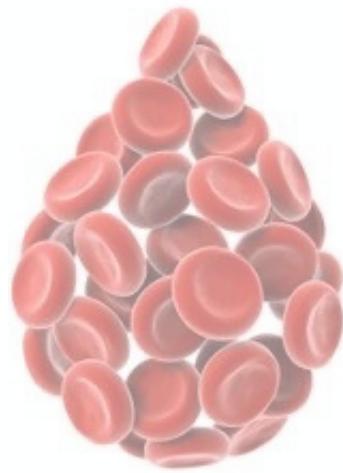


ANKOOD

عنقود

A new way to facilitate Blood transfusion!



OUR TEAM

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ID:2311180



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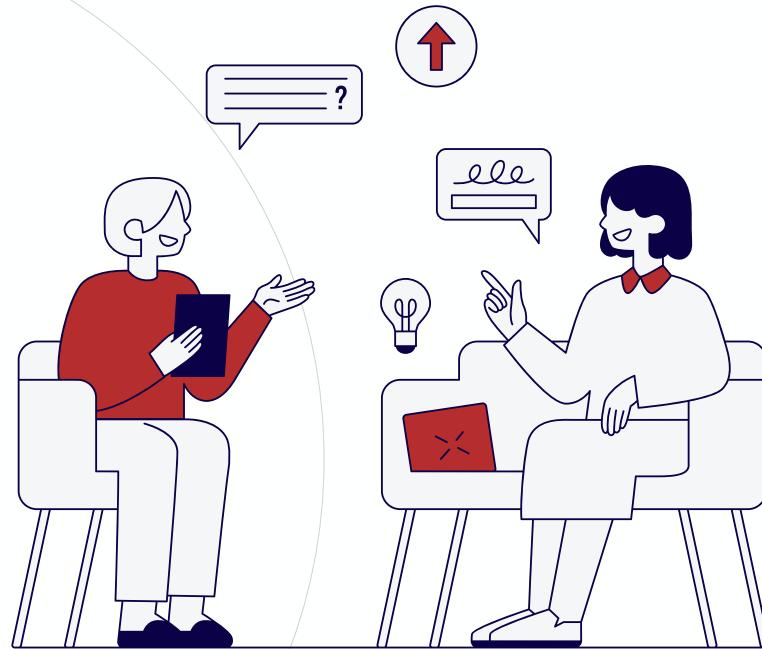
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Introduction

As we all know that blood is an important part of the human being, losing some of it would be extremely dangerous, so our project “Ankood” is an application that includes all the advantages and facilities of the blood donation process, and communicating with hospitals and donors to meet the level of demand. Through simple steps, you will be able to donate and know the extent to which the donation process reaches the patient. It will include a group of specialists, volunteers and others to make the process as professional and safe as possible. And, We chose this name because when blood drops gather they look like a cluster of grapes which translates to “Ankood” in Arabic.



Interviews



Interviews description

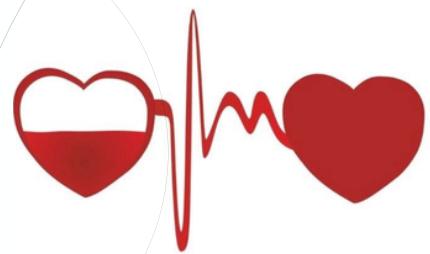
Interviewer: Feryal Emad Jadallah

Interviewee: Sultanh Bandar Al-Mesaed

Job title: Student

Mobile number: 050 597 5552

Interview's date: 5/2/2024



Q1. May you please introduce yourself?

My name is Sultanh, I'm a student at king Abdulaziz University. I'm currently in the faculty of applied medical science I aspire to be a future lab specialist inshallah. I also have experience in the laboratory field.

Q2. Have you ever donated blood?

No, unfortunately.

Q3. Do you support having an application that helps with the blood donation process?

Yes, because it will link the patient that has a specific type of blood with donors who can provide it. And the application will make it more effective and efficient regarding time and emergencies.

Q4. Do you think Ankood will have a positive impact on the medical staff and patients?

Of course, specially in connecting patients with donors. We often see posts on social media asking if someone has a specific type of blood to donate quickly and I believe this application will solve the problem.

Interviews description

Q5. Do you have any features that you think we should add to our program?

- You should add the blood type, medical history and maybe even add organ donation.
- Link the application with the ministry of health and give doctors access.
- Link the application with blood banks.
- Add notifications or announcements for other blood donation campaigns.
- Add guidelines on blood donation protocols.

Q6. Do you have any concerns about the project idea?

No, I think it will be very helpful.

Analyst comments:

From my perspective, I think that conducting this interview with Sultanh gave me valuable ideas for the future, including the addition of organ donations. Sultanh showed excitement for Ankood application, she also believes that it will be very helpful in the medical field for blood donations and transfusions; which is promising for our project.

Interviews description

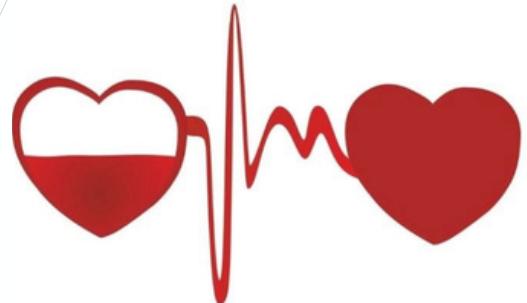
Interviewer: Sara Abdulrahman Bajrsh

Interviewee: Khulod Ahmed AL-Sulami

Job title: Nursing student in internship year

Email : khbj2005@hotmail.com

Interview's date: 2 Feb 2024



Q1. Do you think society needs this type of application?

Of course, we are in dire need of such applications. As society becomes more aware of the importance of donating, we need an easier way to safely bring together donors and those in need.

Q2. If I gave you the opportunity to be a contributor to this application, would you agree?

Critically, beyond the benefits of donation to the donor, there are benefits to us health professionals. The application will add a lot to the speed of response between donors and health centers, and will move the process further and faster.

Q3. What are the main obstacles people in need face in reaching donors?

Lack of awareness. Some people in need may not be sufficiently aware of the importance of donating blood and how to access donors, in addition to not being available at the appropriate times. Some people in need may have difficulty being in the right places to donate blood at the right times.

Interviews description

Q4. From your perspective as a nurse, what vital information should we collect from donors and those in need to ensure the safety of the process?

There is vital information that must be collected from donors and those in need to ensure the safety of the process. This information includes blood type, immunization history, previous donation history, any previous chronic health conditions or infectious diseases, and any medications the person is taking. Collecting this information helps determine the compatibility of donations and assess the safety of the process for donors and those in need.

Q5. Are there any additional features that the app can have to enhance the customer's experience with the blood donation process?

The application can provide additional features to improve customers' experience in the blood donation process, including a system of alerts and reminders for donors, tracking the available stock of blood types, the ability to enter personal health information, and providing digital certificates proving donors' donations.

Analyst comments:

I believe that Nurse Khalood Al-Sulami provided me with valuable insights and gave me a clear vision of the urgent need for an application that facilitates communication between blood donors and recipients. The importance of gathering vital information from donors and recipients to ensure the safety of the process, including blood type examination, vaccination history, and health conditions, was highlighted. Her input has been instrumental in shaping my understanding of the necessary features and considerations for developing an effective blood donation app

Interviews description

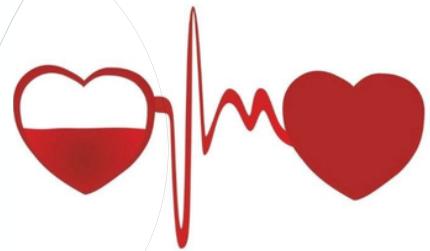
Interviewer: Nada Awadh Almutir

Interviewee: Amani Almutairi

Job title: Laboratory Specialist

Mobile number: 050 513 7220

Interview's date: 5/2/2024



Q1. May you please introduce yourself?

My name is Amani Awadh. I am a Medical Laboratory Specialist member of healthcare team who takes care of the patient samples.

Our goal in the laboratory department is to process various types, natures and sizes of patients specimens in different departments such as: Blood Bank, hematology, toxicology, microbiology, serology, coagulation and chemistry and deliver accurate and precise results in timely manner.

Q2. Why is blood banking important?

Blood banking is essential for emergencies, medical treatments, surgeries, and managing blood disorders such as patients who suffers from anemia like sickle cell anemia and thalassemia.

It ensures to provide a safe and steady supply of blood and blood products for patients in need.

