

بسم الله الرحمن الرحيم



Palestine Polytechnic University

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MedShare

(medicine and medical equipment donation app)

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## Abstract

In this project, an application is developed for smart devices, where users are able to donate their unused medicines and medical equipment, so that these donations will reach those who need them, especially in recent times, when the rate of demand for respirators has increased dramatically due to the spread of Coronavirus, as well as the high prices of medicines related to patients with chronic or serious diseases, creates a barrier for some people from buying it. Via the application, users can search for medicines to be donated, as this application provides an easy environment for making donations and receiving them.

This application is exclusively available in Palestine, and we shall expand the scope of this project in the future.

The project has passed in a chronological phase, starting with writing and defining and clarifying the project requirements, analyzing them, and working on designing the project requirements, passing through the project building phase, in which the technical and actual implementation of the project begins, then integrating what was designed and working on it, passing through the testing process on the application, where it must be ensured that all requirements have been completed. And the user experience of this application is good and easy-to-use and the users can deal with it.

تم تطوير تطبيق للاجهزة الذكية في هذا المشروع، حيث يُمكن المستخدمين من التبرع بما لديهم من ادوية او معدات طبية غير مستخدمة، بحيث تصل هذه التبرعات لمن هم بحاجة اليها، خصوصاً في الآونة الاخيرة، حيث ارتفع معدل الطلب بشكل كبير على اجهزة التنفس بسبب انتشار فايروس كورونا، وايضا اسعار الادوية المرتفعة المتعلقة بمرضى الامراض المزمنة او الخطيرة، يشكل حاجز على بعض الناس من شرائه، فمن خلال التطبيق يستطيع المستخدم البحث عن الادوية المراد التبرع بها، حيث سوف يوفر هذا التطبيق بيئة سهلة للقيام بعمليات التبرع واستقبال التبرعات. سوف يتوفر هذا التطبيق بشكل مبدئي في فلسطين، على ان نقوم بتوسيع نطاق هذا المشروع مستقبلاً.

لقد مر المشروع في مرحلة تسلسل زمني، بدايةً من كتابة وتعريف متطلبات المشروع وتوضيحها، من ثم تحليلها، ثم العمل على تصميم متطلبات المشروع، مروراً بمرحلة بناء المشروع التي قد بدأنا فيها التنفيذ الفني والفعلي للمشروع، من ثم دمج ما تم تصميمه والعمل عليه، مروراً بعمليات التجربة على التطبيق، حيث تم التأكد ان جميع المتطلبات قد اكتملت. و أن تجربة المستخدم لهذا التطبيق كانت جيدة وسهلة الاستخدام.

# **Chapter one**

## **Introduction**

## Chapter one

### 1.1 Overview of the chapter:

In this chapter we will discuss a description of the project, why we chose this idea and motivated us to make it our project, what is the scope of this project and what are the objectives that will be achieved.

### 1.2 Description of the project:

The project is a mobile application for the public who usually have unused medicine and medical equipments. So, instead of throwing them away or just storing them to be ruined or expired they can donate them to those who need them but can't afford to purchase them via the application that we will launch.

Donors would announce via posts what they have of medicine and medical equipments for donation, and they can donate them to an NGO or directly to another user, while following a healthy and safe protocol for donation, like considering whether this medicine must have a prescription to consume and expiration date.

Posts must be reviewed and validated by a medical supervisor to be posted, and all the users can browse these posts.

### 1.3 Motivation:

1. The idea of donating medicine and medical equipment is a positive idea, instead of neglecting those items and no one benefits from them.
2. The absence of such an application for such service.
3. It will be easier for the patient to search for certain medicine or equipment that they need.
4. The importance of donating was evident during the Covid-19 epidemic, where a lot of patients lost their lives due to the lack of medical equipment, especially ventilators.
5. The poor financial situation for a lot of patients made it harder for these people to purchase all the medicine they need, especially the expensive ones, like cancer medicine.
6. The scarcity of some medicine that our country suffers from, and providing alternative medicine is an important factor that would help the patients to act as soon as possible when they can't find the required medicine.

#### **1.4 Scope of the project:**

The scope of the project will be limited to the Palestinian region, and the end-users would be the public and NGOs of the Palestinian society.

#### **1.5 Objectives:**

1. Provide a platform for the members to make posts to donate medicine.
2. Provide a platform for the members to make posts to donate medical equipment.
3. Provide a platform for the people in need to claim donations.
4. Make it easy for members to communicate with other members and the administrator.
5. Ensure that the donated medicine's information is valid.
6. Make the application easy to use.

# **Chapter Two**

## **Functional & non-functional requirements**

## **Chapter two**

### **Functional & non-functional requirements**

#### **2.1 Overview of the chapter:**

In this chapter, we will discuss the functional requirements for the end-user's side, medical supervisor's side and the technical admin's side, and the non-functional requirements of the project.

#### **2.2 Functional requirements**

##### **2.2.1 Member's side:**

1. Members of the system are able to register in the system in order to use it, they can decide whether they are an individual or an NGO.
2. NGOs are able to create an account by adding their information.
3. Members are able to log into the system using their credentials.
4. Members are able to make a post of donation of a medicine and fill in the required details of the donation, this post won't be posted immediately, it would need the medical supervisor's approval to be posted.
5. Members are able to make a post of a donation of a medical equipment and fill in its details.
6. Members are able to modify their own posts.
7. Members are able to delete their own posts after the donation process is done.
8. Members are able to browse other Members' posts.
9. Members are able to filter the posts by location, category or medicine/equipment name.
10. Members are able to send messages to other Members privately.
11. Members are able to comment on posts for clarification about the donation.
12. Members can receive notifications of new comments on their posts.
13. Members are able to update their phone number, location and profile picture.
14. Members are able to lock/unlock their own posts, to make them visible or invisible for the public.

15. Members are able to make suggestions or complaints about the system directly to the admin or the medical supervisor by filling in a report.

### **2.2.2 Medical Supervisor's side:**

1. The supervisor is able to examine the medicine donation posts' details and allow the system to post them if they are valid and safe to be donated.
2. The supervisor is able to browse other people's posts.
3. The supervisor is able to send messages to other Members privately.
4. The supervisor is able to filter the posts by location, category or medicine/equipment name.
5. The supervisor is able to modify the posts.
6. The supervisor is able to delete fake/spam donation posts.
7. The supervisor is able to modify the medicine table in the database.
8. The supervisor is able to add new unregistered medicine on the medicine table in the database.

### **2.2.3 Admin side:**

1. The admin is able to browse the Members' posts.
2. The admin is able to search and filter the posts by location, category or medicine/equipment name.
3. The admin is able to modify the donation posts.
4. The admin is able to delete the donation posts
5. The admin is able to delete Members' comments on a post.
6. The admin is able to review all Members of the system and review their accounts.
7. The admin is able to chat with other Members privately
8. Review Members' reports and take them into consideration.
9. The admin is able to ban or block certain Members from the system for misbehavior.

## **2.3 Non-functional requirements**

### **2.3.1 Product requirements:**

1. The system is available for all members who would be interested in donating medicine or medical equipment or receive a donation.
2. The system provides high levels of security.
3. Members will be given real time services to keep the data updated and safe.
4. System and database must have an internet connection in order to keep up with the information online and deal with the other party's requests.
5. The System must be usable, so users can deal with it easily without any problem (user friendly interface).
6. The system must perform the functions and show the results as quickly as possible, so that it doesn't occupy a large space, and doesn't consume the device's resources of RAM and space.
7. The system shall provide privacy to users (check Privacy Policy appendix).

### **2.3.2 Organizational requirements:**

1. The IDE that has been used is flutter, it's a cross platform and can produce applications for both operating systems, android and IOS.
2. The Application is written in Dart programming language using Android studio due to easy IDE and there are good tools that help the programmer to code.

### **2.3.3 External requirements:**

1. The system shall respect the medical protocols, in that the medicine is not expired, or the medical equipment doesn't suffer from any damages.
2. The system must inform the users that the medicine they want if it needs a prescription to consume it, and if it has to be taken in full courses.

## 2.4 End-Users' functional requirements tables:

### Individual Member registration

Requirement	Individual Member registration
Actors	End-users (Members)
Objective	Create a new Member account
Precondition	The application is installed on the smart device
Scenario	<ol style="list-style-type: none"> <li>1. Open the application</li> <li>2. Fill the required information: <ol style="list-style-type: none"> <li>a. First name</li> <li>b. Last name</li> <li>c. Phone number</li> <li>d. Password</li> <li>e. Location (city)</li> <li>f. Email</li> <li>g. Profile picture (optional)</li> <li>h. Date of birth</li> <li>i. Gender</li> <li>j. Interest</li> </ol> </li> <li>3. Click create</li> <li>4. Read License</li> <li>5. Click Continue</li> </ol>
Exceptions	<ol style="list-style-type: none"> <li>1. Password and confirm password input are not the same.</li> <li>2. The user enters an email address in a language other than English.</li> <li>3. The user enters an invalid email.</li> <li>4. The user enters a password with less than 8 characters.</li> <li>5. The user enters a phone number less than 9 digits or more than 13 digits.</li> <li>6. The user does not fill all the required fields.</li> <li>7. No Internet connection.</li> </ol>

Table 2.4.1 regular user registration

## NGO registration

Requirement	NGO registration
Actors	End-users (Members)
Objective	Create a new NGO account
Precondition	The application is installed on the smart device
Scenario	<ol style="list-style-type: none"><li>1. Open the application</li><li>2. Fill the required information:<ol style="list-style-type: none"><li>a. Name</li><li>b. Manager name</li><li>c. Phone number</li><li>d. Password</li><li>e. Address</li><li>f. Email</li><li>g. Profile picture (optional)</li><li>h. Description</li></ol></li><li>3. Click submit</li></ol>
Exceptions	<ol style="list-style-type: none"><li>1. Password and confirm password input are not the same.</li><li>2. The user enters an email address in a language other than English.</li><li>3. The user enters an invalid email.</li><li>4. The user enters a password with less than 8 characters.</li><li>5. The user enters a phone number less than 9 digits or more than 13 digits.</li><li>6. The user does not fill all the required fields.</li><li>7. No Internet connection.</li></ol>

Table 2.4.2 NGO registration

## Log in

Requirement	Log in
Actors	All Members
Objective	Log into the system
Precondition	The Member must have an account
Scenario	Click the log-in button, then fill the username and password field
Exceptions	<ol style="list-style-type: none"><li>1. The Member forgets their own password.</li><li>2. The Member enters invalid email or password.</li><li>3. No internet connection.</li></ol>

Table 2.4.3 log in

## Medicine donation post

Requirement	Make medicine donation post
Actors	All Members
Objective	Make a post to announce a donation of a medicine
Precondition	The Member must be logged in the system
Scenario	<ol style="list-style-type: none"><li>1. Click on Medicine donation button in home page</li><li>2. Fill the form with the required details<ol style="list-style-type: none"><li>a. Choose the medicine name from a dropdown list (or choose other)</li><li>b. Expiration date</li><li>c. Shape of the medicine (pills, liquid, inhaler, injection, tubes, other)</li><li>d. Quantity</li><li>e. Description (optional)</li><li>f. Picture</li></ol></li><li>4. Click submit button</li></ol>
Exceptions	<ol style="list-style-type: none"><li>1. In case the user wants to donate a medicine that is not registered in the system's database, the user can fill in the medicine name manually, and the medical supervisor can review the post to add the new medicine if it's valid.</li><li>2. No internet connection.</li></ol>

Table 2.4.4 medicine donation post

### Medical equipment donation post

Requirement	Make medical equipment donation post
Actors	All Members
Objective	Make a post to announce a donation of a medical equipment
Precondition	The user must be logged in the system
Scenario	<ol style="list-style-type: none"><li>1. Click on Medical equipment donation button in home page</li><li>2. Fill the form with the required details<ol style="list-style-type: none"><li>a. Name of the equipment</li><li>b. Clear picture of the equipment</li><li>c. Description</li></ol></li><li>4. Click submit</li></ol>
Exceptions	<ol style="list-style-type: none"><li>1. The Member does not fill in all the required details.</li><li>2. No internet connection.</li></ol>

Table 2.4.5 medical equipment donation post

### Modify posts

Requirement	Members are able to modify their own posts
Actors	All Members
Objective	Modify a post to change details
Precondition	<ol style="list-style-type: none"><li>1. The Member must be logged in the system</li><li>2. The Member must have already created a post</li></ol>
Scenario	<ol style="list-style-type: none"><li>1. Click on the modify button</li><li>2. Review the form and make the changes they desire</li><li>3. Click on save button</li></ol>
Exceptions	No internet connection.

Table 2.4.6 modify posts

## Delete posts

Requirement	Members are able to delete their own posts
Actors	All Members
Objective	Members can delete their own posts
Precondition	<ol style="list-style-type: none"><li>1. The Member must be logged in the system</li><li>2. The Member must have already created a post</li></ol>
Scenario	<ol style="list-style-type: none"><li>1. The Member clicks on the delete button</li><li>2. Review an assuring dialog and confirm the deletion</li></ol>
Exceptions	No internet connection.

Table 2.4.7 delete posts

## Browsing

Requirement	Browsing the application
Actors	All Members
Objective	The ability to browsing the application
Precondition	The Member must be logged in the system
Scenario	<ol style="list-style-type: none"><li>1. Browse the available posts.</li><li>2. Filter the posts by medicine, medical equipment, and can be filtered by medicine/equipment name, medicine category or by location</li></ol>
Exceptions	No internet connection

Table 2.4.8 browsing

## Members can filter posts

Requirement	Members are able to search for medicine/medical equipment
Actors	All Members
Objective	Members are able to search for a specific medicine or medical equipment and filter search results, in order to facilitate browsing on application.
Precondition	The Member must be logged in the system.
Scenario	<ol style="list-style-type: none"><li>1. Members can choose the criteria they want to search by, (medicine's name (default), medical equipment's name location) from a dropdown list</li><li>2. Members can type in text-field a keyword to search by</li></ol>
Exceptions	<ol style="list-style-type: none"><li>1. The keyword may not match any post</li><li>2. No internet connection</li></ol>

Table 2.4.9 users search & filter posts

## Messaging

Requirement	Members are able to chat with other Members privately
Actors	All Members
Objective	Members are able to send messages to each other privately, This allows them to better inquire about the donation post.
Precondition	The Member must be logged in the system.
Scenario	<ol style="list-style-type: none"><li>1. Click on a post they interested in</li><li>2. Click on chat with owner button</li><li>3. Exchange text messages with the owner</li></ol>
Exceptions	No internet connection

Table 2.4.10 chatting

## Comments

Requirement	Members are able to comment on posts
Actors	All Members
Objective	Enabling a comment section for posts so the Members can communicate and make clarifications about the post
Precondition	The Member must be logged in the system
Scenario	<ol style="list-style-type: none"><li>1. Click on a post they interested in</li><li>2. Type a comment in the text-field</li><li>3. Click on send button</li></ol>
Exceptions	No internet connection

Table 2.4.11 comments

## Notifications

Requirement	Members receives notifications of new comments on their posts
Actors	All Members
Objective	Providing the notification service
Precondition	<ol style="list-style-type: none"><li>1. The Member Must be logged in the system</li><li>2. The Member enabled the notifications from the application</li><li>3. The Member must have already created a post</li></ol>
Scenario	When a Member comments on a post, a notification is send for who owns that post
Exceptions	<ol style="list-style-type: none"><li>1. Members can disable the notifications</li><li>2. No internet connection</li></ol>

