



# **Final Year Project Report**

**BLOOD UNITY**

**Android based**



**Department of Computer Science &**

**Information Technology**

**Project ID: COMP4111**

**Project Supervisor:**

Muhammad Shoaib

**Submitted By:**

Aisha Imtiaz Ali                      BSF1909006

Hajra Khan Lodhi                      BSF1908935

Zarnub Khan Lodhi                      BSF1909056

**Punjab College**

**186-Abubakar Block, New Garden Town, Lahore**

## **BLOOD UNITY**

### **BS INFORMATION TECHNOLOGY 2019-23**

A project submitted in partial fulfillment of the  
requirements for the award of the degree of  
BS in information Technology

**PUNJAB GROUP OF COLLEGES**  
**UNIVERSITY OF EDUCATION**  
**LAHORE**

August 2023

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“I hereby declare that I have read this project documentation and in my opinion this project is sufficient in terms of scope and quality for the award of the degree of BS in Information Technology.”

---

Project Primary Supervisor  
Name: Mr. Muhammad Shoaib  
Designation: Lecturer  
Punjab Group of Colleges

---

Project Examiner  
Name:  
Designation:  
University of Education

---

Head Of Department  
Name: Mr. Mahroos Shahid  
Designation: Lecturer  
Punjab Group of Colleges

---

Principal  
Name: Farhan  
Designation: Principal  
Punjab Group of  
Colleges

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Signature: \_\_\_\_\_

Name: AISHA IMTIAZ ALI

Date: JULY20,2023

Signature: \_\_\_\_\_

Name: ZARNUB KHAN LODHI

Date:

Signature: \_\_\_\_\_

Name: HAJRA KHAN LODHI

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Name: AISHA IMTIAZ ALI

Date:

Signature: \_\_\_\_\_

Name: ZARNUB KHAN LODHI

Date:

Signature: \_\_\_\_\_

Name: HAJRA KHAN LODHI

Date:

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Signature:

Name: AISHA IMTIAZ ALI

Date:

Signature:

Name: ZARNUB KHAN LODHI

Date:

Signature:

Name: HAJRA KHAN LODHI

Date:

---

Project Primary Supervisor

Name: Muhammad Shoaib

Designation: Lecturer

Punjab Group Of Colleges

---

Project Examiner:

Name:

Designation:

University of Education.

**OFFICE OF CONTROLLER OF EXAMINATION  
NOTIFICATION**

No: \_\_\_\_\_

Date: \_\_\_\_\_

It is notified for the nomination of all the concerned that **Hajra Khan Lodhi, Zarnub Khan Lodhi, .Aisha Imtiaz Ali,** BS student of Punjab Group of Colleges of University of Education has completed all the requirements for the award of BS Degree in the discipline of Information Technology as per detail given hereunder:

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		Credit Hours: _____			Cumulative Grade Point Average (CGPA)
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LEF19EBSIT083	HAJRA KHAN LODHI	<b>132</b>	<b>6</b>	<b>138</b>	
LEF19EBSIT084	AISHA IMTIAZ ALI	<b>132</b>	<b>6</b>	<b>138</b>	
LEF19EBSIT085	ZARNUB KHAN LODHI	<b>132</b>	<b>6</b>	<b>138</b>	

Project Title: Blood UnityName of Supervisor: Muhammad Shoaib

**Signed by**  
**Controller of Examination**



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1- Mr. Shehroz Khan Lodhi

2- Mr. Soban Khan Lodhi

Date:

## **ABSTRACT**

The traditional blood donation system relies heavily on physical location making it difficult to reach a wider pool of potential donor. This limited reach can lead to inadequate blood supplies during emergency or for rare blood types

The Blood Unity is a mobile application designed to facilitate the process of blood donation and connect blood donor and blood seeker in an efficient and user-friendly manner. The app aims to address the challenges of blood shortage and provide a convenient platform for user to find and donate blood, ultimately saving lives. The app provides a user-friendly interface allowing user to register as a donor and register as a seeker and provide relevant information for example blood type, location, contact No etc.

The development of the Blood Unity app follows an agile methodology allowing for iterative development and continuous improvement based on research and group and supervisor discussion. The Blood Unity Application aims to bridge the gap between blood donor and seeker, promoting a culture of volunteering blood donation and making the process more accessible and efficient. By leveraging the power of mobile technology and community participation.

## Table of Contents

<b>Chapter 1 Gathering and Analyzing Information.....</b>	<b>1</b>
1.1 Introduction.....	2
1.2 Problem Statement.....	2
1.3 Goals and Objectives .....	2
1.3.1 Goals.....	2
1.3.2 Objectives .....	3
1.4 Research Questions.....	3
1.5 Methodology .....	3
1.5.1 Available Methodologies.....	3
1.5.2 Chosen Methodology.....	4
1.5.3 Reasons for Chosen Methodology .....	4
1.6 Definitions, Acronyms and Abbreviations .....	4
<b>CHAPTER 2 Software Requirement Specification.....</b>	<b>5</b>
2.1 Stakeholders Characteristics .....	6
2.2 Domain Requirements .....	6
2.3 Functional Requirements .....	6
2.4 Non-Functional Requirements .....	7
<b>CHAPTER 3 Analysis .....</b>	<b>9</b>
3.1 Use Cases .....	10
<b>CHAPTER 4 Design.....</b>	<b>18</b>
4.1 Architecture Diagram .....	19
4.2 ERD Diagram.....	20
4.3 Data Flow Diagram .....	21
4.4 Sequence Diagram.....	25
<b>CHAPTER 5 Graphical User Interfaces .....</b>	<b>29</b>
<b>Chapter 6 Testing .....</b>	<b>49</b>
6.1 Black Box TESTING.....	54
6.2 White Box TESTING .....	58
<b>Chapter 7 Conclusion and Future work.....</b>	<b>60</b>
7.1 Conclusion .....	62
7.2 Future work.....	62
7.3 References.....	61

## List of figures

Figure 3. 1: Use Case diagram of Donor .....	16
Figure 3. 2: Use Case Diagram of Seeker .....	17
Figure 4. 1: Architecture Diagram .....	19
Figure 4. 2: ERD Diagram .....	20
Figure 4. 3: DFD level 0 (Blood Unity) .....	21
Figure 4. 4: DFD Level 0 (Donor) .....	22
Figure 4. 5: DFD Level 0 (Seeker) .....	23
Figure 4. 6: DFD level 1 .....	24
Figure 4. 7: Sequence Diagram of User Login .....	25
Figure 4. 8: Sequence Diagram of User create Profile .....	26
Figure 4. 9: Sequence Diagram of Seeker find Donor .....	27
Figure 4. 10: Class Diagram .....	28
Figure 5. 1: Welcome Screen .....	30
Figure 5. 2: Welcome Screen .....	31
Figure 5. 3: Welcome Screen .....	32
Figure 5. 4: Welcome Screen .....	33
Figure 5. 5: Register .....	34
Figure 5. 6: Login .....	35
Figure 5. 7: Home Page .....	36
Figure 5. 8: Create profile .....	37
Figure 5. 9: Profile created.....	38
Figure 5. 10: Profile View .....	39
Figure 5. 11: Receive Donation Notifications.....	40
Figure 5. 12: Seekers list.....	41
Figure 5. 13: Communication with seeker .....	42
Figure 5. 14: Create Profile .....	43
Figure 5. 15: Profile created.....	44
Figure 5. 16: Donor Search.....	45
Figure 5. 17: Send Donation Request .....	46
Figure 5. 18: Receive notifications about request .....	47
Figure 5. 19: Chat with Donor .....	48
Figure 6. 1: Testing .....	50
Figure 6. 2: Testing Login.....	55
Figure 6. 3: Testing Login.....	56
Figure 6. 4: Testing Login.....	57
Figure 6. 5: Testing Login.....	58

## List of tables

Table 2. 1: Functional Requirements .....	6
Table 2. 2: Non-Functional Requirements .....	7
Table 6. 1: Testcase Registration .....	50
Table 6. 2: Testcase valid E-mail.....	51
Table 6. 3: Testcase Password .....	51
Table 6. 4: Testcase Name edited .....	52
Table 6. 5: Testcase Edit E-mail.....	52
Table 6. 6: Testcase Edit Phone No .....	53
Table 6. 7: Testcase Enter Blood Type.....	53
Table 6. 8: Testcase Location Entered .....	54

## **Chapter No 1**

### **Gathering and Analyzing Information**

## **1.1 Introduction**

Blood donation is a crucial aspect of the healthcare system, as it helps save lives. [1] However, there is still a significant shortage of blood in many areas, which puts lives at risk. To address this issue, a mobile application can be developed that gathers volunteers on one platform and send them donation request when seeker wants blood. The proposed mobile application will allow seekers to conveniently send blood request to donors or participate in blood donation. People who need blood can browse list of the Donors through the proposed mobile application [2]. User can also provide feedback of the app.

## **1.2 Problem Statement**

The traditional donation process is often including manual paperwork, phone calls, social media statuses, resulting a time-consuming experience for seeker who intentionally need blood on time.

The traditional blood donation system relies heavily on physical location making it difficult to reach a wider pool of potential donor. This limited reach can lead to inadequate blood supplies during emergency or for rare blood types.

It is not that people do not want to donate blood, but because they have no idea where they can donate and what are the benefits of donation [3]. In traditional Apps there is no communication between seeker and donor the donor contacts to hospitals and blood bank and donate a blood. In traditional method there is big hurdle in matching Donor blood group with seeker blood group.

## **1.3 Goals and Objectives**

The project goals and objectives of a blood donation system mobile-based can be:

### **1.3.1 Goals**

- Develop a user-friendly mobile application that enables users to register their blood type, location, and user type i.e., seeker or donor.
- Provide volunteers with a platform for donating blood
- Facilitate the organization of blood donation campaigns and encourage users to participate in them.
- Ease the distribution of blood [4]
- Improve access to blood for patients in need and reduce the risk of blood shortages.
- Increase the number of people who donate blood regularly.
- Promote a culture of blood donation and save lives through this life-saving act.

### 1.3.2 Objectives

- The app should serve as a platform to connect donor with seeker.
- The app can help ensure a steady supply of blood by maintaining a database of donors and efficiently matching donors with recipients based on their blood type and location.
- The app gives notification to seeker if Donor reject or accept the seeker donation request.
- Ensuring the privacy and security of donor information is a crucial objective to build trust and confidence among donors.

### 1.4 Research Questions

- How can a blood donation app effectively facilitate the matching of donors with recipient based on blood type, location and urgency?
- What are the best strategies for promoting a blood donation app and increasing its user base.
- What are the privacy and security concerns associated with collecting and sorting donor information in a blood donation app, and how these concerns be mitigated?
- What are critical features and functionalities that should be included in a blood donation app to enhance user experience?

### 1.5 Methodology

#### 1.5.1 Available Methodologies:

There are following methodologies available for software development, each with its own approach, principle and practices [5]. The some most commonly used methodologies are

**a. Waterfall Model:**

The Waterfall methodology is a traditional software development approach that follows a linear and sequential process. It is one of the earliest and most structured software development methodologies. In the Waterfall model, each phase of the software development lifecycle is completed before moving on to the next phase, and there is no overlapping or iterative development.

**b. Scrum Model:**

Scrum is an agile software development methodology that emphasizes flexibility, collaboration, and iterative progress. It is designed to enable teams to deliver high-quality software products in a more adaptive and customer-centric manner. Scrum is widely used in the software industry and beyond for managing complex projects.

**c. Agile Model:**

Agile methodology is an iterative and incremental approach to software development that prioritizes flexibility, collaboration, and customer satisfaction. It values customer feedback and adapts to changing requirements, allowing teams to deliver high-quality software products more efficiently.

**d. Spiral Model:**

The Spiral Model is a software development process model. It is a risk-driven and iterative approach that aims to combine the benefits of both waterfall and iterative development methodologies. The model is designed to handle large and complex projects where uncertainty and changes are expected and need to be managed effectively.



**e. V-Model:**

The V-Model, also known as the Verification and Validation Model, is a software development and testing process model. It is an extension of the traditional waterfall model and emphasizes the importance of early testing and validation activities throughout the development life cycle.

**f. Incremental Model:**

The Incremental Model is a software development process model that divides the development of a system into small increments or portions. Each increment represents a part of the system's functionality and is developed in a series of iterations. Over time, additional increments are added, and the system evolves with each iteration.