Interviews description

Q3. What information does the public not know about blood transfusions and analysis ?

One lesser-known aspect of blood transfusions and analysis is that we perform extensive testing and screening processes include: screening for infectious diseases, blood type compatibility testing (ABO groups), and testing for antibodies other than ABO (non ABO) that could cause adverse reactions in recipients during blood transfusions.

These antibodies may develop in response to previous blood transfusions, pregnancies, or exposure to certain diseases or foreign substances.

So, the case not only about O donates to A, B, AB or O.

There is different important antigens panels need to be tested and matched.

Q4. Do you think there is awareness of the importance of donating blood ?

Yes, Awareness about the importance of donating blood exists, especially during crises, but sustaining a consistent supply is challenging due to misconceptions and fears about the donation process. Efforts to educate and encourage regular donors are essential to meet ongoing healthcare demands

Q5.What are the concerns of blood donors and how do we encourage them to donate ?

Blood donors may have concerns about needles, side effects, and the donation process. To address these concerns, blood donation centers provide education, a supportive environment, pain management techniques, monitoring, and open communication to ensure donors feel comfortable and confident during the donation process, encouraging repeat donations and sustaining the blood supply.

Interviews description

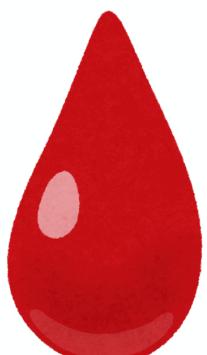
Q6. Is the idea of creating an application to facilitate the blood donation process a good idea in your opinion ?

Yes, creating an application to facilitate the blood donation process is a beneficial idea. Such an app could streamline the donation process by allowing users to find nearby donation centers, schedule appointments, receive reminders, and track their donation history. Additionally, it could provide information about eligibility criteria, donation guidelines, and FAQs, increasing awareness and encouraging more people to donate blood.

Overall, a well-designed blood donation app could make the process more convenient and accessible, ultimately helping to boost blood donations and save lives.

Analyst comments:

The interview with Amani provides analysis of various aspects related to blood banking, transfusions, and blood donation reflects a holistic understanding of blood banking and donation processes. Her insights show the importance of collaboration across healthcare and the technology to enhance patient care and donor engagement efforts. Moreover, when Ankood was mentioned in the interview she gave a positive response about initiating such system for better health care.



Interviews description

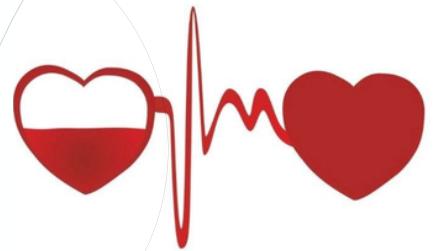
Interviewer: Ghaidaa Alshehri

Interviewee: Ghadah Mohammed Alshehri

Job title: Doctor

Mobile number: 0539391030

Interview's date: 5/2/2024



Q1. Can you please introduce yourself?

My name is Ghadah Mohammed Alshehri, I am a general practitioner studying at King Abdulaziz University in my final training semester. I have knowledge and experience in the areas of blood donation and medical laboratories.

Q2. Do you believe that providing a secure electronic system for exchanging medical information between healthcare providers and their patients can help facilitate the blood withdrawal process and improve healthcare in general?

Yes, I believe that providing a secure electronic system for exchanging medical information between healthcare providers and their patients can help facilitate the blood withdrawal process and improve healthcare in general. This can be achieved by providing quick and secure access to medical information and improving coordination among different medical teams.

Interviews description

Q3. Do you think that using modern technologies such as artificial intelligence or data analysis can contribute to improving the efficiency and accuracy of the blood withdrawal and transfusion process?

Yes, using modern technologies such as artificial intelligence and data analysis can contribute to improving the efficiency and accuracy of the blood withdrawal and transfusion process. This can be achieved by improving disease diagnosis, enhancing safety screening processes, and providing precise advice and guidance to doctors.

Q4. Do many people experience negative experiences or challenges during the blood withdrawal process?

Yes, many people experience negative experiences or challenges during the blood withdrawal process, such as difficulty finding veins, anxiety~ and stress, and pain. These negative experiences can affect patient cooperation and their willingness to undergo other medical procedures.

Q5. Do hospitals and medical centers need a more efficient way to track and manage their blood unit inventory?

Yes, hospitals and medical centers need an effective way to track and manage their blood unit inventory. The loss or damage of units can lead to a shortage of available blood and have a negative impact on patient care.

Q6. Do you think that providing an application or website that facilitates the blood donation process can increase the number of donors and improve blood availability in the community?

Yes, I believe that providing an application or website that facilitates the blood donation process can increase the number of donors and improve blood availability in the community. It can raise awareness and contribute to promoting a culture of blood donation.

Interviews description

Analyst comments:

I believe it is necessary to improve the blood withdrawal and transfusion process by developing an easy-to-use application or website for scheduling blood withdrawal appointments and providing detailed information about the associated procedures. Additionally, the management of blood unit inventory should be improved, and blood donation should be promoted to increase its availability. Modern technologies such as artificial intelligence and data analysis can be used to enhance the blood withdrawal and transfusion process and provide a personalized experience for patients. Finally, a secure electronic system should be provided to facilitate the exchange of medical information and improve coordination among medical teams.



The purpose

Content:

We are planning to make an application that makes the blood donation process easier and more effective, because transferring blood to patients is an extremely important and time sensitive matter. The application allows users to book an appointment to donate blood with flexible time and in different locations , it also allows hospitals and all medical facilities to take from the blood supply as needed.

Motivation:

It is very important for patients to receive blood transitions in the right time to save their lives.

consideration:

Many blood banks lack quantities of blood or a specific type of blood such as O, which makes it hard for doctors and medical staff to save lives.

Goals:

- Making the process of donating and transferring blood easier, faster, efficient and more effective.
- Providing an affective communication way between donors and hospitals.
- Providing safety guidelines about the blood health and general human health.
- Allows the user to search blood types and gain information.
- Allow users to track blood transfer.
- Provide information about the importance of blood donation and advocate for it.
- Generate reports about the blood donation and transfusion process.



Preliminary report

The Problem:

The main problem is the lack of a suitable blood type at the right time, which puts patients' lives at risk and causes delays in the required medical care.

Findings:

The current system has blood shortage, and many people lack information about how important it is to donate.

Recommendation or proposed solution:

Develop "Ankood" application to streamline the blood donation process. The app should include features that enable easy and efficient blood donation, provide real-time updates on donation status reaching patients, and involve specialists, volunteers, and professionals to ensure safety and professionalism. This solution addresses the problem of blood shortages and lack of awareness.

Cost & schedule estimates:

The project will cost 200.000 SR in 120 days.

Phase	Time	Cost
Planning	25 days	30.000 SR
Analysis	18 days	20.000 SR
Design	20 days	50.000 SR
Implementation	12 days	40.000 SR
Testing	33 days	25.000 SR
Maintenance	12 days	35.000 SR

Feasibility study

1. Problem Definition:

The problem lies in the lack of availability of the appropriate blood types at the right time, which leads to delaying treatment and putting the lives of patients at risk. In addition, there are many sub-issues such as scarcity of regular blood donors, insufficient awareness of the importance of blood donation, poor coordination between medical institutions and blood banks, and challenges in blood storage, maintenance, testing and distribution.

2. Scope Objectives of “Ankood”:

In order to preserve lives, “Ankood” will work to strengthen the blood donation system and improve its management, increase awareness of the importance of donation, enhance coordination between relevant authorities, and enhance the processes of storing, examining and distributing blood to ensure the availability of the required blood types when needed.

3. Alternative Solutions:

1. A standalone mobile blood donation application can be created to enable users to donate blood when necessary, The app allows users to find nearby donation sites and get alerts when certain types of blood are in high demand.
2. Intelligent Appointment Scheduling System: Donors and hospitals can arrange appointments using an intelligent scheduling system that takes into account hospital requirements and blood supply, Notifications about available appointments are sent to users.
3. Blood tracking technology: Blood units can be tracked and monitored as they are transported from donors to hospitals using blood tracking devices, This gives medical facilities reliable information and enhances inventory management.
4. Artificial intelligence and data analysis: These tools can be used to evaluate donor behavior, predict future blood requirements, and improve the accuracy of blood type predictions.

