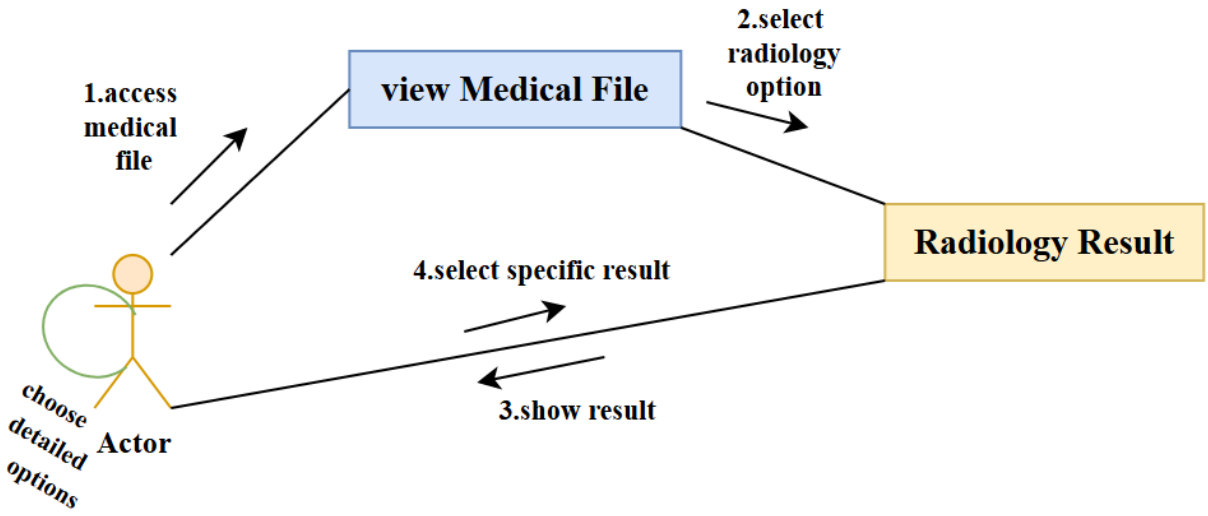


AskYourDoctor

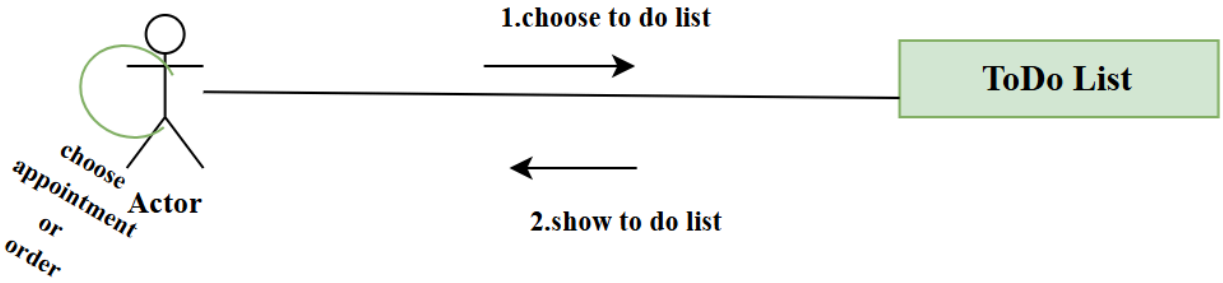


TEA

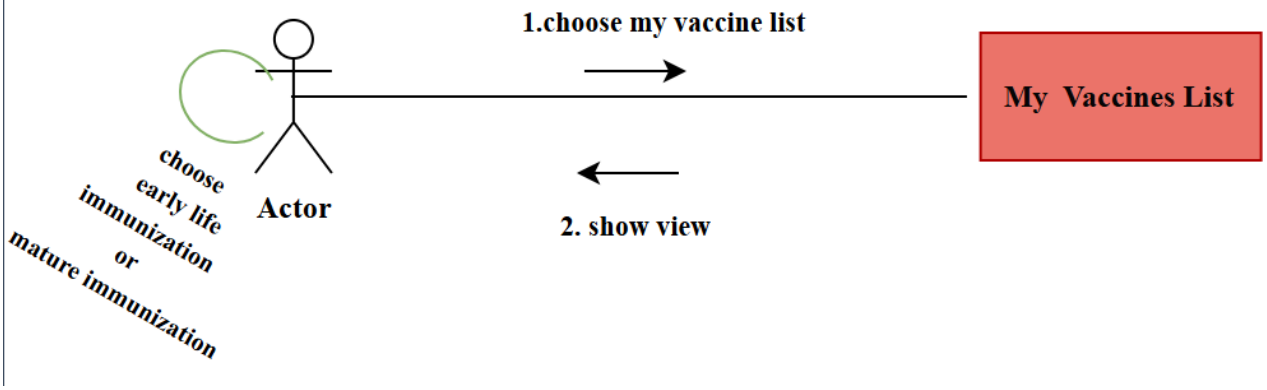
Radiology Result



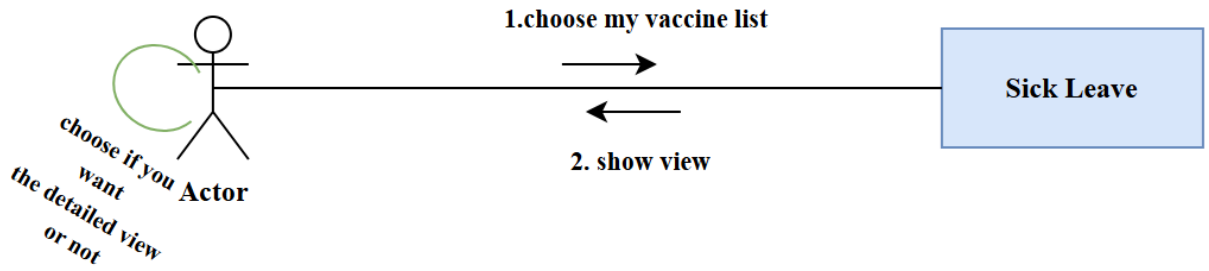
ToDo List



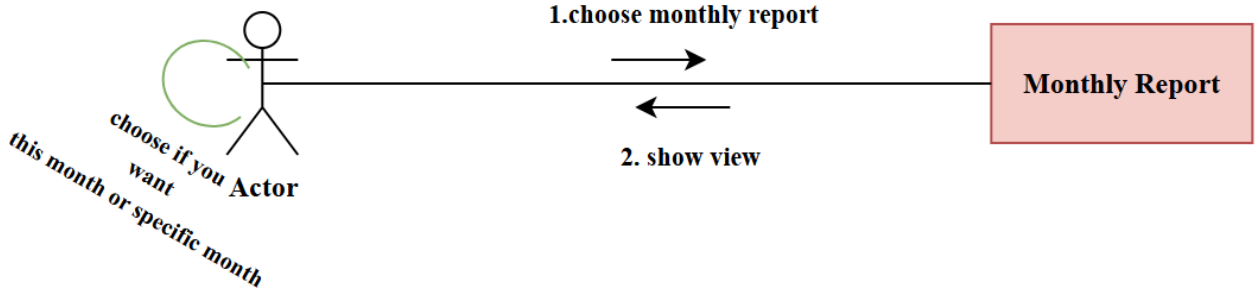
MyVaccines List



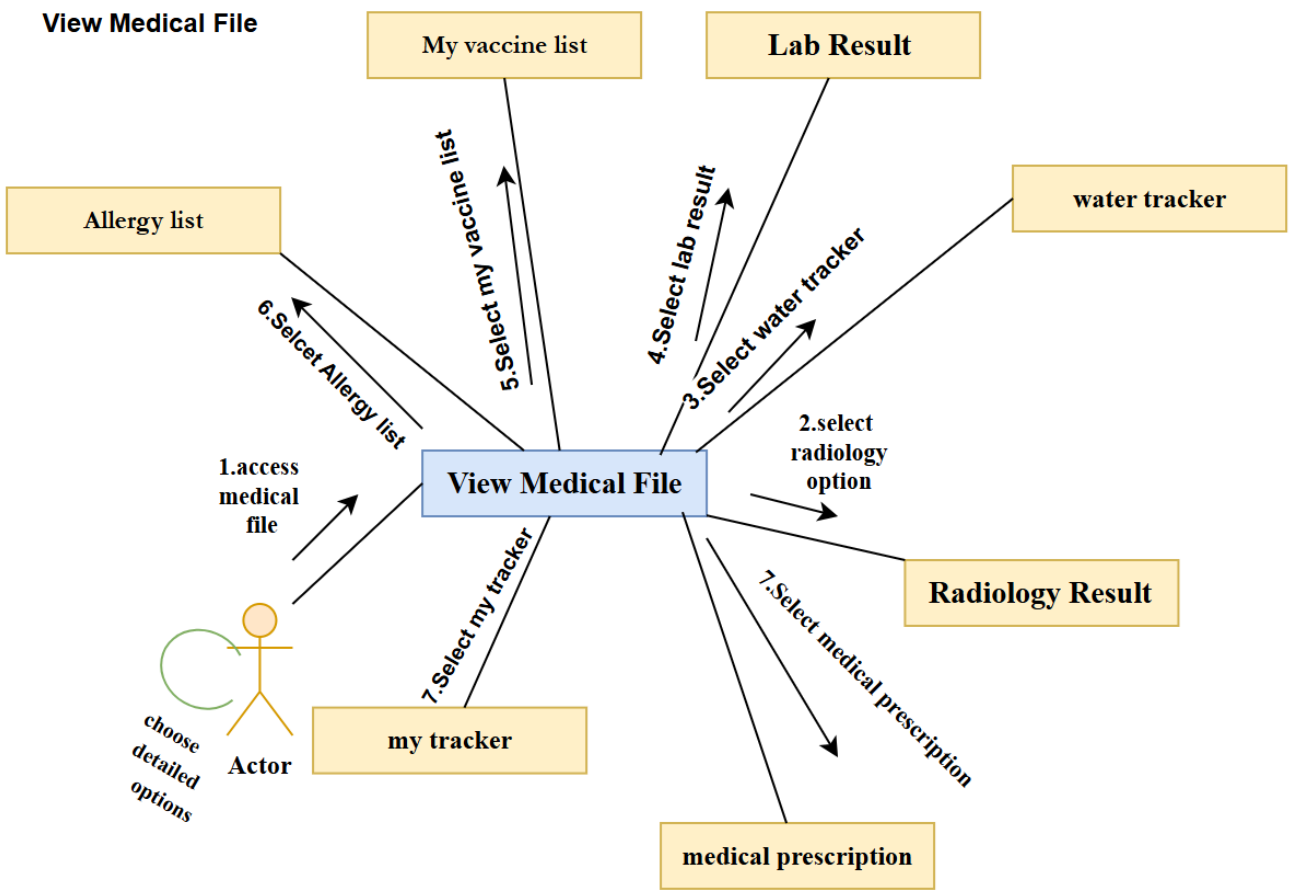
Sick Leave



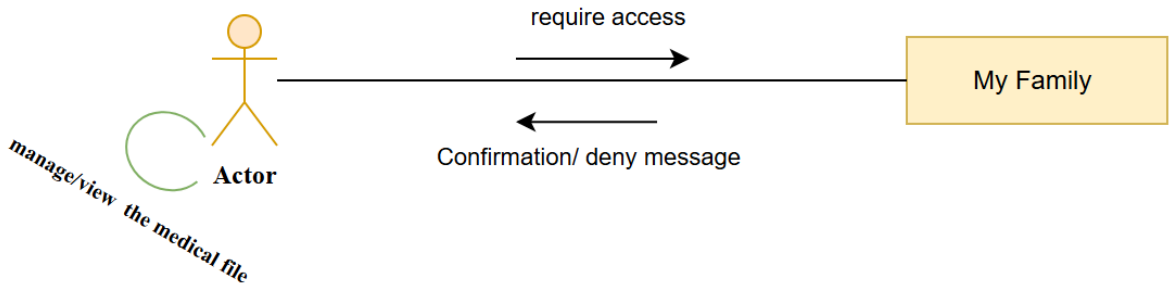
Monthly Report



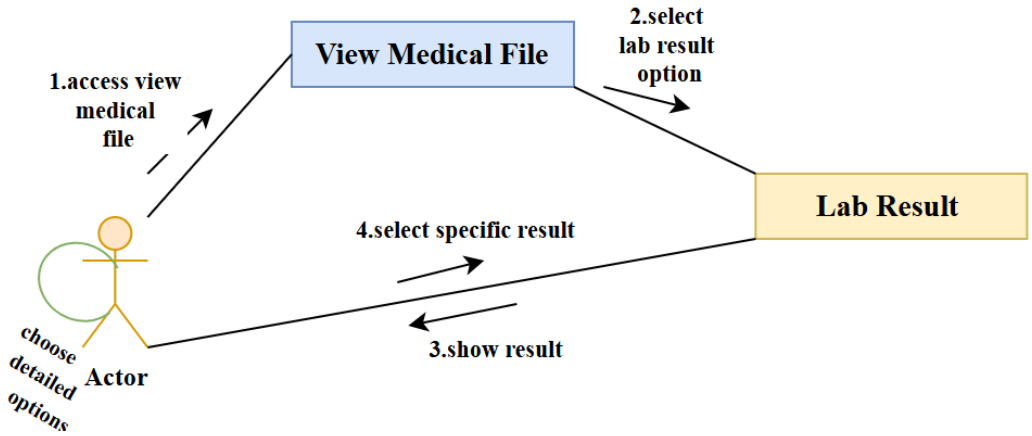
ORKIDA


View Medical File
My vaccine list
Lab Result
Allergy list
water tracker
5.Select my vaccine list
4.Select lab result
3.Select water tracker
6.Selcet Allergy list
2.select radiology option
1.access medical file
View Medical File
Radiology Result
7.Select medical prescription
7.Select my tracker
choose detailed options
Actor
my tracker
medical prescription

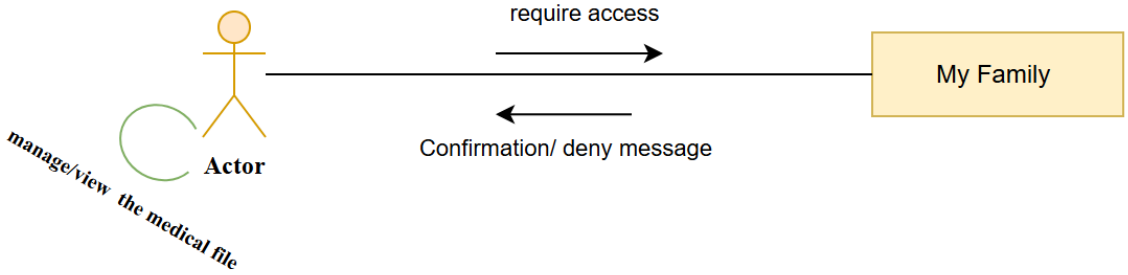
My Family



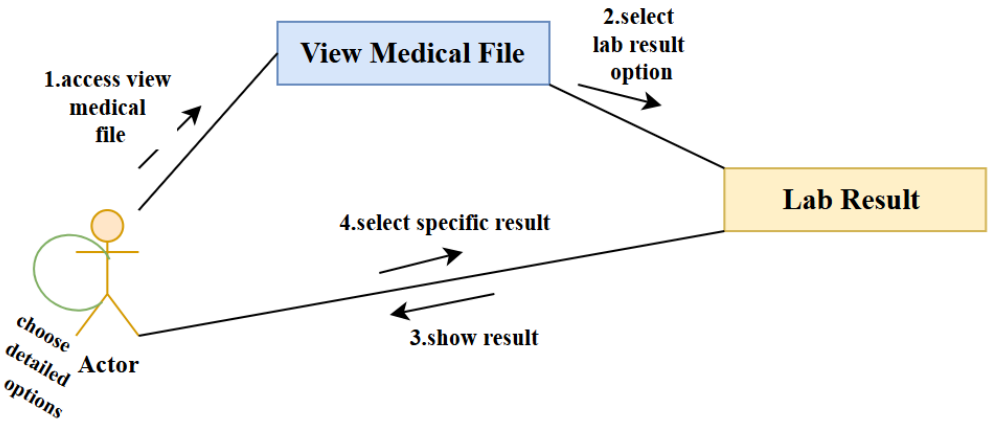
Lab Results Management



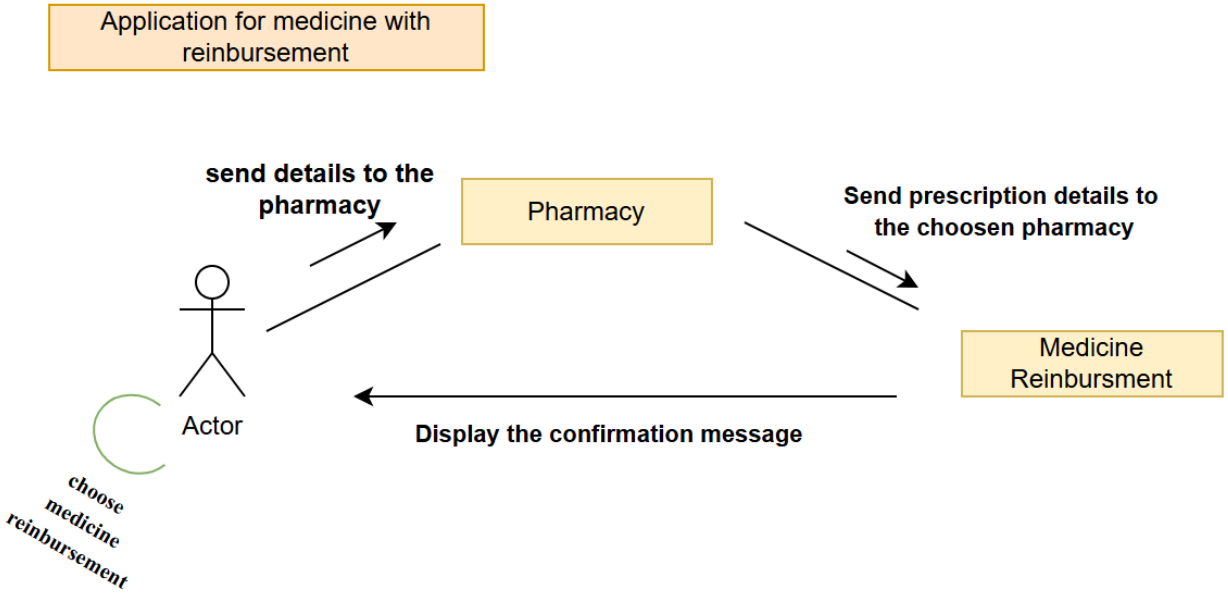
My Family

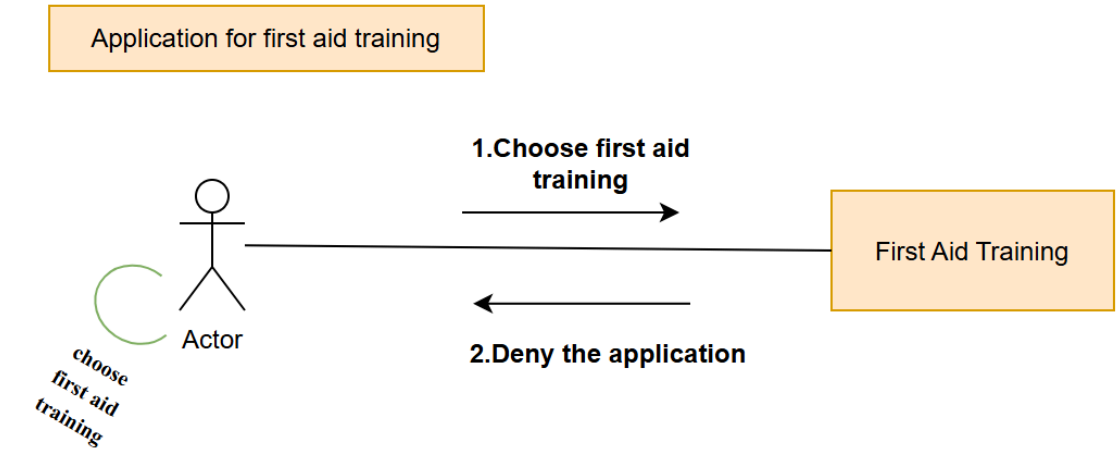


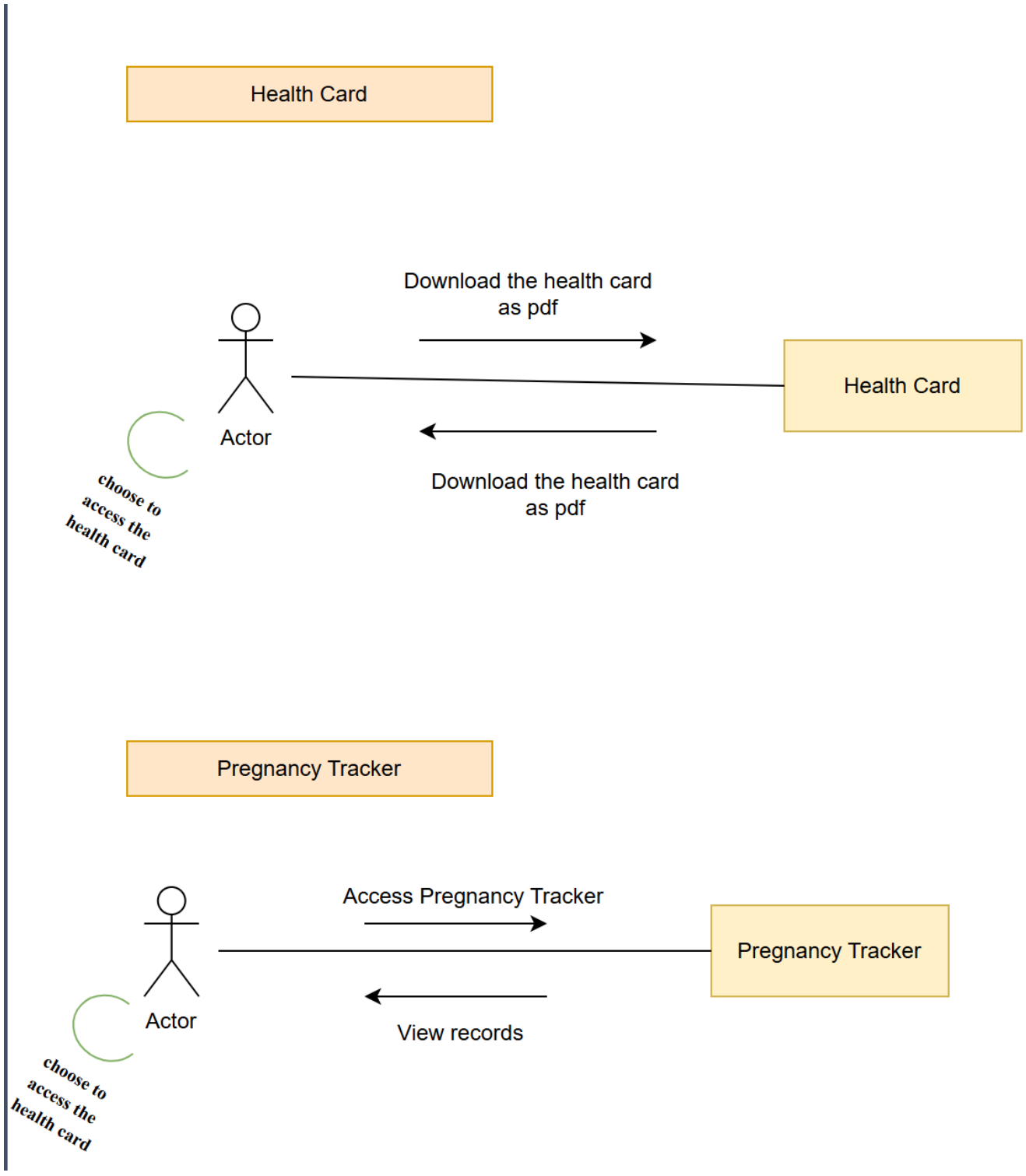
Lab Results Management



REDION

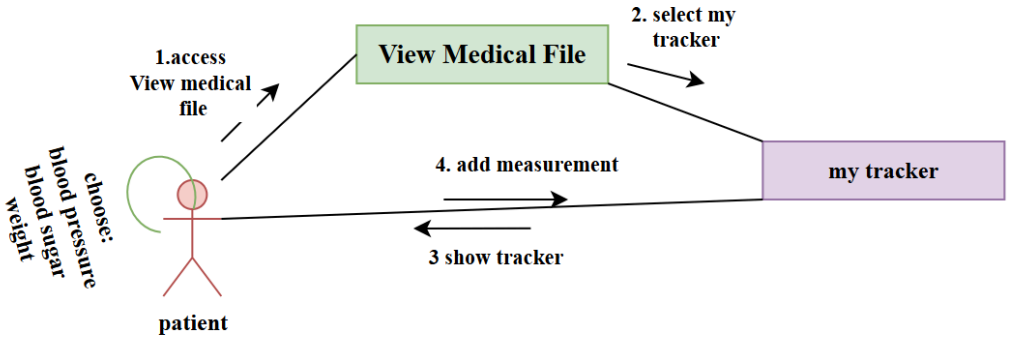

Application for medicine with reinbursement
send details to the pharmacy
Pharmacy
Send prescription details to the choosen pharmacy
Medicine Reinbursment
Actor
Display the confirmation message
choose medicine reinbursement


Application for first aid training
1.Choose first aid training
First Aid Training
Actor
2.Deny the application
choose first aid training