### **1.5.2 Chosen Methodology**

We choose Agile Methodology

### **1.5.3 Reasons for Chosen Methodology**

Reason for choosing Agile methodology is that it offers a flexibility and adaptability in changing requirements. It allows incremental and iterative development [6]. It promotes a culture of continuous improvement. It also encourages collaboration, effective communication for project success.

## **1.6 Definitions, Acronyms and Abbreviations**

**DFD:** Data Flow Diagram.

**ERD:** Entity Relationship Diagram.

**NFR:** Non-Functional Requirements

**FR:** Functional Requirements

**UC:** Use cases

## **CHAPTER 2**

### **Software Requirement Specification**

## 2. Stakeholders Characteristics

**Donors:** These are individuals who voluntarily donate blood. Characteristics of donor may include blood type, Location,

**Seeker:** Seeker are the individual who needs blood due to medical condition, surgeries etc. understanding need, expectations and operational requirements of seeker is crucial for the success of blood donation app.

**App Users:** These are the individual who interact with blood donation app as potential Donor and seeker. Their characteristics may include technological proficiency, comfort with mobile apps. User feedback and usability testing can provide insights into enhancing the user experience.

**Project Supervisors and Academic Advisors:** These stakeholders guide and oversee the FYP project. They provide expertise, advice, and evaluation throughout the project duration. Their characteristics include knowledge and experience in relevant fields such as software development, healthcare, or human-computer interaction.

**Developers and Designers:** The development team consists of individuals responsible for designing and implementing the blood donation app. They possess technical skills, programming expertise, and knowledge of mobile app development frameworks, user interface design principles, and data management.

### 2.1 Domain Requirements

**Donor Registration:** The app should allow individuals to register as blood donors by providing their personal information, including name, contact details, location and blood type.

**Seeker Registration:** The app should allow individuals to register as seeker by providing their personal information, including name, contact details, location and blood type.

**User Profiles:** The app should provide each registered donor or seeker with a personalized user profile that includes their blood type, Location, Contact Number.

**Blood Type Matching and Seeker Management:** The app should facilitate the matching of donors with seeker based on blood type compatibility, urgency, and location. It should have features to manage receiver profiles and ensure accurate and timely matching.

### 2.2 Functional Requirements

No	Requirement	Description
FR1	User Registration and Profile Management	Allow users to register as donors and seekers, providing personal Information, contact details and blood types Enable users to create and manage their profiles, including updating personal information, setting preferences.
FR2	Donor Search and Matching	Provide a search function for users to find donors based on blood type, location.
FR3	Communication and Messaging	Implement a messaging system for donors and seekers to communicate and exchange information regarding donation details, clarifications, and updates.

FR4	Notifications	Implement a notification feature where, when a seeker sends a donation request to a donor, the donor receives a notification regarding the request. If the donor decides to accept or decline the donation request, a notification is sent back to the seeker, informing them of the status of their request (whether it has been accepted or declined).
FR5	Feedback	The e-beauty salon should have features for communicating with customers effectively. It should send appointment reminders, notifications of any changes or updates, and promotional messages. It may utilize email, SMS, or in-app notifications for communication purposes.

**Table 2.1 Functional Requirements**

### 2.3 Non-Functional Requirements

No	Requirement	Description
NFR1	Performance	The blood donation process operates 24/7, ensuring a continuous supply of blood at all times. Seekers can find the required blood whenever they need it.
NFR2	Security	The database is designed to be secure, and any attempts by unauthorized individuals to make changes to it will be restricted by our system. Our database is equipped with robust security measures to safeguard the integrity and confidentiality of the information it holds. Access to the database is strictly controlled, and only authorized personnel with the appropriate credentials are granted permission to make changes.
NFR3	Safety	As a critical aspect of our data management strategy, the blood unity app follows a strict policy of conducting daily backups for all data. These backups are performed at regular 24-hour intervals, allowing us to capture the most recent information accurately.
NFR4	Usability	Ensuring a seamless and intuitive user experience is a top priority for us. We have designed the blood unity app with a strong focus on user-friendliness, making it effortless for both donors and seekers to navigate and interact with the platform.

NFR5	Maintenance	Maintenance refers to the characteristics and qualities that ensure the application can be easily maintained and managed throughout its lifecycle. It involves measures to support efficient updates, bug fixes, and enhancements while minimizing downtime and disruption to users.
NFR6	Scalability	The system shall be designed to scale horizontally and vertically to accommodate increasing demand and user growth.
NFR7	Accessibility	The system guides to ensure accessibility for users with disabilities. [7]

**Table 2.2 Non-Functional Requirements**

## **CHAPTER 3**

### **Analysis**

### 3.1 Use Cases

**UC Number:** 1.1

**UC Name:** Sign- up

**Functional Requirement No:** FR1

**Primary Actors/Stakeholders:** Seeker, Donor

**Description:** This use case describes how a sign up to the system. System gives the access to the user/seeker, donor to create their account to use the System.

**Preconditions:**

The system must be in the logout state and has the Sign-up screen displayed.

**Main Success Scenario (MSS):**

1. User opens the app and clicks on the "Sign Up" button.
2. The app displays the Sign-Up page, prompting the user to enter their personal details, including name, email, password..
3. User fills out the required fields and clicks on the "Submit" button.
4. The app validates the user's input and checks if the email and phone number are not already associated with an existing account.
5. If the input is valid and the email and phone number are unique, the app creates a new user account and displays a success message.
6. The user can now log in with their newly created account details.

**Alternative Scenario:**

1. If any field mentioned is missing/blank that field will be highlighted and show message please fill/select this field
2. If email already exist than Message will be displayed This Account Already Exist try another.

**Basic flow:**

1. User clicks on "Sign Up" button.
2. User fills out the required fields.
3. User clicks on "Submit" button.
4. App validates input and creates a new account.

**Post conditions:**

If the use case was successful, System will inform the user that his account is created successfully and go to the home page where he can login and proceed further.

**Extensions:**

1. Error Generate if all necessary information is not filled.
2. If corrected data entered then error generated.
3. If data is not submitted successfully then error is generated.

**UC Number:** 2

**UC Name:** Login

**Functional Requirement No:** FR1

**Primary Actors/Stakeholders:** Seeker, Donor

**Description:** This use case describes how a sign in to the system. System gives the access to them according to their roles.

**Preconditions:** The system is in the login state and has the login screen displayed.

**Main Success Scenario (MSS):**

1. User opens the app and is presented with the login screen.
2. User enters their email and password.
3. System verifies the email and password.
4. System logs the user into their account and redirects them to the home screen.

**Basic flow:**

1. The user opens the GUI.
2. System displays the “Log in” prompt.
3. The user enters his/her Email and password.
4. The system validates the entered name and password and logs the user into the system.

**Alternative Scenario:**

If user has no account.

- a) System gives option of creating account.
  - b) If user enters invalid name and/or password.
  - c) System displays an error message
2. If user is not authorized to login.
    - a) System displays the unknown user message and terminates the use case.
  3. Software should give the option to recover the password.

**Post conditions:**

If the use case was successful, the actor is now logged into the system, if not, the system state is unchanged.

**Extensions:**

If the email or password is incorrect, the system displays an error message to the user and prompts them to enter their login credentials again.



**UC Number:** 3

**UC Name:** Forgotten password

**Actors:** seeker, donor

**Description:**

This case is about to a user of a system or application has forgotten their password and needs to reset it in order to gain access to their account. This scenario is a common occurrence in today's digital world, where people have numerous accounts with different websites and applications.

**Preconditions:**

The pre-condition of the Forgotten Password scenario is that the user must have previously created an account with the system and must have forgotten their password. The system should have a mechanism in place to enable password resets, such as a password reset tool

**Alternative Scenario:**

- 1.The user may try to reset the password themselves using a password reset tool provided by the system.
- 2.The user may try to create a new account with the system if they cannot reset their password.

**Post conditions:**

- 1.The user should be able to reset their password successfully.
- 2.The user regain access to their account
- 3.The system should also store the new password securely and update their records accordingly.

**Exceptions:**

- 1.If the user is unable to verify their identity during the password reset process. In such cases, the system may require additional information or verification steps to confirm the user's identity before allowing them to reset their password.
- 2.If the system or application experiences technical issues or downtime, the user may not be able to reset their password until the issue is resolved.

**UC Number:** 4

**UC Name:** Invalid email

**Actors:** seeker and donor

**Description:**

This use case is about a user of a system attempts to register or login using an email address that does not meet the required format or is not recognized by the system as a valid email address. This often happens when people mistype or misspell their email addresses.

**Preconditions:**

The user must have attempted to register or login using an email ID that does not meet the required format or is not recognized by the system as a valid email address. The system or application should have a mechanism in place to validate email IDs entered by users.

**Alternative Scenario:**

1. The user may be prompted to enter a valid email address and try again.
2. The user may be directed to a help or support page that provides information on how to format a valid email address.
3. The user may be given the option to contact customer support for assistance with their email ID.

**Post conditions:**

1. The user should receive an error message indicating that their email ID is invalid and should be prompted to enter a valid email ID.
2. The system should not allow the user to proceed until a valid email ID is entered.

**Exceptions:**

1. If the system or application incorrectly identifies a valid email ID as invalid, or if the system is unable to validate email IDs due to technical issues or downtime
2. In such cases, the user may be directed to contact customer support for assistance with their email ID.

**UC Number:** 5

**UC Name:** Edit profile

**Actors:** donor and seeker

**Description:** This use case allows a user to edit their profile.

**Preconditions:** Login is required to see profile.

**Main Success Scenario (MSS):**

1. The user selects the "Edit Profile" option from the menu.
2. The app displays the user's current profile information, including name, contact info, and blood type details.
3. The user updates the desired fields, such as email or phone number.
4. The app validates the user's input and updates the profile with the new information.
5. The app displays a success message indicating that the profile has been updated

**Flow:**

The donor / seeker can see their profile in detail and make necessary changes if required in profile as desire.

1. User selects "Profile" from the app menu.
2. App displays the user's current profile information.
3. User selects "Edit Profile".
4. App displays the "Edit Profile" screen.
5. User can change their contact details and blood type.
6. User selects the "Update" button.
7. App saves the new profile information.

**Alternate flow:**

If the user selects "Cancel" instead of "Save Changes", the app will return to the previous screen without saving any changes.

**Post conditions:**

User's profile information is updated with the new changes.

**Exceptions:** None

**UC Number:** 6

**UC Name:** find donor

**Functional Requirement No:** FR1

**Primary Actors/Stakeholders:** Seeker

**Description:** A user wants to search for available blood donors in the blood unity app.

**Preconditions:**

- 1.The user has launched the blood donation app.
- 2.The user is registered and logged in to the app.
- 3.The app has information about available blood donors, including their blood groups and contact information.

**Basic flow:**

- 1.The seeker selects the "Donation Request" screen on the app's.
- 2.The app displays a list of available blood groups for the seeker to select.
- 3.The seeker selects the desired blood group from the list and selects "Search."
4. User can click on their desired donor and modal view will appear with a donation request button and emergency call button
5. Seeker can send donation request to the donor

**Alternative Scenario:**

If there are no donors available for the selected blood group, the app displays a message informing the user that there are no matches found.

**Post conditions:**

- 1.The seeker has successfully searched for and found a donor for their requested blood group.
- 2.The seeker has sent a request for blood donation to the selected donor.

**Extensions:**

Scenario: No matching donors found

- 1.The user enters the required information for the donor search.
- 2.The app searches the donor database for matching donors based on the search criteria.
- 3.If no matching donors are found, the app displays a message informing the user that no donors were found.

