HUNTER FOR A BLOOD DONOR APPLICATION

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BACHELOR OF COMPUTER SCIENCE

(SOFTWARE ENGINEERING)

WITH HONOURS

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HUNTER FOR A BLOOD DONOR APPLICATION

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THESIS SUBMITTED IN FULFILMENT OF THE REQUIREMENTS

FOR THE AWARD OF DEGREE OF

BACHELOR OF COMPUTER SCIENCE (SOFTWARE ENGINEERING) WITH HONORS

FACULTY OF COMPUTING

UNIVERSITY MALAYSIA PAHANG

MAY 2022

ACKNOWLEDGEMENTS

I'd like to thank my supervisor, Ts. Dr. Hoh Wei Siang, for his guidance and leadership during the project. I'm happy and pleased that I'm studying under his supervision since he can offer his insight, knowledge, and skills. Along with my project, he also provided me with some suggestions.

In addition, I'd want to convey my gratitude to all of the instructors who helped me during my research. My friends and classmates, as well as my family, support me physically and mentally. They have kept me motivated throughout my project. Apart from that, I'd like to express my gratitude to everyone who assisted me in completing this project, whether directly or indirectly. Their encouragement is my driving factor in completing this job effectively.

ABSTRAK

Pendermaan darah ialah apabila seseorang memberikan darahnya secara bebas supaya darah itu boleh dikeluarkan dari badannya dan dimasukkan ke dalam badan seseorang yang memerlukannya. Darah boleh didermakan dua kali setahun. Orang ramai, bagaimanapun, kurang bersedia untuk menderma darah pada masa kini. Ini berikutan fakta bahawa penderma dikehendaki beratur panjang untuk mendapatkan temu janji untuk menderma darah atau membuat akaun untuk menderma darah. Tambahan pula, kerana semua pendaftaran dan pelantikan dilakukan di atas kertas, terdapat risiko besar data penderma tersilap letak. Matlamat penyelidikan ini adalah untuk menyelesaikan masalah yang timbul semasa menderma darah. Kami boleh menggunakan aplikasi untuk membuat akaun dan menjadualkan janji temu derma darah. Aplikasi ini juga membantu mencari penderma semasa kecemasan. Dokumen ini juga membandingkan tiga permohonan derma darah yang berbeza dari negara yang berbeza. Model Pembangunan Aplikasi Rapid (RAD) bagi Kitaran Hayat Pembangunan Perisian telah digunakan untuk projek ini (SDLC). Pendekatan RAD membahagikan pembangunan perisian kepada perancangan keperluan, reka bentuk pengguna, pembinaan dan pemotongan. Rajah konteks, rajah kes guna, penerangan kes guna, rajah ERD, kamus data, rajah kelas telah dibangunkan untuk projek ini. Android Studio akan digunakan untuk membuat projek ini, yang akan dikodkan dalam Java. Semasa fasa ujian sistem projek ini, kes ujian akan dilaksanakan untuk memastikan sebarang masalah yang berpotensi dalam projek dikesan. Ujian Penerimaan Pengguna (UAT) dan ujian kebolehgunaan akan dilakukan untuk memastikan sistem memenuhi semua keperluan dan spesifikasi projek. Pada akhir projek, had projek dan kerja masa depan juga dibincangkan pada akhir.

ABSTRACT

A blood donation is when a person gives their blood freely so that it can be taken out of their body and put into the body of someone who needs it. Blood can be donated twice a year. People are, however, less willing to donate blood nowadays. This is due to the fact that donors are required to stand in long queues to obtain an appointment to donate blood or to create an account to donate blood. Furthermore, because all registration and appointments are done on paper, there is a considerable risk of donor data being misplaced. The goal of this research is to solve a problem that arises during blood donation. We can use an application to create an account and schedule a blood donation appointment. This document also compared three different blood donations applications from different country. The Rapid Application Development (RAD) model of the Software Development Life Cycle was employed for this project (SDLC). The RAD approach divides software development into requirements planning, user design, construction and cutover. Context diagram, use case diagram, use case description, ERD diagram, data dictionary, class diagram were developed for this project. Android Studio will be used to create this project, which will be coded in Java. During the system testing phase of this project, the test cases will be executed to ensure that any potential problems in the project are detected. User Acceptance Testing (UAT) and usability testing will be performed to check that the system meets all of the project's requirements and specifications. At the conclusion of the project, the project limitations and future works also were discussed at the end.

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

Most blood donors in the developed world today are unpaid volunteers who donate blood for the benefit of the community. Established supplies are low in certain countries, so volunteers typically donate blood when relatives or friends are in danger. Many people give blood for a variety of reasons, including charity, greater self-confidence, aiding a friend or relative, and societal pressure (Alva Mantari, 2018).

Blood donations are divided into categories based on who will be receiving their donation. When a donor provides blood to a blood bank for storage and transfusion to an unknown recipient, this is known as an "allogeneic" donation (Darwiche, 2010). When someone, generally a family member, donates blood with the aim of transfusing it to a specific individual, this is known as a "directed" donation. Directed donations are unusual when there is an established supply.

The medical officer or the on-duty nurse will determine a person's eligibility to donate. A potential donor must be in good health in order for the donation to be safe for both the donor and the blood being given. Individuals who are determined to be engaging in high-risk activities are not permitted to donate blood. Sharing needles among drug users, engaging in prostitution or visiting prostitutes, having a sexual connection with someone of the same gender, and having or having more than one sexual partner are all high-risk activities (Zambon, 2020).

The procedure that needs to be followed for blood donation is that the blood donation registration form must be completed first. Weigh your entire body. A blood test can be used to determine your blood group and hemoglobin level (Britannica, 2020). A medical officer or nurse provides pre-donation counselling. They need to have their information recorded and a blood donation book supplied if they are eligible. The actual blood donation procedure takes between 7 to 15 minutes. Before getting out of bed, the donor must rest for at least 10 minutes after the

donation has been finished and the needle has been withdrawn. After that, a small meal will be provided to the donor (G. Elizabeth Rani., 2021).

One of the direct benefits of donating blood is that you can lower the iron levels in your body, which can minimize your risk of heart disease (Peffer K, 2019). Giving blood reduces your iron levels and allows your body to restore them with new blood. While we discussed how giving blood lowers iron levels in the blood, it also lowers the chance of acquiring cancer. Donating blood can minimize your risk of heart disease, which means you're less likely to have a heart attack. Donating blood on a semi-regular basis can help lower your iron levels, reduce stress, and offer you peace of mind knowing that you're helping others in need (Rathner, 2014).

1.2 PROBLEM STATEMENT

With the advancement of internet technology, people can connect from virtually any location. With only one click from a mobile phone, the same internet technology may be used to make appointments to donate blood. Meanwhile, the old technique takes a long time to complete and cannot be done anywhere or at any time. Donors need to make an appointment before donating blood. To do that, they need to go to a hospital or blood donation center, or the donor needs to make an appointment on their website. Donors cannot make appointments through the website at any time or place. This is because, to do that, they need a laptop or computer around them. Furthermore, the hospital staff is unable to provide real-time news regarding blood donation activities around the nation. If they want to share news regarding blood donation, they need to make a poster and share the poster around them, which takes a lot of time. Sometimes the poster does not reach most of the people. Most people are unaware of what is going on in their community in terms of blood donations. On the other hand, most of the donors don't know that to donate blood they need to meet the eligibility requirements. Some donors, without knowing their eligibility, make an appointment to donate blood, and when donating blood, they know that they are not eligible and cannot donate blood. Furthermore, hospital workers are unable to provide real-time updates on the present condition of donors. Staff must manually update the donor's status in writing on paper. In the event of an emergency, the need to seek and the only way to contact donors is to check through the documents because there is no application to handle it and it may increase the pressure on the workers.

1.3 OBJECTIVES

The objectives of this project are as the following:

I. To gather and collect requirements of Hunter For A Blood Donor Application.
II. To design and develop a new Hunter For A Blood Donor Application.
III. To test the developed Hunter For A Blood Donor Application.

1.4 SCOPE

The scope of this project is as following:

I. The target users of this application are hospital staff and people with age 18 and above.
II. The application is only Android-based.
III. The content will include register account, add details, news feed, make an appointment, view appointments, history, news feed, track nearby blood banks, view donor profile, add new user, and security.
IV. This application is in the English Language.

1.5 REPORT ORGANIZATION

Chapter 1 explains the introduction of blood donation. This chapter also includes information about the project's background, and problem statement. Finally, the application's objective and project scope have been outlined explicitly.

The literature review of the project will be stated clearly in chapter 2. Similar existing application will be discussed furtherly in this chapter including detail regarding blood donation application listing the existing application, comparison of existing application, and so on.

Chapter 3 explains in detail about the methodology used to develop this project. It explains clearly with the content such as proposed design and interface including the hardware and software specification.

The blood donation application results and implementation are critical parts of the documentation process. In this chapter 4, the implementation, testing, and outcome are all discussed in detail. This chapter went over every detail of the project's development in significant detail.

CHAPTER 2

LITERATURE REVIEW

Introduction and information about blood donation applications are included in this chapter. In addition, a quick overview of certain existing systems will be presented, as well as a comparison of those systems. This chapter is finally brought to an end with a conclusion.

2.1 INTRODUCTION

There are numerous applications for finding blood donors and locating nearby blood banks. These applications, however, are not available in Malaysia. The majority of them can be found in other countries. For example, there are some blood donor finder applications, such as Blood by Red Cross, which allow the donor to book an appointment with blood banks and also find local blood donation centres quickly and easily. After conducting research, it was discovered that there is no application available to locate blood donors in order to donate blood or to locate blood in an emergency while also tracking local blood banks in our country. This concept of integrating both inventions helps to tackle the problem of people looking for blood donors and nearby blood banks for the blood group they desire in the event of an accident. During an emergency, the application provides the benefits of saving time and life.

2.2 BACKGROUND OF HUNTER FOR A BLOOD DONOR APPLICATION

The Hunter For A Blood Donor Application, which is an application used by donors to make an appointment to donate blood. The role of donor in this application is create or update profile, check eligibility to donate blood, view news feed, make appointment to donate, view nearby blood banks and view blood donation history. The staff will be another user in this system. The role of staff will be similar to donor but the staff have extra functions like adding new staff, delete existing user, approve appointments, set and update appointment slots, view donor list, manage campaign and manage news feed. The role of admin in this system is the admin can update profile, add new admin, delete an admin and manage report of hospitals, users, appointment and campaign.

2.3 REVIEW OF EXISTING SYSTEM

2.3.1 SIMPLYBLOOD – FIND A DONOR

Figure 2. *1* is example screenshot of the system.

Website link: https://play.google.com/store/apps/details?id=com.simplyblood&hl=en&gl=US

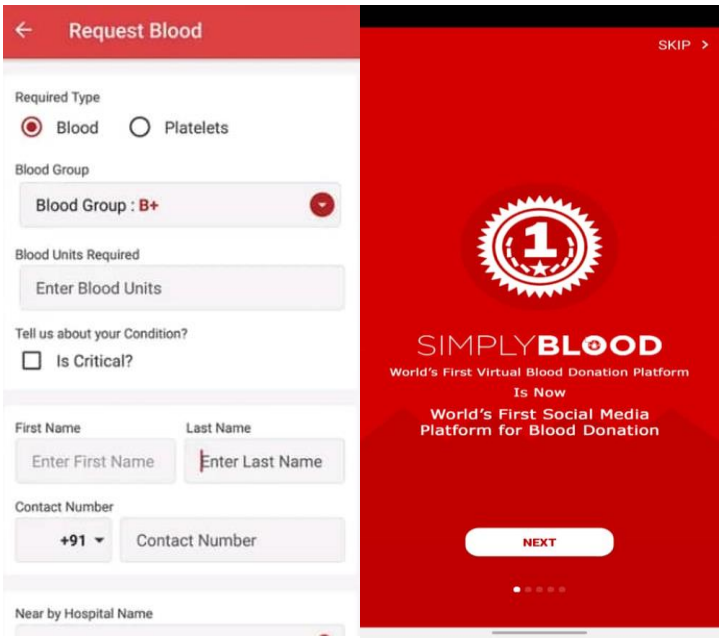

Figure 2. 1 SIMPLYBLOOD – FIND A DONOR Interface

Simply Blood is a blood donation app for Android smartphones that is completely free. In three easy steps, Simply Blood finds, notifies, and connects thousands of blood donors. The Simply Blood donation app assures that blood donation is simple and that a donor's privacy is protected. A blood donor can donate blood at any time and in any location, as well as find a qualified recipient. Connecting blood donors and those in need saves time, which increases the chances of saving lives and avoids blood shortages.

Simply Blood's benefits include connecting blood donors with blood seekers so that donors can see the impact their blood has on someone's life. The software allows blood donors and blood seekers to connect in real time, saving time. In an emergency situation, the time saved can be crucial in saving lives. Simply Blood distributes blood requests to all possible blood donors within 5 kilometers of the required location. This improves a donor's chances of visiting a hospital or blood bank to donate blood to a patient. It also cuts down on the amount of time it takes to fulfil a blood request. However, the app does not have the ability to update the user's profile.

2.3.2 BLOOD DONOR – ALL BLOOD GROUP

Figure 2. 2 is example screenshot of the system. Website link: https://play.google.com/store/apps/details?id=com.bitsandbyte.blood.donor&hl=en&gl=US

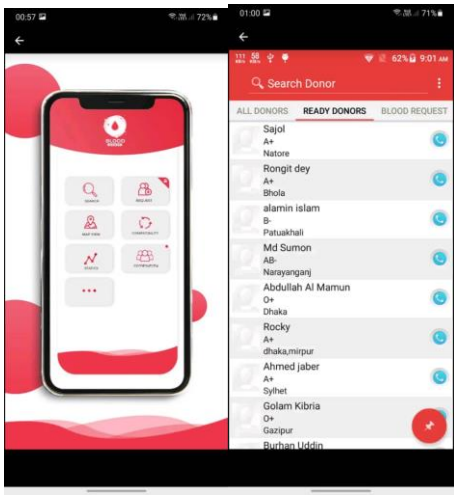

Figure 2. 2 BLOOD DONOR – ALL BLOOD GROUP Interface

One of the most prevalent and critical issues is blood deficiency and blood emergencies, and the Blood Donor All Blood Groups app is here to help. The goal is to link people who are looking for blood donors in their area with those who donate blood. This blood donation software would function as a virtual blood bank, allowing people to save lives. Blood receptors are no longer required to hunt for legitimate blood banks. All blood group kinds, such as type A, type O, type AB, or type O, would be readily available. Whether the customer wants a universal donor group or the rarest blood types (AB-) and/or most sought blood group (O+), the requested blood group will be arranged in seconds.

One of the advantages of Blood Donor-All Blood Groups is their adaptability. Because the user's comfort is always a top priority for the local blood drive app, this is the case. If an app user as a donor is unavailable or unable to donate blood for any reason, just switch off the availability button; no one will approach that person for blood donation until the availability button is turned back on. This blood donor app will keep you up to date. Check the most recent statistics to see which blood group is overrepresented in a given area. These figures can be used to determine which blood groups are in short supply and which blood groups are in high demand in a given region. The disadvantage of this application is that the donor cannot randomly make an appointment to donate blood. They can only donate blood during an emergency.

2.3.3 BLOOD FRIEND – BLOOD DONOR APP

Figure 2. *3* is example screenshot of the system. Website link: https://play.google.com/store/apps/details?id=com.posl.bloodfriends&hl=en&gl=US

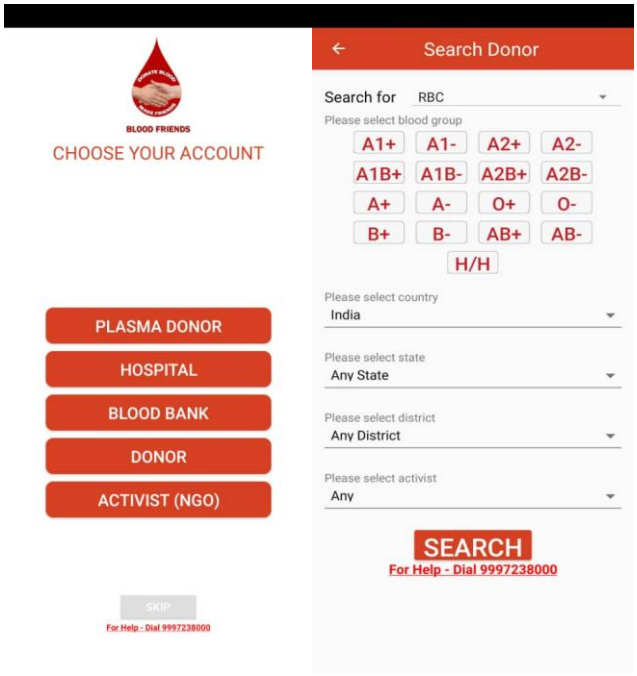

Figure 2. 3 BLOOD FRIEND – BLOOD DONOR APP Interface

Donate blood and make friends at the same time. This digital era of blood donation is for the benefit of human society's support groups. The Blood Donor App is an initiative to donate blood in order to save lives and make friends, hence the name "Blood Friends." This is a standardized blood donation smartphone app that allows blood banks, hospitals, and recipients to search for blood donors in their area who will be available in as little time as possible. The Blood Friends application will allow registered users to examine full information about blood donors and submit blood requests through the communication network.

The app's benefits include the ability to quickly publish blood donation requests, allowing individuals to contact you for a donation just by looking at your profile. The interface is easy to use and the software is user-friendly. They support as many blood groups as possible, including the unusual H/H blood group. This app assists donors in locating these blood groups, and it is both quick and dependable. However, the disadvantage of this application is that it does not support tracking nearby donors and donors are unable to make an appointment to donate blood.

2.4 COMPARISON OF EXISTING SYSTEM

The comparison between three different existing systems and applications which are Simply Blood – Find a Donor, Blood Donor – All Group Blood, and Blood Friend – Blood Donor App is shown in the

Table 2. 1 The comparison of 3 applications.

Table 2. 1 The comparison of 3 applications

Features	Simply Blood	Blood Donor	Blood Friend
Login	Yes	Yes	Yes
User profile	Yes	Yes	Yes
Interoperability	Mobile application and web-based	Mobile application	Mobile application
Platform	Android	Android	Android
Connectivity	Online	Online	Online
Price	Free	Free	Free
User type	Donor	Donor	Donor, Hospital (Staff), Blood bank (Staff), NGO
Create Profile	Yes	Yes	Yes
View History	Yes	Yes	No
Request Donor	Yes	Yes	No
Make an appointment	Yes	No	No
GPS	No	Yes	No
Social media integration	Yes	No	No
Flexibility	No	Yes	No
Search Blood Donor	Yes	No	No
Latest Statistics	No	Yes	No

Helpline Number	No	No	Yes
Self-Testing	No	No	No
Features	**Simply Blood**	**Blood Donor**	**Blood Friend**
Manage Campaign	No	No	No
Manage Report	No	No	No
News Feed	No	No	No

To access the system, users must first register and log in to their account, as seen in the comparison of the three existing systems and applications above. Users can also manage their profiles across all three services. Android is available on all three systems as the operating system or platform. On the other hand, The Hunter for a Blood Donor Application utilizes Android as its operating system because it will be developed with Android Studio.

The Simply Blood-Find a Donor application is available on both mobile and web. However, the Blood Donor-All Group Blood and Blood Friend-Blood Donor App applications are only available on mobile. The Hunter for a Blood Donor App will be focused purely on design for the user's mobile device. Furthermore, the proposed system would include capabilities similar to those found in Simply Blood-Find a Donor and Blood Donor-All Group Blood, such as the ability to create a profile and view contribution history. These characteristics are appropriate and beneficial for the proposed system.

Blood Donor-All Group Blood also has a GPS feature that may be used to locate nearby blood banks. This characteristic will also be utilized in the development of the proposed system. Aside from that, all of the systems are free to download from the Google Play Store, and all three applications must be used when online. For the Simply Blood-Find a Donor and Blood Donor-All Group Blood apps, the donor is the only one who can use them. The Blood Friend-Blood Donor App, on the other hand, has a variety of users, including donors, hospital staff, blood bank workers, and non-governmental organizations.

Additionally, both the Simply Blood-Find a Donor and Blood Donor-All Group Blood applications allow for blood donation requests. The Blood Friend-Blood Donor App, on the other hand, is unable to make a request for a blood donor. Only the Simply Blood-Find a Donor application has the ability to schedule an appointment and integrate with social media. These two functionalities are not available in the other applications. The Hunter For A Blood Donor can be used to make an appointment to donate blood. The donor can also update or cancel the appointment that they have already made.

The flexibility and up-to-date statistics of the Blood Donor-All Group Blood application are not available in both the Simply Blood-Find a Donor and Blood Friend-Blood Donor apps. The Simply Blood-Find a Donor application allows users to look for a blood donor, while the Blood Friend-Blood Donor App offers users a helpline number in the event of an emergency. Also, there is no self-test feature any applications. There is no news feed on any of the three applications. The Hunter For A Blood Donor App has a feature that self-tests. A Self-test is a feature that donors can use to check their eligibility to donate blood. If the donor meets the eligibility requirements, they can donate blood. Otherwise, the donor cannot make an appointment to donate blood. And the News Feed feature in the Hunter For A Blood Donor App is used to spread news about blood donation in the country to donors so that everyone is aware of what is going on around them. Manage Campaign feature in the Hunter For A Blood Donor App is used to add new campaign details, add campaign participants details and view participants. The manage report feature in this app used by admin to view list of hospitals, users, campaigns and appointments and new hospital details.

2.5 CONCLUSION

Finally, this chapter covered the literature review of the proposed project's features as well as the three current systems and applications. According to an examination of three existing systems and applications, each system has its own advantages and weaknesses. A few characteristics are similar to those found in the Hunter for a Blood Donor Application, and they can be implemented in the proposed system application with some tweaks. For example, the news

feed feature allows users to follow local blood banks and form communities of people with the same blood group. The project's methodology will be discussed in the following chapter.

CHAPTER 3

METHODOLOGY

A project's technique is critical in ensuring that the study can be completed. The impact of technique on the project's outcome will be examined in this chapter.

3.1 INTRODUCTION

A procedure or set of processes used in software development is known as a software development methodology. A software development methodology is a system that determines the order of execution of tasks, methods of assessment, and control. The direction of a project, its budget, the timeline for the end product, and even the preferences of the project manager and team members are all factors that go into selecting software development models. Software development techniques differ from each other in how the stages of the software life cycle are interconnected within the development cycle. Waterfall, Agile, Rapid Application Development (RAD), Extreme Programming, Joint Application Development (JAD), and other software development methodologies are only a few examples. The selected methodology for this proposed project is the Rapid Application Development (RAD) model in the Software Development Life Cycle (SDLC).

3.2 RAPID APPLICATION DEVELOPMENT (RAD) MODEL

Figure 3. 1 RAD Model shows Rapid Application Development (RAD) methodology is a software design approach that was created to overcome the rigidity of other traditional software work methods, which make it difficult to make modifications after initial development is complete.

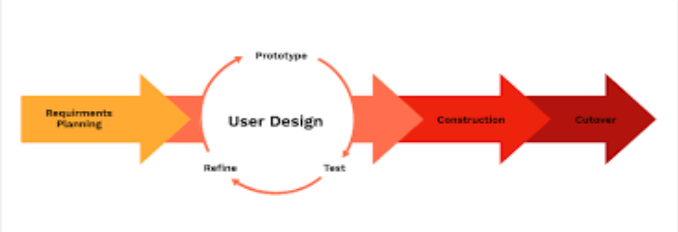

Figure 3. 1 RAD Model

At every stage of the development process, RAD approach is intended to be adaptable to changes and to accept new inputs, such as features and functions. Rapid prototyping, swift and iterative prototype releases, and prompt feedback are prioritized by the RAD framework above extended development and testing cycles (Beynon-Davies, 1999). The RAD framework also places a strong emphasis on cutting down on planning time and increasing user feedback during the prototype stage. Although the methodology can be broken down in a variety of ways, RAD generally comprises four core phases: requirements planning, user design, rapid development, and cutover.

Requirement planning is the first phase of the RAD model. Developers and clients engage throughout this stage to define project goals and expectations, as well as current and potential concerns that will need to be handled during development. A specification document gathers, analyses, and documents all of the project's requirements. The brainstorming concept is carried out in order to understand the needs and to carry out the requirements feasibility test in order to ensure that all of the analyzed requirements are testable. To examine the requirements in the proposed project, the diagrams used, and the documents that will be used in this phase. In this case, the Hunter For A Donor Application was developed to reduce the burden of donors and staff managing the appointment to donate blood and view their donation history. By this can prevent

misunderstandings and expensive change orders in the future by obtaining agreement from each important stakeholder and developer.

User design is the second phase of the RAD model. The user design will be developed through numerous prototype iterations once the project's scope has been determined. In this stage, clients and developers collaborate closely to make sure that their demands are met at every stage of the design process. It's comparable to adjustable software development in that users can evaluate each product prototype at each stage to make sure it matches their expectations. An iterative method is used to work out all the knots and flaws. A prototype is created by the developer, the client tries it, and then both parties discuss the pros and cons. This approach enables designers to make changes to the model as they go until they arrive at a satisfying design. In order to eliminate any chance of something falling through the cracks, both the software developers and the clients learn from the experience.

Construction is the third phase of the RAD model. The working model is created during construction using the prototypes and beta systems created during the design process. Because the bulk of problems and adjustments were handled throughout the extensive iterative design process, developers may build the final working model faster than they could using a traditional project management strategy. Preparation for rapid building, programme and application development, coding, and testing are the smaller factors that make up the phase. The code for the Hunter For A Blood Donor App is written in the Java programming language in Android Studio. The Hunter For A Blood Donor Application's database table was created using Firebase, which is a website to store databases. The system undergoes a User Acceptance Test (UAT) to confirm that it meets all of the requirements and specifications, as well as to identify and repair any faults. The client still has the opportunity to provide input during this third phase, which is crucial. Users can make suggestions for changes or new ideas to fix problems as they arise.

Cutover is the final phase of the RAD model. This is the phase in which the finished product is launched. It comprises user training in addition to data conversion, testing, and changeover to the new system. While the developers and customers continue to scan the system for vulnerabilities, all final modifications are done. The system deployment phase, on the other hand,

does not apply to the Hunter For A Blood Donor Application because the proposed system is not yet ready to be made public.

3.3 REQUIREMENTS

The functional and non-functional requirements of Hunter For A Blood Donor application is shown in the **Table 3. 1.**

Table 3. 1 Functional and Non-Functional Requirements

Functional Requirements	**Non-functional Requirements**
Users should be able to log in using their email address and password.	The password must be at least 6 characters long and contain a mix of alphabetical, numerical and special characters.
New donors should be able to register through the system.	Users should be able to use the app without the need for any instructions.
The system should allow donor to make an appointment.	The privacy of the user's data must be safeguarded.
The system donor can view and do changes in the appointment like update and delete.	The app must only be available on the Huawei AppStore.
The system should allow staff to approve or reject appointment.	The application only available in English.
The system should allow staff to update available slot for the appointment.	
The system should allow staff to cancel slot for the appointment.	
The system should allow staff to add news, edit or delete news.	
The system should allow staff to view donor’s profile and history of blood donation.	

The system should allow users to manage their profile like update information.	
Functional Requirements	**Non-functional Requirements**
The system should allow staff to add new campaign details into system.	
The system should allow staff to add campaign participants details into the system.	
The system should allow staff to view participants details into the system.	
The system should allow admin to add new hospital details.	
The system should allow admin to view report of hospitals, users, campaigns and appointments.	

Constraints

1.Users need to have an internet connection to be able to access the application.

2.Only the hospital admin can access the application to respond and approve the donor registration.

Limitations

1. The application only available on mobile devices with Android operating system.

2. The application only available on English language.

3.4 CONTEXT DIAGRAM

Based on the **Figure 3. 2**, this context diagram describes the relationship with the system that has external entities such as Donor, Staff and Hospital admin.

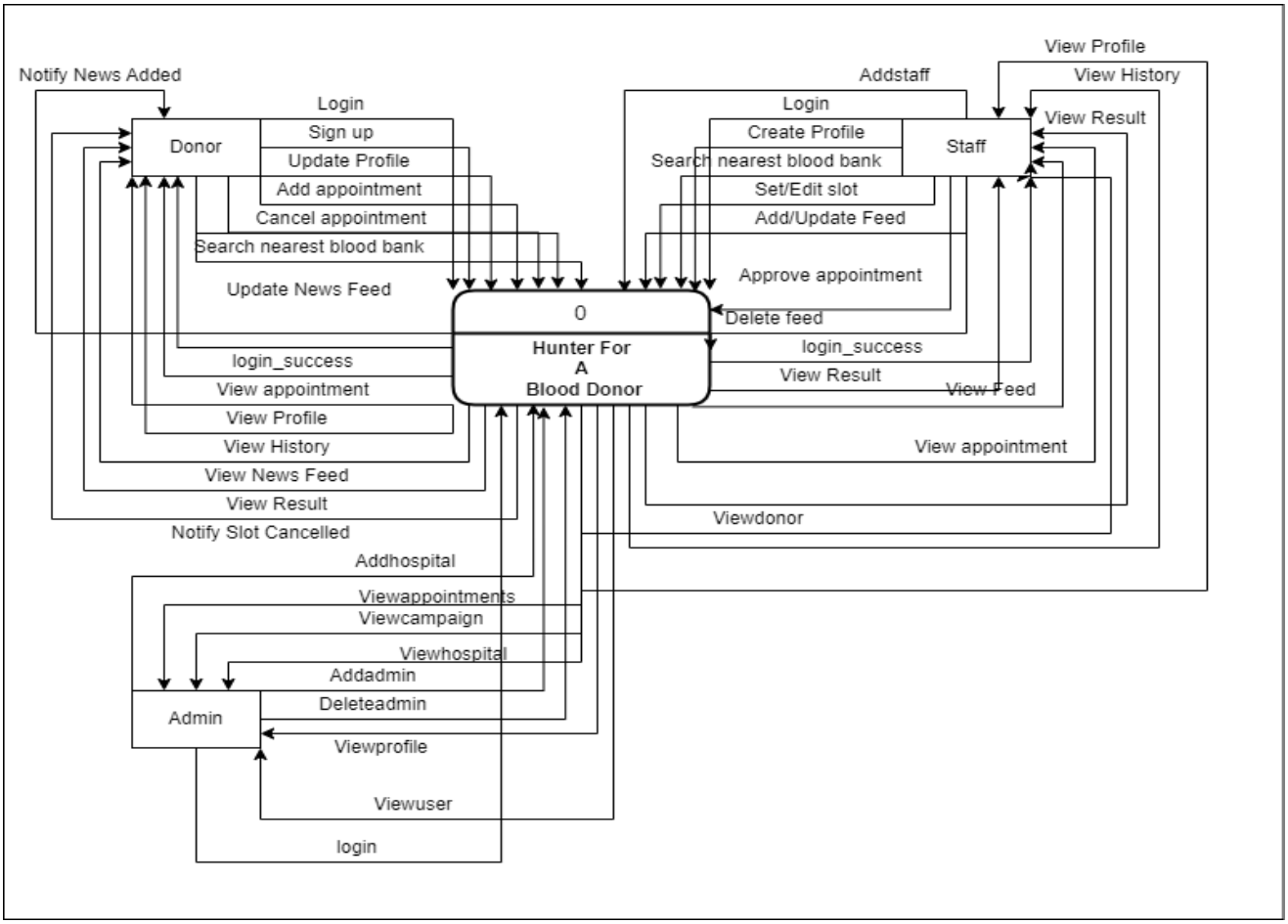

Figure 3. 2 Context Diagram of Hunter For A Blood Donor Application

This context diagram has three entities that involved and interact with the system. Each entity has its flow. Donor, staff and hospital admin must authenticate their username and password in order to use the system. Donor can register into the system if he or she doesn't have account in the system.

3.5 USE CASE DIAGRAM

Based on the **Figure 3. 3**, this use case diagram describes the modules of Manage User, Manage Appointment, Manage News Feed, Manage Slot, Manage Self-test, Manage Campaign, and Manage Report. This use case diagram consists 3 users which are donor, staff, and hospital admin.

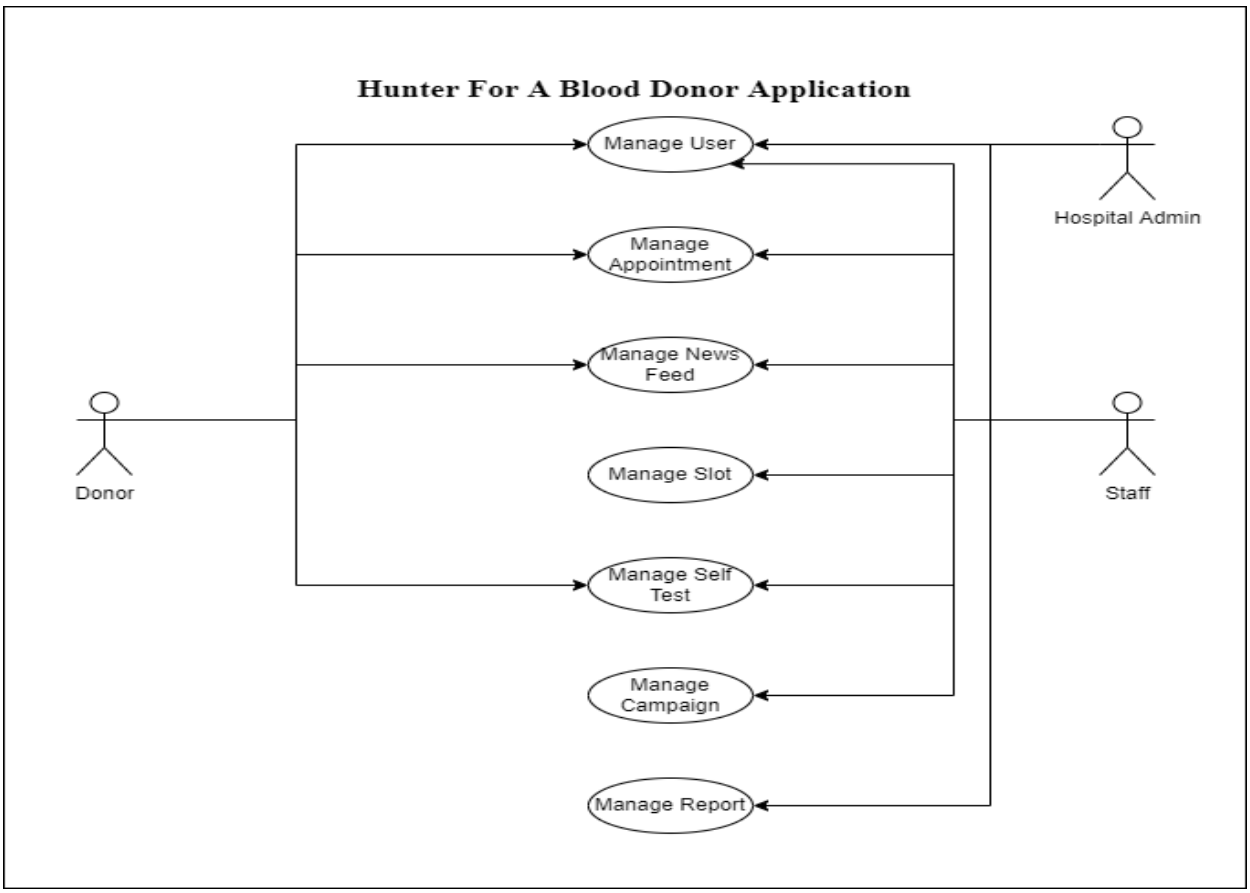

Figure 3. 3 Use Case Diagram

The use case description of Hunter For A Blood describes the modules of Manage User, Manage Appointment, Manage News Feed, Manage Slot, Manage Self-test, Manage Campaign, and Manage Report. This use case diagram consists 3 users which are donor, staff, and hospital admin is shown in the **Table 3. 2.**

Table 3. 2 Use Case Description

Requirement Id	**Module**	**Description**
BD001	Manage User	Hospital admin able to add new staff and hospital admin into the system. The hospital admin also able to view all staff, and hospital admin profiles. Once staff left the organization the hospital admin can remove or delete their profile from the system. At the same time hospital admin can view their own profile and update information about their profile. The role of staff in this system is the staff able to view their own profile and history. At the same time staff able to view their coworker (staff) and donor's profile and history too. The staff also can update information about their own profile. As a donor, the donor able create their own profile if they are new user. The donor able to view their profile and history. At the same time the donor can update information about their profile.
BD002	Manage Appointment	In this module the donor able to add an appointment. Once the donor successfully made an appointment the donor able to view the appointments and the donor also can cancel the appointment if they want. At the time the donor only can make one appointment. The donor also can update the appointment that

		they already made. When making an appointment donor also able to view their blood banks or hospital to donate blood. The role of the staff in this module is staff able to view all the appointment made all the donors. Once a donor made an appointment the staff need to approve the appointment. The staff also can make appointment.
BD003	Manage News Feed	In this module the staff can a news into the news feed. Once the news successfully added into the system staff able to view, update and delete the news from the system. The donor only can view news that added or updated by staff. When a staff added new news into the system, the donor will receive a notification.
BD004	Manage Slot	In this module there will be only one user which is the staff. The staff able set limit for an appointment section. Once the staff set a limit for an appointment section. The staff can view, update and delete the appointment slot. If the staff delete an appointment section, automatically a message will be sent to the donor to notify that the appointment that they already made is canceled and the donor need make a new appointment.
BD005	Manage Self-Test	In this module the donor can take a test by filling out a form or survey to check their eligibility to donate blood and can view the result. Once the donor takes the self-test the result will be immediately released by the system. The role of staff in this is the staff able to view the results of all the donor.

Requirement Id	**Module**	**Description**
BD006	Manage Campaign	In this module, the staff can add new campaign details. The staff also need to record the campaign participants details. The staff also can view the participants details in the system.
BD007	Manage Report	The hospital admin will be responsible to manage report module. The admin can view list of all hospitals, user, campaign and appointments of each hospitals. The admin also can new hospital details.

3.6 ACTIVITY DIAGRAM

Based on the **Figure 3. 4**, shows the activity diagram for the donor.

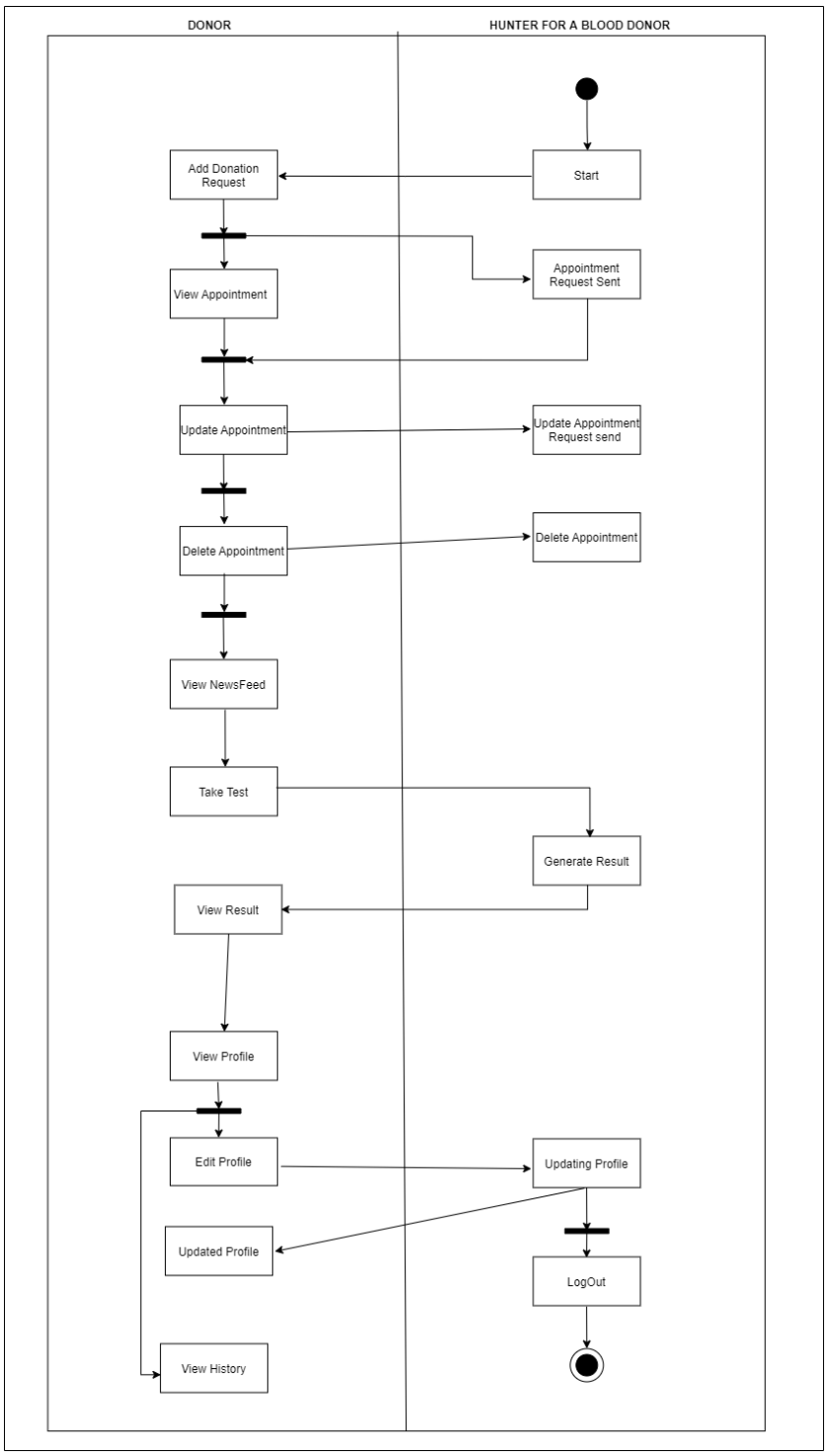

Figure 3. 4 Activity Diagram for Donor

Based on the **Figure 3. 5**, shows the activity diagram for the staff.