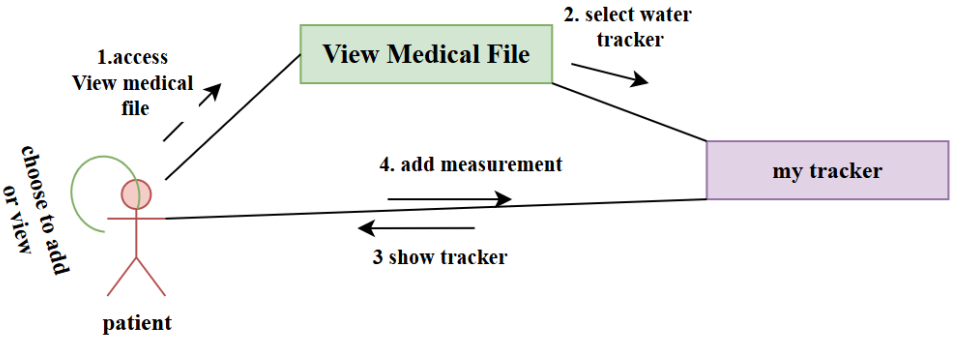

Health Card
Download the health card as pdf
Actor
Health Card
Download the health card as pdf
choose to access the health card
Pregnancy Tracker
Access Pregnancy Tracker
Actor
Pregnancy Tracker
View records
choose to access the health card

LAYAN

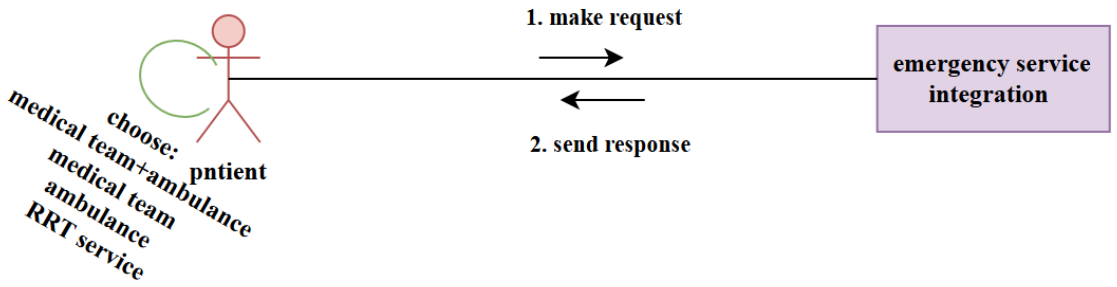
my tracker



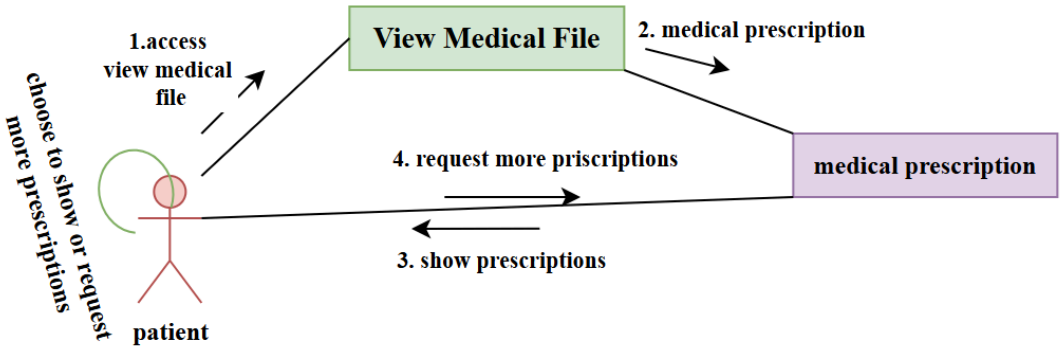
water tracker



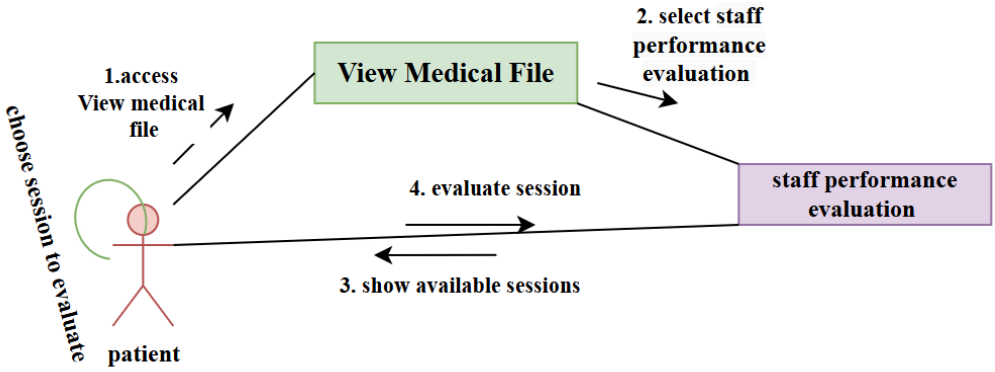
emergency service integration



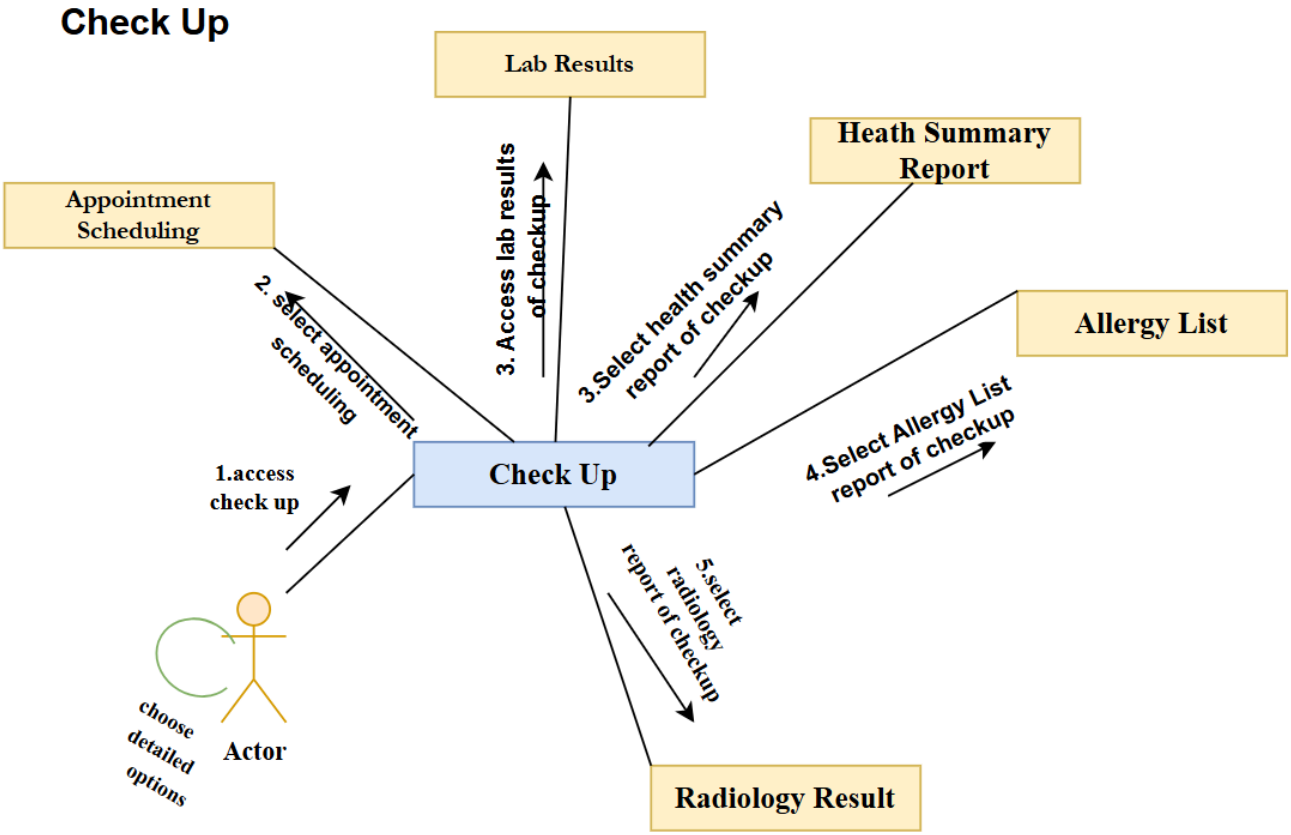
medical prescription

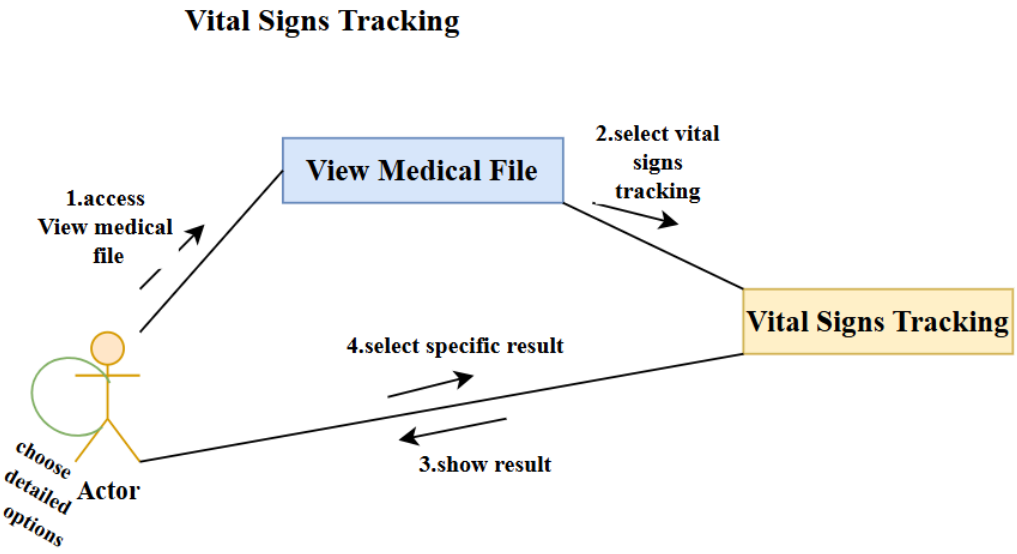


staff performance evaluation

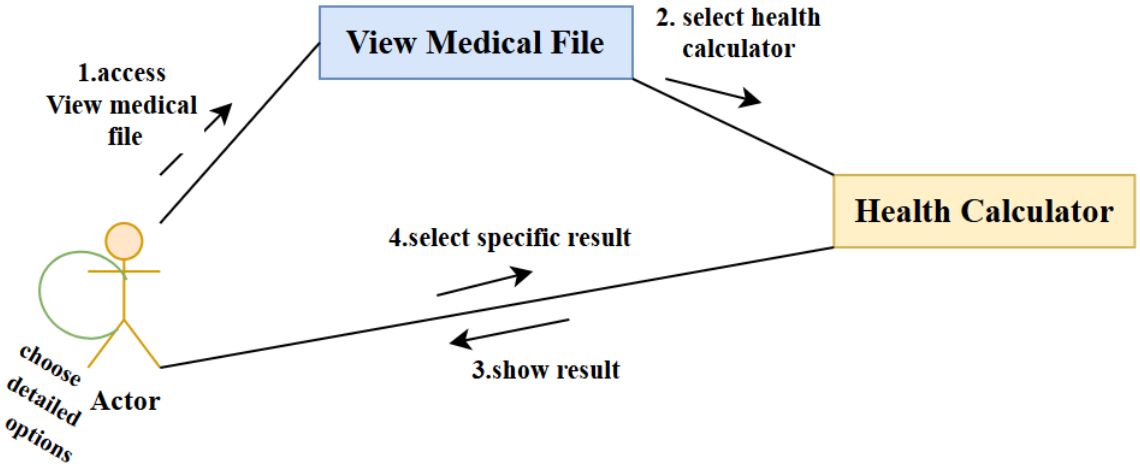


UNEJSI

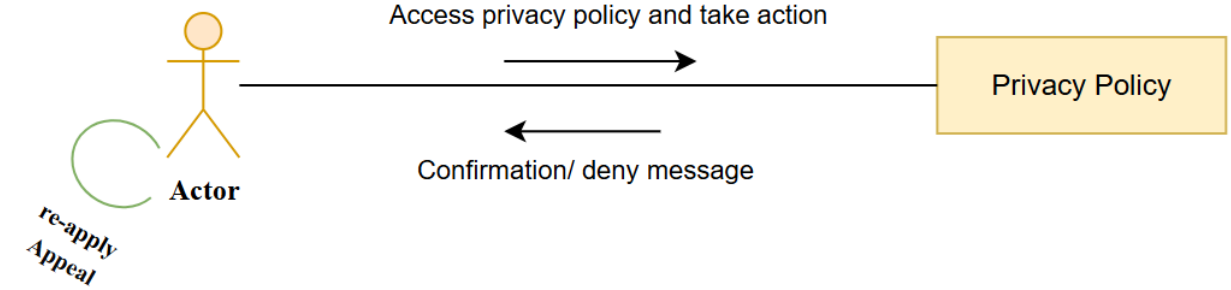

Check Up
Lab Results
Heath Summary Report
Appointment Scheduling
3. Access lab results of checkup
2. select appointment scheduling
3.Select health summary report of checkup
Allergy List
4.Select Allergy List report of checkup
1.access check up
Check Up
5.select radiology report of checkup
choose detailed options
Actor
Radiology Result


Vital Signs Tracking
View Medical File
2.select vital signs tracking
1.access View medical file
Vital Signs Tracking
4.select specific result
choose detailed options
Actor
3.show result

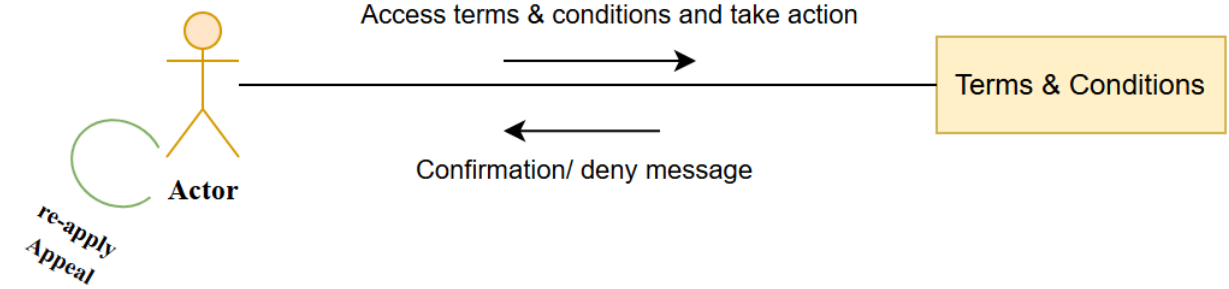
Health Calculator



Privacy Policy

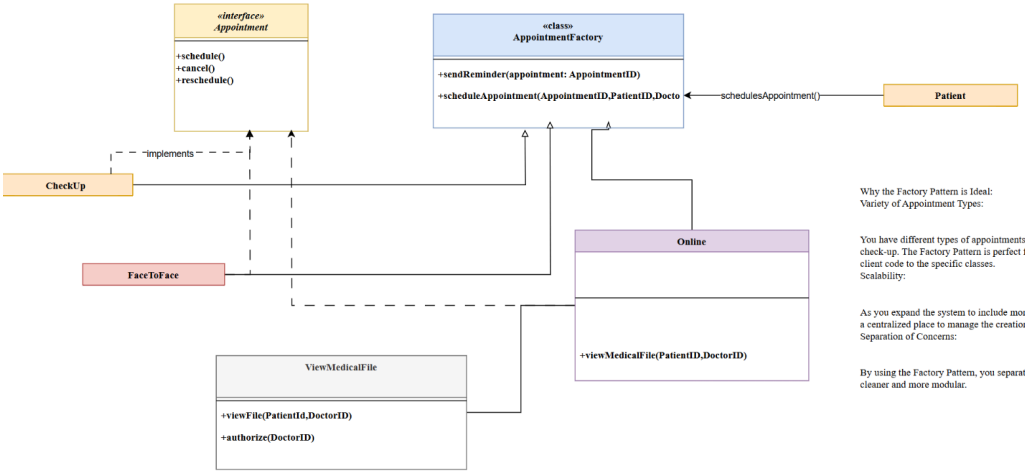


Terms & Conditions



Design Pattern:

ZIKO & ORKIDA



Why the Factory Pattern is Ideal:
Variety of Appointment Types:

You have different types of appointments: consultation call, face-to-face consultation, online conversation, and check-up. The Factory Pattern is perfect for creating instances of these different types without tightly coupling the client code to the specific classes.
Scalability:

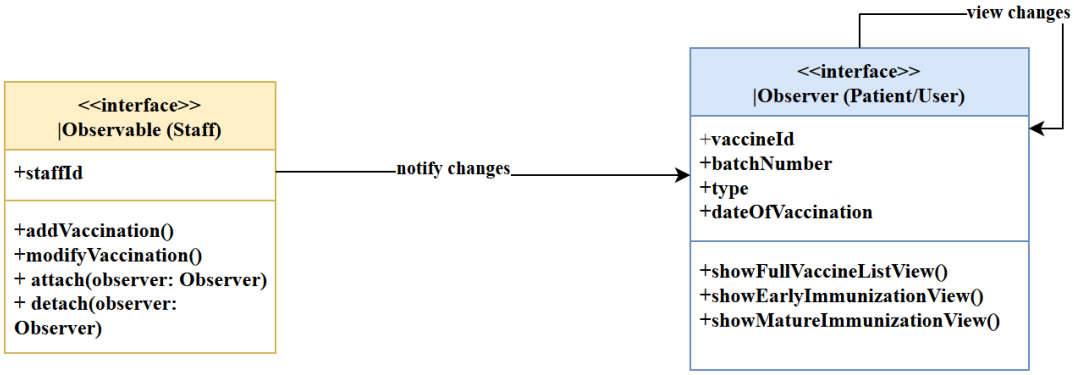
As you expand the system to include more appointment types or change existing ones, the Factory Pattern provides a centralized place to manage the creation logic, making it easier to maintain and extend.
Separation of Concerns:

By using the Factory Pattern, you separate the creation logic from the scheduling logic, which makes the code cleaner and more modular.

TEA

Observer for Vaccine List (Behavioral Design Patterns)

This behavioral design pattern is the best choice because it lets you define a mechanism to notify multiple objects about any events that happen to the object theyre observing and in our case for vaccine list : it ensures that each user has access to their complete vaccination history within the system(early and prime immunizations), and also is responsible for notifying observers (users) when there are updates to the vaccination record.



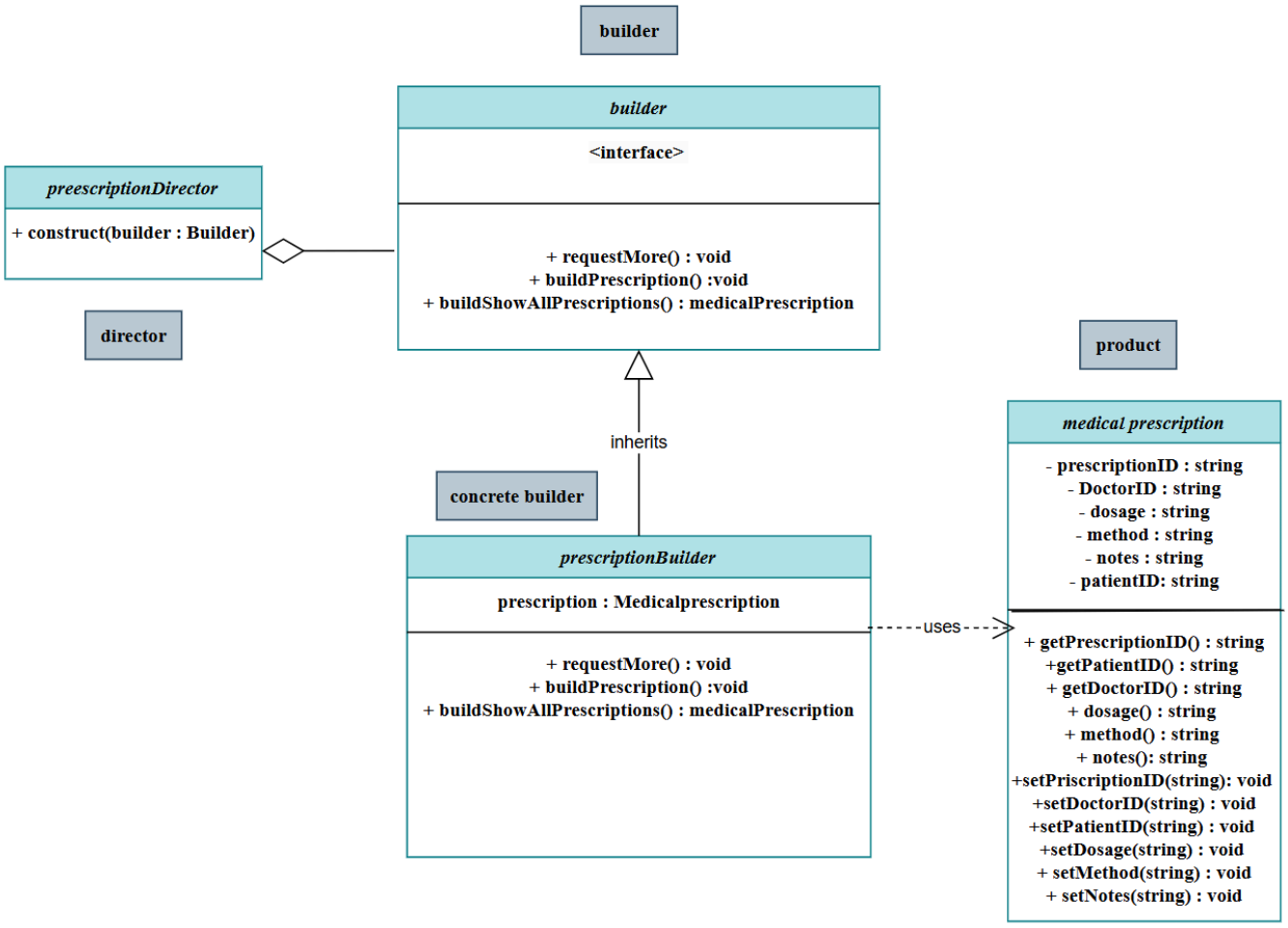
LAYAN

medical prescription:

which pattern should we choose?

we can use a builder design pattern, which is most suitable because:

1. a patient can have a verity of prescriptions and with different descriptions and dosages which can be created using flexible representation
2. the builder pattern enables complex design patterns which can help with the medical prescription part since it contains many attributes



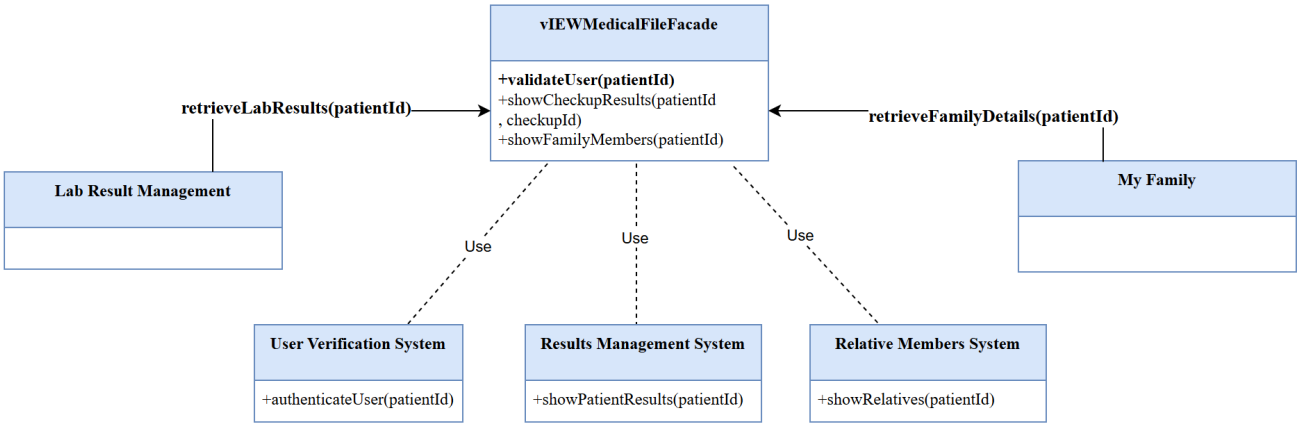
UNEJSI

Why use the Facade Pattern?