**UC Number:** 7

**UC Name:** logout

**Actor:** seeker and donor

**Description:** Actors firstly log-in in this system as per as their roles

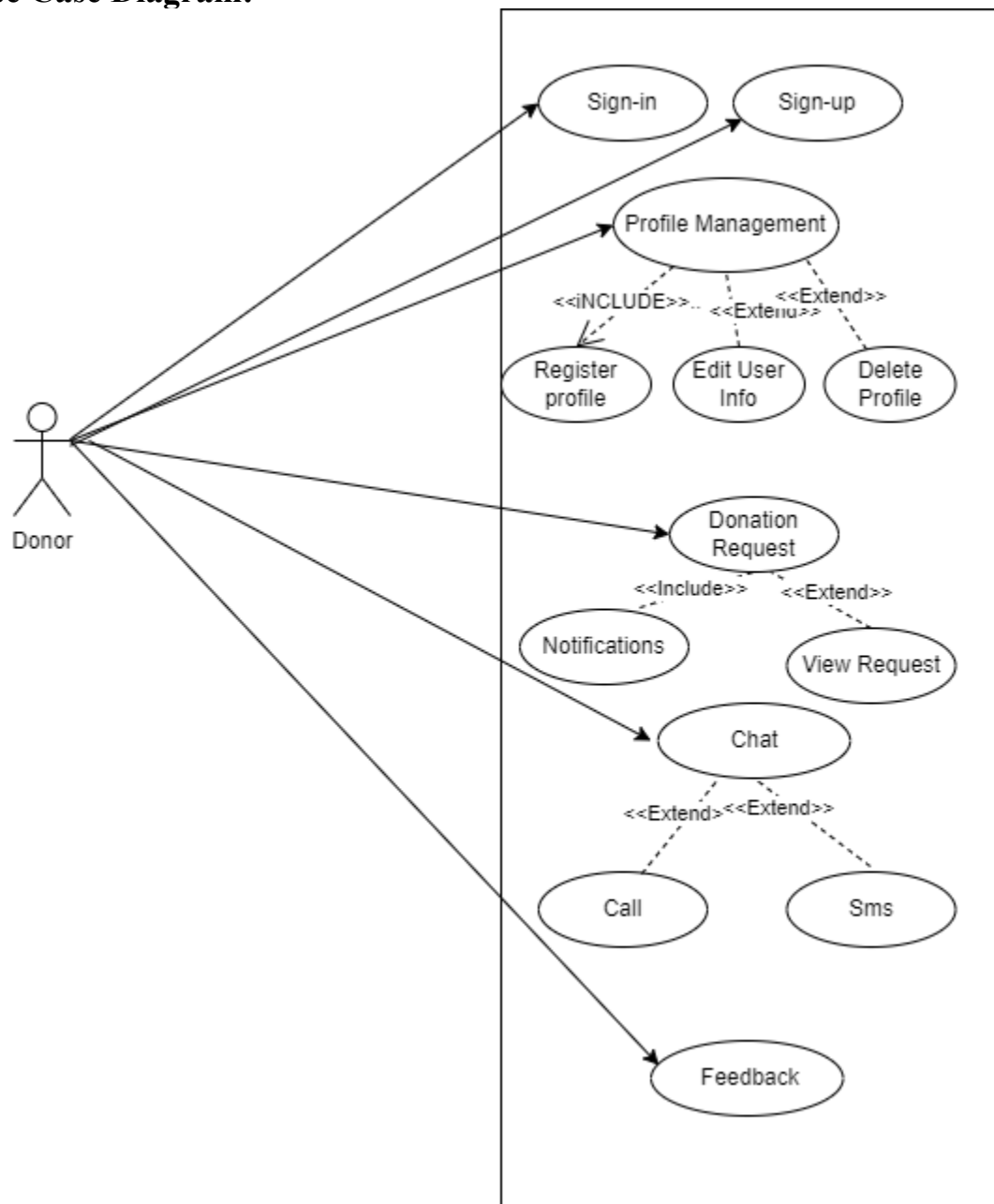
**Preconditions:** Must log in

**Basic flow:** Sign up or log in required for users.

**Alternate flow:** Not Log out

**Post condition:** Redirect to main page of application.

**Extension:** None

**Use Case Diagram:****Figure 3. 1: Use Case diagram of Donor**

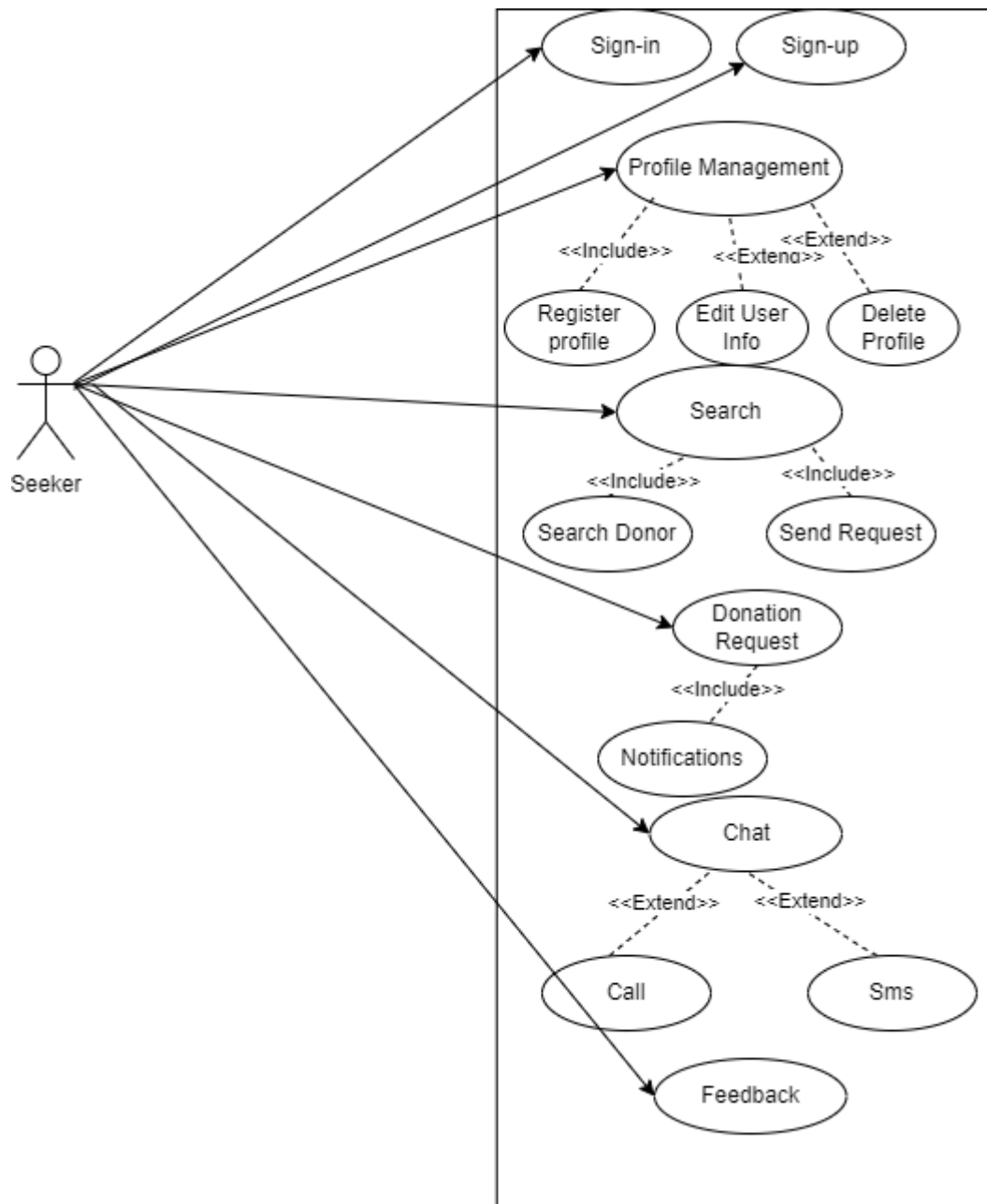
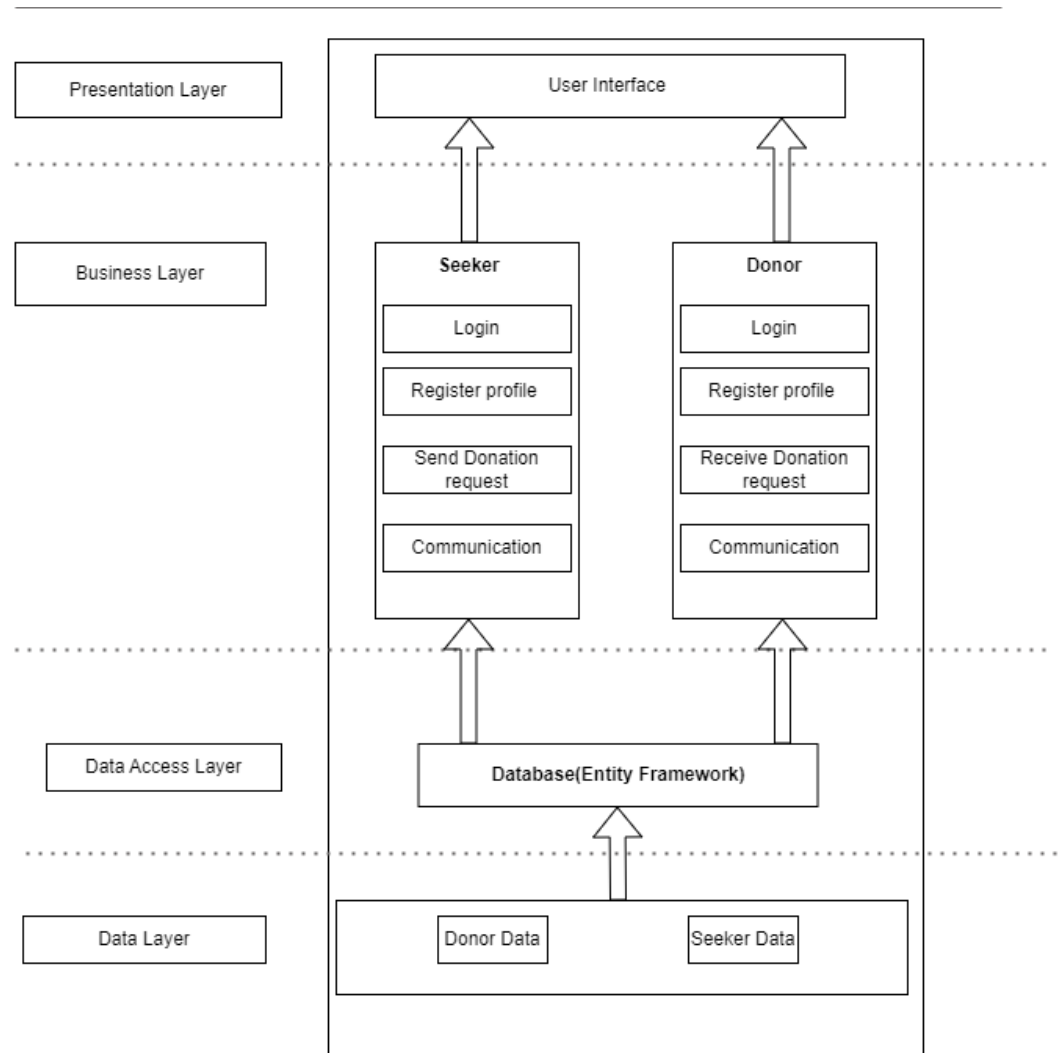