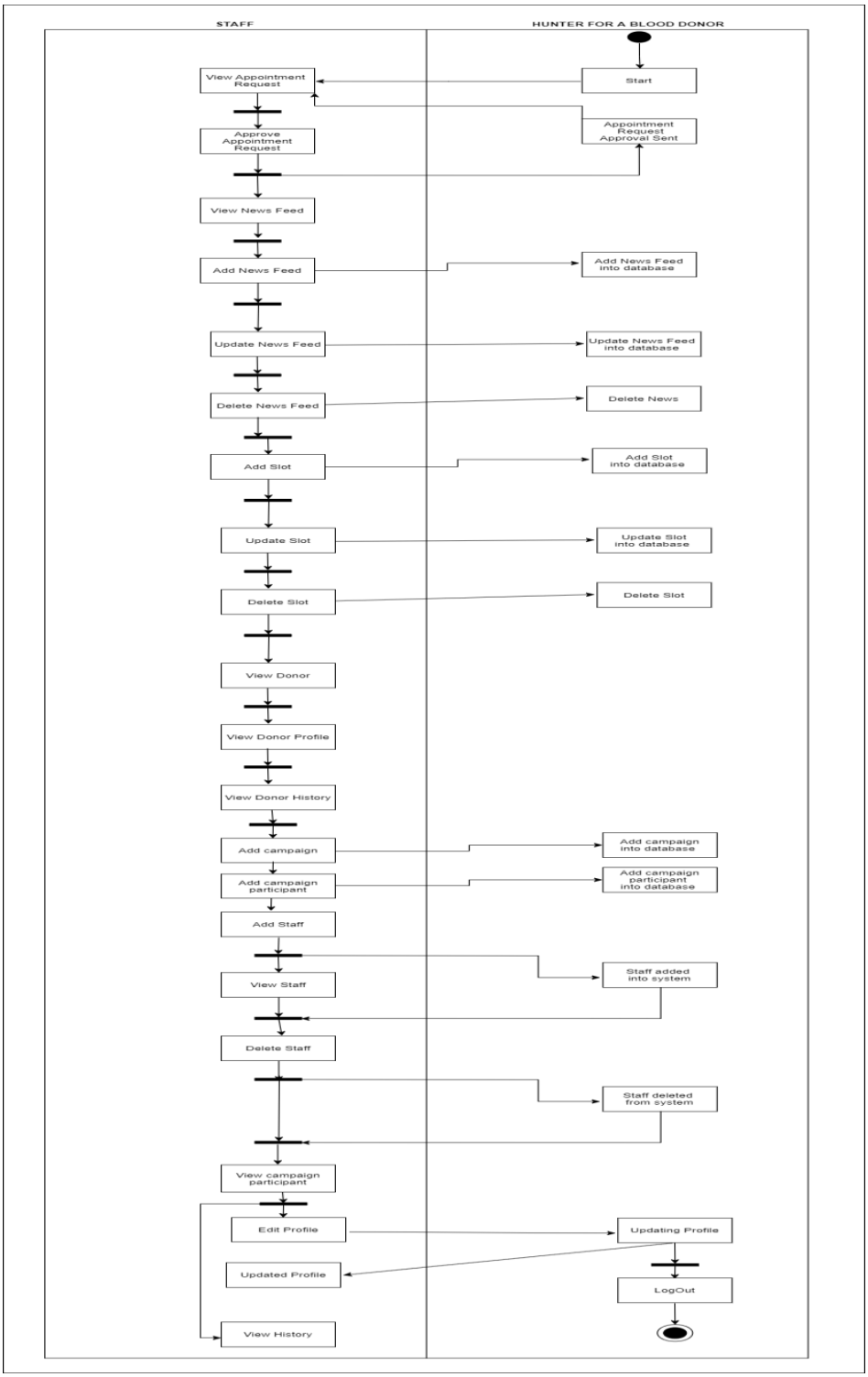

Figure 3. 5 Activity Diagram for Staff

Based on the **Figure 3. 6**, shows the activity diagram for the hospital admin.

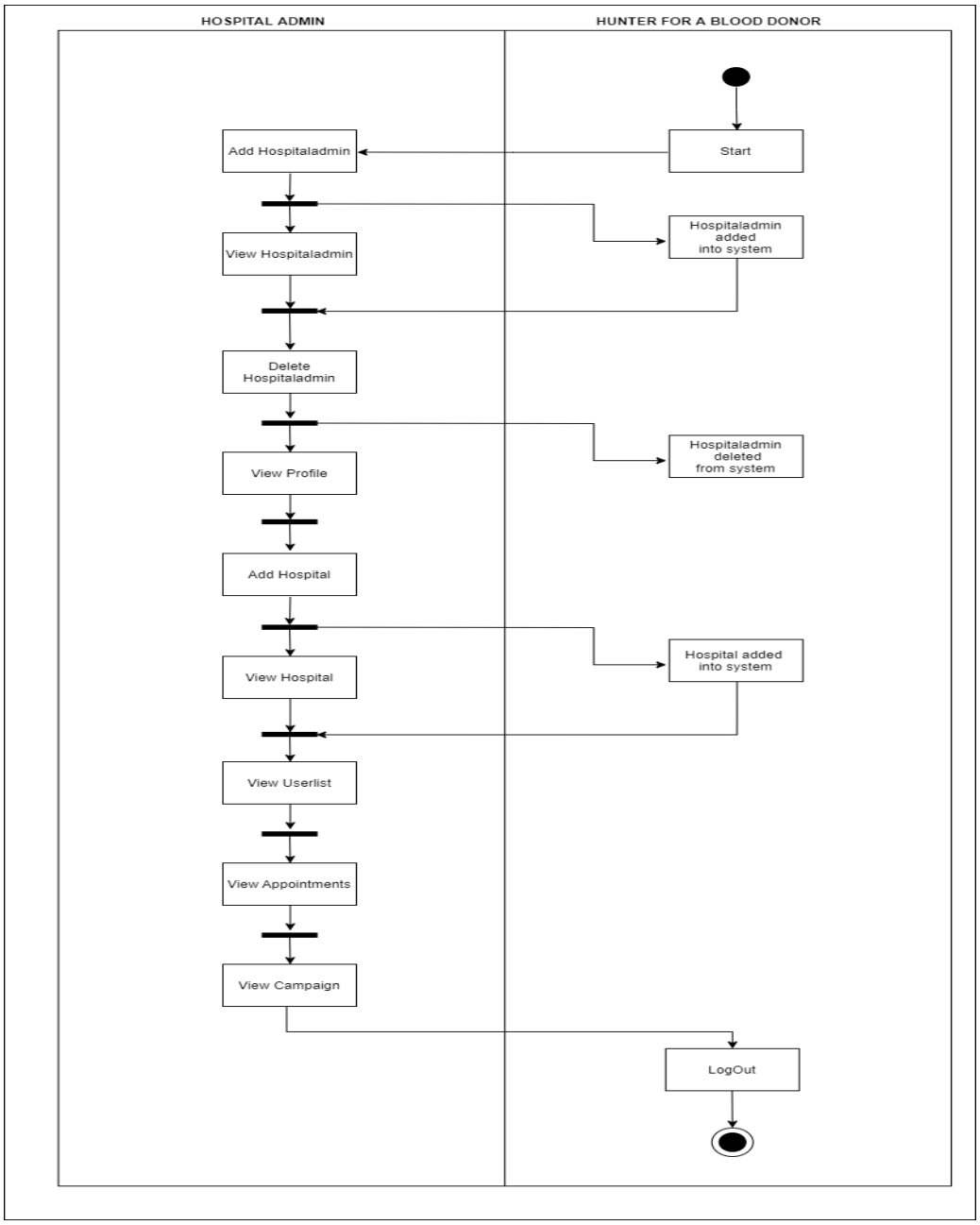

Figure 3. 6 Activity Diagram for Hospital admin

3.7 ERD DIAGRAM

Figure 3. 7 shows ERD diagram which consists seven entities in this project.

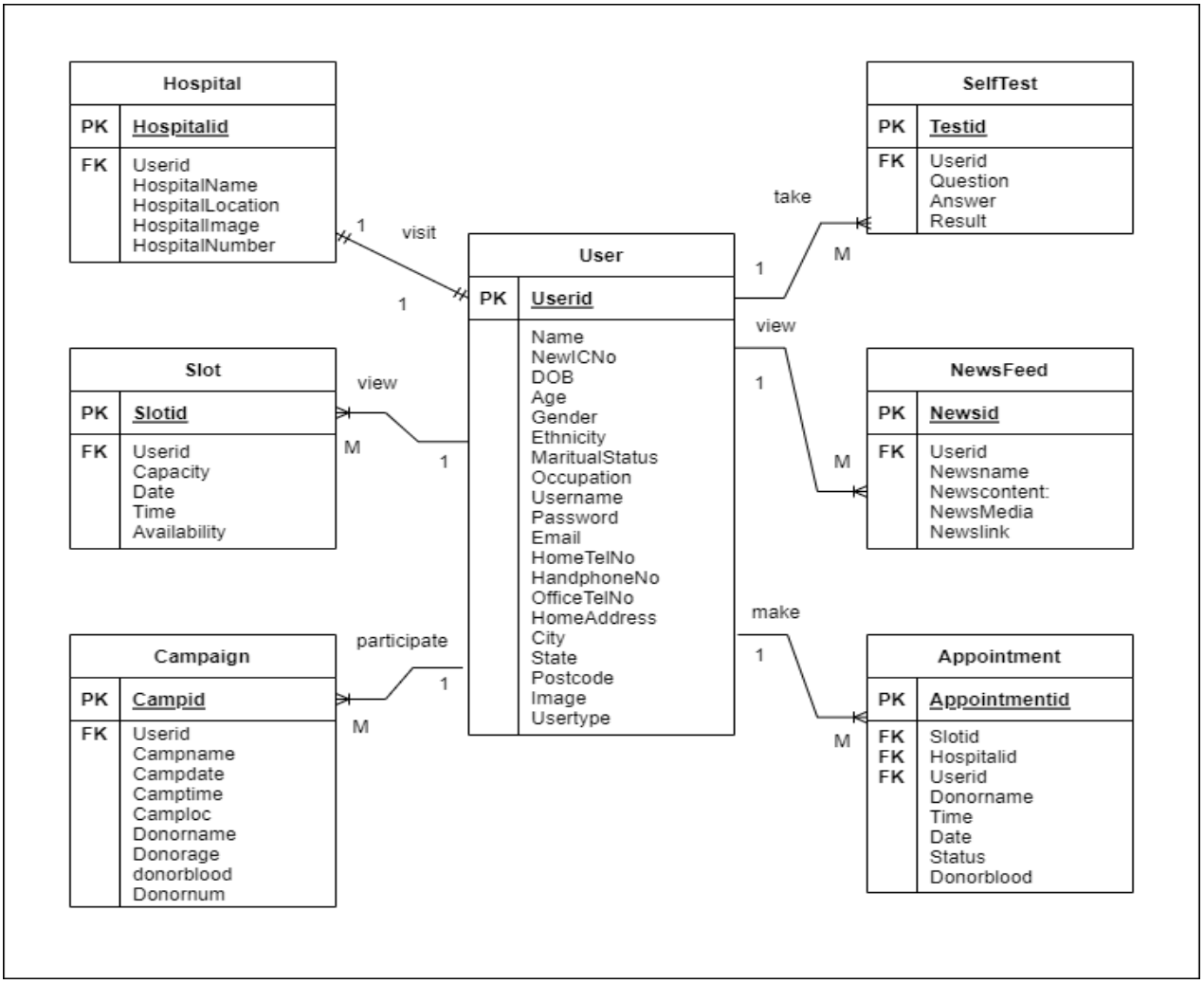

Figure 3. 7 Entity Relationship Diagram of Hunter For A Blood Donor Application

User table used to store all the user information. Hospital table is used to store all the hospital lists in the system. The appointment table is used to view the available appointments for the donor and staff who need to approve them. The slot table is added to increase the set capacity for an appointment. The self-test table is used to store the donor's answer to the eligibility question. The News Feed table is used to store the latest news regarding blood donation. The campaign table used to store all campaign details.

3.8 DATA DICTIONARY

3.8.1 User Table

Table 3. 3 describes the data dictionary of the donor in this system. This will include Userid, Name, NewICNo, DOB, Age, Gender, Ethnicity, MaritualStatus, Occupation, Username, Password, Email, HomeTelNo, HandphoneNo, OfficeTelNo, HomeAddress, City, State, Postcode, Image and Usertype.

Table 3. 3 User Table

Data Name	Data Type	Module	Constraint
Userid	Int	Manage User	PK
Name	Varchar (200)	Manage User	
NewICNo	Varchar (20)	Manage User	
DOB	Varchar (200)	Manage User	
Age	Int	Manage User	
Gender	Varchar (20)	Manage User	
Ethnicity	Varchar (20)	Manage User	
MaritualStatus	Varchar (20)	Manage User	
Occupation	Varchar (20)	Manage User	
Username	Varchar (50)	Manage User	
Password	Varchar (50)	Manage User	
Email	Varchar (50)	Manage User	
HomeTelNo	Varchar (20)	Manage User	
HandphoneNo	Varchar (20)	Manage User	
OfficeTelNo	Varchar (20)	Manage User	
HomeAddress	Varchar (100)	Manage User	
City	Varchar (100)	Manage User	
State	Varchar (100)	Manage User	
Postcode	Varchar (100)	Manage User	

Data Name	Data Type	Module	Constraint
Image	Blob	Manage User	
Usertype	Varchar (100)	Manage User	

3.8.2 Appointment Table

Table 3. 4 describes the data dictionary of the appointment in this system. This will include Appointmentid, Slotid, Hospitalid, Userid, Donorname, Donorblood, Time, Date, Status.

Table 3. 4 Appointment Table

Data Name	Data Type	Module	Constraint
Appointmentid	Int	Manage Appointment	PK
Slotid	Int	Manage Appointment	FK
Hospitalid	Int	Manage Appointment	FK
Userid	Int	Manage Appointment	FK
Donorname	Varchar (200)	Manage Appointment	
Donorblood	Varchar (50)	Manage Appointment	
Time	Varchar (50)	Manage Appointment	
Date	Varchar (50)	Manage Appointment	
Status	Varchar (50)	Manage Appointment	

3.8.3 Hospital Table

Table 3. 5 describes the data dictionary of the hospital in this system. This will include Hospitalid, Userid, HospitalName, HospitalLocation, HospitalImage and HospitalNumber.

Table 3. 5 Hospital Table

Data Name	Data Type	Module	Constraint
Hospitalid	Int	Manage Appointment	PK
Userid	Int	Manage Appointment	FK

Data Name	Data Type	Module	Constraint
HospitalName	Varchar (200)	Manage Appointment	
HospitalLocation	Varchar (200)	Manage Appointment	
HospitalImage	Blob	Manage Appointment	
HospitalNumber	Varchar (50)	Manage Appointment	

3.8.4 NewsFeed Table

Table 3. 6 describes the data dictionary of the newsfeed in this system. This will include Newsid, Userid, Newsname, Newscontent, NewsMedia and Newslink.

Table 3. 6 NewsFeed Table

Data Name	Data Type	Module	Constraint
Newsid	Int	Manage NewsFeed	PK
Userid	Int	Manage NewsFeed	FK
Newsname	Varchar (200)	Manage NewsFeed	
Newscontent	Varchar (200)	Manage NewsFeed	
NewsMedia	BLOB	Manage NewsFeed	
Newslink	Varchar (200)	Manage NewsFeed	

3.8.5 Slot Table

Table 3. 7 describes the data dictionary of the slot in this system. This will include Slotid, Userid, Capacity, Date, Time, Availability.

Table 3. 7 Slot Table

Data Name	Data Type	Module	Constraint
Slotid	Int	Manage Slot	PK
Userid	Int	Manage Slot	FK
Capacity	Varchar (50)	Manage Slot	

Data Name	Data Type	Module	Constraint
Date	Varchar (10)	Manage Slot	
Time	Varchar (10)	Manage Slot	
Availability	Varchar (50)	Manage Slot	

3.8.6 SelfTest Table

Table 3. *8* describes the data dictionary of the selftest in this system. This will include Testid, Userid, Question, Answer and Result.

Table 3. 8 SelfTest Table

Data Name	Data Type	Module	Constraint
Testid	Int	Manage SelfTest	PK
Userid	Int	Manage SelfTest	FK
Question	Int	Manage SelfTest	
Answer	Varchar (50)	Manage SelfTest	
Result	Varchar (50)	Manage SelfTest	

3.8.7 Campaign Table

Table 3. 9 describes the data dictionary of the campaign in this system. This will include Campid, Campname, Userid, Campdate, Camptime, Camploc, Donorname, Donorage, Donorblood and Donornum.

Table 3. 9 Campaign Table

Data Name	Data Type	Module	Constraint
Campid	Int	Manage Campaign	PK
Userid	Int	Manage Campaign	FK
Campname	Varchar (200)	Manage Campaign	

Data Name	Data Type	Module	Constraint
Campdate	Varchar (200)	Manage Campaign	
Camptime	Varchar (200)	Manage Campaign	
Camploc	Varchar (200)	Manage Campaign	
Donorname	Varchar (200)	Manage Campaign	
Donorage	Varchar (200)	Manage Campaign	
Donorblood	Varchar (200)	Manage Campaign	
Donornum	Varchar (200)	Manage Campaign	

3.9 CLASS DIAGRAM

Figure 3. 8 shows the class diagram is a structural diagram in the Unified Modeling Language (UML) that is used for general conceptual modelling of the application's structure and for translating the models into programming code.

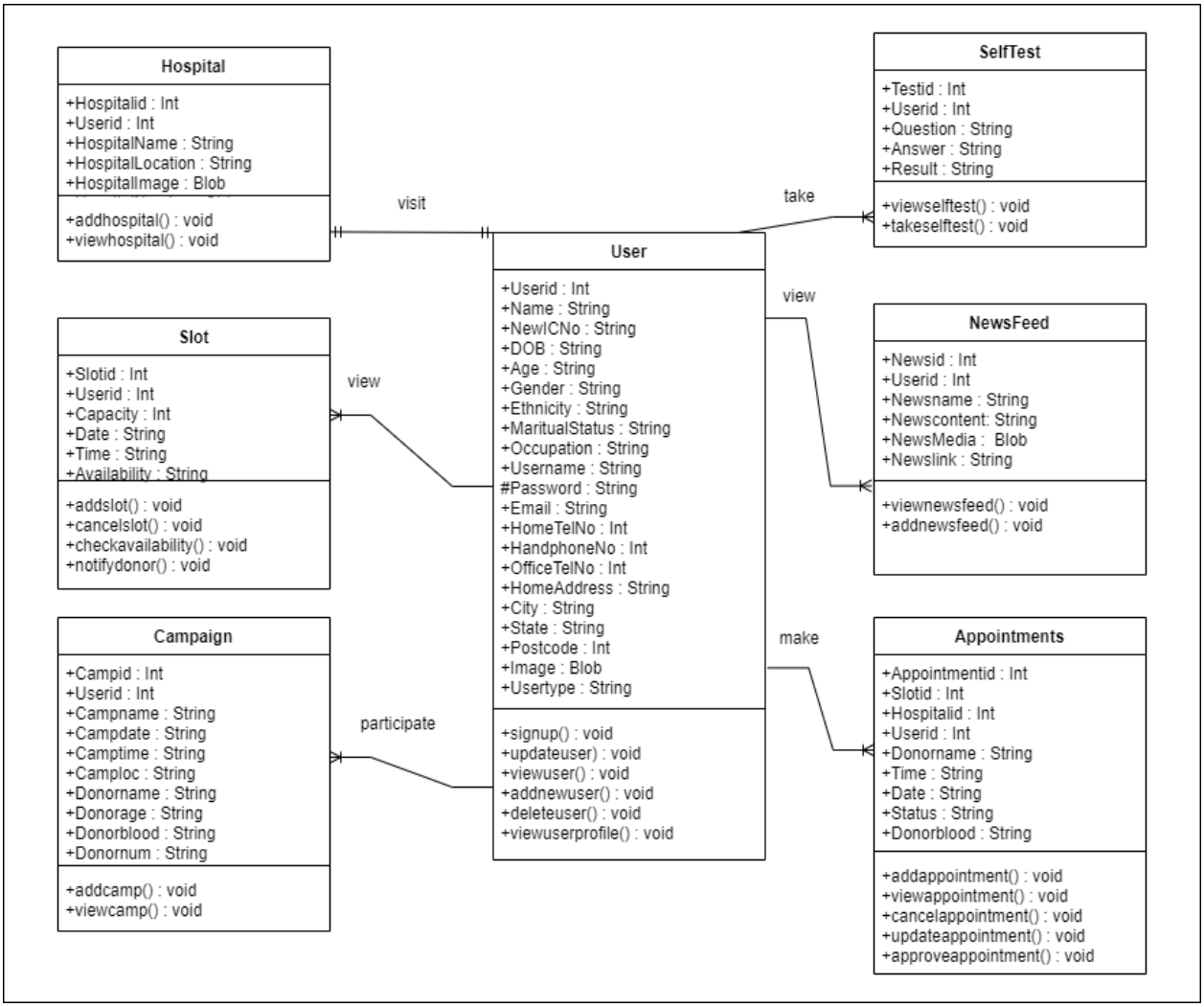

Figure 3. 8 Class diagram of Hunter For A Blood Donor Application

It describes the attributes and operations of a class on the system that are mapped to object-oriented languages. User, Appointment, Hospital, Slot, NewsFeed, SelfTest, and Campaign are the 7 classes in Hunter For A Blood Donor Application.

3.10 REQUIREMENT OF HARDWARE AND SOFTWARE

Table 3. 10 below show the requirement of hardware and software to be used in this project.

Table 3. 10 Requirement of Hardware and Software of Hunter For A Blood Application

NAME	VERSION	DESCRIPTION
Android Studio	4.0	For developing mobile application.
Github	2.5	Store coding in GitHub for backup
MockFlow	Online Trial	Use for draw interface design
Firebase	Online Trial	Store database
MSI Alpha 15	A3DDK	Used as tool to execute all software code and applications.
Draw.io	Online Trial	Use for draw the diagrams
Microsoft Office Word	2019	Use for documentation.
Microsoft Office Excel	2019	Use to create Gantt Chart.

3.11 WORK BREAKDOWN STRUCTURE

In software project management, a work breakdown structure (WBS) is a mechanism for completing a multi-step project. It separates the job into smaller, more manageable, and self-contained activities, allowing tasks to be completed more quickly and efficiently. The planned project's work breakdown structure is depicted in the **Figure 3. 9 .**

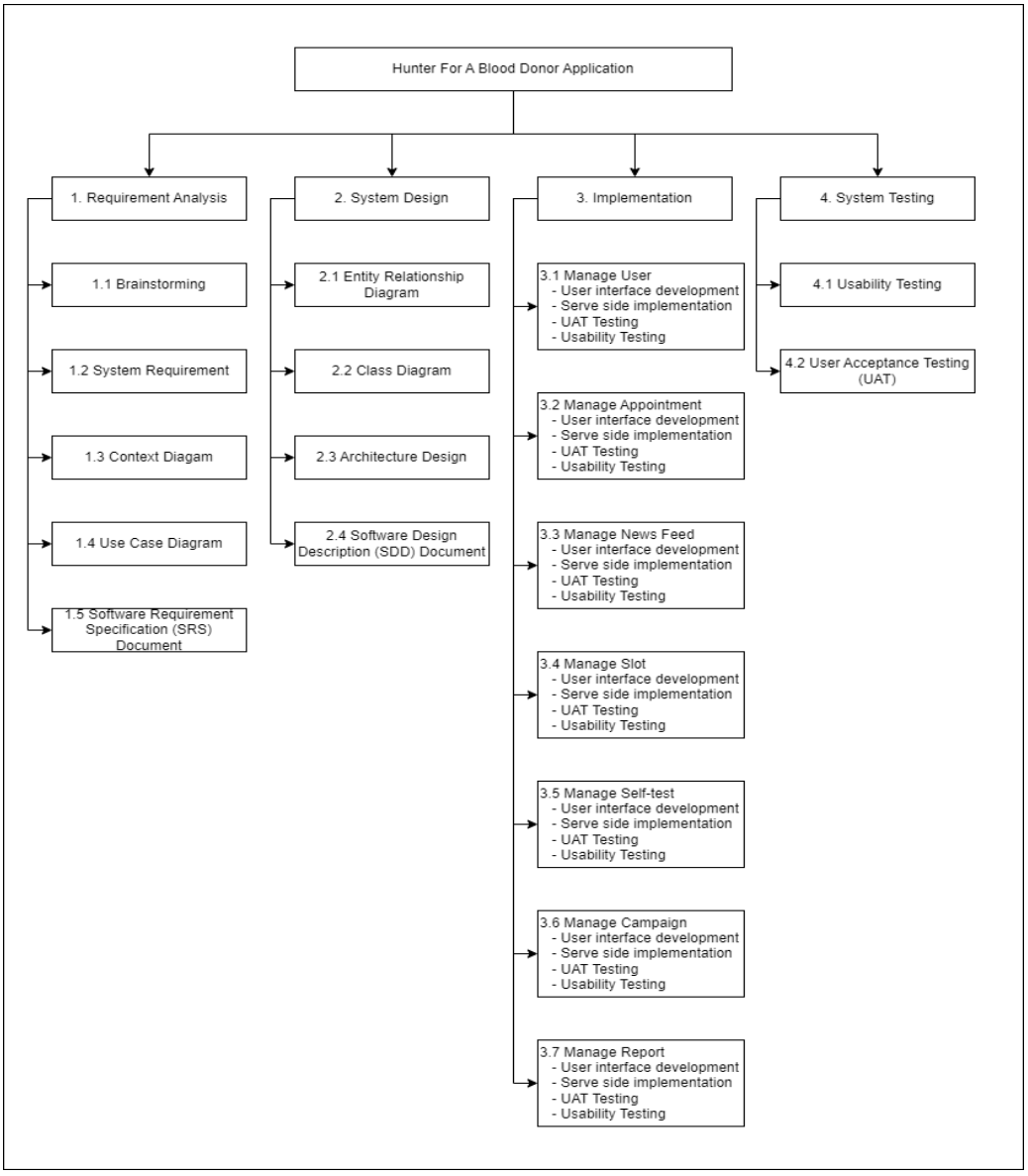

Figure 3. 9 WBS Diagram of Hunter For A Blood Donor Application

3.12 GANTT CHART

Table 3. 11 shows a Gantt chart is a project management tool that is a graphical depiction of a project schedule. It shows the start and finishes dates of several tasks of a project. A Gantt Chart will be attached in the **APPENDIX A**.

Table 3. 11 Organization Plan Table

TASK	START	END	DURATION (day)
Requirement Analysis			
Brainstorming idea	09/3/22	10/3/22	2
Study on Hunter For A Blood Donor Application	10/3/22	12/3/22	3
Define background of the project	13/3/22	13/3/22	1
Define title, problem statement and objective	14/3/22	15/3/22	2
Collect user requirement	19/3/22	22/3/22	4
Study on existing system and application	25/3/22	30/3/22	6
Compare existing system and application	31/3/22	1/4/22	2
System Design			
Define methodology used	14/4/22	14/4/22	1
Study methodology used	14/4/22	15/4/22	2
Use case diagram, context diagram, DFD, ERD and class diagram	20/4/22	26/4/22	7

TASK	START	END	DURATION (day)
Define hardware and software requirement	27/4/22	28/4/22	2
Interface design	29/4/22	5/5/22	7
SRS document	6/5/22	11/5/22	6
SDD document	12/5/22	17/5/22	6
Implementation			
Implement Manage User	20/5/22	26/5/22	7
Implement Manage Appointment	27/5/22	2/6/22	7
Implement Manage News Feed	3/6/22	9/6/22	7
Implement Manage Slot	10/6/22	16/6/22	7
Implement Manage Self-test	17/6/22	23/6/22	7
Implement Manage Campaign	24/6/22	30/6/22	7
Implement Manage Report	1/7/22	7/7/22	7
System Testing			
Unit testing	9/7/22	15/7/22	7
Integration testing	16/7/22	22/7/22	7

3.13 TESTING PLAN/VALIDATION PLAN

Table 3. 12 shows a test plan for all the modules.

Table 3. 12 Testing/Validation Plan

No.	Module	Function	Status				Comment
1.	Manage User	Allow user to login into the system.	Yes		No		
		Allow donor and hospital admin to create new profile.	Yes		No		
		Allow user to view own profile.	Yes		No		
		Allow user to update own profile	Yes		No		
		Allow user to view other's profile.	Yes		No		
		Allow hospital admin to delete old staff's profile.	Yes		No		
2.	Manage Appointment	Allow donor and staff make a new appointment.	Yes		No		
		Allow staff and donor to view the appointments.	Yes		No		
		Allow donor to update the appointment.	Yes		No		
		Allow donor to cancel the appointment.	Yes		No		
		Allow donor to view nearby blood banks.	Yes		No		
		Allow staff to approve appointment made by donor.	Yes		No		

No.	Module	Function	Status				Comment
		Allow staff to cancel appointment made by donor.	Yes		No		
3.	Manage News Feed	Allow donor and staff to view news feed.	Yes		No		
		Allow staff to update news feed.	Yes		No		
		Allow staff to delete news feed.	Yes		No		
		Allow staff to add news feed.	Yes		No		
		Allow donor receive notification when new news added	Yes		No		
4.	Manage Slot	Allow hospital admin to add sot.	Yes		No		
		Allow hospital admin to update slot.	Yes		No		
		Allow hospital admin to view slot.	Yes		No		
		Allow hospital admin delete slot.	Yes		No		
		Allow donor receive notification when appointment slot deleted by staff.	Yes		No		
5.	Manage Self-Test	Allow donor to take test by filling up survey.	Yes		No		
		Allow donor and staff to view result.	Yes		No		
6.	Manage Campaign	Allow staff to add new campaign details.	Yes		No		
		Allow staff to add new campaign participant details.	Yes		No		
		Allow staff to view campaign participants details	Yes		No		

No.	Module	Function	Status				Comment
7.	Manage Report	Allow hospital admin to view all hospitals details	Yes		No		
		Allow hospital admin to add hospital details.	Yes		No		
		Allow hospital admin to view all appointment details	Yes		No		
		Allow hospital admin to view all user details	Yes		No		
		Allow hospital admin to view all campaign details	Yes		No		

3.14 POTENTIAL USE

Donors, seekers, and hospital admin can all utilize the Hunter for A Blood Donor Application, which is a database of blood donors. When a donor needs to make an appointment, they can use this application. They can make blood donations simply on their mobile devices. At the same time, donors can frequently check news regarding blood donations. For this great endeavor, applications for Hunter for a Blood Donor are being developed.

Aside from that, this application assists donors in adding user information so that donors can view the donor's profile and current status regarding blood donation. It, also shows the history of the donor's blood donations. A donor can also make an appointment to donate blood by choosing the time and location where they are going to donate the blood. Once a donor has made an appointment, the donor can view the appointment. When the donor makes an appointment, the donor can edit the appointment that they have already made. If there's an emergency, the donor can cancel the appointment. There will be a news feed that displays the information about the donation. Donors can also take a self-test to check their eligibility to donate blood. If they pass the test, they can donate blood. The donors can only make an appointment when they pass. They self-test. Donors can also view the results of their tests. Users can also track their nearby blood banks when they need blood from them. The donor can also update their profile security by updating their passwords.

Apart from the donor, there will be one other user who is staff. The staff can view the donor's profile and the donor's current status regarding the donor's blood donation. It also shows the history of the donor's blood donations. At the same time, the staff can view their own profile and make some changes to their own profile. The staff can also accept an appointment that has been made by a donor. Once the staff approves, then only the donor can donate blood. The staff need to set a slot for each appointment section. They can edit, delete, and view the slot. If the staff can schedule an appointment and a donor makes an appointment during that time, a notification of cancellation will be sent to the donor. When the donor has completed the self-test, the staff can view their test and result. The staff are also responsible for adding news to the news feed. The staff can also view, edit, and delete the news that they have already posted. The staff also can new staff into the system. The staff also can remove a staff account if the staff left the organization.

The role of hospital admin in this system is that the hospital admin can add hospital admins into the system. The hospital admin can also view their own profile and update their profile. If the hospital admin leaves the organization, the hospital admin can remove their account from this system. The hospital admin also can manage report by viewing list of hospitals and new hospital details into the system. The hospital admin also can view list of users, appointments and campaigns of each hospital.

3.15 CONCLUSION

Finally, the waterfall model was used to develop the Hunter For A Blood Donor application. This chapter has gone over each phase of the waterfall model. In this chapter, the context diagram, use case diagram, entity relationship diagram, and class diagram for this project have all been built and demonstrated. In addition, the project's hardware and software requirements were described in this chapter.

CHAPTER 4

RESULTS AND DISCUSSION

4.1 INTRODUCTION

With the goals that were previously established in Chapter 1 as a guide, the results and discussion of the Hunter For A Blood Donor Application are presented in this chapter. The operational prototype's screenshots of the implementation are shown, and this chapter will go through each interface's functionality. Additionally, the project's testing results will be discussed in the results and discussion. The summary will wrap up all the information in this chapter. The Android Studio development platform and Firebase as the cloud database are used to create the Hunter For A Blood Donor application.

4.2 IMPLEMENTATION

The Hunter For A Blood Donor Application Implementation will cover the steps in building and implementing various aspects of the project. A brief description of each project module will be followed by screenshots of the user interface.

Figure 4. 1 shows when the user clicks the application, this splash screen will appear.

Figure 4. 1 Splash Screen

Figure 4. 2 show the user can log in to the system by entering their email and password. If the email and password are valid, the user can login into the application. Otherwise, there will be an error message. If the user forgets the password, the user can click "Forgot Password" to change their password. If the user is new to the application, the user can click "New User? Create Account to log in" will navigate to Sign up page to create profile and login into the application.

Figure 4. 2 Login Page

Donor

Manage User

Figure 4. 3 shows the new user can enter details to create a profile. Once successfully filled in all the details, the user can login into the application. To register in the application, users must be at least 18 years old. Below that, an error message will pop out, and also, if any details weren't filled in, the application will show an error message.

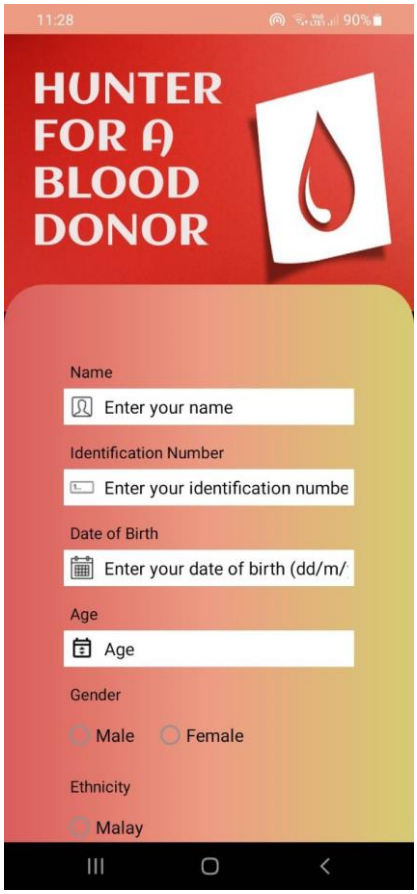

Figure 4. 3 Signup Page

Figure 4. 4 shows once the user logs into the application, it will redirect to the profile interface. If the user wants to edit the user profile, they can click the edit icon and it will redirect to the edit profile interface. If the user wants to log out of the system, they can click the logout icon.

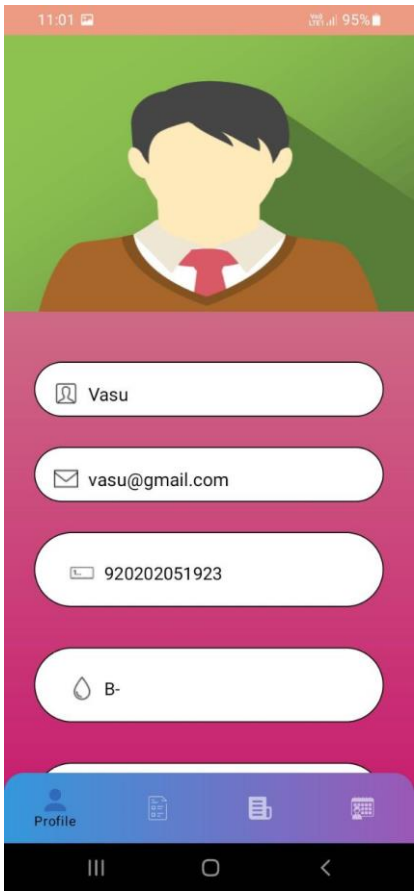

Figure 4. 4 View Profile

Figure 4. 5 shows the user can edit their profile information here. If the user wants to change the profile picture, they need to click on the image so that it will open the gallery and the user can update the profile picture. Once the user has inserted the new profile picture and information, they need to click the update button to update the information in the application. If the user clicks the "Please click this if you wish to change the password," it will redirect to the update password interface.

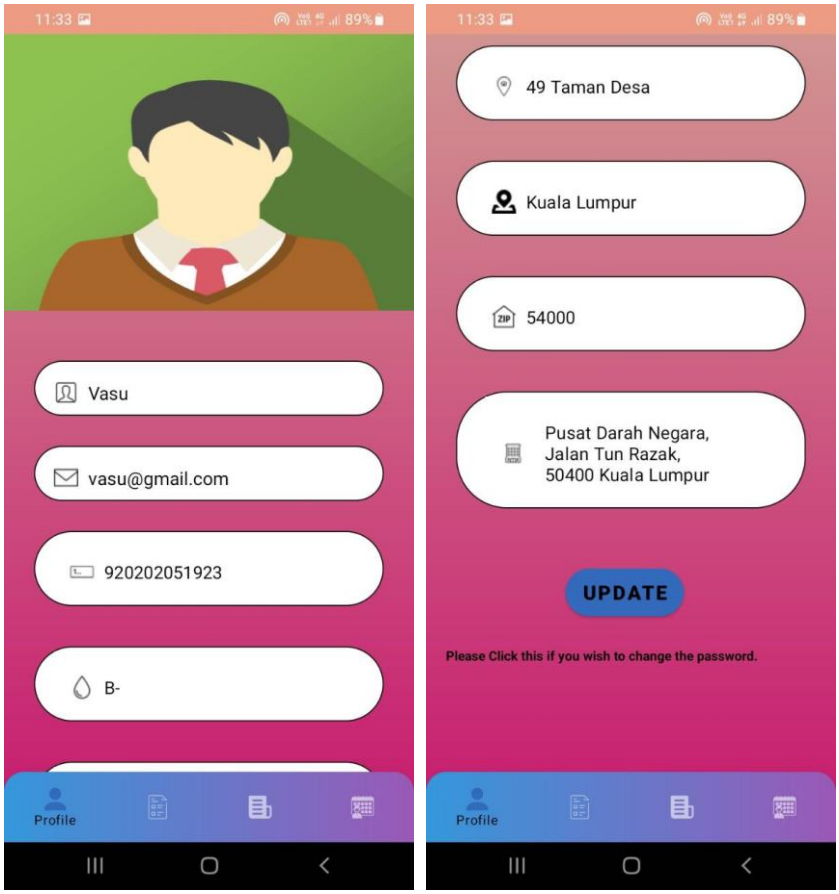

Figure 4. 5 Edit Profile

Figure 4. 6 shows the user can change their password in this interface. To do that, the user needs to enter their current password to authenticate. If the authentication is successful, the user can enter a new password. Otherwise, the user will be unable to change their password.

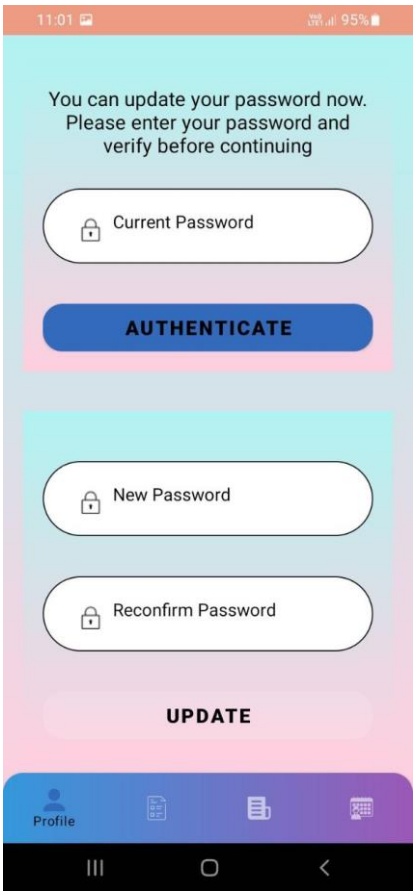

Figure 4. 6 Change Password

Manage Test

Figure 4. 7 shows the donor can read the self-test questions. Once it is done, they can click the "agree" button to self-test.

