

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

AN-NAJAH NATIONAL UNIVERSITY



FACULTY OF ENGINEERING AND INFORMATION  
TECHNOLOGY

Computer Engineering Department

Software Graduation Project

Hand In Hand

STUDENTS

AYA QARTALLO

RAYA AHMAD

ADVISORS

DR. SUFYAN SAMARA

Presented in partial fulfillment of the requirements for Bachelor degree in  
Computer Engineering.

JAN, 2023

## **Acknowledgement**

We express our sincere gratitude to Allah and to our supervisor, Dr. Sufyan Samara, for his guidance, and we thank our family and friends for their psychological support.

## **Disclaimer**

This report was written by Aya Qartallo and Raya Ahmad, in the Department of Computer Engineering, College of Engineering, and An-Najah National University. This report has not been modified and evaluated because it is considered part of the evaluation and may contain grammatical errors as well as errors in content. It is worth noting that the opinions expressed in it, along with any results and recommendations, are for students only. AnNajah National University accepts no responsibility for the consequences of using this report for a purpose other than the purpose for which it was intended.

# Contents

<b>Acknowledgement</b>	<b>1</b>
<b>Disclaimer</b>	<b>1</b>
<b>Abstract</b>	<b>5</b>
<b>1 Introduction</b>	<b>6</b>
1.1 Statement of the problem . . . . .	6
1.2 Objectives . . . . .	6
1.3 Scope of the work . . . . .	6
1.4 Significance of the work . . . . .	6
1.5 Organization . . . . .	7
<b>2 Constraints, Standards and Earlier Coursework</b>	<b>7</b>
2.1 Constraints . . . . .	7
2.2 Standards . . . . .	8
2.3 Earlier coursework . . . . .	8
<b>3 Literature Review</b>	<b>8</b>
<b>4 Methodology</b>	<b>9</b>
4.1 Technologies . . . . .	9
4.1.1 Server side API . . . . .	9
4.1.2 Database . . . . .	9
4.1.3 UI Design . . . . .	9
4.1.4 IDEs . . . . .	10
4.2 Project Architecture . . . . .	10
4.3 Project Design . . . . .	11
4.3.1 Admin/Staff Website . . . . .	11
4.3.2 Users Application . . . . .	29
<b>5 Results and Discussion</b>	<b>57</b>
<b>6 Conclusion</b>	<b>57</b>
6.1 Summary . . . . .	57
6.2 Future Work . . . . .	57

## List of Figures

1	Project Architecture . . . . .	10
2	Admin/Employees Login page . . . . .	11
3	Admin/Employees Sign Up page . . . . .	12
4	Admin/Employees Reset Password page . . . . .	13
5	Scholarships staff page . . . . .	13
6	Add scholarships page . . . . .	14
7	Make an appointment page . . . . .	15
8	Make an appointment page . . . . .	15
9	Make an appointment page . . . . .	16
10	Make an appointment page . . . . .	16
11	User Information page . . . . .	17
12	Scholarship staff dashboard . . . . .	18
13	Loans staff page . . . . .	18
14	Add loans page . . . . .	19
15	Loan Request page . . . . .	20
16	Loans staff dashboard . . . . .	21
17	Outstanding Students staff page . . . . .	21
18	Add Outstanding Students page . . . . .	22
19	Outstanding Students staff dashboard . . . . .	23
20	Messages staff page . . . . .	24
21	Messages page . . . . .	24
22	Messages page . . . . .	25
23	Messages page . . . . .	25
24	Donation requests page . . . . .	26
25	Admin page . . . . .	26
26	Add Joint Stock Companies page . . . . .	27
27	Employee's Request page . . . . .	27
28	Admin Dashboard page . . . . .	28
29	Login page . . . . .	29
30	Signup page . . . . .	30
31	Forget Password page . . . . .	31
32	Home page . . . . .	32
33	Drawer page . . . . .	33
34	Scholarship Sections . . . . .	34
35	Loans Sections . . . . .	35
36	Joint Stock Companies Section . . . . .	36
37	Chat page . . . . .	37
38	Profile page - Personal Information . . . . .	38