Table 2.4.12 notifications

## Update profile

Requirement	Members are able to update their Profile
Actors	All Members
Objective	Allow Members to make changes on their information.
Precondition	The Member must be logged in the system.
Scenario	<ol style="list-style-type: none"><li>1. Click on edit profile button</li><li>2. Edit their information<ol style="list-style-type: none"><li>a. Phone number (optional)</li><li>b. Location (optional)</li><li>c. Profile picture (optional)</li><li>d. Interest (optional)</li></ol></li><li>3. Click on save changes button</li></ol>
Exceptions	<ol style="list-style-type: none"><li>1. Members can't change their name or email</li><li>2. No internet connection</li></ol>

Table 2.4.13 update profile

## Locking posts

Requirement	Members are able to lock/unlock their own posts
Actors	All Members
Objective	Lock a post so the other Members cannot see the post
Precondition	<ol style="list-style-type: none"><li>1. The Member must be logged in the system</li><li>2. The Member must have already created a post</li></ol>
Scenario	<ol style="list-style-type: none"><li>1. A Member can click on the lock icon to lock their post and prevent other Members from seeing their post, in case they agreed with someone to give them the donation.</li><li>2. A Member can click again on the lock icon to unlock their post and allow others to see the post</li></ol>
Exceptions	No internet connection

Table 2.4.14 locking posts

## Complaints and suggestions

Requirement	Members are able to send reports to the admin and the medical supervisor
Actors	All Members
Objective	Allow Members to report system malfunction and users misbehavior, and make suggestions to improve the system
Precondition	The Member must be logged in the system
Scenario	<ol style="list-style-type: none"> <li>1. Click on the Report button from the app Drawer.</li> <li>2. Fill in a description of their feedback.</li> <li>3. Choose to whom they want to send the report, to the admin or medical supervisor.</li> <li>4. Click Send</li> </ol>
Exceptions	No internet connection

Table 2.4.15 complaints and suggestions

## 2.5 Medical Supervisor's functional requirements tables:

### Supervisor examine the donation posts

Requirement	Examine the donation posts details
Actors	Medical supervisor & admin
Objective	To ensure that the information that will be posted is valid
Precondition	Log in the system with supervisor's account
Scenario	<ol style="list-style-type: none"> <li>1. Click on posts requests page</li> <li>2. Click on a post request</li> <li>3. Review the post's details <ol style="list-style-type: none"> <li>a. Click on approve button when valid</li> <li>b. Click on reject button when invalid</li> </ol> </li> </ol>
Exceptions	No internet connection

Table 2.5.1 supervisor examine the donation posts

### Supervisor browse other Members' posts

Requirement	Browsing other Members' posts.
Actors	medical supervisor
Objective	To browse Members' posts and to check if a Member has edited the post with wrong information
Precondition	Log in the system with supervisor's account
Scenario	Browse available posts and review them.
Exceptions	No internet connection

Table 2.5.2 supervisor browse other people's posts

### Supervisor messaging

Requirement	Send messages to Members
Actors	Medical supervisor
Objective	To facilitate communication with Members in the system
Precondition	Log in the system with supervisor's account
Scenario	<ol style="list-style-type: none"><li>1. Click on a post</li><li>2. Click on chat-with-owner button</li></ol>
Exceptions	No internet connection

Table 2.5.3 supervisor chatting

### Supervisor search & filter

Requirement	Medical supervisor is able to search for medicine/medical equipment and filter the posts
Actors	Medical supervisor
Objective	Medical supervisor is able to search for a specific medicine or medical equipment and filter search results, in order to facilitate browsing on application.
Precondition	Log in the system with supervisor's account
Scenario	<ol style="list-style-type: none"> <li>1. Medical supervisor can choose the criteria they want to search by, (medicine's name (default), medical equipment's name location) from a dropdown list.</li> <li>2. Medical supervisor can type in text-field a keyword to search by.</li> </ol>
Exceptions	<ol style="list-style-type: none"> <li>1. The keyword may not match any post</li> <li>2. No internet connection</li> </ol>

Table 2.5.4 supervisor search & filter

### Modify posts

Requirement	Modify posts
Actors	Medical supervisor
Objective	Modify posts details
Precondition	Log in the system with supervisor's account
Scenario	<ol style="list-style-type: none"> <li>1. Click on a post.</li> <li>2. Click on the modify icon.</li> <li>3. Change post's details.</li> <li>4. Click on the save button.</li> </ol>
Exceptions	No internet connection

Table 2.5.5 modify posts

### Delete fake/spam donation posts

Requirement	Delete fake/spam donation posts
Actors	Medical supervisor
Objective	To stop spamming and delete fake posts
Precondition	Log in the system with supervisor's account
Scenario	<ol style="list-style-type: none"><li>1. Click on a post</li><li>2. Review the post's details</li><li>3. Click on delete button</li><li>4. Confirm the deletion</li></ol>
Exceptions	No internet connection

Table 2.5.6 delete fake/spam donation posts

### Modify the medicine table

Requirement	Modify the medicine table in the database
Actors	Medical supervisor & admin
Objective	Correct wrong information about a medicine
Precondition	Log in the system with supervisor's account
Scenario	<ol style="list-style-type: none"><li>1. Click on medicines in the App Drawer.</li><li>2. Choose a certain medicine from the medicine list.</li><li>3. Click on the edit button.</li><li>4. Make the changes needed.</li><li>5. Click on the save changes button.</li></ol>
Exceptions	No internet connection

Table 2.5.7 modify the medicine table

### Add new unregistered medicine to database

Requirement	Medical supervisor is able to add new unregistered medicine on the medicine table in the database
Actors	medical supervisor & admin
Objective	Add new medicine in database
Precondition	Log in the system with supervisor's account
Scenario	<ol style="list-style-type: none"><li>1. Click on medicines in the App Drawer.</li><li>2. Click on the add new medicine button.</li><li>3. Fill the new medicine's details</li><li>4. Click add.</li></ol>
Exceptions	No internet connection

Table 2.5.8 add new unregistered medicine to database

### 2.6 Technical admin's functional requirements tables:

#### Admin browse posts

Requirement	Admin are able to browse all Members' posts
Actors	Admin
Objective	Enabling the admin to browse Members' posts
Precondition	Must be logged in the system as admin
Scenario	Open the application and browse posts
Exceptions	No internet connection

Table 2.6.1 admin browse posts

### Admin search & filter posts

Requirement	Admin is able to search for medicine/medical equipment
Actors	Admin
Objective	Admin is able to search for a specific medicine or medical equipment and filter search results, in order to facilitate browsing on application.
Precondition	Must be logged in the system as admin
Scenario	<ol style="list-style-type: none"><li>1. Admin can choose the criteria they want to search by, medicine's name (default), medical equipment's name location) from a dropdown list</li><li>2. Admin can type in text-field a keyword to search by</li></ol>
Exceptions	<ol style="list-style-type: none"><li>1. The keyword may not match any post</li><li>2. No internet connection</li></ol>

Table 2.6.2 admin search & filter posts

### Admin modify posts

Requirement	Admin is able to modify other Members' posts
Actors	Admin
Objective	Modify a post to change details
Precondition	Must be logged in the system as admin
Scenario	<ol style="list-style-type: none"><li>1. Click on a post</li><li>2. Click on the modify button</li><li>3. Review the form and make the changes they desire</li><li>4. Click on save button</li></ol>
Exceptions	No internet connection

Table 2.6.3 admin modify posts

### Admin delete posts

Requirement	Admin are able to delete posts
Actors	Admin
Objective	Admin can delete unwanted posts
Precondition	Must be logged in the system as admin
Scenario	<ol style="list-style-type: none"><li>1. Click on a post</li><li>2. Click on the delete button</li><li>3. Review an assuring dialog and confirm the deletion</li></ol>
Exceptions	No internet connection

Table 2.6.4 admin delete posts

### Admin delete comments

Requirement	Admin is able to comments on posts
Actors	Admin
Objective	Admin can comment on any post on the application.
Precondition	Must be logged in the system as admin
Scenario	<ol style="list-style-type: none"><li>1. Click on a post.</li><li>2. Click on the comments button.</li><li>3. Write a comment.</li><li>4. Click on the send icon.</li></ol>
Exceptions	No internet connection

Table 2.6.5 admin delete comments

### Admin review members' accounts

Requirement	Admin is able to review all members of the system and their accounts
Actors	Admin
Objective	Admin can review all members of the system and review their accounts
Precondition	Must be logged in the system as admin
Scenario	Enter Members' profiles and review them
Exceptions	No internet connection

Table 2.6.6 admin review members' accounts

### Admin send messages to other Members

Requirement	Admin is able to send messages to other Members
Actors	Admin
Objective	Enabling the admin to exchange messages with Members
Precondition	Must be logged in the system as admin
Scenario	<ol style="list-style-type: none"><li>1. Enter a user profile</li><li>2. Click on send message button</li></ol>
Exceptions	No internet connection

Table 2.6.7 admin chat with users

### Admin review suggestions and complaints

Requirement	Admin is able to review Members' suggestions and complaints
Actors	Admin
Objective	Admin can review Members' reports and take them into consideration
Precondition	Must be logged in the system as admin
Scenario	Click on the reports button from the app Drawer.
Exceptions	No internet connection

Table 2.6.8 admin review suggestions and complaints

### Admin ban and block Members

Requirement	Admin is able to block and ban Members from using the system
Actors	Admin
Objective	Enabling the admin ban certain Members from using the system for misbehaving, or block certain Members from making comments.
Precondition	Must be logged in the system as admin
Scenario	<ol style="list-style-type: none"><li>1. Enter a Member profile</li><li>2. Click on the ban button or block button.</li></ol>
Exceptions	No internet connection

Table 2.6.9 admin ban users

## 2.7 Class diagram

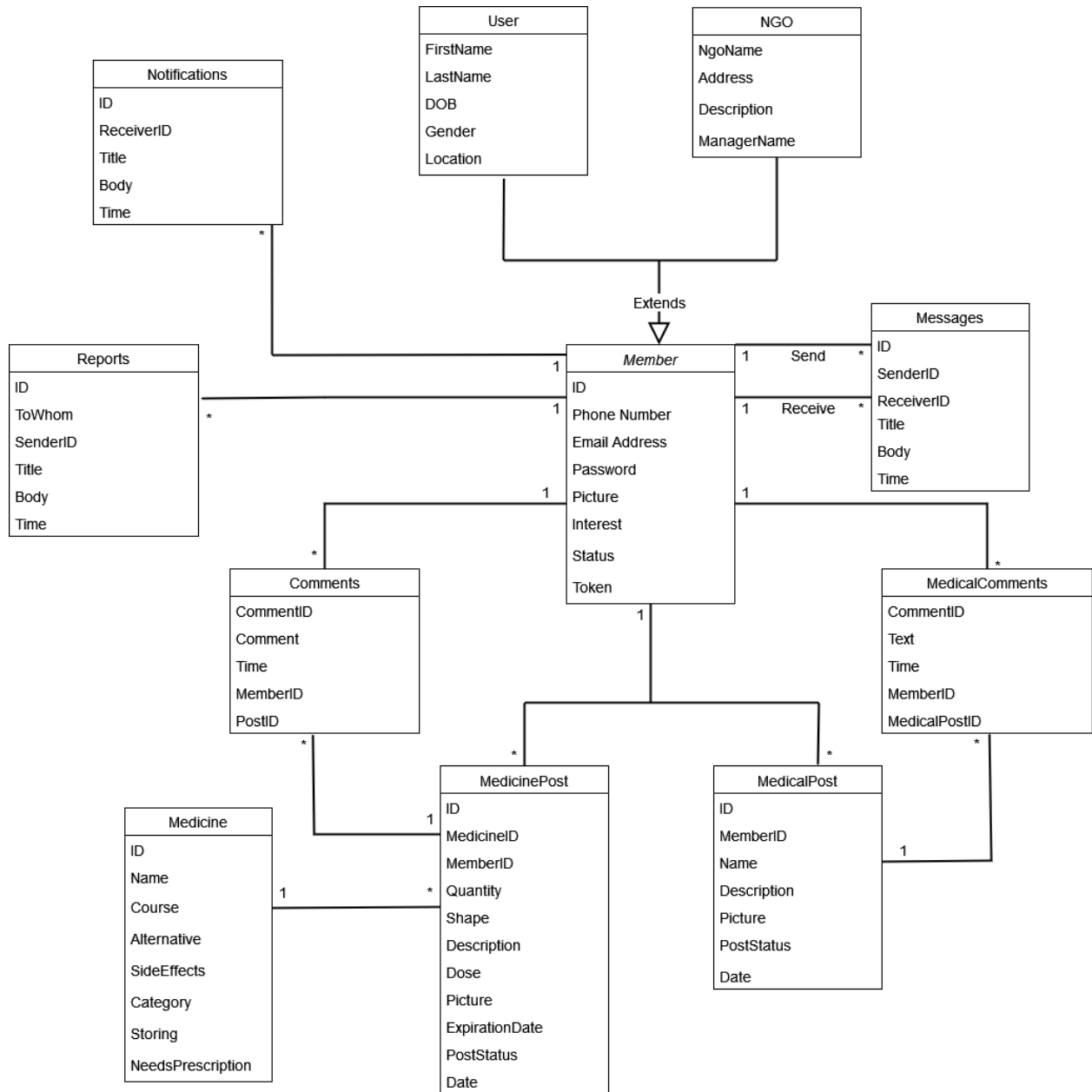
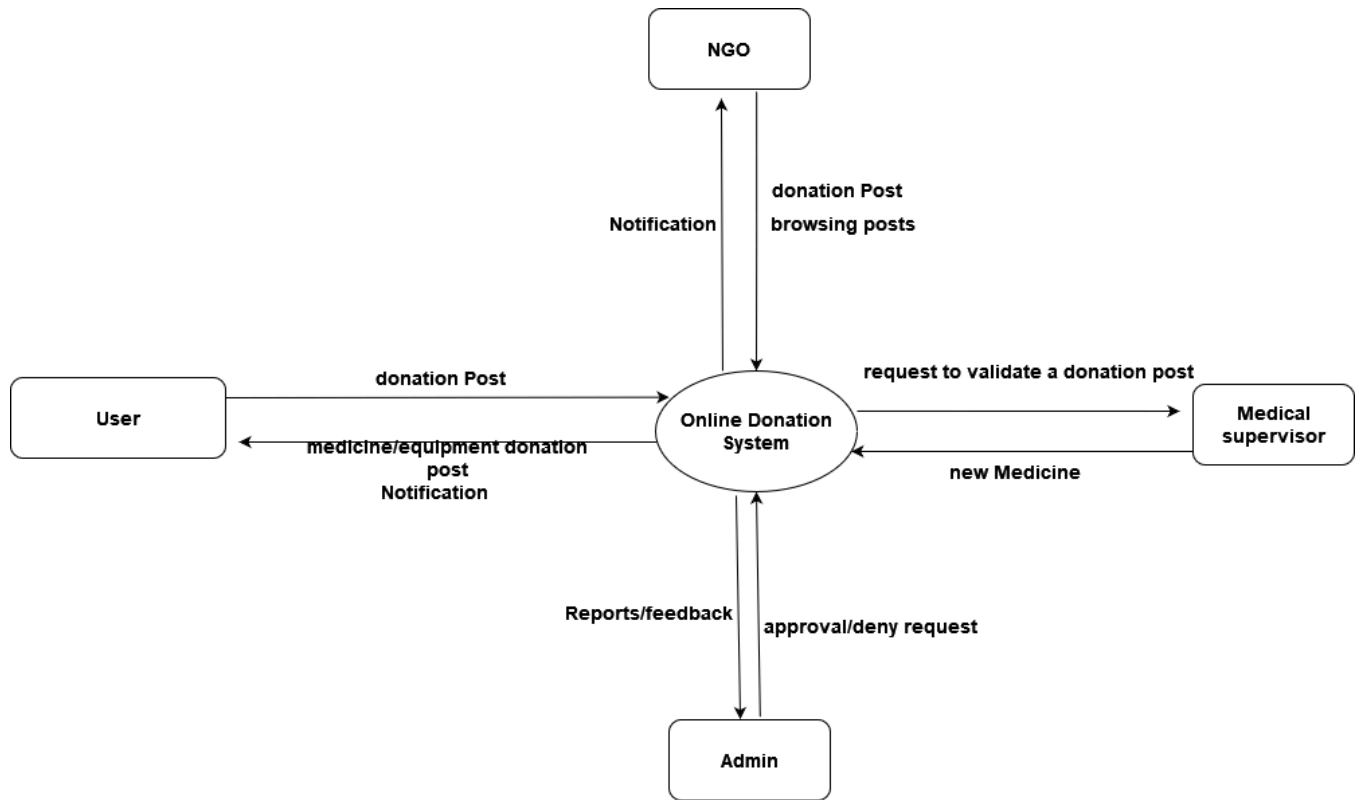


Figure 2.7.1 class diagram

## 2.8 Use-case diagram



## 2.9 Context Diagram



## 2.10 Sequence Diagram

It explains how members can make a Medicine Donation Post.