Medical File

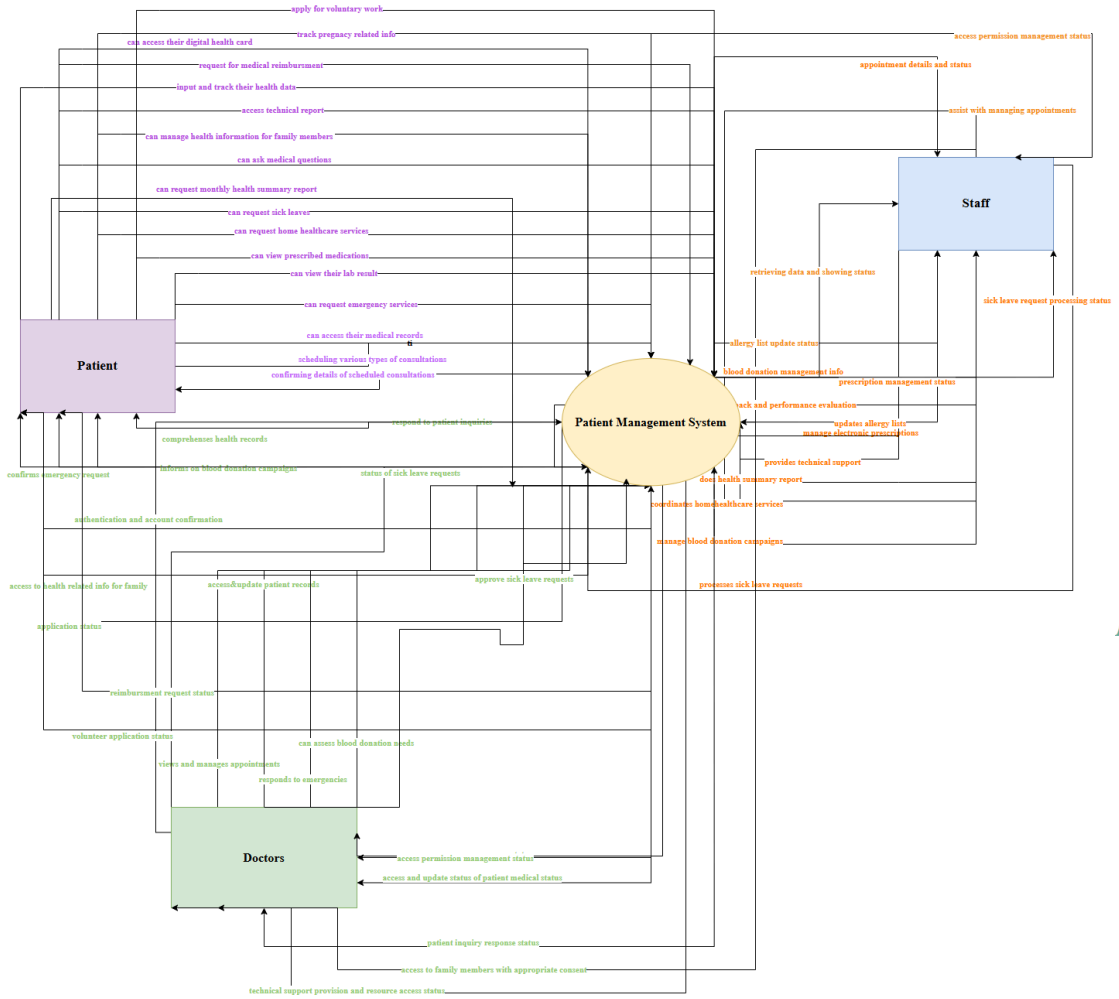
Facade Pattern

The Facade pattern provides a simplified interface to a complex subsystem.
It hides the complexities of the subsystem and provides a higher-level interface that makes the subsystem easier to use.

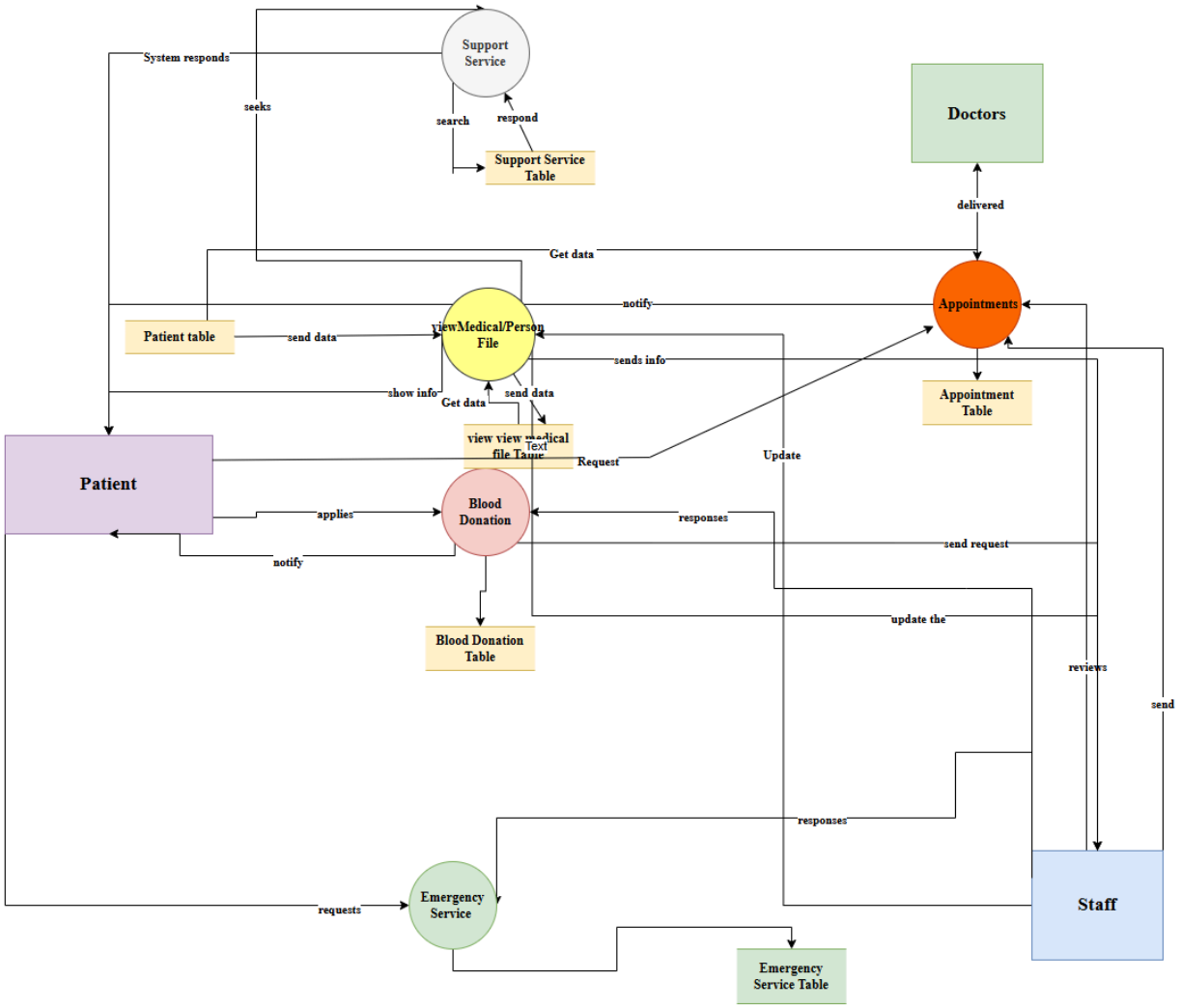


DFD Diagram:

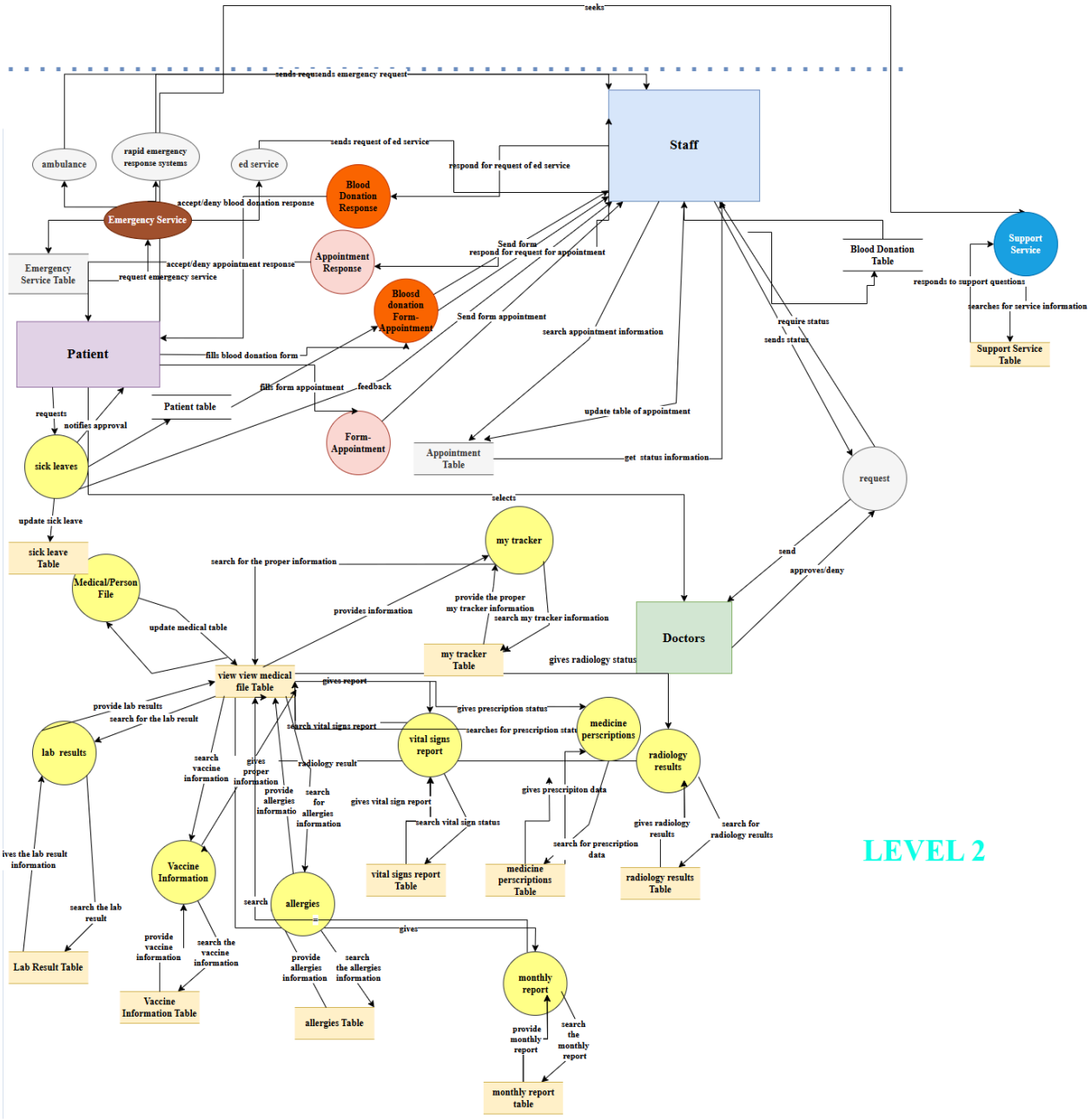
ORKIDA & TEA & ZIKO


apply for voluntary work
track pregnacy related info
can access their digital health card
request for medical reimbursmesi
input and track their health data
access technical report
can manage health information for family members
can ask medical questions
can request monthly health summary report
can request sick leave
can request home healthcare services
can view prescribed medications
can view their lab result
can request emergency services
can access their medical records
scheduling various types of consultations
confirming details of scheduled consultations
respond to patient inquiries
comprehenses health records
informs on blood donation campaigns
confirms emergency request
authentication and account confirmation
access to health related info for family
application status
reimbursment request status
volunteer application status
views and manages appointments
Patient
Patient Management System
Staff
Doctors
access permission management status
appointment details and status
assist with managing appointments
retrieving data and showing status
sick leave request processing status
allergy list update status
blood donation management info
prescription management status
ack and performance evaluation
updates allergy lists
manage electronic prescriptions
provides technical support
doct health summary report
coordinates homehealthcare services
manage blood donation campaigns
processes sick leave requests
status of sick leave requests
approve sick leave requests
access&update patient records
can assess blood donation needs
responds to emergencies
access permission management status
access and update status of patient medical status
patient inquiry response status
access to family members with appropriate consent
technical support provision and resource access status

LEVEL 0

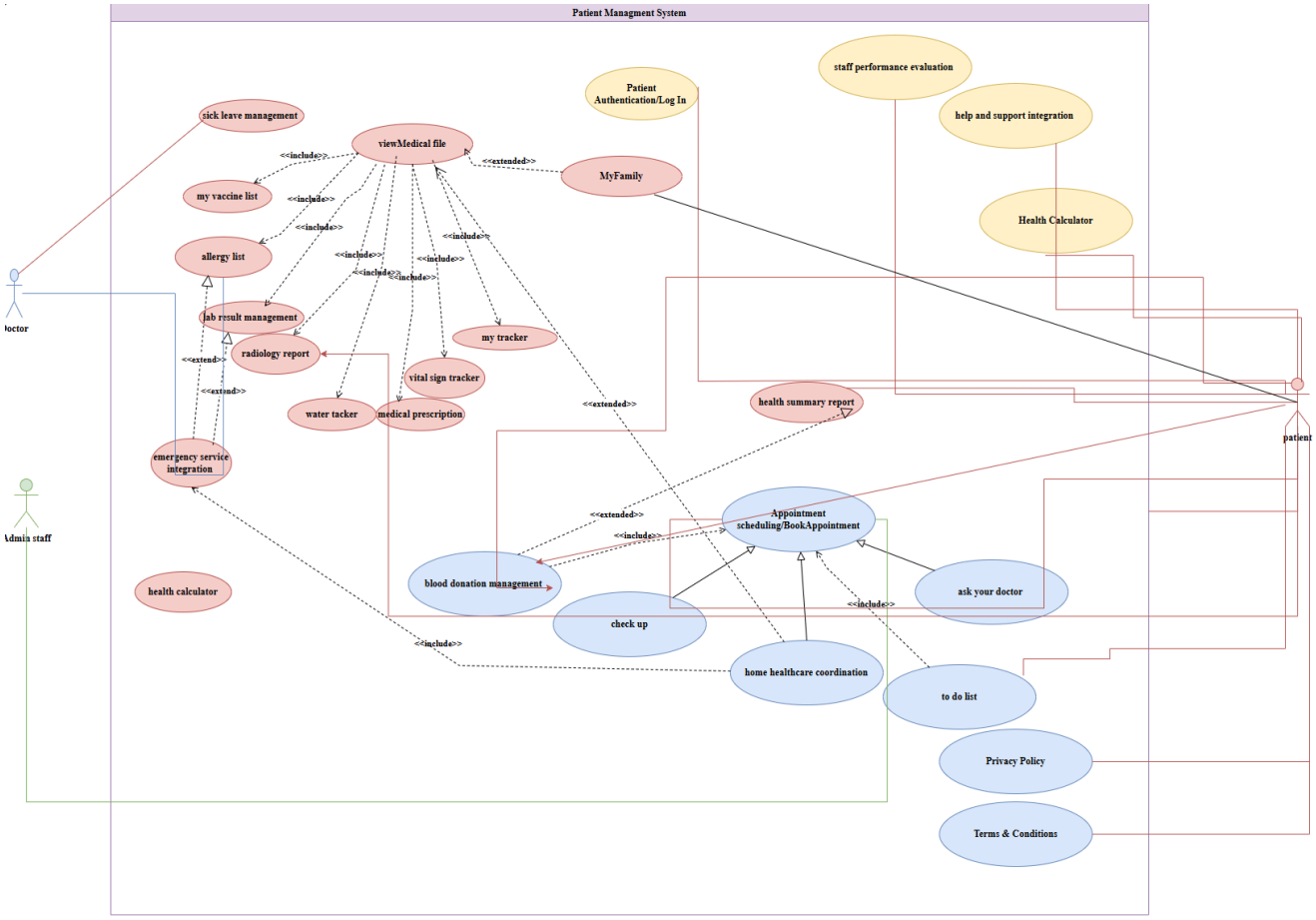

Support Service
System responds
seeks
search
respond
Support Service Table
Doctors
delivered
Get data
Appointments
notify
Patient table
send data
viewMedical/Person File
sends info
show info
Get data
send data
Appointment Table
view view medical file Table
Text
Request
Update
Patient
applies
Blood Donation
responses
send request
notify
update the
Blood Donation Table
reviews
send
responses
Staff
requests
Emergency Service
Emergency Service Table

LEVEL 1


seeks
sends requsends emergency request
Staff
ambulance
rapid emergency response systems
ed service
sends request of ed service
respond for request of ed service
Blood Donation Response
accept/deny blood donation response
Emergency Service
Emergency Service Table
request emergency service
accept/deny appointment response
Appointment Response
Send form respond for request for appointment
Blood Donation Table
Support Service
responds to support questions
searches for service information
Support Service Table
Bloosd donation Form-Appointment
Send form appointment
search appointment information
require status
sends status
Patient
fills blood donation form
fills form appointment
feedback
Patient table
requests
notifies approval
sick leaves
Form-Appointment
Appointment Table
update table of appointment
get status information
request
selects
update sick leave
sick leave Table
my tracker
search for the proper information
send
approves/deny
Medical/Person File
provides information
provide the proper my tracker information
search my tracker information
update medical table
Doctors
my tracker Table
gives radiology status
view view medical file Table
gives report
provide lab results
search for the lab result
gives prescription status
search vital signs report
searches for prescription status
medicine perscriptions
lab results
vital signs report
radiology results
search vaccine information
gives proper information
radiology result
provide allergies information
search for allergies information
gives vital sign report
gives prescripton data
search vital sign status
gives radiology results
search for radiology results
search for prescription data
ives the lab result information
Vaccine Information
vital signs report Table
medicine perscriptions Table
radiology results Table
search
allergies
gives
search the lab result
Lab Result Table
provide vaccine information
search the vaccine information
provide allergies information
search the allergies information
monthly report
Vaccine Information Table
allergies Table
provide monthly report
search the monthly report
monthly report table
LEVEL 2

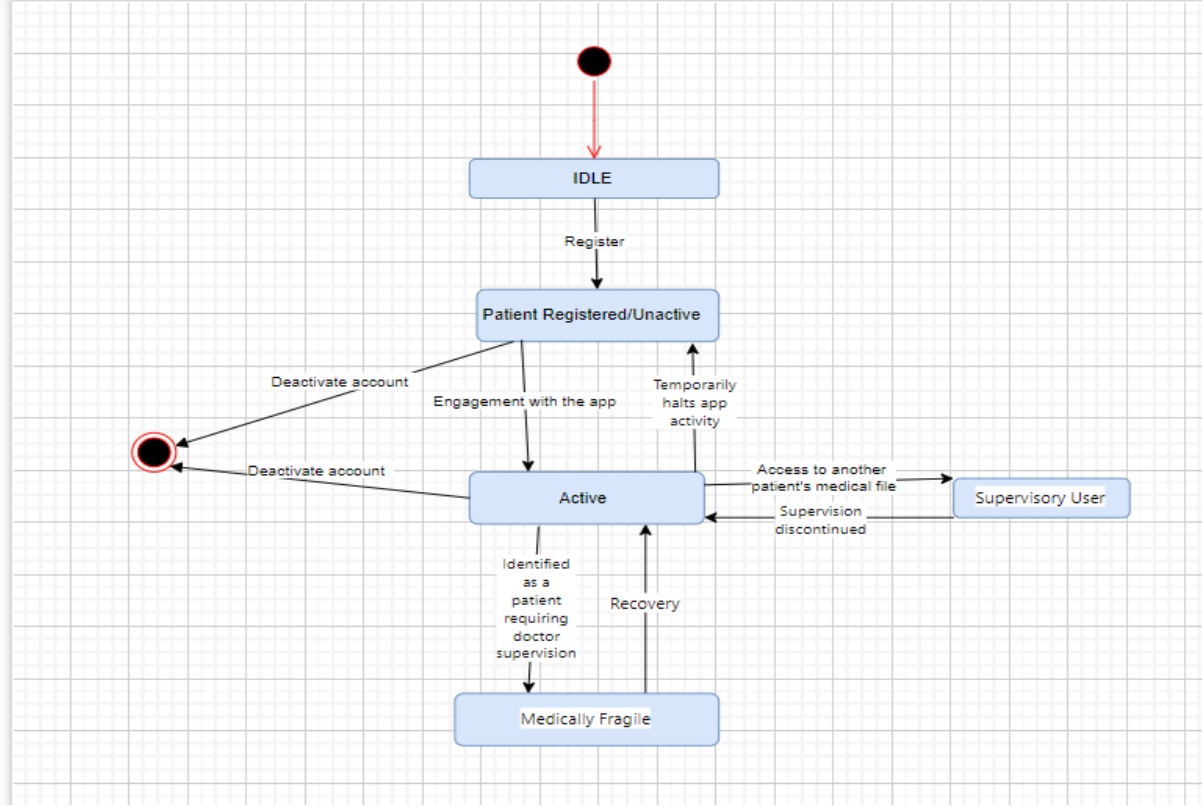
UseCase Diagram:

AS A GROUP

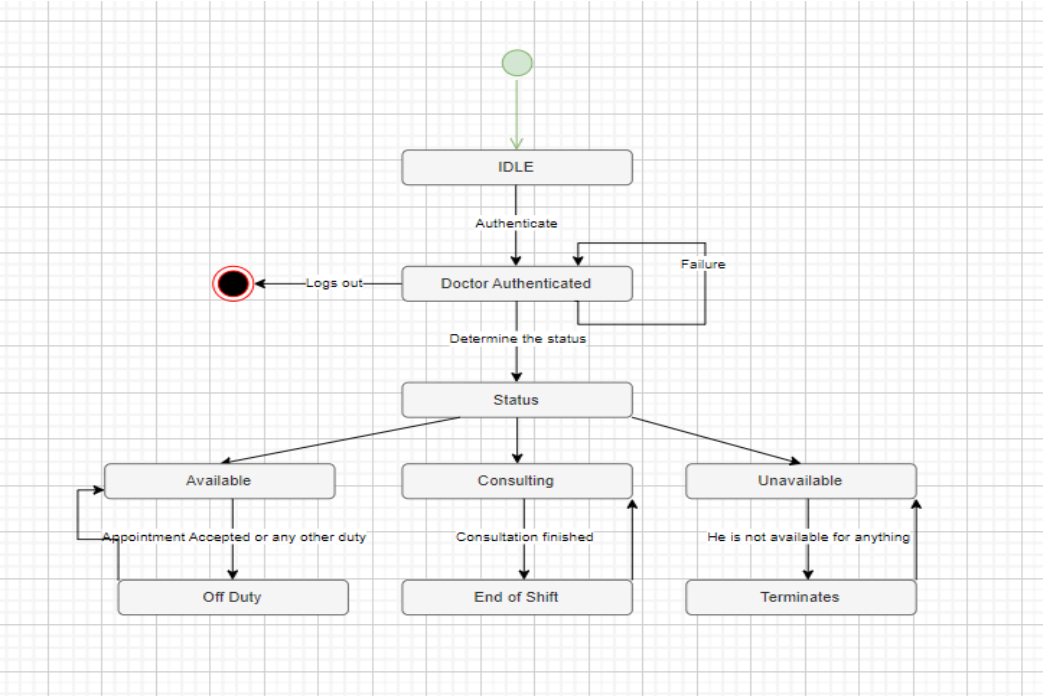


State Diagram:

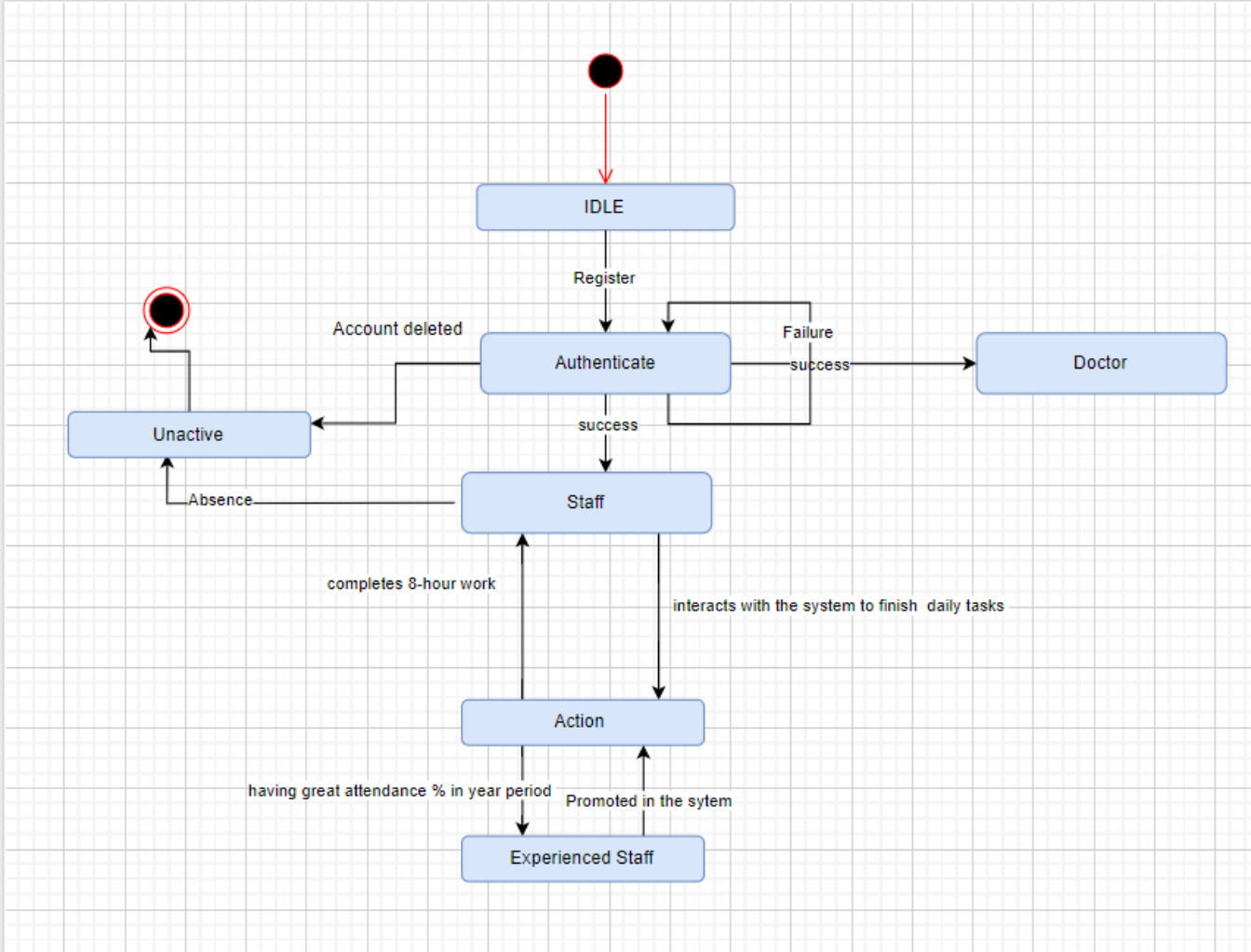
ORKIDA (state machine)