39	Profile page - Contact Information . . . . .	39
40	Profile page - Educational Information . . . . .	40
41	Family Data page - section 1 . . . . .	42
42	Family Data page - section 2 . . . . .	43
43	Family Data page - section 3 . . . . .	44
44	Outstanding Students page . . . . .	45
45	Donations page . . . . .	46
46	Add Donation Requests page . . . . .	47
47	Donate page . . . . .	48
48	Settings page . . . . .	49
49	Reset Password page . . . . .	50
50	Language Feature . . . . .	51
51	Dark Theme Feature . . . . .	52
52	Contact Us page - Send Message Section . . . . .	53
53	Contact Us page - Messages From Admin Section . . . . .	54
54	Receiving Notifications . . . . .	55
55	Notifications page . . . . .	56

## Abstract

At the beginning of each semester, we notice that there are many publications on university student groups on Facebook, including the presence of some students who are unable to pay tuition fees in whole or in part due to difficult financial conditions, and others who have difficulty in purchasing one of the requirements for their studies, such as a laptop, etc. From here was the birth of the idea of our project. The project aims to help needy students pay their tuition fees, as well as to facilitate donors to find those students. Our application includes many features, including the presence of a personal account for each student from the beneficiaries, in which personal information about the student is stored, specifically the information needed by the Loans and Grants Department for each student, view available scholarships and loans suitable with their qualifications, notify users when a new scholarship or loan is available, promotional ads for hardworking students to urge people to donate for them, contracting with companies of interest so that they provide discounts on supplies needed for students or supporting several students, in exchange for posting advertisements for these companies, chatting between users, searching, light/dark theme, and supporting two languages are features in our project.

We visited the university's grants and loans section to help us add more features to the application. In the end, the idea of our project has not been implemented before exactly as we did, but there are some websites for donations only and others for loans.

# **1 Introduction**

## **1.1 Statement of the problem**

Some needy students face a problem when they want to search for study grants or study loans to be able to complete their studying years, they may not pay attention to advertising for them and miss the application period, for other needy students may feel shy to post a poster on one of the social media like Facebook asking for financial support to complete their studying fees or to buy one of their studying requirements, on the other side, we find students who would like to help their colleagues financially but do not know how to reach them. These problems represent the main motivation for our project which aims to solve them.

## **1.2 Objectives**

Through our project, we seek to create a program that collects different types of financial support for needy students to complete their university studies, which makes the search process for loans or grants easier as all the available loans and grants for each student are shown on the main page of the application depending on the profile of the student. This will save time and effort for the students instead of searching in different places. Notifications will be sent to the students when any loan or grant is posted to attract their attention to apply before the specified period ends. Another aim is to submit evidence papers electronically to simplify the process for the students. Finally, to make the process of collecting donations for any needy student through this application instead of resorting to social media sites, there is a specific place where students can post any help request, and notifications will be sent to any student registered as a donor.

## **1.3 Scope of the work**

In our project, we focused mainly on the Department of Loans and Grants. We made several visits to the Old Branch of the Department of Loans and Grants at An-Najah National University. The main objective of this was to find out the personal information needed by this department about the student and the mechanism for selecting students to obtain a scholarship or loan in general. Finally, the pages that the admin and staff need to simplify their work.

## **1.4 Significance of the work**

Our project mainly contributes to finding a smart solution to the problems of needy students in finding financial support to complete their university education. On the

main page of the application, only grants and loans that are compatible with the student's college and GPA are displayed, which ensures a greater opportunity for this student to accept his order, and the search feature and joint stock companies are also available about a loan or a grant through the name to simplify the search process for the student. A chat is also available that brings together all users of the application so that the student can ask any question related to grants and loans or the method of submission. There is also a dedicated place in the application to publish any post to collect donations or even request assistance in purchasing one of the study supplies. Notifications will be sent to students when any grant or loan is published, and also notifications will be sent to students affiliated with donors when any post is published to request financial assistance. Finally, there is a dedicated place to publish about the outstanding students who are beneficiaries of this aid in order to encourage the donation process for students.

## **1.5 Organization**

The report is divided into different sections, the first one is the introduction, then we move to talk about the restrictions, standards, and courses that we learned before starting the project, after that, we move to the literature review section, which explains the collection of previous experiences and opinions on the topic of our project, then we show the methodology used for our project. From the data and visits that we made at the beginning, then we talk about the languages and tools used in the project, then the method of implementing and presenting the project by explaining each feature with the attached pictures, and finally, we show the results and a summary of our project.