Feasibility study

4. Cost and benefits of Alternatives:

A- Costs Table:

Cost Category	Estimated Cost
Development and Design	50.000 SR
Server Infrastructure and Hosting	20.000 SR
Integration with External Applications	10.000 SR
Artificial Intelligence and Data Analysis	30.000 SR
Blood Tracking Technology	15.000 SR
Security and Data Protection	10.000 SR
Marketing and Awareness Campaigns	40.000 SR
Maintenance and Updates	25.000 SR
Total Revised Estimated Cost	200.000 SR

Feasibility study

B- Benefits of applying the alternative from a financial perspective:

1. Standalone Mobile Blood Donation Application:

- Cost savings by eliminating traditional blood drive expenses.
- Efficient resource allocation and reduced waste.
- Improved donor retention and reduced acquisition costs.

2. Intelligent Appointment Scheduling System:

- Streamlined operations and reduced administrative overhead.
- Increased donor engagement and reduced missed appointments.
- Enhanced donor experience and improved retention.

3. Blood Tracking Technology:

- Reduced inventory management costs and minimized waste.
- Improved logistics efficiency and transportation savings.

4. Artificial Intelligence and Data Analysis:

- Improved blood supply prediction and optimized inventory management.
- Targeted marketing, reducing costs of broader advertising.
- Resource optimization for enhanced operational efficiency.



Feasibility study

5. Software Impacts:

1. Integration with external applications: The application may need to integrate with other programs, such as social networking sites, blood donation facilities, or hospital management systems. To facilitate data exchange and communication between other applications, existing software must be modified.
2. Advances in forecasting and inventory control: Future blood needs can be predicted more accurately and inventory control can be enhanced using artificial intelligence and data analysis methods for the purpose of processing and analyzing data related to blood donation and hospital needs.
3. Smart Appointment Booking System: By setting up a smart appointment booking system, blood donation appointments can be better scheduled according to hospital requirements and availability. Features such as appointment reminders and open time slot notifications can be built into this system.
4. Improving security and data protection: It is necessary to improve security and protect users' private information within the program, and this may require strengthening security programs and placing additional security precautions such as data encryption, two-factor authentication, and activating a backup copy of the data in the event of loss.

Feasibility study

6.Potential Changes in “Ankood”:

1. Increased Blood Donation Rates: With the implementation of the "Ankood" application, there is a potential for increased blood donation rates as the app simplifies the process and raises awareness about the importance of blood donation.
2. Improved Blood Inventory Management: The centralized blood inventory management system within "Ankood" will enhance the tracking and distribution of blood units, reducing shortages and ensuring that the right blood types are available when needed.
3. Enhanced Coordination and Efficiency: The application will facilitate better coordination between blood banks, medical institutions, and donors, resulting in improved efficiency in the blood donation process. This will lead to quicker access to blood for patients in need.
4. Professional and Safe Donor Experience: The involvement of specialists, volunteers, and professionals in the "Ankood" app will ensure a professional and safe blood donation experience. Donors will have confidence in the process, encouraging them to donate regularly.

7.Recommendation Alternative of “Ankood”:

The proposed option, which is the best choice among the proposed alternatives, depends for “Ankood”.

It is an intelligent scheduling system that offers a number of important features, including the ability to schedule appointments according to hospital requirements and blood availability and receive information regarding open time periods.

The intelligent appointment booking system makes it easy for people to schedule donation sessions based on their location and availability. However, medical centers are able to manage their inventory and determine open time periods according to their needs. Users can also receive alerts and reminders about their scheduled appointments and accepted donations using the smart booking system.

Project plan

SOFTWARE DEVELOPMENT PLAN



	Task Mode	Task Name	Duration	Start	Finish	Predecessors	Resource Names	Add New Column
0	Normal	Software Development	120 days	Mon 1/29/24	Fri 7/12/24			
1	Normal	Planning	25 days	Mon 3/4/24	Fri 3/1/24		Feryal	
2	Normal	Analysis	18 days	Mon 3/4/24	Wed 3/27/24	1	Nada	
3	Normal	Design	20 days	Thu 3/28/24	Wed 4/24/24	2	Sara	
4	Normal	Implementation	12 days	Thu 4/25/24	Fri 5/10/24	3	Nada	
5	Normal	Testing	33 days	Mon 5/13/24	Wed 6/26/24	4	Ghaidaa	
6	Normal	Maintenance	12 days	Thu 6/27/24	Fri 7/12/24	5	Sara	

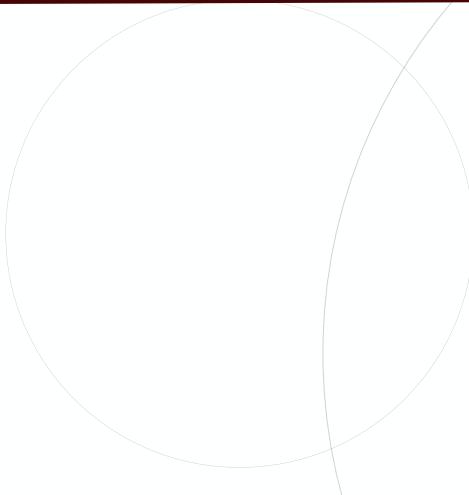
A Gantt chart showing the timeline for the Software Development tasks. The x-axis represents time from January 2024 to July 2024. Tasks are color-coded by resource: Feryal (red), Nada (blue), Sara (purple), and Ghaidaa (yellow). Arrows indicate dependencies between tasks.

- Task 0: Software Development (120 days) starts on Mon 1/29/24 and ends on Fri 7/12/24. It has no predecessors.
- Task 1: Planning (25 days) starts on Mon 3/4/24 and ends on Fri 3/1/24. It is assigned to Feryal.
- Task 2: Analysis (18 days) starts on Mon 3/4/24 and ends on Wed 3/27/24. It is assigned to Nada.
- Task 3: Design (20 days) starts on Thu 3/28/24 and ends on Wed 4/24/24. It is assigned to Sara.
- Task 4: Implementation (12 days) starts on Thu 4/25/24 and ends on Fri 5/10/24. It is assigned to Nada.
- Task 5: Testing (33 days) starts on Mon 5/13/24 and ends on Wed 6/26/24. It is assigned to Ghaidaa.
- Task 6: Maintenance (12 days) starts on Thu 6/27/24 and ends on Fri 7/12/24. It is assigned to Sara.

Stockholder definition

The Client:

Hospitals.



The Customer:

Donors.

The Stakeholder:

Ministry of health.



The scope of the work

The Current Situation:

Content:

The blood donation process is long, unclear and isn't easy to access which makes people fear or refuse to donate blood.

The family and friends of a patient often search for donors among themselves fearing for their loved ones lives which makes the process even more stressful.

There isn't any well known applications or systems that help makes the process easier and more efficient.

Motivation:

In emergencies and life threatening conditions having blood near will save lives. For a human body the blood is one of the most important parts, you certainly can't live without it and if you lost some of it you will be in a critical situation.

The Context of the Work:

Content:

With Ankood hospitals will be able to request huge amounts of blood ahead of time and even specify the required blood type.

Donors will be able to donate regularly easily and with flexible places and times, also we will spread awareness about the importance of donating blood and saving lives