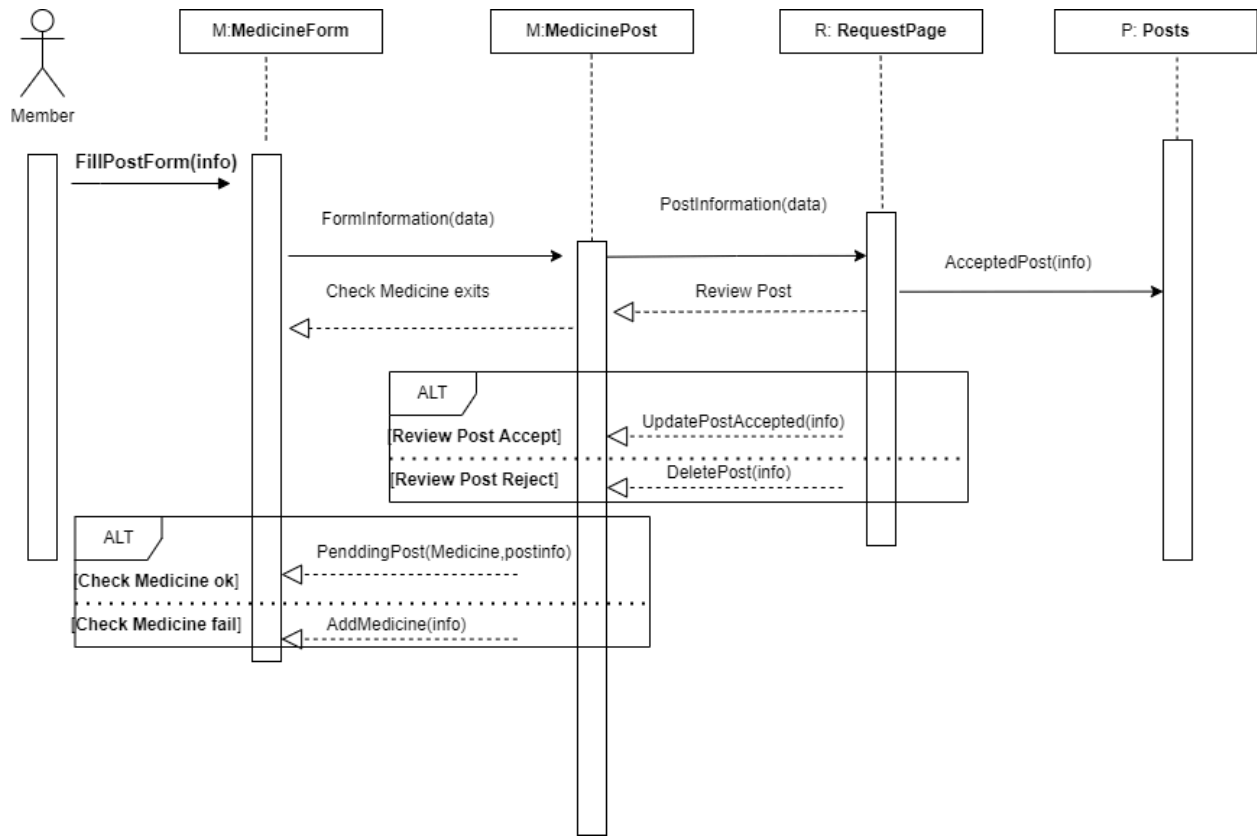


Figure 2.10.1 sequence diagram

# **Chapter Three**

## **Architecture**

## Chapter 3

### 3.1 Overview of the chapter:

In this chapter, we will discuss the system's architecture, context diagram, database tables, database mapping and the interfaces of the application.

### 3.2 Introduction:

In this Chapter, we will talk about the System model and its parts and detail its components, and the architecture that is used in our project, and the alternative architecture, then we will move to the database section (Mapping and designing), Context Diagram.

This chapter is important, because it enables the programmer to understand the components of the system, and therefore it makes it easier for him to program and understand how the parts of the project communicate with each other.

### 3.3 Project architecture design:

Since the project is a mobile application, the chosen structure is MVVM, as this structure consists of three main elements, one part responsible for the views, another for the information that will be displayed, and another that is an intermediary between them. It is to move as much state and logic from the view into a separate entity called ViewModel. ViewModel also contains business logic and acts as an intermediary between view and model.

#### 3.3.1 The system architecture (MVVM) Components:

- 1- View
- 2- View Model
- 3- Model

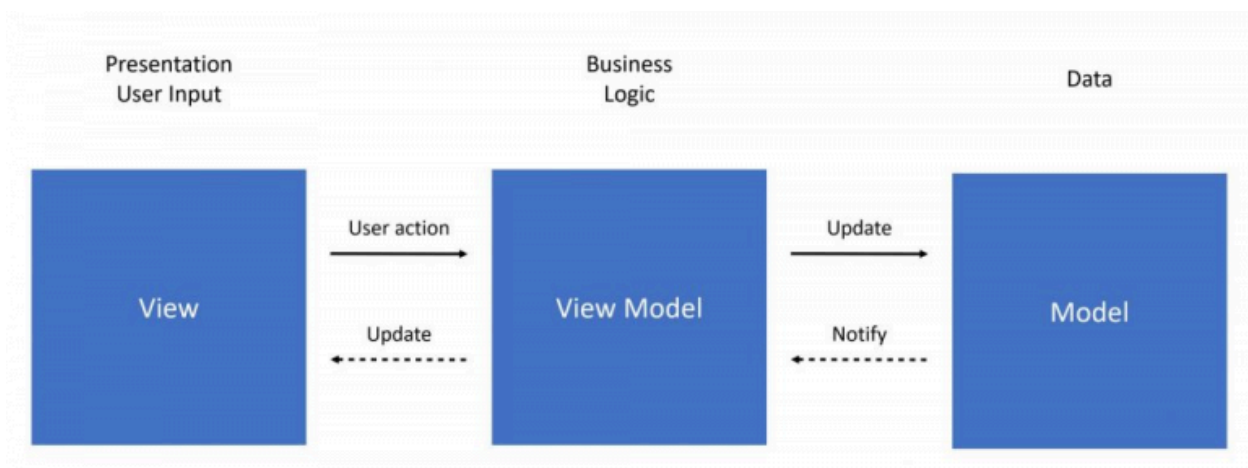


Figure 3.3.1.1 MVVM components

#### 3.3.2 Description of the parts of the system architecture:

## **1- View:**

This part contains user interfaces and in-app content, which respond to changes in view models and pass user events to view models In the section on display interfaces.

## **2- View Model:**

The view model implements properties and commands to which the view can data bind to, and notifies the view of any state changes through change notification events. The properties and commands that the view model provides define the functionality to be offered by the UI, but the view determines how that functionality is to be displayed. This operation happens through API.

## **3- Model:**

Model classes are non-visual classes that encapsulate the app's data. Therefore, the model can be thought of as representing the app's domain model, which usually includes a data model along with business and validation logic.

## **3.4 Alternative Architecture design**

### **3.4.1 BLoC (Business Logic Component)**

#### **3.4.1.1 What is BLoC ?**

It's an architectural pattern based on separate components (BLoC components). BLoC components contain only business logic, which can easily be shared between different apps. This architecture was introduced by Google at Google I/O 2019.

#### **3.4.1.2 When to use the BLoC pattern**

- You need to separate a view from its logic, because the management became too complex
- You want your view to be completely separate from the business logic
- You started a complex project that needs to be scalable and maintainable

So it is not suitable for our project.

### 3.4.1.3 BLoC Architecture

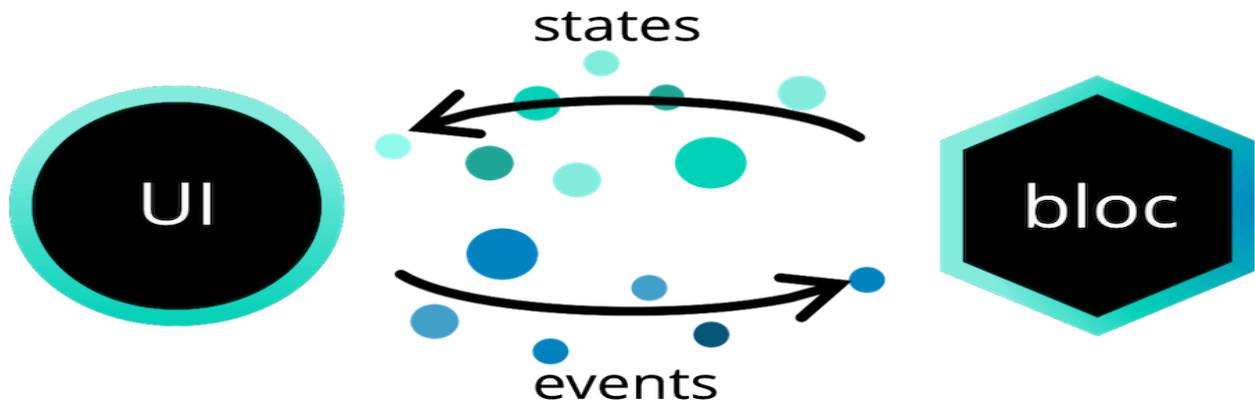


Figure 3.4.1.3.1 BLoC architecture

### 3.4.2 Why use MVVM architecture:

Because our app requires many models to view transformations, also MVVM is enough for small projects, and MVVM is easy to treat with it and Multiple **View** can be mapped with a single **ViewModel**, and it's makes project files maintainable and easy to make changes also all modules are independent which improves the testability of each layer

### 3.4.3 Back-End RESTFUL API:

The REST API is a necessity for many applications because it is the lightest way to create, read, update, or delete information between different applications over the internet or HTTP protocol, so we've adopted PHP to create a RESTFUL API that receives requests from the mobile app or from the admin web page. See the image below, which shows how it works:

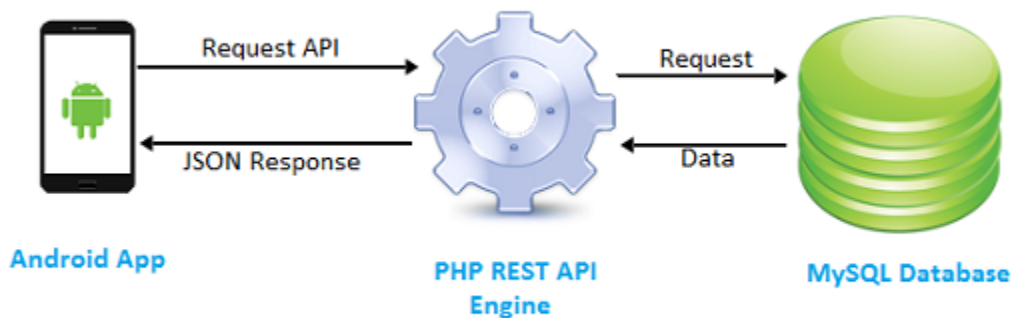


Figure 3.4.3.1 RESTFUL API

### **3.5 Model Objects Contains:**

- Members
- User (individual)
- NGO
- Message
- Medicine
- MedicineDonationPost
- MedicalDonationComment
- MedicineDonationComment
- MedicalDonationPost
- Notifications
- Reports