## **2 Constraints, Standards and Earlier Coursework**

### **2.1 Constraints**

During the period of work on the project, we faced several difficulties, including:

1. Communicate with the official in the Loans and Aid Department to collect more information about loans, grants, and the necessary data from applicants for this assistance.
2. Some techniques and languages used were self-taught during this period, which required teaching and implementation at the same time.
3. The most difficult thing was to find clear sources for learning Flutter. Which required additional time and effort.

## 2.2 Standards

In our system, the Model View Controller style was applied. To make it simpler to track the progress of the project, we can break it into three parts. These elements are listed as follows:

1. Model: represents the database we used, MySQL, SQLite(1) Firebase(2). In order to keep updating itself, it will respond to both view requests and console requests.
2. Presentation: It represents the GUI that students will use to apply for a scholarship or loan and donations from other students, and the GUI for the admin and staff to deal with it.
3. Console: It stands for the PHP-built back-end server that enables communication and cooperation between the model and opinion. It is also in charge of controlling application logic.

## 2.3 Earlier coursework

In terms of previous courses, we have written clean, highly coherent, and lowly coupling code using what we learned in the Software Engineering and Advanced Software Engineering course. Research and critical thinking skills course to write this report. Writing admin pages requires a web development course. There are also online courses for learning Dart (3) Flutter(4) (5).

## 3 Literature Review

Scholarships and loans are of great benefit as they facilitate the lives of students who are unable to afford tuition fees. There is a need for an application that facilitates the process of searching for scholarships or loans for the student through a single application that combines them, and thus there is no need to search on other sites, by searching for websites and applications similar to our application, we found the "Student Loan Fund" (6) website that specializes only in student loan requests and submitting identification papers through the university, but we seek in our application to exploit technology to facilitate for students, as all required papers are attached electronically, and another example is the website "University Scholarships Fund"(7) only specializes in scholarships, as advertisements for some scholarships are posted on it, as for providing support for the purchase of some study supplies for students, we did not notice that there was any idea regarding this issue. Therefore, through our project, we seek to provide an application that the student can access to find all the aid he needs to complete his university education, as it includes Palestinian students from all universities.

## 4 Methodology

### 4.1 Technologies

This section will discuss all of the technologies, tools, and programming languages that we used throughout the project to create the website and the application.

#### 4.1.1 Server side API

We used PHP for several reasons: It is an open source and popular language, the flexibility of PHP makes it easy to integrate with many different databases, including MySQL which we used in our project, easy to maintain, and has enhanced security features, finally we have previous knowledge in this language as we took it as a part of web course at the university.

#### 4.1.2 Database

We used different databases in our project the first one is MySQL an open-source, free database. With this database, we can effectively manage our data because it is a highly strong, reliable, and stable solution. In terms of dependability and security, it is one of the most widely used database management systems and it ensures to get a high-efficiency performance, we used this database mainly to store the data remotely. The second one is SQFLite(1) a database plugin for flutter. It is highly reliable and embedded database engine. We used it to store the family and profile data locally, which makes the process of retrieving these data when a user opens the app faster than bringing the data from the remote database. The last one is Firebase(2) a platform for building web and mobile applications and offers a variety of tools and services to developers so they can build sophisticated apps and expand their user bases. We used it to build chat and send notifications to the users.

#### 4.1.3 UI Design

We used the Flutter framework for a mobile application since it is open-source, cross-platform, built in the Dart programming language, has free, quick testing, and is the most powerful in terms of performance. For the website, we used HTML5 a common markup language for creating web pages, CSS to create the style for web pages, and Java Script a scripting language that enables us to create dynamically updating content.

#### 4.1.4 IDEs

We chose VS Code because it is a code editor with support for development processes like debugging, playback, and version control. It is also lightweight, user-friendly, and available for any desired operating system. We used it for the mobile app. Additionally, we tested the mobile application code using an Android app emulator. For the website we used PHPStorm a great program for web development, this IDE makes it easy to work with other languages like HTML5, CSS, and JavaScript which we used in our project.