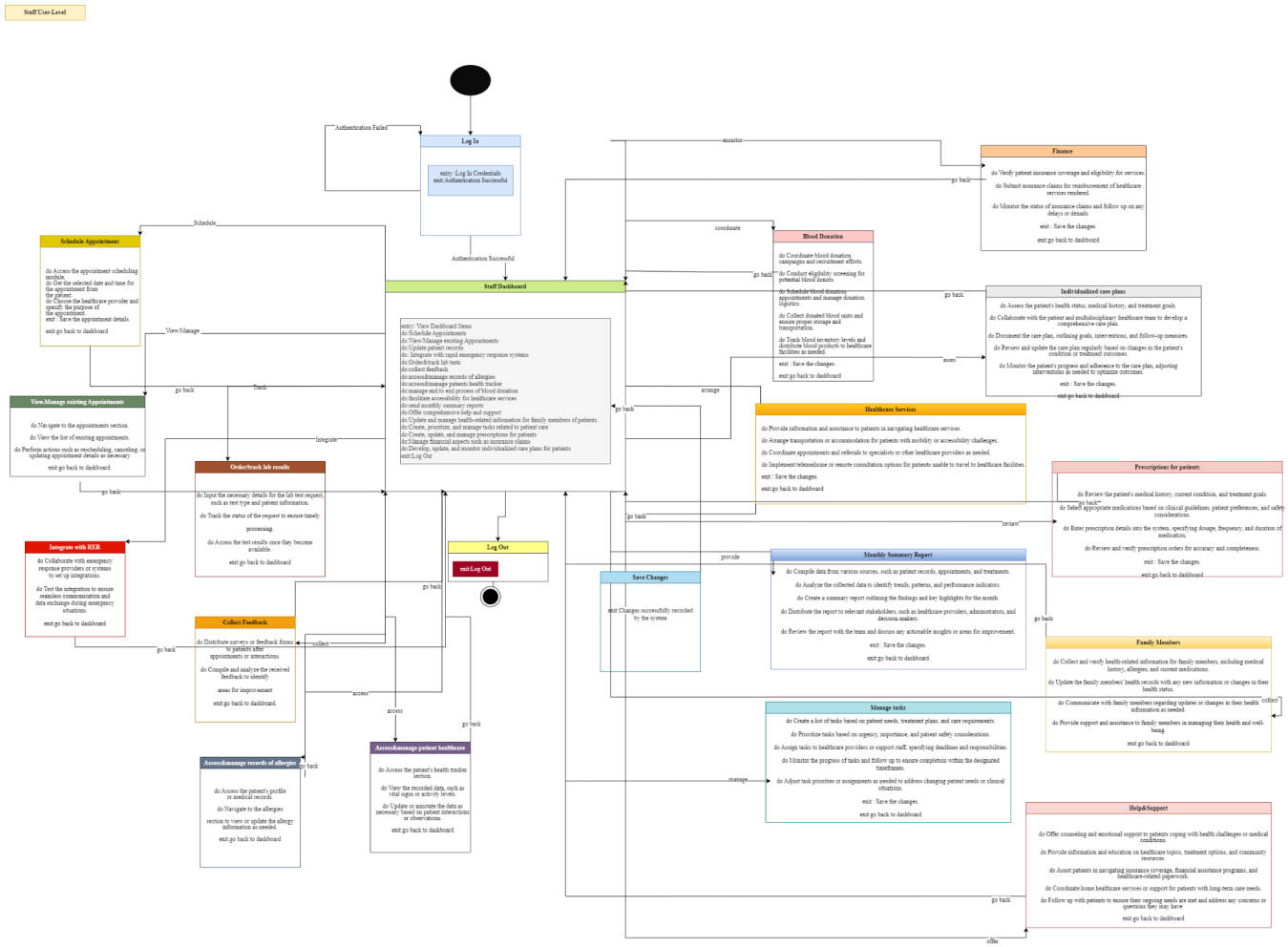
UNEJSI (state machine)



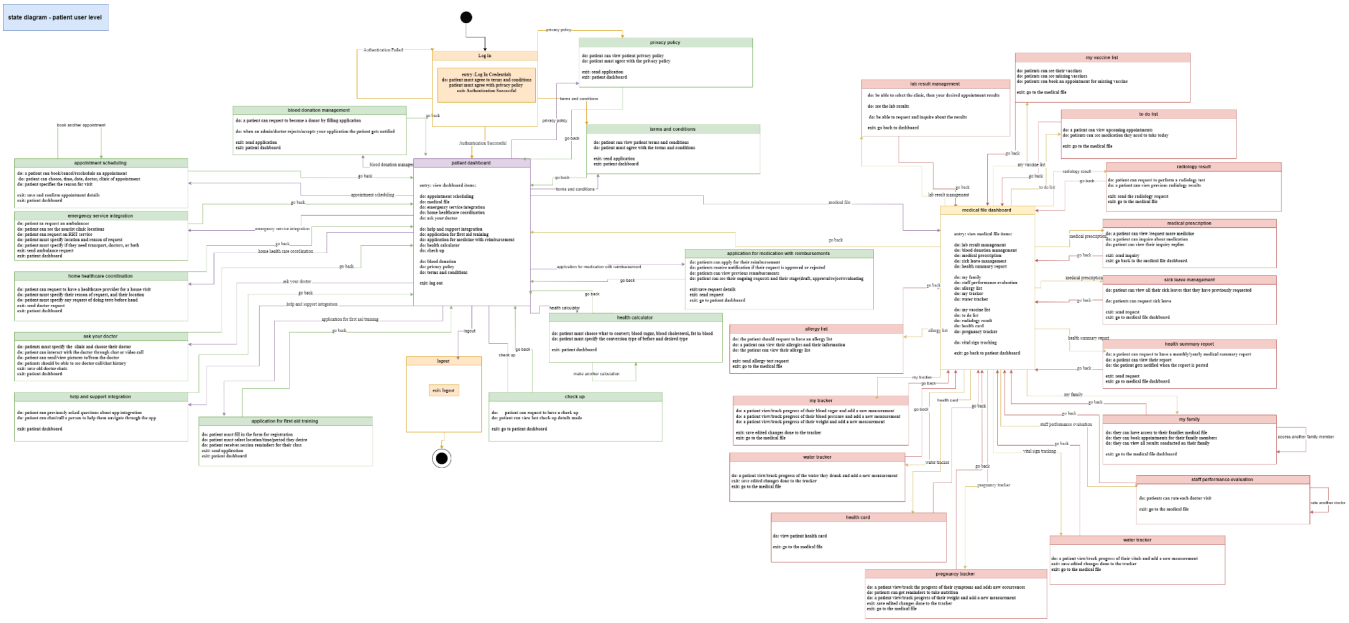
ZIKO (state machine)



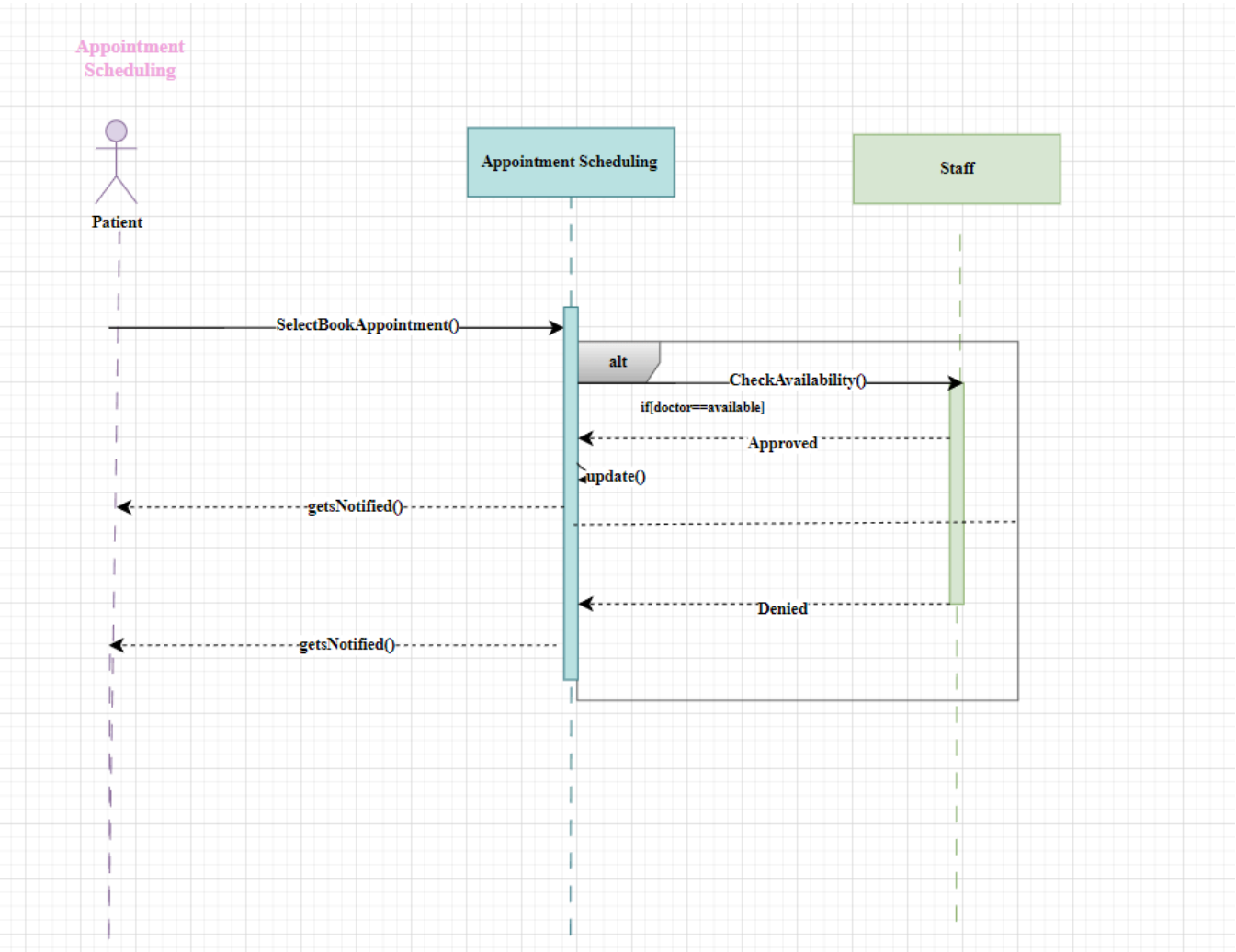
TEA

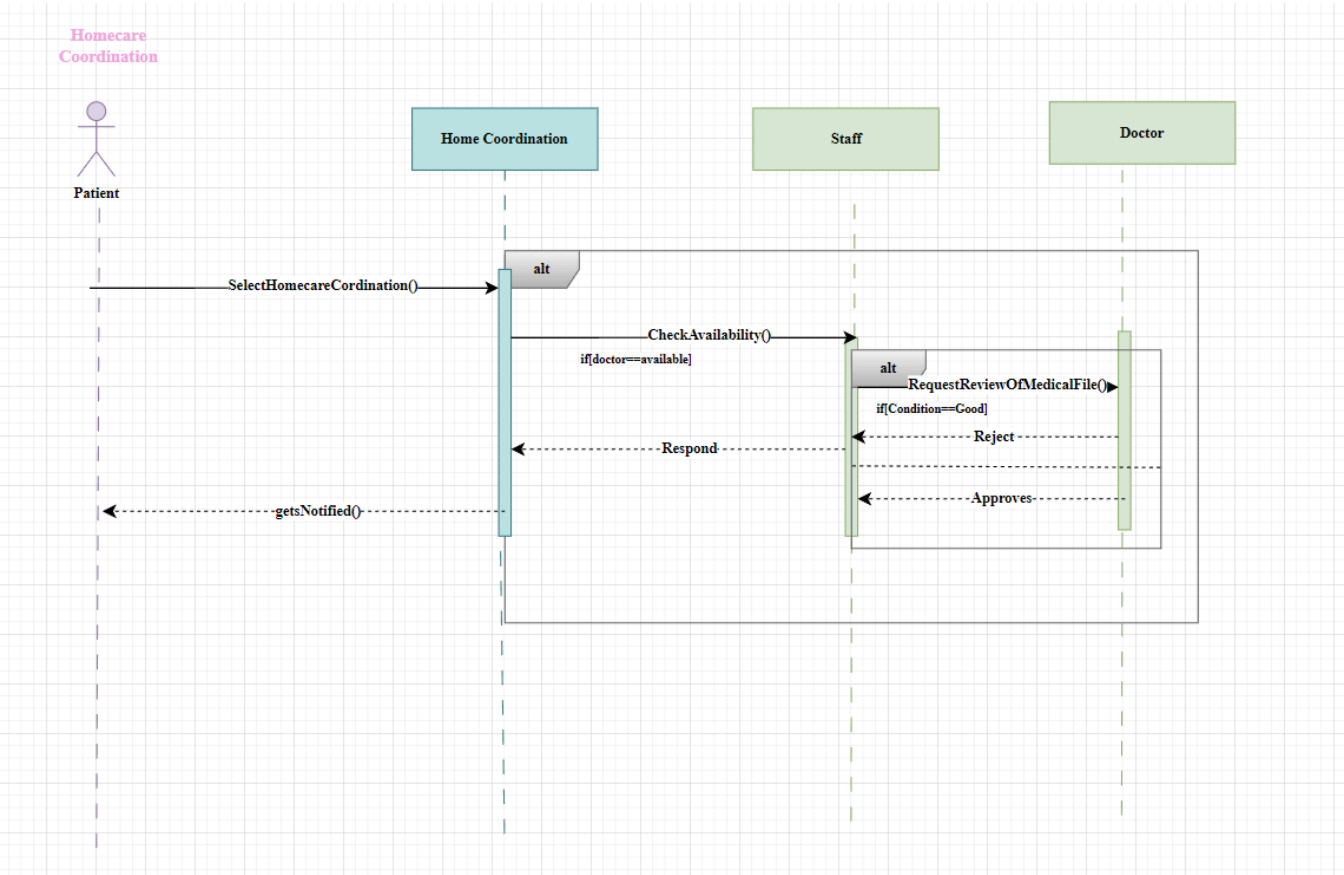

Staff User-Level
Log In
entry :Log In Credentials
exit:Authentication Successful
Authentication Failed
Authentication Successful
Staff Dashboard
entry: View Dashboard Items
do:Schedule Appointments
do:View/Manage existing Appointments
do:Update patient records
do: Integrate with rapid emergency response systems
do:Order&track lab tests
do:collect feedback
do:access&manage records of allergies
do:access&manage patients health tracker
do:manage end to end process of blood donation
do:facilitate accessibility for healthcare services
do:send monthly summary reports
do:Offer comprehensive help and support
do:Update and manage health-related information for family members of patients.
do:Create, prioritize, and manage tasks related to patient care
do:Create, update, and manage prescriptions for patients
do:Manage financial aspects such as insurance claims
do:Develop, update, and monitor individualized care plans for patients
exit:Log Out
Schedule Appointment
do: Access the appointment scheduling module.
do: Get the selected date and time for the appointment from the patient.
do: Choose the healthcare provider and specify the purpose of the appointment.
exit : Save the appointment details.
exit:go back to dashboard
View/Manage existing Appointments
do: Navigate to the appointments section.
do: View the list of existing appointments.
do: Perform actions such as rescheduling, canceling, or updating appointment details as necessary
exit:go back to dashboard.
Integrate with RER
do: Collaborate with emergency response providers or systems to set up integrations.
do: Test the integration to ensure seamless communication and data exchange during emergency situations.
exit:go back to dashboard
Order/track lab results
do: Input the necessary details for the lab test request, such as test type and patient information.
do: Track the status of the request to ensure timely processing.
do: Access the test results once they become available.
exit:go back to dashboard
Collect Feedback
do: Distribute surveys or feedback forms to patients after appointments or interactions.
do: Compile and analyze the received feedback to identify areas for improvement
exit:go back to dashboard.
Access&manage records of allergies
do: Access the patient's profile or medical records.
do: Navigate to the allergies section to view or update the allergy information as needed.
exit:go back to dashboard
Access&manage patient healthcare
do: Access the patient's health tracker section.
do: View the recorded data, such as vital signs or activity levels.
do: Update or annotate the data as necessary based on patient interactions or observations.
exit:go back to dashboard
Log Out
exit:Log Out
Save Changes
exit:Changes successfully recorded by the system
Finance
do: Verify patient insurance coverage and eligibility for services.
do: Submit insurance claims for reimbursement of healthcare services rendered.
do: Monitor the status of insurance claims and follow up on any delays or denials.
exit : Save the changes.
exit:go back to dashboard
Blood Donation
do: Coordinate blood donation campaigns and recruitment efforts.
do: Conduct eligibility screening for potential blood donors.
do: Schedule blood donation appointments and manage donation logistics.
do: Collect donated blood units and ensure proper storage and transportation.
do: Track blood inventory levels and distribute blood products to healthcare facilities as needed.
exit : Save the changes.
exit:go back to dashboard
Individualized care plans
do: Assess the patient's health status, medical history, and treatment goals.
do: Collaborate with the patient and multidisciplinary healthcare team to develop a comprehensive care plan.
do: Document the care plan, outlining goals, interventions, and follow-up measures.
do: Review and update the care plan regularly based on changes in the patient's condition or treatment outcomes.
do: Monitor the patient's progress and adherence to the care plan, adjusting interventions as needed to optimize outcomes.
exit : Save the changes.
exit:go back to dashboard
Healthcare Services
do: Provide information and assistance to patients in navigating healthcare services.
do: Arrange transportation or accommodation for patients with mobility or accessibility challenges.
do: Coordinate appointments and referrals to specialists or other healthcare providers as needed.
do: Implement telemedicine or remote consultation options for patients unable to travel to healthcare facilities.
exit : Save the changes.
exit:go back to dashboard
Monthly Summary Report
do: Compile data from various sources, such as patient records, appointments, and treatments.
do: Analyze the collected data to identify trends, patterns, and performance indicators.
do: Create a summary report outlining the findings and key highlights for the month.
do: Distribute the report to relevant stakeholders, such as healthcare providers, administrators, and decision-makers.
do: Review the report with the team and discuss any actionable insights or areas for improvement.
exit : Save the changes.
exit:go back to dashboard
Prescriptions for patients
do: Review the patient's medical history, current condition, and treatment goals.
do: Select appropriate medications based on clinical guidelines, patient preferences, and safety considerations.
do: Enter prescription details into the system, specifying dosage, frequency, and duration of medication.
do: Review and verify prescription orders for accuracy and completeness.
exit : Save the changes
exit:go back to dashboard
Family Members
do: Collect and verify health-related information for family members, including medical history, allergies, and current medications.
do: Update the family members' health records with any new information or changes in their health status.
do: Communicate with family members regarding updates or changes in their health information as needed.
do: Provide support and assistance to family members in managing their health and well-being.
exit:go back to dashboard
Manage tasks
do: Create a list of tasks based on patient needs, treatment plans, and care requirements.
do: Prioritize tasks based on urgency, importance, and patient safety considerations.
do: Assign tasks to healthcare providers or support staff, specifying deadlines and responsibilities.
do: Monitor the progress of tasks and follow up to ensure completion within the designated timeframes.
do: Adjust task priorities or assignments as needed to address changing patient needs or clinical situations.
exit : Save the changes.
exit:go back to dashboard
Help&Support
do: Offer counseling and emotional support to patients coping with health challenges or medical conditions.
do: Provide information and education on healthcare topics, treatment options, and community resources.
do: Assist patients in navigating insurance coverage, financial assistance programs, and healthcare-related paperwork.
do: Coordinate home healthcare services or support for patients with long-term care needs.
do: Follow up with patients to ensure their ongoing needs are met and address any concerns or questions they may have.
exit:go back to dashboard
Schedule
View/Manage
Track
Integrate
collect
access
monitor
coordinate
arrange
assess
review
provide
manage
offer
go back