### 3.6 Class diagram

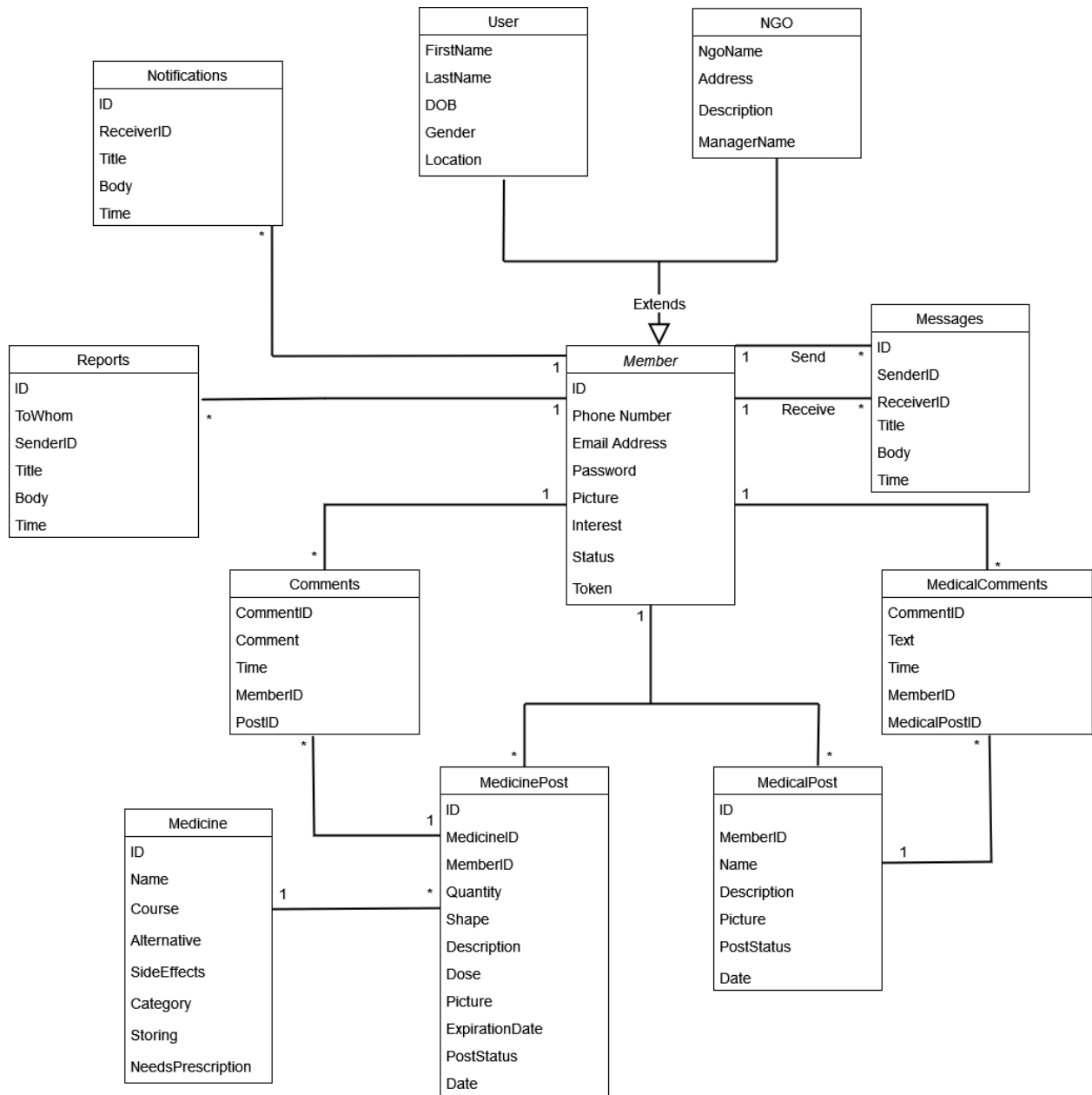


Figure 3.6.1 class diagram

### 3.7 Database logical mapping:

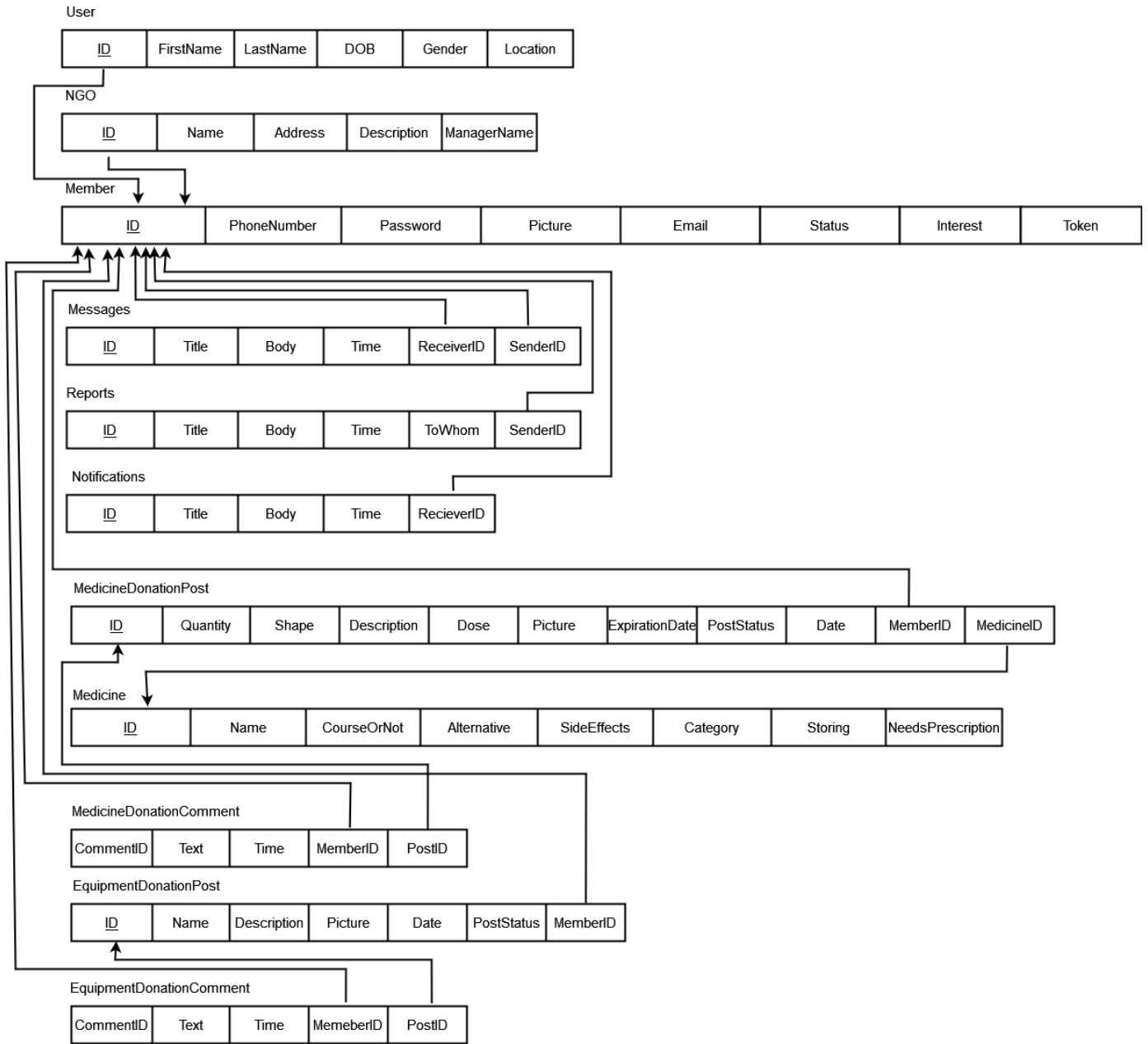


Figure 3.7.1 database logical mapping

### 3.8 Class diagram tables description:

1. User:
  - ID: Unique integer with auto increment for all users (PK & FK).
  - FirstName: string and not-null.
  - LastName: string and not-null.
  - DOB: date of birth of the user of type date.
  - Gender: string, “male” for male users and “female” for female users.
  - Location: string, city chosen from dropdown list.
2. NGO:
  - ID: unique integer with auto increment for all users (PK & FK).
  - Name: string and not-null.
  - Address: string
  - Description: string tring, a description of this institution.
  - ManagerName: string, institution manager’s name
3. Member:
  - ID: unique integer with auto increment for all users (PK).
  - PhoneNumber: integer
  - Email: string , unique and not-null.
  - Password: string and not-null with 8 digits at minimum.
  - Picture: string and nullable.
  - Interest: string, user’s interest in a medicine category.
  - Token: String, using to know the id of a member's mobile.
  - Status: represents the status of a Member
    - A. “Active” means that the Member is allowed to use the system.
    - B. “Blocked” means that the Member can’t comment on any post on the system.
    - C. “Banned” means that the Member is forbidden to use the system.
4. Message:
  - ID: unique integer, not-null with auto increment (PK).
  - SenderID: unique integer, not-null, represents the ID of the Member who sent the message.
  - ReceiverID: unique integer, not-null, represents the ID of the Member who would receive the message.
  - Title: string, not-null, represents the title message text.
  - Body: string, not-null, represents the message body text.
  - time: Datetime, not-null, represents the time of message.
5. Medicine:
  - ID: unique integer, not-null with auto increment (PK).
  - Name: string, not-null.

- CourseOrNot: boolean, not-null, '0' means that this medicine does not need to be consumed in full courses, '1' means that this medicine must be consumed in full courses.
- Alternative: String , nullable, represents the ID of an alternative medicine if it existed.
- SideEffects: string, represents the side effects of this medicine.
- Category: string, the category that this medicine belongs to.
- Storing: string, represents information about storing this medicine.
- NeedsPrescription: boolean, '0' means that this medicine does not need a prescription to be consumed, '1' means that this medicine needs a prescription to be consumed.

#### 6. MedicineDonationPost:

- ID: unique integer, not-null with auto increment (PK).
- MedicineID: unique integer, not-null, represents the ID of the medicine to be donated (FK).
- MemberID: unique integer, not-null, represents the ID of the owner of this post (FK).
- Quantity: integer, not-null, represents the quantity of medicine that the donor desires to donate.
- Shape: string, not-null, represents the shape of the medicine:
  - A. Pills (tablets, capsules, etc)
  - B. Milliliters (liquid, solution, drops)
  - C. Inhales
  - D. Injections
  - E. Tubes (cream, ointment, lotion)
- Description: string, nullable, additional information from the donor.
- Dose: string.
- Picture: string, a picture of the medicine provided by the donor.
- ExpirationDate: date, not-null.
- PostStatus: string, the current status of the post
  - A. "Pending" represents the status of the post after the user submits a post details and before the approval of the supervisor.
  - B. "Accepted" represents the status of the post after the supervisor approves a post request to be posted.
  - C. "Locked" represents the status of the post after the donation process is done and the donor has locked the post to hide it from the posts page feed.
- Date: date, not-null, represents the date of creating this post.

#### 7. MedicineDonationComment:

- commentID: unique integer, not-null (PK).

- Comment: string, not-null, represents the text of the comment.
- Time: Datetime, not-null, represents the date of the comment.
- Member ID: unique integer, not-null, represents the ID of the owner of the comment (FK).
- PostID: unique integer, not-null, represents the ID of the post that holds the comment (FK).

#### 8. MedicalDonationPost:

- ID: unique integer, not-null (PK).
- Member ID: unique integer, represents the ID of the donor (FK).
- Name: string, not-null, represents the name of the medical equipment to be donated.
- Description: string, information about the medical equipment provided by the donor.
- Picture: string, not-null, a picture of the medical equipment provided by the donor.
- PostStatus: string, the current status of the post
  - A. “Pending” represents the status of the post after the user submits a post details and before the approval of the supervisor.
  - B. “Accepted” represents the status of the post after the supervisor approves a post request to be posted.
  - C. “Locked” represents the status of the post after the donation process is done and the donor has locked the post to hide it from the posts page feed.
- Date: date, not-null, represents the date of the post.

#### 9. MedicalDonationComment:

- CommentID: unique integer, not-null (PK).
- Comment: string, not-null, represents the text of the comment.
- Time: Datetime, not-null, represents the date of the comment.
- Member ID: unique integer, not-null, represents the ID of the owner of the comment (FK).
- MedicalPostID: unique integer, not-null, represents the ID of the post that holds the comment (FK).

#### 10. Notifications:

- ID: unique integer, not-null (PK).
- ReceiverID: unique integer, not-null, represents the ID of the Receiver that holds the notification (FK).
- Title: string, not-null, represents the title of the notification.
- Body: String, not-null, represents the body of the notification.
- Time: Datetime, not-null, represents the date of the notification.

## 11. Reports:

- ID: unique integer, not-null (PK).
- ToWhom: string, not-null, represents the side that receives the report.
- SenderID: unique integer, not-null, represents the ID of the member that sends the report (FK).
- Title: string, not-null, represents the title of the report.
- Body: string, not-null, represents the body of the report.
- Time: Datetime, not-null, represents the date of the comment.

### 3.9 Database tables:

#### Individual

Attribute	Type	PK	FK	Not-Null	Unique
ID	int	Yes	Yes	Yes	Yes
FirstName	String			Yes	
LastName	String			Yes	
Gender	String				
DOB	Date				
Location	String				

Table 3.9.1 User table description

#### NGO

Attribute	Type	PK	FK	Not-Null	Unique
ID	int	Yes	Yes	Yes	Yes
Name	String			Yes	
Address	String				
Description	String				
ManagerName	String				

Table 3.9.2 NGO table description

## Member

Attribute	Type	PK	FK	Not-Null	Unique
ID	int	Yes		Yes	Yes
PhoneNumber	int			Yes	
Email	String			Yes	Yes
Password	String			Yes	
Picture	String				
Interest	String				
Status	String			Yes	
Token	String			Yes	

Table 3.9.3 Member table description

## Message

Attribute	Type	PK	FK	Not-Null	Unique
ID	int	Yes		Yes	Yes
SenderID	int		Yes		
ReceiverID	int		Yes		
Title	String			Yes	
Body	String			Yes	
Time	Datetime			Yes	

Table 3.9.4 Message table description

## Medicine

Attribute	Type	PK	FK	Not-Null	Unique
ID	int	Yes		Yes	Yes
Name	String			Yes	
CourseOrNot	bool				
Alternative	String				
SideEffects	String			Yes	
Category	String			Yes	
Storing	String				
NeedsPrescription	bool			Yes	

Table 3.9.5 Medicine table description

## MedicineDonationPost

Attribute	Type	PK	FK	Not-Null	Unique
ID	int	Yes		Yes	Yes
MedicineID	int		Yes	Yes	
MemberID	int		Yes	Yes	
Quantity	int			Yes	
Shape	String			Yes	
Description	String			Yes	
Dose	int			Yes	
Picture	String			Yes	
ExpirationDate	Date			Yes	
PostStatus	String			Yes	
Date	Datetime			Yes	

Table 3.9.6 MedicineDonationPost table description

### MedicineDonationComment

Attribute	Type	PK	FK	Not-Null	Unique
CommentID	int	Yes		Yes	Yes
Comment	String			Yes	
Time	Datetime			Yes	
MemberID	int		Yes	Yes	
PostID	int		Yes	Yes	

Table 3.9.7 MedicineDonationComment table description

### MedicalDonationPost

Attribute	Type	PK	FK	Not-Null	Unique
ID	int	Yes		Yes	Yes
MemberID	int		Yes	Yes	
Name	String			Yes	
Description	String			Yes	
Picture	String			Yes	
PostStatus	String			Yes	
Date	Datetime			Yes	

Table 3.9.8 MedicalDonationPost table description

### MedicalDonationComment

Attribute	Type	PK	FK	Not-Null	Unique
CommentID	int	Yes		Yes	Yes
Comment	String			Yes	
Time	Datetime			Yes	
MemberID	int		Yes	Yes	
MedicalPostID	int		Yes	Yes	

Table 3.9.9 MedicalDonationComment table description

### Notifications

Attribute	Type	PK	FK	Not-Null	Unique
ID	int	Yes		Yes	Yes
ReceiverID	int		Yes	Yes	
Title	String			Yes	
Body	String			Yes	
Time	Datetime			Yes	

Table 3.9.10 Notifications table description

## Reports

Attribute	Type	PK	FK	Not-Null	Unique
ID	int	Yes		Yes	Yes
ToWhom	String			Yes	
SenderID	int		Yes	Yes	
Title	String			Yes	
Body	String			Yes	
Time	Datetime			Yes	

Table 3.9.11 Reports table description

# **Chapter 4**

## **Implementation**

## Chapter 4

### Implementation

#### 4.1 Introduction:

In this chapter we will discuss the coding phase of the project, including the three parts of the project: the mobile application, the admin dashboard and the database.

#### 4.2 software environment and tools:

##### 4.2.1 Android Studio:

Android Studio is Android's official IDE. A platform for writing applications which provides a unified environment where you can build apps for Android phones, tablets, Android Wear, Android TV, and Android Auto. And allows the developers to preview the appearance of their applications on various emulators.



Figure 4.2.1.1 Android Studio logo

### 4.2.2 Visual Studio Code:

Visual Studio Code, also commonly referred to as VS Code, is a source-code editor made by Microsoft for Windows, Linux and macOS. Features include support for debugging, syntax highlighting, intelligent code completion, snippets, code refactoring, and embedded Git.

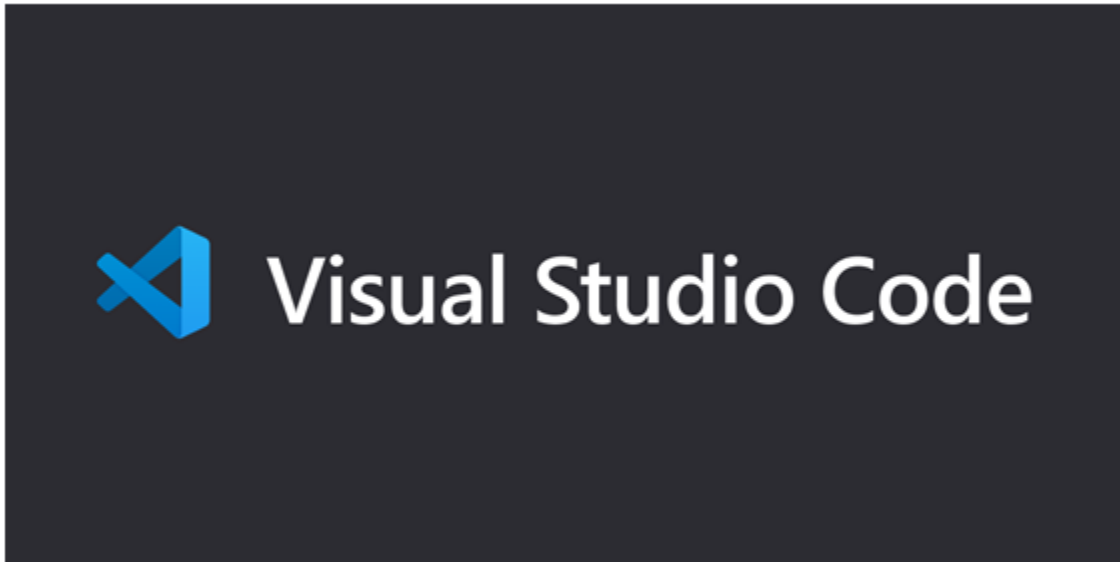


Figure 4.2.2.1 Visual Studio Code logo

### 4.2.3 Flutter Framework:

Flutter is Google's free and open-source UI framework for creating native mobile applications. Provides an environment for developing cross platform applications for Android, Windows, IOS, MacOS, Linux and web from a single codebase. Alongside Dart which is an open-source programming language, and it's easy to learn, stable and creates high-performance applications. Which is suitable for this project for developing Android application and a website for the admin dashboard.