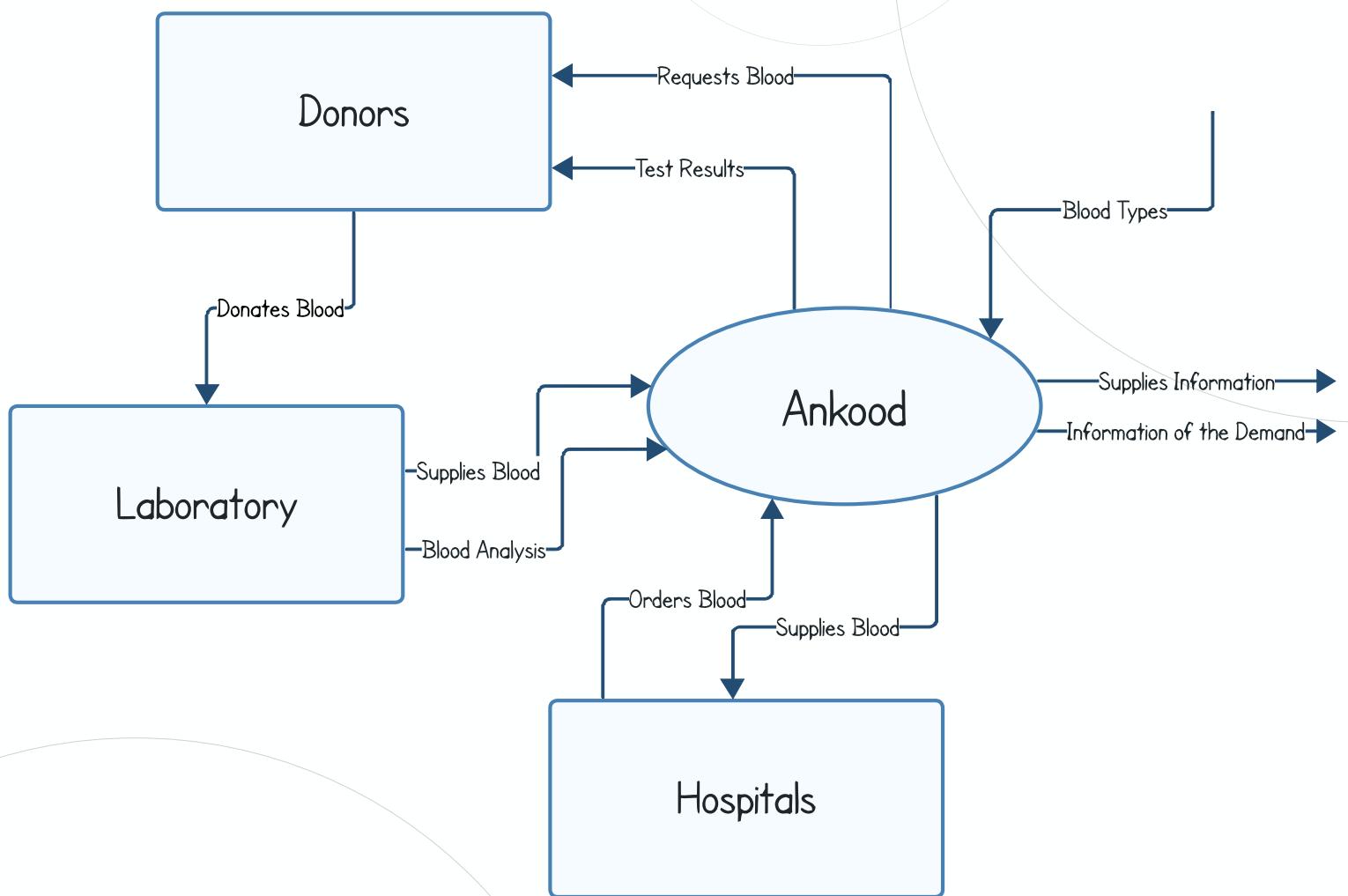
Motivation:

In the future we might add organ donation, Kidney dialysis, to help make these processes easier more accessible and less stressful.

We will add delivery service to small villages and far places.

We will add an option for Hospitals and Medical institutions to donate medical supplies.

Context diagram



Business Event List

Event Name	Input and output	Summary
Request blood	Request blood (out)	Request blood from donors.
Test results	Test results (out)	The donor receives test results.
Blood analysis	Blood analysis (in)	The laboratory sends blood analysis.
Supplies blood	Supplies blood (in)	Receiving blood supplies from the laboratory.
Orders blood	Orders blood (in)	Hospitals orders blood supplies.
Supplies blood	Supplies blood (out)	The hospitals receive blood supplies.
Information of demand	Information of demand (out)	The system produces a report about the demand.
Supply information	Supply information (out)	The system produces a report about blood supplies.
Blood types	Blood types (in)	The system receives blood types from the Ministry of Health.

Functional requirements

ID	Requirement Definition
FR1	Create an account
FR1.1	The system must allow the user to create an account in the application that provides the necessary information such as name, ID number, and blood type.
FR2	Login
FR2.1	The system must allow the user to enter the application using his username and password, with the ability to reset their password.
FR3	Searching for blood types
FR3.1	The system must allow the user to search for the availability of different blood types in the blood bank
FR4	Receive Notifications
FR4.1	The system must be able to send notifications to the user regarding emergency situations and the need for blood donation.
FR5	Generate reports
FR5.1	The system must be able to generate reports and statistics about blood donation operations, orders, and inventory.
FR6	Records
FR6.1	The system must allow the hospital to access patient and donor records while ensuring privacy and security.
FR7	Track Blood transfer
FR7.1	The system must allow the user to track donations.
FR8	Help
FR8.1	The system should allow the user to request assistance from customer service by calling or chatting online.
FR9	Log out
FR9.1	The system must provide the functionality to automatically log out after a period of inactivity or allow the user to manually log out of the system.

Non-Functional requirements

Data Security

DS1 : Sensitive data must be encrypted and protected from unauthorized access.

Scalability and extensibility

SE1: The system must be designed to be scalable to accommodate an increasing number of users and data.

Speed of performance

SP1: The application must respond within seconds to any inquiry or request.

Reliability

R1: The application must be reliable and available all the time.

Compatibility

C1: The application must be compatible with different devices and operating systems.

Ease of use

EU1: The application should be easy to use and provide an intuitive user interface.

Privacy

P1: The user's privacy must be protected and his data must be dealt with in accordance with laws and legislation.

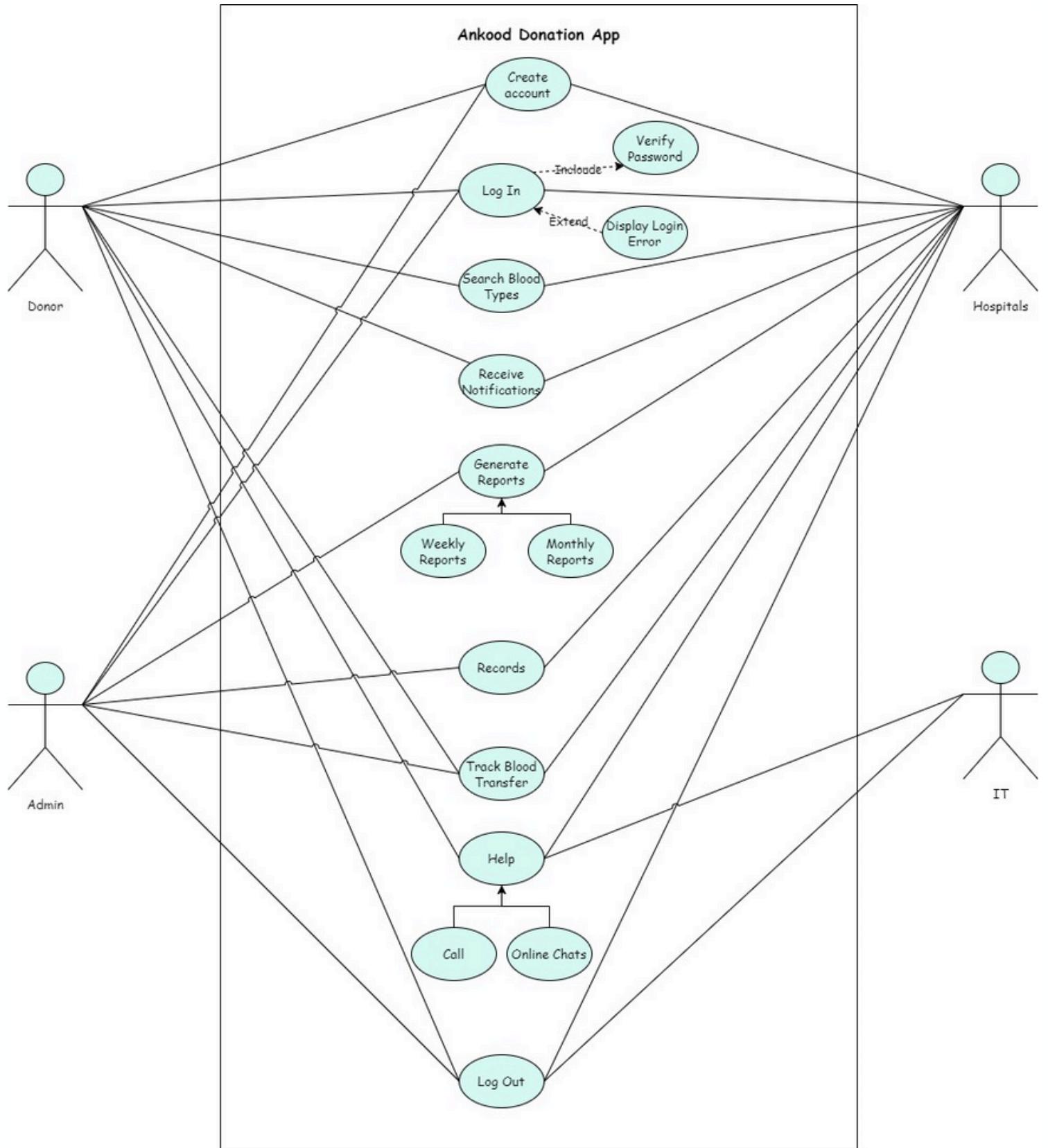
Backup and Recovery

BR1 Effective data backup and recovery mechanisms must be in place to combat data loss.