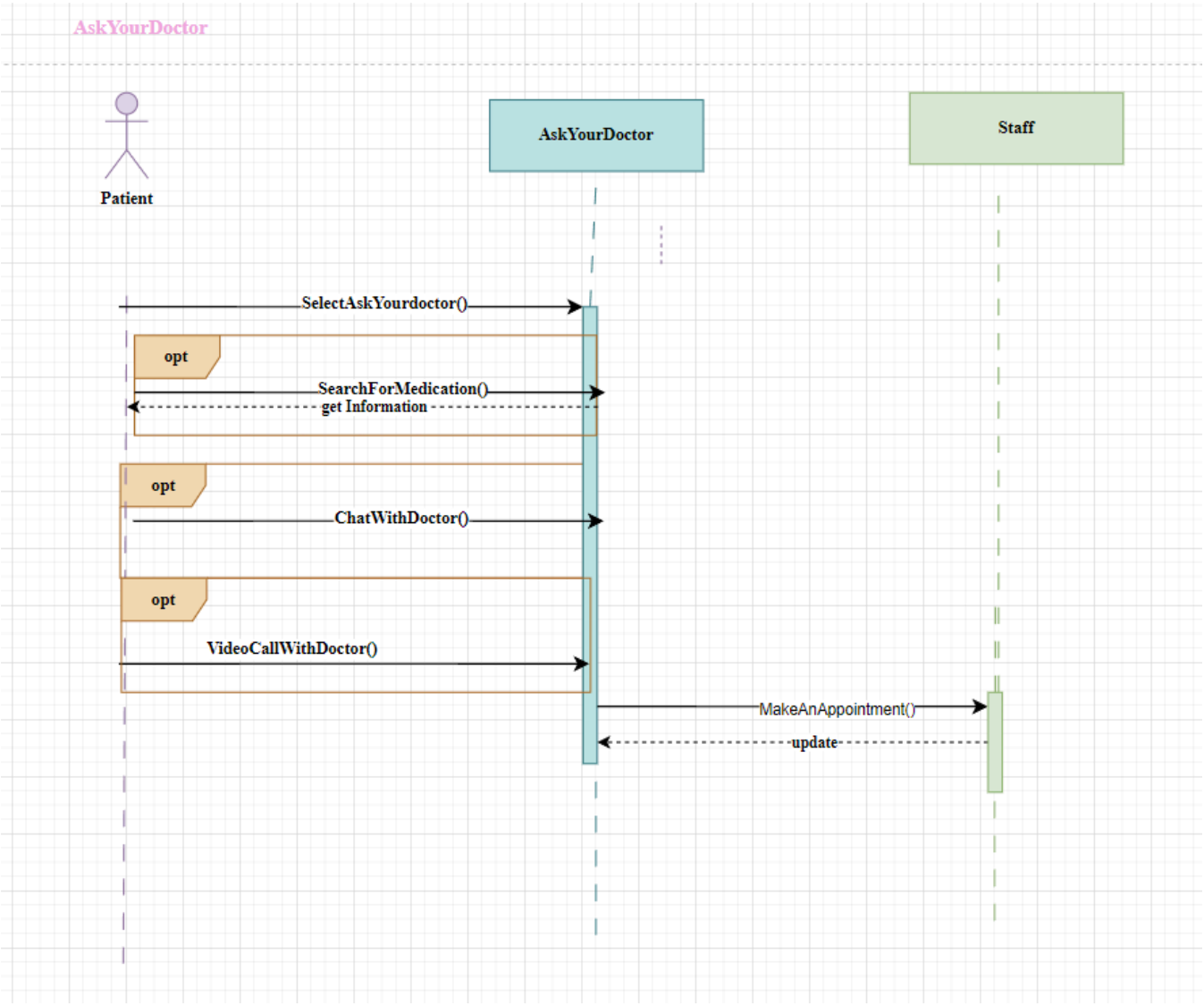
LAYAN

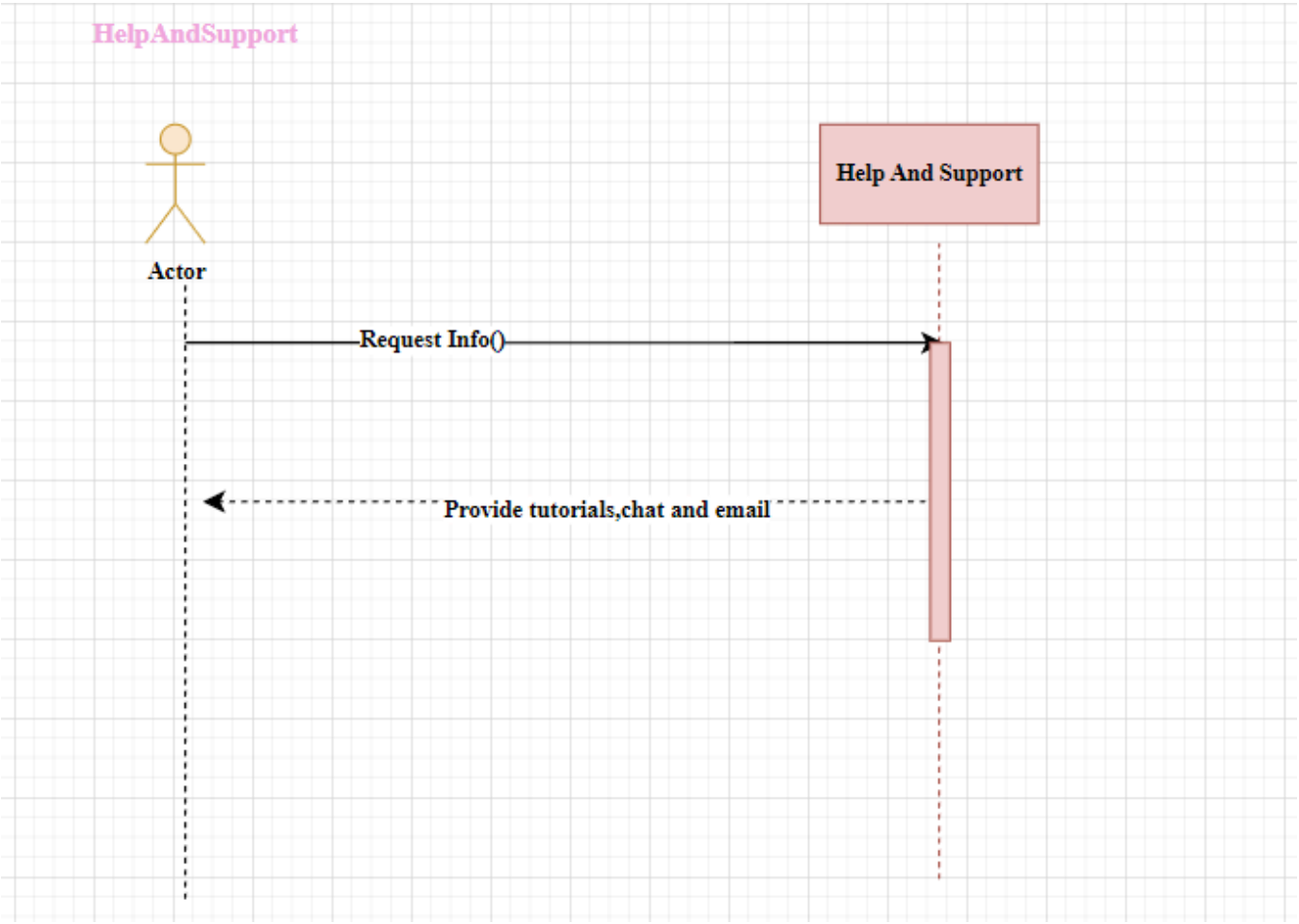


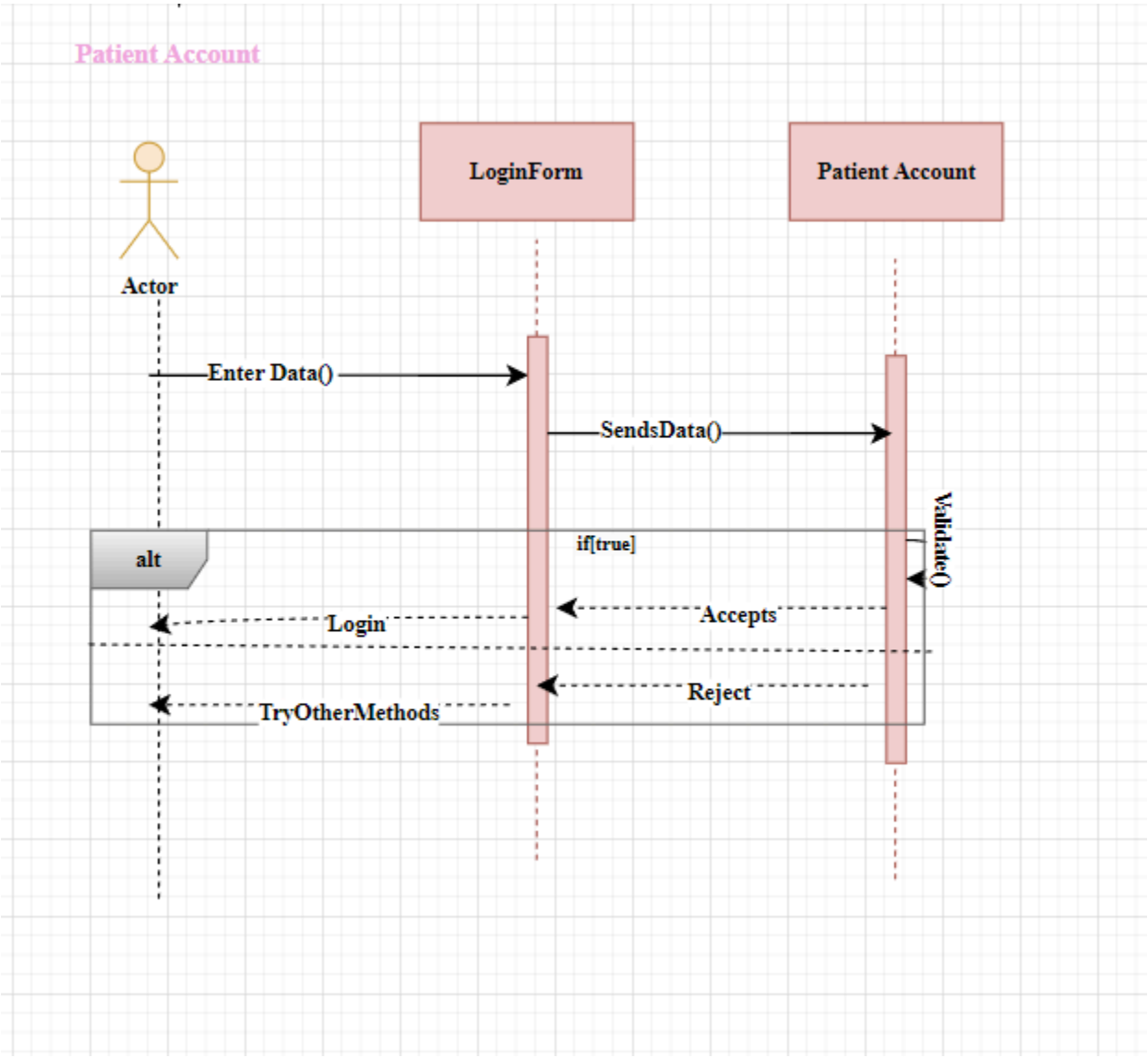
Sequence Diagram:

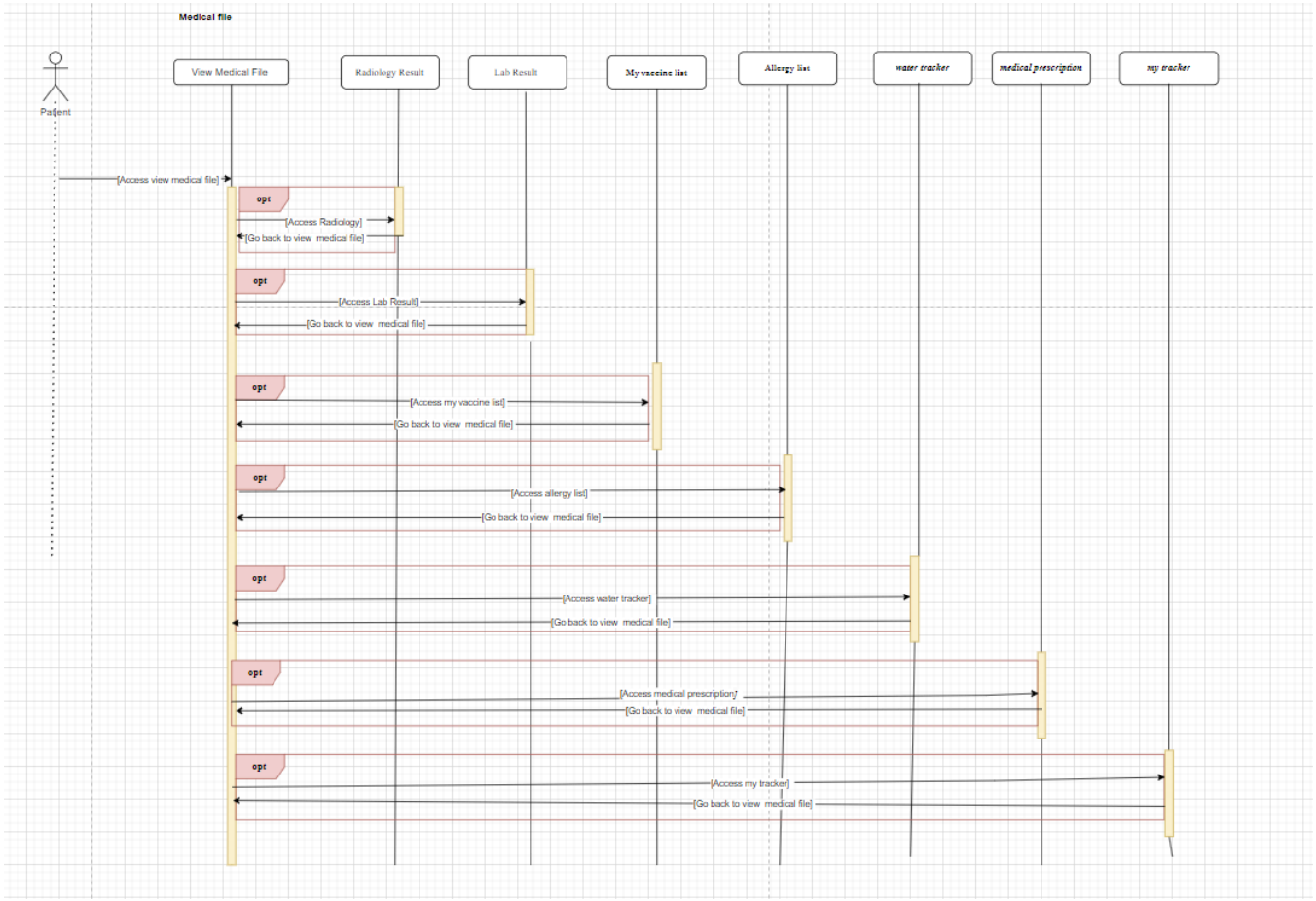

Appointment Scheduling
Patient
Appointment Scheduling
Staff
SelectBookAppointment()
alt
CheckAvailability()
if[doctor==available]
Approved
update()
getsNotified()
Denied
getsNotified()

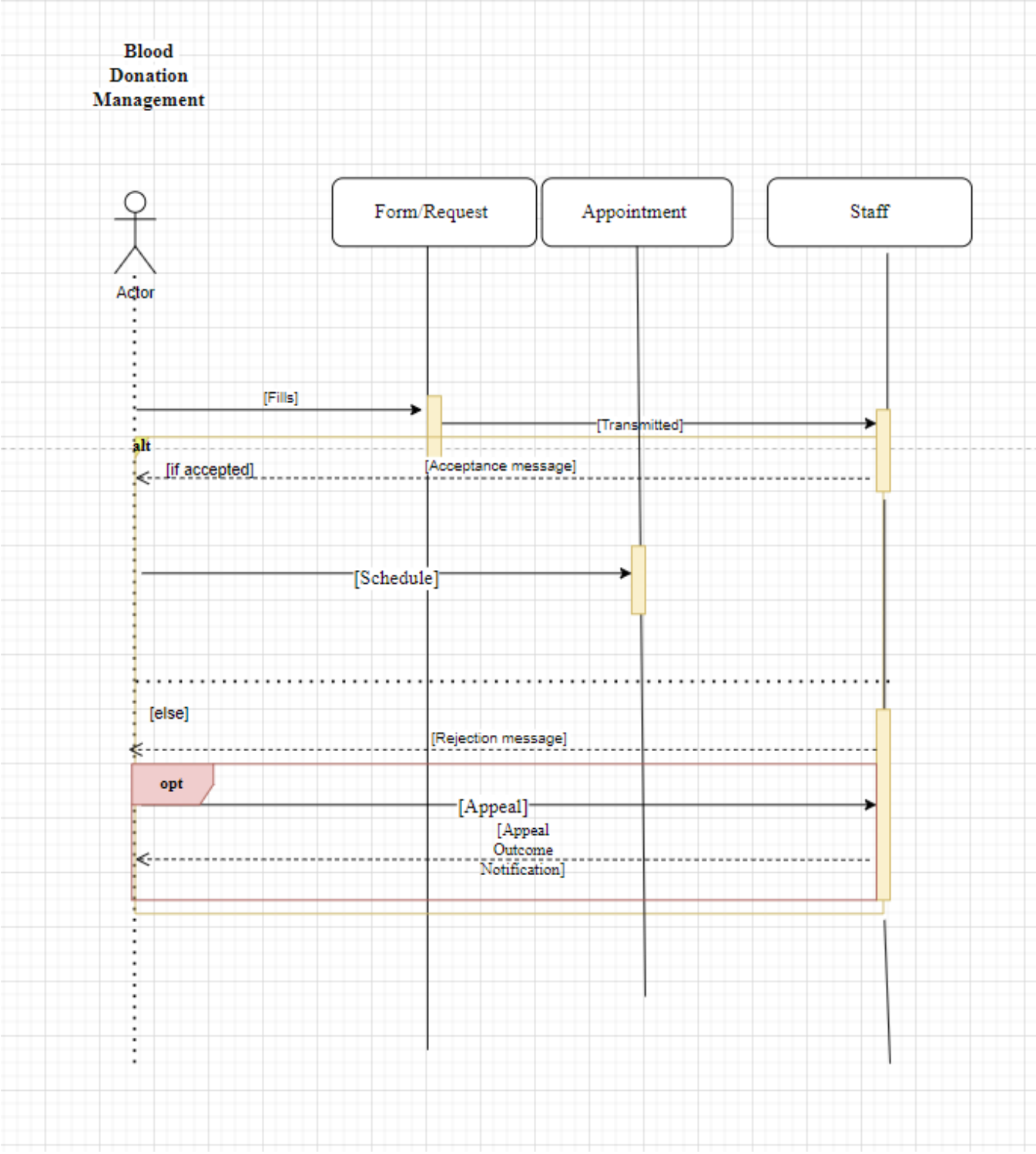

Homecare Coordination
Patient
Home Coordination
Staff
Doctor
alt
SelectHomecareCordination()
CheckAvailability()
if[doctor==available]
alt
RequestReviewOfMedicalFile()
if[Condition==Good]
Reject
Respond
Approves
getsNotified()

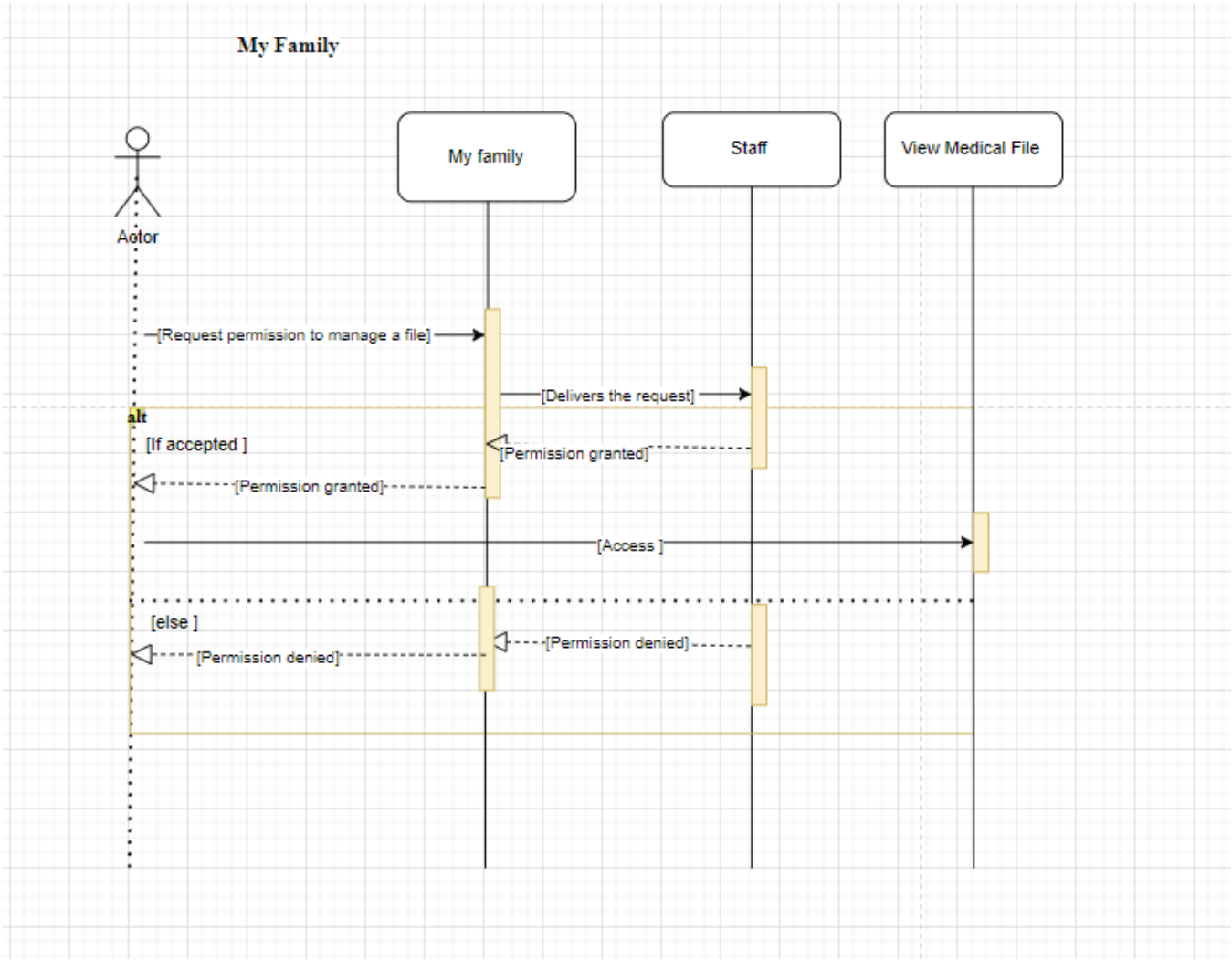

AskYourDoctor
Patient
AskYourDoctor
Staff
SelectAskYourdoctor()
opt
SearchForMedication()
get Information
opt
ChatWithDoctor()
opt
VideoCallWithDoctor()
MakeAnAppointment()
update

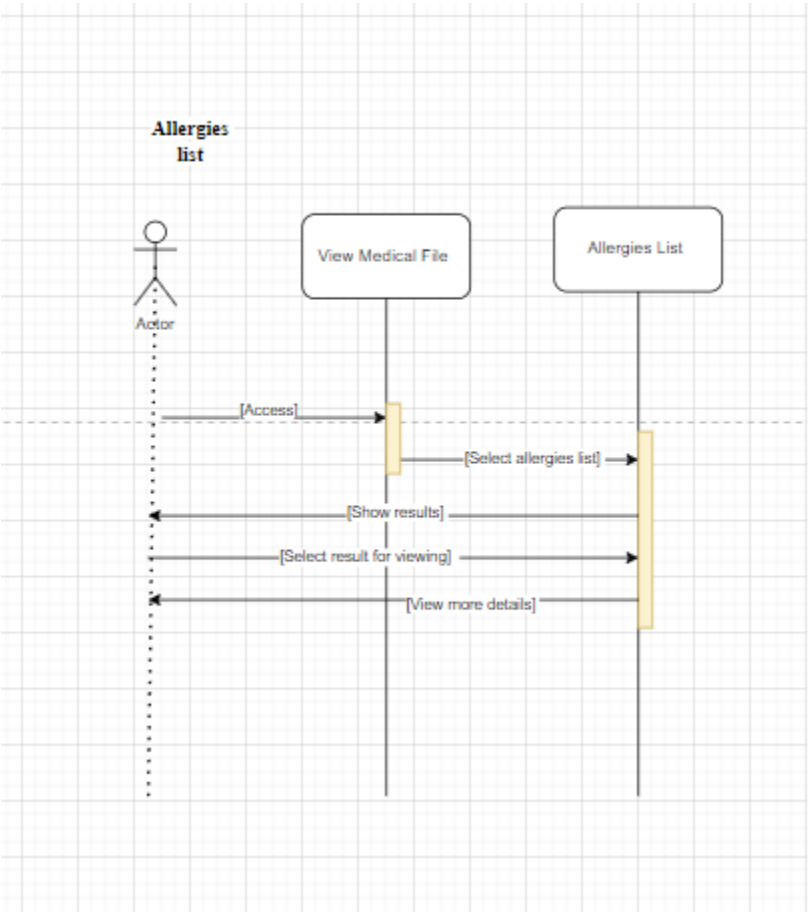

HelpAndSupport
Actor
Help And Support
Request Info()
Provide tutorials,chat and email

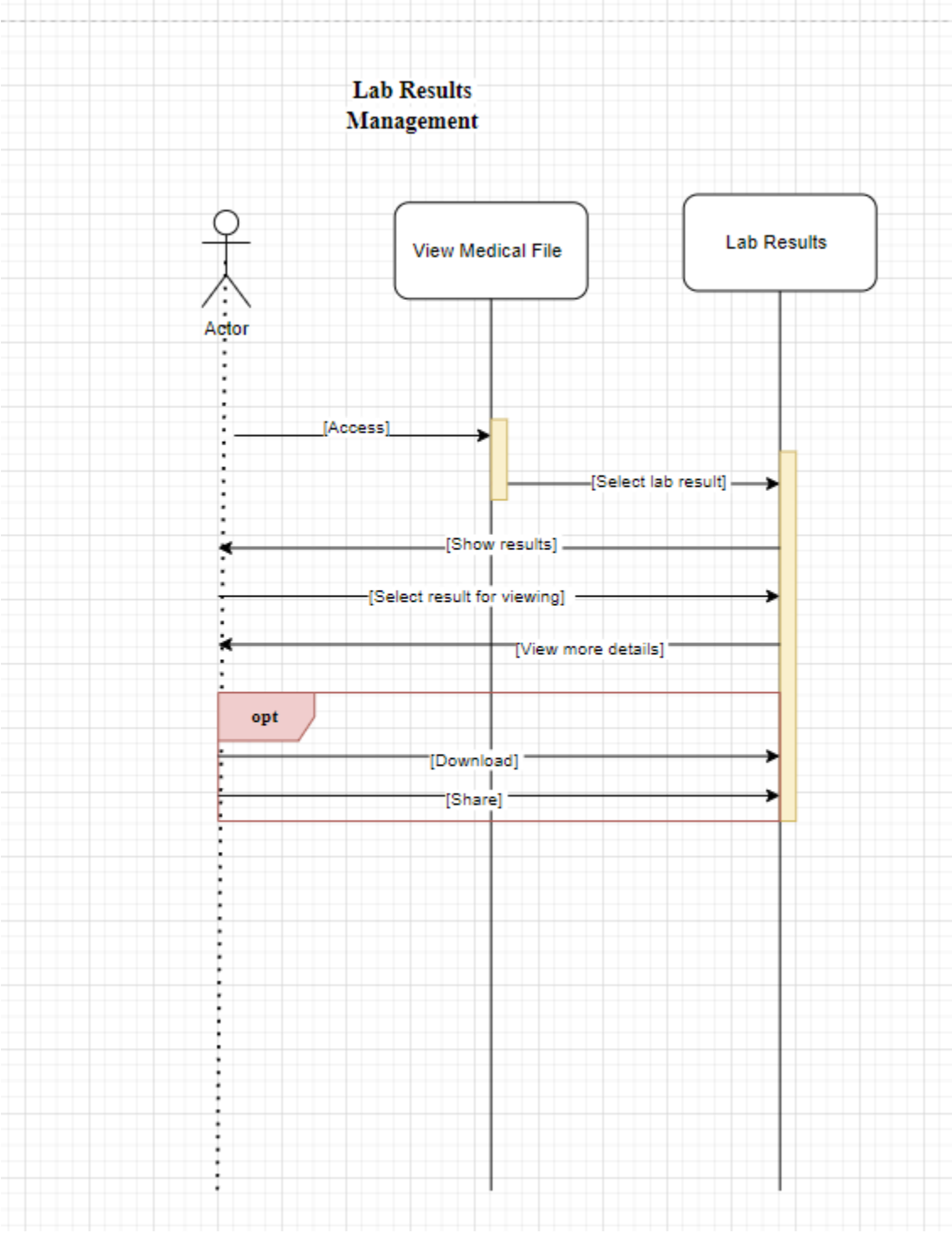

Patient Account
LoginForm
Patient Account
Actor
Enter Data()
SendsData()
Validate()
alt
if[true]
Login
Accepts
Reject
TryOtherMethods

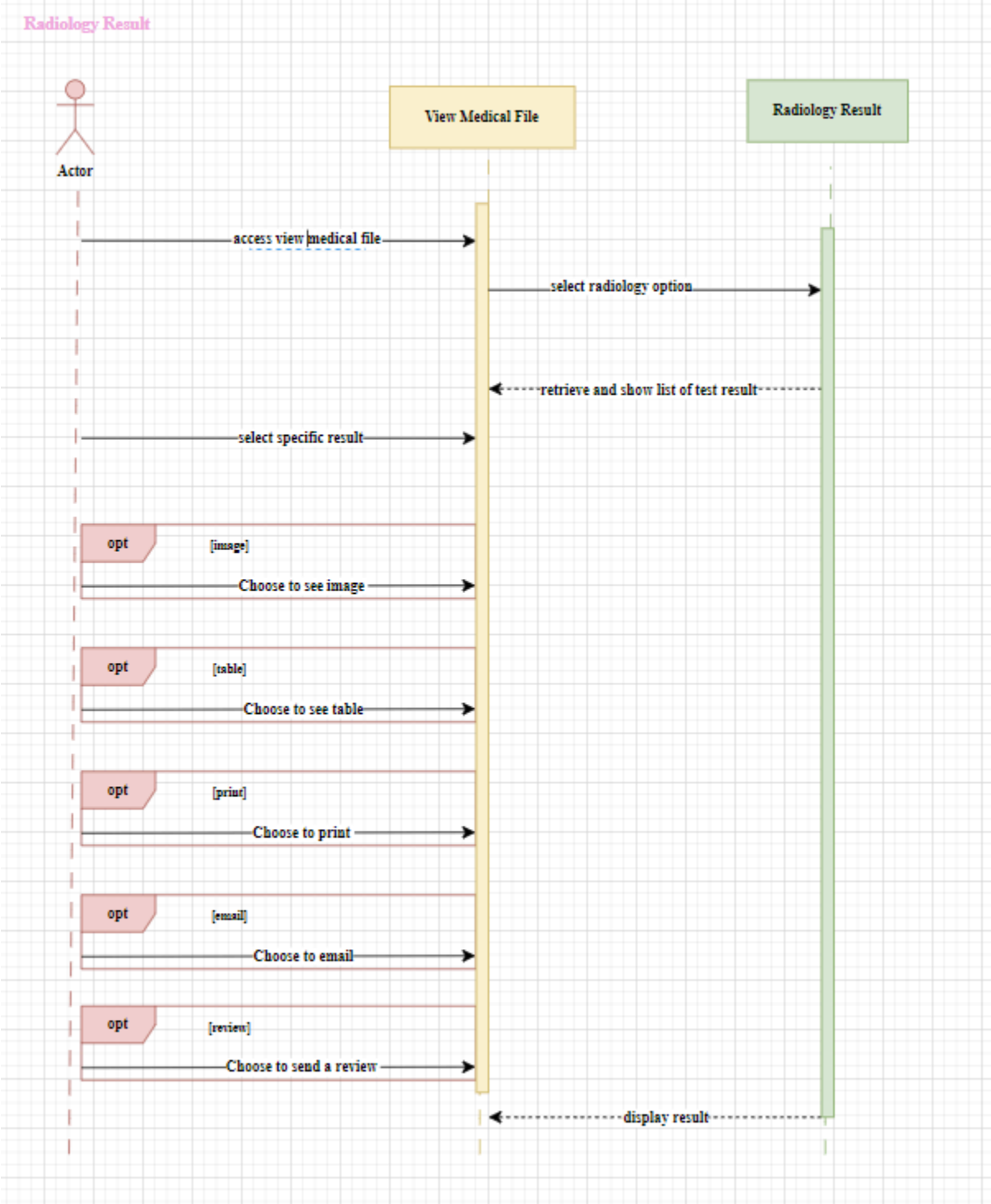

Medical file
Patient
View Medical File
Radiology Result
Lab Result
My vaccine list
Allergy list
water tracker
medical prescription
my tracker
[Access view medical file]
opt
[Access Radiology]
[Go back to view medical file]
opt
[Access Lab Result]
[Go back to view medical file]
opt
[Access my vaccine list]
[Go back to view medical file]
opt
[Access allergy list]
[Go back to view medical file]
opt
[Access water tracker]
[Go back to view medical file]
opt
[Access medical prescription]
[Go back to view medical file]
opt
[Access my tracker]
[Go back to view medical file]