Figure 4.2.3.1 Flutter and Dart logo

#### 4.2.4 XAMPP:

XAMPP is a software distribution which provides the Apache web server, MySQL database and Php all in one package. Which provides a solution for setting up a local web server.

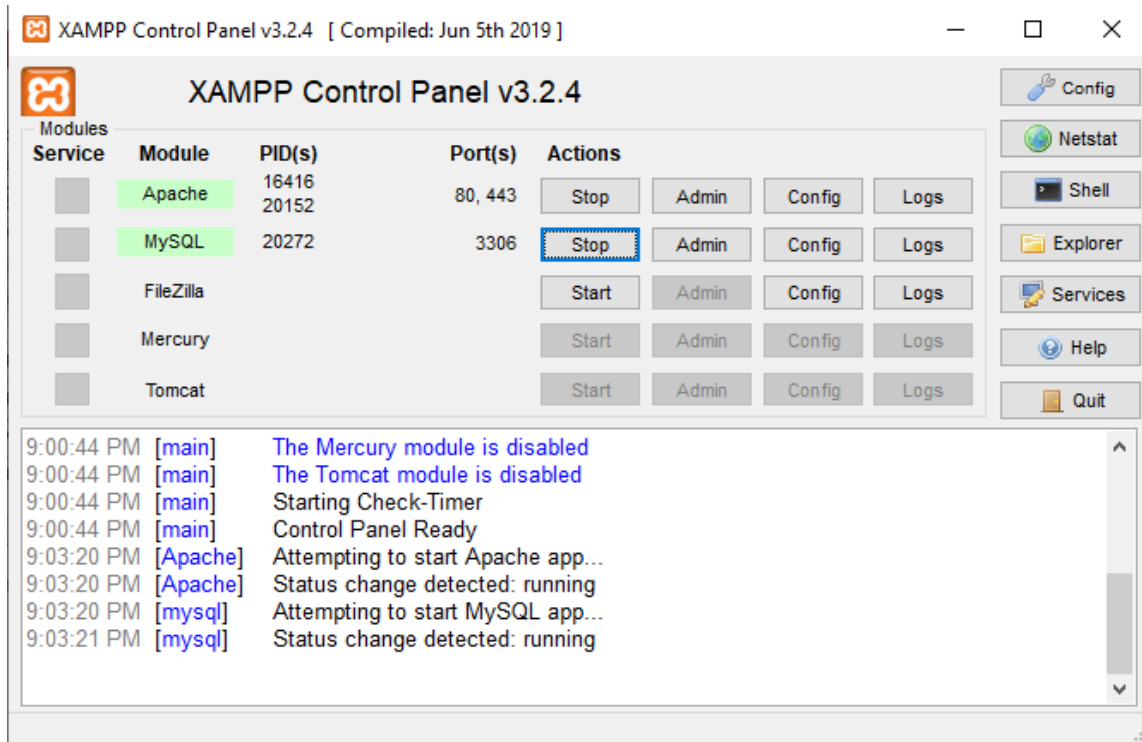


Figure 4.2.4.1 XAMPP Control Panel interface

#### 4.2.5 000webhost:

000webhost server is a free website hosting service with PHP, MySQL and cPanel, without serving ads alongside the content. And provides built-in firewall and DDoS protection.



Figure 4.2.5.1 000webhost logo

#### **4.2.6 Google Firebase:**

Firebase is a real-time, cloud-hosted, NoSQL database developed by Google, helpful for providing real-time messaging system, and sending and receiving notifications.



Figure 4.2.6.1 Google Firebase logo

#### **4.3 Implementing the system:**

The system is divided into four parts:

##### **4.3.1 Mobile application (frontend):**

The client side of the system, an Android application with MVVM architecture, provides the user interface so the users can register and log in the system, create new medicine and medical equipment donation posts, browse and comment on other peoples posts, send messages to other users and send reports to admin.

And additional interfaces for the admin and the medical supervisors to preview medicine donation posts request, edit and add new medicines to the medicines table in the database and receive the reports sent from the users.

##### **4.3.2 Admin Dashboard website (frontend):**

A website exclusive for the admin and the medical supervisors to facilitate previewing the medicines table from the database and add new medicines, preview medicine donation posts requests and preview users of the system and their information.

##### **4.3.3 000webhost online server (backend):**

A server hosts the database of the system and the PHP files, receives queries from the frontend and sends back the required content. This database contains the main classes of the system as shown in the class diagram.

### 4.3.4 Google Firebase (backend):

Cloud real-time database, sends and receives messages from the users of the system, and sends notifications when a new message is received, or a comment is posted on the user's post, or when the medical supervisor approve on the user's pending post, and sends the admin and the medical supervisor a notification when there is a new pending post to be reviewed for acceptance or rejection.

## 4.4 Key fragments of the code:

### 4.4.1 Credential validation code:

```
1274 TextFormField buildTextFormFieldAll(String myHintText, bool pass, TextEditingController myController) {
1275     return TextFormField(
1276         controller: myController,
1277         obscureText: myHintText == "Password" ? _obscureTextPass : pass,
1278         keyboardType: myHintText == "Enter your phone number" ? TextInputType.phone : TextInputType.text,
1279         validator: (value) {
1280             if (pass == true) {
1281                 if (value == null || value.trim().isEmpty) { return "Password can't be Empty";}
1282                 if (value.trim().length < 8) { return "Password must be at least 8 characters";}
1283                 if( myHintText == "Confirm Password") {
1284                     if (value != password.text)
1285                         {return "Password does not match"; }
1286                 }}
1287             if( myHintText == "Enter your phone number") {
1288                 if (value == null || value.trim().isEmpty) {
1289                     return "Please enter your phone number";
1290                 }
1291                 else if (value.length < 9 || value.length > 13) {
1292                     return "Please Enter Valid Phone Number!";
1293                 }
1294             }
1295             if (value == null || value.trim().isEmpty) {return "Please Enter Some Text"; }
1296             if( myHintText == "Enter User Email") {
1297                 if (value.trim().isEmpty) {
1298                     return "Email can't be empty";
1299                 }
1300                 if (value.length < 3) {
1301                     return "Please Write More Than 4 Chars!";
1302                 }
1303                 bool emailValid = RegExp( r'^((([^\<>()[\]\\\.,;:\s@\\"]+|\.[^\<>()[\]\\\.,;:\s@\\"]+)*)(\|"+.+"))@(\[[0-9]{1,3}\. [
1304                 if(emailValid == true)
1305                     {return null;}
1306                 else {return "Email is not correct!"; } }
1307             if ((myHintText == "Enter short description about your NGO") && value.length > 150) {
1308                 return "Too long Text!";
1309             }
1310             return null;
1311         },
```

Figure 4.4.1.1 validation code screenshot

As shown in the screenshot, when creating a new account, the user must enter a password with at least 8 characters and rewrite it to be sure that the user typed the password correctly and avoid typo. Also, the user must enter their phone number and would be valid if the phone number

digits is between 9 to 13 digits. And if the new user is an NGO, they must enter a short description of their institute no more than 150 characters.

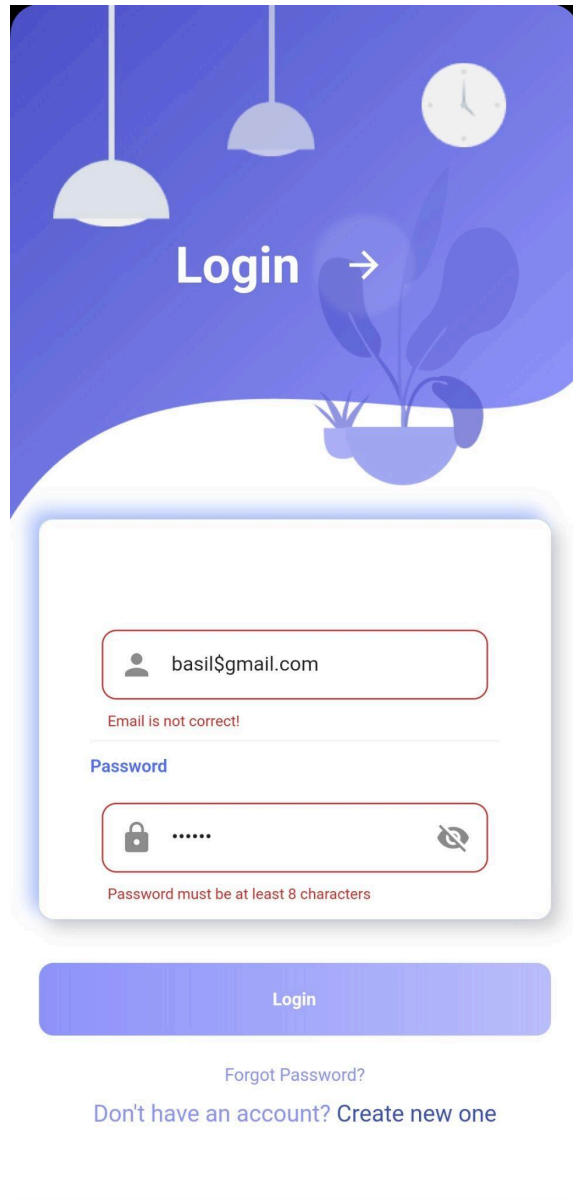


Figure 4.4.1.2 login page with invalid email and password

#### 4.4.2 Add new medicine donation post function:

```
352 Future addMedicinePost() async {
353   if (dropdownvaluename == "Other")
354   { if(nameController.text.isEmpty)
355     { setState(() { isLoading = false; });
356       Fluttertoast.showToast(...); return;}
359     if(discription.text.isEmpty || dateController.text.isEmpty || strength.text.isEmpty)
360     { setState(() { isLoading = false; });
361       Fluttertoast.showToast(...);return;}
363     if (_file == null){ setState(() { isLoading = false;});
364       Fluttertoast.showToast(...);return;}
366     await addMedicine();
367     await fetchMedId();
368   }
369   if(discription.text.isEmpty || dateController.text.isEmpty || strength.text.isEmpty)
370   {setState(() {isLoading = false;});
371     Fluttertoast.showToast(...);return;}
373   if (_file == null){
374     setState(() { isLoading = false; });
375     Fluttertoast.showToast(...);return;}
377   var now = DateTime.now();
378   var formatter = DateFormat('yyyy-MM-dd kk:mm:ss');
379   String formattedDate = formatter.format(now);
380   String base64 = base64Encode(_file!.readAsBytesSync());
381   String imagename = _file!.path.split("/").last;
382   var data = {
383     "medicineid": medicineId.toString(),
384     "memberid": userid.toString(),
385     "quantity": _counterValue.toString(),
386     "shape": dropdownvalue,
387     'description': discription.text,
388     'dose': strength.text,
389     'picture': imagename,
390     "picture64": base64,
391     'expirationdate': dateController.text,
392     'poststatus': "Pending",
393     'date': formattedDate
394   };
```

Figure 4.4.2.1 screenshot of the function part 1

```

395     var url = "${Connect().connection}/addmedicinepost.php";
396     var response = await http.post(Uri.parse(url), body: data);
397     if (response.statusCode == 200) {
398         try {
399             Fluttertoast.showToast(...);
401             sendNotifyToAdmin("Requests", "There are a new post need to reveiw!");
402             setState(() {isLoading = false;});
403             Navigator.pushReplacement(context, MaterialPageRoute(builder: (context) => HomePage()));
404         }
405         catch (e) {
406             setState(() {isLoading = false;});
407             throw Fluttertoast.showToast(...);
409         }
410     }
411     else {
412         Fluttertoast.showToast(...);}
414 }

```

Figure 4.4.2.2 screenshot of the function part 2

This function is for creating a new medicine donation post and upload it to the database using PHP file existing in the online server contains a query to add a new item to the MedicinePost table in the database, sending the user's ID, post status as "Pending", date of the post and information about the donation.

Also sends notification to the admin and medical supervisor of a new post request that needs reviewing for acceptance or rejection.

#### 4.4.3 Notify post owner when someone comments on their post:

```
119   sendNotify(String title, String body, String token) async {
120     var serverToken = Connect().serverKey;
121     await http.post(
122       Uri.parse('https://fcm.googleapis.com/fcm/send'),
123       headers: <String,String>{
124         'Content-Type' : 'application/json',
125         'Authorization' : 'key=$serverToken',
126       },
127       body: jsonEncode(
128         <String, dynamic>{
129           'notification': <String, dynamic>{
130             'body': body.toString(),
131             'title': title.toString()
132           },
133           'priority': 'high',
134           'data': <String, dynamic>{
135             'click_action': 'FLUTTER_NOTIFICATION_CLICK',
136             'postid': widget.postid,
137             'memberid': widget.memberid,
138           },
139           'to': token.toString()
140         },
141       ),
142     );
143   }
```

Figure 4.4.3.1 screenshot of the function sendNotify code

When someone comments on a certain post, this function sends a notification to the owner of the post with the help of Google Firebase.

#### 4.4.4 Permissions:

```
161  checkPermission_openCamera() async{
162      var cameraStatus = await Permission.camera.status;
163
164      if (!cameraStatus.isGranted) {
165          await Permission.camera.request();
166      }
167
168      if (await Permission.camera.isGranted) {
169          pickerCamera();
170      }
171      else {
172          Fluttertoast.showToast(...);
182      }
183  }
184
185  checkPermission_openGalary() async{
186      var galaryStatus = await Permission.storage.status;
187
188      if (!galaryStatus.isGranted) {
189          await Permission.storage.request();
190      }
191
192      if (await Permission.storage.isGranted) {
193          pickerGalary();
194      }
195      else {
196          Fluttertoast.showToast(...);
206  }
```

Figure 4.4.4.1 screenshot of code checking for permissions

```
4      <uses-permission android:name="android.permission.CAMERA"/>
5      <uses-permission android:name="android.permission.READ_EXTERNAL_STORAGE"/>
6      <uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE"/>
7      <uses-permission android:name="android.permission.CALL_PHONE"/>
```

Figure 4.4.4.2 screenshot of code in AndroidManifest.xml

Creating a new donation post requires the user to provide a picture of the item they wish to donate, so they have to either open the camera and take a photo or open the gallery and choose a picture. This code asks the user's permission to open the camera and the gallery, and the application won't be able to open the camera or the gallery if the user rejects the permission.