Continuous updates and development

CD1: The application must undergo continuous updating and development to improve services and add new features.

Use Case Diagram



Use Case Description

UC1: Search Blood Type

Scope: Blood Bank System

Level: User interaction

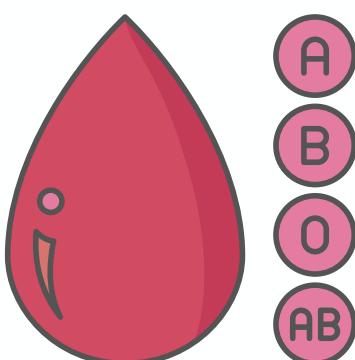
Primary Actor: Hospital, Donor

Precondition: User wants to search for a specific blood type in the Blood Bank System.

Stakeholders and Interests:

- Hospital: Interested in finding available blood units of a specific blood type for transfusion.
- Donor: Interested in checking the availability of their blood type in the blood bank.

- 1- The user selects the "Search Blood Type" option in the system.
- 2- The system presents a search form for the user to enter the desired blood type.
- 3- The user enters the specific blood type they want to search for.
- 4- The user submits the search form.
- 5- The system retrieves the relevant blood units matching the specified blood type.
- 6- The system displays the search results to the user, showing the availability and location of the blood units.



Use Case Description

UC2: Receive Notifications

Scope: Blood Bank System

Level: Automated

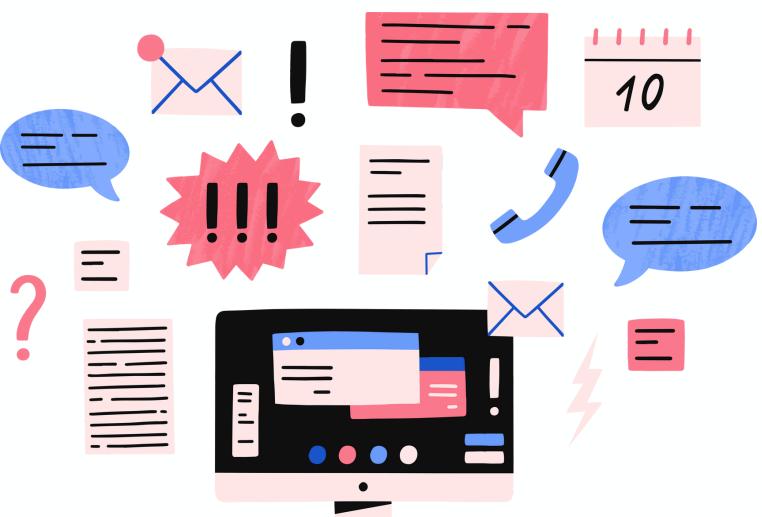
Primary Actor: Hospital, Donor

Precondition: User wants to receive notifications from the Blood Bank System.

Stakeholders and Interests:

- Hospital: Interested in receiving notifications about critical blood shortages, new donations, and relevant updates.
- Donor: Interested in receiving notifications about blood drives, updates on their donation status, and relevant news.

- 1- The system monitors blood inventory levels and donation activities.
- 2- If a critical blood shortage occurs, the system sends a notification to the relevant hospitals.
- 3- If a new donation is made, the system sends a notification to the donor confirming their donation.
- 4- The system allows users to configure their notification preferences, such as email, SMS, or in-app notifications.



Use Case Description

UC3: Generate Reports

Scope: Blood Bank System

Level: User interaction

Primary Actor: Hospital, Admin

Precondition: User wants to generate reports from the Blood Bank System.

Stakeholders and Interests:

- Hospital: Interested in generating reports on blood inventory, usage, and donation statistics.
- Admin: Interested in generating system-wide reports and performance metrics.

- 1- The user selects the "Generate Reports" option in the system.
- 2- The system presents a report generation interface to the user.
- 3- The user selects the type of report they want to generate, such as monthly or weekly.
- 4- The user specifies any additional parameters or filters for the report.
- 5- The user submits the report generation request.
- 6- The system processes the request and retrieves the relevant data from the database.
- 7- The system generates the report based on the selected parameters.
- 8- The system presents the generated report to the user for viewing or downloading.



Use Case Description

UC4: Records

Scope: Blood Bank System

Level: User interaction

Primary Actor: Hospital, Admin

Precondition: User wants to access and manage records in the Blood Bank System.

Stakeholders and Interests:

- Hospital: Interested in maintaining accurate records of blood units, donors, and transfusions.
 - Admin: Interested in managing and organizing records within the system.
-
- 1- The user selects the "Records" option in the system.
 - 2- The system presents a records management interface to the user.
 - 3- The user selects the type of record they want to access or manage, such as blood units, donor information, or transfusion records.
 - 4- The system retrieves the requested records from the database.
 - 5- The user can view, update, or delete records as needed.
 - 6- If the user wants to add a new record, they can select the appropriate option and provide the necessary information.
 - 7- The system validates and stores the new record in the database.
 - 8- The system confirms the successful record management operation to the user.



Use Case Description

UC5: Track Blood Transfer

Scope: Blood Bank System

Level: User interaction

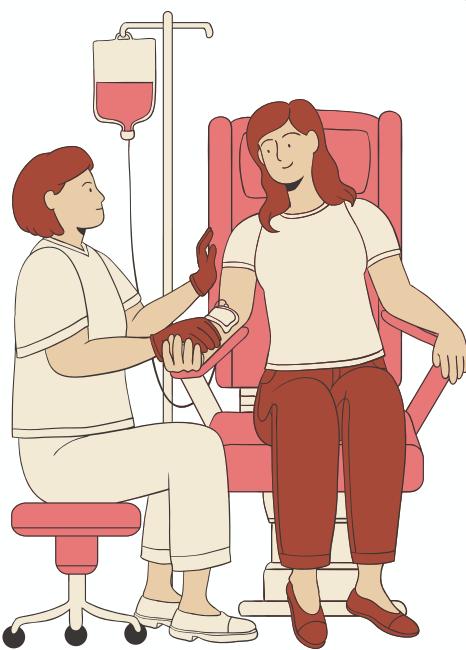
Primary Actor: Admin, Hospital, Donor

Precondition: User wants to track the transfer of blood units in the Blood Bank System.

Stakeholders and Interests:

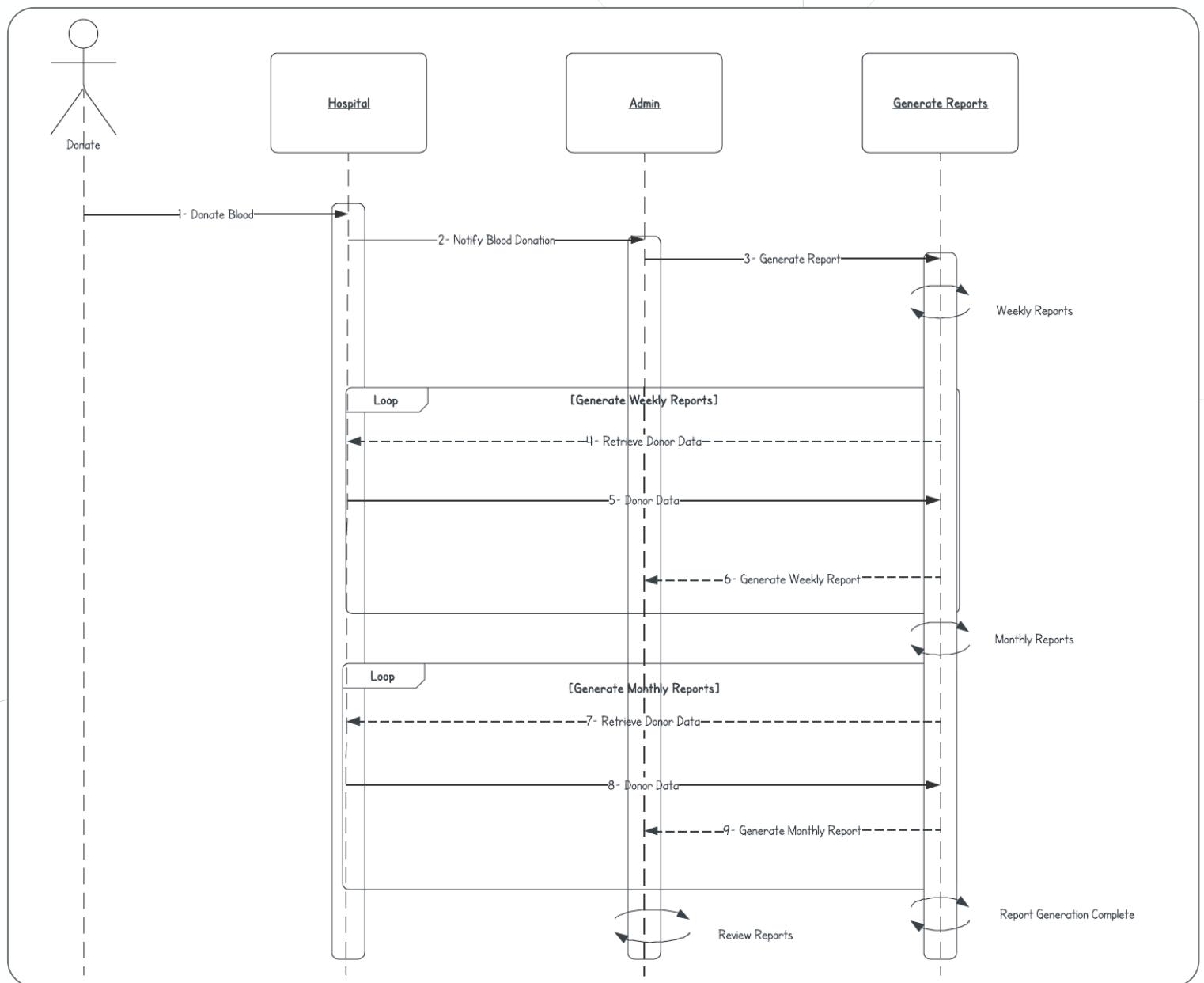
- Admin: Interested in organizing and tracking blood transfer within the system.
- Hospital: Interested in tracking the movement of blood units from the blood bank to the transfusion site.
- Donor: Interested in tracking the status and location of their donated blood units.

- 1- The user selects the "Track Blood Transfer" option in the system.
- 2- The system presents a tracking interface to the user.
- 3- The user enters the unique identifier or relevant details of the blood unit they want to track.
- 4- The user submits the tracking request.
- 5- The system retrieves the current status and location of the blood unit.
- 6- The system displays the tracking information to the user, including the time of transfer, transportation details, and destination.



Generate Reports

Sequence Diagram



Generate Reports

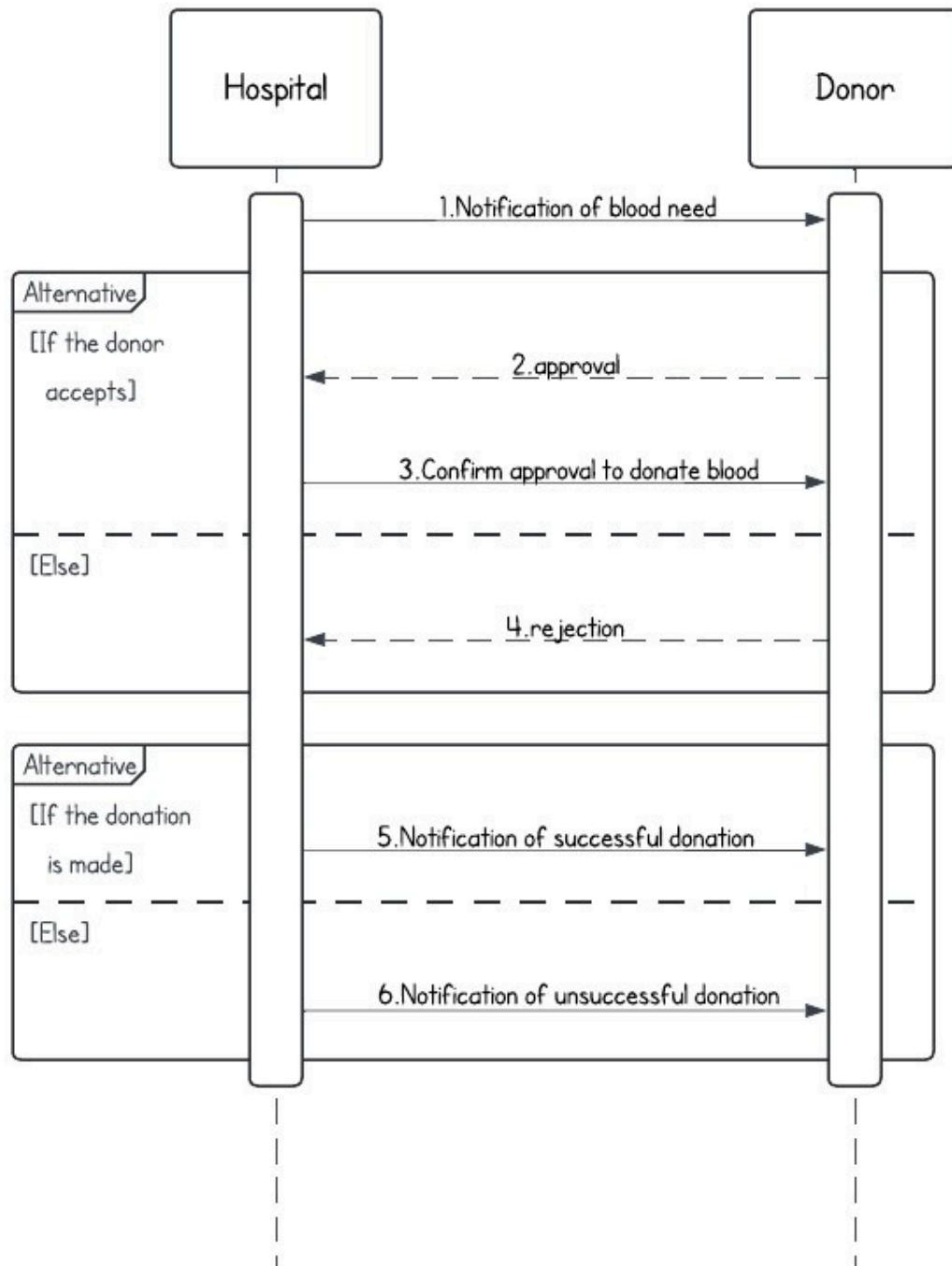
Sequence Diagram

Description:

1. The Donor initiates the interaction by donating blood to the Hospital.
2. The Hospital notifies the Admin about the blood donation.
3. The admin activates the "Generate Reports" component.
 - The "Generate Reports" component is activated to start the report generation process.
 - The "Generate Reports" component generates a weekly report.
4. It sends a message to the Hospital to retrieve donor data.
5. The Hospital responds with the donor data.
 - The "Generate Reports" component sends a message to the Admin to generate the weekly report.
6. This loop continues until the weekly report generation is complete.
 - The "Generate Reports" component generates a monthly report.
7. It sends a message to the Hospital to retrieve donor data.
8. The Hospital responds with the donor data.
 - The "Generate Reports" component sends a message to the Admin to generate the monthly report.
9. This loop continues until the monthly report generation is complete.
 - Once the report generation is complete, the "Generate Reports" component deactivates.
 - The Admin reviews the generated reports.

Receive Notifications

Sequence Diagram



Receive Notifications

Sequence Diagram

Description:

1. Reporting the need for blood:

The sequence begins with a notification from the hospital indicating the need for a blood donation. This notice will likely be sent to potential people Registered or available donors.

Alternate flow (if donation accepted)

2. Approval:

The donor responds to the notification, expressing his willingness to donate blood.

3. Confirmation of consent to donate blood:

Once the donor's desire is confirmed, the hospital or blood donation center verifies and approves the donation process.

Else (rejection):

If the donor refuses or does not respond, the process moves to rejection.

4. Rejection:

In the event of refusal (not accepting the donor's wish), the process ends without the donation being initiated.