Figure 3. 2: Use Case Diagram of Seeker

## **CHAPTER 4:**

### **Design**

## 4.1 Architecture Diagram

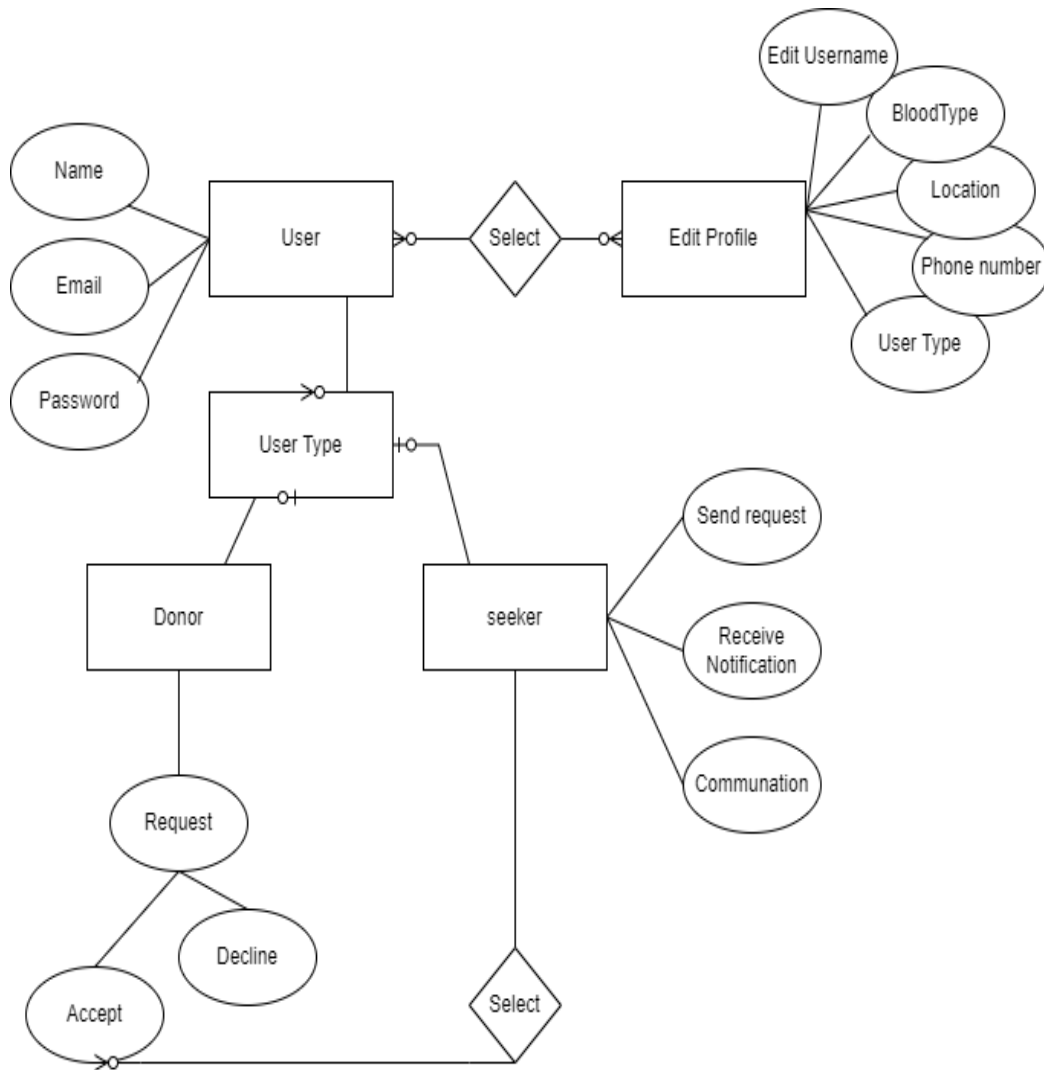


**Figure 4. 1: Architecture Diagram**

- 1.The presentation layer provides a user interface for people to interact with the system.
- 2.The business layer is responsible for managing the system's business logic. It includes the modules and services that support the core functionality of the system.
- 3.The data layer manage the system's data storage and retrieval. It includes the database management system and other data storage and retrieval mechanisms such as file systems or cloud storage.



## 4.2 ERD Diagram

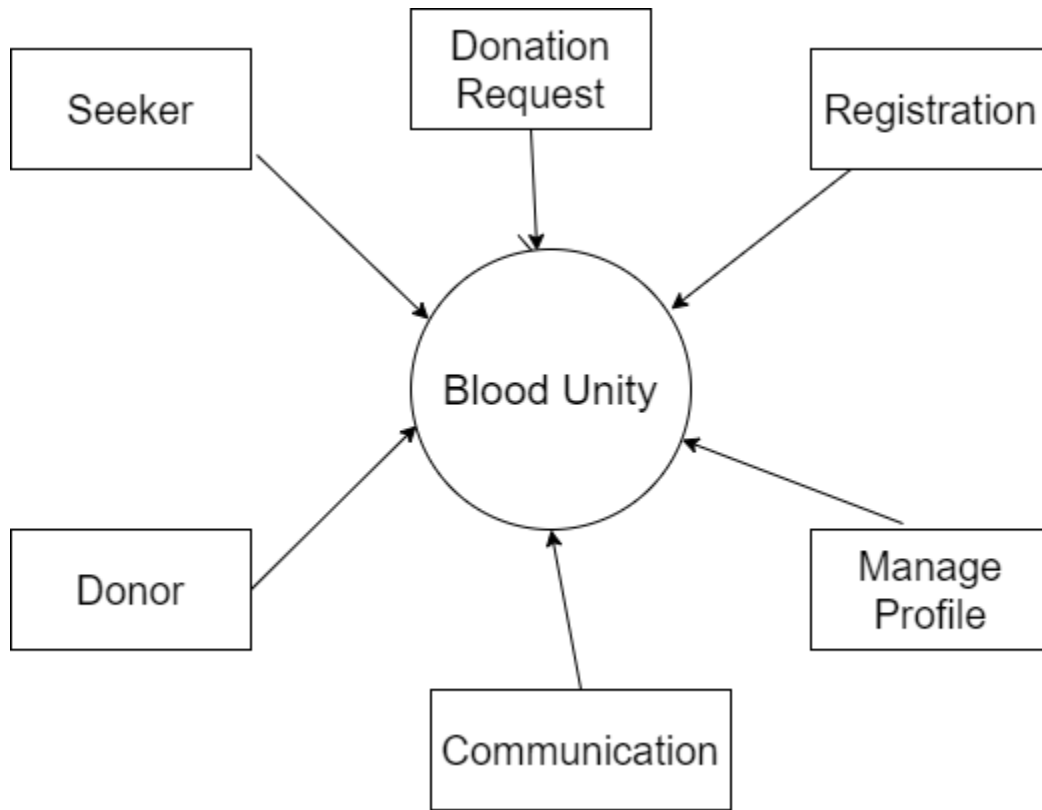


**Figure 4. 2: ERD Diagram**

- 1.ERD includes entities such as Users which are donor and seeker.
- 2.Entities and relationships may be included based on the specific features and functionalities of the Blood Unity app.
- 3.ERD provides a comprehensive overview of the data model and serves as a foundation for the app's database design and functionality.

### 4.3 Data Flow Diagram

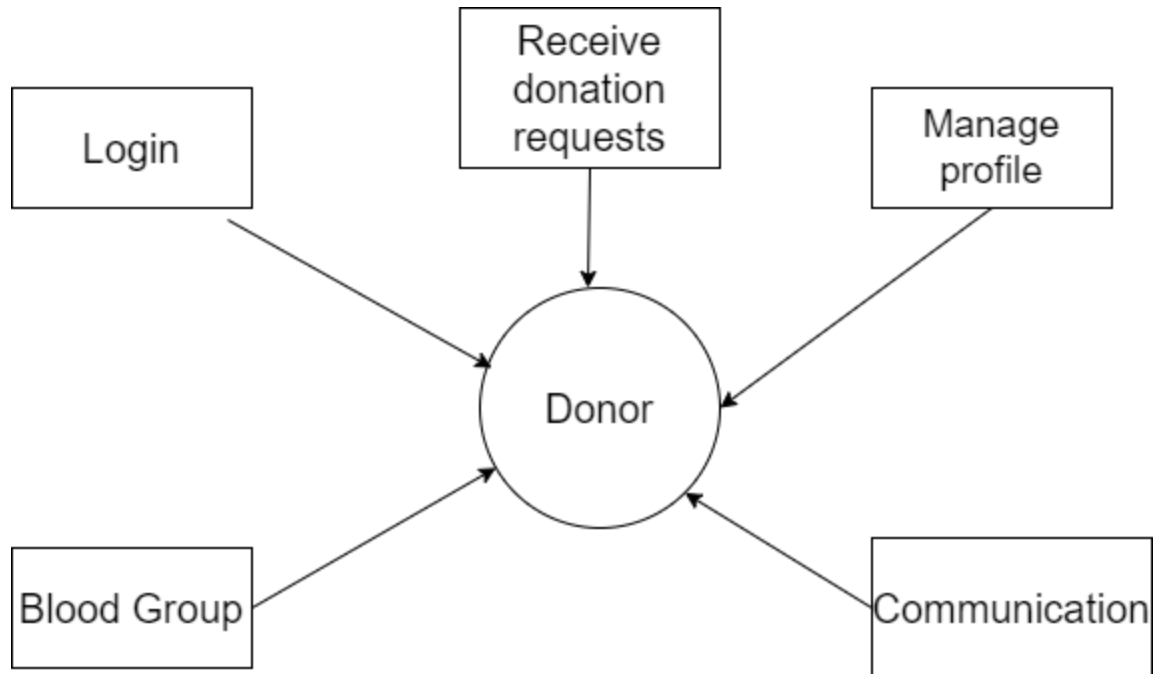
DFD level 0 Diagram of Blood Unity



**Figure 4. 3: DFD level 0 (Blood Unity)**

1. It provides a high-level overview of the flow of data and processes within the entire system.
2. The data flow into the "Blood Unity" from external entities such as donor seeker they are represented as rectangles.

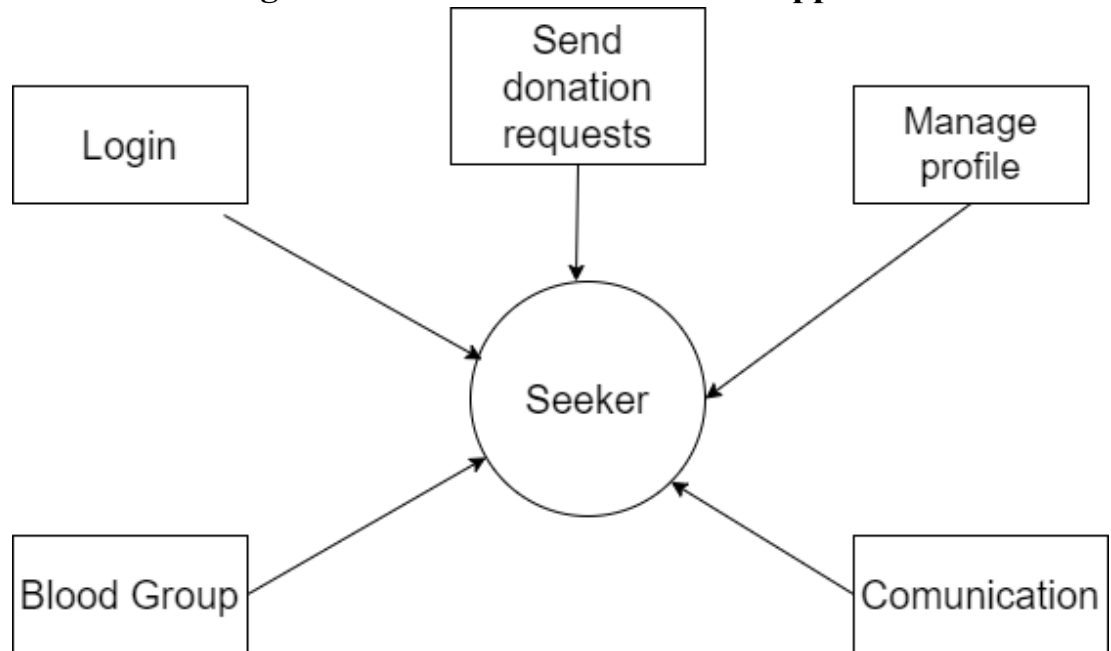
**DFD Level 0 Diagram of Donor interaction with Application**



**Figure 4. 4: DFD Level 0 (Donor)**

1. The data flows into the “Donor Interaction” process from external entities such as Receive donation requests. Communication etc.
2. The donor receives donation requests from the seeker and communicate with seeker.

**DFD level 0 Diagram of Seeker interaction with application**



**Figure 4. 5: DFD Level 0 (Seeker)**

1. The data flows into the “Seeker Interaction “process from external entities such as donor, communication, manage profile etc.
2. The seeker sends donation request to donor and communicate with donor through call or message.