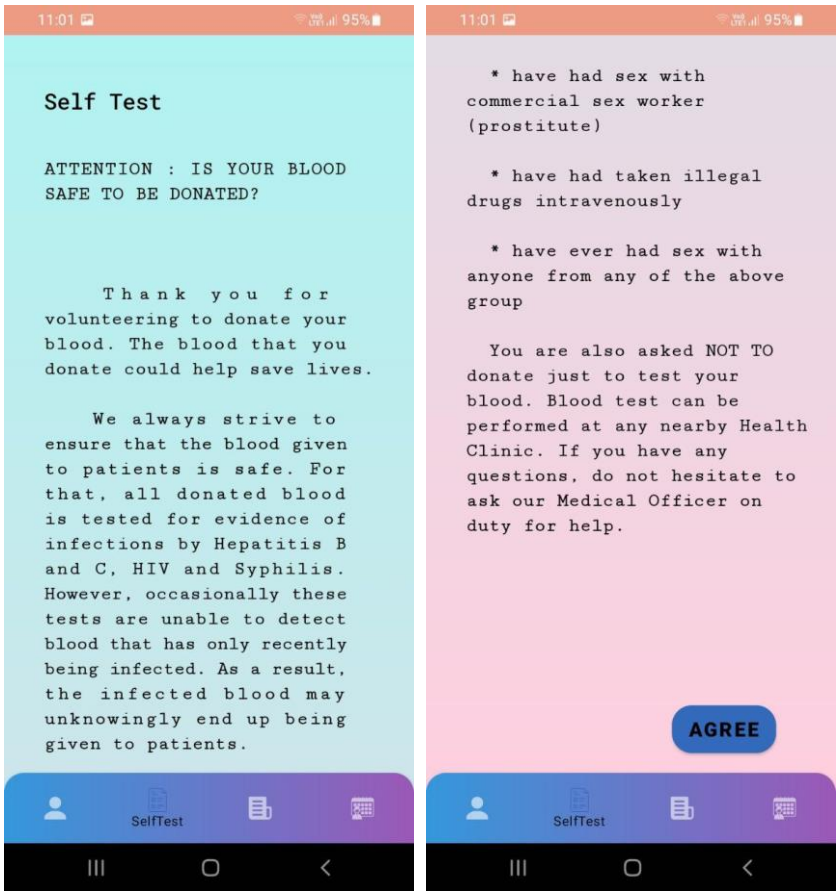

Figure 4. 7 Test Instruction

Figure 4. 8 shows the donor can answer the survey by clicking the yes or no radio button. Once it's done, they can click the submit button. If the donor wants to view their previous self-test result, they can click the result icon on the top right of the page and it will redirect to the result interface.

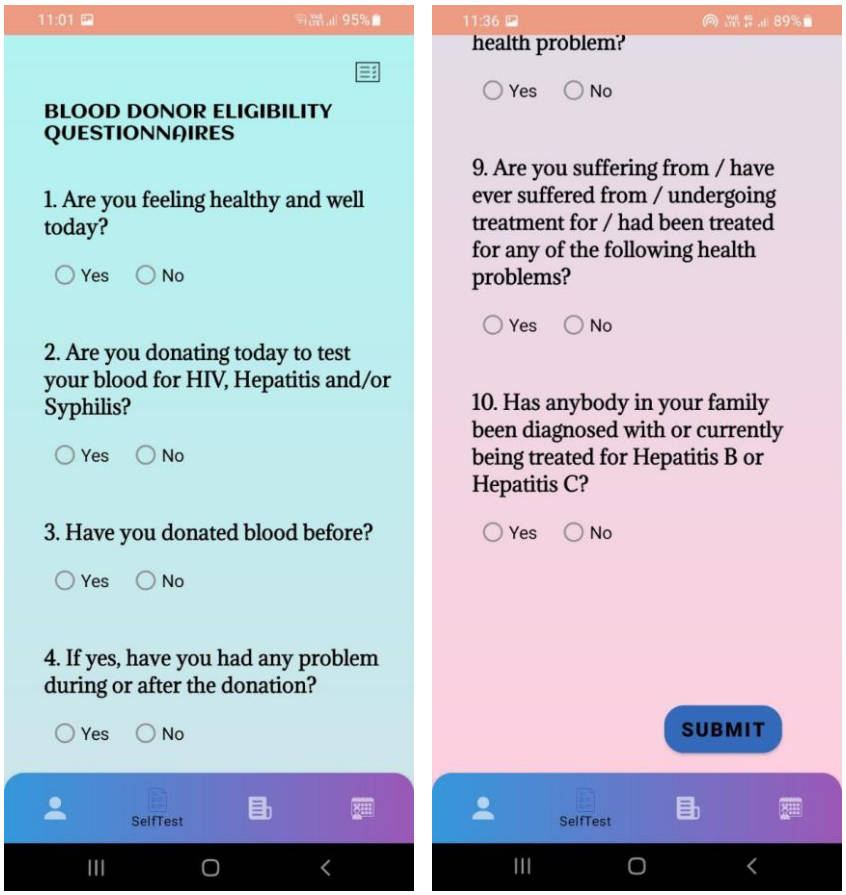

Figure 4. 8 Test Question

Figure 4. 9 shows the donor failed the test. The application will display a failed message. If the donor clicks the continue button, it will redirect to the test instruction page.

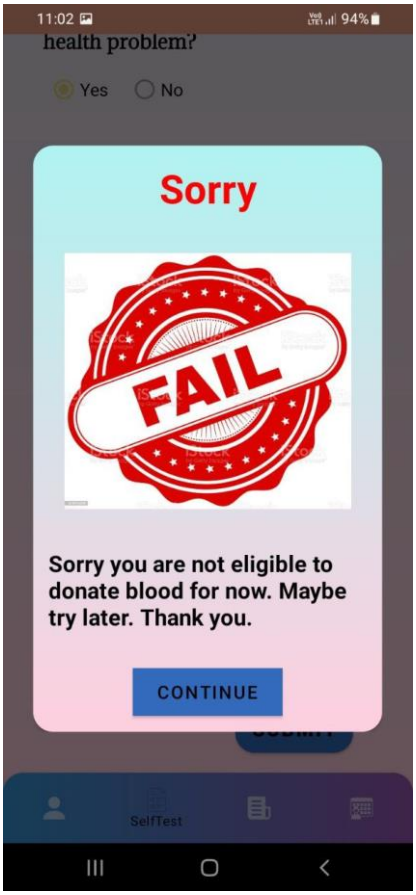

Figure 4. 9 Test Failed Message

Figure 4. 10 shows the donor passes the test. The application will display a success message. If the donor clicks the cancel button, it will redirect to the test instruction interface. If the donor clicks the continue button, it will redirect to the appointment interface.

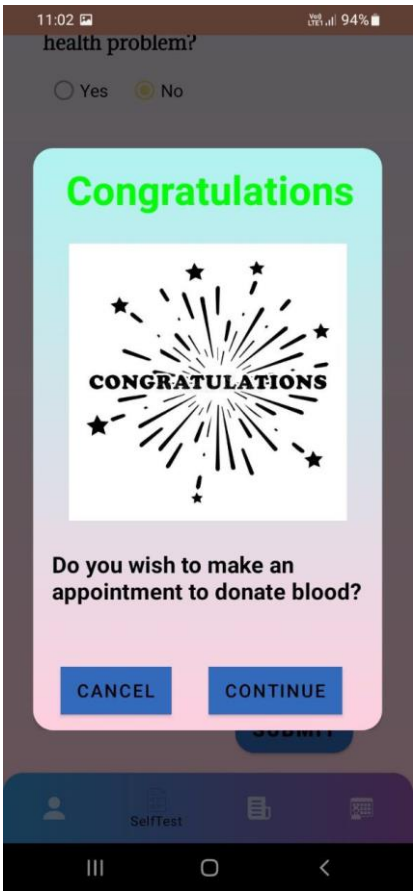

Figure 4. 10 Test Success Message

Figure 4. 11 shows the donor can view their eligibility results.

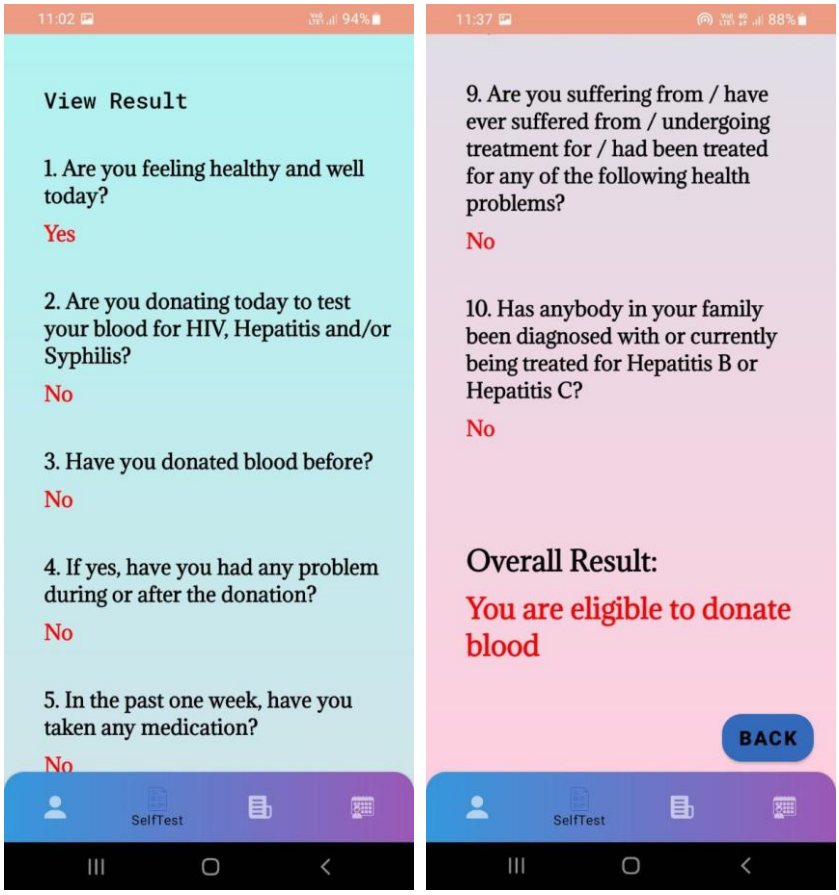

Figure 4. 11 View Result

Manage News

Figure 4. 12 shows the donor can view the latest news regarding blood donations in the news feed interface.

Figure 4. 12 View News Feed

Manage Appointment

Figure 4. 13 shows the donor can view their upcoming appointments through this interface. If the donor clicks the "Add Appointment" button, it will redirect to the add appointment interface. If the donor clicks the "Track Location" button, it will redirect to the track location interface. If the donor clicks the "View History" button, it will redirect to the appointment history interface.

Figure 4. 13 Appointment

Figure 4. 14 shows the donor can view their appointment history.

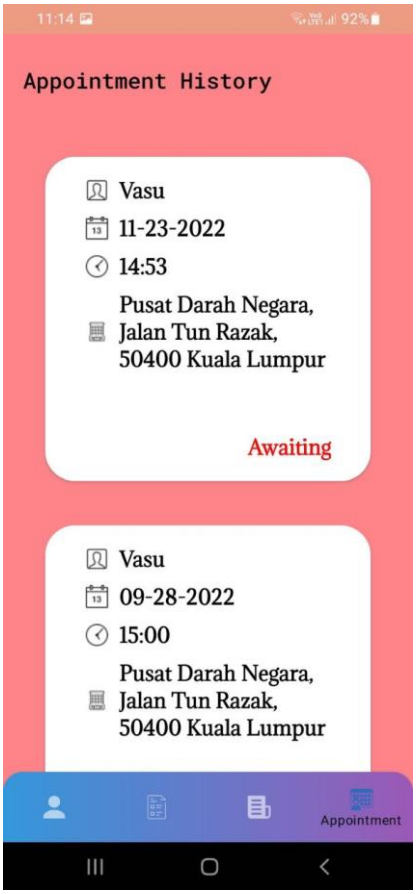

Figure 4. 14 Appointment History

Figure 4. 15 shows the donor can view their current location. If the donor clicks the hospital icon above the map, it will display the nearby blood banks. If the donor clicks the hospital icon in the map, it will display the hospital name and address. The donor can also click the map icon to open the maps to view the routes and directions.

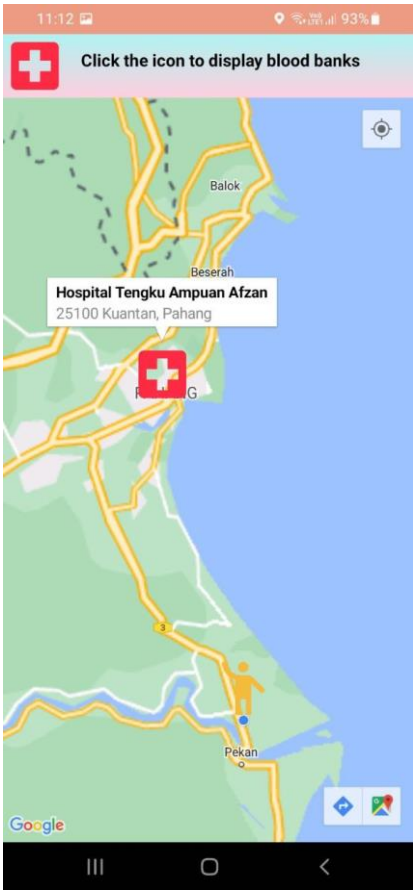

Figure 4. 15 Nearby Blood Bank

Figure 4. 16 shows once the donor clicks the "Add Appointment" button, it will redirect to the selected hospital interface. In this interface, the donor needs to select their preferred state and select the hospital that they want. Once it is done, the donor needs to click the next button.

Figure 4. 16 Select Hospital

Figure 4. 17 shows once the donor successfully selects the hospital, the donor needs to select the date they want to make an appointment. Once it is done, the donor can click the next button.

Figure 4. 17 Select Date

Figure 4. 18 shows Once the donor successfully selects the date, the donor needs to select the time they want to make an appointment. Once it is done, the donor can click the next button. The time slot will be red if the slot capacity is full. The donor was unable to click that slot. They need to select a different time slot.

Figure 4. 18 Select Time

Figure 4. 19 shows the donor needs to verify the appointment details. If all is okay, the donor can click the book button to confirm the appointment.

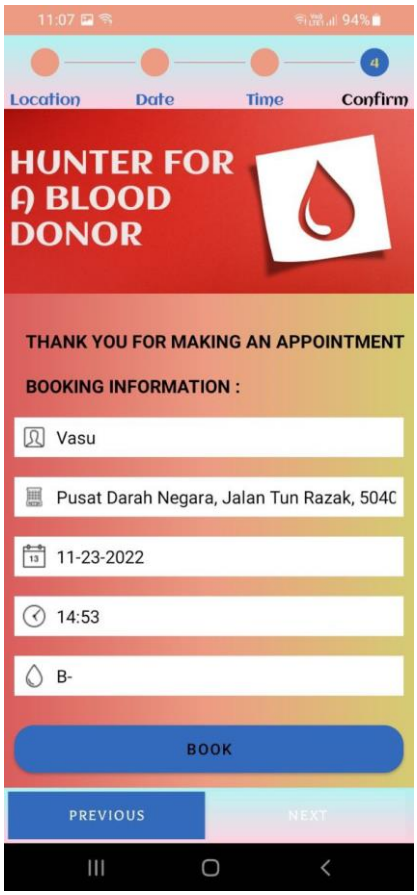

Figure 4. 19 Appointment Confirmation

Figure 4. 20 shows the donor can view their upcoming appointment here. When there's an appointment, the "Add Appointment" button is unable to be clicked. If they want to change their appointment, they can click the change button to make the change, but before the change, a pop-out message will appear to confirm that the appointment needs to be changed. This is because once the appointment clicks to change, it will not be retrieved. If the user wants to delete the appointment, they can click the delete button to delete it.

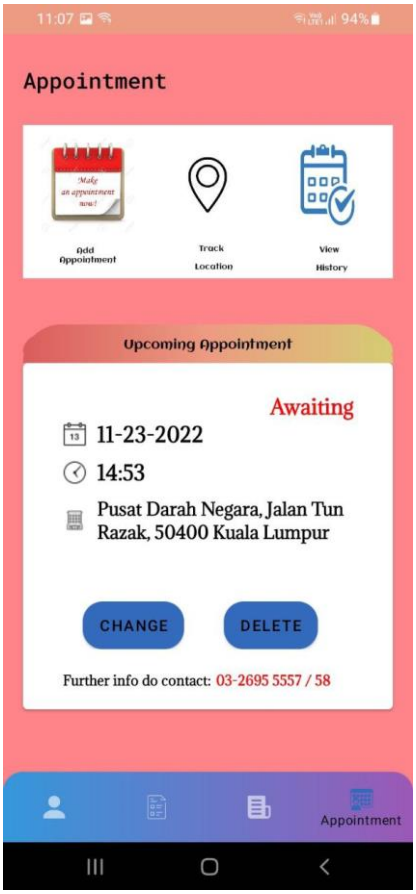

Figure 4. 20 Upcoming Appointment

Staff

Manage User

Figure 4. 21 shows this module, most of the functions of staff are the same as donors.

Figure 4. 21 View Staff Profile

Figure 4. 22 shows the staff can view the user directory of their hospital. If the staff clicks the "Donor" button, it will redirect to the donor list interface. If the staff clicks the "Staff" button, it will redirect to the staff list interface.

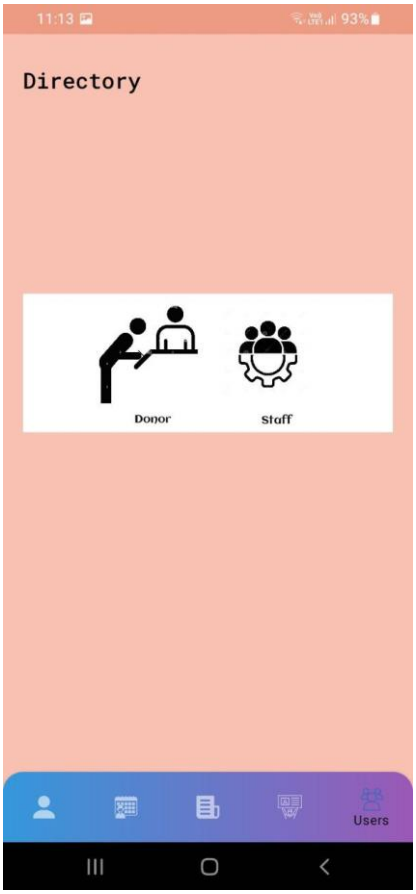

Figure 4. 22 User Directory

Figure 4. 23 shows the staff has access to all donors who have registered with that hospital. If the staff clicks the user icon, it will redirect to the donor's information interface. If the staff clicks the result icon, it will redirect to the donor's result interface.

Figure 4. 23 User List (Donor)

Figure 4. 24 shows the staff can view donor profile information.

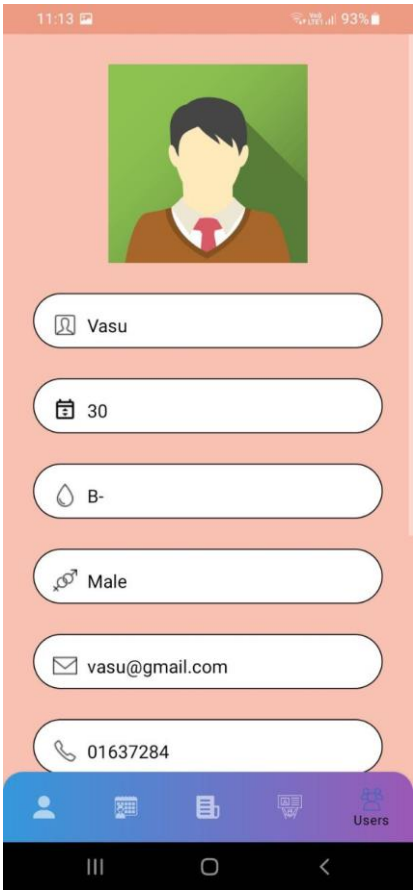

Figure 4. 24 View User Profile

Figure 4. 25 shows the staff can view donor test result information.

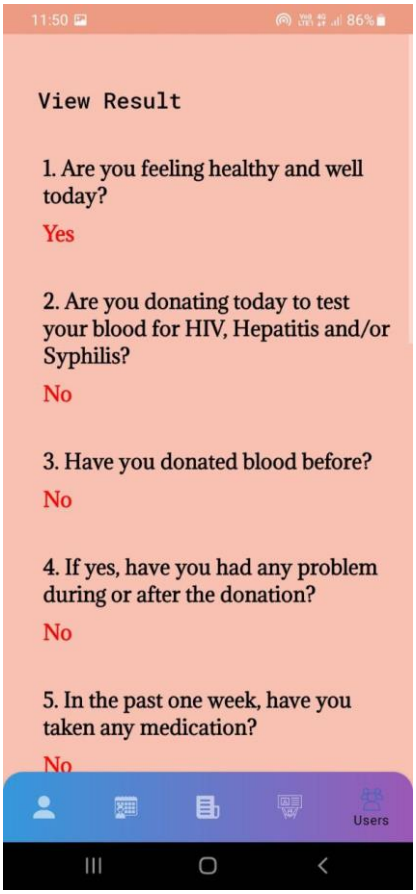

Figure 4. 25 View Donor Result

Figure 4. 26 shows the staff has access to all staff who have registered with that hospital. If the staff clicks the user icon, it will redirect to the staff's information interface. If the staff clicks the bin icon, it will delete the user from this application. If the staff wants to add new staff to the application, they can click the add floating button to redirect to the add staff interface.

Figure 4. 26 User List (Staff)

Figure 4. 27 shows the staff can enter new staff details. Once it is done, the staff clicks the add button.

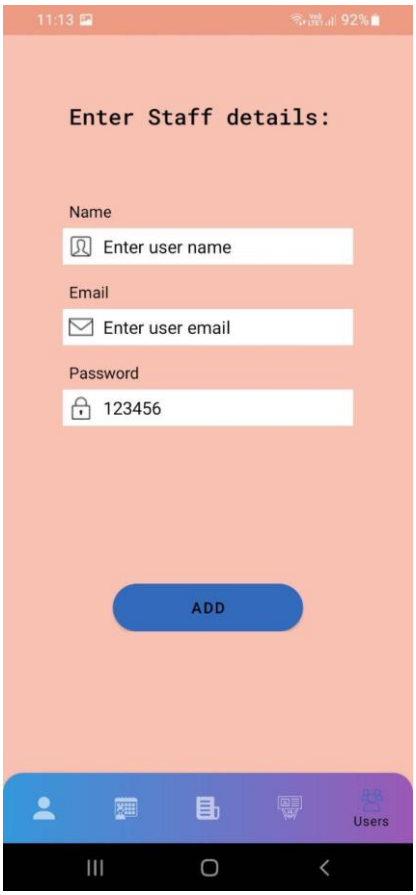

Figure 4. 27 Add Staff

Manage Appointment

Figure 4. 28 shows this module, most of the functions of staff are the same as donors. "Slots" and "View Appointments" are two extra buttons added in this module. If the staff clicks the slots button, it will redirect to the slot interface. If the staff clicks the view appointment button, it will redirect to the view appointments interface.

Figure 4. 28 Appointment (Staff)

Figure 4. 29 shows this interface, the staff can view upcoming appointments registered with the hospital. The staff can click the "approve" or "reject" button for the appointments made by the donors.

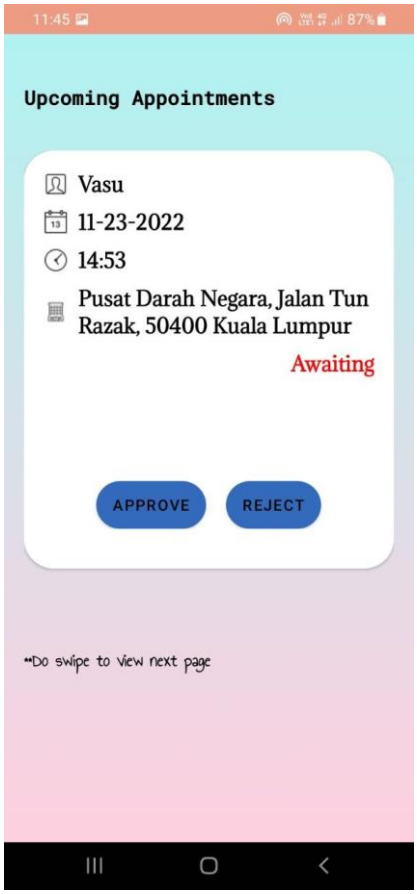

Figure 4. 29 Staff View Upcoming Appointments

Figure 4. 30 shows this interface, the staff can view today's confirmed appointments with the hospital. The staff can click the "complete" button for donors who attended the appointment and the "reject" button for donors who failed to attend the appointment.

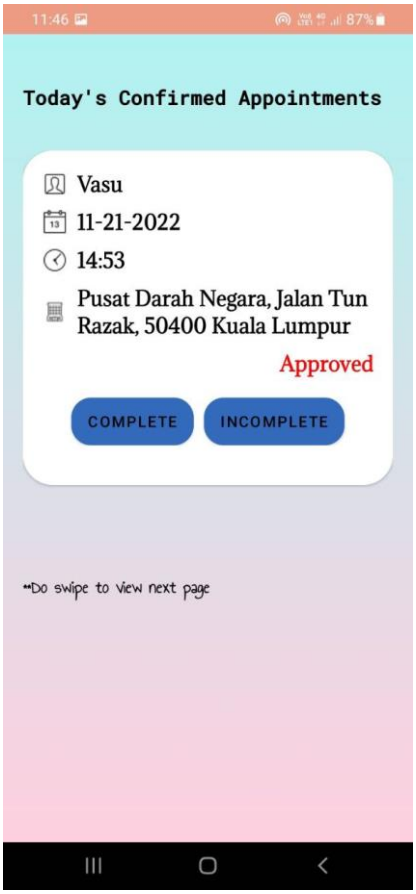

Figure 4. 30 Staff View Today Appointments

Figure 4. 31 shows this interface, the staff can all completed appointments with the hospital.

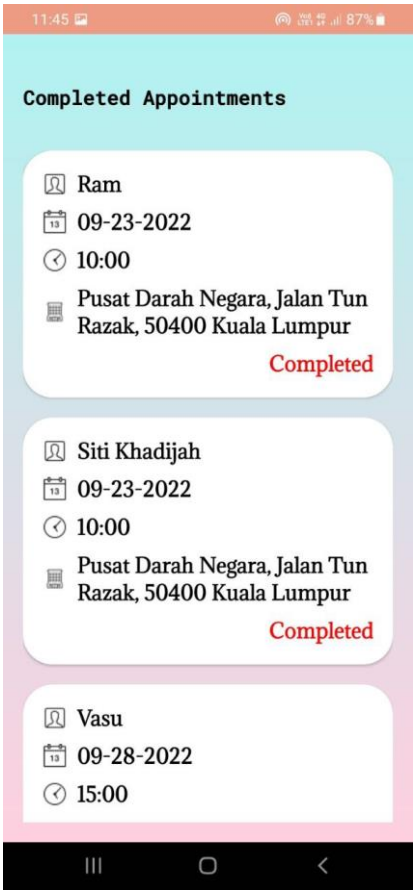

Figure 4. 31 Staff View Completed Appointments

Manage Slot

Figure 4. 32 shows the staff can select the date to view the slots. The staff can click the details icon to view slot details. If the staff wants to add a new slot, they can click the add icon floating button to add new slot details.

Figure 4. 32 View Slots

Figure 4. 33 shows the staff can view the slot details. The staff can only update the capacity information. Once it is done, the staff can click the update button to update the slot. If the staff wants to delete the slot, they can click the delete button to delete the slot. If the donors have registered an appointment in that slot, a notification will be sent to the donors.

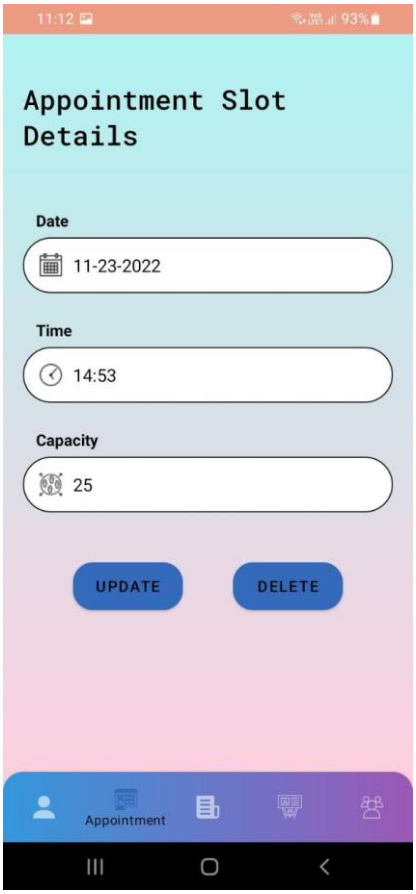

Figure 4. 33 Slot Details

Figure 4. 34 shows once the staff successfully deleted an appointment slot and a donor made an appointment at that slot a notification will be sent to the donor.

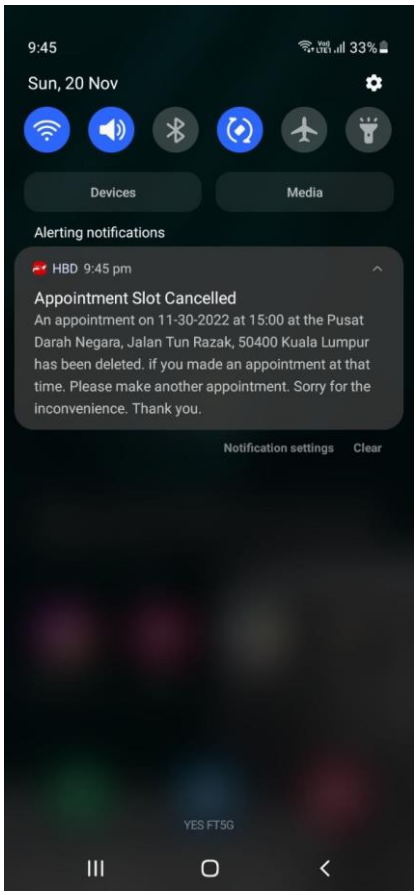

Figure 4. 34 Cancel Appointment Notification

Figure 4. 35 shows the staff can add slot details. Once it's done, staff needs to click the save button.

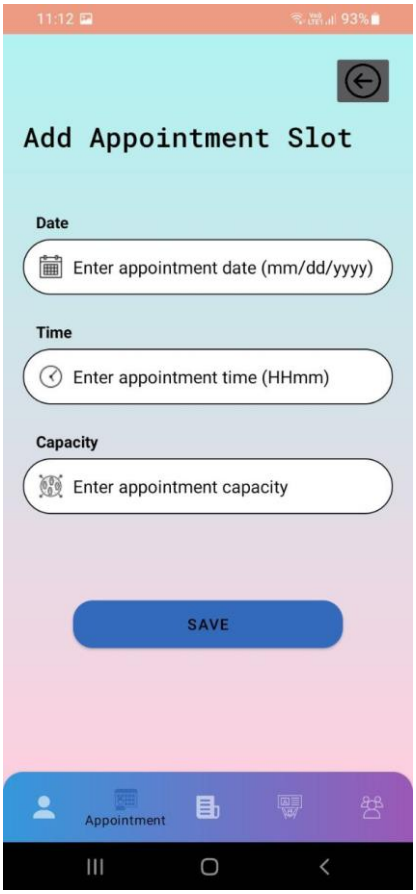

Figure 4. 35 Add Slots

Manage News

Figure 4. 36 shows the staff can view the news. If the staff wants to add news details, they can click the plus icon floating button to add the details. The staff can also click the edit icon button to edit the news information and the delete icon button to delete the news information.

Figure 4. 36 News Feed

Figure 4. 37 shows the staff can edit the news details. Once it is done, the staff needs to click the update button.

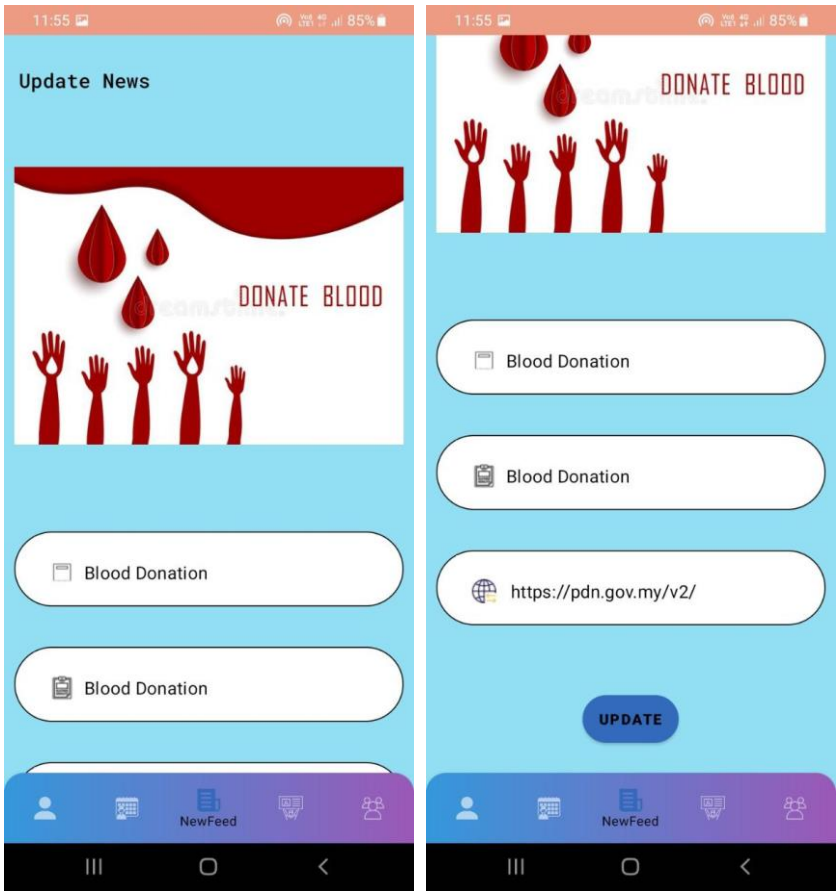

Figure 4. 37 Update News

Figure 4. 38 shows the staff can add news details. Once it's done, staff needs to click the save button.

Figure 4. 38 Add News

Figure 4. 39 shows once the staff successfully added a news a notification will be sent to all users.

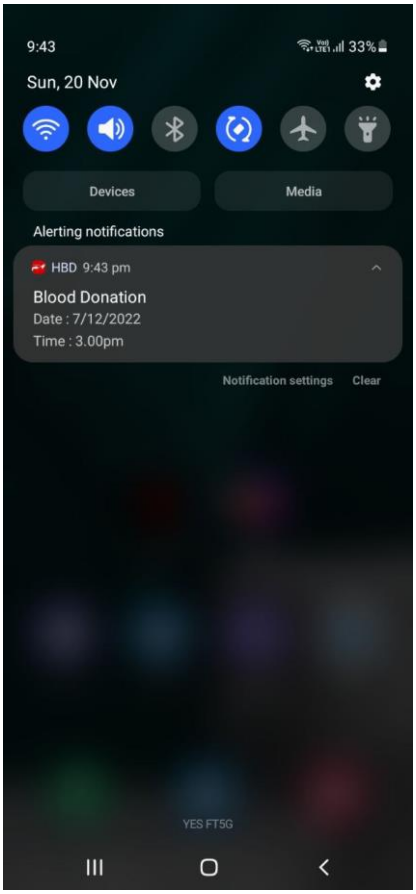

Figure 4. 39 Add News Notification

Manage Campaign

Figure 4. 40 shows the staff can add campaign participant details. Once it's done, staff needs to click the save button. If the staff clicks the "Add Campaign" button, it will redirect to the new campaign interface. If the staff clicks the "View Campaign" button, it will redirect to the campaign participant interface.

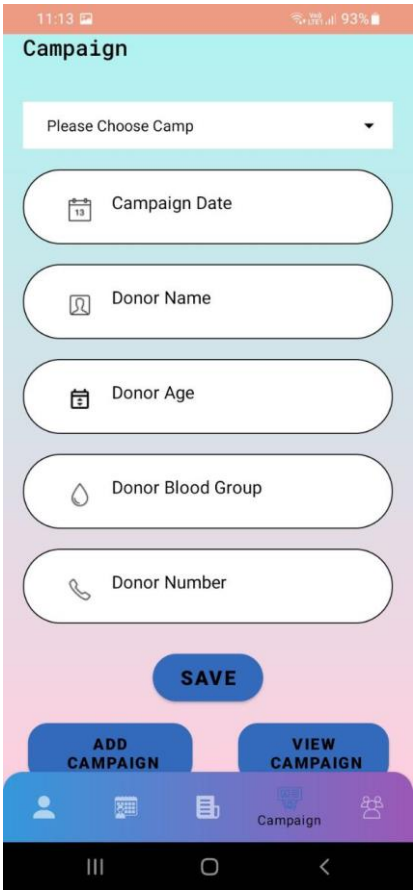

Figure 4. 40 Add Campaign Participant Details

Figure 4. 41 shows the staff can add campaign details. Once it's done, staff needs to click the save button.

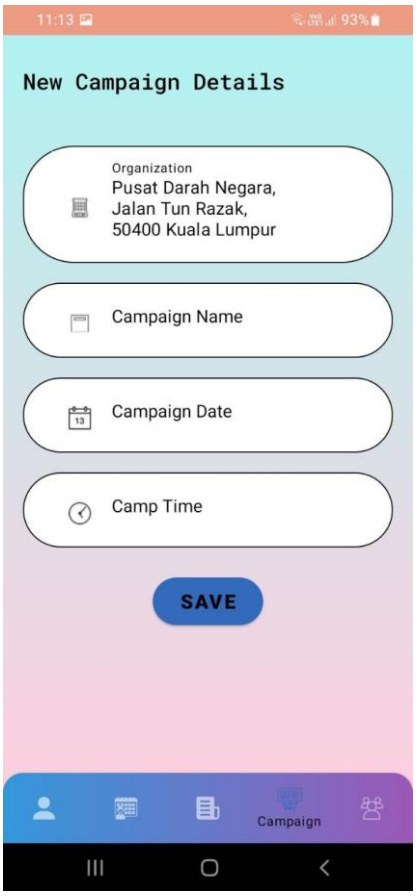

Figure 4. 41 Add Camp Details

Figure 4. 42 shows the staff can view a campaign participant's details by selecting the camp name and clicking the search button to view the list of donors who participated in that camp.

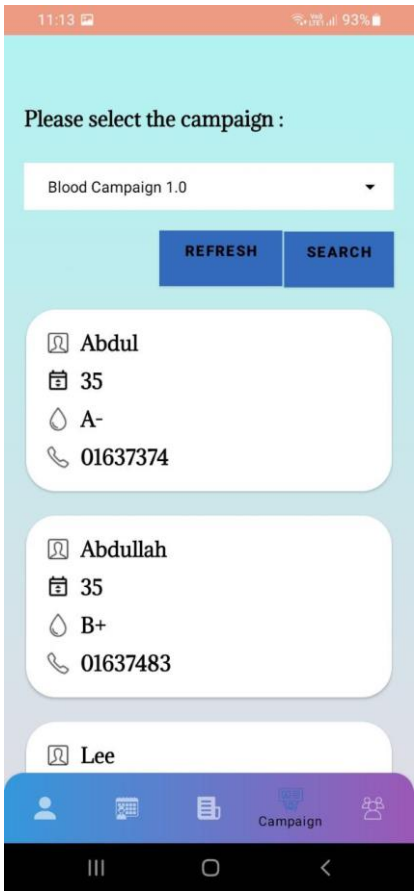

Figure 4. 42 View Campaign Participants

Hospital Admin

Manage User

Figure 4. 43 shows this module, all functions of hospital admin are the same as staff.

Figure 4. 43 Admin Profile

Manage Report

Figure 4. 44 shows the hospital admin can select the report data that they want to view. If the hospital admin clicks "Hospital", it will redirect to the hospital report interface. If the hospital admin clicks "Users", it will redirect to the user report interface. If the hospital admin clicks "Campaign", it will redirect to the campaign report interface. If the hospital admin clicks "Appointments", it will redirect to the appointments report interface.