#### 4.4.5 Light and dark modes:

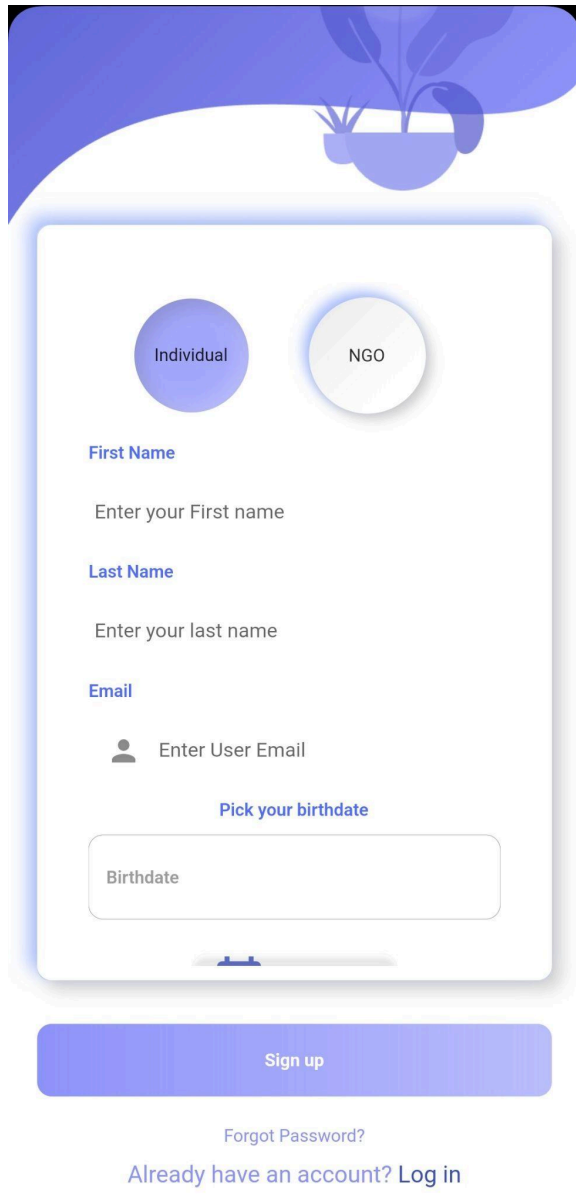
```
144  return NeumorphicApp(  
145      title: 'MedShare',  
146      debugShowCheckedModeBanner: false,  
147      themeMode: ThemeMode.light,  
148      theme: const NeumorphicThemeData(  
149          // baseColor: Color(0xFFFFFFFF),  
150          baseColor: Color.fromARGB(255,204,217,233),  
151          accentColor: Colors.indigoAccent,  
152          shadowLightColor: Color.fromARGB(255,126,158,255),  
153          // variantColor: Colors.red,  
154          intensity: 0.8,  
155          lightSource: LightSource.topLeft,  
156          depth: 8,  
157      ), // NeumorphicThemeData  
158      darkTheme: const NeumorphicThemeData(  
159          accentColor: Color.fromARGB(255,126,158,255),  
160          shadowDarkColor: Colors.indigo,  
161          baseColor: Color.fromARGB(255,36,40,55),  
162          lightSource: LightSource.bottomRight,  
163          depth: 8,  
164      ), // NeumorphicThemeData
```

Figure 4.4.5.1 screenshot of code with the colors of both modes

In pursuit of the users' preferences and comfort, the application provides the light and dark modes using Neumorphic design for soft and comfortable-for-sight UI.

## 4.5 User Interfaces:

### 4.5.1 Register page:



Individual NGO

**First Name**  
Enter your First name

**Last Name**  
Enter your last name

**Email**  
Enter User Email

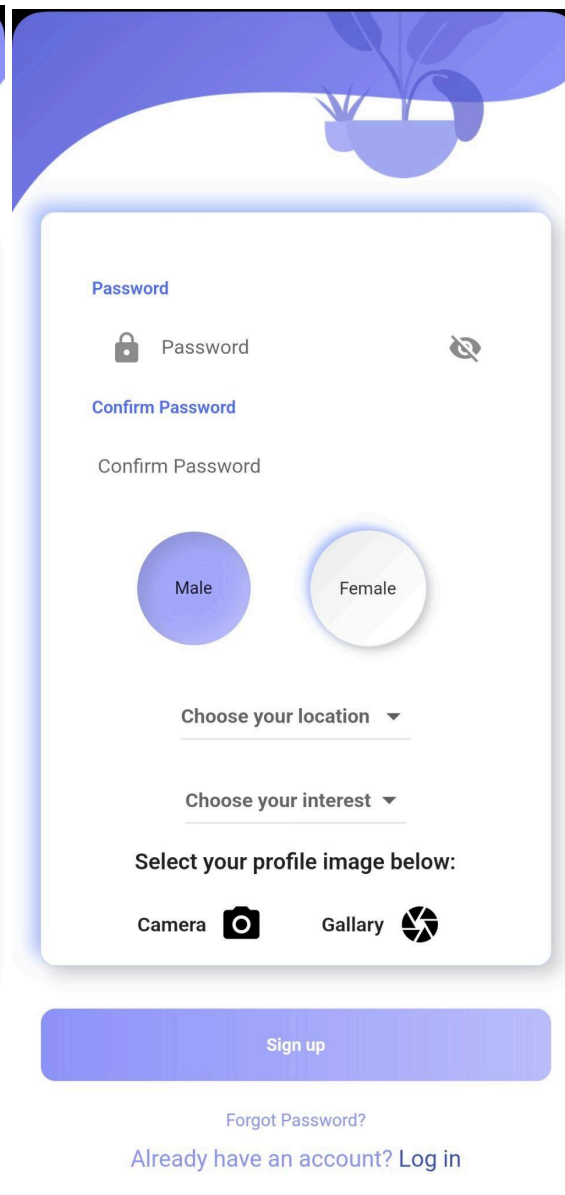
Pick your birthdate

Birthdate

Sign up

[Forgot Password?](#)

[Already have an account? Log in](#)



**Password**  
Password

**Confirm Password**  
Confirm Password

Male Female

Choose your location

Choose your interest

Select your profile image below:

Camera Gallery

Sign up

[Forgot Password?](#)

[Already have an account? Log in](#)

Figure 4.5.1.1 register page part 1

Figure 4.5.1.2 register page part 2

New members have to fill in all the information as shown, including an optional profile picture, members of type NGO have to fill in extra information such as manager name, address and description.

#### 4.5.2 Home page:

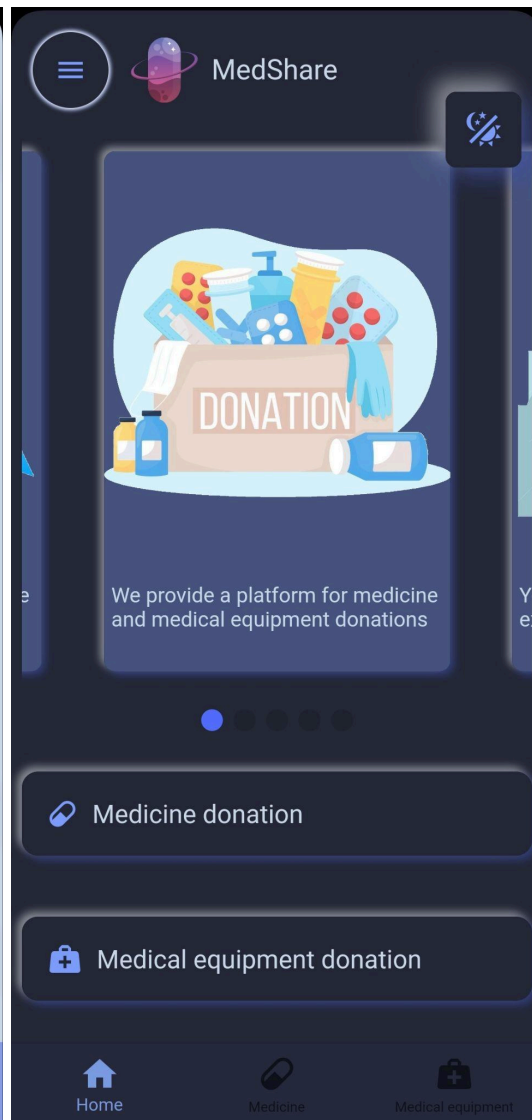
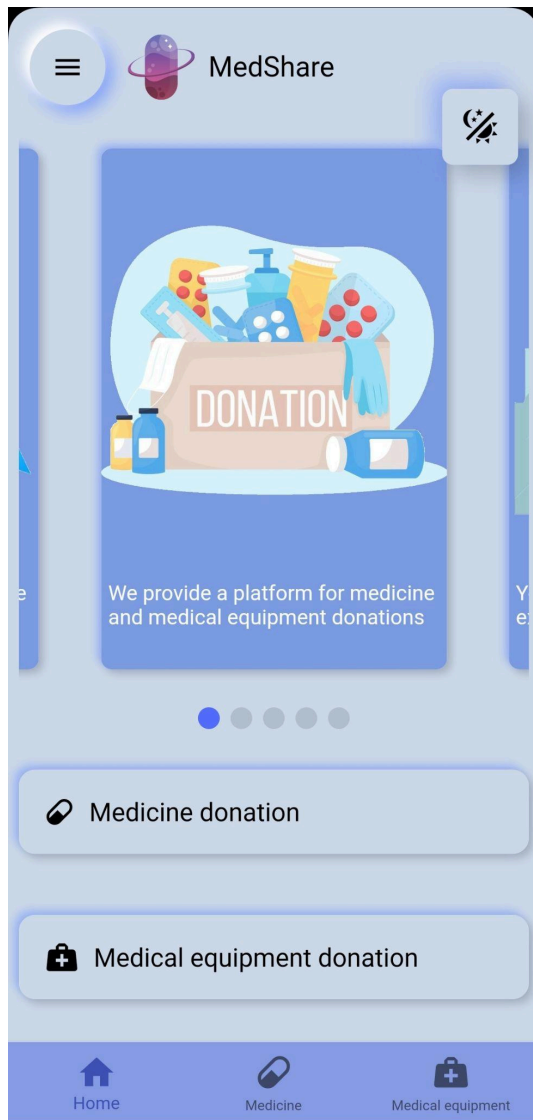


Figure 4.5.2.1 home page in light mode

Figure 4.5.2.2 home page in dark mode

Home page has a bottom navigation bar to navigate throughout the application, two buttons to navigate to medicine donation post form and medical equipment donation form, drawer icon and light/dark mode switch.

### 4.5.3 Creating donation posts

The image displays two side-by-side screenshots of a mobile application interface for creating donation posts. Both screens feature a bottom navigation bar with three icons: Home, Medicine, and Medical equipment.

**Left Screenshot: Add medical equipment donation post**  
- Title: Add medical equipment donation post  
- Field: Name (text input)  
- Section: Upload a picture (Camera, Gallery)  
- Field: Description (text area, 0/150)  
- Buttons: Submit, Cancel

**Right Screenshot: Add medicine donation post**  
- Title: Add medicine donation post  
- Fields: Medicine name (Acamol), Medicine shape (Pills)  
- Field: Expiration date (calendar icon, pick a date)  
- Field: Dose (text input, MG)  
- Field: Quantity (input with - 1 +)  
- Section: Upload a picture (Camera, Gallery)  
- Field: Description (text area, 0/150)  
- Buttons: Submit, Cancel

Figure 4.5.3.1 medicine donation form Figure 4.5.3.2 medical equipment donation form

Members have to fill in a form to publish a donation post and submit it. The post won't be published immediately, it needs to be approved by the medical supervisor or the admin first to be published to the public.

#### 4.5.4 Medicine donation posts feed page:

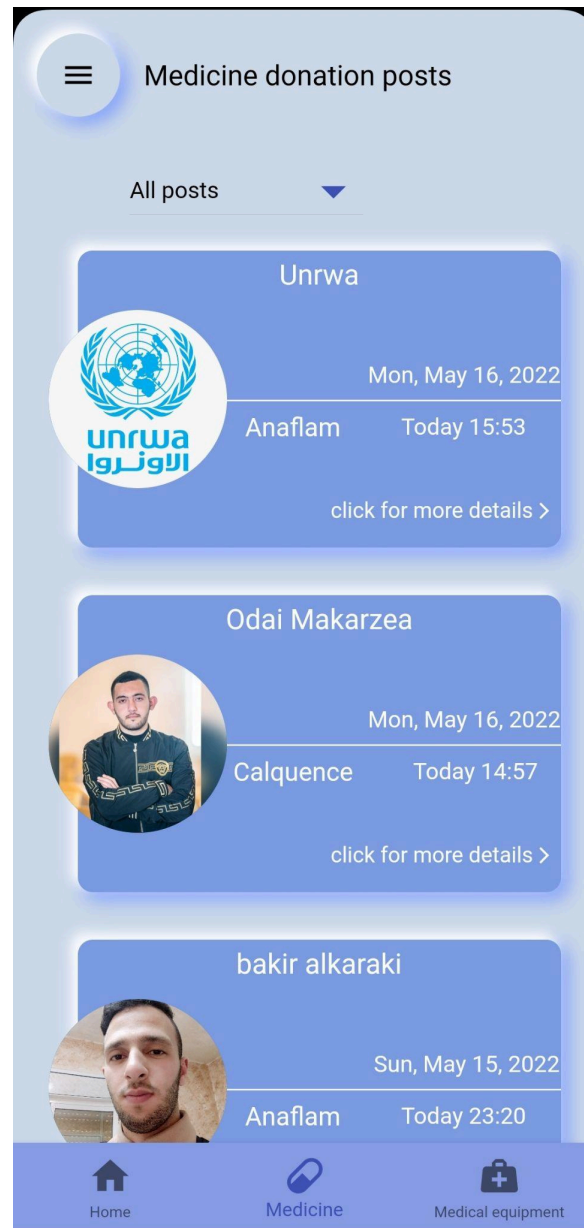


Figure 4.5.4.1 Medicine donation posts feed page

In this page, members can browse medicine donation posts, and filter them by category, location, medicine name or all posts.

#### 4.5.5 Medicine donation post details:

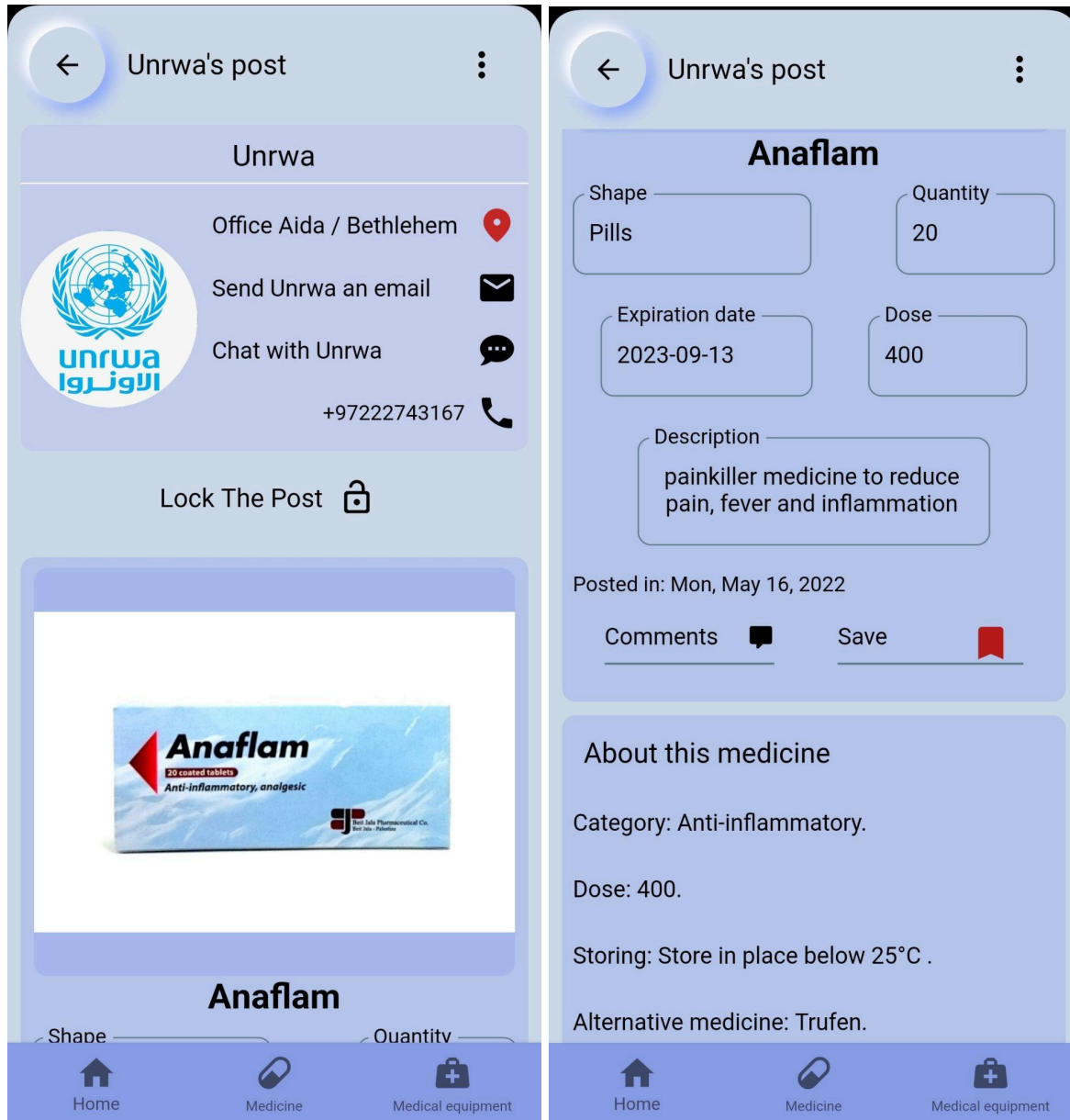


Figure 4.5.5.1, 4.5.5.2 medicine donation post details

This page shows the details of a medicine donation post, with extra information about the medicine, and a Comments button that navigates to the comments section of this post.