Alternate flow (if donated)

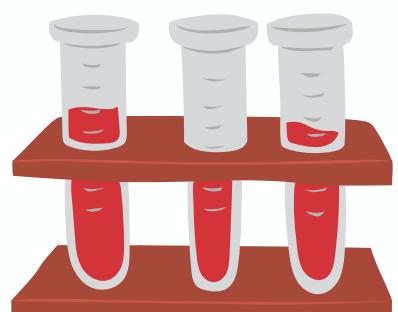
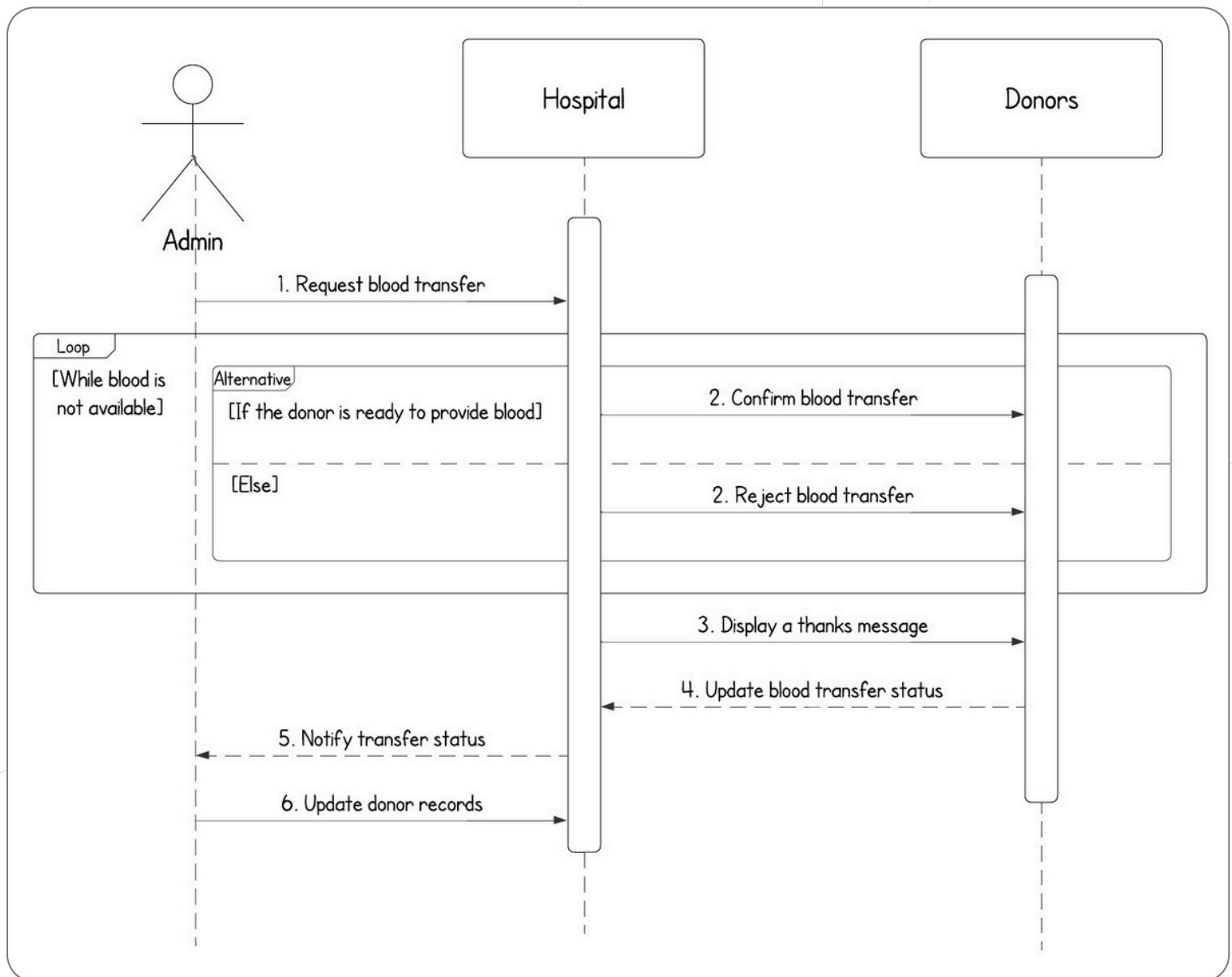
5. Notification of successful donation:

After approval and successful donation, the hospital will notify the donor of the successful completion of the donation process.

Else (unsuccessful)

6. Notification of unsuccessful donation: If the donation cannot go ahead or is unsuccessful for any reason (e.g., medical reasons, ineligibility of the donor), the hospital will notify the donor of the unsuccessful result.

Track Blood Transfer Sequence Diagram

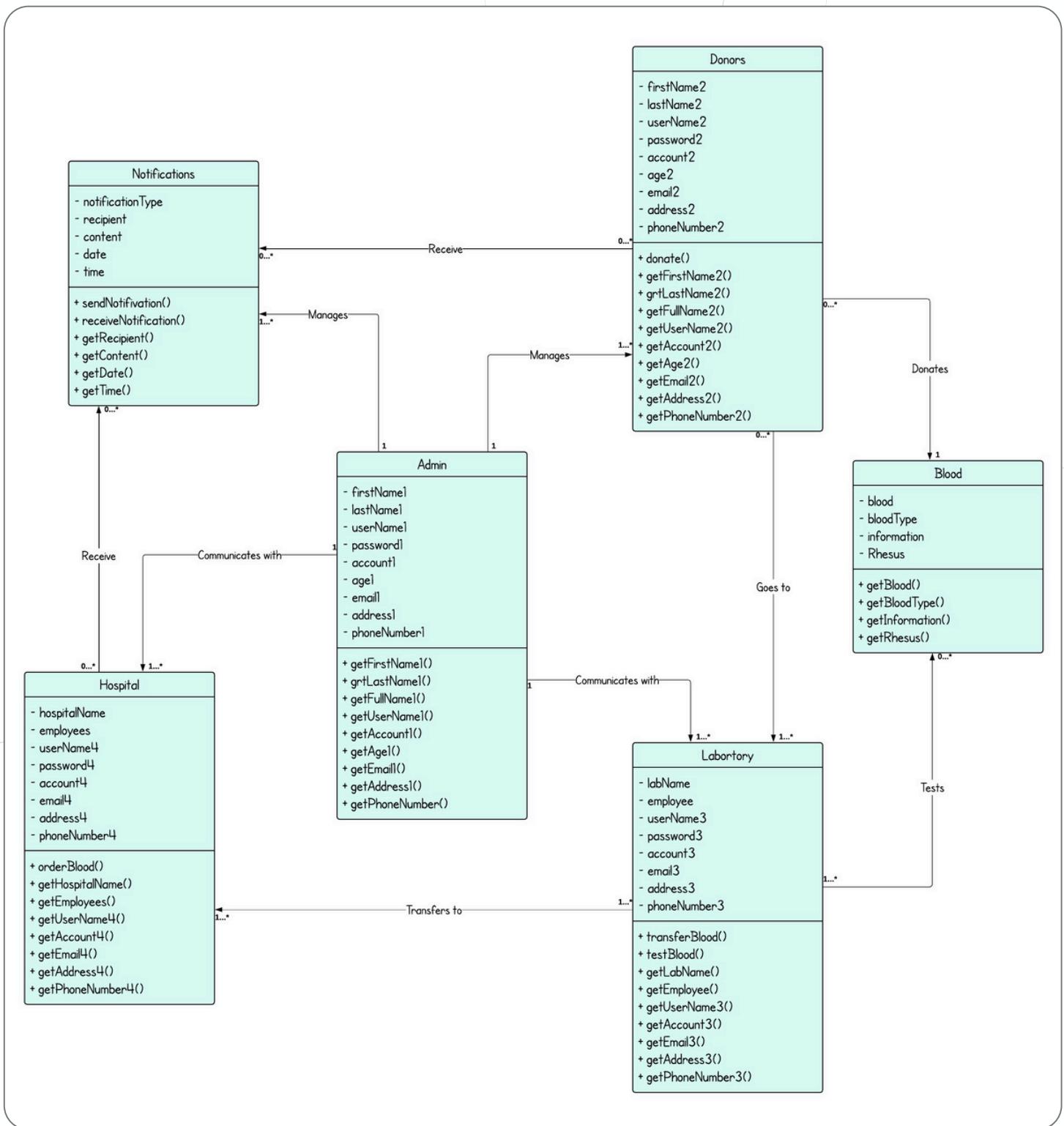


Track Blood Transfer Sequence Diagram

Description:

1. Request blood transfer: the admin initiates the transfer process by requesting a transfer from the hospital.
2. There is an alternative inside a loop that continues while blood is not available.
 - Confirm blood transfer: is executed if the donor is ready to provide blood to the hospital.
 - Reject blood transfer: is executed if the donor is not ready to provide blood to the hospital.
3. Display a thanks message: the hospital system will generate and display a thank you for contributing message for the donor.
4. Update blood transfer status: the donor will update the status of the blood transfer to the hospital.
5. Notify transfer status: the hospital will notify the admin about the updated transfer status.
6. Update donor records: at the end, the hospital will update the information about blood donors records for the admin and to keep them accurate and up to date.