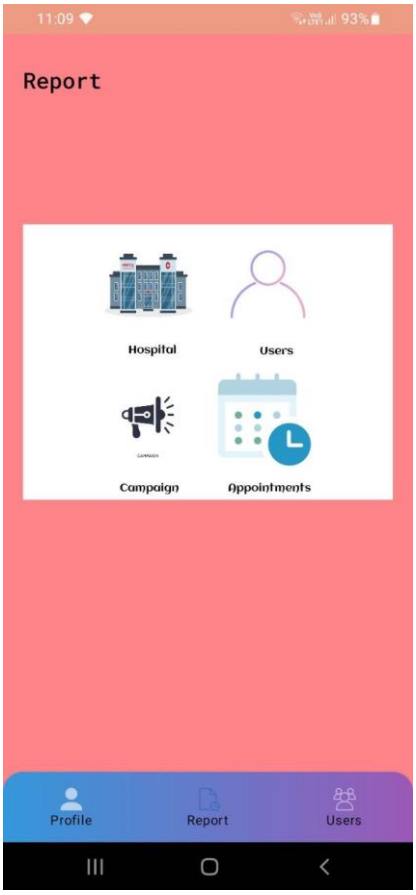

Figure 4. 44 Report Page

Figure 4. 45 shows the hospital admin needs to select the state to view the available hospital list for that specific state. If the hospital admin wants to add new hospital details, they can click the plus icon floating button to add new hospital details.

Figure 4. 45 View Hospitals

Figure 4. 46 shows the hospital admin can add the hospital details. Once it's done, hospital admin needs to click the save button.

Figure 4. 46 Add Hospital

Figure 4. 47 shows the hospital admin can view a user report by selecting the state, hospital, and user type and clicking the search button to view the list of users.

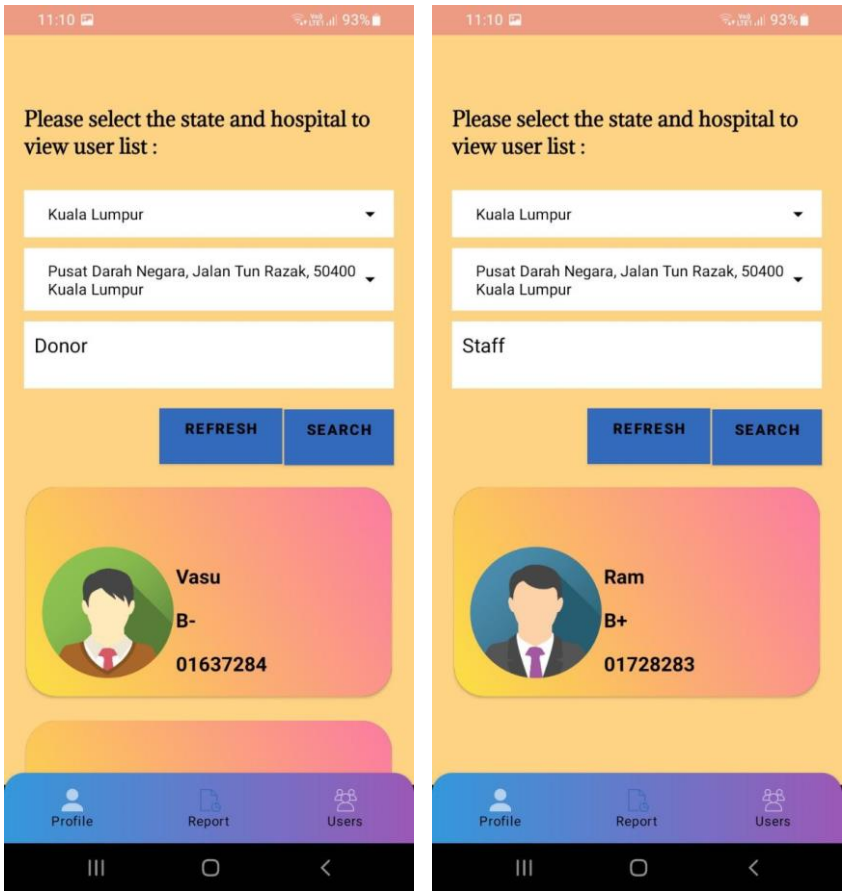

Figure 4. 47 View User List

Figure 4. 48 shows the hospital admin can view a campaign report by selecting the state, hospital, and camp name and clicking the search button to view the list of donors who participated in that camp.

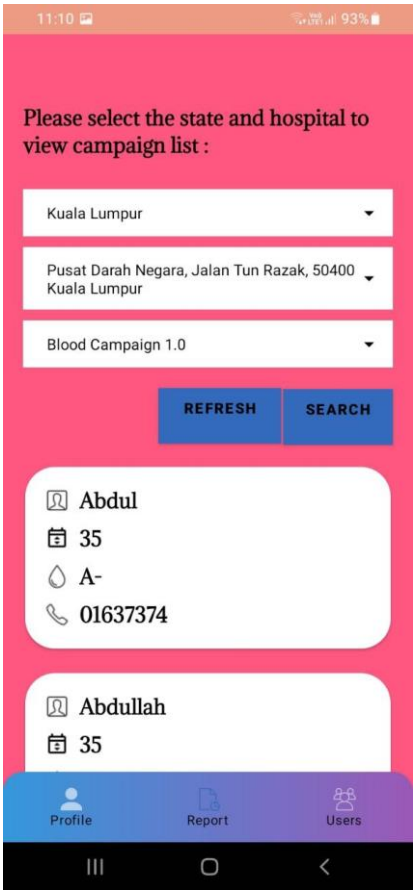

Figure 4. 48 View Campaign List

Figure 4. 49 shows the hospital admin can view an appointment report by selecting the state, hospital, and date and clicking the search button to view the list of appointments registered.

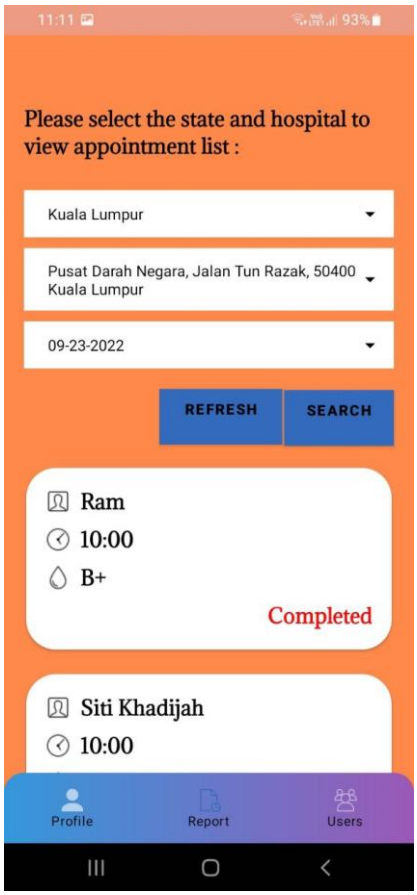

Figure 4. 49 View Appointment List

4.3 SYSTEM TESTING

After the development of Hunter For A Blood Donor Application is completed, testing process is carried out to evaluate the functionality and usability as well as the effectiveness of the application. User Acceptance test is used to test every single of function of the Hunter For A Blood Donor application from beginning to end. Any errors occur will be noted in this form. After the UAT have been distributed, the results show that all the tested function are pass. These UAT can refer to **APPENDIX D**.

Next the system goes through a Usability Test to make sure that the requirements are completed and that any defects or flaws can be found to ensure quality control. The public is invited to participate in Usability Test. The Usability Test is carried out online, and the respondents are gathered using a Google form. The Hunter For A Blood Donor Application is put through its paces by having users provide feedback and suggestions for development using their mobile devices. Donors, hospital staff, and hospital admins can all access the form. The responders will be questioned about whether they wish to test the application on donors, hospital staff, hospital admins, or all three. The questions to be asked to the respondents are shown in **APPENDIX E**.

The respondents' age, gender, blood group and user type were entered before the user acceptance testing's content. The user type to test on the Hunter For A Blood Donor can be chosen by the respondent. Donors, hospital staff, and hospital admins are the three user types. The following questions are based on the modules of manage user, manage test, manage news, and manage appointments when the responder chooses the user type of donor. When the respondent chooses the hospital staff as a user type, the questions are based on the modules for managing users, tests, news, appointments, slots, and campaigns. If the respondent chooses the hospital admin user type, the questions are based on the manage user and manage report modules.

4.4 RESULTS AND DISCUSSION

There are 45 responses collected for the Usability Test. Among the 45 responses, there are 15 responses responded as the donors, 15 responses responded as the staff, and 15 responses responded as the hospital admin. All the respondents are satisfied with the functionality of the manage user module, manage appointment module, manage slot module, manage newsfeed module, manage self-test module, manage campaign module, and manage report module for all the three users. The result of User Acceptance Testing can be referred to the **APPENDIX D**. The questions and answers of Usability Test can be referred to the **APPENDIX E** and **APPENDIX F**.

Table 4. 1 shows the summary of donor's usability testing. This test data was taken from Google Forms. The full results attached in the **APPENDIX F.**

Table 4. 1 Summary for Donor

User Type: Donor (15 responses)			
Module	**System Functionality**	**User Satisfaction (%)**	**Helps in Life (%)**
Manage User	PASS	100	-
Manage Appointment	PASS	100	100
Manage News	PASS	100	94
Manage Test	PASS	100	-

Table 4. 2 shows the summary of staff's usability testing. This test data was taken from Google Forms. The full results attached in the **APPENDIX F**.

Table 4. 2 Summary for Staff

User Type: Staff (15 responses)			
Module	**System Functionality**	**User Satisfaction (%)**	**Helps in Life (%)**
Manage User	PASS	100	-
Manage Appointment	PASS	100	100
Manage News	PASS	100	100
Manage Test	PASS	100	100
Manage Slot	PASS	100	94
Manage Campaign	PASS	100	-

Table 4. 3 shows the summary of staff's usability testing. This test data was taken from Google Forms. The full results attached in the **APPENDIX F**.

Table 4. 3 Summary for Hospital Admin

User Type: Hospital Admin (15 responses)			
Module	**System Functionality**	**User Satisfaction (%)**	**Helps in Life (%)**
Manage User	PASS	100	-
Manage Report	PASS	100	87

4.5 CHAPTER SUMMARY

Finally, 45 responses were chosen at random from the Hunter For A Blood Donor Application. There were 15 responses responded as donors, 15 responses responded as hospital staff, and 15 responses responded as hospital admin. The responses' results have been gathered and analysed for the application's improvement. According to the results of the testing, this application makes it simple and quick for donors to schedule appointments. Additionally, this application reduces the time spent in line at the hospital counter to schedule an appointment or determine eligibility. The hospital's staff may simply manage their appointments, slots, and campaigns with the use of this app on their smartphones. This encourages them to use the application at any time and from any location. The admins of the hospital section may simply handle user reports, appointments, and campaigns for each hospital. Due to positive user feedback, this application is very simple to use for donors, hospital staff, and admins.

CHAPTER 5

CONCLUSION

5.1 INTRODUCTION

The summary of Chapters 1 through 4 in this thesis is covered as a conclusion in this chapter. In addition, this chapter discusses the project's constraints, future work, advantages and disadvantages, and the project's conclusion. The Hunter For A Blood Donor Application was created to address the issues of user data loss and standing in huge queues to schedule blood donations. By saving so much of the donors' time, this system application makes it easier for them to schedule blood donations. Additionally, this application enables staff to access user data and quickly approve appointments made by users. The major goals of this project are to create a Hunter For A Blood Donor Application that will reduce the workload on donors and save time when scheduling appointments instead of using outdated methods that take a lot of time to complete and cannot be used anywhere or anytime. This app is intended for blood donors who require assistance setting up appointments or searching for blood banks, as well as hospital staff who need to manage appointments and slots. The application was created using Java programming using Android Studio. The methodology for this project is Rapid Application Development (RAD) in the Software Development Life Cycle (SDLC). The Rapid Application Development (RAD) model's requirement planning, design, construction, and cutover phases are those that apply to this project. According to the findings examined in Chapter 4, this application is useful for donors to schedule an appointment and check their eligibility to donate blood. This system helps the staff in managing slots for each appointment part as well as staff appointments in the staff section. They discovered it was simple to manage the report area of the admin part.

5.2 ADVANTAGE AND DISADVANTAGE

The proposed application brings some benefits to users. One of the advantages is that the application helps donors make appointments easily without waiting in a long queue to make an appointment. Also, the donor can make an appointment from anywhere and anytime using their smartphone. This can save a lot of time for users. The next advantage is that the hospital staff is able to spread news regarding blood donations and the needs of blood donors easily by using this application. When the staff posts the news in the news feed, the donors are able to view the news by using the application. This application helps users spread news easily regarding blood donations. Then, before making an appointment, the donors can check their eligibility to donate blood by answering questions that will be asked in this application. The donors do not need to come to the hospital and check their eligibility for blood donation.

There are, however, some drawbacks to the suggested use. A network connection is needed to access this application. To use this application, the user needs an internet connection. Other than that, the application only allows hospital staff or admins to add one user at a time. Adding multiple users at a time is currently not available in this application. The proposed application's other drawback is that it is only accessible to Android users. Given that it was created using Android Studio, this application can only be used by Android users. iOS devices are not supported by this application.

5.3 PROJECT CONSTRAINT

Even though the project has progressed satisfactorily, there were still some obstacles to overcome. The lack of references and examples of blood donation applications is the project's barrier. This is due to the fact that Hunter For A Blood Donor, an existing similar blood donation application, has a smaller market share in Malaysia and abroad. As a result, creating the proposed application is difficult. I must use logical reasoning, input previously learned theory, and apply it to the application that has been suggested.

For instance, the system has limited database of hospital and users. Since the application not widely collaborating with hospital so the resources of hospitals is not much as expected. Since we collecting some personal details, we need to encrypt the data and kept it more secured.

The weak internet connection environment is the project's only other obstacle. I completed this recommended application despite the unstable internet connection. When I have to use the Internet to find similar fixes to bugs, this becomes a challenge. Additionally, the data storage for the proposed application comes from the Firebase Cloud Database. So, in order to access the programme, it needs the Internet. Since my internet connection is slow, each time I test a module, I must patiently wait for the data to be retrieved from Firebase and displayed on the screen.

5.4 FUTURE WORK

The suggested application will require Pusat Darah Negara collaboration in the future in order to be published. Additionally, this suggested application will enhance the platform, which is available for both iOS and Android at the moment. As a result, users of Android and iOS may use and appreciate the experience of setting appointments without using outmoded processes that take a long time to complete and can be used anywhere or anytime.

The suggested application would also improve the user satisfaction by adding reward system. Reward will encourage users to donate blood frequently. For example, each time a user donate blood system should give some points. When the user reached certain level, they can claim the points with services or offers provided in the application. The user experience for the admin and staff sections will also be improved, allowing for the simultaneous addition of more users. This is due to the present application's one-user-at-a-time user addition limit.

5.5 CONCLUSION

In conclusion, the Hunter For A Blood Donor Application has achieved its goals and may provide a solution to the issue of reducing the workload on donors and saving time when scheduling appointments in place of using antiquated procedures that require a lot of time to complete and cannot be used anywhere or anytime.

The donors may quickly schedule appointments and keep track of the blood banks in their area where they can donate blood. Staff members can simply keep track of donor records without losing them. They can broadcast news about blood donations and campaigns, manage appointments by clicking approve buttons, view donors' eligibility, and manage campaigns. The admin may handle all hospitals', users', appointments', and campaigns' reports in the admin section.

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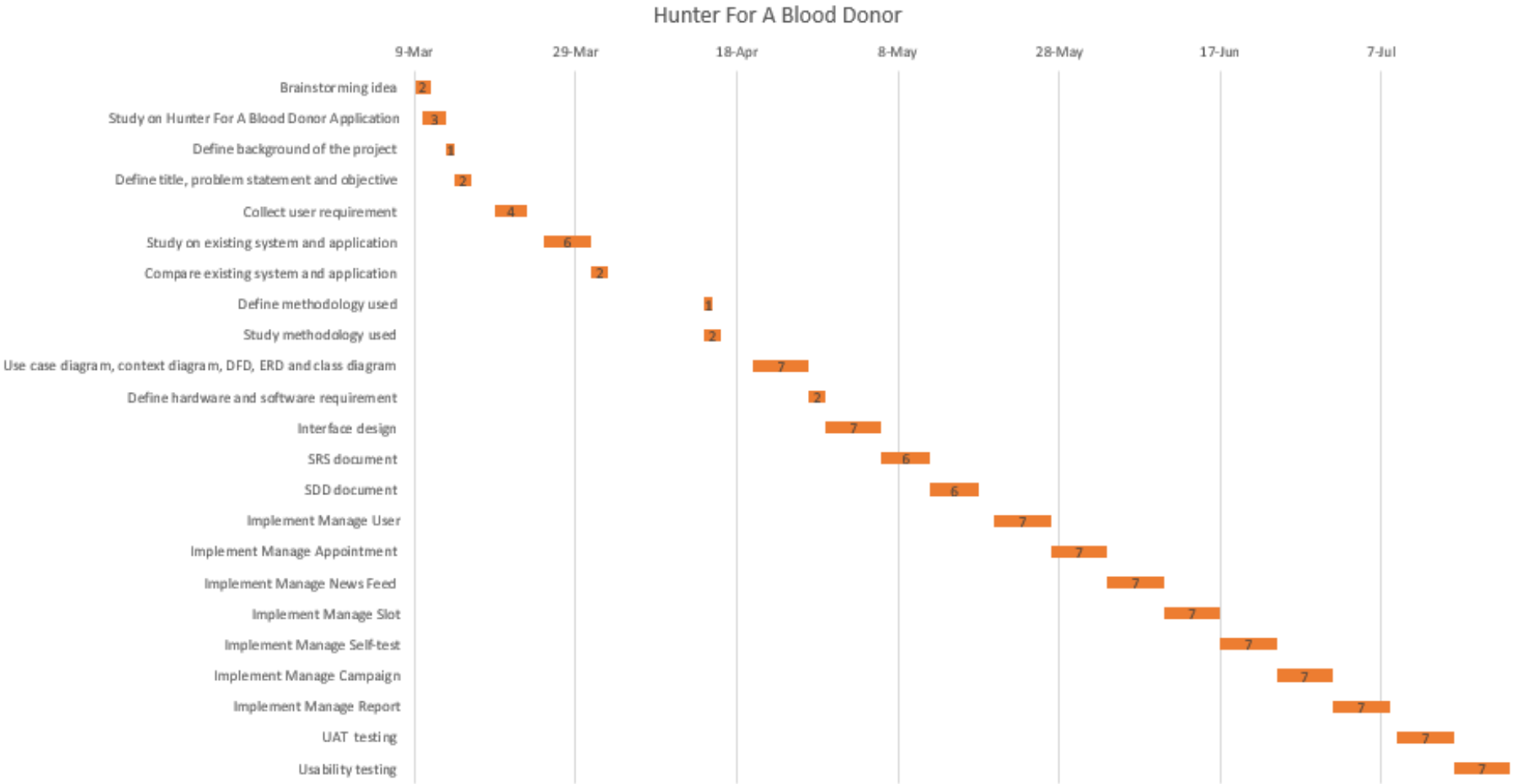
APPENDIX A – GANNT CHART


Hunter For A Blood Donor
9-Mar
29-Mar
18-Apr
8-May
28-May
17-Jun
7-Jul
Brainstorming idea
Study on Hunter For A Blood Donor Application
Define background of the project
Define title, problem statement and objective
Collect user requirement
Study on existing system and application
Compare existing system and application
Define methodology used
Study methodology used
Use case diagram, context diagram, DFD, ERD and class diagram
Define hardware and software requirement
Interface design
SRS document
SDD document
Implement Manage User
Implement Manage Appointment
Implement Manage News Feed
Implement Manage Slot
Implement Manage Self-test
Implement Manage Campaign
Implement Manage Report
UAT testing
Usability testing

APPENDIX B – SOFTWARE REQUIREMENT SPECIFICATION (SRS)

2022

SOFTWARE REQUIREMENT SPECIFICATION (SRS)

[HUNTER FOR A BLOOD DONOR]

DOCUMENT APPROVAL

	Name	Date
Authenticated by: *logadarshan* _____ Name: Logadarshan A/L Krishnan	LOGADARSHAN A/L KRISHNAN	
Approved by: _____ Client		

Software : Microsoft Word, Draw.io.

Archiving Place :

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CHAPTER 1

1.1 PROJECT DESCRIPTION

The purpose of this Software Requirement Specification (SRS) document is to provide details and idea which define the Hunter for A Blood Donor with the collaboration with client. This documentation consists of all requirements about this blood donation system (BDS) including their functionality for every module and users of the system. The user interface and GUI also described thoughtfully for more detailed design implementation and clear visualization. This document intended to be a flexible document as it able to change and evolve within the development process of BDS. The diagrams and concept of this system is visualized using use case, use case description and sequence diagram to ensure project flow and understanding from both clients and developer side. This document shall be the main reference to all stakeholders beside assisting developers in Software Development Lifecycle (SDLC) process.

The Hunter for A Blood Donor Application, which is a database of blood donors, can be used by donors, seekers, and staff. This application can be used by donor who need to make appointment to donate blood. They can make appointment to donate blood by using their mobile devices to check slot availability. Donors can update their information so that they can see their profile and the status of their blood donation. It also displays the donor's blood donation history. A donor can also schedule a blood donation appointment by specifying the time and location where he or she wishes to donate blood. Before donating the blood, the donor needs to check their eligibility to donate blood. To do that the donor need to self-test by fill up a survey to check their eligibility. The donor also can view the news feed to know latest news regarding blood donation.

Aside from the donor, another user will be the staff. The staff's role is to view information about donor so that they can contact them in an emergency. When a donor made an appointment, the staff can accept it. Only donors who have been approved by the staff are allowed to donate blood. The staff also responsible to assign slots for each appointment. Once the slot is full, the donor needs to find another slot to make their appointment. If a donor already made an appointment and the staff cancelled the slot there will automatic message will be sent

to the donor. When a donor fills up survey to check their eligibility to donate the blood, the staff needed go through the survey and need to release the result. The role of hospital admin in this system is add new staff into the system.

Firstly, this document describes system identification, context diagram and data flow diagram of this document which helps the developer and testers to use this as reference for future maintenance work. This SRS contains the references for this document, the product function with the description using use case diagram with specific actors and use case for each module. The actors will be donor and staff as an actor.

Lastly, this SRS contains GUI or wireframe that has been designed to facilitate the client, developers, testers and managing staff to review the interfaces for each functionality requirement to ensure each follows the requirement that has been verified by the client.

1.2 SYSTEM IDENTIFICATION

System Title : Hunter for A Blood Donor

System Abbreviation : HFABD

System Identification Number: HFABD_SRS_2022_V1

SRS : Software Requirement Specification

2022 : Development Year 2022

V1 : Version 1

1.3 CONTEXT DIAGRAM

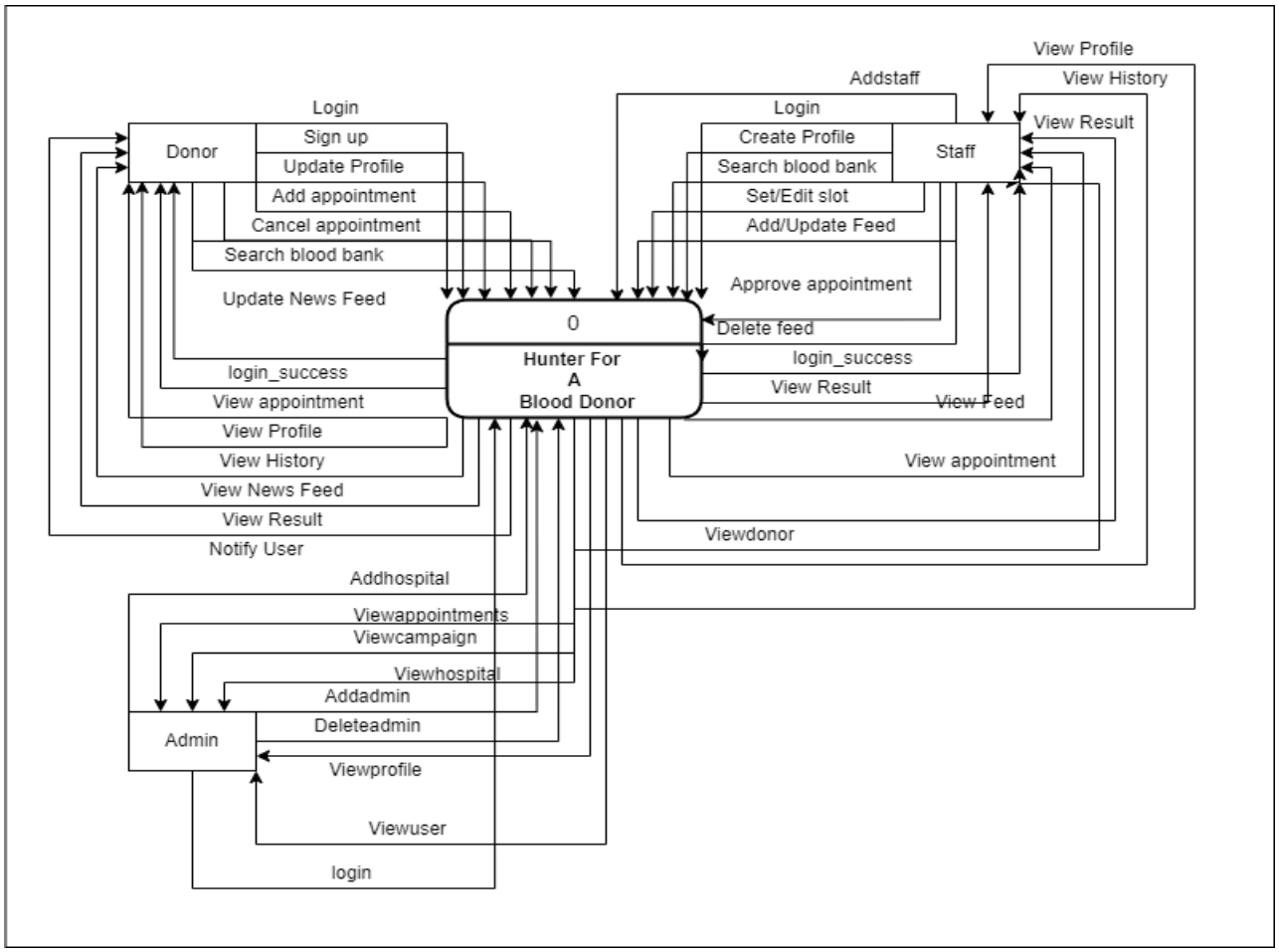

Figure 1 Context Diagram

Based on the Figure 1, this context diagram describes the relationship with the system that has external entities such as Donor, Staff and Hospital admin. This context diagram has four entities that involved and interact with the system. Each entity has its flow. Donor, staff and hospital admin must authenticate their username and password in order to use the system. Donor can register into the system if he or she doesn't have account in the system.

1.4 DATA FLOW DIAGRAM

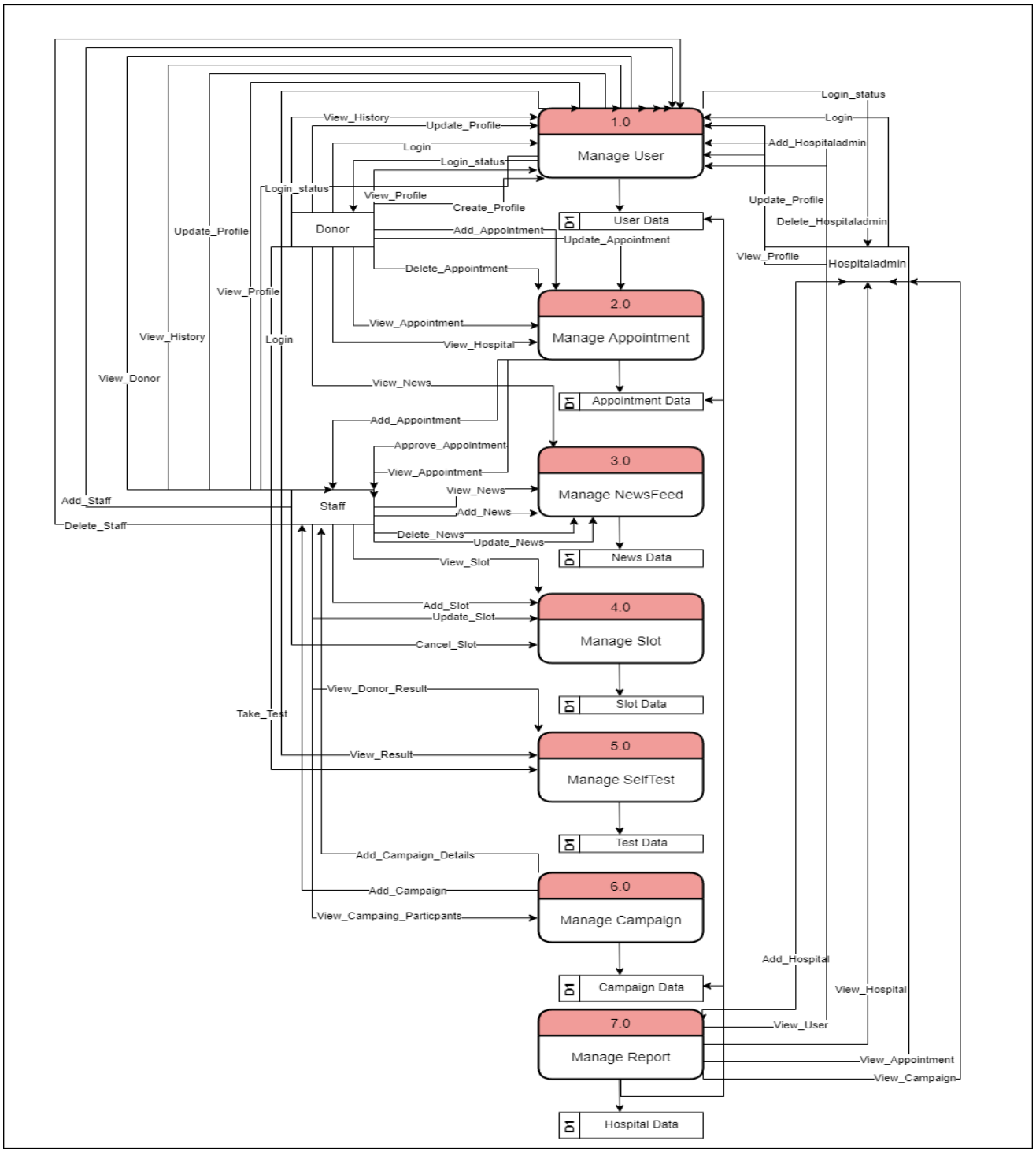

Figure 2 Data Flow Diagram

CHAPTER 2

2.1 USE CASE DIAGRAM AND DESCRIPTION

2.1 Overall Use Case Diagram

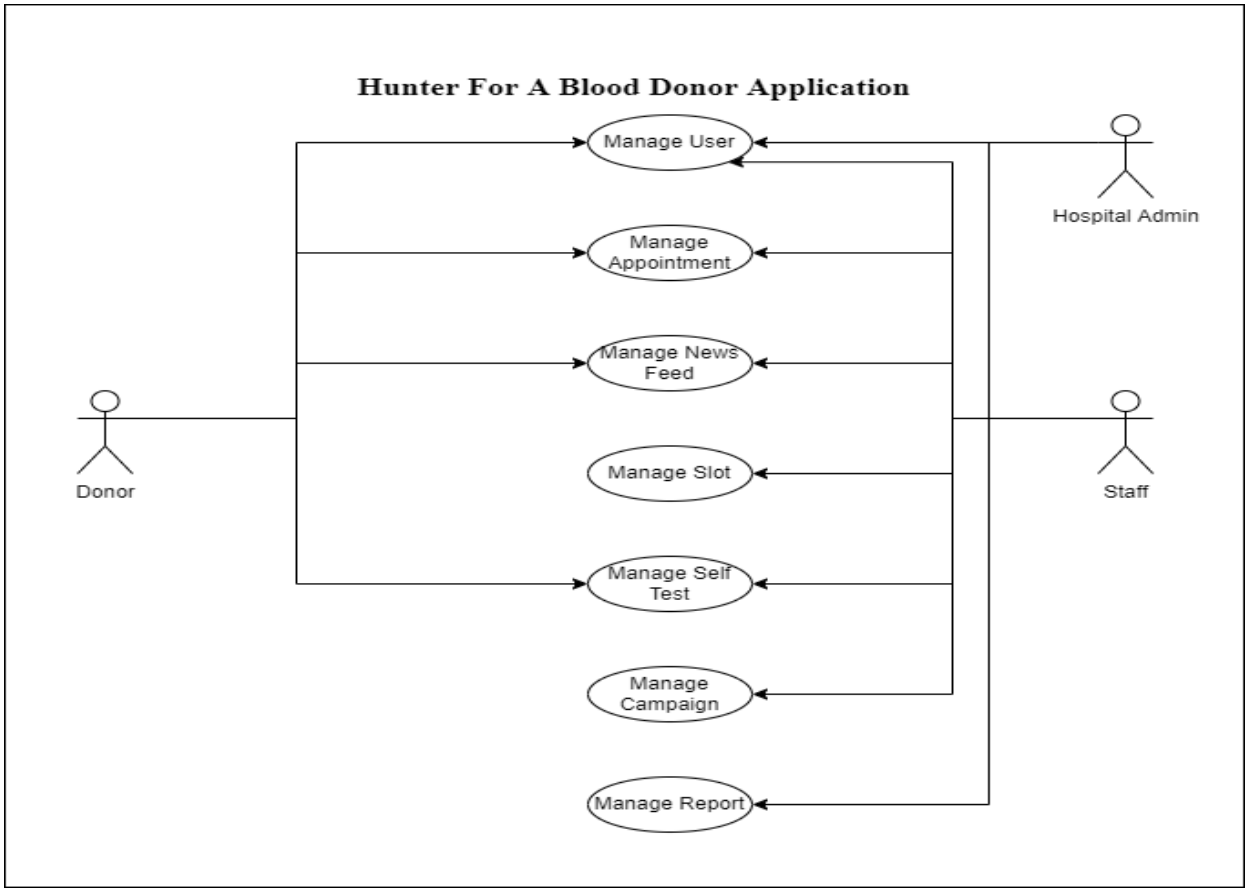

Figure 3 Use Case Diagram

Requirement Id	Module	Description
BD001	User	Hospital admin able to add new staff and hospital admin into the system. The hospital admin also able to view all staff, donor, hospital admin profiles. Once staff left the organization the hospital admin can remove or delete their profile from the system. At the same time hospital admin can view their own profile and update information about their profile. The role of staff in this system is the staff able to view their own profile and history. At the same time staff able to view their coworker (staff) and donor's profile and

		history too. The staff also can update information about their own profile. As a donor, the donor able create their own profile if they are new user. The donor able to view their profile and history. At the same time the donor can update information about their profile.
BD002	Appointment	In this module the donor able to add an appointment. Once the donor successfully made an appointment the donor able to view the appointments and the donor also can cancel the appointment if they want. At the time the donor only can make one appointment. The donor also can update the appointment that they already made. When making an appointment donor also able to view their blood banks or hospital to donate blood. The role of the staff in this module is staff able to view all the appointment made all the donors. Once a donor made an appointment the staff need to approve the appointment. The donor also can make an appointment.
BD003	News Feed	In this module the staff can a news into the news feed. Once the news successfully added into the system staff able to view, update and delete the news from the system. The donor only can view news that added or updated by staff.
BD004	Manage Slot	In this module there will be only one user which is the staff. The staff able set limit for an appointment section. Once the staff set a limit for an appointment section. The staff can view, update and delete the appointment slot. If the staff delete an appointment section, automatically a message will be sent to the donor to notify that the appointment that they already made is canceled and the donor need make a new appointment.
BD005	Self-Test	In this module the donor can take a test by filling out a form or survey to check their eligibility to donate blood and can view the result. Once the donor takes the self-test the result will be immediately released by the system.

		The role of staff in this is the staff able to view the results of all the donor.
BD006	Manage Campaign	In this module, the staff can add new campaign details. The staff also need to record the campaign participants details. The staff also can view the participants details in the system.
BD007	Manage Report	The hospital admin will be responsible to manage report module. The admin can view list of all hospitals, user, campaign and appointments of each hospitals. The admin also can new hospital details.

Table 1 Overall Use Case Description

2.1.1 Manage User Use Case Diagram

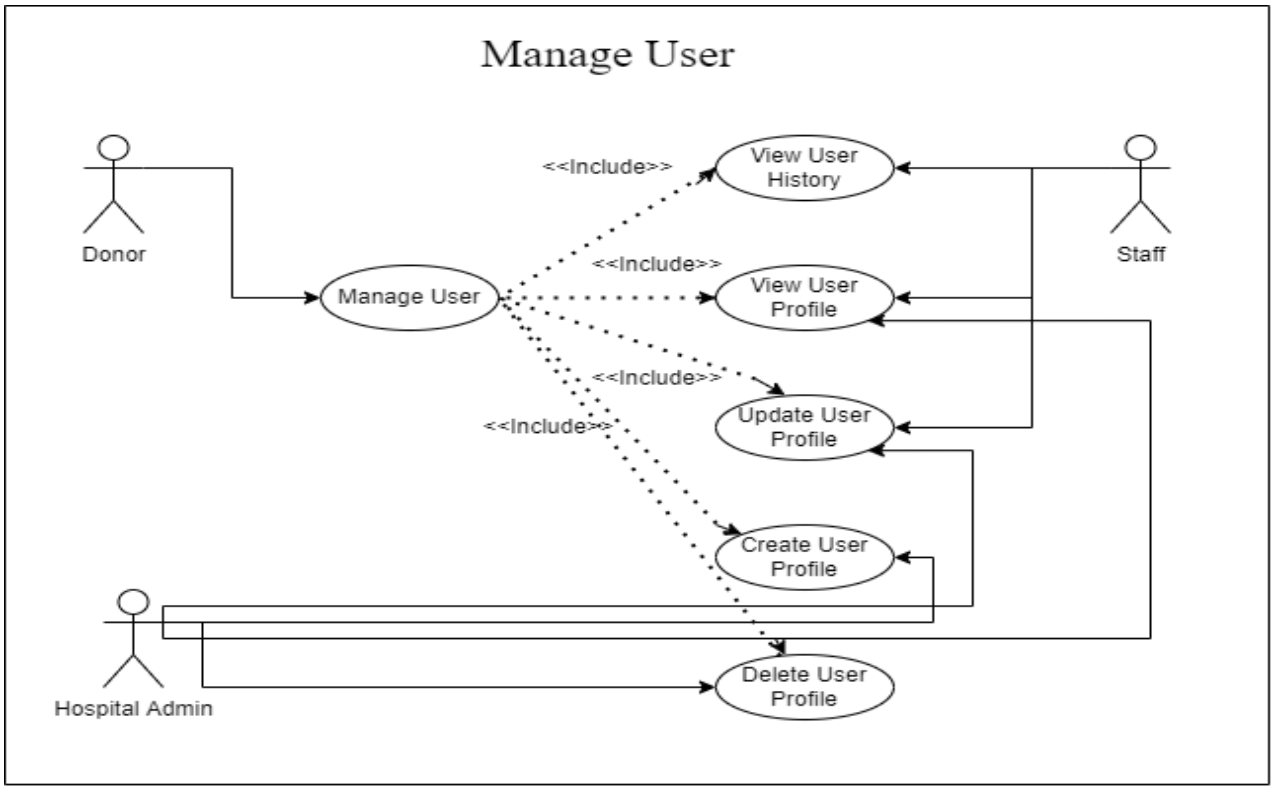

Figure 4 Manage User Use Case Diagram

Use Case ID	HFABD-100
Use Case Name	Manage User
Brief Description	To view their own profile and history
Actor	Donor, staff and hospital admin
Pre-Conditions	The system must be logged into with a specific user's login account.
Basic Flow	1. The use case starts when user selects the view user. 2. The system displays user list. [**A1: View User History**] [**A2: Update User Profile**] [**A3: Create User Profile**] [**A4: Delete User Profile**]. 3. The use case ends.
Alternative Flow	1. The donor and staff able to: a. View User History [**A1: View User History**] 1. Donor and staff click on the view appointment button. 2. Donor and staff click on view history button to view the history. 3. For donor and staff only can view their own history.