## 4.5.6 App's Drawer

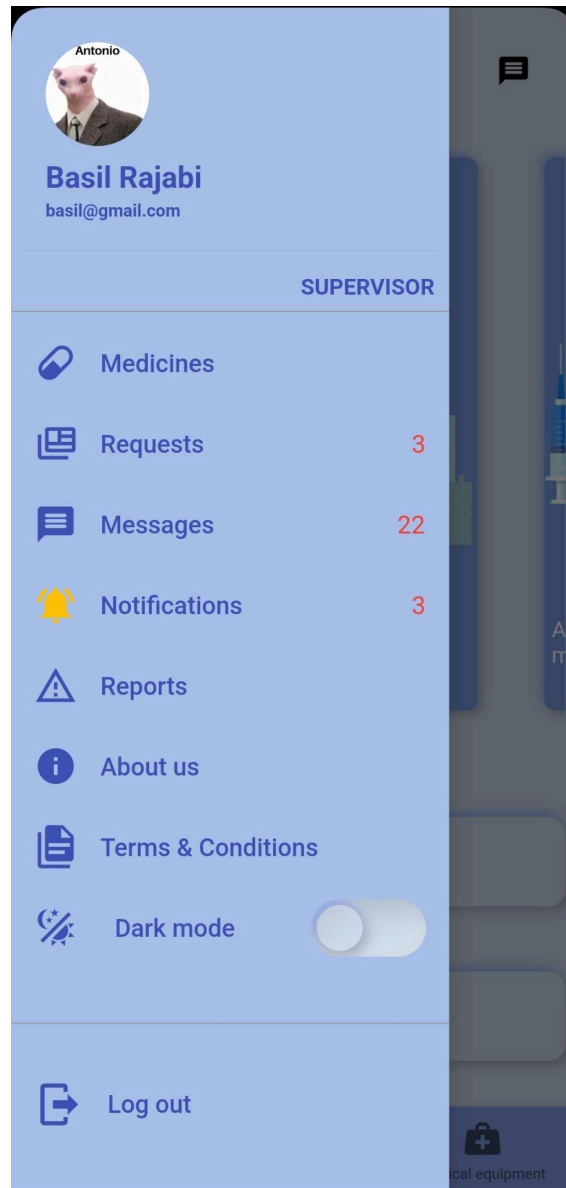


Figure 4.5.6.1 app Drawer for medical supervisor

The Drawer navigates to the profile page, messages page, reports page, notifications page, terms & conditions page, light/dark mode switch and log out button. The supervisor and admin have extra options than regular members such as navigating to the medicines list in the database and medicine posts requests page.

## 4.5.7 Profile page

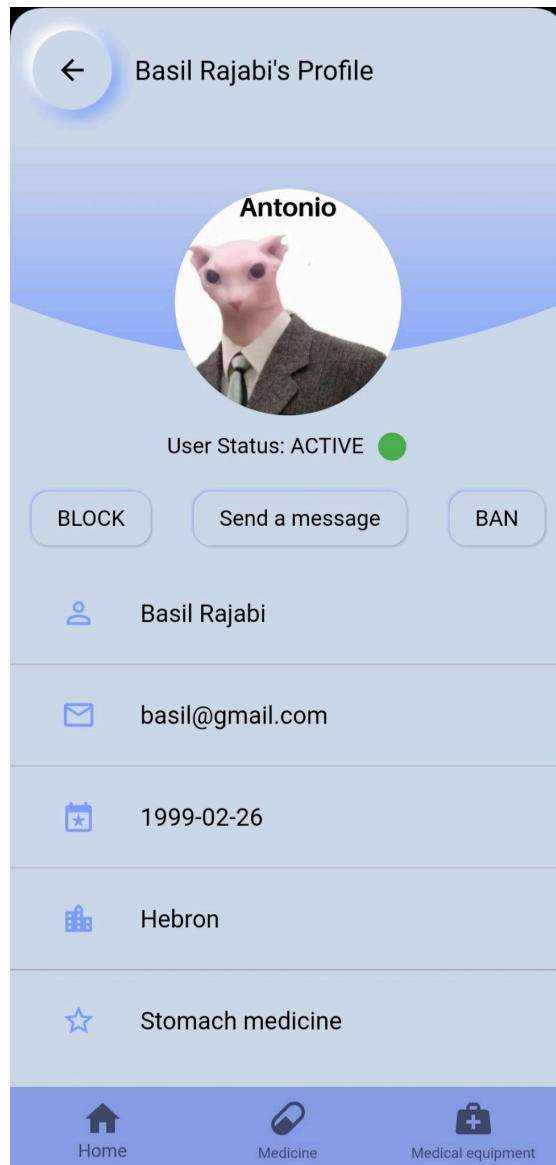


Figure 4.5.7.1 profile page of a member from admin's perspective

The profile page of the members shows when another member clicks on their name, it contains their basic information and send-a-message button. In addition, admin can see their status whether it's "active", "banned" or "blocked", also, admin sees extra two buttons, block and ban.

#### 4.5.8 Messages page:

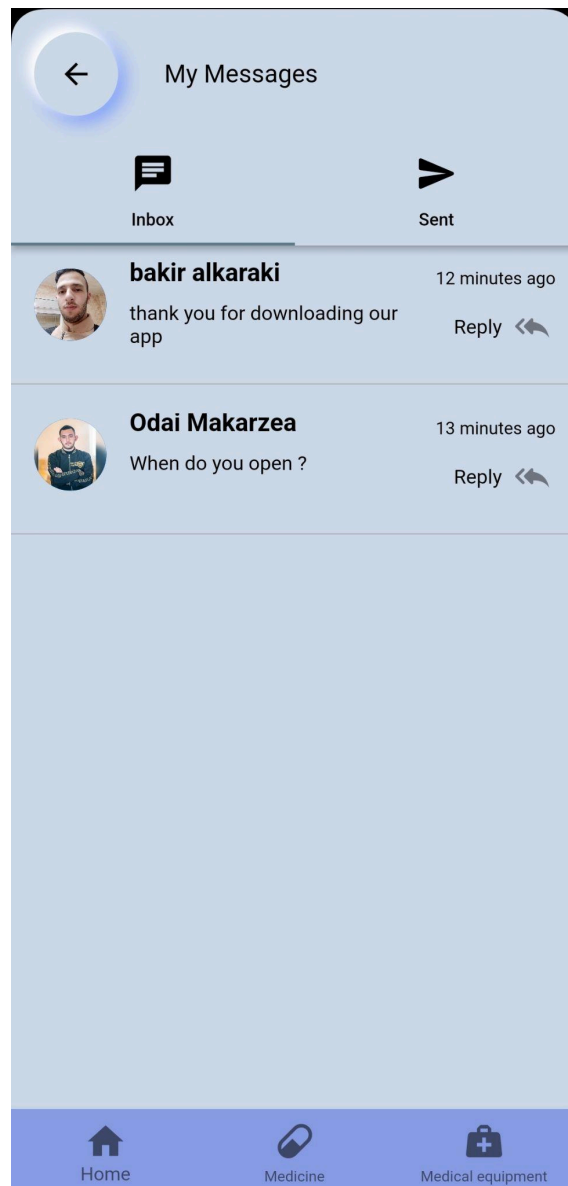


Figure 4.5.8.1 messages page

The messages page can navigate between inbox (incoming messages) and sent messages, it shows the name and picture of who sent the message, how much passed since they sent it, the body of the message and a reply button.

# Chapter 5

## Testing

## Chapter 5

### Testing

#### 5.1 Introduction:

In the stage of testing the system, we make sure that the system works correctly without any problems, and we also make sure that the functional and non-functional requirements of the project are completed, and that the system works accurately and quickly in completing the tasks. The stage of checking the system comes after the design and implementation of the system.

#### 5.2 Validation:

All information entered in all fields in the application (EditText) is checked to ensure that the data entered by the user matches all conditions as follows:

- Customize the field to match the entry
- The operation will not be executed if wrong data is entered
- The operation is not performed if the fields are empty

#### 5.3 System check process(API Request):

The system units were fully checked and ensured how they worked and the results of the examination were successful. The following tables are a review of some of the tests that we have carried out from the application side; Because it's the part that the user interacts with:

#	case	input	Expected output	Obtained output	Pass/Fail
1	Correct and complete information	email=bakir@gmail.com Password=1234	Successful login	As Expected	pass
2	Wrong email and Password	email=bakir@gmailcom Password= bakir123	Prevent post the request  Email is not correct...  Error Message	As Expected	Pass

Table 5.3.1 Login process

#	case	input	Expected output	Obtained output	Pass/Fail
1	Correct and complete information	medicineid=medid memberid=memberid quantity=1 shape=pills dose=500MG description=new post expirationdate=15/10/2023 Date = current.date() picture= image..	Successful added post	As Expected	pass
2	Medicine id not exist	medicineid= null /not found	Error message	As Expected	Pass
3	Image not uploaded, or description,dose and shape is empty	...	Prevent post the request	As Expected	Pass

Table 5.3.2 Add Medicine Post

#	case	input	Expected output	Obtained output	Pass/Fail
1	Correct and complete information	firstname=bakir lastname=alkaraki password=12345678Bak ir Email= <a href="mailto:bakir@gmail.com">bakir@gmail.com</a> picture= image DOB=15/03/2000 location=hebron interest=none phone=0597197233 gender=male  For NGO Description =asdasds Managername = namehere Address = Gaza Interest = none Ngoname = NameOfNgo	Successfully added	As Expected	pass
2	email already exist	email=bakir@gmail.com	Error message	As Expected	Pass
3	Password does not matching system validation - contain at least 8 character  Or other fields are empty	Password= 1234567  For ngo description= null Managername = null  For member firstname= null Lastname = null DOB= null	Prevent post the request	As Expected	Pass

Table 5.3.3 Add new member

#	case	input	Expected output	Obtained output	Pass/Fail
1	Correct and complete information	Medicine name=Anaflam Course = true alternative= Trufen sideeffects= feeling dizzy nausea general fatigue category=Analgesic storing=A place away from the sun needPrescription=true	Successful add	As Expected	pass
2	Medicine already exist	Medicine name = Acamol	Error message	As Expected	Pass
3	Medicine does not belong to any category, or fields are empty.	...	Prevent post the request	As Expected	Pass

Table 5.3.4 Add new medicine

#	case	input	Expected output	Obtained output	Pass/ Fail
1	Correct and complete information	Comment body = It's my first comment Date = current.date() Memberid = id Postid = id	Successful add	As Expected	pass
2	Comment body is empty	...	Prevent post the request	As Expected	Pass

Table 5.3.5 Add a Comment

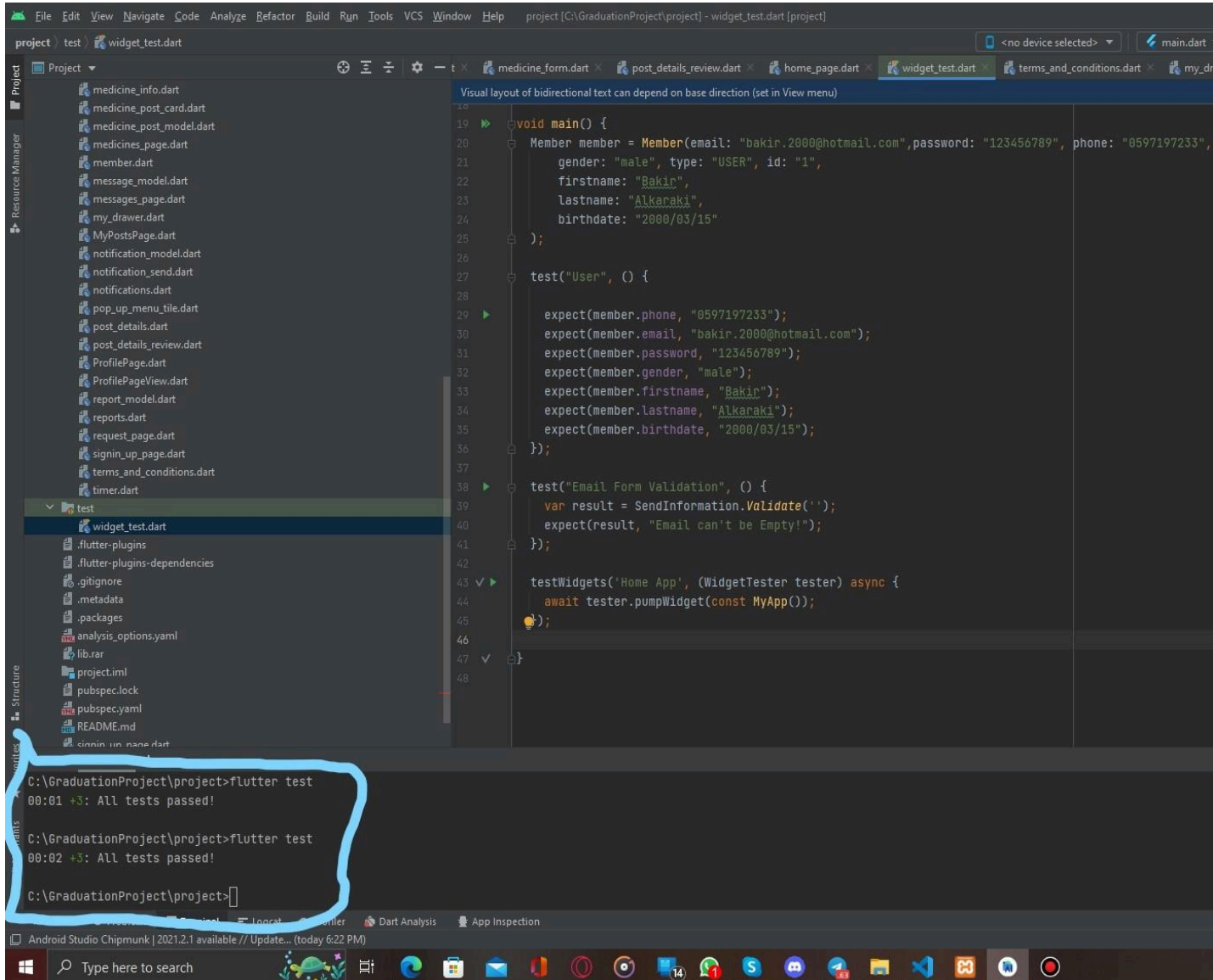


Figure 5.3.6 Flutter Unit testing for email textform and create member

# Chapter 6

## Conclusion

## **Chapter 6**

### **Conclusion**

#### **6.1 Conclusion**

This project was implemented to fulfill all the requirements, and was tested of all requirements and features, and the application will be launched on Play Store for Android users and App Store for IOS users. This project was developed based on the needs of a certain group of the Palestinian society of medicines and medical equipments, which can be scarce and difficult to purchase. This need has clearly emerged during the Covid-19 epidemic. Now people can donate their excess medicines and unused medical equipment via the application that we have developed instead of getting rid of them. Founding this project is necessary because it's the only application that provides such service for the Palestinian community. Via this application, users can publish a post with information about the medicine or the medical equipment that they wish to donate, and communicate with other users, under the supervision of the medical supervisor.