## DFD Level 1

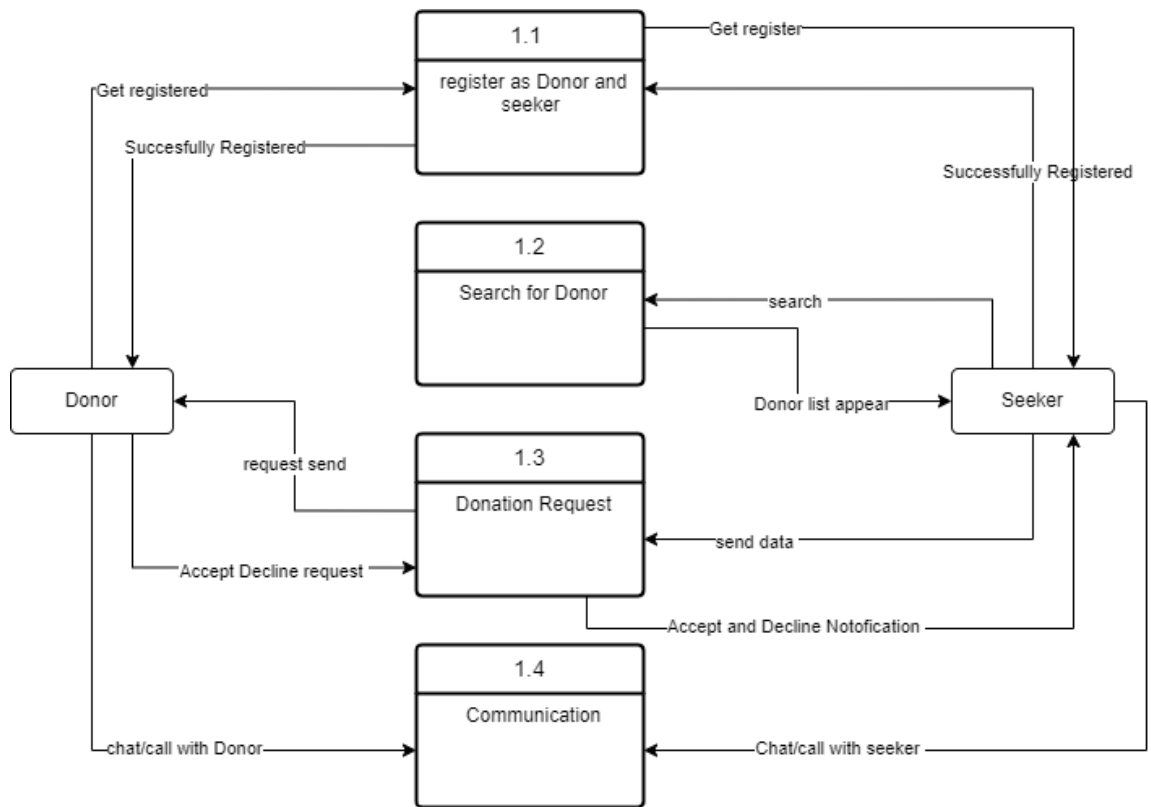
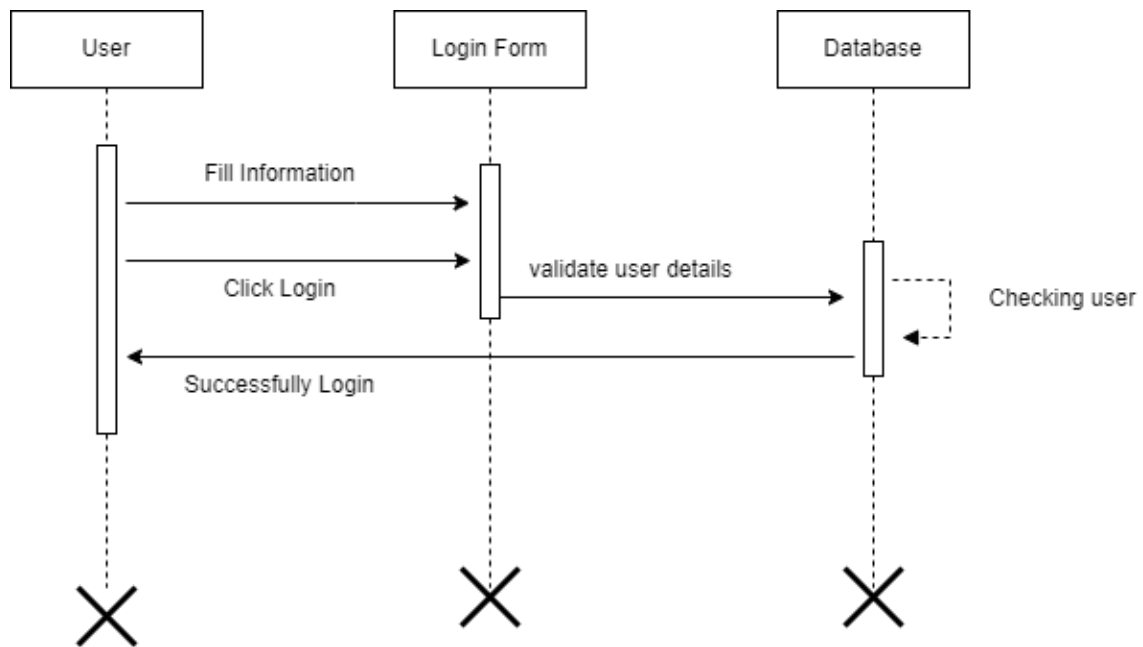


Figure 4.6: DFD level 1

1. It highlights the specific tasks and interaction within each sub process and demonstrate how is manipulated and shared to ensure affective management of donation.
2. The level 1 Data flow Diagram for the blood unity android app seeker and donor functionality provides a closer look at the processes and flow within the interaction process.

#### 4.4 Sequence Diagram of User Login



**Figure 4. 7: Sequence Diagram of User Login**

**Actor:** The actor in this sequence diagram is the "User," representing anyone interacting with the app.

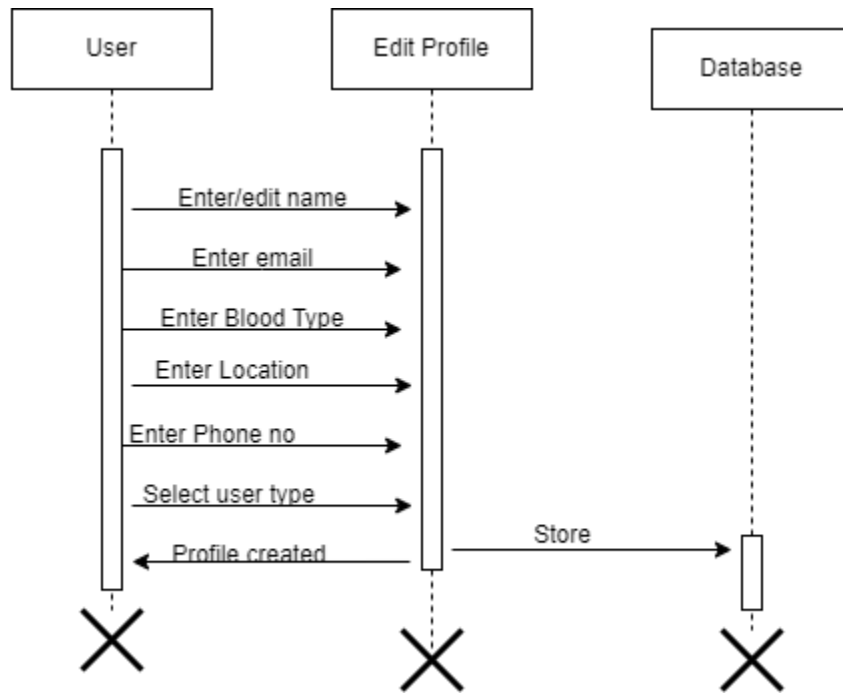
**User Login Scenario:** The user initiates the login process by filling in their correct information (such as username and password) into the login form. The "Login" message is sent from the user to the system, carrying the login credentials as parameters.

**User Validation:** The system validates the user's login credentials by checking the provided information against the database.

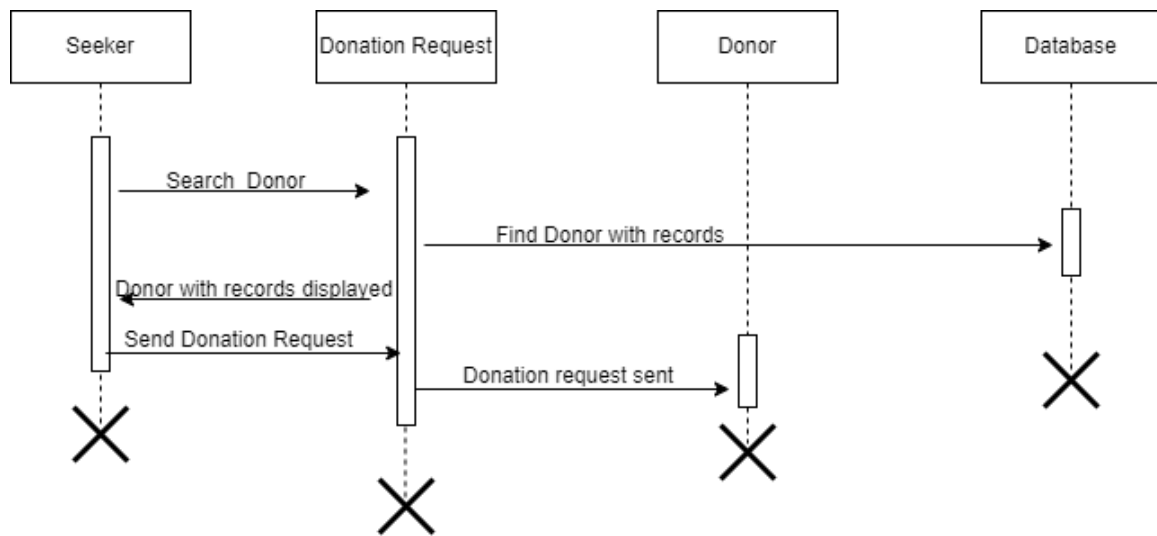
The "Validate User" message is sent from the system to the "Database" to check the user's validity.

The "Database" performs the validation process and sends back a response, indicating whether the user is registered and valid.

**Login Success:** If the user's information is valid, the home screen will appear to the user.

**Sequence Diagram of User create Profile:****Figure 4. 8: Sequence Diagram of User create Profile**

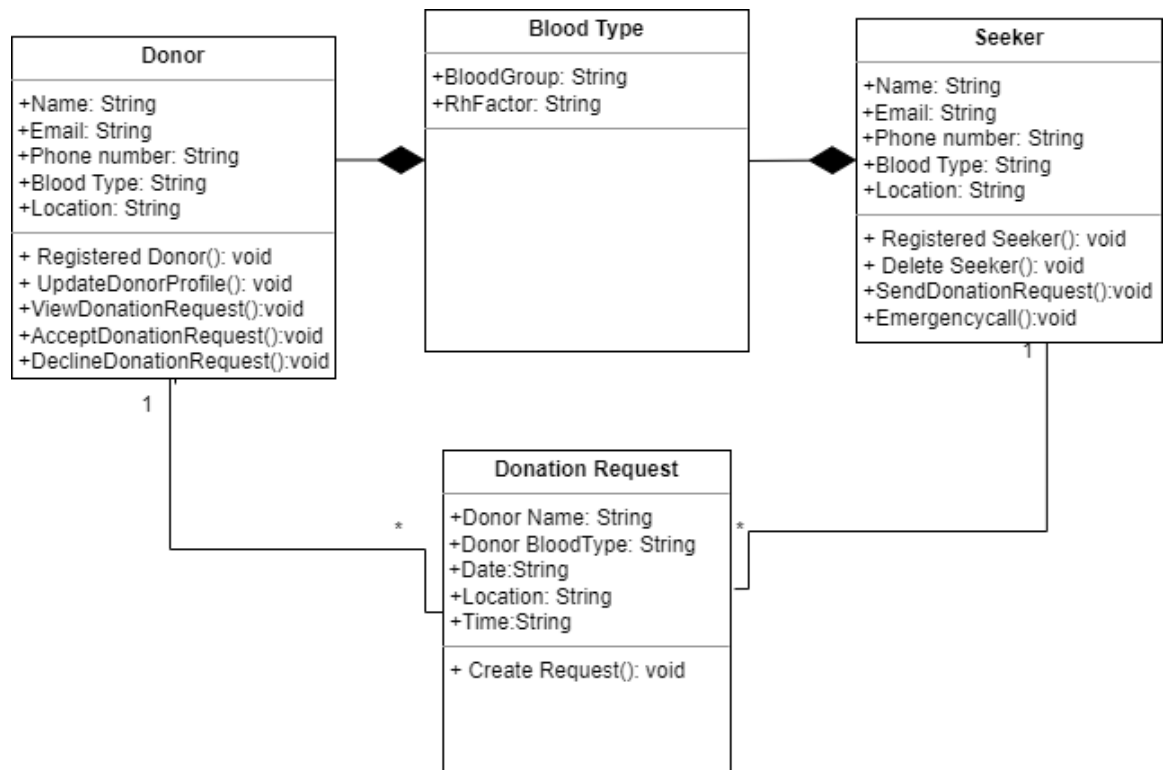
Once users log in to the app, they have the option to create their profiles and register as donors or seekers. During profile creation, users input relevant information and specify their user type as either a donor or a seeker. Upon successful registration, users are officially recognized as donors or seekers within the app. They can then proceed to donate or receive blood, depending on their chosen role, and engage in blood donation activities accordingly.