	4. Once it done, they need to click back button. 5. The system back to basic flow number 3. 2. The donor, staff and hospital admin able to: b. Update User Profile [**A2: Update User Profile**] 1. The donor, staff and hospital admin click on view profile button to view their own profile. 2. Then the donor, staff and hospital admin need to click on the update button. 3. Donor, staff and hospital admin need update their own information. 4. System validates the information. 5. System updates the information to database. 6. The system back to basic flow number 3. c. Create User Profile [**A3: Create User Profile**] 1. The donor clicks on the create profile or signup button to add create user profile. While the staff and hospital admin click add user. 2. The hospital admin, staff and donor need to enter the new user details. 3. System validates the information. 4. System saved the information to database. 5. The system back to basic flow number 3. 3. The hospital admin and staff able to: d. Delete User Profile [**A4: Delete User Profile**] 1. The hospital admin and staff click on the delete profile button. 2. The hospital admin and staff select a user from the list. 3. The hospital admin and staff click delete button beside the username. 4. Information deleted from database. 5. The system back to basic flow number 3.
Exceptional Flow	None
Post-Conditions	The user data is saved and updated.
Rules	None
Constraints	None

Table 2 Manage User Use Case Description

2.1.2 Manage Appointment Use Case Diagram

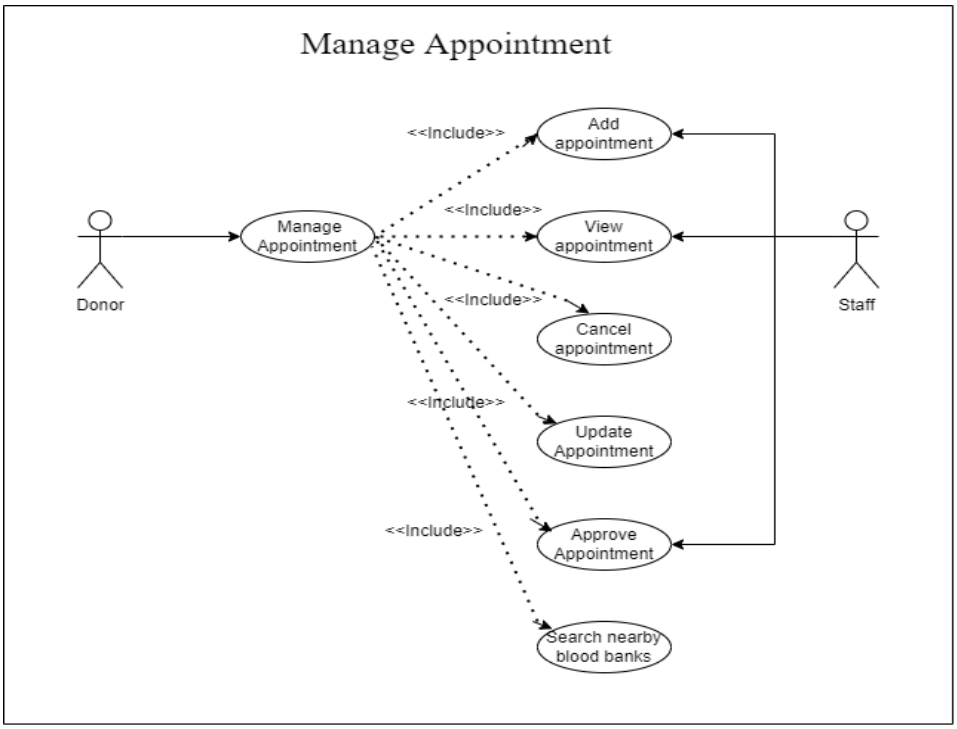

Figure 5 Manage Appointment Use case Diagram

Use Case ID	HFABD-200
Use Case Name	Appointment
Brief Description	To make an appointment to donate blood.
Actor	Donor and staff
Pre-Conditions	The system must be logged into with a specific user's login account.
Basic Flow	1. The use case starts when user selects the view appointment. 2. The system displays appointment list. [**A1: Add Appointment**] [**A2: Cancel Appointment**] [**A3: Update Appointment**] [**A4: Search Blood Bank**] [**A5: Approve Appointment**]. 3. The use case ends.
Alternative Flow	1. The donor and staff able to: a. Add Appointment [**A1: Add Appointment**] 1. Donor click on add appointment button to make an appointment. 2. Donor select time and date. 3. System validates the information. 4. System saved the information to database. 5. The system back to basic flow number 3.

	2. The donor able to: a. Cancel Appointment [**A2: Cancel Appointment**] 1. Donor click on the view appointment button. 2. Donor select the appointment that they already made. 3. Donor click on the cancel appointment button. 4. Information deleted from database. 5. The system back to basic flow number 3. b. Update Appointment [**A3: Update Appointment**] 1. Donor click on the update appointment button. 2. Donor select the appointment that they already made. 3. Donor click on update appointment button. 4. Donor key in the details. 5. System validates the information. 6. System updates the information to database. 7. The system back to basic flow number 3. c. Search nearby blood bank [**A4: Search Nearby Blood Bank**] 4. The donor and staff click search nearby blood bank button. 5. The system displays the available data. 6. Once it done, click on the back button. 7. The system back to basic flow number 3. 3. The staff able to: a. Approve Appointment [**A5: Approve Appointment**] 1. The staff click on the approve appointment button. 2. The staff can view the all the appointment in the system. 3. The staff select an appointment. 4. The staff approve an appointment. 5. Once it done, click on the back button. 6. The system back to basic flow number 3.
Exceptional Flow	None
Post-Conditions	The appointment data is saved and updated.
Rules	None
Constraints	None

Table 3 Manage Appointment Use Case Description

2.1.3 Manage News Feed Use Case Diagram

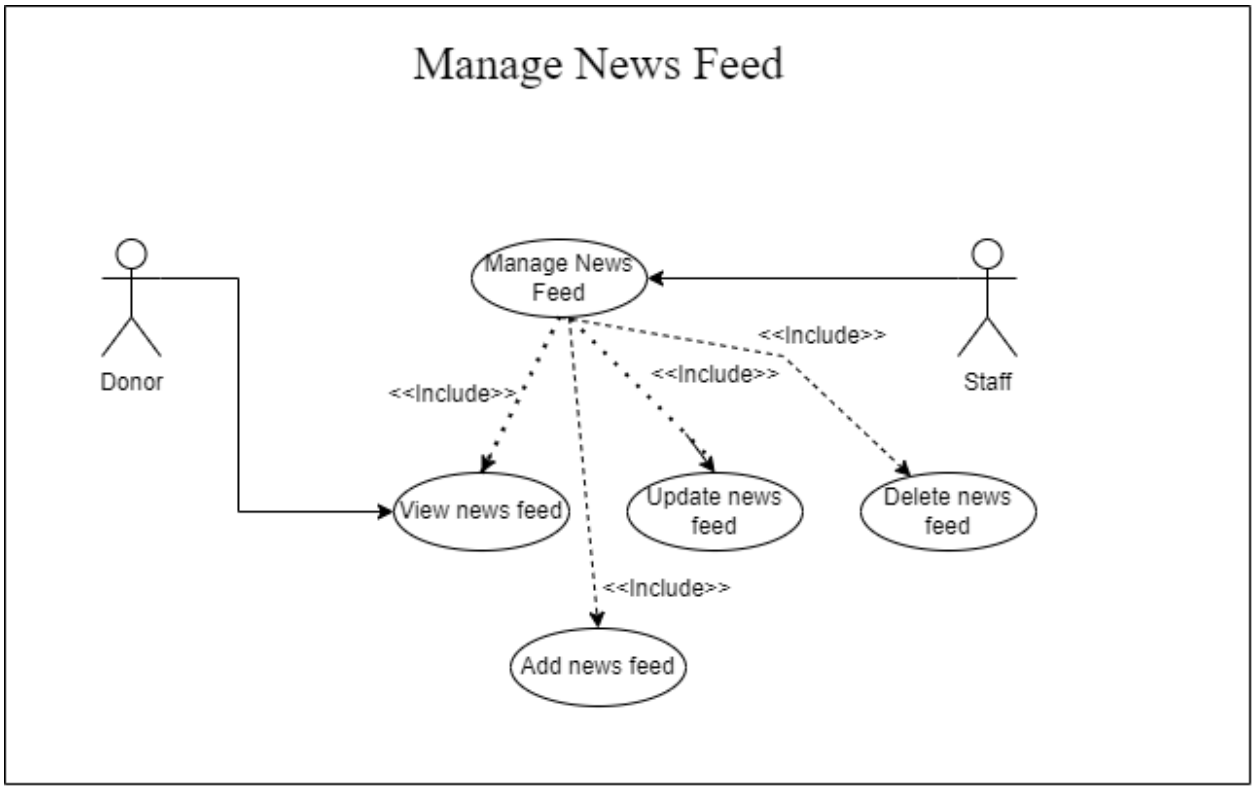

Figure 6 Manage News Feed Use Case Diagram

Use Case ID	HFABD-300
Use Case Name	News Feed
Brief Description	To view the recent news in the system.
Actor	Donor and staff
Pre-Conditions	The system must be logged into with a specific user's login account.
Basic Flow	1. The use case starts when user selects the View NewsFeed button. 2. The system displays News list. [**A1: Add News Feed**], [**A2: Update News Feed**], [**A1: Delete News Feed**]. 3. The system displays data as requested by the user.
Alternative Flow	1. The staff able to: a. Add News Feed [**A1: Add News Feed**] 1. The staff click on view news button to view the news feed. 2. Then the staff need to click on the add button. 3. Staff need to key in latest news. 4. System validates the information.

	5. System saved the information to database. 6. The system back to basic flow number 3. b. Update News Feed [**A2: Update News Feed**] 1. Staff select the news that they already exist. 2. Staff click on update button. 3. Staff key in the details. 4. System validates the information. 5. System updates the information to database. 6. The system back to basic flow number 3. b. Delete News Feed [**A3: Delete News Feed**] 1. Staff select the news that they already exist. 2. Staff click on delete button. 3. Information deleted from database. 4. The system back to basic flow number 3.
Exceptional Flow	None
Post-Conditions	The news data is saved and updated.
Rules	None
Constraints	None

Table 4 Manage News Feed Use Case Description

2.1.4 Manage Slot Use Case Diagram

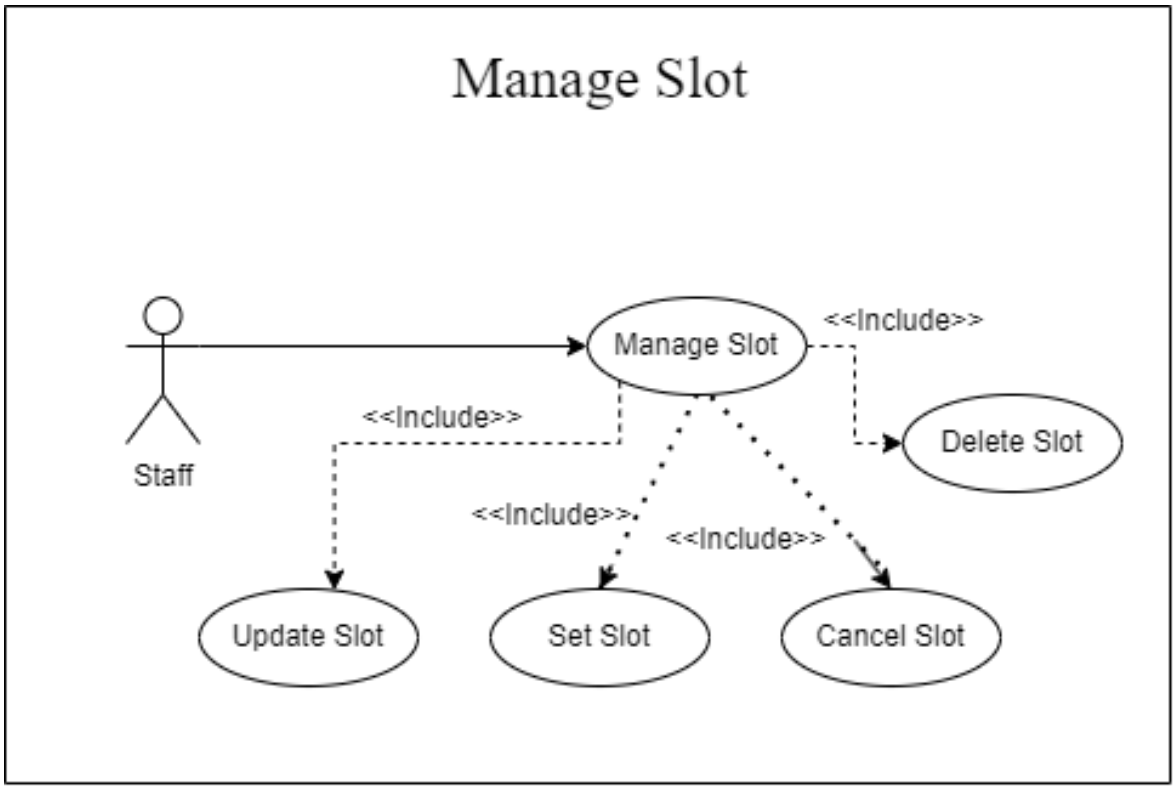

Figure 7 Manage Slot Use Case Diagram

Use Case ID	HFABD-400
Use Case Name	Manage Slot
Brief Description	To manage number seats or limit for each appointment slot.
Actor	Staff
Pre-Conditions	The system must be logged into with a specific user's login account.
Basic Flow	1. The use case starts when user selects the View Slot button. 2. The system displays Slot list. [**A1: Set Slot**], [**A2: Update Slot**], [**A2: Cancel Slot**]. 3. The use case ends.
Alternative Flow	1. The staff able to: a. Set slot [**A1: Set Slot**] 1. The staff need to click on the set slot button. 2. The staff need to select an appointment timing. 3. The staff need set capacity limit. 4. System validates the information. 5. System saved the information to database. 6. The system back to basic flow number 3.

	b. Update Slot [**A2: Update Slot**] 1. Staff select the slot that they already exist. 2. Staff click on update button. 3. Staff key in the details. 4. System validates the information. 5. System updates the information to database. 6. The system back to basic flow number 3. c. Cancel Slot [**A3: Cancel Slot**] 1. The staff can view the all the slots in the system. 2. The staff select a slot. 3. The staff click cancel slot button. 4. The system will send notification to the donor. 5. Information deleted from database. 6. The system back to basic flow number 3.
Exceptional Flow	None
Post-Conditions	The slot data is saved and updated.
Rules	None
Constraints	None

Table 5 Manage Slot Use Case Description

2.1.5 Manage Self-Test Use Case Diagram

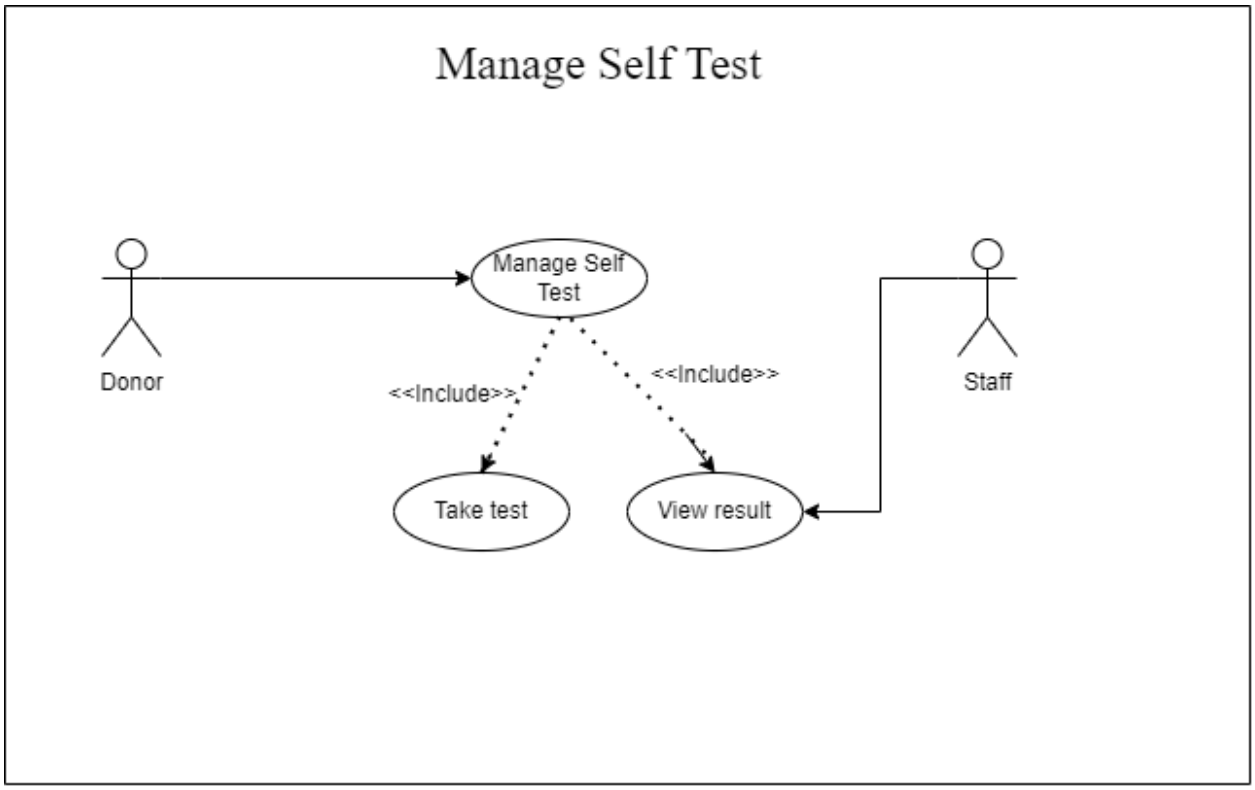

Figure 8 Manage Self-Test Use Case Diagram

Use Case ID	HFABD-500
Use Case Name	Self-Test
Brief Description	To take a test to see eligibility to donate blood or not.
Actor	Donor and staff
Pre-Conditions	The system must be logged into with a specific user's login account.
Basic Flow	1. The use case starts when user selects the self-test category. 2. The user can access their selected category. 3. The system displays data as requested by the user.
Alternative Flow	1. The donor able to: a. Take Test [**A1: Take Test**] 1. The donor needs to click on take test button. 2. The donor needs to enter the data. 3. System validates the information. 4. System saved information to database. 5. The result will be generated immediately.

	6. The system back to basic flow number 3. 2. The donor and staff able to: a. View Result [**A2: View Result**] 1. The staff and donor click on the view button. 2. The system display the data. 3. Once it done, click the back. 4. The system back to basic flow number 3.
Exceptional Flow	None
Post-Conditions	The test data is saved and updated.
Rules	None
Constraints	None

Table 6 Manage Self-Test Use Case Description

2.1.6 Manage Campaign Use Case Diagram

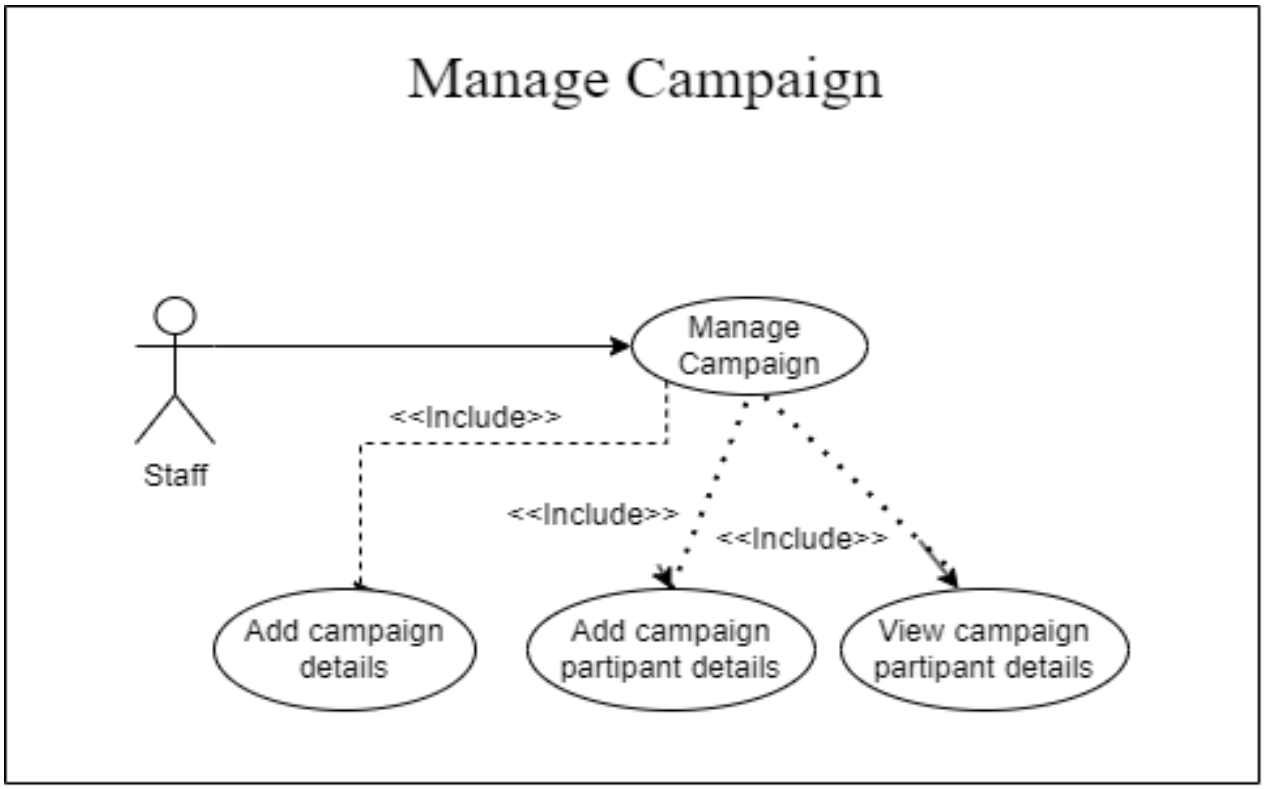

Figure 9 Manage Self-Test Use Case Diagram

Use Case ID	HFABD-600
Use Case Name	Campaign
Brief Description	To add camp details so the user can participate blood donation campaign.
Actor	Staff
Pre-Conditions	The system must be logged into with a specific user's login account.
Basic Flow	1. The use case starts when user selects the campaign category. 2. The user can access their selected category. 3. The system displays data as requested by the user.
Alternative Flow	1. The staff able to: a. Add campaign details [**A1: Add campaign details**] 1. The staff needs to click on add camp button. 2. The staff needs to enter the data. 3. System validates the information. 4. System saved information to database. 5. The result will be generated immediately.

	6. The system back to basic flow number 3. b. Add campaign participants details [**A2: Add campaign participant details**] 1. The staff needs to click on add participants button. 2. The staff needs to enter the data. 3. System validates the information. 4. System saved information to database. 5. The result will be generated immediately. 6. The system back to basic flow number 3. c. View campaign participants details [**A3: View campaign participant details**] 1. The staff click on the view button. 2. The staff select the camp name. 3. The system display the data. 4. Once it done, click the back. 5. The system back to basic flow number 3.
Exceptional Flow	None
Post-Conditions	The campaign data is saved and updated.
Rules	None
Constraints	None

Table 7 Manage Campaign Use Case Description

2.1.7 Manage Report Use Case Diagram

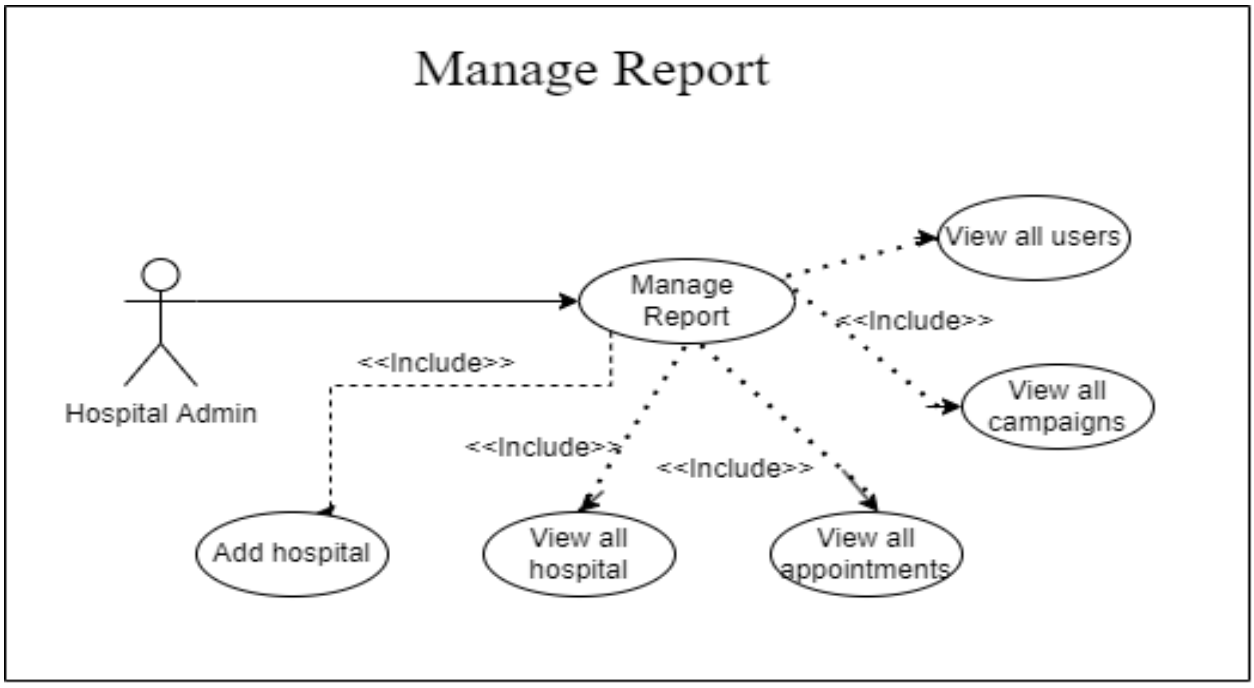

Figure 10 Manage Report Use Case Diagram

Use Case ID	HFABD-700
Use Case Name	Report
Brief Description	To see all, record all hospital appointments, campaign, appointment and user
Actor	Hospital Admin
Pre-Conditions	The system must be logged into with a specific user's login account.
Basic Flow	1. The use case starts when user selects the report category. 2. The user can access their selected category. 3. The system displays data as requested by the user.
Alternative Flow	1. The Hospital Admin able to: a. Add Hospital [**A1: Add Hospital**] 1. The hospital admin needs to click on add hospital button. 2. The hospital admin needs to enter the data. 3. System validates the information. 4. System saved information to database. 5. The result will be generated immediately. 6. The system back to basic flow number 3.

	b. View Hospitals [**A2: View Hospitals**] 1. The hospital admin click on the view hospital button. 2. The hospital admin select the state. 3. The system display the data. 4. Once it done, click the back. 5. The system back to basic flow number 3. c. View Users [**A3: View Users**] 1. The hospital admin click on the view user button. 2. The hospital admin select the state. 3. The hospital admin select the hospital. 4. The hospital admin select the user type. 3. The system display the data. 4. Once it done, click the back. 5. The system back to basic flow number 3. d. View Appointments [**A4: View Appointments**] 1. The hospital admin click on the view appointment button. 2. The hospital admin select the state. 3. The hospital admin select the hospital. 4. The hospital admin select the date. 3. The system display the data. 4. Once it done, click the back. 5. The system back to basic flow number 3. e. View Campaigns [**A5: View Campaigns**] 1. The hospital admin click on the view campaign button. 2. The hospital admin select the state. 3. The hospital admin select the hospital. 4. The hospital admin select the camp name. 3. The system display the data. 4. Once it done, click the back. 5. The system back to basic flow number 3.
Exceptional Flow	None
Post-Conditions	The report data is saved and updated.
Rules	None
Constraints	None