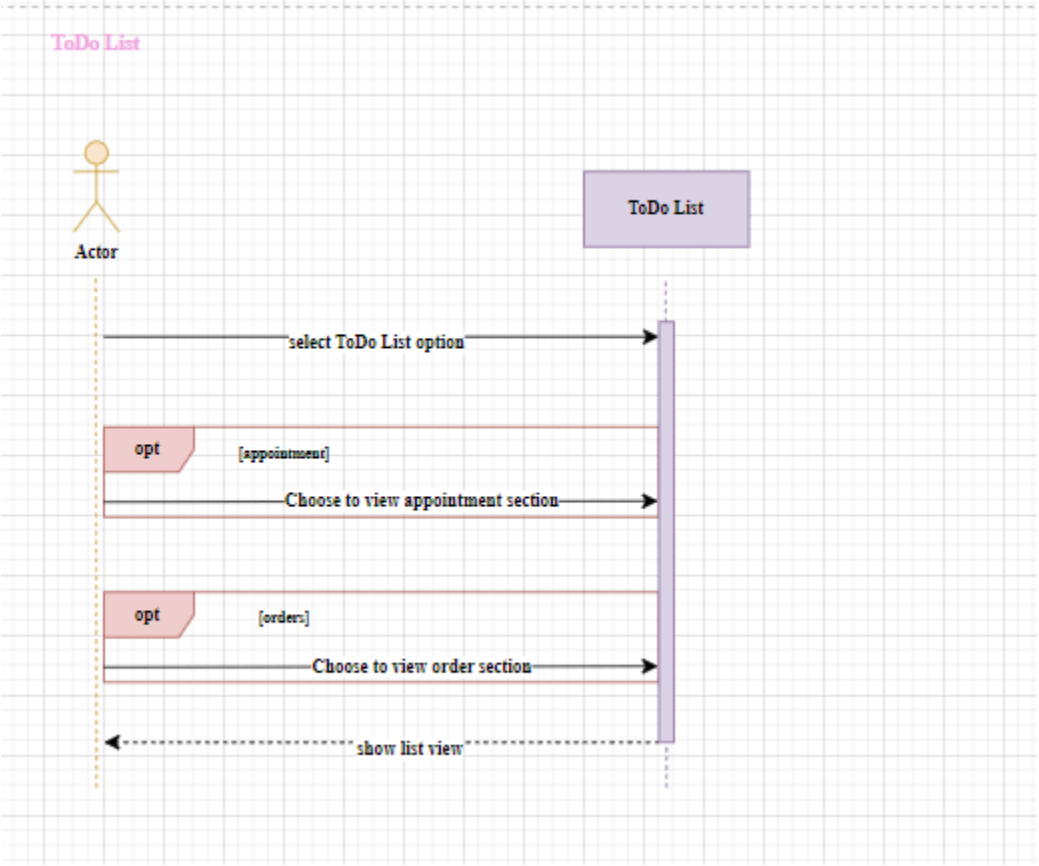

Blood Donation Management
Actor
Form/Request
Appointment
Staff
[Fills]
[Transmitted]
alt
[if accepted]
[Acceptance message]
[Schedule]
[else]
[Rejection message]
opt
[Appeal]
[Appeal Outcome Notification]

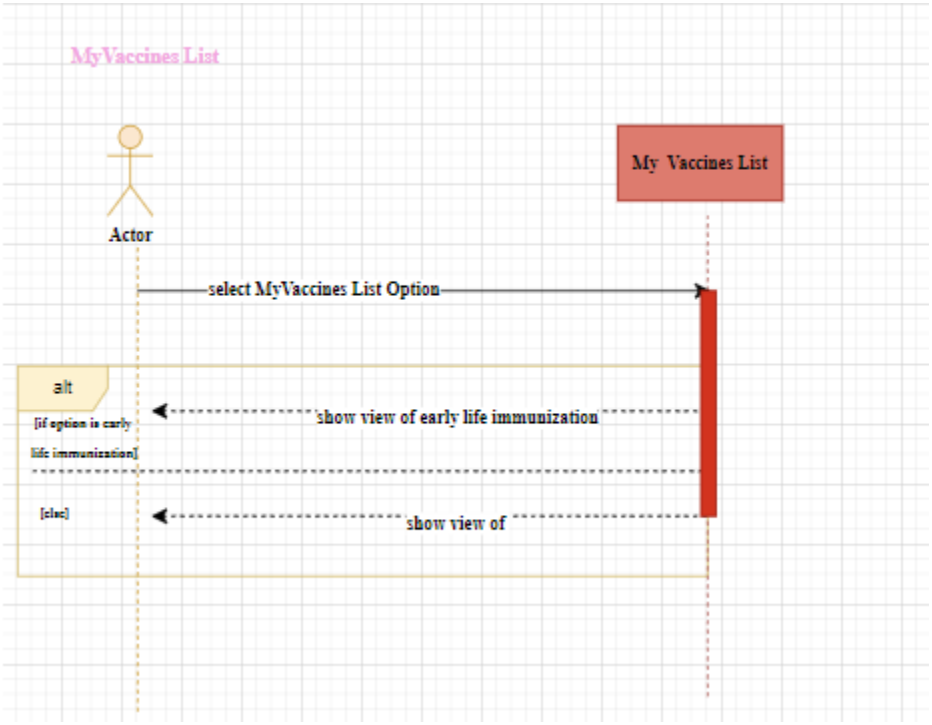

My Family
Aotor
My family
Staff
View Medical File
[Request permission to manage a file]
[Delivers the request]
alt
[If accepted]
[Permission granted]
[Permission granted]
[Access]
[else]
[Permission denied]
[Permission denied]

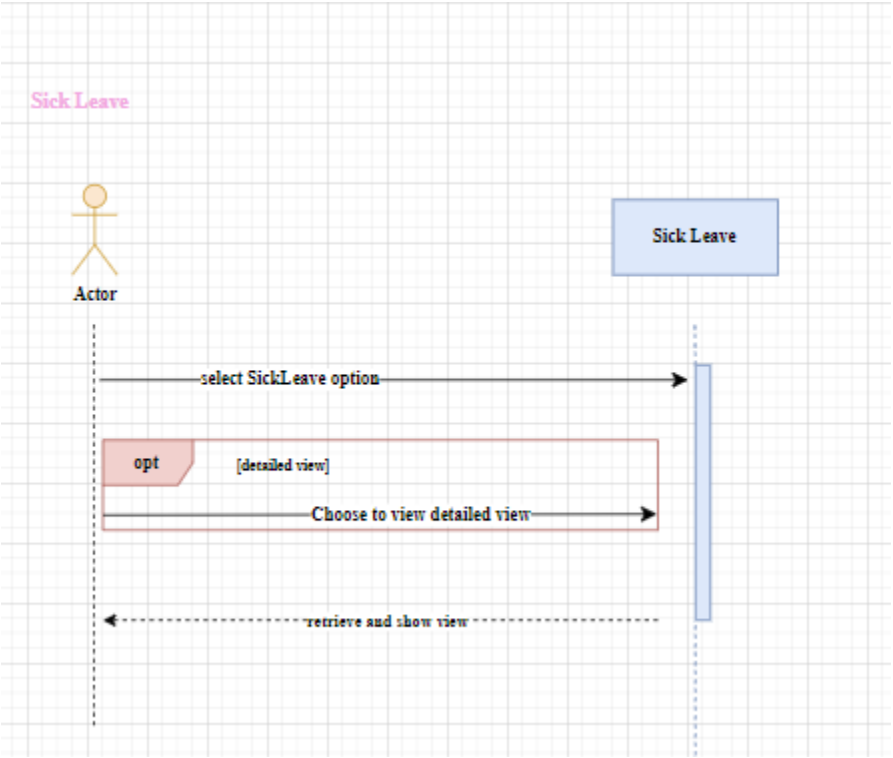

Allergies list
Actor
View Medical File
Allergies List
[Access]
[Select allergies list]
[Show results]
[Select result for viewing]
[View more details]

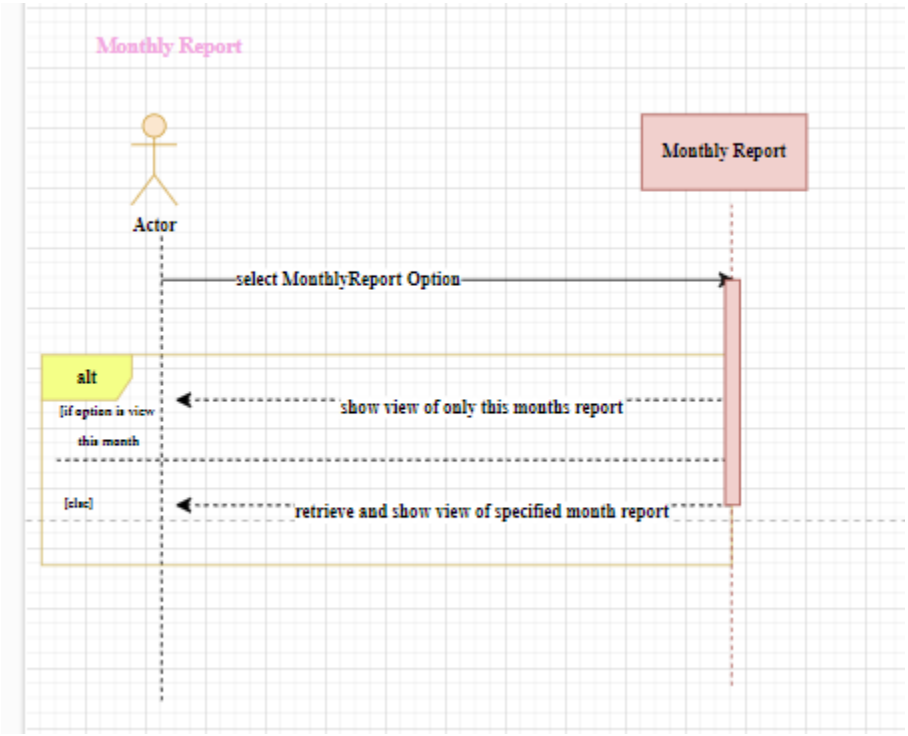

Lab Results Management
Actor
View Medical File
Lab Results
[Access]
[Select lab result]
[Show results]
[Select result for viewing]
[View more details]
opt
[Download]
[Share]

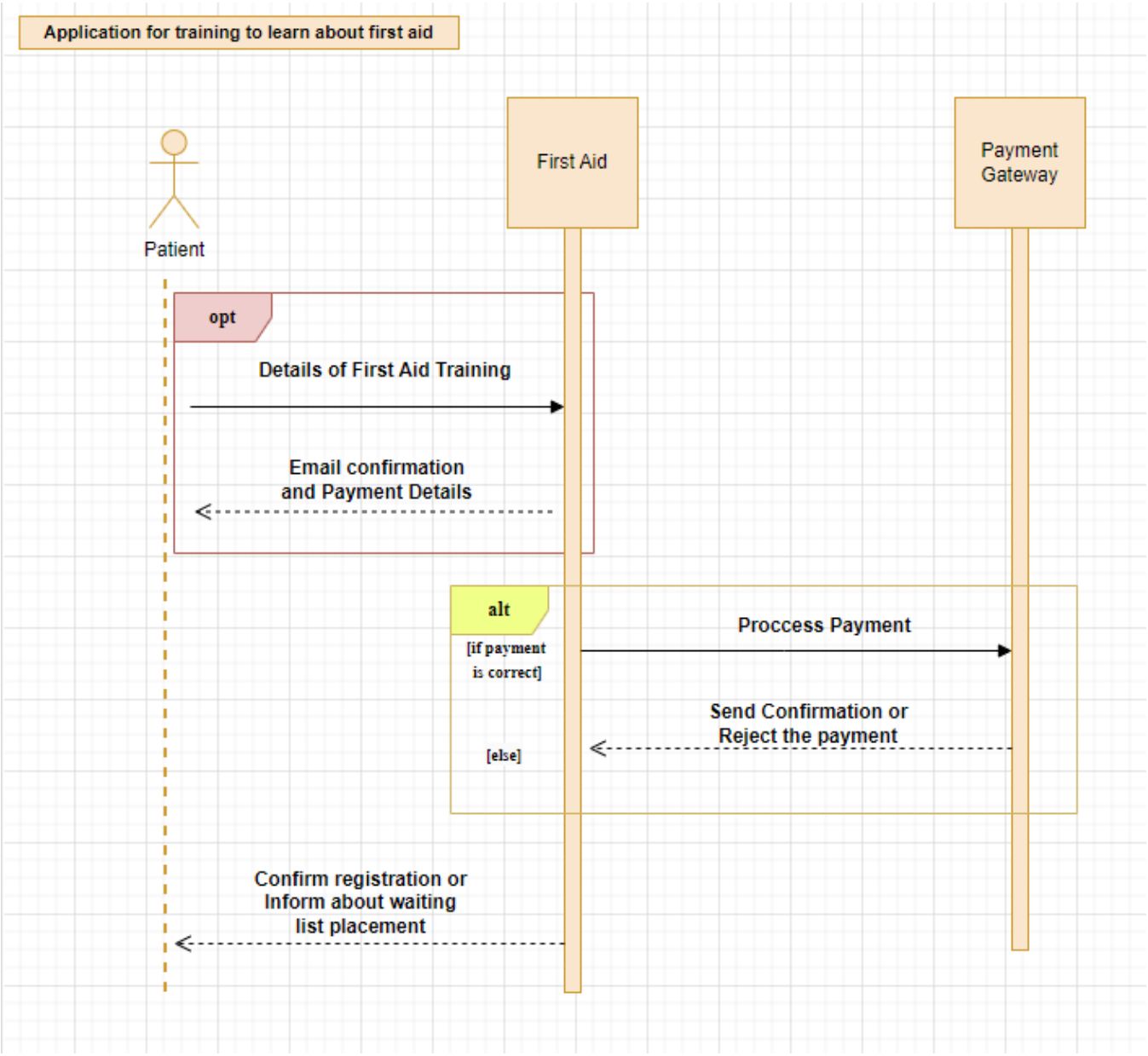

Radiology Result
Actor
View Medical File
Radiology Result
access view medical file
select radiology option
retrieve and show list of test result
select specific result
opt
[image]
Choose to see image
opt
[table]
Choose to see table
opt
[print]
Choose to print
opt
[email]
Choose to email
opt
[review]
Choose to send a review
display result

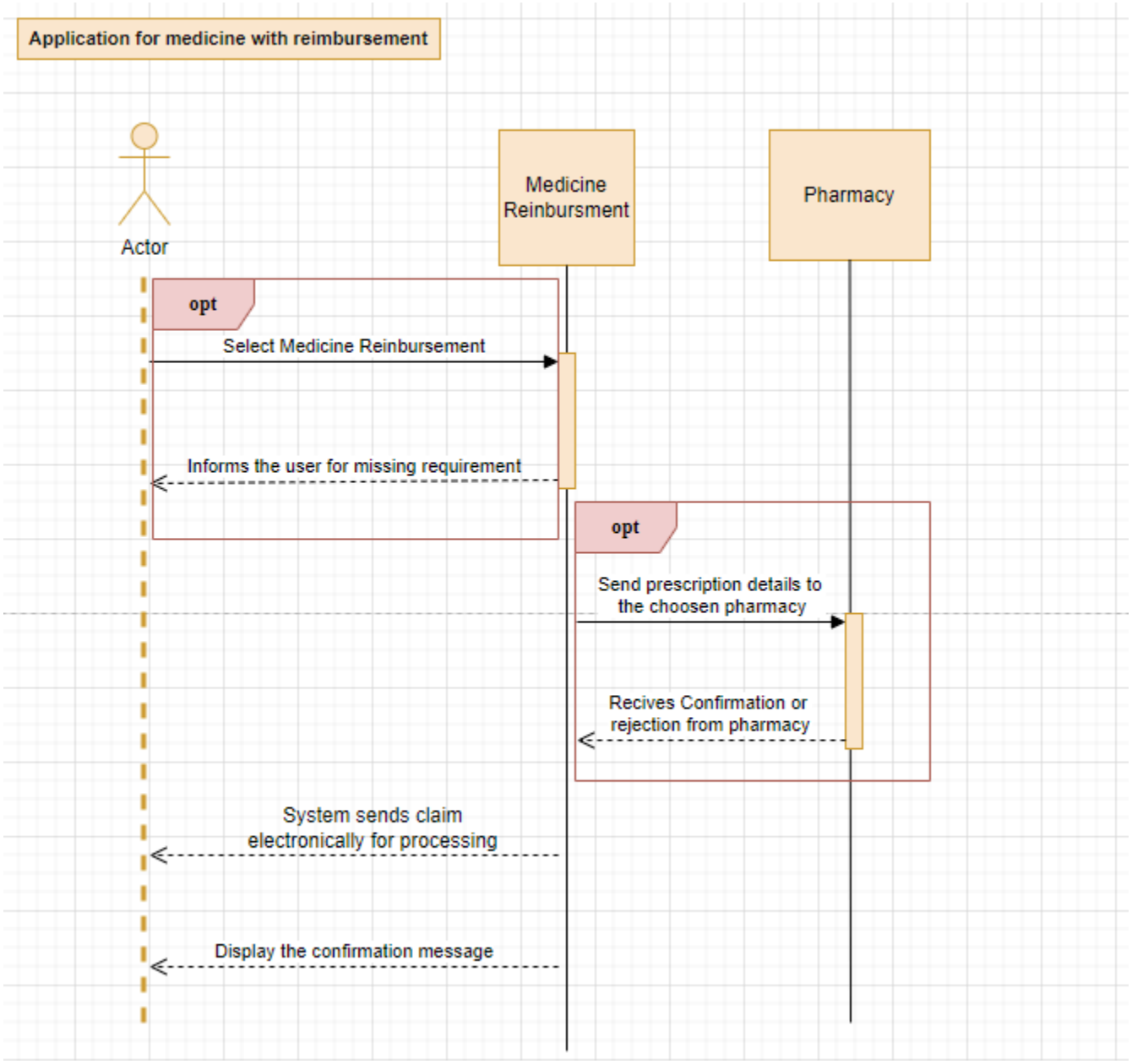

ToDo List
Actor
ToDo List
select ToDo List option
opt
[appointment]
Choose to view appointment section
opt
[orders]
Choose to view order section
show list view

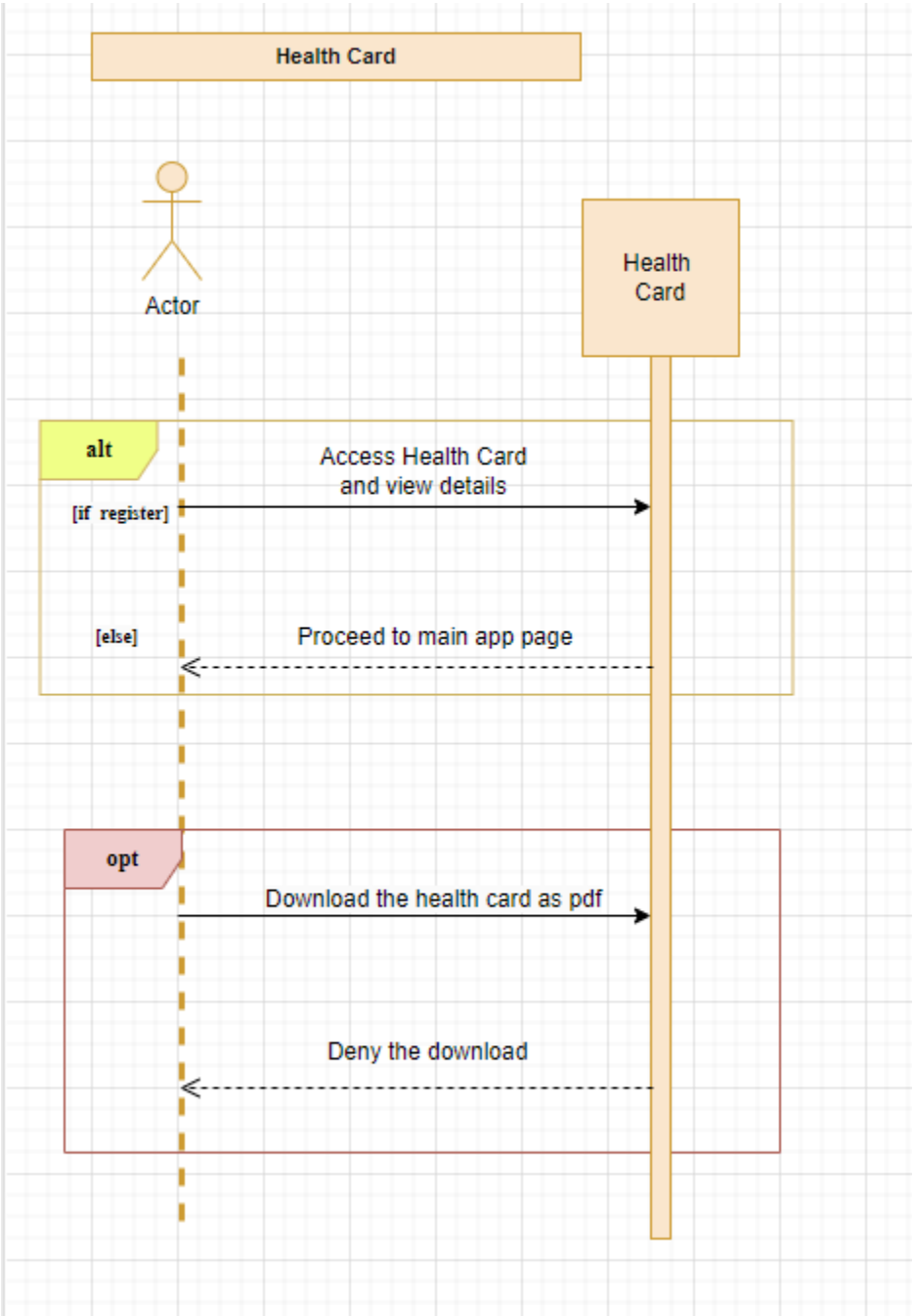

MyVaccines List
Actor
My Vaccines List
select MyVaccines List Option
alt
[if option is early life immunization]
show view of early life immunization
[else]
show view of