**Sequence Diagram of Seeker find Donor for Blood:****Figure 4. 9: Sequence Diagram of Seeker find Donor**

The sequence diagram of Blood Unity depicts the process of how a seeker finds a donor through the app. Once logged in, the seeker utilizes the donation request module to search for donors. The app displays a list of donors along with their records. The seeker then sends a donation request, which is subsequently sent to the selected donor.



## 4.5 Class Diagram



**Figure 4. 10: Class Diagram**

Class Diagram shows the static structure of the system by illustrating the classes, their attribute and their relationship.

### **Donor Class:**

**Description:** Represents the donors registered in the app.

**Attributes:** name, blood Type, contact Information, etc.

**Methods:** Registered Donor(), ViewDonationRequests(), acceptDonationRequest(), declineDonationRequest(), updateDonorProfile(), etc.

### **Seeker Class**

**Description:** Represents the donors registered in the app.

**Attributes:** name, blood Type, contact Information, etc.

**Methods:** Registered Seeker(), UpdateSeekerProfile(), SendDonationRequest(), Emergencycall().

## **CHAPTER 5:**

### **Graphical User Interfaces**

## 5.1 Welcome Screen

Welcome to Blood Unity!

Get started by creating an account and completing your profile to become a part of our lifesaving community Find blood donors & Submit your urgent blood needs and receive real-time notifications as donors respond to your request.



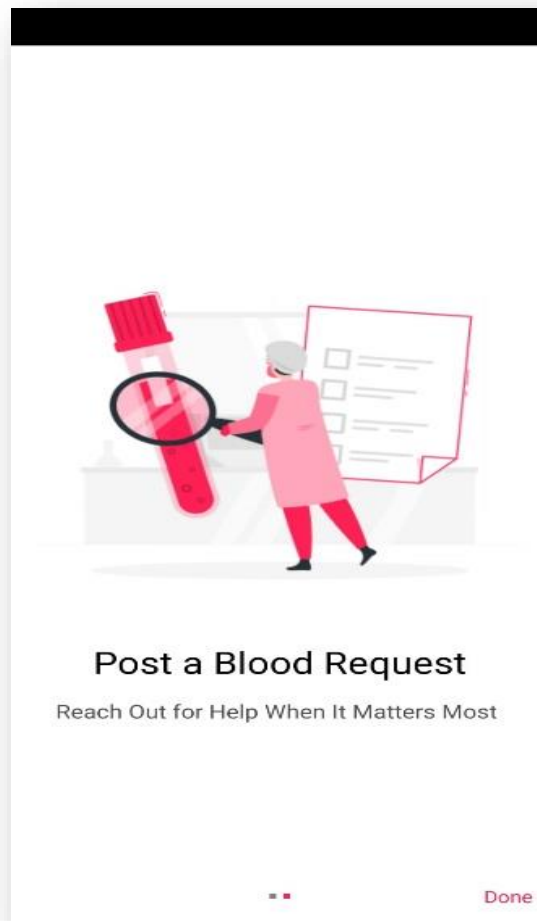
Figure 5. 1: Welcome Screen

## Welcome Screen



**Figure 5. 2: Welcome Screen**

## Welcome Screen



**Figure 5. 3: Welcome Screen**

## Welcome Screen



### Register and Login

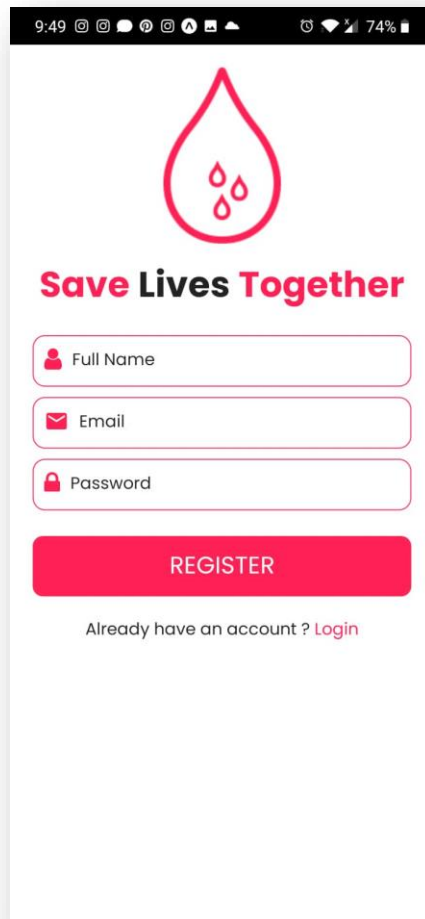
- Register to create an account.
- Login to access the app's features.
- Explore the app without a profile, but no interactions allowed.
- Create a Seeker or Donor profile for full app functionality.
- Choose your role as a Seeker or Donor to get started.



Done

**Figure 5. 4: Welcome Screen**

## 5.2 Register Screen:

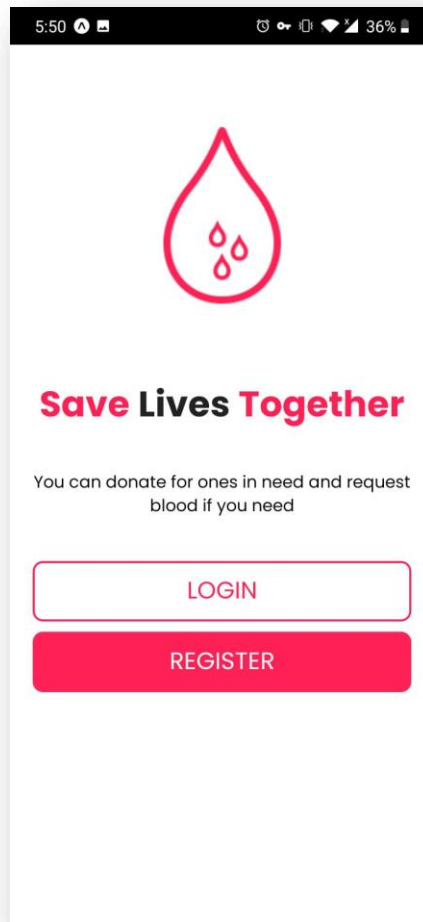


The image shows a mobile application interface for a registration screen. At the top, there is a status bar with the time 9:49, various notification icons, and a battery level of 74%. Below the status bar is a large red drop icon containing three smaller red drops. Underneath the icon, the text "Save Lives Together" is displayed in a bold, black font. Below this text are three input fields, each with a red icon on the left: a person icon for "Full Name", an envelope icon for "Email", and a lock icon for "Password". Below the input fields is a large red button with the word "REGISTER" in white capital letters. At the bottom of the screen, there is a link that says "Already have an account ? Login" in a smaller, black font.

**Figure 5. 5: Register**

### 5.3 Login Screen:

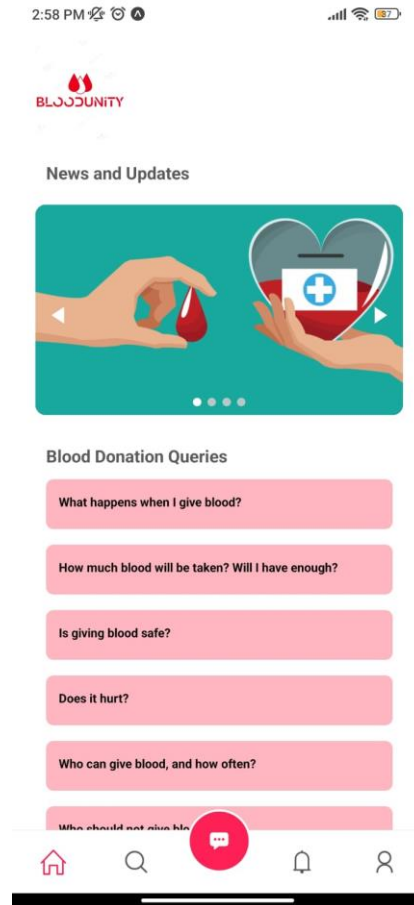
Login to the Blood Unity to become a part of our life-saving network, where you can easily find and connect with blood donors in need.



**Figure 5. 6: Login**



## 5.4 Home Page



**Figure 5. 7: Home Page**

After logging in, you will be directed to the home screen of Blood Unity, where you can access various queries related to blood donation and learn about the importance of donating blood.

## 5.5 Donor UI

The screenshot shows a mobile application interface for editing a profile. At the top, the status bar displays the time as 3:00 PM, signal strength, Wi-Fi, and battery levels. Below the status bar, there is a back arrow and the text 'EditProfile'. The main form area is a light gray rectangle containing several input fields and a radio button group. The fields are labeled 'Name', 'Email', 'Blood Type', 'Location', and 'Phone No.', each with a corresponding red-outlined text box. Below these fields is a 'User Type' section with two radio buttons: 'Donor' and 'Seeker'. At the bottom of the form are three buttons: 'Save' (red), 'Update' (gray), and 'Delete' (gray). The entire form is set against a white background with a thin black border at the bottom.

**Figure 5. 8: Create profile**

After login when user want to register as donor user can proceed to the "Edit Profile" module. Within this module, they can input the necessary information and choose the user type as "donor" from the available options.

## Profile Created UI

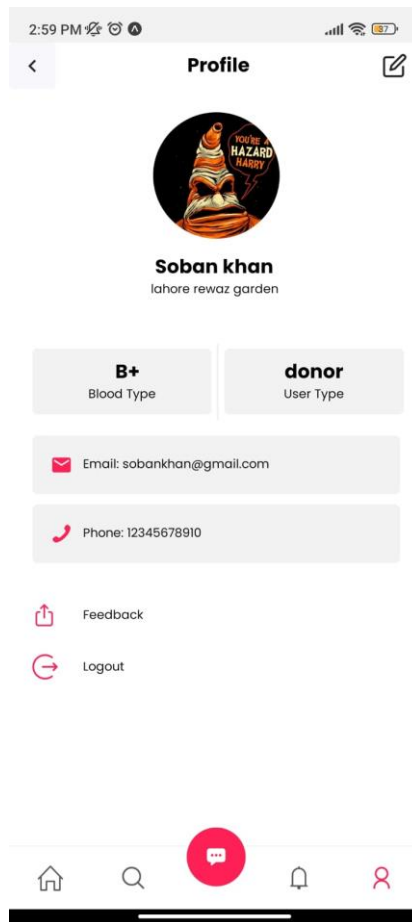
The screenshot displays a mobile application interface for editing a donor profile. At the top, the status bar shows the time as 2:59 PM and various icons. Below the status bar, there is a back arrow and the title 'EditProfile'. The main content area is a light gray box containing several form fields, each with a red border and a label above it: 'Name' (containing 'Soban khan'), 'Email' (containing 'sobankhan@gmail.com'), 'Blood Type' (containing 'B+'), 'Location' (containing 'lahore rewaz garden'), and 'Phone No.' (containing '12345678910'). At the bottom of the form box, there are three buttons: a red 'Save' button, a dark gray 'Update' button, and a light gray 'Delete' button. The bottom of the screen shows a black home indicator bar.

**Figure 5. 9: Profile created**

Once the Donor Profile is created, donors have the ability to edit their personal information such as name, blood type, location, and contact number. To make changes, the user can navigate to the "Edit Profile" section within the Donor Profile UI. Within this section, the user will find editable fields for each piece of information they wish to update.

After making the desired changes, the user can simply press the "Update" button. This action will save the edited information and automatically update their Donor Profile with the new data. The user will receive a confirmation message indicating that the changes have been successfully applied.

## Profile view UI



**Figure 5. 10: Profile View**

The Donor Profile View UI presents a user-friendly interface that allows donors to view and manage their information conveniently. It includes sections for personal details like Profile image, name, blood type, location, and contact number.