Table 8 Manage Report Use Case Description

2.2 SEQUENCE DIAGRAM

2.2.1 Manage User Sequence Diagram

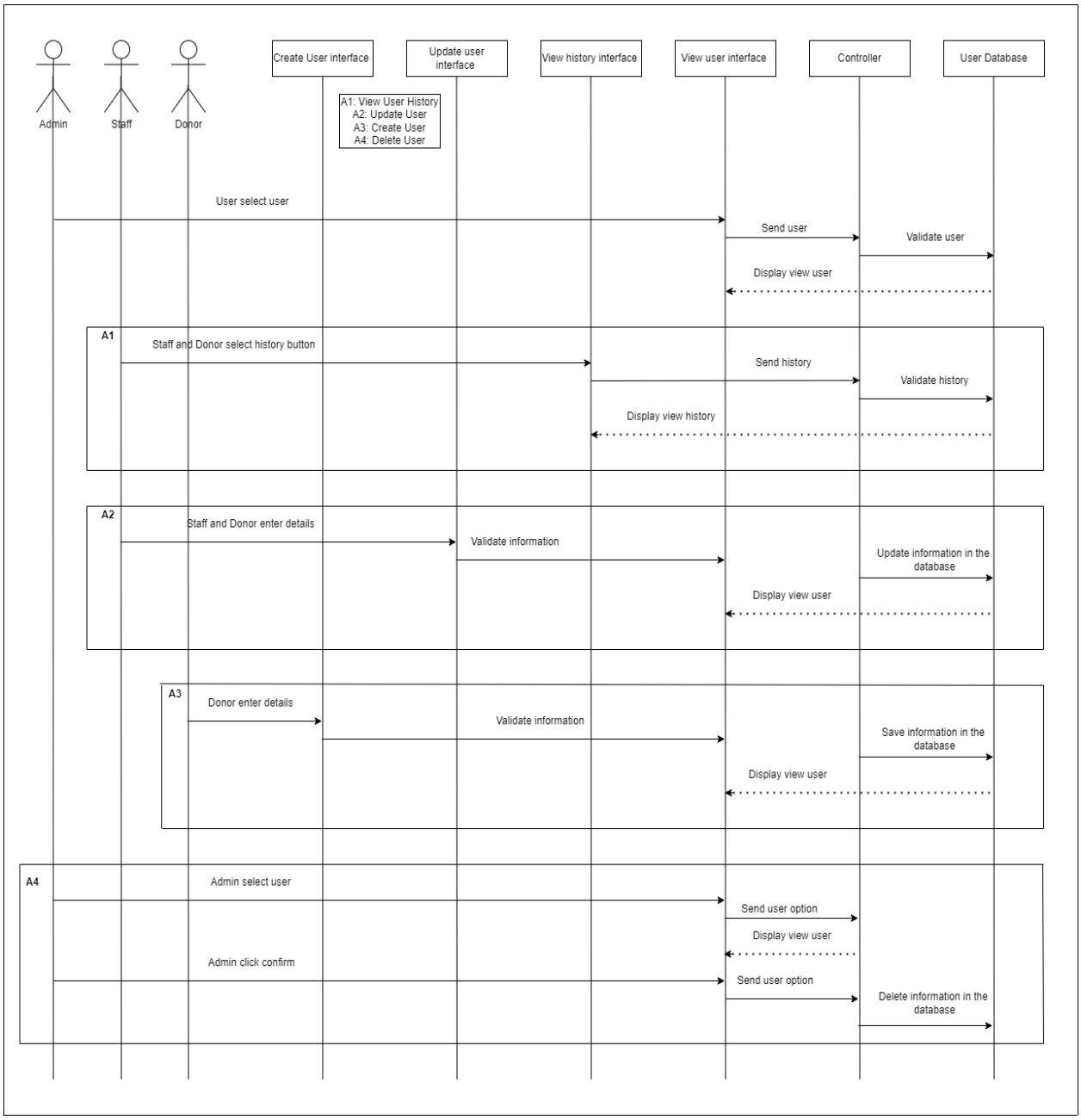

Figure 11 Manage User Sequence Diagram

2.2.2 Manage Appointment Sequence Diagram

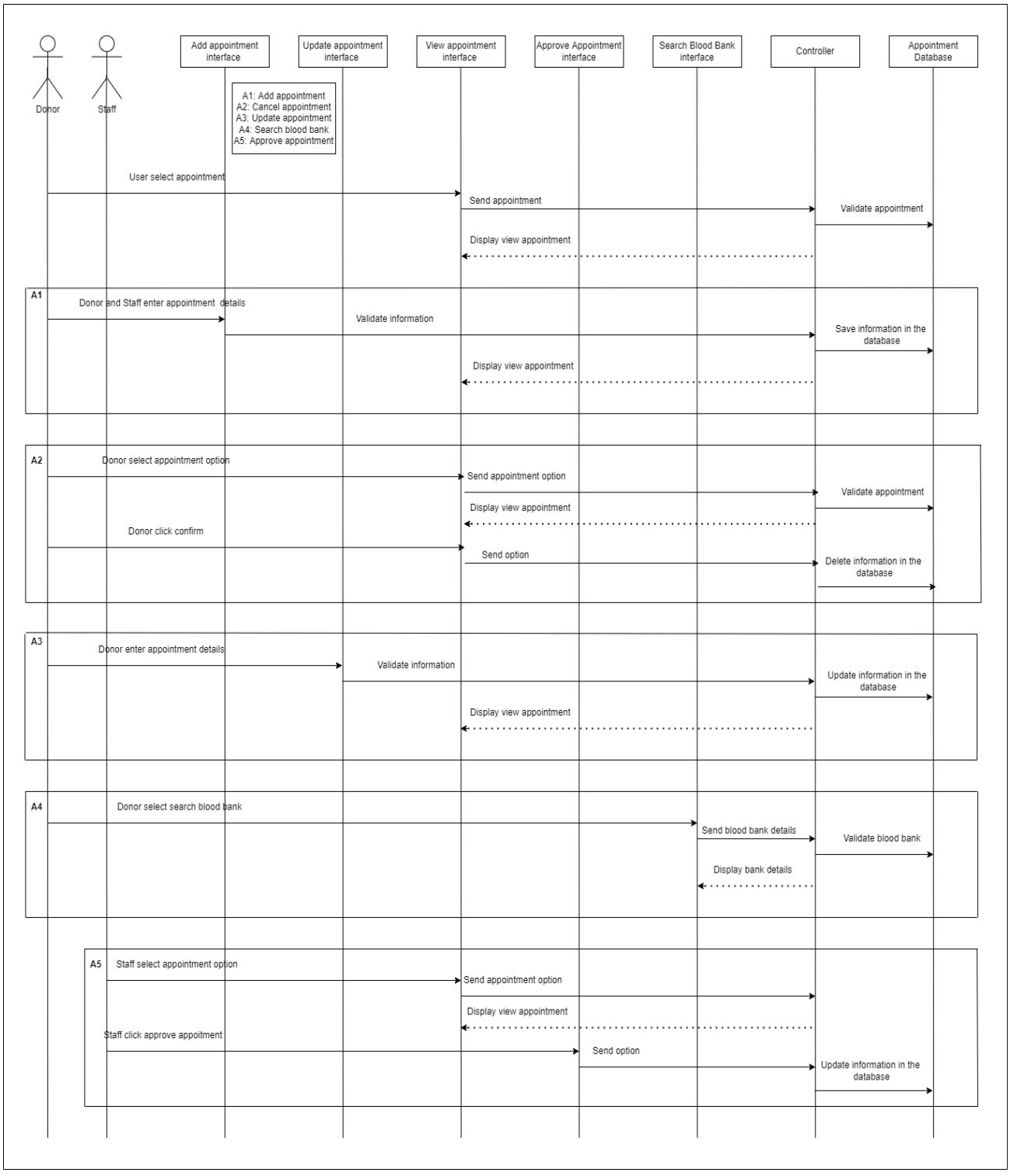

Figure 12 Manage Appointment Sequence Diagram

2.2.3 Manage News Feed Sequence Diagram

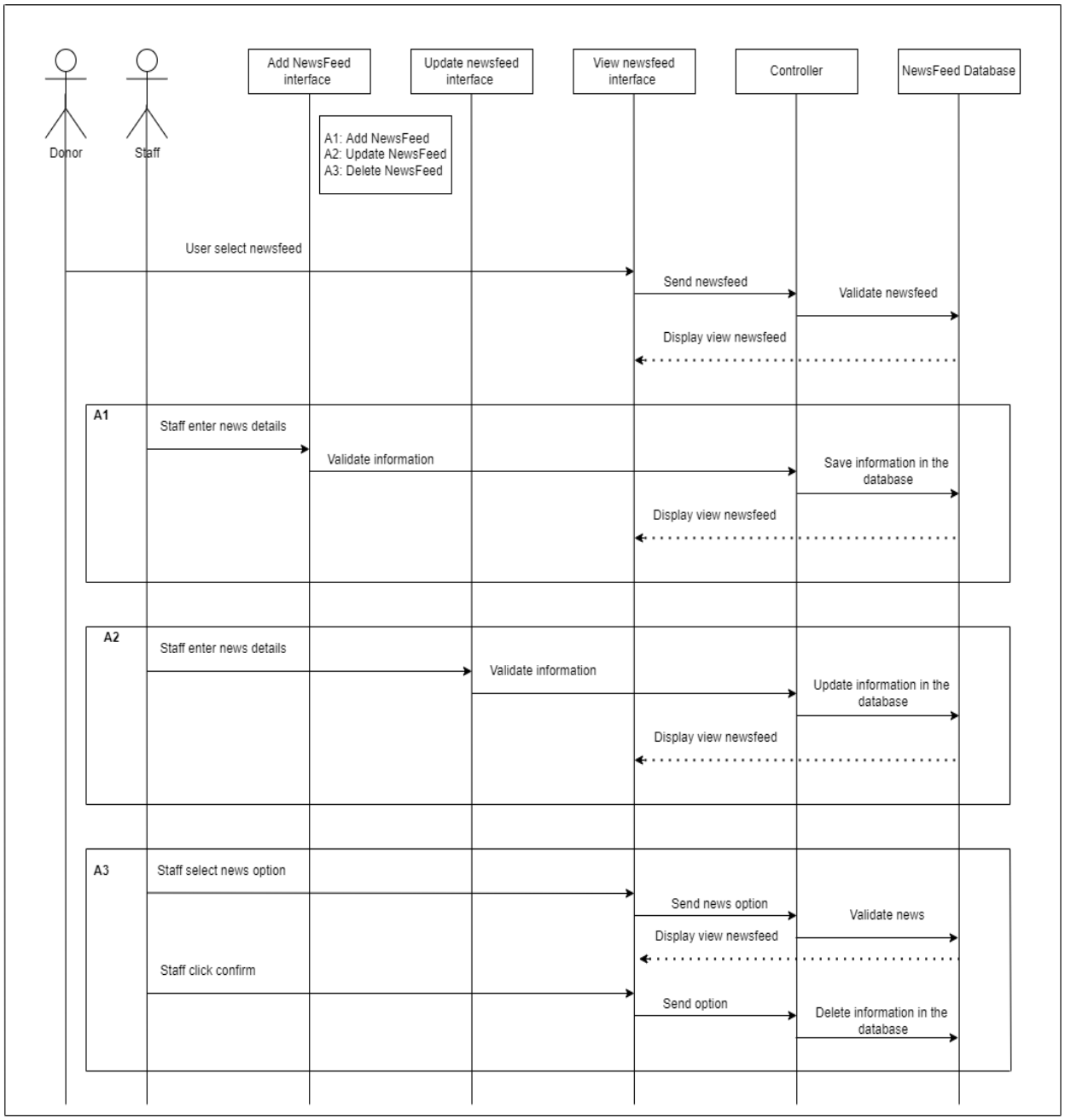

Figure 13 Manage News Feed Sequence Diagram

2.2.4 Manage Slot Sequence Diagram

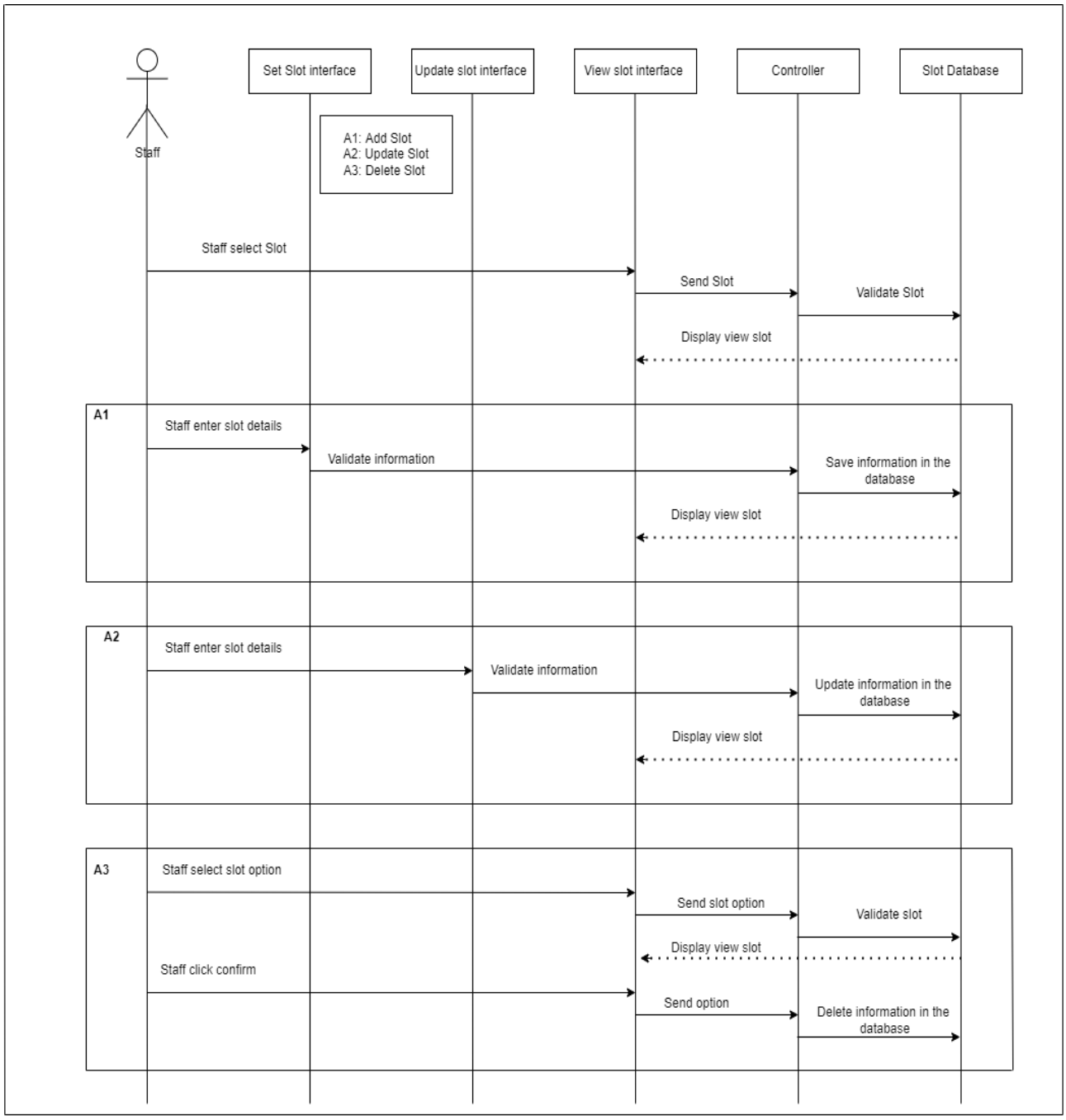

Figure 14 Manage Slot Sequence Diagram

2.2.5 Manage Self-Test Sequence Diagram

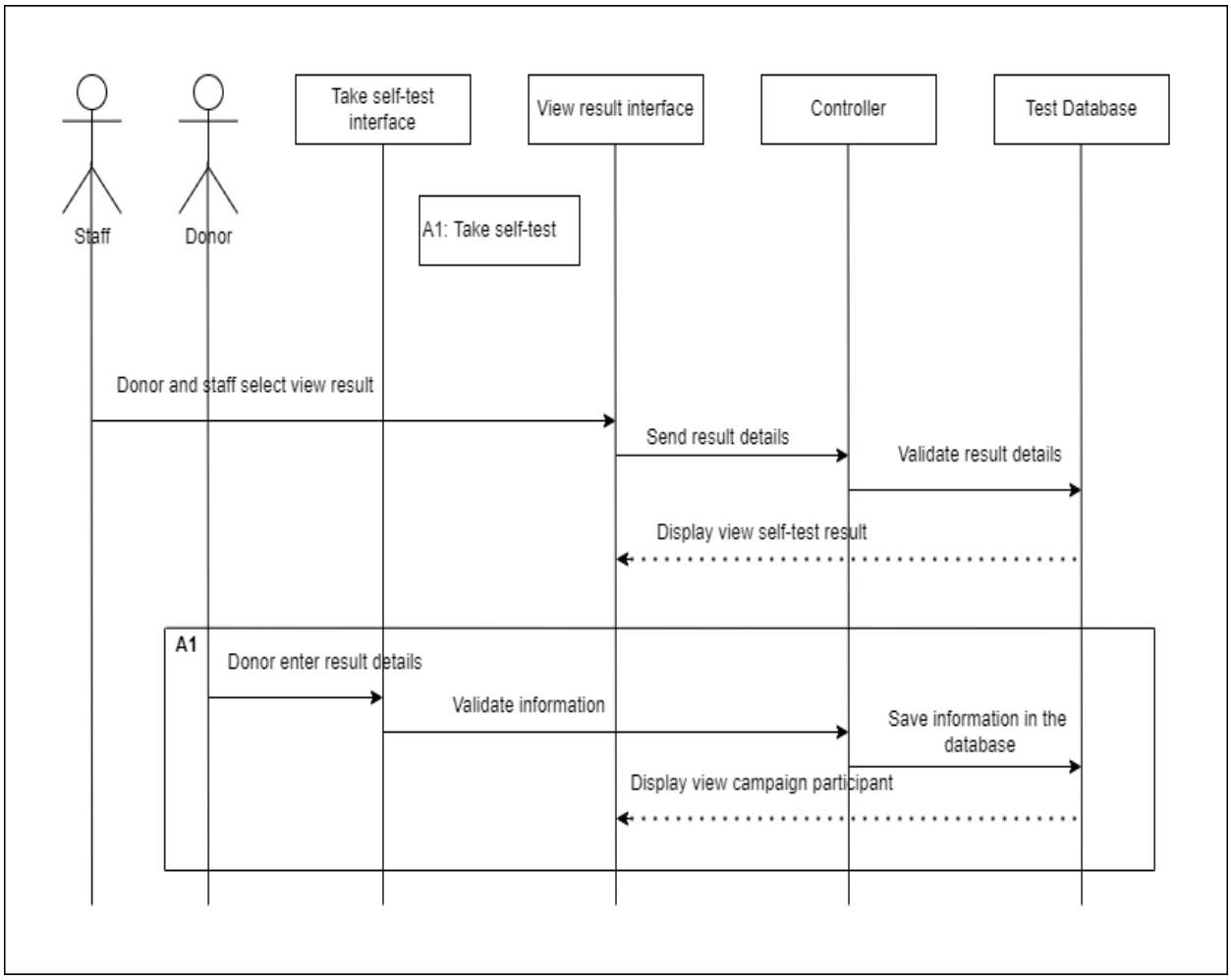

Figure 15 Manage Self-Test Sequence Diagram

2.2.6 Manage Campaign Sequence Diagram

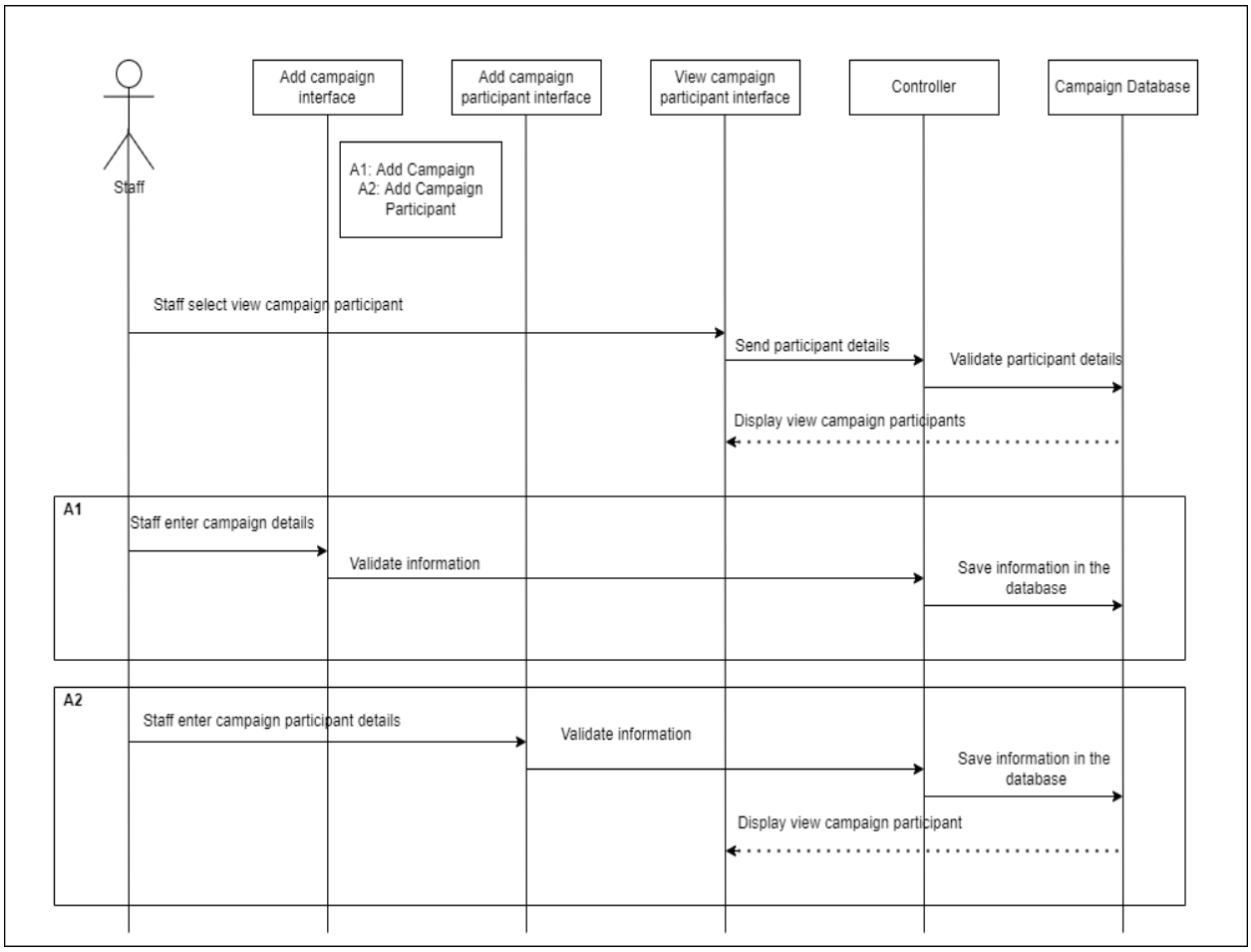

Figure 16 Manage Campaign Sequence Diagram

2.2.7 Manage Report Sequence Diagram

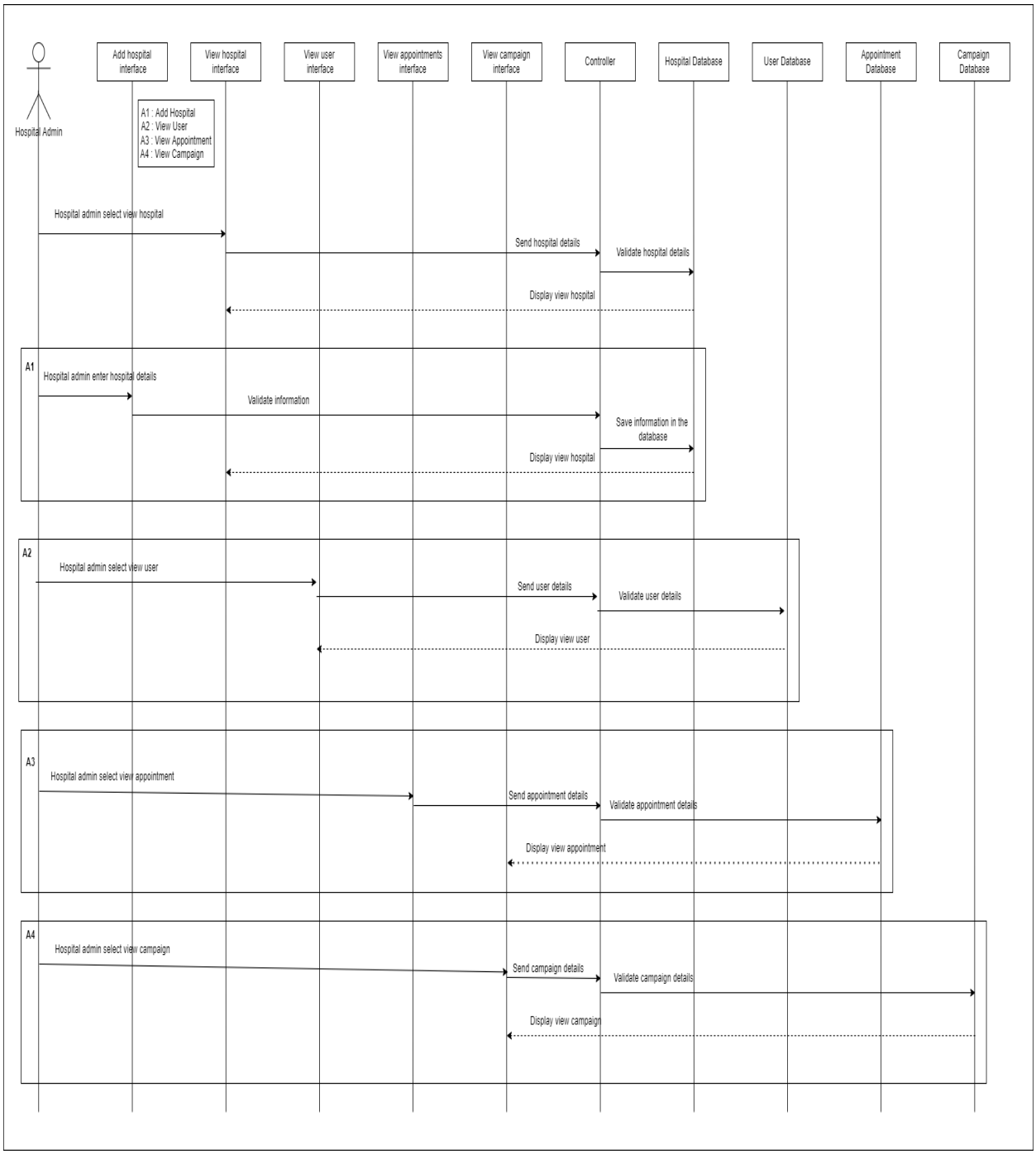

Figure 17 Manage Report Sequence Diagram

CHAPTER 3

3.1 INTERFACE DESIGN

Figure 18 Splash Screen

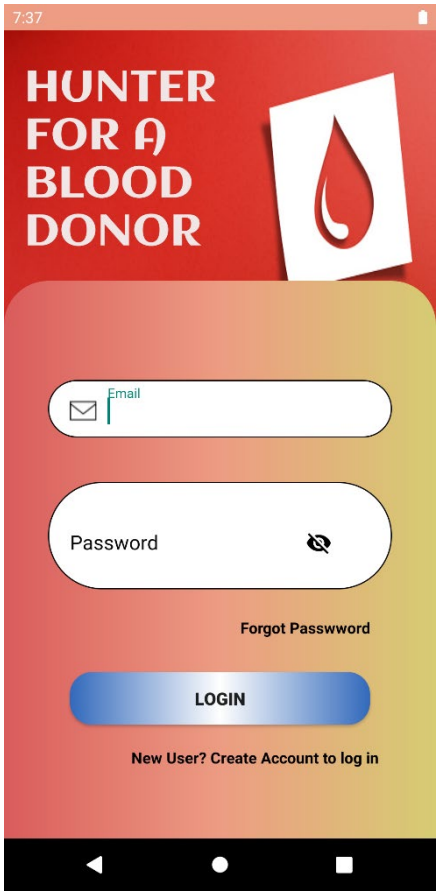

Figure 19 Login Page

Donor

Manage User

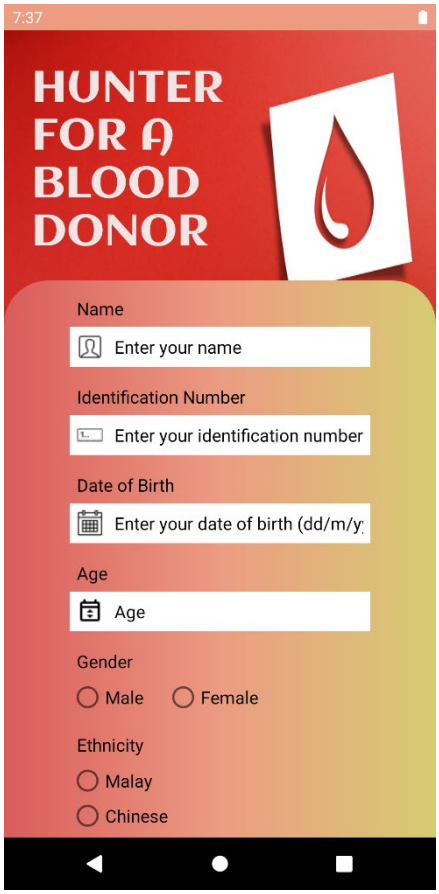

Figure 20 Signup Page

Figure 21 View Profile

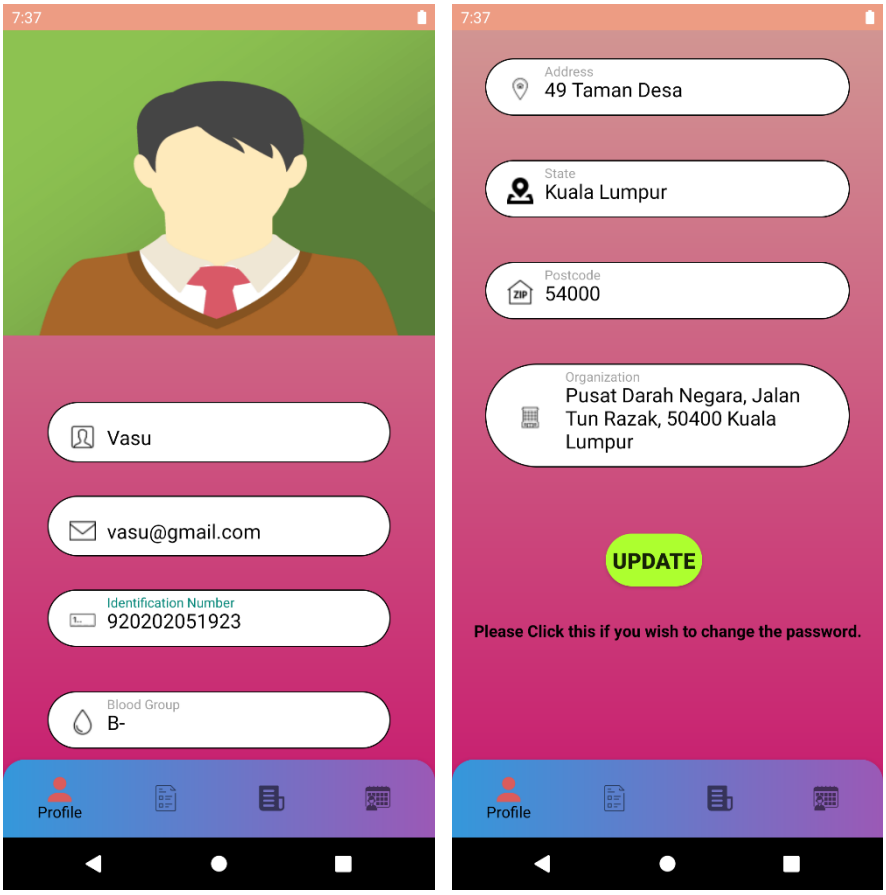

Figure 22 Edit Profile

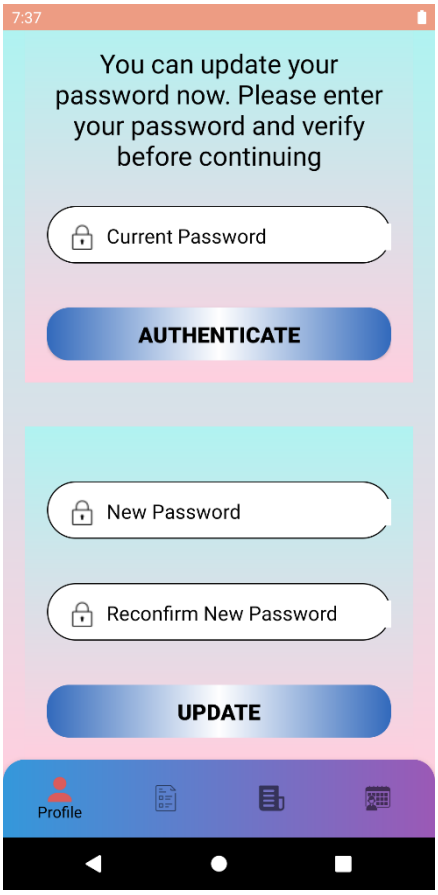

Figure 23 Change Password

Manage Test

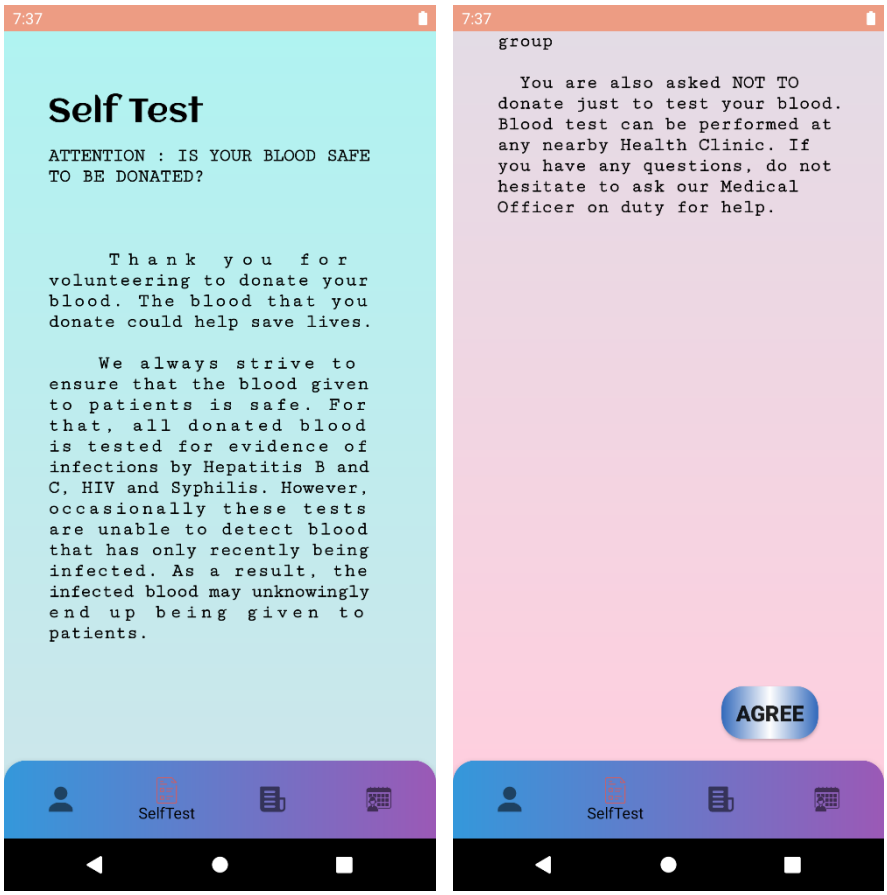

Figure 24 Test Instruction

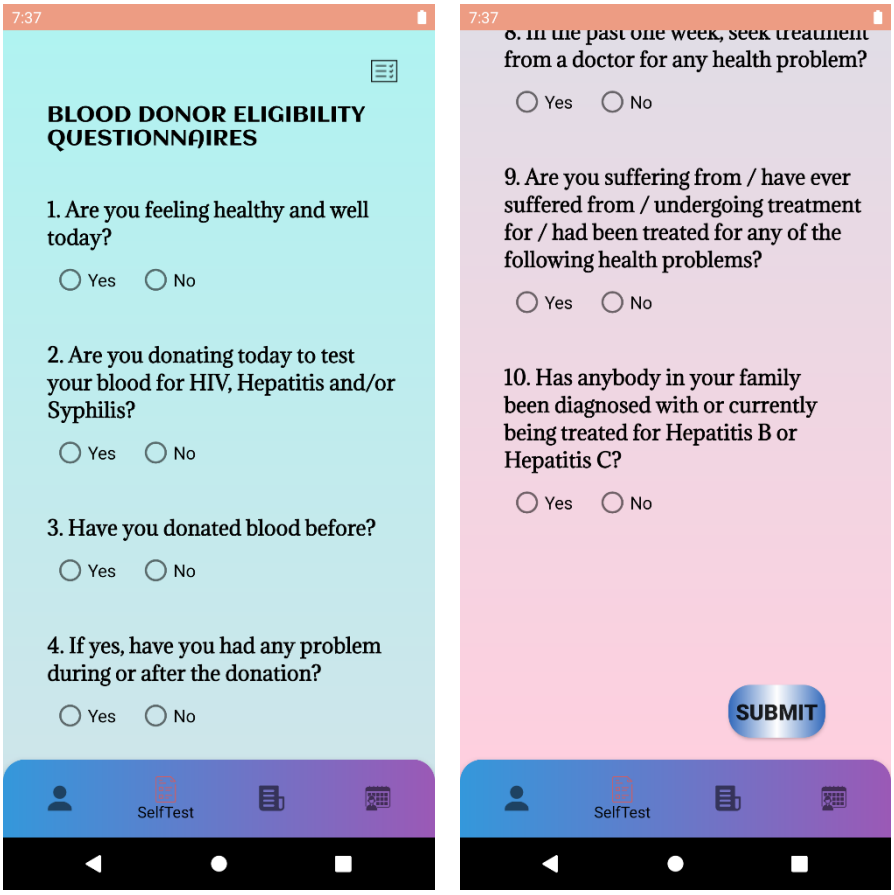

Figure 25 Test Question

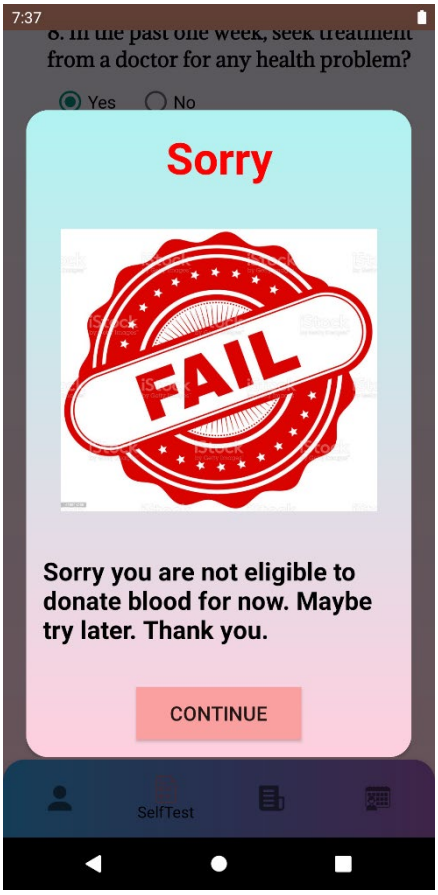

Figure 26 Test Failed Message

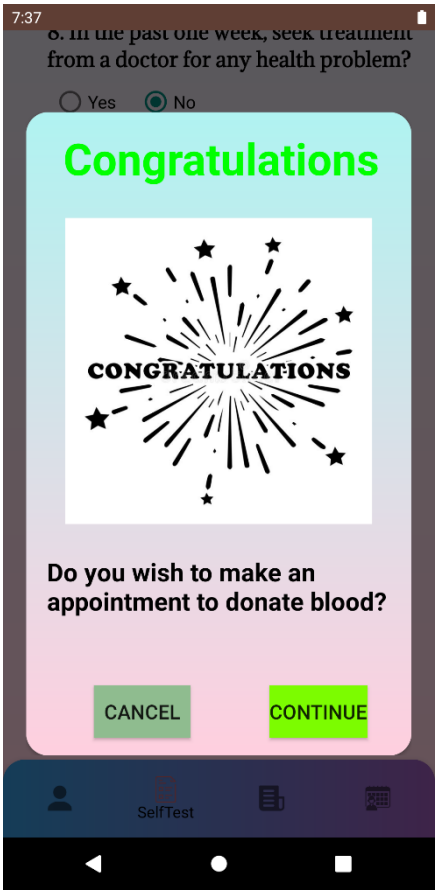

Figure 27 Test Success Message

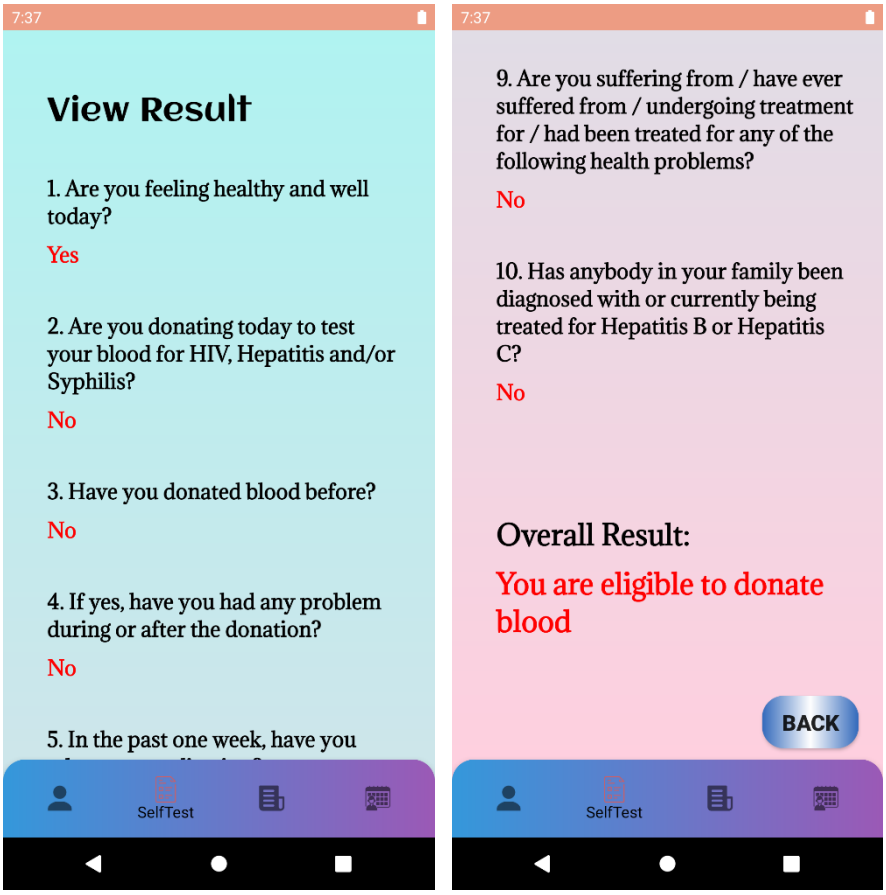

Figure 28 View Result

Manage News

Figure 29 View News Feed

Manage Appointment

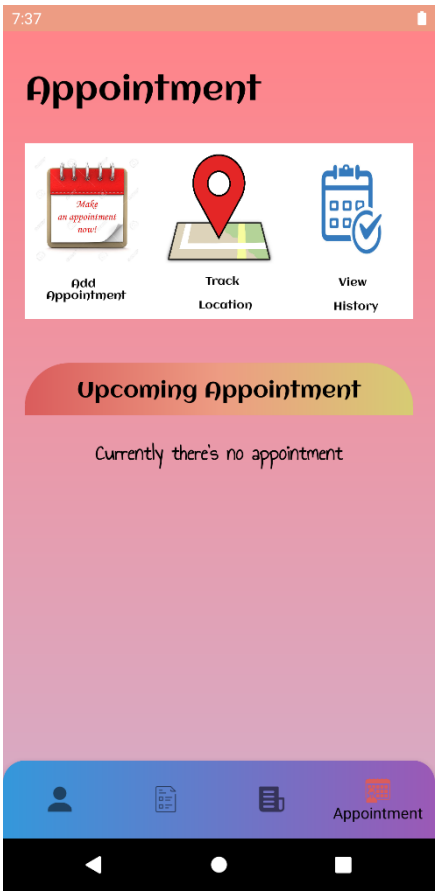

Figure 30 Appointment

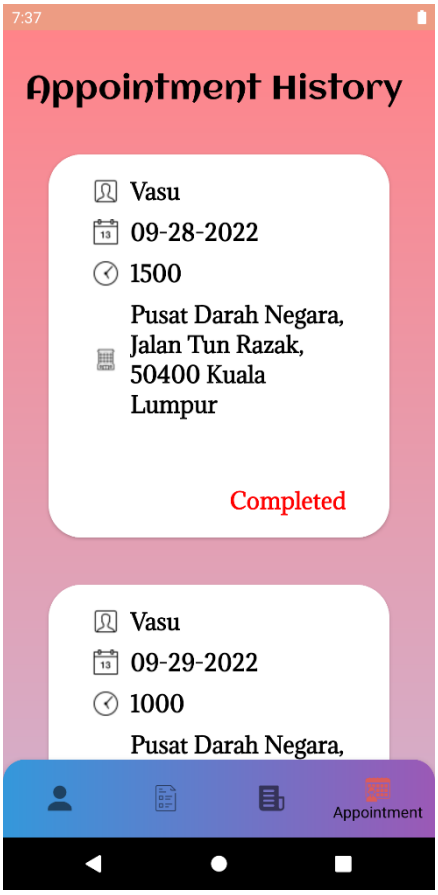

Figure 31 Appointment History

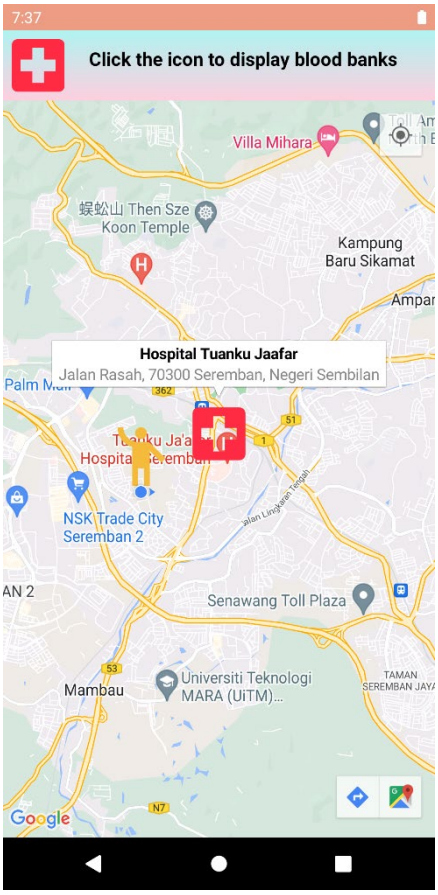

Figure 32 Nearby Blood Bank

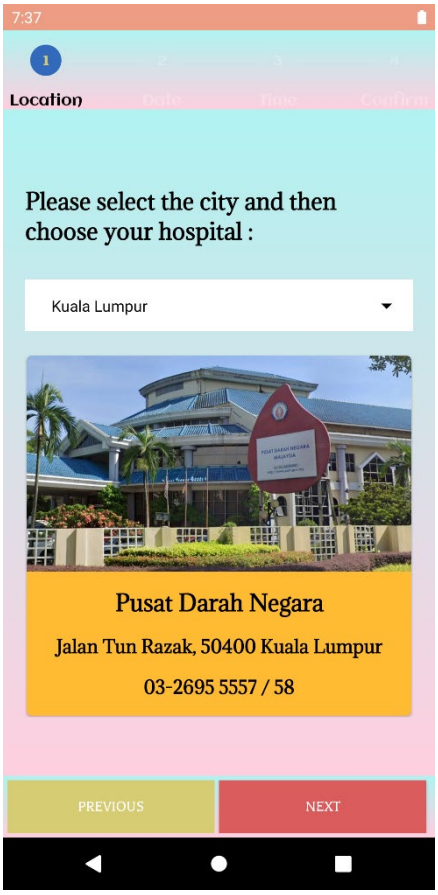

Figure 33 Select Hospital

Figure 34 Select Date

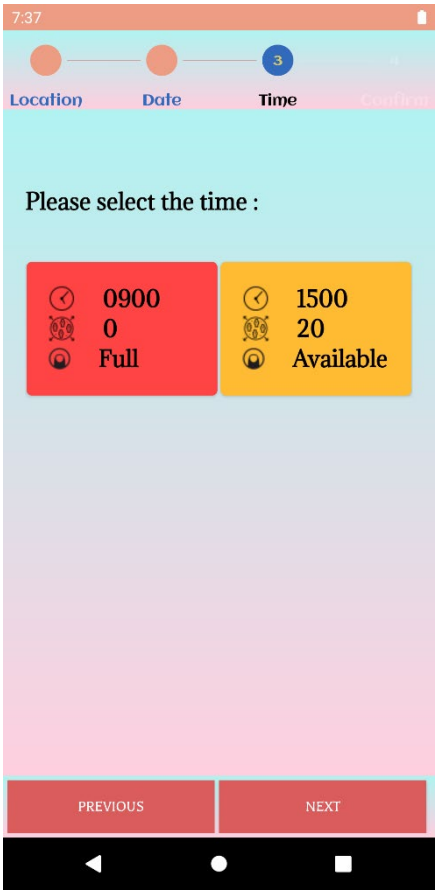

Figure 35 Select Time

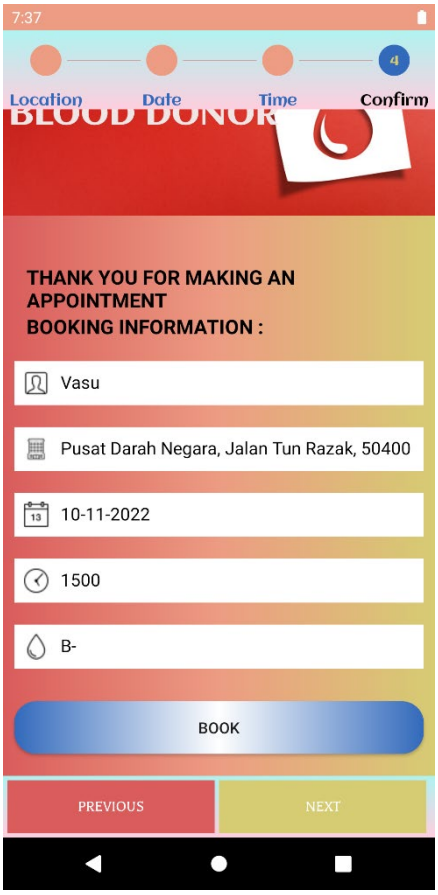

Figure 36 Appointment Confirmation

Figure 37 Upcoming Appointment

Staff

Manage User

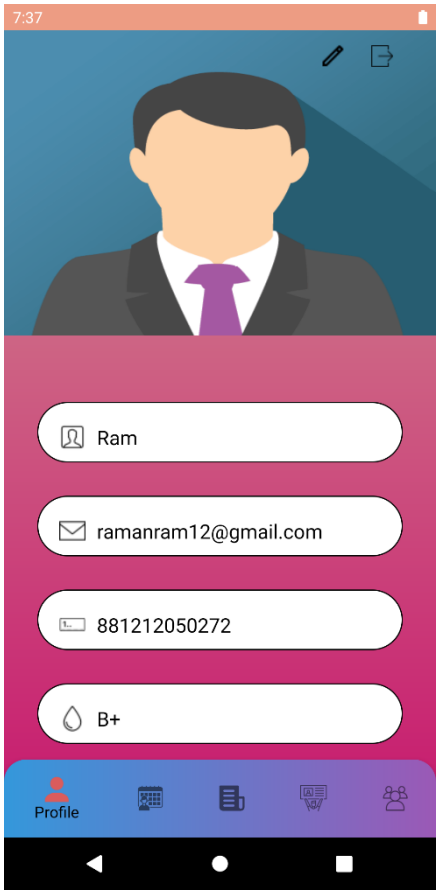

Figure 38 View Staff Profile

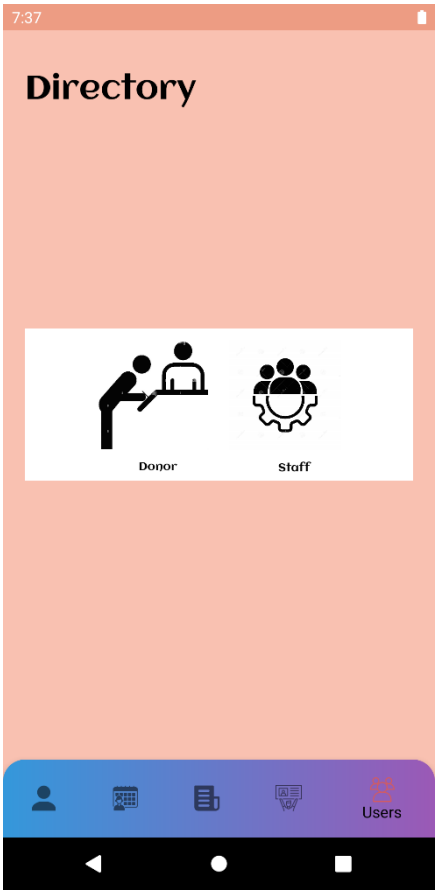

Figure 39 User Directory

Figure 40 User List (Donor)