Class diagram



Class diagram

Class Description:

1. Donors:

- Attributes: firstName2, lastName2, userName2, password2, account2, age2, email2, address2, phoneNumber2

- Methods:

- donate(): Initiates the blood donation process.
- getFirstName2(): Retrieves the donor's first name.
- getLastname2(): Retrieves the donor's last name.
- getFullName2(): Retrieves the full name of the donor.
- getUserName2(): Retrieves the username of the donor.
- getAccount2(): Retrieves the donor's account information.
- getAge2(): Retrieves the donor's age.
- getEmail2(): Retrieves the donor's email address.
- getAddress2(): Retrieves the donor's address.
- getPhoneNumber2(): Retrieves the donor's phone number.

2. Admin:

- Attributes: firstName1, lastName1, userName1, password1, account1, age1, email1, address1, phoneNumber

- Methods:

- getFirstName1(): Retrieves the admin's first name.
- getLastname1(): Retrieves the admin's last name.
- getFullName1(): Retrieves the full name of the admin.
- getUserName1(): Retrieves the username of the admin.
- getAccount1(): Retrieves the admin's account information.
- getAge1(): Retrieves the admin's age.
- getEmail1(): Retrieves the admin's email address.
- getAddress1(): Retrieves the admin's address.
- getPhoneNumber(): Retrieves the admin's phone number.

3. Blood:

- Attributes: blood, bloodType, information, Rhesus

- Methods:

- getBlood(): Retrieves the blood details.
- getBloodType(): Retrieves the blood type.
- getInformation(): Retrieves additional information about the blood.
- getRhesus(): Retrieves the Rhesus factor of the blood.

Class diagram

4. Laboratory:

- Attributes: labName, employee, userName3, password3, account3, email3, address3, phoneNumber3
- Methods:
 - transferBlood(): Facilitates the transfer of blood.
 - testBlood(): Conducts tests on blood samples.
 - getLabName(): Retrieves the laboratory's name.
 - getEmployee(): Retrieves information about laboratory employees.
 - getUserId3(): Retrieves the laboratory's username.
 - getAccount3(): Retrieves the laboratory's account information.
 - getEmail3(): Retrieves the laboratory's email address.
 - getAddress3(): Retrieves the laboratory's address.
 - getPhoneNumber3(): Retrieves the laboratory's phone number.

5. Hospital:

- Attributes: hospitalName, employees, userName4, password4, account4, email4, address4, phoneNumber4
- Methods:
 - orderBlood(): Places an order for blood.
 - getHospitalName(): Retrieves the hospital's name.
 - getEmployees(): Retrieves information about hospital employees.
 - getUserId4(): Retrieves the hospital's username.
 - getAccount4(): Retrieves the hospital's account information.
 - getEmail4(): Retrieves the hospital's email address.
 - getAddress4(): Retrieves the hospital's address.
 - getPhoneNumber4(): Retrieves the hospital's phone number.

6. Notifications:

- Attributes: notificationType, recipient, content, date, time
- Methods:
 - sendNotification(): Sends a notification.
 - receiveNotification(): Receives a notification.
 - getRecipient(): Retrieves the recipient of the notification.
 - getContent(): Retrieves the content of the notification.
 - getDate(): Retrieves the date of the notification.
 - getTime(): Retrieves the time of the notification.

Class diagram

Relationships:

- Zero or more Donors donate exactly one blood.
- Zero or more donors go to one or more laboratories.
- Zero or more donors receive zero or more notifications.
- One or more laboratories test zero or more blood.
- One or more laboratories transfer to one or more hospitals.
- Zero or more hospitals receive zero or more notifications.
- Exactly one admin manages one or more notifications.
- Exactly one admin manages one or more donors.
- Exactly one admin communicates with one or more laboratories.
- Exactly one admin communicates with one or more hospitals.

Analysis Classes for the Problem Statement:

1. Donors: Entity class representing individuals donating blood.

Purpose: to store donor information and facilitate donations.

2. Admin: Control class managing notifications, donor management, and communication with laboratories and hospitals. Purpose: administrative tasks within the system.

3. Blood: Entity class representing blood units, including type and information.

Purpose: manage blood data for donations and testing.

4. Laboratory: Entity class representing laboratories testing blood and transferring it to hospitals.

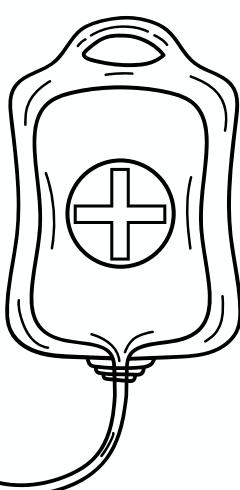
Purpose: facilitate testing and distribution.

5. Hospital: Entity class representing hospitals receiving blood from laboratories.

Purpose: handle blood reception and related tasks.

6. Notifications: Entity class managing communication within the system.

Purpose: facilitate notification and messaging between system components.

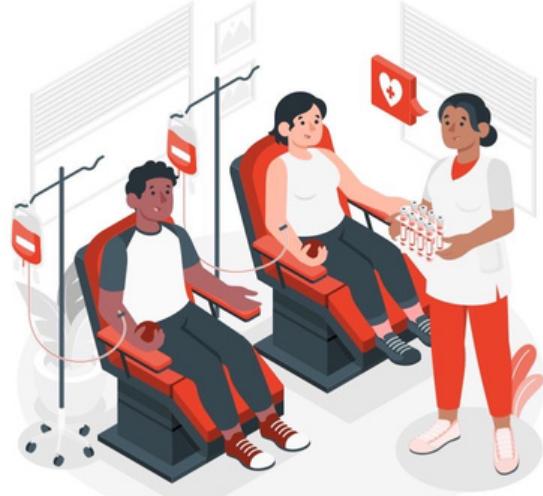


Conclusion

In conclusion, Ankood emerges as a critical solution to address the urgent need for efficient blood donations. Recognizing the utmost importance of timely blood transfusions for patients, the app aims to simplify and enhance every aspect of blood donation, from donor engagement to distribution to medical facilities. By leveraging technology and community engagement, Ankood aspires to bridge the gap between blood supply and demand, ultimately saving lives.

With its comprehensive approach that includes user-friendly interfaces, intelligent scheduling systems, blood tracking technologies, and data-driven insights, Ankood represents an important step towards a more efficient and effective blood donation system.

Through collaborative efforts and shared commitment to this noble cause, Ankood seeks to ensure that no patient is at risk of delaying treatment due to blood shortages, promoting a healthier and safer future for all.



Suggestions

- Communicate with several hospitals, laboratories, blood banks and other medical facilities to make the process accessible to as many people as possible.
- Increase the security and data safety, apply encryptions and other security measures.
- Add extremely strong verification and authorization to ensure that only authorized people are able to access the important information.
- Gather feedback and analyze data to continuously improve the application.
- Conduct marketing campaigns to raise awareness and attract more donors.
- Include a rewards and incentive program in the app to encourage regular blood donation, such as virtual certificates, points, or other recognition for those who donate more than once
- Include a section for volunteer opportunities and awareness campaigns related to blood donation to encourage active participation beyond donating blood.
- Enable social media integration for users to share their donation experiences and achievements, raising awareness and inspiring others to join in.

Task allocation table

The Task	The Members
Introduction	Everyone
Interviews description	Everyone
The purpose	Feryal
Preliminary report	Ghaidaa, Sara, Feryal
Feasibility study	Nada, Ghaidaa, Sara
project plan	Sara, Ghaidaa, Feryal
Stockholder definition	Everyone
The scope of the work	Feryal

Task allocation table

The Task	The Members
Business Event List	Feryal
Context diagram	Everyone
Functional requirement	Sara
Non-Functional requirement	Sars
Use case	Everyone, but mostly Nada and Ghaidaa
Sequence diagram	Everyone
Class diagram	Everyone
Conclusion	Nada
Suggestions	Everyone

The background features a minimalist design with light gray, thin-lined geometric shapes. It includes two large overlapping circles in the upper right quadrant and two large overlapping arcs in the lower left quadrant, all rendered in a very pale gray.

Thank You