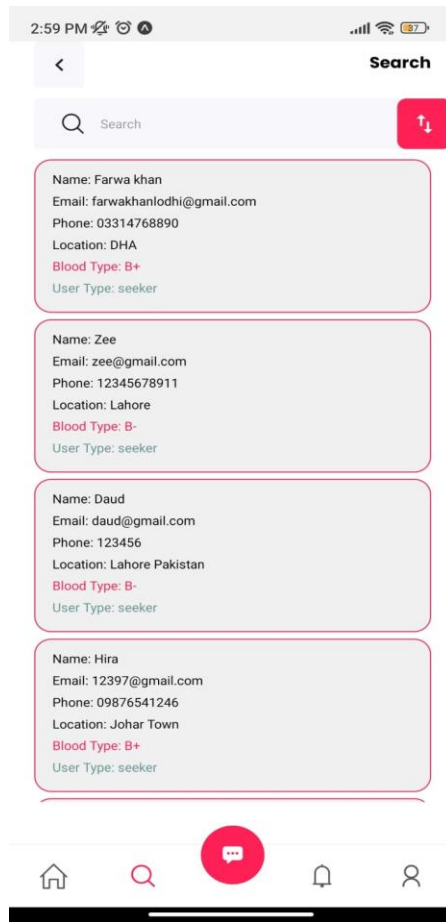
## Receive Donation Notifications



**Figure 5. 11: Receive Donation Notifications**

The Donor receives donation requests from seekers through the Donation Request UI. This module facilitates the interaction between donors and seekers. Seekers can send their donation requests, and donors can view and respond to them using this user-friendly interface.

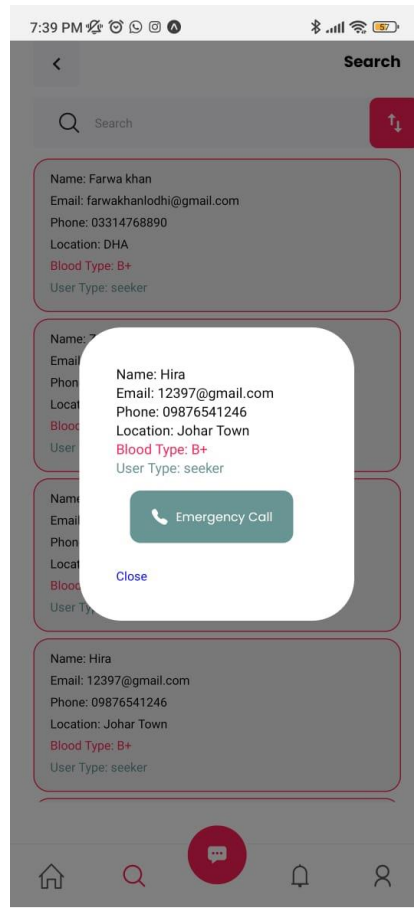
## Seekers List



**Figure 5. 12: Seekers list**

This is the UI of search module, donors can access a comprehensive list displaying all the seekers who are in need of blood donations. The list presents essential information about each seeker, allowing donors to view details such as the seeker's name, blood type required, location.

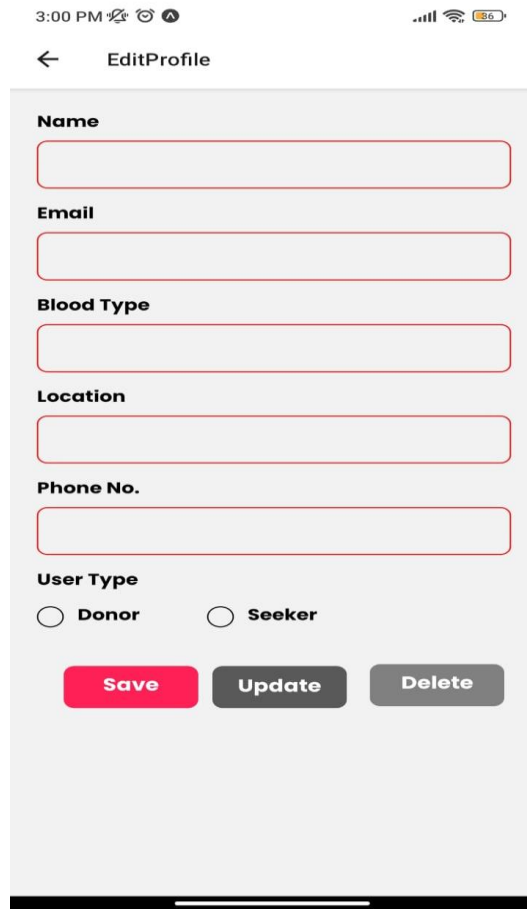
## Communication with seeker



**Figure 5. 13: Communication with seeker**

In this UI, donors have the option to select a specific seeker to whom they would like to donate blood. Upon selecting the seeker from the list, a detailed model view of the selected seeker is displayed.

## 5.6 Seeker UI:



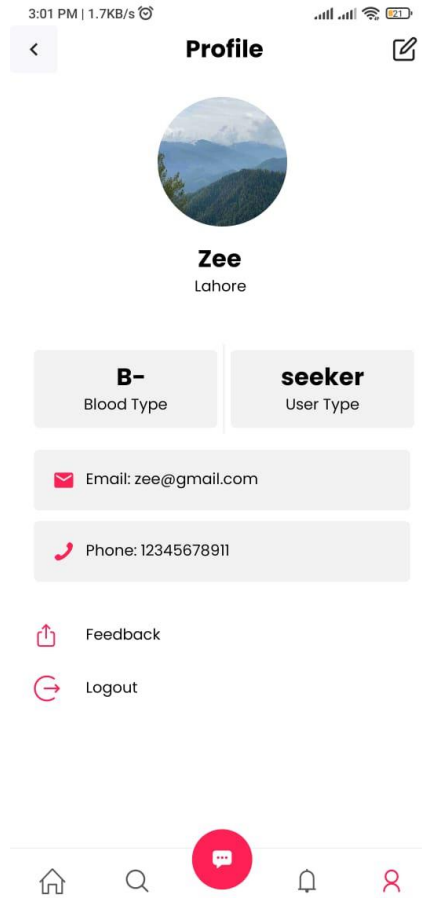
The screenshot displays a mobile application interface for editing a user profile. At the top, the status bar shows the time as 3:00 PM, signal strength, Wi-Fi, and battery levels. Below the status bar, there is a navigation bar with a back arrow and the text 'EditProfile'. The main content area is a light gray box containing several form fields, each with a red border and a light gray background. The fields are labeled 'Name', 'Email', 'Blood Type', 'Location', and 'Phone No.'. Below these fields, there is a 'User Type' section with two radio buttons: 'Donor' and 'Seeker'. At the bottom of the form, there are three buttons: 'Save' (red), 'Update' (dark gray), and 'Delete' (dark gray). The entire form is set against a light gray background.

**Figure 5. 14: Create Profile**

After login when user want to register as seeker user can proceed to the "Edit Profile" module. Within this module, they can input the necessary information and choose the user type as "seeker" from the available options.



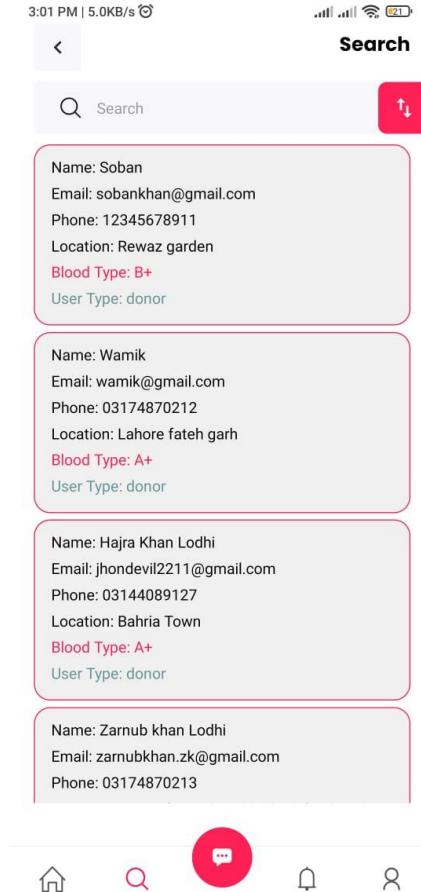
## Profile Created



**Figure 5. 15: Profile created**

The Seeker Profile View UI presents a user-friendly interface that allows seeker to view and manage their information conveniently. It includes sections for personal details like Profile image, name, blood type, location, and contact number.

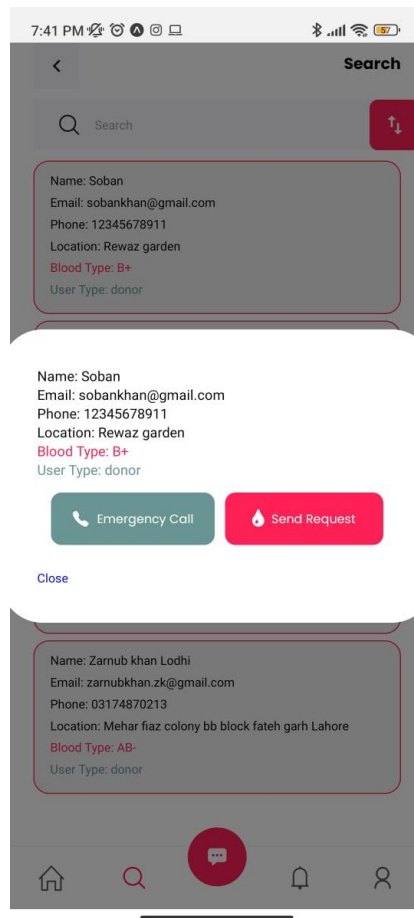
## Donor search



**Figure 5. 16: Donor Search**

This is the UI of search module, seeker can access a comprehensive list displaying all the donors who are available for blood donations. The list presents essential information about each donor, allowing donors to view details such as the donor's name, blood type required location.

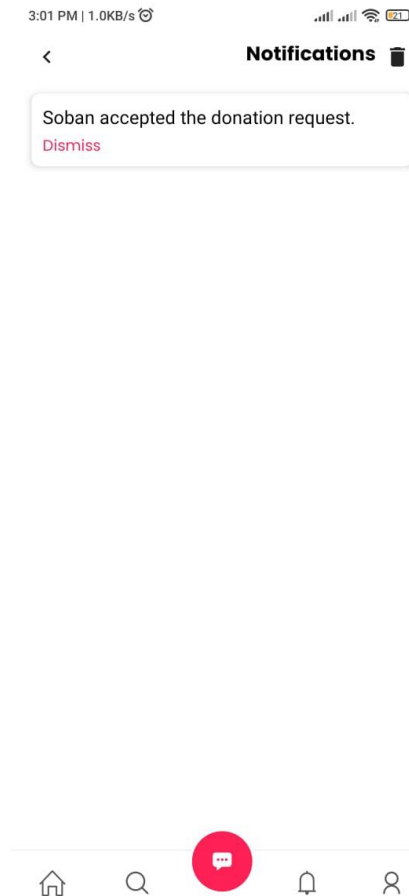
## Send Donation Request



**Figure 5. 17: Send Donation Request**

In this UI, seeker have the option to select a specific donor. Upon selecting the donor from the list, a detailed model view of the selected donor is displayed.

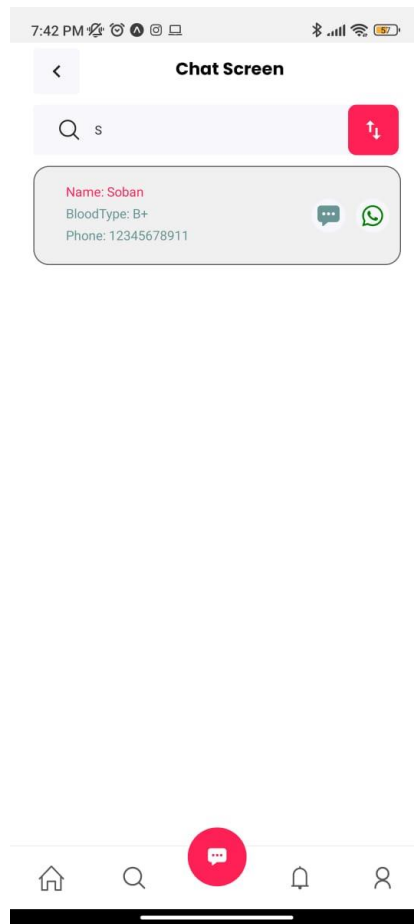
## Receive notifications about request



**Figure 5. 18: Receive notifications about request**

In the Notifications module, when a donor accepts or declines a request from a seeker, the system generates corresponding notifications. These notifications will appear as a list of recent activities in the notification center or panel. If a request is approved, the notification will inform the seeker that their request has been accepted and may include the name of the donor with details. Likewise, if a request is declined, the notification will notify the seeker that their request has been declined, along with the donor's name and details.