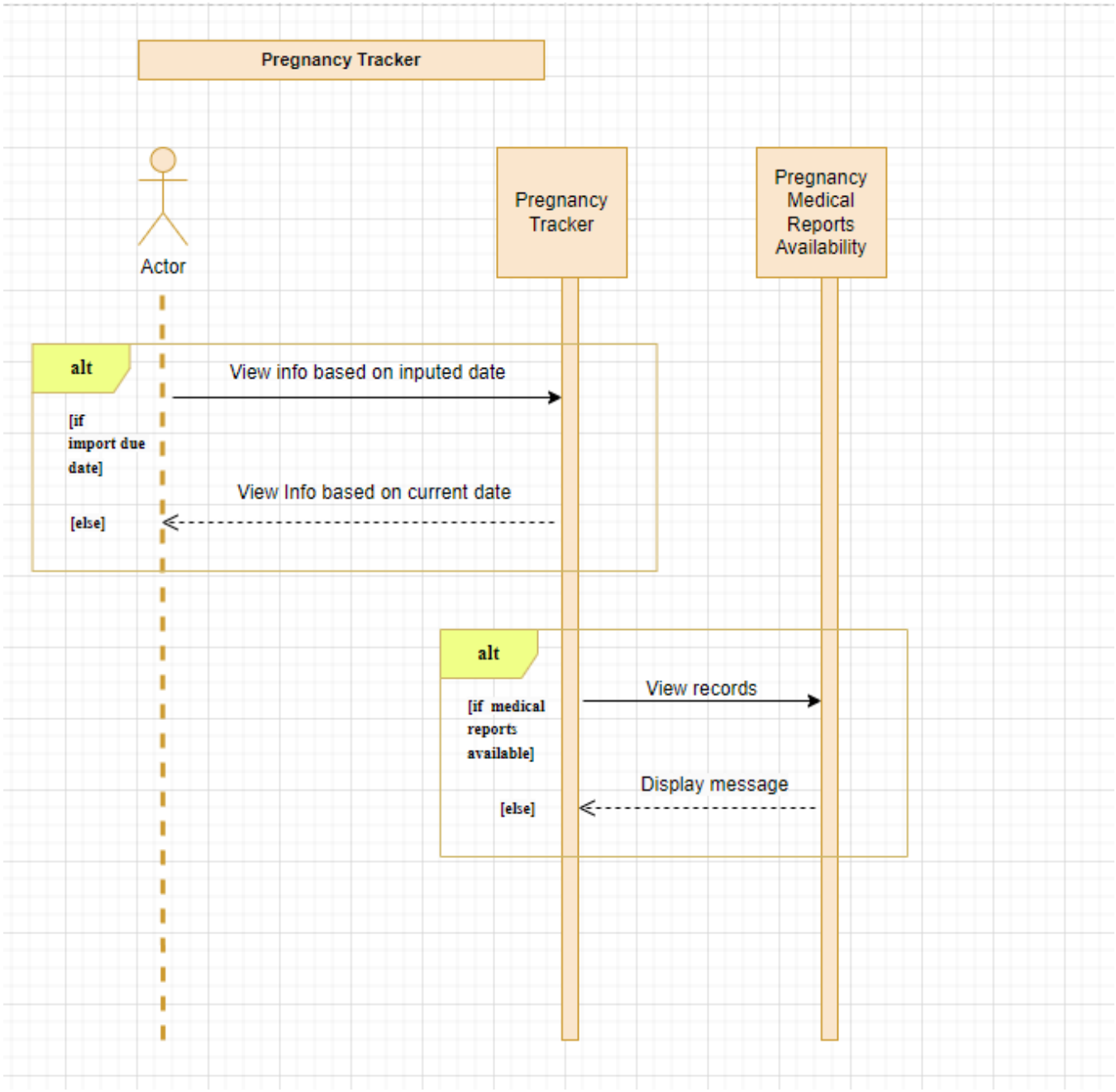

Sick Leave
Actor
Sick Leave
select SickLeave option
opt
[detailed view]
Choose to view detailed view
retrieve and show view


Monthly Report
Actor
Monthly Report
select MonthlyReport Option
alt
[if option is view this month
show view of only this months report
[else]
retrieve and show view of specified month report

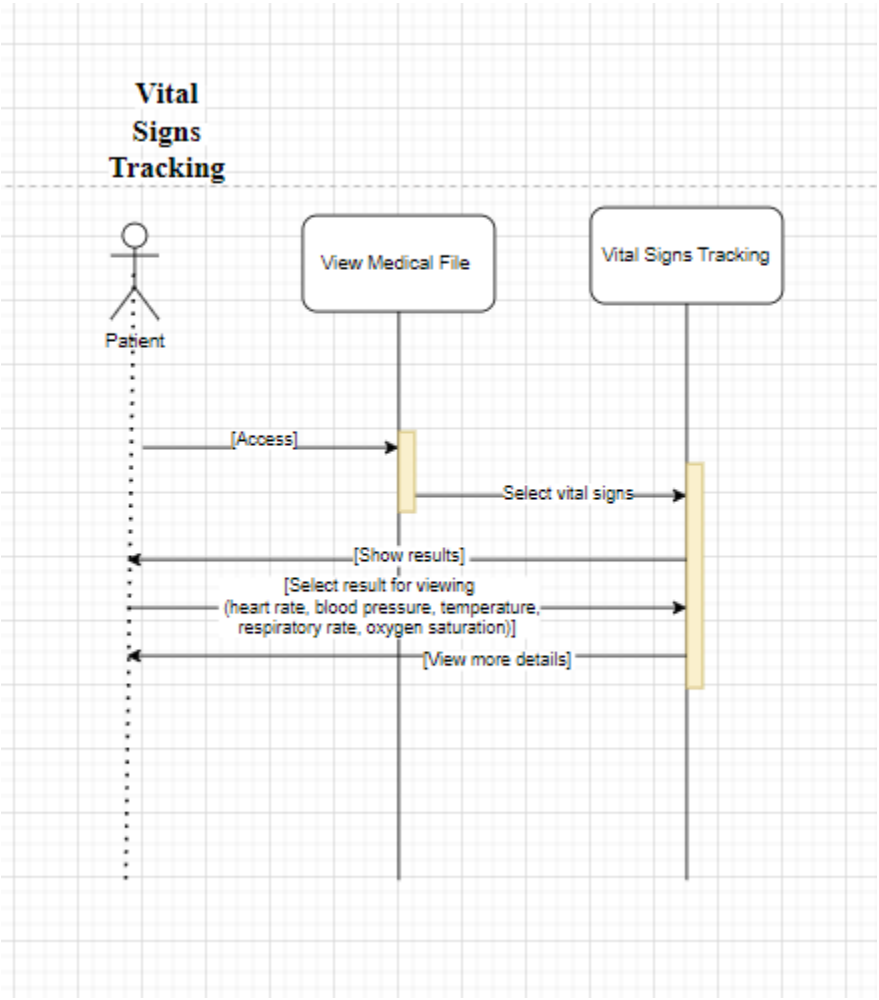

Application for training to learn about first aid
Patient
First Aid
Payment Gateway
opt
Details of First Aid Training
Email confirmation and Payment Details
alt
[if payment is correct]
Proccess Payment
Send Confirmation or Reject the payment
[else]
Confirm registration or Inform about waiting list placement

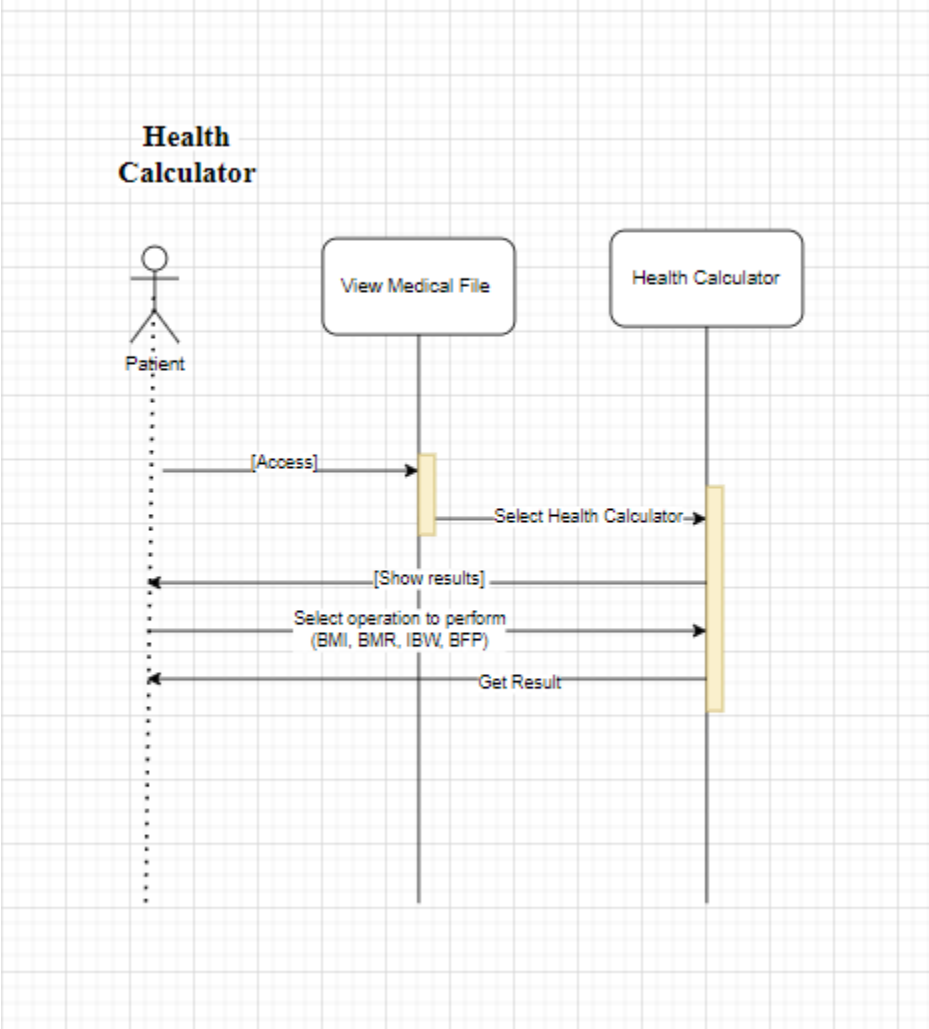

Application for medicine with reimbursement
Actor
Medicine Reinbursment
Pharmacy
opt
Select Medicine Reinbursement
Informs the user for missing requirement
opt
Send prescription details to the choosen pharmacy
Recives Confirmation or rejection from pharmacy
System sends claim electronically for processing
Display the confirmation message

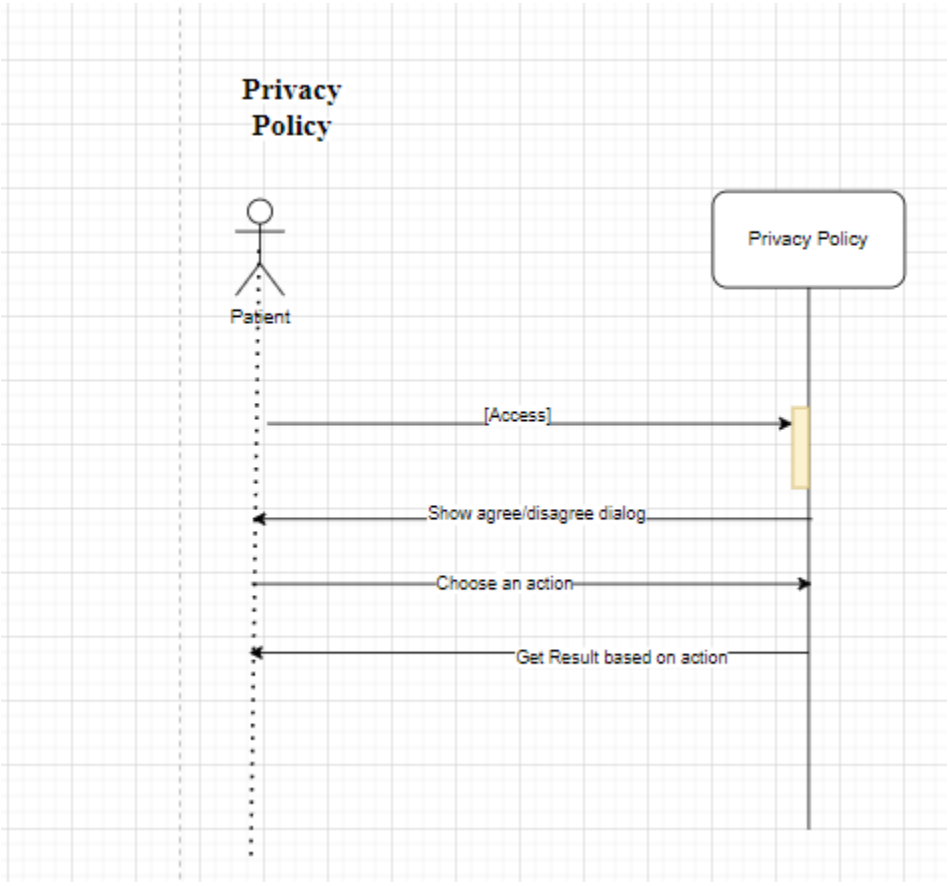

Health Card
Actor
Health Card
alt
Access Health Card and view details
[if register]
[else]
Proceed to main app page
opt
Download the health card as pdf
Deny the download

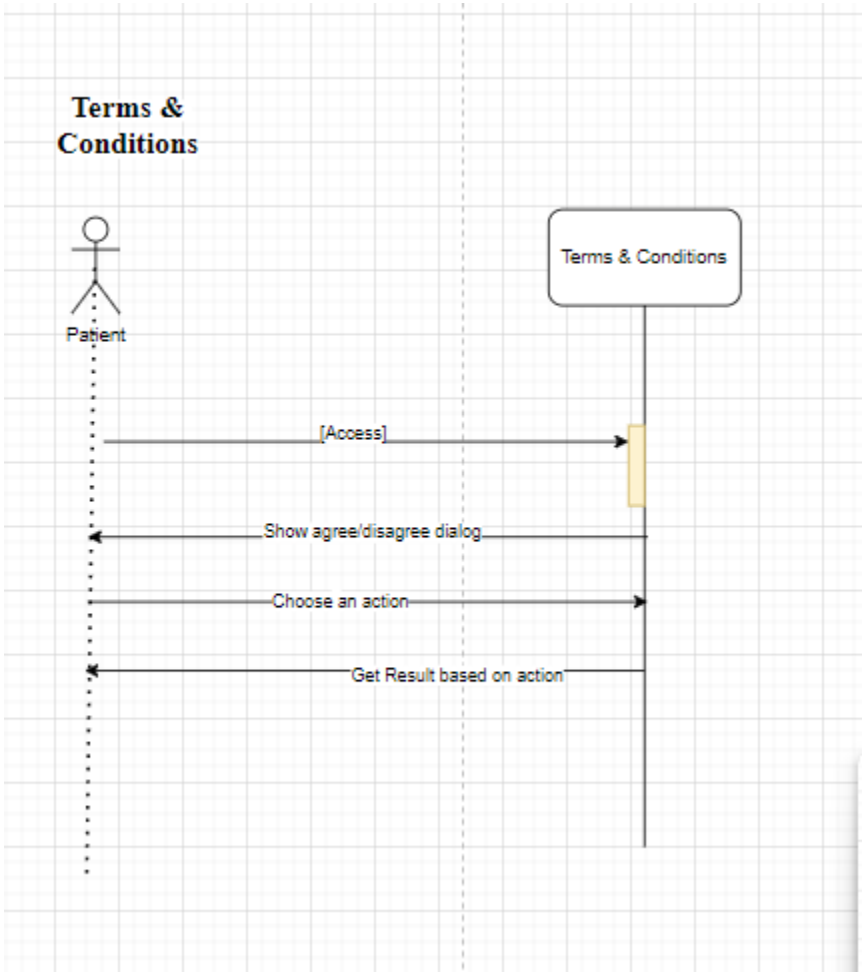

Pregnancy Tracker
Actor
Pregnancy Tracker
Pregnancy Medical Reports Availability
alt
View info based on inputed date
[if import due date]
View Info based on current date
[else]
alt
View records
[if medical reports available]
Display message
[else]

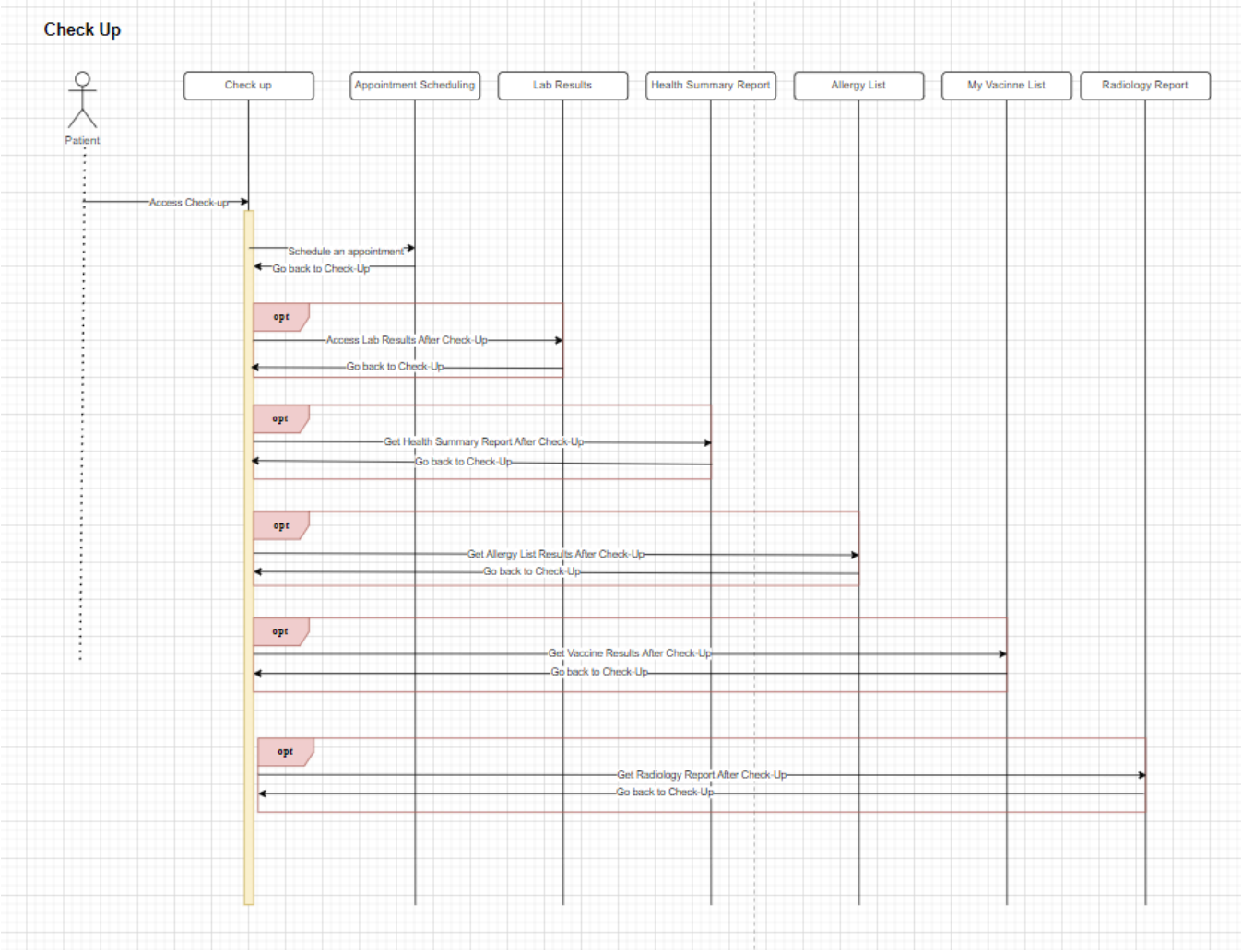

emergency service integration
patient
emergency service integration
admin staff
doctor
opt
[list]
view nearby ER/clinics
show nearby ER/clinics
opt
[form]
choose to order ambulance
send request
alt
notify doctors
[if request accepted]
send acceptance
[if request not accepted]
send rejection
opt
[form]
choose to order RRT service
send request
alt
notify doctors
[if request accepted]
send acceptance
[if request not accepted]
send rejection
opt
[form]
choose to order ambulance and emergency team
send request
alt
notify doctors
[if request accepted]
send acceptance
[if request not accepted]
send rejection
opt
[form]
send request
alt
notify doctors
[if request accepted]
send acceptance
[if request not accepted]
send rejection
opt
[history]
view history orders
show history list

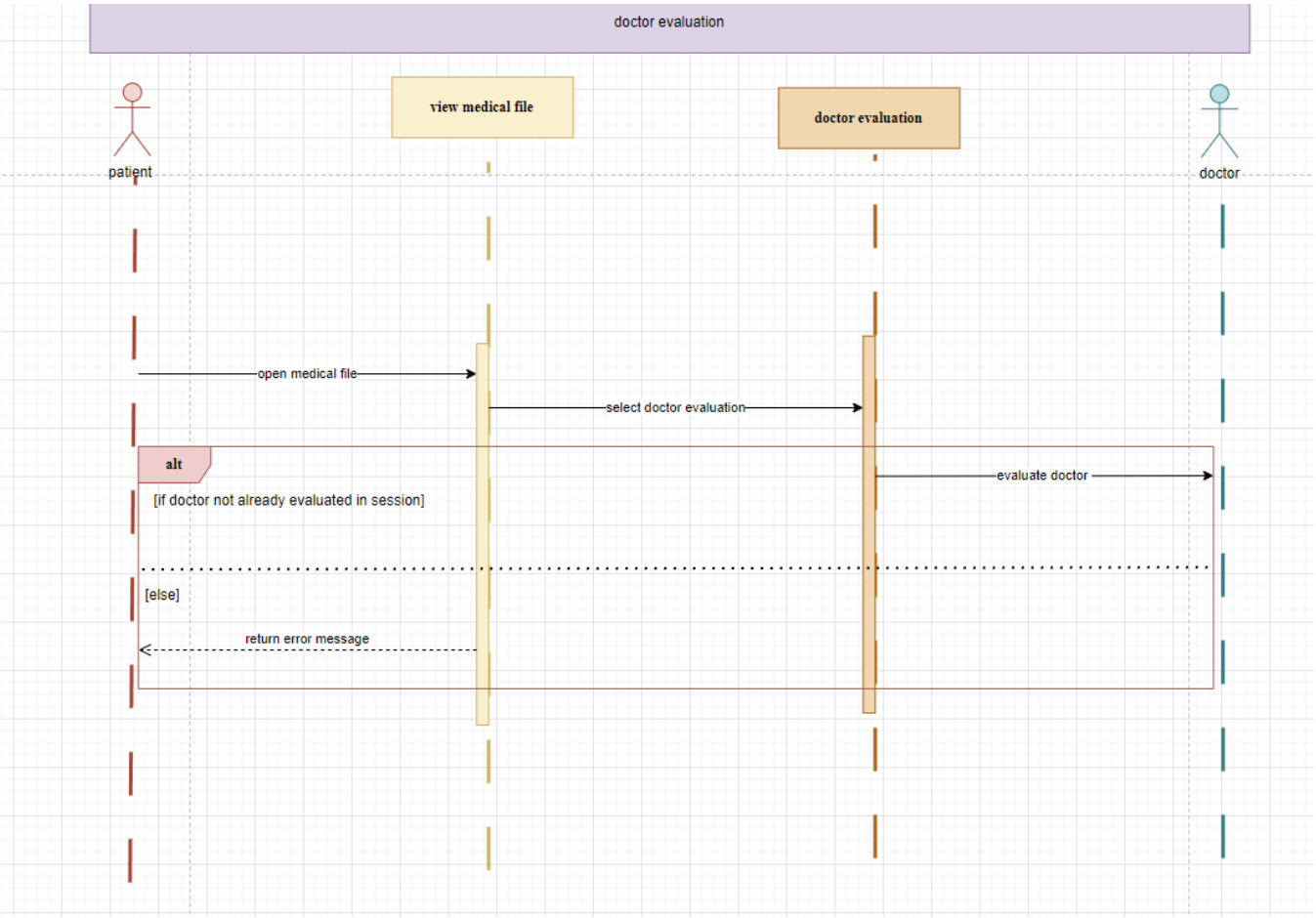

Vital
Signs
Tracking
Patient
View Medical File
Vital Signs Tracking
[Access]
Select vital signs
[Show results]
[Select result for viewing
(heart rate, blood pressure, temperature,
respiratory rate, oxygen saturation)]
[View more details]

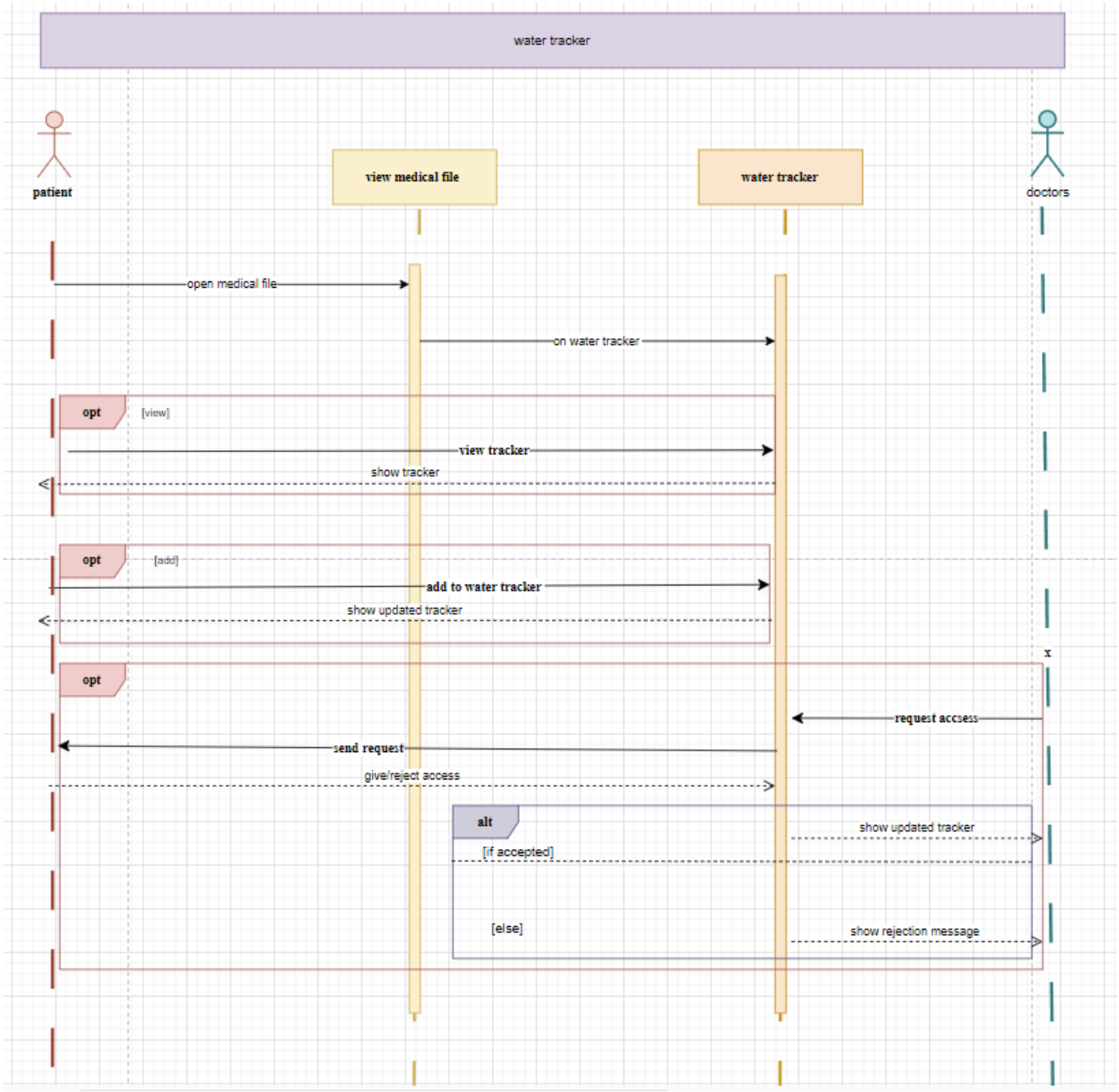

Health Calculator
Patient
View Medical File
Health Calculator
[Access]
Select Health Calculator
[Show results]
Select operation to perform
(BMI, BMR, IBW, BFP)
Get Result