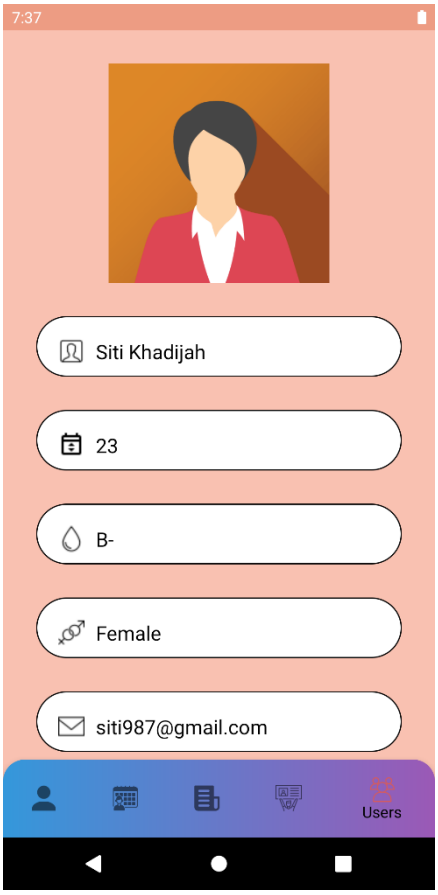

Figure 41 View User Profile

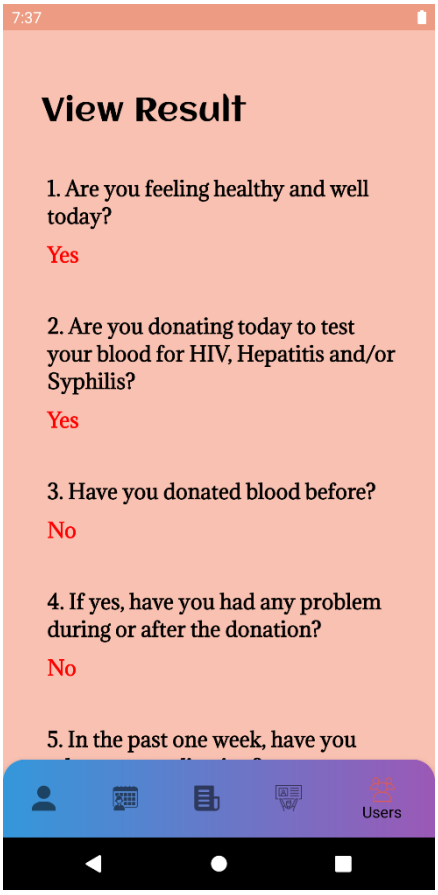

Figure 42 View Donor Result

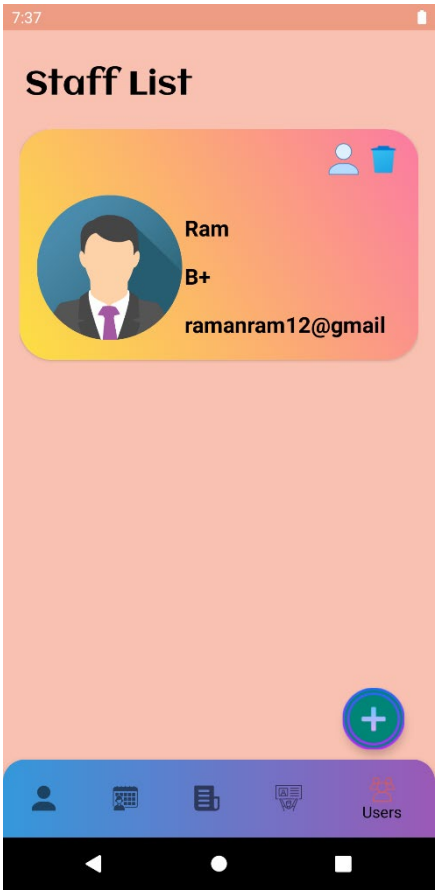

Figure 43 User List (Staff)

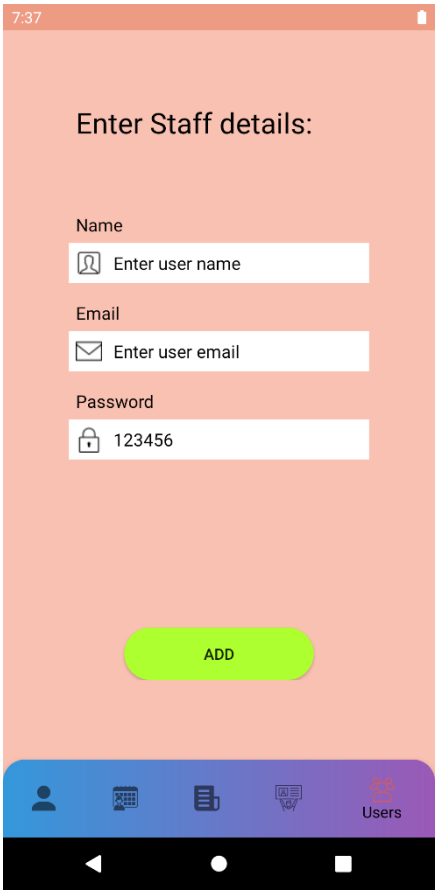

Figure 44 Add Staff

Manage Appointment

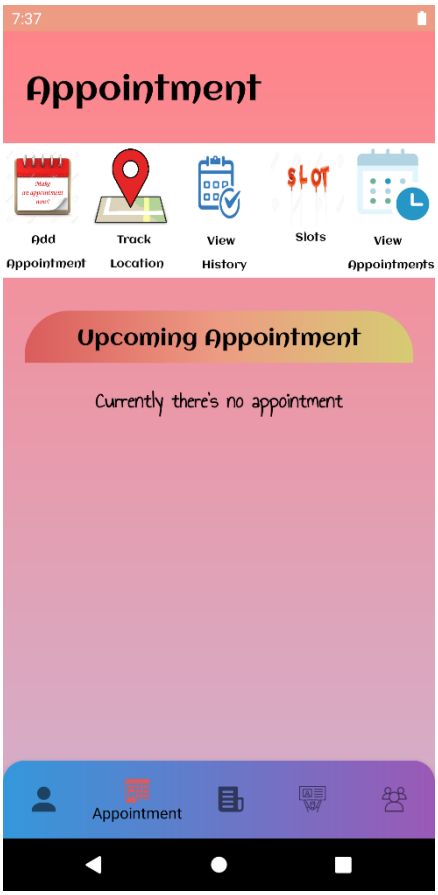

Figure 45 Appointment (Staff)

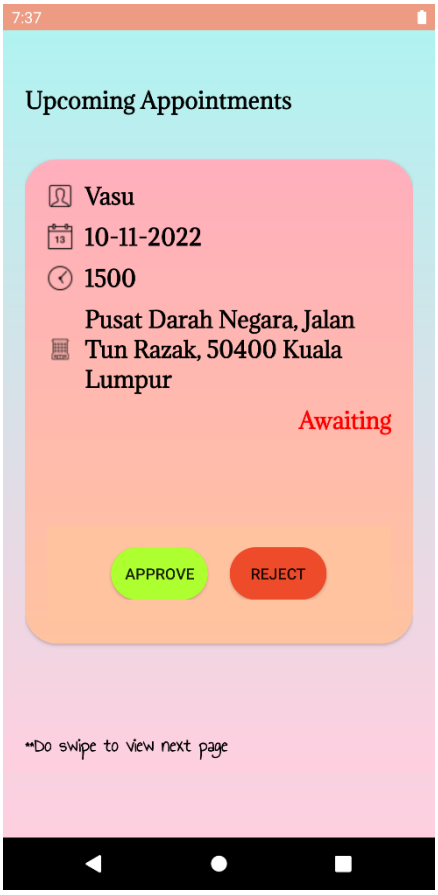

Figure 46 Staff View Upcoming Appointments

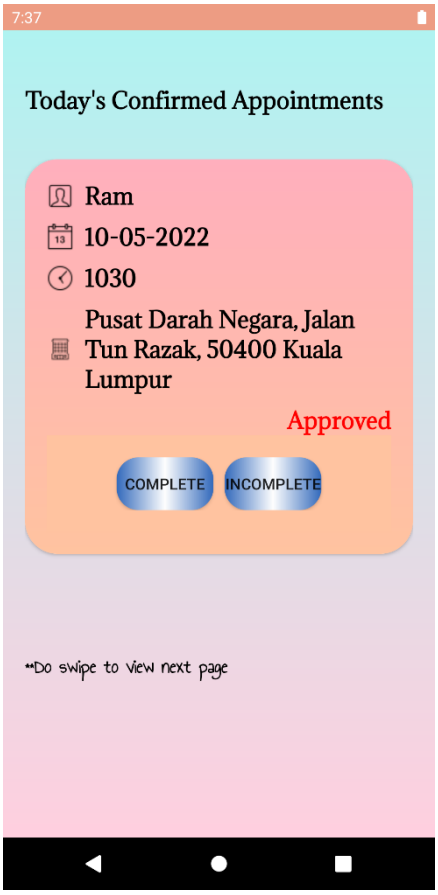

Figure 47 Staff View Today Appointments

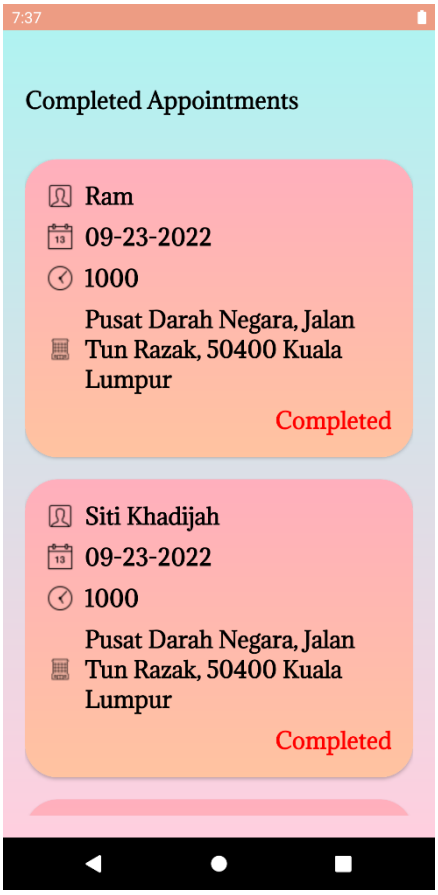

Figure 48 Staff View Completed Appointments

Manage Slot

Figure 49 View Slots

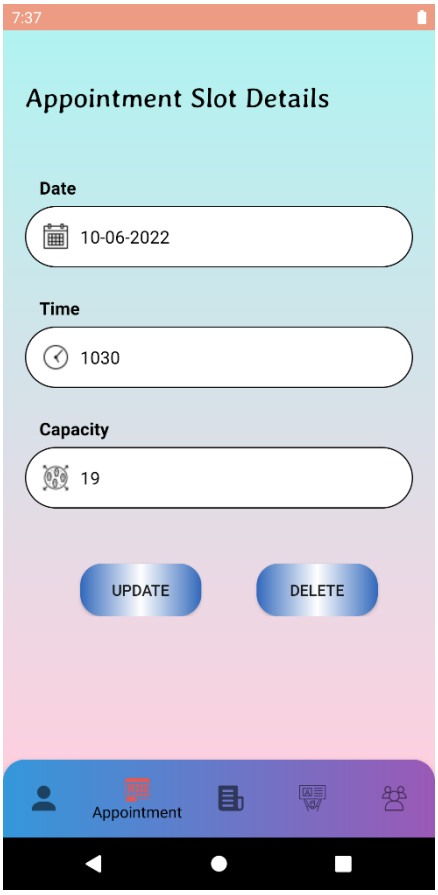

Figure 50 Slot Details

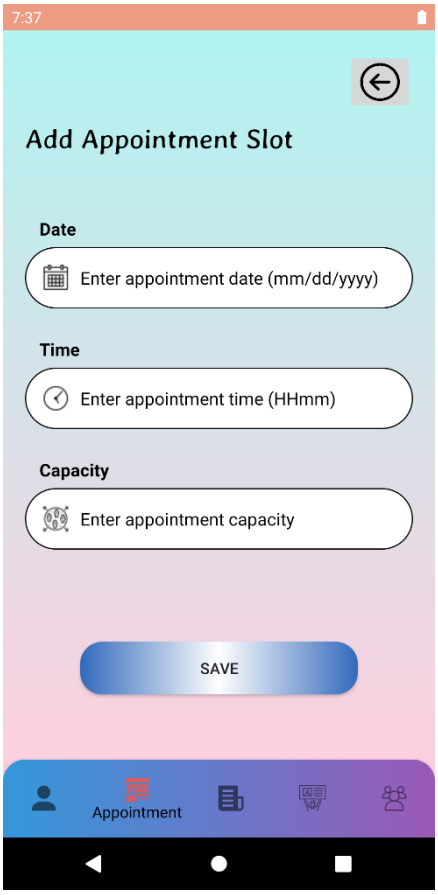

Figure 51 Add Slots

Manage News

Figure 52 News Feed

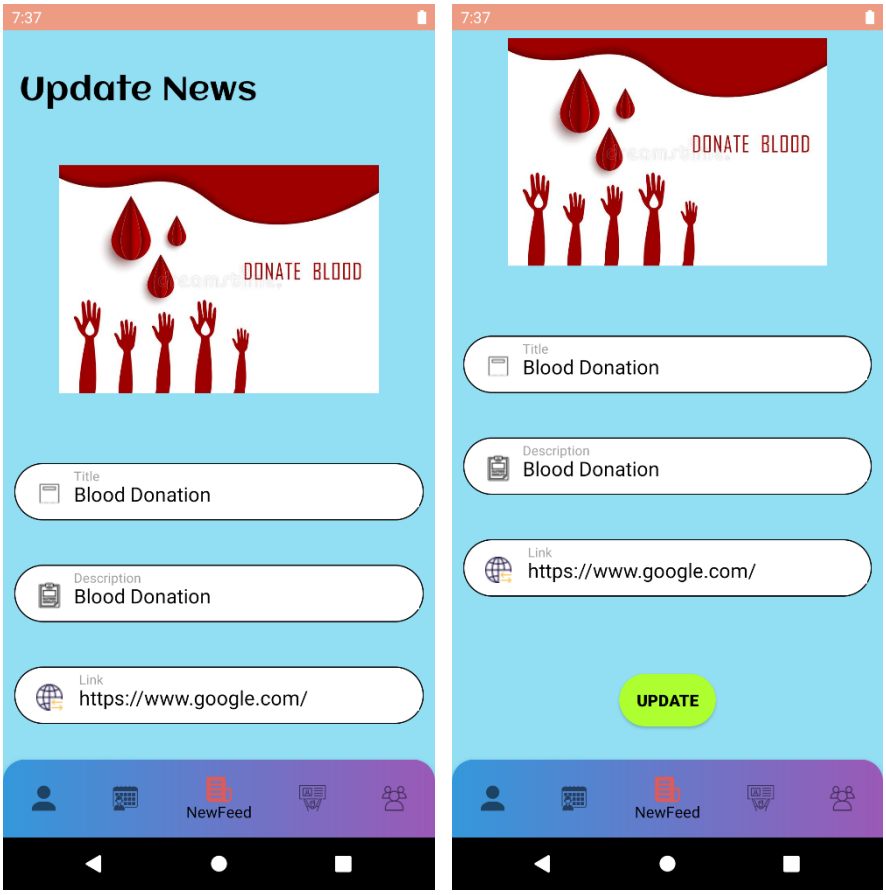

Figure 53 Update News

Figure 54 Add News

Manage Campaign

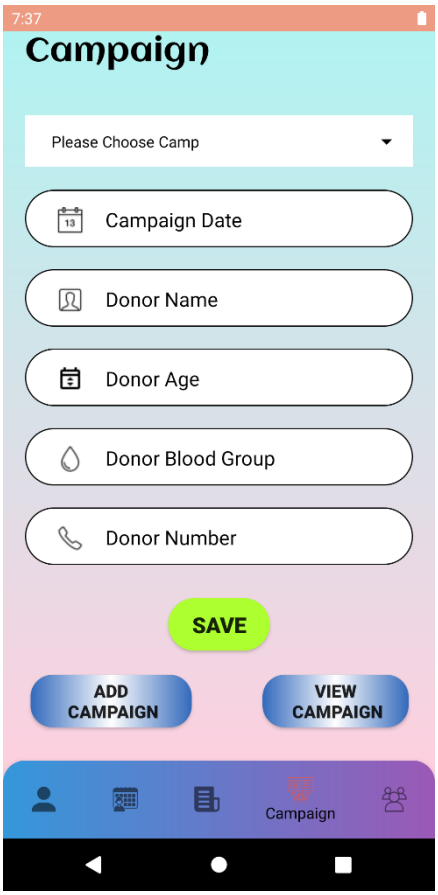

Figure 55 Add Campaign Participant Details

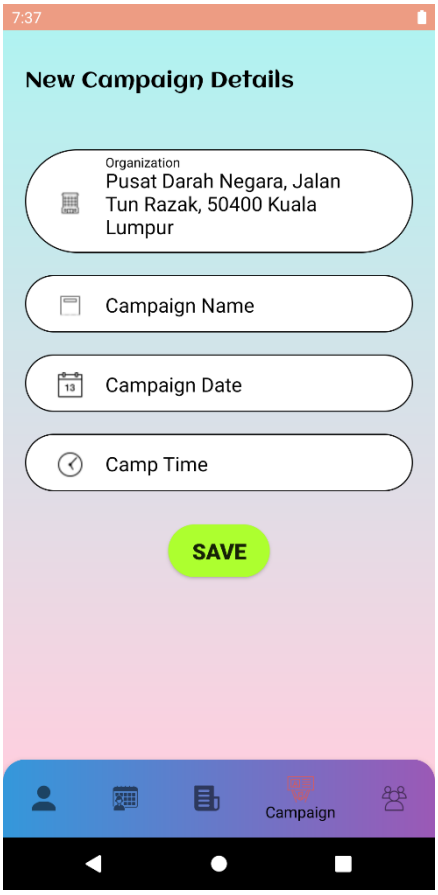

Figure 56 Add Camp Details

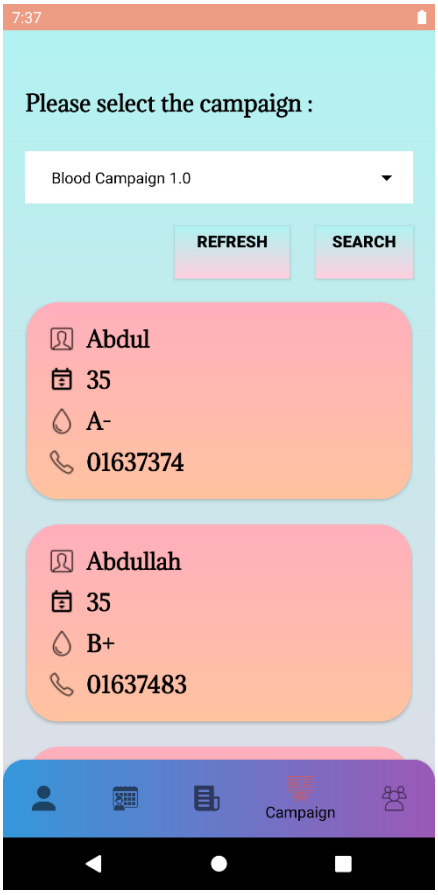

Figure 57 View Campaign Participants

Manage User

Admin

Figure 58 Admin Profile

Manage Report

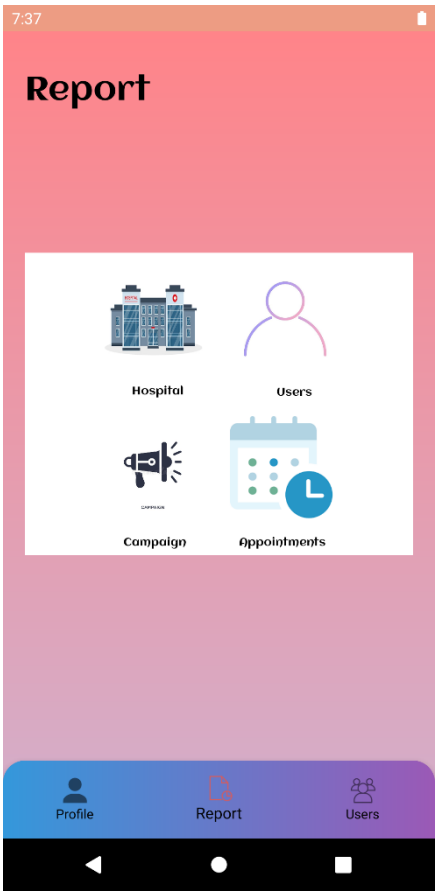

Figure 59 Report Page

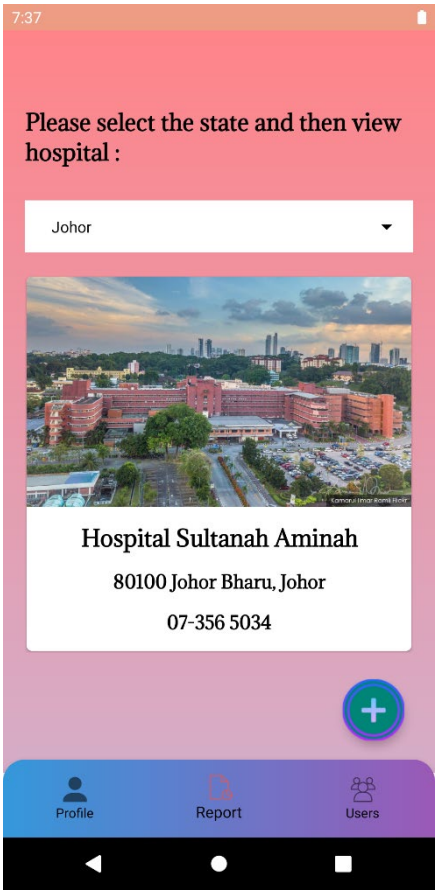

Figure 60 View Hospitals

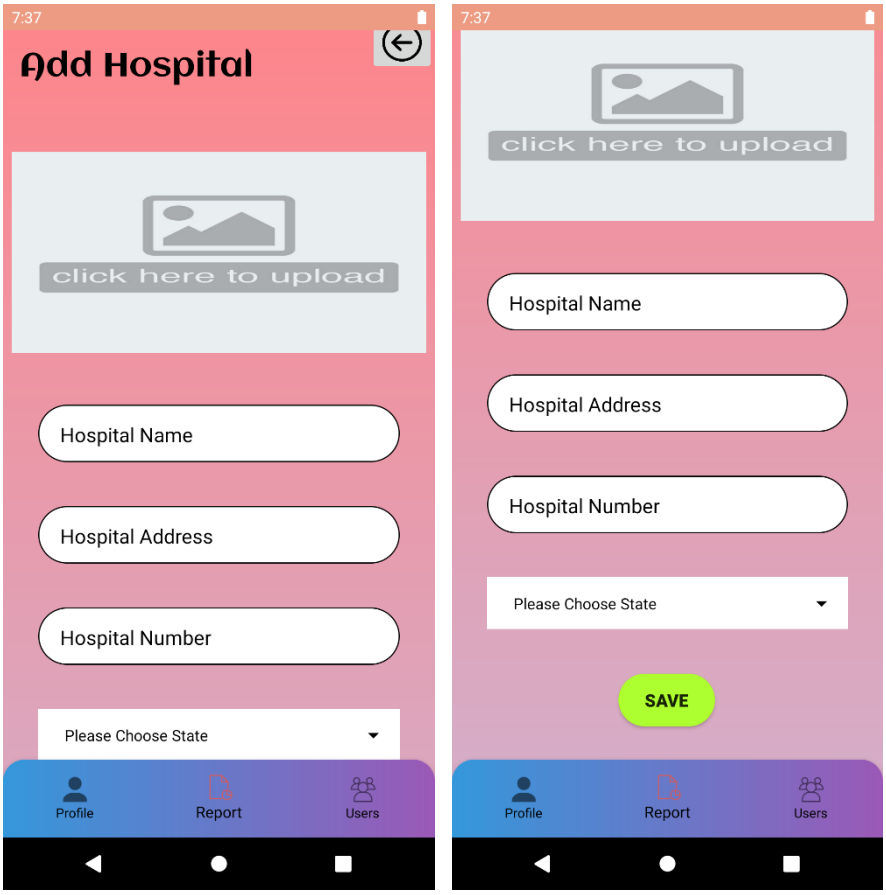

Figure 61 Add Hospital

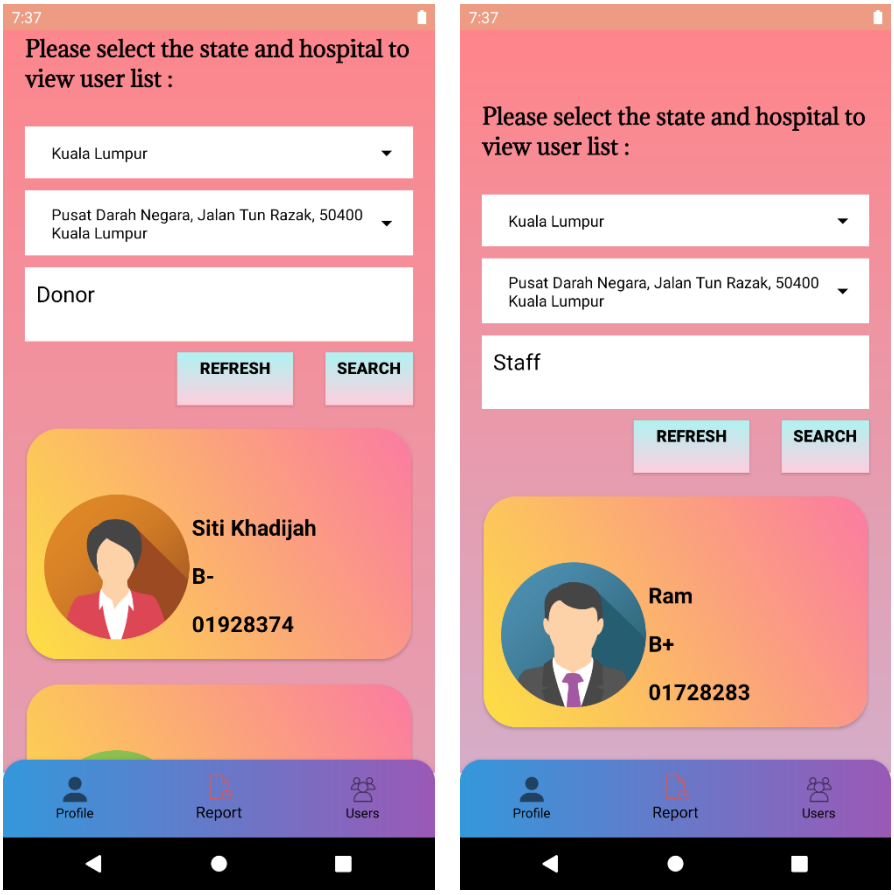

Figure 62 View User List

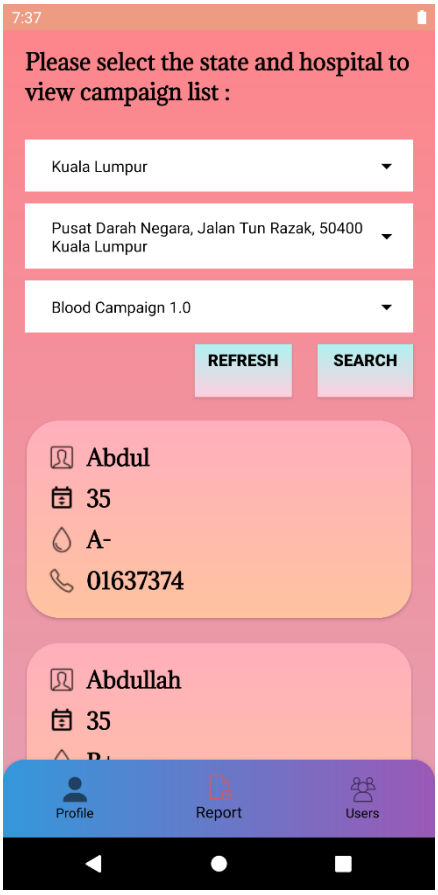

Figure 63 View Campaign List

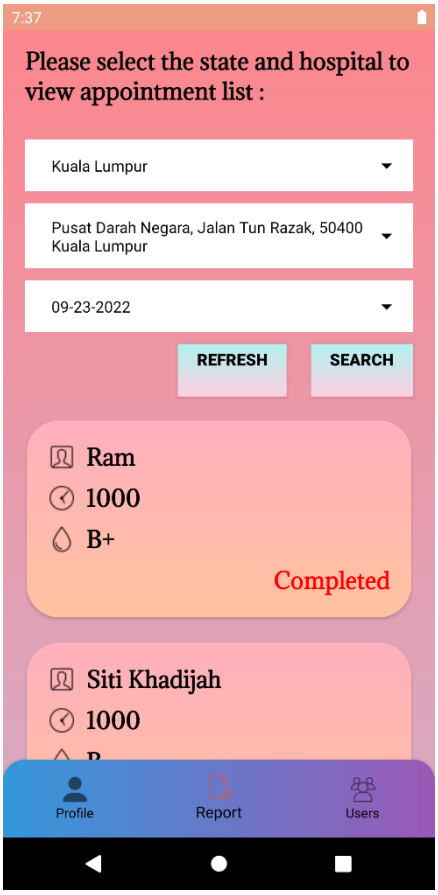

Figure 64 View Appointment List

3.2 HARDWARE AND SOFTWARE SPECIFICATION

NAME	VERSION	TYPE	DESCRIPTION
Android Studio	4.0	Software Language	For developing mobile application.
MockFlow	Web	Interface Designer	For draw interface
Visual Studio	1.54.2	Software Text Editor	For amending source code.
Github	2.5	Software	Store coding in GitHub for backup
XAMPP	7.4.11	Software Host	Store database and run localhost
MSI Alpha 15	A3DDK	Hardware	Used as tool to execute all software code and applications.

Table 9 Hardware and Software

APPENDIX C – SOFTWARE DESIGN DESCRIPTION (SDD)

2022

SOFTWARE DESIGN DESCRIPTION (SDD)

[HUNTER FOR A BLOOD DONOR]

DOCUMENT APPROVAL

	Name	Date
Authenticated by: *logadarshan* _____ Name: Logadarshan A/L Krishnan	LOGADARSHAN A/L KRISHNAN	
Approved by: _____ Client		

Software : Microsoft Word, Draw.io

Archiving Place :

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CHAPTER 1

1.1 PROJECT DESCRIPTION

The purpose of this Software Description Document (SDD) document is to provide details and idea which define the Hunter for A Blood Donor with the collaboration with client. This documentation consists of all detailed design about this blood donation system (BDS) including their functionality for every module and users of the system. This document intended to be a flexible document as it able to change and evolve within the development process of BDS. The diagrams and concept of this system is visualized using class diagram model view controller diagram and the ERD diagram to ensure project flow and understanding from both clients and developer side.

The Hunter for A Blood Donor Application, which is a database of blood donors, can be used by donors, seekers, and staff. This application can be used by donor who need to make appointment to donate blood. They can make appointment to donate blood by using their mobile devices to check slot availability. Donors can update their information so that they can see their profile and the status of their blood donation. It also displays the donor's blood donation history. A donor can also schedule a blood donation appointment by specifying the time and location where he or she wishes to donate blood. Before donating the blood, the donor needs to check their eligibility to donate blood. To do that the donor need to self-test by fill up a survey to check their eligibility. The donor also can view the news feed to know latest news regarding blood donation.

Aside from the donor, another user will be the staff. The staff's role is to view information about donor so that they can contact them in an emergency. When a donor made an appointment, the staff can accept it. Only donors who have been approved by the staff are allowed to donate blood. The staff also responsible to assign slots for each appointment. Once the slot is full, the donor needs to find another slot to make their appointment. If a donor already made an appointment and the staff cancelled the slot there will automatic message will be sent to the donor. When a donor fills up survey to check their eligibility to donate the blood, the staff can view the result. When there’s a campaign the staff can new campaign details and view list of donors participated in it. The staff also can view list of donors and staff in that hospital and add new staff into the system.

The role of admin in this system is add new admin into the system. The admin also can manage report by viewing list of hospitals and number of appointments and campaigns organized by each hospital. The admin also views the user directory each hospital.

Firstly, this document describes system identification, architecture model which is the model view controller diagram and the class diagram of this document which helps the developer and testers to use this as reference for future maintenance work.

Lastly, this SDD contains detailed design description of each module such as the input output and algorithm for each input and output. This has been designed to facilitate the client, developers, testers and managing staff to review the interfaces for each functionality requirement to ensure each follows the requirement that has been verified by the client.

1.2 SYSTEM IDENTIFICATION

System Title : Hunter for A Blood Donor

System Abbreviation : HFABD

System Identification Number: HFABD_SRS_2022_V1

SDD : Software Design Description

2022 : Development Year 2022

V1 : Version 1

1.3 ARCHITECTURE / BLUE PRINT

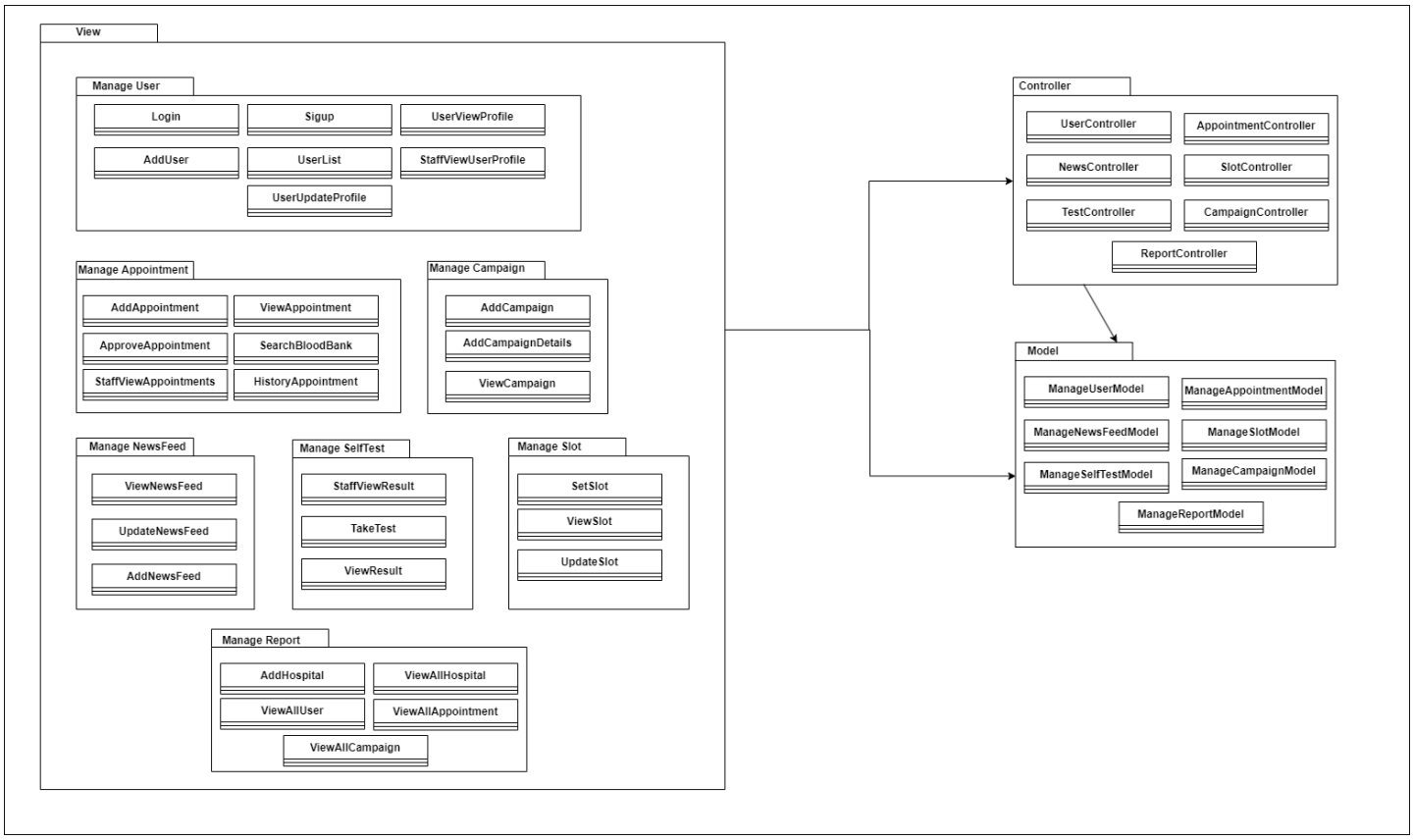


Figure 1 MVC Diagram of Hunter For A Blood Donor

The MVC diagram in Figure 1 shown in the diagram above. Among them are the model (data), the view (user interface), and the controller (processes that handle input). The MVC model, also referred to as the "pattern," is frequently used in the creation of modern user interfaces. It covers all of the necessary components for creating desktop, web, and apps. The seven views depicted in the diagram above are manage user, manage appointments, manage newsfeed, manage slot, manage self-test, manage campaign and manage report. Each view has its own set of functions. There are seven controllers, each of which belongs to its own view in the view package. As for the models, there are seven models in the controller package that relate to relevant controllers.

1.4 ARCHITECTURE / BLUEPRINT DESCRIPTION

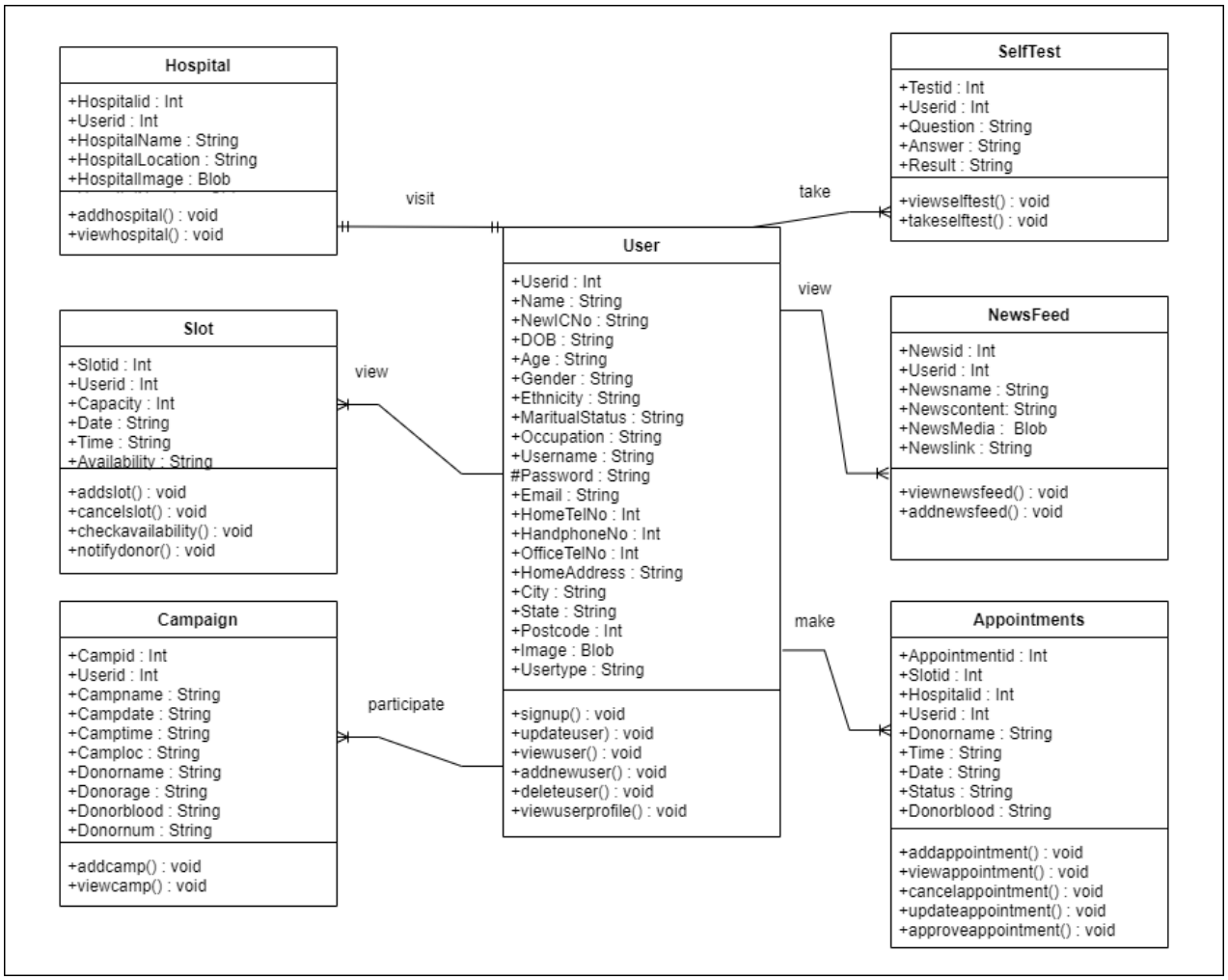


Figure 2 Class Diagram Of Hunter For A Blood Donor

The Figure 2 shows the class diagram of Hunter For A Blood Donor. There are total of seven classes which are user, appointment, hospital, newsfeed, slot, selftest and campaign.