## Chat Screen



**Figure 5. 19: Chat with Donor**

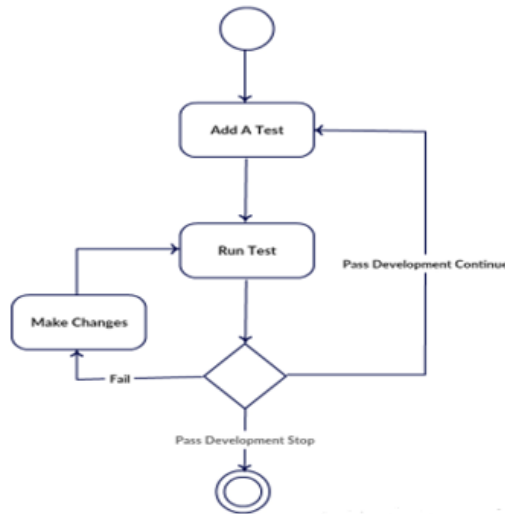
Through chat screen UI the seeker can communicate with Donor

## **Chapter 6**

### **Testing**

## 6.1 TESTING

Testing was carried out on a weekly basis to gauge which aspects of the application were most important to users, what issues were and which part the most enjoyable. [8]



**Figure 6. 1: Testing**

### TESTING Registration

In this module input validations tested which are given below.

Check whether full name is entered or not

Check whether valid email is entered or not

Check whether password is entered correctly or not

**Test Case Id: TC#1**

Test Case Name: Full name is entered or not			
Pre-Condition		Registration form is Open	
Sr	Action	Expected Result	Status
1	Enter the name	Name is entered	OK

**Table 6. 1: Testcase Registration**

**Test Case Id: TC#2**

Test Case Name: Test Email Entered			
Pre-Condition		Registration form is Open	
Sr	Action	Expected Result	Status
1	Enter Email in “Email” input box	Email Structure is Valid	OK

**Table 6. 2: Testcase valid E-mail****Test Case Id: TC#3**

Test Case Name: Test Password Entered			
Pre-Condition		Registration form is Open	
Sr	Action	Expected Result	Status
1	Enter your valid Password in “Password ” box	Login successful	OK

**Table 6. 3: Testcase Password****TESTING Edit Profile**

In this module input validations tested which are given below.

Test whether Name is edited correctly or not

Test whether phone number is entered correctly or not.

Test whether valid blood type is entered or not.

Test whether valid Location is entered or not.



**Test Case Id: TC#4**

Test Case Name: Full name is edited or not			
Pre-Condition	Edit Profile form is Open		
Sr	Action	Expected Result	Status
1	Edit the name	Name is edited	OK

**Table 6. 4: Testcase Name edited****Test Case Id: TC#5**

Test Case Name: Test Email Edited			
Pre-Condition	Edit Profile form is Open		
Sr	Action	Expected Result	Status
1	Enter Email in "Email" input box	Email Structure is Valid or email is edited	OK

**Table 6. 5: Testcase Edit E-mail**

**Test Case Id: TC#6**

Test Case Name: Test Mobile Number entered			
Pre-Condition	Edit Profile form is Open		
Sr	Action	Expected Result	Status
1	Enter integer value of 11digit	Valid	OK

**Table 6. 6: Testcase Edit Phone No****Test Case Id: TC#7**

Test Case Name: Test blood type entered			
Pre-Condition	Edit Profile form is Open		
Sr	Action	Expected Result	Status
1	Enter Universal Blood type	Universal blood type entered	OK

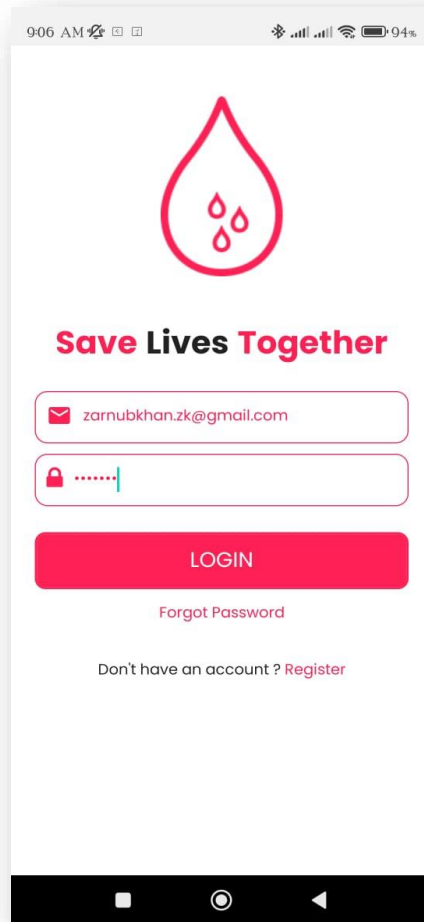
**Table 6. 7: Testcase Enter Blood Type**

**Test Case Id: TC#8**

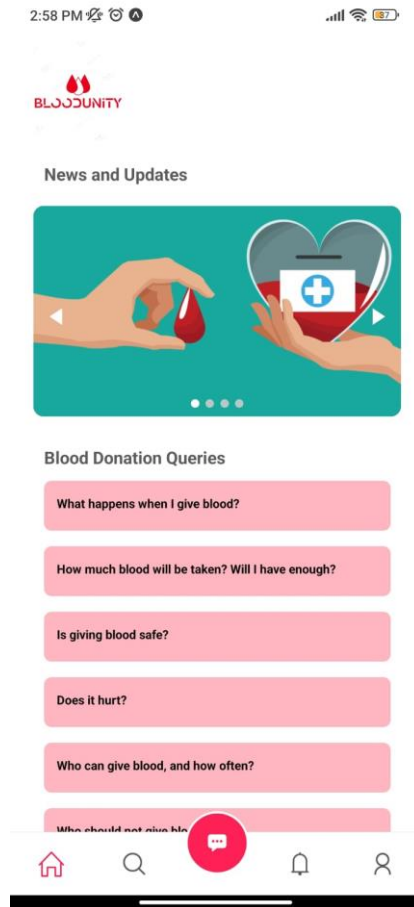
Test Case Name: Test Location entered			
Pre-Condition		Edit Profile form is Open	
Sr	Action	Expected Result	Status
1	Enter the valid location of Pakistan	Location of Pakistan is entered	OK

**Table 6. 8: Testcase Location Entered**

## 6.2 Black Box TESTING

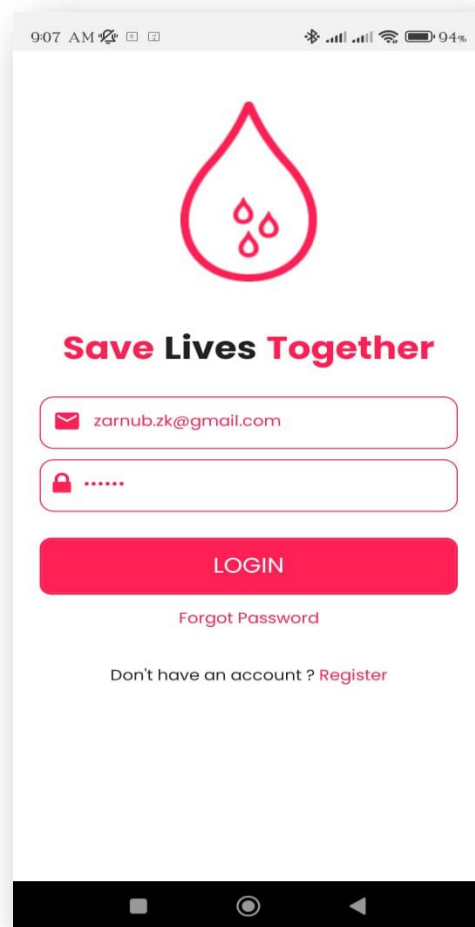


**Figure 6.2: Testing Login**

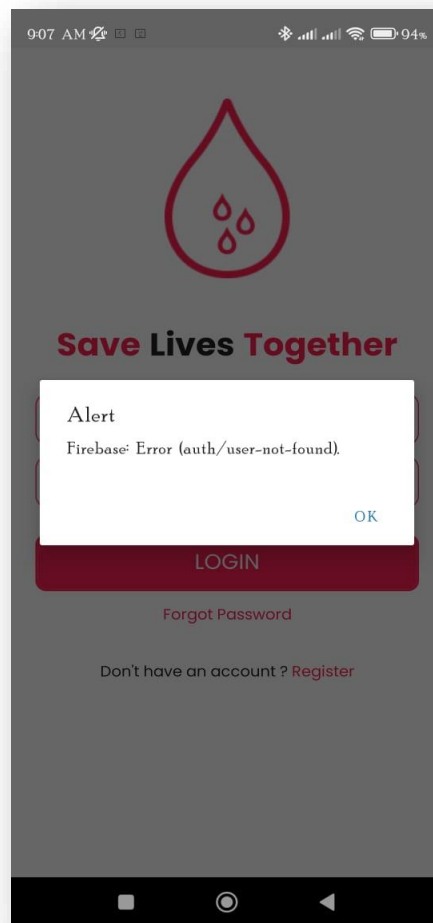


**Figure 6.3: Testing Login**

In these pictures user fill all the valid credentials so next home screen module is opened



**Figure 6.4: Testing Login**



**Figure 6.5: Testing Login**

In these pictures user fill the wrong credentials so error message is popped up.

### 6.3 White Box Testing

```
const ResetPassword = () => {  
  const { email } = formState.inputValues;  
  if (email !== null) {  
    sendPasswordResetEmail(auth, email)  
      .then(() => {  
        alert("Reset Password sent successfully");  
      })  
      .catch((error) => {  
        const errorCode = error.code;  
        const errorMessage = error.message;  
        alert(errorMessage);  
      });  
  } else {  
    alert("Enter a Valid Email");  
  }  
};
```

```
<TouchableOpacity  
  onPress={() => ResetPassword()}  
>  
  <Text  
    style={{  
      ...FONTS.body3,  
      color: COLORS.primary,  
      marginVertical: 12,  
    }}  
  >  
    Forgot Password  
  </Text>  
</TouchableOpacity>
```



## **Chapter 7**

### **Conclusion and Future work**

## **7.1 Conclusion:**

In conclusion, the Blood Unity app is a robust and user-friendly platform that facilitates seamless communication and coordination between blood donors and seekers. The app aims to bridge the gap between individuals in need of blood donations and those willing to contribute, ultimately saving lives and promoting a strong sense of community and altruism.

Throughout the development and analysis of the app, several key features have been identified, such as user registration and login, profile management, blood donation request submission, and donation response management. These features enable users to create and manage their profiles, initiate and respond to donation requests.

The app's intuitive user interface, coupled with its efficient notification system, ensures that donors and seekers can easily connect and engage in the blood donation process. Donors receive timely notifications about donation requests, while seekers are promptly informed of the acceptance or rejection of their requests.

## **7.2 Future Work:**

Blood unity has great scope in future and if we get a chance to continue this project following are the potential areas to focus on;

1. **Implementation of an In-App Messaging Service:** Our focus would be on integrating a built-in messaging service within the app to facilitate seamless communication between donors and seekers. This feature will enhance user engagement and enable real-time interaction, making it more convenient for donors and seekers to connect and coordinate blood donations directly within the app.
2. **In the future development of the Blood Unity app,** we aim to incorporate alert messages that will serve to notify all donors with a specific blood type whenever a seeker requests that particular blood type. This enhancement will ensure that relevant donors promptly receive notifications about blood donation requests that match their blood type, facilitating a quicker and more targeted response to urgent blood needs. By implementing this feature, we strive to streamline the communication process and increase the likelihood of successful blood donation matches, ultimately benefiting both seekers and donors in times of critical need.

## 7.3 References

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- [3] S. A. Hashim, "Online Blood Donation Reservation And Managementsystem In Jeddah," *Life Science Journal* 2014.
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- [5] "Synopsys," [Online]. Available: <https://www.synopsys.com/blogs/software-security/top-4-software-development-methodologies/>.
- [6] [Online]. Available: <https://www.marceldigital.com/blog/what-is-agile-web-development-everything-you-need-to-know>.
- [7] A. Jarzębowicz, "A Qualitative Study on Non-Functional Requirements in Agile Software Development," pp. 40458 - 40475, 08 March 2021.
- [8] G. J. Myers, "The Art of Software Testing, 3rd Edition," 1979.