#### **6.2 Future plans**

- Enabling new features in the application.
- Provide Arabic language option for the application.
- Expanding the range of the application to include new countries.
- Include new categories for donation related to health and nutrition.

# **Appendix #1**

## **Privacy Policy**

## Privacy Policy

Last updated: December 08, 2021

This Privacy Policy describes Our policies and procedures on the collection, use and disclosure of Your information when You use the Service and tells You about Your privacy rights and how the law protects You.

We use Your Personal data to provide and improve the Service. By using the Service, You agree to the collection and use of information in accordance with this Privacy Policy.

## Interpretation and Definitions

---

### Interpretation

The words of which the initial letter is capitalized have meanings defined under the following conditions. The following definitions shall have the same meaning regardless of whether they appear in singular or in plural.

### Definitions

For the purposes of this Privacy Policy:

**Account** means a unique account created for You to access our Service or parts of our Service.

**Affiliate** means an entity that controls, is controlled by or is under common control with a party, where "control" means ownership of 50% or more of the shares, equity interest or other securities entitled to vote for election of directors or other managing authority.

**Application** means the software program provided by the Company downloaded by You on any electronic device, named MedShare

**Company** (referred to as either "the Company", "We", "Us" or "Our" in this Agreement) refers to MedShare, hebron ras joura.

**Country** refers to: Palestinian Territories

**Device** means any device that can access the Service such as a computer, a cell phone or a digital tablet.

**Personal Data** is any information that relates to an identified or identifiable individual.

**Service** refers to the Application.

**Service Provider** means any natural or legal person who processes the data on behalf of the Company. It refers to third-party companies or individuals employed by the Company to facilitate the Service, to provide the Service on behalf of the Company, to perform services related to the Service or to assist the Company in analyzing how the Service is used.

**Usage Data** refers to data collected automatically, either generated by the use of the Service or from the Service infrastructure itself (for example, the duration of a page visit).

**You** means the individual accessing or using the Service, or the company, or other legal entity on behalf of which such individual is accessing or using the Service, as applicable.

## **Collecting and Using Your Personal Data**

---

### **Types of Data Collected**

#### **Personal Data**

While using Our Service, We may ask You to provide Us with certain personally identifiable information that can be used to contact or identify You. Personally identifiable information may include, but is not limited to:

- Email address
- First name and last name
- Phone number
- Address, City
- Gender
- Date of birth
- Medicine category interest

#### **Information Collected while Using the Application**

While using Our Application, in order to provide features of Our Application, We may collect, with Your prior permission:

- Pictures and other information from your Device's camera and photo library

We use this information to provide features of Our Service, to improve and customize Our Service. The information may be uploaded to the Company's servers and/or a Service Provider's server or it may be simply stored on Your device.

You can enable or disable access to this information at any time, through Your Device settings.

#### **Use of Your Personal Data**

The Company may use Personal Data for the following purposes:

**To provide and maintain our Service**, including to monitor the usage of our Service.

**To manage Your Account:** to manage Your registration as a user of the Service. The Personal Data You provide can give You access to different functionalities of the Service that are available to You as a registered user.

**For the performance of a contract:** the development, compliance and undertaking of the purchase contract for the products, items or services You have purchased or of any other contract with Us through the Service.

**To contact You:** To contact You by email, telephone calls, SMS, or other equivalent forms of electronic communication, such as a mobile application's push notifications regarding updates or informative communications related to the functionalities, products or contracted services, including the security updates, when necessary or reasonable for their implementation.

**To provide You** with news, special offers and general information about other goods, services and events which we offer that are similar to those that you have already purchased or enquired about.

**To manage Your requests:** To attend and manage Your requests to Us.

**For business transfers:** We may use Your information to evaluate or conduct a merger, divestiture, restructuring, reorganization, dissolution, or other sale or transfer of some or all of Our assets, whether as a going concern or as part of bankruptcy, liquidation, or similar proceeding, in which Personal Data held by Us about our Service users is among the assets transferred.

**For other purposes:** We may use Your information for other purposes, such as data analysis, identifying usage trends, determining the effectiveness of our promotional campaigns and to evaluate and improve our Service, products, services, marketing and your experience.

We may share Your personal information in the following situations:

- **With Service Providers:** We may share Your personal information with Service Providers to monitor and analyze the use of our Service, to contact You.
- **For business transfers:** We may share or transfer Your personal information in connection with, or during negotiations of, any merger, sale of Company assets, financing, or acquisition of all or a portion of Our business to another company.
- **With Affiliates:** We may share Your information with Our affiliates, in which case we will require those affiliates to honor this Privacy Policy. Affiliates include Our parent company and any other subsidiaries, joint venture partners or other companies that We control or that are under common control with Us.
- **With business partners:** We may share Your information with Our business partners to offer You certain products, services or promotions.
- **With other users:** when You share personal information or otherwise interact in the public areas with other users, such information may be viewed by all users and may be publicly distributed outside.
- **With Your consent:** We may disclose Your personal information for any other purpose with Your consent.

### **Retention of Your Personal Data**

The Company will retain Your Personal Data only for as long as is necessary for the purposes set out in this Privacy Policy. We will retain and use Your Personal Data to the extent necessary to comply with our legal obligations (for example, if we are required to retain your data to comply with applicable laws), resolve disputes, and enforce our legal agreements and policies.

The Company will also retain Usage Data for internal analysis purposes. Usage Data is generally retained for a shorter period of time, except when this data is used to strengthen the security or to improve the functionality of Our Service, or We are legally obligated to retain this data for longer time periods.

### **Transfer of Your Personal Data**

Your information, including Personal Data, is processed at the Company's operating offices and in any other places where the parties involved in the processing are located. It means that this information may be transferred to — and maintained on — computers located outside of Your state, province, country or other governmental jurisdiction where the data protection laws may differ than those from Your jurisdiction.

Your consent to this Privacy Policy followed by Your submission of such information represents Your agreement to that transfer.

The Company will take all steps reasonably necessary to ensure that Your data is treated securely and in accordance with this Privacy Policy and no transfer of Your Personal Data will take place to an organization or a country unless there are adequate controls in place including the security of Your data and other personal information.

### **Disclosure of Your Personal Data**

#### **Business Transactions**

If the Company is involved in a merger, acquisition or asset sale, Your Personal Data may be transferred. We will provide notice before Your Personal Data is transferred and becomes subject to a different Privacy Policy.

#### **Law enforcement**

Under certain circumstances, the Company may be required to disclose Your Personal Data if required to do so by law or in response to valid requests by public authorities (e.g. a court or a government agency).

#### **Other legal requirements**

The Company may disclose Your Personal Data in the good faith belief that such action is necessary to:

- Comply with a legal obligation

- Protect and defend the rights or property of the Company
- Prevent or investigate possible wrongdoing in connection with the Service
- Protect the personal safety of Users of the Service or the public
- Protect against legal liability

### **Security of Your Personal Data**

The security of Your Personal Data is important to Us, but remember that no method of transmission over the Internet, or method of electronic storage is 100% secure. While We strive to use commercially acceptable means to protect Your Personal Data, We cannot guarantee its absolute security.

### **Children's Privacy**

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Our Service does not address anyone under the age of 13. We do not knowingly collect personally identifiable information from anyone under the age of 13. If You are a parent or guardian and You are aware that Your child has provided Us with Personal Data, please contact Us. If We become aware that We have collected Personal Data from anyone under the age of 13 without verification of parental consent, We take steps to remove that information from Our servers.

If We need to rely on consent as a legal basis for processing Your information and Your country requires consent from a parent, We may require Your parent's consent before We collect and use that information.

### **Links to Other Websites**

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Our Service may contain links to other websites that are not operated by Us. If You click on a third party link, You will be directed to that third party's site. We strongly advise You to review the Privacy Policy of every site You visit.

We have no control over and assume no responsibility for the content, privacy policies or practices of any third party sites or services.

### **Changes to this Privacy Policy**

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We may update Our Privacy Policy from time to time. We will notify You of any changes by posting the new Privacy Policy on this page.

We will let You know via email and/or a prominent notice on Our Service, prior to the change becoming effective and update the "Last updated" date at the top of this Privacy Policy.

You are advised to review this Privacy Policy periodically for any changes. Changes to this Privacy Policy are effective when they are posted on this page.

## Contact Us

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If you have any questions about this Privacy Policy, You can contact us:

- By email: [181086@ppu.edu.ps](mailto:181086@ppu.edu.ps)
- Or email: [181054@ppu.edu.ps](mailto:181054@ppu.edu.ps)

# **Appendix #2**

## **Terms and Conditions**

## **Terms and Conditions**

Welcome to MedShare!

These terms and conditions outline the rules and regulations for the use of MedShare's mobile application.

By accessing this application we assume you accept these terms and conditions. Do not continue to use MedShare if you do not agree to take all of the terms and conditions stated on this page.

The following terminology applies to these Terms and Conditions, Privacy Statement and Disclaimer Notice and all Agreements: "Client", "You" and "Your" refers to you, the person log on this website and compliant to the Company's terms and conditions. "The Company", "Ourselves", "We", "Our" and "Us", refers to our Company. "Party", "Parties", or "Us", refers to both the Client and ourselves. All terms refer to the offer, acceptance and consideration of payment necessary to undertake the process of our assistance to the Client in the most appropriate manner for the express purpose of meeting the Client's needs in respect of provision of the Company's stated services, in accordance with and subject to, prevailing law of Netherlands. Any use of the above terminology or other words in the singular, plural, capitalization and/or he/she or they, are taken as interchangeable and therefore as referring to the same.

## **License**

Unless otherwise stated, MedShare and/or its licensors own the intellectual property rights for all material on MedShare. All intellectual property rights are reserved. You may access this from MedShare for your own personal use subjected to restrictions set in these terms and conditions.

You must not:

- Republish material from MedShare
- Sell, rent or sub-license material from MedShare
- Reproduce, duplicate or copy material from MedShare
- Redistribute content from MedShare

This Agreement shall begin on the date hereof December 08, 2021.

Parts of this application offer an opportunity for users to post and exchange opinions and information in certain areas of the application. MedShare does not filter, edit, publish or review Comments prior to their presence on the application. Comments do not reflect the views and opinions of MedShare, its agents and/or affiliates. Comments reflect the views and opinions of the person who posts their views and opinions. To the extent permitted by applicable laws,

MedShare shall not be liable for the Comments or for any liability, damages or expenses caused and/or suffered as a result of any use of and/or posting of and/or appearance of the Comments on this application.

MedShare reserves the right to monitor all Comments and to remove any Comments which can be considered inappropriate, offensive or causes breach of these Terms and Conditions.

You warrant and represent that:

- You are entitled to post the Comments on our application and have all necessary licenses and consents to do so;
- The Comments do not invade any intellectual property right, including without limitation copyright, patent or trademark of any third party;
- The Comments do not contain any defamatory, libelous, offensive, indecent or otherwise unlawful material which is an invasion of privacy
- The Comments will not be used to solicit or promote business or custom or present commercial activities or unlawful activity.

You hereby grant MedShare a non-exclusive license to use, reproduce, edit and authorize others to use, reproduce and edit any of your Comments in any and all forms, formats or media.

### **Hyperlinking to our Content**

The following organizations may link to our application without prior written approval:

- Government agencies;
- Search engines;
- News organizations;
- Online directory distributors may link to our application in the same manner as they hyperlink to the Websites of other listed businesses; and
- System wide Accredited Businesses except soliciting non-profit organizations, charity shopping malls, and charity fundraising groups which may not hyperlink to our application.

These organizations may link to our home page, to publications or to other Website information so long as the link: (a) is not in any way deceptive; (b) does not falsely imply sponsorship, endorsement or approval of the linking party and its products and/or services; and (c) fits within the context of the linking party's site.

We may consider and approve other link requests from the following types of organizations:

- commonly-known consumer and/or business information sources;

- dot.com community sites;
- associations or other groups representing charities;
- online directory distributors;
- internet portals;
- accounting, law and consulting firms; and
- educational institutions and trade associations.

We will approve link requests from these organizations if we decide that: (a) the link would not make us look unfavorably to ourselves or to our accredited businesses; (b) the organization does not have any negative records with us; (c) the benefit to us from the visibility of the hyperlink compensates the absence of MedShare; and (d) the link is in the context of general resource information.

These organizations may link to our home page so long as the link: (a) is not in any way deceptive; (b) does not falsely imply sponsorship, endorsement or approval of the linking party and its products or services; and (c) fits within the context of the linking party's site.

If you are one of the organizations listed in paragraph 2 above and are interested in linking to our application, you must inform us by sending an email to MedShare. Please include your name, your organization name, contact information as well as the URL of your site, a list of any URLs from which you intend to link to our application, and a list of the URLs on our site to which you would like to link. Wait 2-3 weeks for a response.

Approved organizations may hyperlink to our application as follows:

- By use of our corporate name; or
- By use of the uniform resource locator being linked to; or
- By use of any other description of our application being linked to that makes sense within the context and format of content on the linking party's site.

No use of MedShare's logo or other artwork will be allowed for linking absent a trademark license agreement.

### **Content Liability**

We shall not be held responsible for any content that appears on your application. You agree to protect and defend us against all claims that are rising on your application. No link(s) should appear on any application that may be interpreted as libelous, obscene or criminal, or which infringes, otherwise violates, or advocates the infringement or other violation of, any third party rights.

### **Your Privacy**

Please read Privacy Policy

### **Reservation of Rights**

We reserve the right to request that you remove all links or any particular link to our application. You approve to immediately remove all links to our application upon request. We also reserve the right to amend these terms and conditions and its linking policy at any time. By continuously linking to our application, you agree to be bound to and follow these linking terms and conditions.

### **Removal of links from our application**

If you find any link on our application that is offensive for any reason, you are free to contact and inform us any moment. We will consider requests to remove links but we are not obligated to do so or to respond to you directly.

We do not ensure that the information on this application is correct, we do not warrant its completeness or accuracy; nor do we promise to ensure that the application remains available or that the material on the application is kept up to date.

### **Disclaimer**

The information provided by MedShare (“we,” “us,” or “our”) on our mobile application is for general information purposes only. All information on our mobile applications is provided in good faith, however we make no representation or warranty of any kind, express or implied, regarding the accuracy, adequacy, validity, reliability, availability or completeness of any information on our mobile application. UNDER NO CIRCUMSTANCE SHALL WE HAVE ANY LIABILITY TO YOU FOR ANY LOSS OR DAMAGE OF ANY KIND INCURRED AS A RESULT OF THE USE OF OUR MOBILE APPLICATION OR RELIANCE ON ANY INFORMATION PROVIDED ON OUR MOBILE APPLICATION. YOUR USE OF OUR MOBILE APPLICATION AND YOUR RELIANCE ON ANY INFORMATION ON OUR MOBILE APPLICATION IS SOLELY AT YOUR OWN RISK.