1.4.1 CLASS DIAGRAM DETAILS

1.4.1.1 Donor

Class Name	User
Module involved	Manage User
Attributes	Userid Name NewICNo DOB Age Gender Ethnicity MaritualStatus Occupation Username Password Email HomeTelNo HandphoneNo OfficeTelNo HomeAddress City State Postcode Image Usertype
Method	signup() updateuser) viewuser() addnewuser() deleteuser() viewuserprofile()

Table 1 User Class

1.4.1.2 Appointment

Class Name	Appointment
Module involved	Manage Appointment
Attributes	Appointmentid Slotid Hospitalid Userid Donorname Donorblood Time Date Status
Method	addappointment() viewappointment() cancelappointment() updateappointment() approveappointment()

Table 2 Appointment Class

1.4.1.3 Hospital

Class Name	Hospital
Module involved	Manage Report
Attributes	Hospitalid Userid HospitalName HospitalLocation HospitalImage HospitalNumber
Method	addhospital() viewhospital()

Table 3 Hospital Class

1.4.1.4 NewsFeed

Class Name	NewsFeed
Module involved	Manage NewsFeed
Attributes	Newsid Userid Newsname Newscontent NewsMedia NewsMedia
Method	addnewsfeed() viewnewsfeed()

Table 4 NewsFeed Class

1.4.1.5 Slot

Class Name	Slot
Module involved	Manage Slot
Attributes	Slotid Userid Capacity Date Time Availability
Method	addslot() cancelslot() checkavailability() notifydonor()

Table 5 Slot Class

1.4.1.6 SelfTest

Class Name	SelfTest
Module involved	Manage SelfTest
Attributes	Testid Userid Question Answer Result
Method	viewselftest() takeselftest()

Table 6 SelfTest Class

1.4.1.7 Campaign

Class Name	Campaign
Module involved	Manage Campaign
Attributes	Campid Userid Campname Campdate Camptime Camploc Donorname Donorage Donorblood Donornum
Method	addcamp() viewcamp()

Table 7 Question Class

CHAPTER 2

2.1 DETAILED DESCRIPTION

INPUT	OUTPUT	ALGORITHM

Login	" Login Successful"	**BEGIN**
		Input Username, and Password.
		If correct
		Display "Login Successful"
		Else
		Display "Invalid Login" and back to login profile.
		END

Signup	"Signup Successful"	**BEGIN**
		Input user details
		If correct
		Display "Signup Successful"
		Else
		Display "Invalid Signup" and back to signup page.
		END

Update Profile	"Updated Successfully"	**BEGIN** Select profile Input profile details **If correct** Display "Updated Successfully"

		Else Display "Update haven't done" and stay on the same page. **END**
View Profile	Display profile	**BEGIN** Click view profile **If correct** Display user profile **Then** Redirect to profile page **END**
View History	Display history	**BEGIN** Click view history **If correct** Display user history **Then** Redirect to history page **END**

Add User	"Added Successfully"	**BEGIN**
		Insert user details
		If correct
		Display " Added Successfully "
		Else
		Display "Existing User" and back to add user page.
		END

Delete User	"Deleted Successfully"	**BEGIN** Select user and click delete. **If correct** Display " Deleted Successfully " **Then** Redirect to delete user list page. **END**

Add Appointment	"Appointment Added Successfully"	**BEGIN**
		Insert appointment details
		If correct
		Display " Added Successfully "
		Else
		Display "Existing Appointment" or "Unavalaible Slot" and back to add appointment page.
		END

View Appointment	Display Appointment	**BEGIN** Click view appointment **If correct** Display appointment **Then** Redirect to appointment page **END**

Staff View Appointment	Display Appointment	**BEGIN** Click view appointments **If correct** Display all appointments **Then** Redirect to appointment page **END**
Cancel Appointment	“Appointment Cancelled Successfully”	**BEGIN** Select appointment and click delete. **If correct** Display " Deleted Successfully " **Then** Redirect to view appointment page. **END**

Update Appointment	“Appointment Updated Successfully”	**BEGIN**
		Select appointment and click update.
		If correct
		Display "Updated Successfully"
		Else
		Display "Update haven’t done" and go back to view appointment page
		END

Approve Appointment	“Appointment Approved Successfully”	**BEGIN**
		Select appointment
		Click confirm or reject button
		If confirmed
		Display "Appointment Approved Successfully" and donor get notification
		Else
		Display "Appointment Rejected" and donor get notification
		END

Add News Feed	“News Feed Added Successfully”	**BEGIN**
		Insert news feed details
		If correct
		Display " Added Successfully "
		Else
		Display "Unable add news feed” and back to view news feed page.
		END

Update News Feed	“News Feed Update Successfully”	**BEGIN**
		Select news feed and click update button
		If correct
		Display " Updated Successfully "
		Else

		Display "Unable update news feed" and back to view news feed page. **END**
View News Feed	Display News Feed	**BEGIN** Click view news feed **If correct** Display news feed **Then** Redirect to news feed page **END**

Set Slot	"Slot Added Successfully"	**BEGIN**
		
		Insert slot details
		
		If correct
		
		Display " Added Successfully "
		
		Else
		
		Display "Unable add new slot" and back to slot homepage
		
		END

View Slot	Display Slot	**BEGIN** Click view slot **If correct** Display slot **Then** Redirect to slot page **END**

Cancel Slot	"Slot Cancelled Successfully"	**BEGIN** Select slot and click delete. **If correct** Display " Deleted Successfully " and send notification to the donor if the donor select the slot. **Then** Redirect to view slot page. **END**
Update Slot	"Slot Updated Successfully"	**BEGIN** Select slot and click update. **If correct** Display " Updated Successfully ". **Then** Redirect to view slot page. **END**

Take Test	"Test Recorded Successfully"	**BEGIN**
		Insert test details
		If correct
		Display " Added Successfully "
		Else
		Display "Unable add test details" and back to selftest homepage.
		END

View Result	Display Result	**BEGIN**
		Click view result
		If correct
		Display result
		Else
		Display “Your Result is Unavailable” and redirect to selftest homepage.
		END

View Result (Staff)	Display Result	**BEGIN**
		Click donorid
		Click view test
		If correct
		Display test
		Else
		Display “The Result is Unavailable” and redirect to selftest homepage.
		END

Add Campaign	“Campaign Added successfully”	**BEGIN**
		Insert campaign participants details
		If correct
		Display " Added Successfully "
		Else
		Display "Unable add details” and back to campaign homepage.

		END

View Campaign	Display Campaign	**BEGIN**
		Click view campaign
		If correct
		Display campaign
		Else
		Display " Unavailable" and redirect to campaign homepage.
		END

Add Camp	"Camp Details Added successfully"	**BEGIN**
		Insert campaign details
		If correct
		Display " Added Successfully "
		Else
		Display "Unable add campaign details" and back to campaign homepage.
		END

Add Hospital	"Hospital Added successfully"	**BEGIN**
		Insert hospital details
		If correct
		Display " Added Successfully "
		Else
		Display "Unable add hospital details" and back to report homepage.

		END

View Hospital	Display Hospitals	**BEGIN**
		Click view hospitals
		If correct
		Display hospitals
		Else
		Display " Unavailable" and redirect to report homepage.
		END

View Userlist	Display Userlist	**BEGIN**
		Click view userlist
		If correct
		Display userlist
		Else
		Display " Unavailable" and redirect to report homepage.
		END

View All appointments	Display All Appointments	**BEGIN**
		Click view all appointments
		If correct
		Display all appointments
		Else
		Display " Unavailable" and redirect to report homepage.
		END

View All Campaigns	Display All Campaigns	**BEGIN** Click view all campaigns

		If correct Display all appointments **Else** Display " Unavailable" and redirect to report homepage. **END**

Table 8 Detailed Description

2.2 DATA DICTIONARY

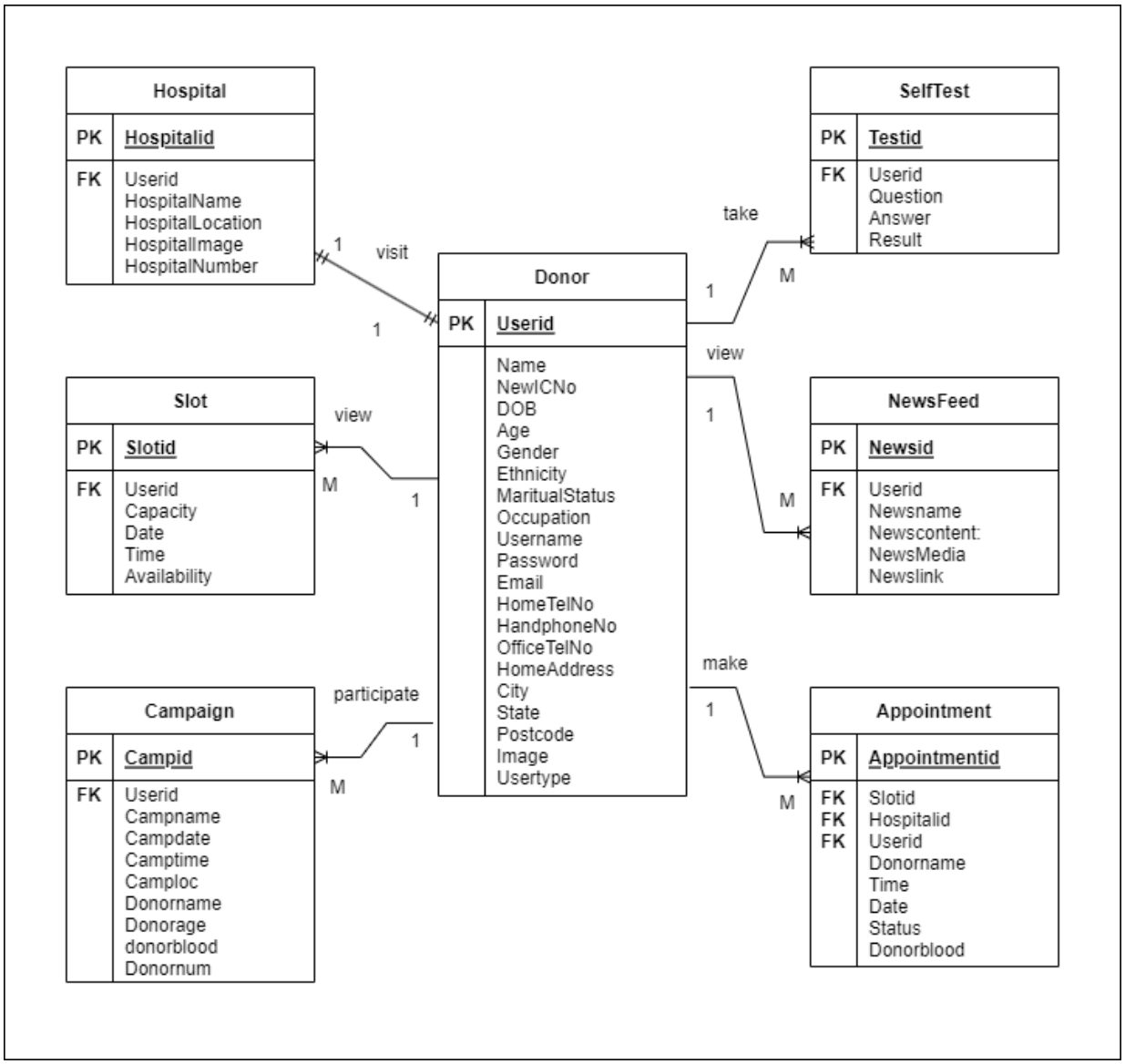


Figure 3 ERD Diagram of Hunter For A Blood Donor

2.2.1 User Table

Table 9 describes the data dictionary of the donor in this system. This will include Userid, Name, NewICNo, DOB, Age, Gender, Ethnicity, MaritualStatus, Occupation, Username, Password, Email, HomeTelNo, HandphoneNo, OfficeTelNo, HomeAddress, City, State, Postcode, Image and Usertype.

Data Name	Data Type	Module	Constraint
Userid	Int	Manage User	PK
Name	Varchar (200)	Manage User	
NewICNo	Varchar (20)	Manage User	
DOB	Varchar (200)	Manage User	
Age	Int	Manage User	
Gender	Varchar (20)	Manage User	
Ethnicity	Varchar (20)	Manage User	
MaritualStatus	Varchar (20)	Manage User	
Occupation	Varchar (20)	Manage User	
Username	Varchar (50)	Manage User	
Password	Varchar (50)	Manage User	
Email	Varchar (50)	Manage User	
HomeTelNo	Varchar (20)	Manage User	
HandphoneNo	Varchar (20)	Manage User	
OfficeTelNo	Varchar (20)	Manage User	
HomeAddress	Varchar (100)	Manage User	
City	Varchar (100)	Manage User	
State	Varchar (100)	Manage User	
Postcode	Varchar (100)	Manage User	
Image	Blob	Manage User	
Usertype	Varchar (100)	Manage User	

Table 9 User Table

2.2.2 Appointment Table

Table 10 describes the data dictionary of the appointment in this system. This will include Appointmentid, Slotid, Hospitalid, Userid, Donorname, Donorblood, Time, Date, Status.

Data Name	Data Type	Module	Constraint
Appointmentid	Int	Manage Appointment	PK
Slotid	Int	Manage Appointment	FK
Hospitalid	Int	Manage Appointment	FK
Userid	Int	Manage Appointment	FK
Donorname	Varchar (200)	Manage Appointment	
Donorblood	Varchar (50)	Manage Appointment	
Time	Varchar (50)	Manage Appointment	
Date	Varchar (50)	Manage Appointment	
Status	Varchar (50)	Manage Appointment	

Table 10 Appointment Table

2.2.3 Hospital Table

Table 11 describes the data dictionary of the hospital in this system. This will include Hospitalid, Userid, HospitalName, HospitalLocation, HospitalImage and HospitalNumber.

Data Name	Data Type	Module	Constraint
Hospitalid	Int	Manage Appointment	PK
Userid	Int	Manage Appointment	FK
HospitalName	Varchar (200)	Manage Appointment	
HospitalLocation	Varchar (200)	Manage Appointment	
HospitalImage	Blob	Manage Appointment	
HospitalNumber	Varchar (50)	Manage Appointment	

Table 11 Hospital Table

2.2.4 NewsFeed Table

Table 12 describes the data dictionary of the newsfeed in this system. This will include Newsid, Userid, Newsname, Newscontent, NewsMedia and Newslink.

Data Name	Data Type	Module	Constraint
Newsid	Int	Manage NewsFeed	PK
Userid	Int	Manage NewsFeed	FK
Newsname	Varchar (200)	Manage NewsFeed	
Newscontent	Varchar (200)	Manage NewsFeed	
NewsMedia	BLOB	Manage NewsFeed	
Newslink	Varchar (200)	Manage NewsFeed	

Table 12 NewsFeed Table

2.2.5 Slot Table

Table 13 describes the data dictionary of the slot in this system. This will include Slotid, Userid, Capacity, Date, Time, Availability.

Data Name	Data Type	Module	Constraint
Slotid	Int	Manage Slot	PK
Userid	Int	Manage Slot	FK
Capacity	Varchar (50)	Manage Slot	
Date	Varchar (10)	Manage Slot	
Time	Varchar (10)	Manage Slot	
Availability	Varchar (50)	Manage Slot	

Table 13 Slot Table

2.2.6 SelfTest Table

Table 14 describes the data dictionary of the selftest in this system. This will include Testid, Userid, Question, Answer and Result.

Data Name	Data Type	Module	Constraint
Testid	Int	Manage SelfTest	PK
Userid	Int	Manage SelfTest	FK
Question	Int	Manage SelfTest	
Answer	Varchar (50)	Manage SelfTest	
Result	Varchar (50)	Manage SelfTest	

Table 14 SelfTest Table

2.2.7 Campaign Table

Table 15 describes the data dictionary of the question in this system. This will include Campid, Campname, Userid, Campdate, Camptime, Camploc, Donorname, Donorage, Donorblood and Donornum.

Data Name	Data Type	Module	Constraint
Campid	Int	Manage Campaign	PK
Userid	Int	Manage Campaign	FK
Campname	Varchar (200)	Manage Campaign	
Campdate	Varchar (200)	Manage Campaign	
Camptime	Varchar (200)	Manage Campaign	
Camploc	Varchar (200)	Manage Campaign	
Donorname	Varchar (200)	Manage Campaign	
Donorage	Varchar (200)	Manage Campaign	
Donorblood	Varchar (200)	Manage Campaign	
Donornum	Varchar (200)	Manage Campaign	

Table 15 Campaign Table

APPENDIX D – USER ACCEPTANCE TESTING (UAT)

The purpose of this section is to outline the User Acceptance Testing (UAT) process for the application. Approval of this testing that reviewers are confident that following the execution of the test plan, the resulting system will be considered fully tested and eligible for implementation.

D.1 Manage User

Table D. 1 shows the test case for manage user interfaces. All the result is pass.

Table D. 1 Manage User interfaces test case

No	Test Data	Expected Result	Actual Result	Pass/Fail	Comment
1.	User to login into the system.	Success	Success	Pass	-
2.	Donor and to create new profile.	Success	Success	Pass	-
3.	Hospital admin and to create new user.	Success	Success	Pass	-
4.	User to view own profile.	Success	Success	Pass	-
5.	Hospital admin to view other's profile.	Success	Success	Pass	-
6.	Staff to view donor's profile.	Success	Success	Pass	-
7.	User to update own profile.	Success	Success	Pass	-
8.	Hospital admin to delete old staff's profile.	Success	Success	Pass	-
9.	Donor view appointment history.	Success	Success	Pass	-
10.	Staff view appointment history.	Success	Success	Pass	-

D.2 Manage Appointment

Table D.2 shows the test case for manage appointment interfaces. All the result is pass.

Table D. 2 Manage Appointment interfaces test case

No	Test Data	Expected Result	Actual Result	Pass/Fail	Comment
1.	Donor make a new appointment.	Success	Success	Pass	-
2.	Donor view the appointments.	Success	Success	Pass	-
3.	Donor update the appointment.	Success	Success	Pass	-
4.	Donor cancel the appointment.	Success	Success	Pass	-
5.	Donor view nearby blood banks.	Success	Success	Pass	-
6.	Staff make a new appointment.	Success	Success	Pass	-
7.	Staff view the appointments.	Success	Success	Pass	-
8.	Staff update the appointment.	Success	Success	Pass	-
9.	Staff cancel the appointment.	Success	Success	Pass	-
10.	Staff view nearby blood banks.	Success	Success	Pass	-
11.	Staff approve appointment made by donor.	Success	Success	Pass	-
12.	Staff reject appointment made by donor.	Success	Success	Pass	-
13.	Staff set status complete for appointment made by donor.	Success	Success	Pass	-
14.	Staff set status incomplete for appointment made by donor.	Success	Success	Pass	-
15.	Staff view all the appointments made in the hospital.	Success	Success	Pass	-

D.3 Manage News Feed

Table D. 3 shows the test case for manage news feed interfaces. All the result is pass.

Table D. 3 Manage News interfaces test case

No	Test Data	Expected Result	Actual Result	Pass/Fail	Comment
1.	Donor view the news.	Success	Success	Pass	-
2.	Staff make a new news.	Success	Success	Pass	-
3.	Staff view the news.	Success	Success	Pass	-
4.	Staff update the news.	Success	Success	Pass	-
5.	Staff delete the news.	Success	Success	Pass	-
6.	Donor receive notification when new news added.	Success	Success	Pass	-

D.4 Manage Slot

Table D. 4 shows the test case for manage slot interfaces. All the result is pass.

Table D. 4 Manage Slot interfaces test case

No	Test Data	Expected Result	Actual Result	Pass/Fail	Comment
1.	Staff make a new slot.	Success	Success	Pass	-
2.	Staff view the slots.	Success	Success	Pass	-
3.	Staff update the slot details.	Success	Success	Pass	-
4.	Staff delete the slot details.	Success	Success	Pass	-
5.	Send notification to the donor who made an appointment during the deleted slot.	Success	Success	Pass	-

D.5 Manage Self-Test

Table D. 5 shows the test case for manage self-test interfaces. All the result is pass.

Table D. 5 Manage Self-Test interfaces test case

No	Test Data	Expected Result	Actual Result	Pass/Fail	Comment
1.	Donor take a test.	Success	Success	Pass	-
2.	Donor view the result.	Success	Success	Pass	-
3.	Donor view success message.	Success	Success	Pass	-
4.	Donor view failure message	Success	Success	Pass	-
5.	Staff view the results of donors.	Success	Success	Pass	-

D.6 Manage Campaign

Table D. 6 shows the test case for manage campaign interfaces. All the result is pass.

Table D. 6 Manage Campaign interfaces test case

No	Test Data	Expected Result	Actual Result	Pass/Fail	Comment
1.	Staff add new campaign details	Success	Success	Pass	-
2.	Staff add campaign participant's details.	Success	Success	Pass	-
3.	Staff view the campaign participant's details.	Success	Success	Pass	-

D.7 Manage Report

Table D. 7 shows the test case for manage report interfaces. All the result is pass.

Table D. 7 Manage Report interfaces test case

No	Test Data	Expected Result	Actual Result	Pass/Fail	Comment
1.	Hospital admin add new hospital details	Success	Success	Pass	-
2.	Hospital admin view hospital details	Success	Success	Pass	-
3.	Hospital admin view user details	Success	Success	Pass	-
4.	Hospital admin view appointment details	Success	Success	Pass	-
5.	Hospital admin view campaign details	Success	Success	Pass	-

APPENDIX E – USABILITY TESTING (QUESTION)

Usability Testing For Hunter For Blood Donor Application

Please take a few minutes to fill up this survey. All the information is used for the academic purposes and the private information are strictly confidential.
This form is consists of seven modules which are Manage User, Manage Appointment, Manage News Feed, Manage Self Test, Manage Campaign, Manage Slot, and Manage Report. Your cooperation is highly appreciated. For further information, you may contact :
Name : Logadarshan A/L Krishnan
Id : CB19083
Number : 01123415482
Email : logadarshan@gmail.com

App Name : Hunter For Blood Donor
Platform : Huawei Appstore
Link : https://appgallery.huawei.com/app/C107126579

Thank you!

logadarshan@gmail.com (not shared) Switch account

* Required

Age *

- ◯ 18-39
- ◯ 40-59
- ◯ 60 and above

Gender *

- ◯ Male
- ◯ Female

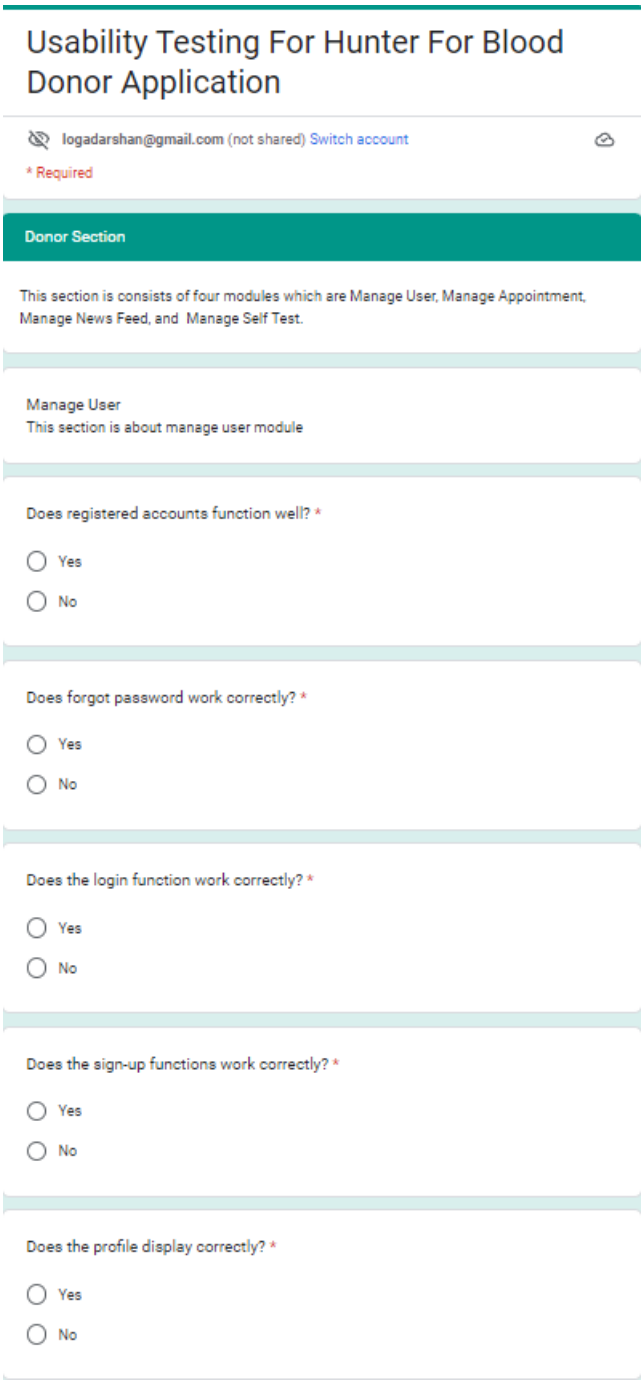
Blood Group *

Choose

User Type *

- ◯ Donor
- ◯ Hospital Staff
- ◯ Hospital Admin

User Type: Donor



Usability Testing For Hunter For Blood Donor Application

logadarshan@gmail.com (not shared) Switch account

* Required

Donor Section

This section is consists of four modules which are Manage User, Manage Appointment, Manage News Feed, and Manage Self Test.

Manage User
This section is about manage user module

Does registered accounts function well? *

- Yes
- No

Does forgot password work correctly? *

- Yes
- No

Does the login function work correctly? *

- Yes
- No

Does the sign-up functions work correctly? *

- Yes
- No

Does the profile display correctly? *

- Yes
- No

Able to update all of the displayed information? *

- ◯ Yes
- ◯ No

Manage Appointment
This section is about manage appointment module

Able to make a new appointment? *

- ◯ Yes
- ◯ No

Able to update an appointment that already made? *

- ◯ Yes
- ◯ No

Able to delete an appointment? *

- ◯ Yes
- ◯ No

Able to view upcoming appointment? *

- ◯ Yes
- ◯ No

Able to view appointment history? *

- ◯ Yes
- ◯ No

Able to view nearby blood banks? *

- ◯ Yes
- ◯ No

Manage News Feed
This section is about manage news feed module

Able to view latest news regarding blood donation? *

- ◯ Yes
- ◯ No

Manage Self Test
This section is about manage self test module

Able to do the self-test? *

- ◯ Yes
- ◯ No

Able to view the result of self-test *

- ◯ Yes
- ◯ No

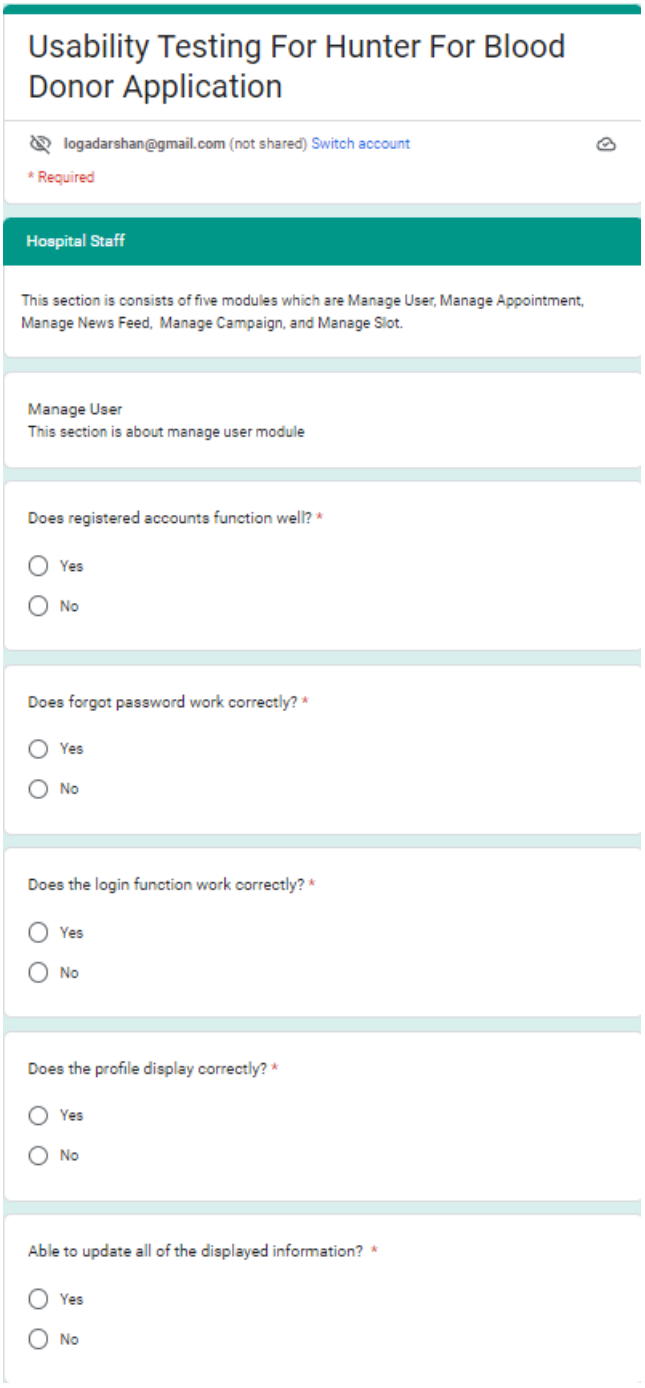
Does the Hunter For Blood Donor helps you to manage appointment? *

- ◯ Yes
- ◯ No

Does the Hunter For Blood Donor helps you to view news? *

- ◯ Yes
- ◯ No

User Type: Staff



Usability Testing For Hunter For Blood Donor Application

logadarshan@gmail.com (not shared) Switch account

* Required

Hospital Staff

This section is consists of five modules which are Manage User, Manage Appointment, Manage News Feed, Manage Campaign, and Manage Slot.

Manage User
This section is about manage user module

Does registered accounts function well? *

- Yes
- No

Does forgot password work correctly? *

- Yes
- No

Does the login function work correctly? *

- Yes
- No

Does the profile display correctly? *

- Yes
- No

Able to update all of the displayed information? *

- Yes
- No

Able to add new user into system? *

- ◯ Yes
- ◯ No

Able to view donor profile? *

- ◯ Yes
- ◯ No

Able to view donor result? *

- ◯ Yes
- ◯ No

Able to remove an user from the system? *

- ◯ Yes
- ◯ No

Manage Appointment
This section is about manage app module

Able to make a new appointment? *

- ◯ Yes
- ◯ No

Able to update an appointment that already made? *

- ◯ Yes
- ◯ No

Able to delete an appointment? *

- ◯ Yes
- ◯ No

Able to view upcoming appointment? *

- ◯ Yes
- ◯ No

Able to view appointment history? *

- ◯ Yes
- ◯ No

Able to view nearby blood banks? *

- ◯ Yes
- ◯ No

Able to approve or reject appointments of the hospital? *

- ◯ Yes
- ◯ No

Able to set status of appointment complete or incomplete ? *

- ◯ Yes
- ◯ No

Able to view all the completed appointments of the hospital? *

- ◯ Yes
- ◯ No

Manage Slot
This section is about manage slot module

Able to add an appointment slot? *

- ◯ Yes
- ◯ No

Able to view appointment slot? *

- ◯ Yes
- ◯ No

Able to update an appointment slot? *

- ◯ Yes
- ◯ No

Able to delete an appointment slot? *

- ◯ Yes
- ◯ No

Able to send a notification when an appointment slot cancelled? *

- ◯ Yes
- ◯ No

Manage News Feed
This section is about manage news feed module

Able to add a news? *

- ◯ Yes
- ◯ No

Able to view news? *

- ◯ Yes
- ◯ No

Able to update a news? *

- ◯ Yes
- ◯ No

Able to delete news ? *

- ◯ Yes
- ◯ No

Able to send notification when a news added? *

- ◯ Yes
- ◯ No

Manage Campaign
This section is about manage campaign module

Able to add a campaign details? *

- ◯ Yes
- ◯ No

Able to add campaign participant details? *

- ◯ Yes
- ◯ No

Able to view campaign participant details? *

- ◯ Yes
- ◯ No

Does the Hunter For Blood Donor helps you to manage appointment? *

- ◯ Yes
- ◯ No

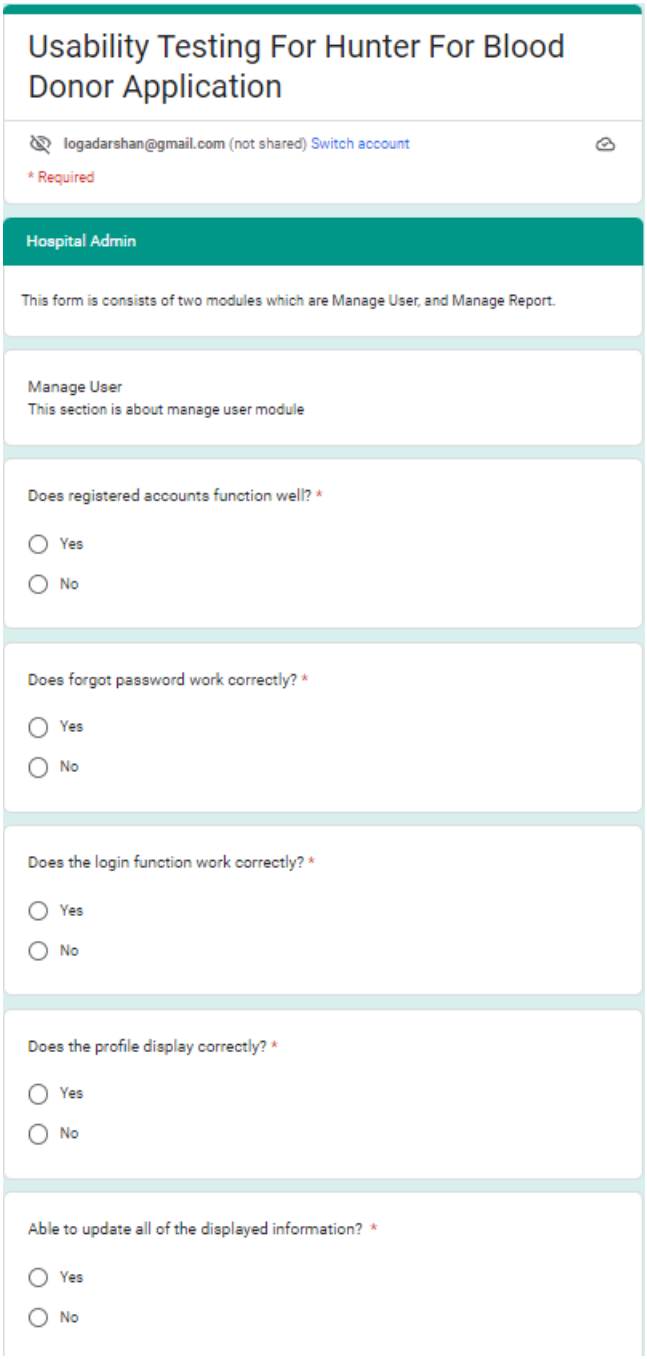
Does the Hunter For Blood Donor helps you to manage slot? *

- ◯ Yes
- ◯ No

Does the Hunter For Blood Donor helps you to manage news? *

- ◯ Yes
- ◯ No

User Type: Hospital Admin



Usability Testing For Hunter For Blood Donor Application

logadarshan@gmail.com (not shared) Switch account

* Required

Hospital Admin

This form is consists of two modules which are Manage User, and Manage Report.

Manage User
This section is about manage user module

Does registered accounts function well? *

- Yes
- No

Does forgot password work correctly? *

- Yes
- No

Does the login function work correctly? *

- Yes
- No

Does the profile display correctly? *

- Yes
- No

Able to update all of the displayed information? *

- Yes
- No

Able to add new user into system? *

- ◯ Yes
- ◯ No

Able to view user profile? *

- ◯ Yes
- ◯ No

Able to remove an user from the system? *

- ◯ Yes
- ◯ No

Manage Report
This section is about manage report module

Able to view all hospital list? *

- ◯ Yes
- ◯ No

Able to add new hospital? *

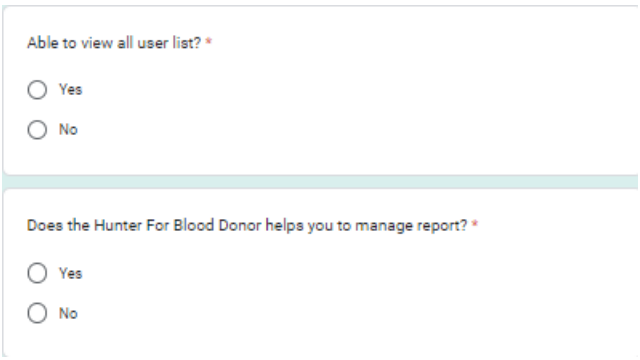
- ◯ Yes
- ◯ No

Able to view all appointment list? *

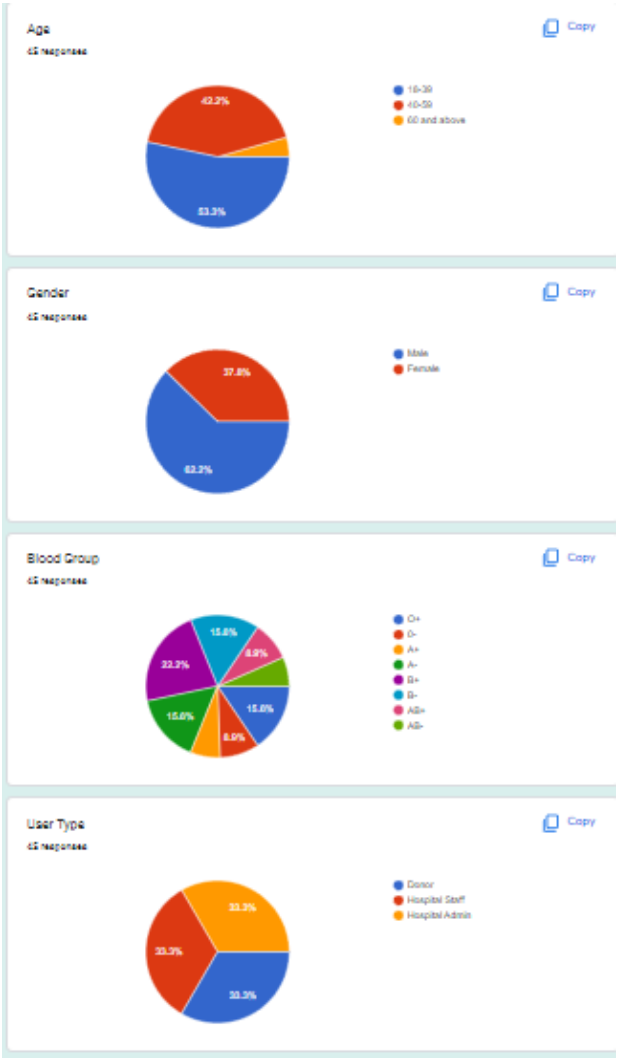
- ◯ Yes
- ◯ No

Able to view all campaign list? *

- ◯ Yes
- ◯ No


Able to view all user list? *
Yes
No
Does the Hunter For Blood Donor helps you to manage report? *
Yes
No

APPENDIX F – USABILITY TESTING (ANSWERS)


Age
Copy
42.2%
53.3%
Gender
Copy
37.8%
62.2%
Blood Group
Copy
15.6%
6.6%
22.2%
15.6%
15.6%
6.6%
User Type
Copy
33.3%
33.3%
33.3%

User Type: Donor


Able to update all of the displayed information?
Copy
12 responses
Yes
No
100%
Manage Appointment
Able to make a new appointment?
Copy
12 responses
Yes
No
100%
Able to update an appointment that already made?
Copy
12 responses
Yes
No
100%
Able to delete an appointment?
Copy
12 responses
Yes
No
100%
Able to view upcoming appointment?
Copy
12 responses
Yes
No
100%

Able to view appointment history?

12 responses

Able to view nearby blood banks?

12 responses

Manage News Feed

Able to view latest news regarding blood donation?

12 responses

Manage Self Test

Able to do the self-test?

12 responses

Able to view the result of self-test

12 responses

Does the Hunter For Blood Donor helps you to manage appointment?

12 responses

Does the Hunter For Blood Donor helps you to view news?

12 responses

User Type: Staff


Able to add new user into system?
Copy
15 responses
Yes
No
100%
Able to view donor profile?
Copy
15 responses
Yes
No
100%
Able to view donor result?
Copy
15 responses
Yes
No
100%
Able to remove an user from the system?
Copy
15 responses
Yes
No
100%
Manage Appointment
Able to make a new appointment?
Copy
15 responses
Yes
No
100%


Able to update an appointment that already made?
Copy
Able to delete an appointment?
Copy
Able to view upcoming appointment?
Copy
Able to view appointment history?
Copy
Able to view nearby blood banks?
Copy
Able to approve or reject appointments of the hospital?
Copy


Able to set status of appointment complete or incomplete ?
Copy
12 responses
Yes
No
100%
Able to view all the completed appointments of the hospital?
Copy
12 responses
Yes
No
100%
Manage Slot
Able to add an appointment slot?
Copy
12 responses
Yes
No
100%
Able to view appointment slot?
Copy
12 responses
Yes
No
100%
Able to update an appointment slot?
Copy
12 responses
Yes
No
100%


Able to delete an appointment slot?
Copy
15 responses
Yes
No
100%
Able to send a notification when an appointment slot cancelled?
Copy
15 responses
Yes
No
100%
Manage News Feed
Able to add a news?
Copy
15 responses
Yes
No
100%
Able to view news?
Copy
15 responses
Yes
No
100%
Able to update a news?
Copy
15 responses
Yes
No
100%


Able to delete news ?
Copy
Yes
No
100%
Able to send notification when a news added?
Copy
Yes
No
100%
Manage Campaign
Able to add a campaign details?
Copy
Yes
No
100%
Able to add campaign participant details?
Copy
Yes
No
100%
Able to view campaign participant details?
Copy
Yes
No
100%


Does the Hunter For Blood Donor helps you to manage appointment?
Copy
Yes
No
100%
Does the Hunter For Blood Donor helps you to manage slot?
Copy
Yes
No
93.3%
Does the Hunter For Blood Donor helps you to manage news?
Copy
Yes
No
100%

User Type: Hospital Admin


Able to add new user into system?
Copy
12 responses
Yes
No
100%
Able to view user profile?
Copy
12 responses
Yes
No
100%
Able to remove an user from the system?
Copy
12 responses
Yes
No
100%
Manage Report
Able to view all hospital list?
Copy
12 responses
Yes
No
100%
Able to add new hospital?
Copy
12 responses
Yes
No
100%


Able to view all appointment list?
15 responses
Copy
Yes
No
100%
Able to view all campaign list?
15 responses
Copy
Yes
No
100%
Able to view all user list?
15 responses
Copy
Yes
No
100%
Does the Hunter For Blood Donor helps you to manage report?
15 responses
Copy
Yes
No
13.3%
86.7%