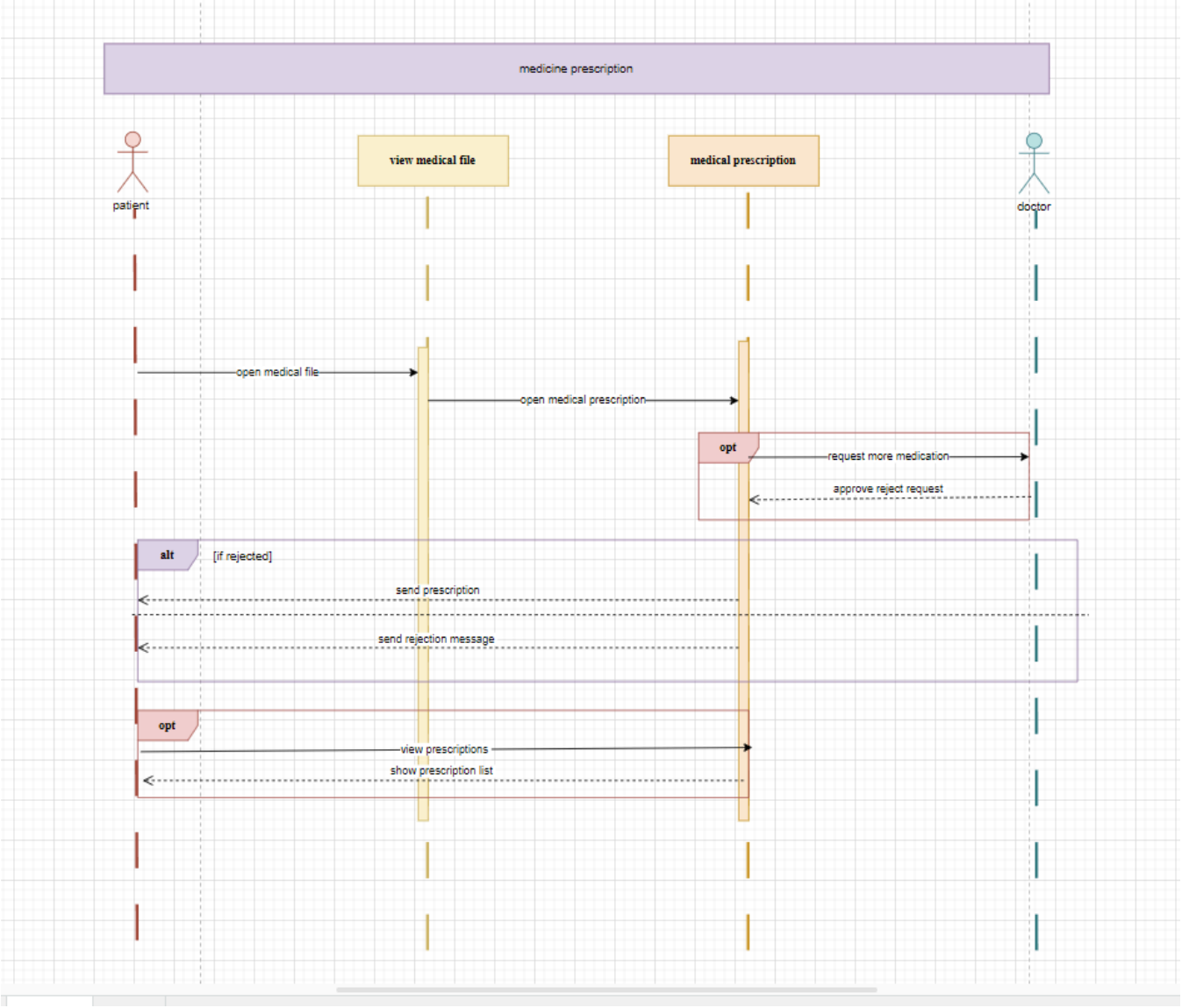

Privacy Policy
Patient
Privacy Policy
[Access]
Show agree/disagree dialog
Choose an action
Get Result based on action

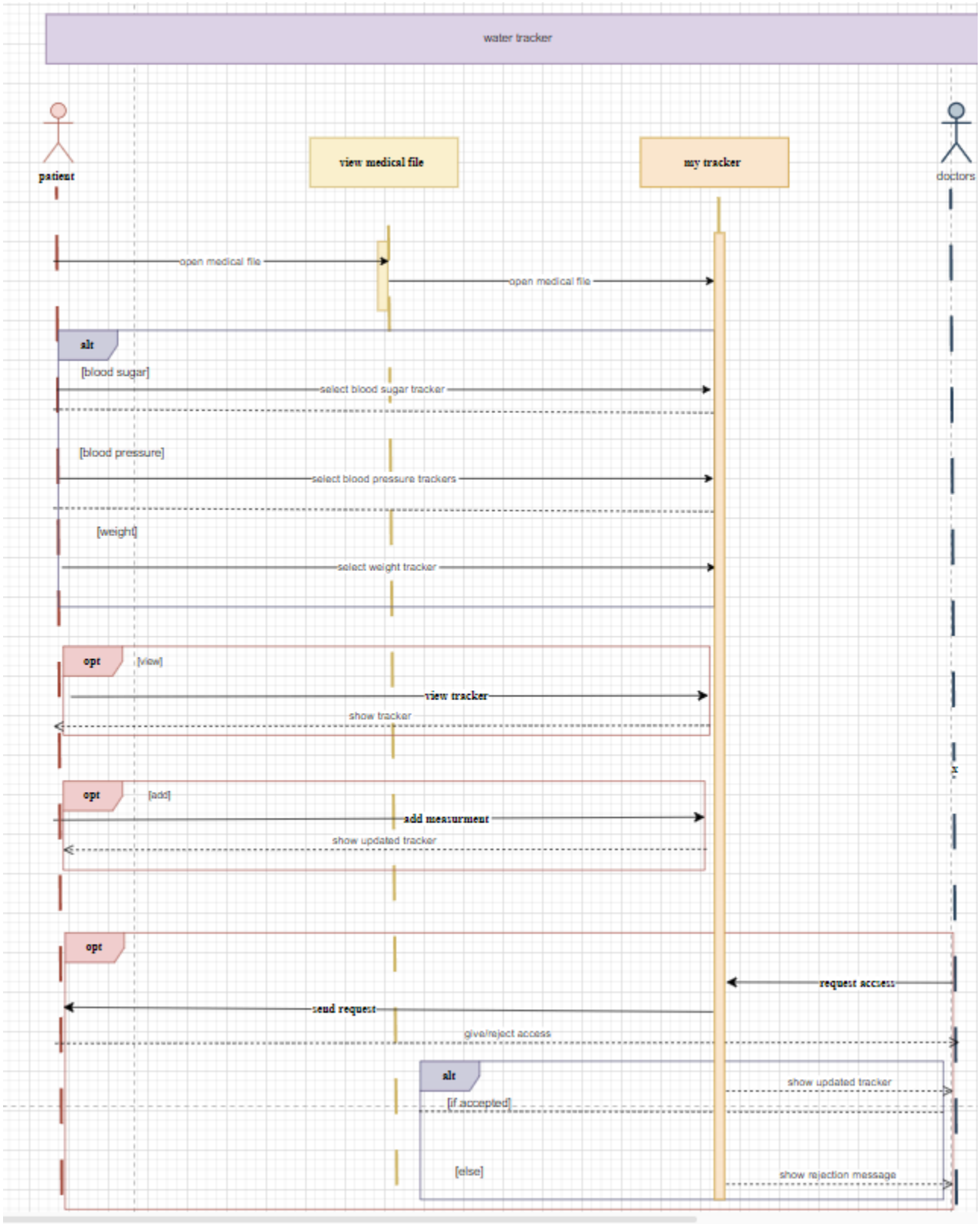

Terms &
Conditions
Patient
Terms & Conditions
[Access]
Show agree/disagree dialog
Choose an action
Get Result based on action

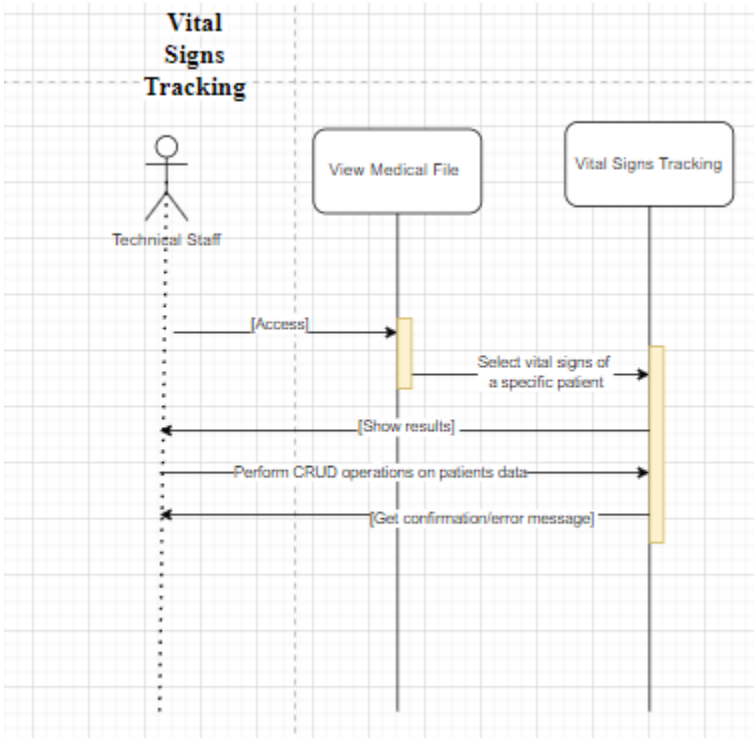

Check Up
Patient
Check up
Appointment Scheduling
Lab Results
Health Summary Report
Allergy List
My Vacinne List
Radiology Report
Access Check-up
Schedule an appointment
Go back to Check-Up
opt
Access Lab Results After Check-Up
Go back to Check-Up
opt
Get Health Summary Report After Check-Up
Go back to Check-Up
opt
Get Allergy List Results After Check-Up
Go back to Check-Up
opt
Get Vaccine Results After Check-Up
Go back to Check-Up
opt
Get Radiology Report After Check-Up
Go back to Check-Up


doctor evaluation
patient
view medical file
doctor evaluation
doctor
open medical file
select doctor evaluation
alt
[if doctor not already evaluated in session]
evaluate doctor
[else]
return error message

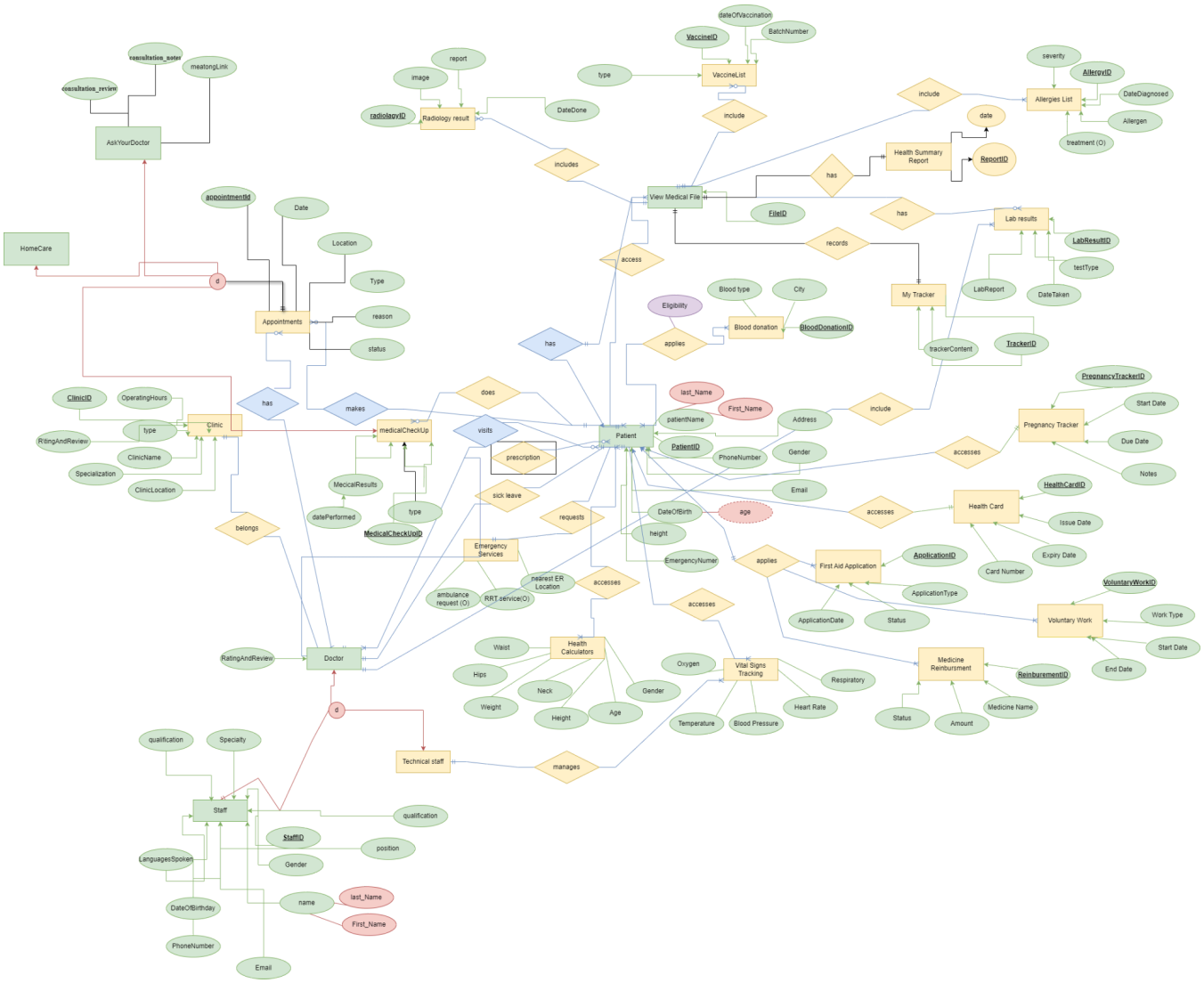

water tracker
patient
view medical file
water tracker
doctors
open medical file
on water tracker
opt
[view]
view tracker
show tracker
opt
[add]
add to water tracker
show updated tracker
opt
x
request accsess
send request
give/reject access
alt
show updated tracker
[if accepted]
[else]
show rejection message


medicine prescription
patient
view medical file
medical prescription
doctor
open medical file
open medical prescription
opt
request more medication
approve reject request
alt
[if rejected]
send prescription
send rejection message
opt
view prescriptions
show prescription list


water tracker
patient
view medical file
my tracker
doctors
open medical file
open medical file
alt
[blood sugar]
select blood sugar tracker
[blood pressure]
select blood pressure trackers
[weight]
select weight tracker
opt
[view]
view tracker
show tracker
opt
[add]
add measurment
show updated tracker
opt
request access
send request
give/reject access
alt
[if accepted]
show updated tracker
[else]
show rejection message


Vital Signs Tracking
Technical Staff
View Medical File
Vital Signs Tracking
[Access]
Select vital signs of a specific patient
[Show results]
Perform CRUD operations on patients data
[Get confirmation/error message]

ERD diagram:


dateOfVaccination
VaccineID
BatchNumber
VaccineList
type
include
severity
AllergyID
Allergies List
DateDiagnosed
Allergen
treatment (O)
date
Health Summary Report
ReportID
has
report
image
radiologyID
Radiology result
DateDone
includes
consultation_note
meatongLink
consultation_review
AskYourDoctor
appointmentId
Date
Location
Type
reason
status
Appointments
HomeCare
d
View Medical File
FileID
records
access
has
Lab results
LabResultID
testType
LabReport
DateTaken
My Tracker
trackerContent
TrackerID
Eligibility
Blood type
City
Blood donation
BloodDonationID
applies
has
ClinicID
OperatingHours
type
RatingAndReview
ClinicName
Specialization
ClinicLocation
Clinic
has
makes
medicalCheckUp
does
visits
prescription
sick leave
requests
Patient
last_Name
First_Name
patientName
PatientID
PhoneNumber
Address
Gender
Email
DateOfBirth
age
height
EmergencyNumer
include
accesses
PregnancyTrackerID
Pregnancy Tracker
Start Date
Due Date
Notes
HealthCardID
Health Card
Issue Date
Expiry Date
Card Number
MedicalResults
datePerformed
type
MedicalCheckUpID
belongs
Emergency Services
nearest ER Location
ambulance request (O)
RRT service(O)
accesses
applies
First Aid Application
ApplicationID
ApplicationType
ApplicationDate
Status
VoluntaryWorkID
Voluntary Work
Work Type
Start Date
End Date
RatingAndReview
Doctor
Waist
Hips
Neck
Weight
Height
Age
Gender
Health Calculators
Oxygen
Vital Signs Tracking
Respiratory
Heart Rate
Temperature
Blood Pressure
Medicine Reinbursment
ReinburementID
Medicine Name
Amount
Status
d
Technical staff
manages
qualification
Specialty
Staff
StaffID
position
Gender
LanguagesSpoken
name
last_Name
First_Name
DateOfBirthday
PhoneNumber
Email
qualification

APPENDIX

Appendix A.

Appendix : Sample Input/Output Format

This section includes sample input and output formats to guide users and developers in understanding the expected data structures and results for the hospital management system.

Example Input Format:

JSON Payload for Patient Registration:


```
{
 "patientId": "P12345",
 "name": "John Doe",
 "dateOfBirth": "1980-01-01",
 "address": "123 Main St, Anytown, USA",
 "contactNumber": "555-1234",
 "insuranceDetails": {
  "provider": "Health Insurance Inc.",
  "policyNumber": "HI123456789"
 }
}
```


Example Output Format:

JSON Response for Appointment Booking:


```
{
 "status": "success",
 "message": "Appointment booked successfully",
 "data": {
  "appointmentId": "A67890",
```

```
  "patientId": "P12345",
  "doctorId": "D123",
  "appointmentDate": "2024-06-01T10:30:00Z"
 }
}
```

Appendix : User Survey Results

This section summarizes the results of user surveys conducted to gather requirements and preferences from hospital staff and patients.

- Survey Population:
  - Number of respondents: 300 (including doctors, nurses, administrative staff, and patients)
  - Demographics: 55% healthcare professionals, 45% patients, ages 18-65
- Key Findings:
  - 85% of staff prefer an intuitive and easy-to-navigate interface.
  - 70% of patients want online appointment booking and medical record access.
  - 60% of respondents highlighted the need for a mobile application.

Appendix : Problem Description

This section describes the problems to be solved by the hospital management system.

- Current Issues:
  - Manual processes leading to data entry errors.
  - Lack of integration between different departments.
  - Limited access to patient records, causing delays in treatment.
- Proposed Solutions:
  - Implement an automated data entry system with validation checks.
  - Develop a centralized database for seamless data sharing across departments.
  - Provide secure online access to patient records for authorized personnel.

Appendix : Special Packaging Instructions

This section provides special packaging instructions for the code and media to meet various requirements specific to the hospital management system.

- Security Requirements:
  - Encrypt all patient data at rest and in transit.
  - Implement role-based access control to limit data access.
- Export Requirements:
  - Ensure compliance with HIPAA regulations for data privacy.
  - Include necessary export documentation for any international deployments.
- Initial Loading Requirements:

- Provide a detailed installation and configuration guide.
- Include a checklist to verify the setup and initial data load.

Appendix B. Definitions, Acronyms, and Abbreviations

EHR: Electronic Health Record

HIPAA: Health Insurance Portability and Accountability Act

UI: User Interface

API: Application Programming Interface

Appendix C. References

IEEE Std 830-1998, IEEE Recommended Practice for Software Requirements Specifications.

ISO/IEC/IEEE 29148:2018, Systems and software engineering — Life cycle processes — Requirements engineering.

"Healthcare Information Systems: A Practical Approach for Health Care Management," Wiley, 2021.

"HIPAA Compliance Handbook," National Institute of Standards and Technology, 2022.

Appendix D. Organizing the Requirements

This section is for information only as an aid in preparing the requirements document.

Detailed requirements tend to be extensive. Give careful consideration to your organization scheme. Some examples of organization schemes are described below:

By System Mode
Some systems behave quite differently depending on the mode of operation. For example, a control system may have different sets of functions depending on its mode: training, normal, or emergency.

By User Class
Some systems provide different sets of functions to different classes of users. For example, an elevator control system presents different capabilities to passengers, maintenance workers, and fire fighters.

By Objects
Objects are real-world entities that have a counterpart within the system. For example, in a patient monitoring system, objects include patients, sensors, nurses, rooms, physicians, medicines, etc. Associated with each object is a set of attributes (of that object) and functions (performed by that object). These functions are also called services, methods, or processes.

Note that sets of objects may share attributes and services. These are grouped together as classes.

By Feature
A feature is an externally desired service by the system that may require a sequence of inputs to affect the desired result. For example, in a telephone system, features include local call, call forwarding, and conference call. Each feature is generally described in a sequence of stimulus-response pairs, and may include validity checks on inputs, exact sequencing of operations, responses to abnormal situations, including error handling and recovery, effects of parameters, relationships of inputs to outputs, including input/output sequences and formulas for input to output.

By Stimulus
Some systems can be best organized by describing their functions in terms of stimuli. For example, the functions of an automatic aircraft landing system may be organized into sections for loss of power, wind shear, sudden change in roll, vertical velocity excessive, etc.

By Response
Some systems can be best organized by describing all the functions in support of the generation of a response. For example, the functions of a personnel system may be organized into sections corresponding to all functions associated with generating paychecks, all functions associated with generating a current list of employees, etc.

By Functional Hierarchy
When none of the above organizational schemes prove helpful, the overall functionality can be organized into a hierarchy of functions organized by common inputs, common outputs, or common internal data access. Data flow diagrams and data dictionaries can be used to show the relationships between and among the functions and data.

Additional Comments
Whenever a new Requirements Specification is contemplated, more than one of the organizational techniques given above may be appropriate. In such cases, organize the specific requirements for multiple hierarchies tailored to the specific needs of the system under specification.

There are many notations, methods, and automated support tools available to aid in the documentation of requirements. For the most part, their usefulness is a function of organization. For example, when organizing by mode, finite state machines or state charts may prove helpful; when organizing by object, object-oriented analysis may prove helpful; when organizing by feature, stimulus-response sequences may prove helpful; and when organizing by functional hierarchy, data flow diagrams and data dictionaries may prove helpful.

Appendix E. Organizing the Requirements

Introduction

Organizing the requirements effectively is crucial to ensure clarity, comprehensiveness, and ease of use. This section provides information on various schemes that can aid in preparing a well-structured requirements document for the hospital management system.

Organization Schemes

1. **Functional Decomposition**
    - **Overview:** Break down the system into its primary functions or modules. Each function or module is then described in detail.
    - **Example Sections:**
        - **Patient Management:**
            - Registration
            - Medical History
            - Appointments
        - **Staff Management:**
            - Staff Profiles
            - Scheduling
            - Payroll
        - **Billing and Insurance:**
            - Billing Procedures
            - Insurance Claims
            - Payment Processing
2. **Use Case-Based Organization**
    - **Overview:** Structure the requirements around use cases that describe how different users interact with the system.
    - **Example Sections:**
        - **Use Case 1: Patient Registration:**
            - Actors: Receptionist, Patient
            - Pre-conditions
            - Main Flow
            - Alternate Flows
        - **Use Case 2: Appointment Booking:**
            - Actors: Patient, Doctor, Receptionist
            - Pre-conditions
            - Main Flow
            - Alternate Flows
3. **Feature-Based Organization**
    - **Overview:** Organize requirements by grouping them into features or capabilities of the system.
    - **Example Sections:**
        - **Feature 1: Online Appointment System:**
            - User Interface
            - Backend Processing
            - Notifications
        - **Feature 2: Electronic Health Records (EHR):**
            - Data Entry
            - Data Retrieval

        - Security and Privacy
4. **Stakeholder-Based Organization**
    - **Overview:** Organize requirements based on different stakeholders and their needs.
    - **Example Sections:**
        - **For Patients:**
            - Online Registration
            - Access to Medical Records
            - Appointment Scheduling
        - **For Healthcare Providers:**
            - Patient Information Management
            - Medical History Tracking
            - Prescription Management
        - **For Administrators:**
            - Staff Scheduling
            - Financial Reporting
            - System Configuration
5. **Document Hierarchy**
    - **Overview:** Use a hierarchical approach to organize requirements, starting with high-level requirements and breaking them down into detailed specifications.
    - **Example Sections:**
        - **Level 1: High-Level Requirements:**
            - System Objectives
            - Key Functionalities
        - **Level 2: Detailed Functional Requirements:**
            - Specific Features
            - User Interactions
        - **Level 3: Non-Functional Requirements:**
            - Performance Criteria
            - Security Requirements

Conclusion

Choosing an appropriate organization scheme for the requirements document depends on the complexity of the system and the needs of its stakeholders. The aim is to provide a clear, comprehensive, and easily navigable document that facilitates understanding and implementation of the hospital management system requirements.