## 4.2 Project Architecture

In our project, we used Model View Controller(MVC) architecture which its separates into three parts. It is commonly used in web development framework since we can achieve a scalable project.

In the first section, the model holds all of the data in the project that is transmitted from the view or console, as it does in our project (MySQL, SQLite, Firebase). This element of the structure (MySQL) is shared by both the app and the website, which each have their own view and controller. The second component is the view, which displays the project's user interface; in our case, we have two views, one for the app (Flutter) and one for the website (HTML5/CSS, JavaScript). Finally, the Controller connects the View and Model by performing all activities between them, sending requests and answers, and processing data (PHP).

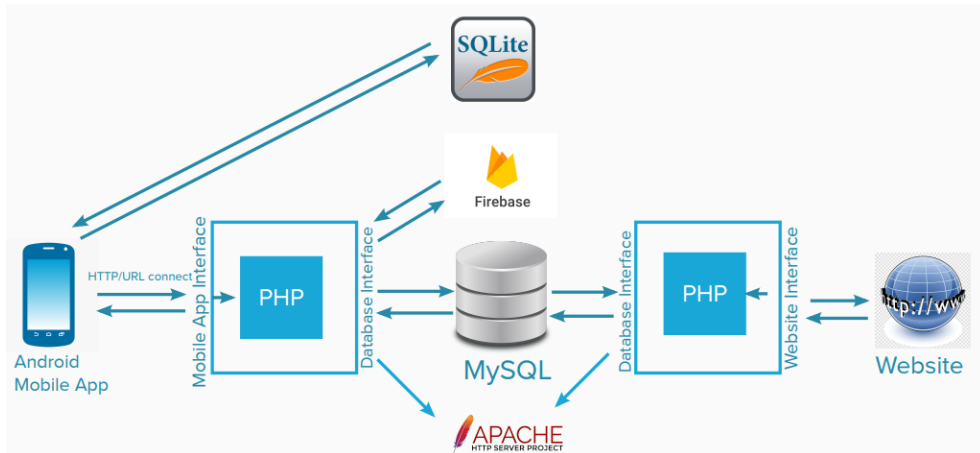


Figure 1: Project Architecture

## 4.3 Project Design

### 4.3.1 Admin/Staff Website

Login page allows the admin or staff to log in to the website if he or she has an account. This is done by entering his or her username and password in the fields, then clicking on the "Login" button. It will then move him or her to the appropriate page depending on if he or she is an admin or what type of staff he or she is. If the admin/staff forget his/her password he/she can change it by clicking on "Forget Password". In addition, if anyone wants to join the staff, he/she can click on the "Sign Up" button.

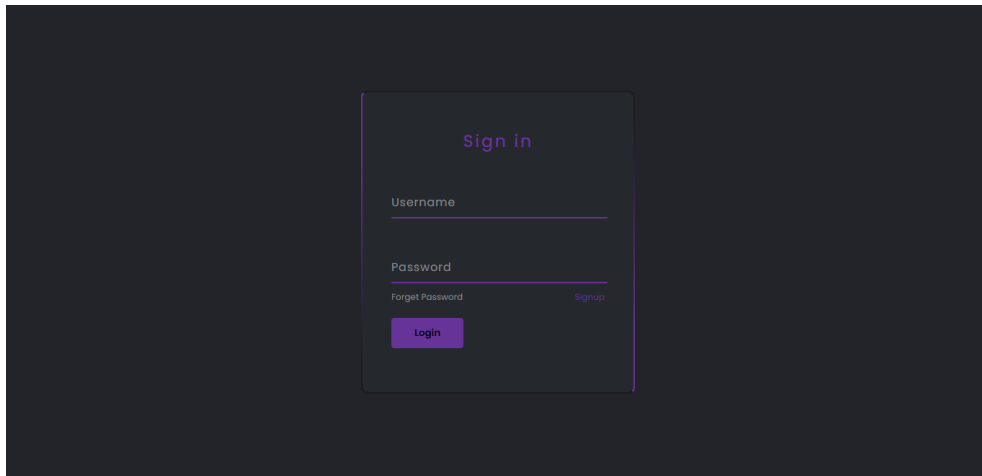
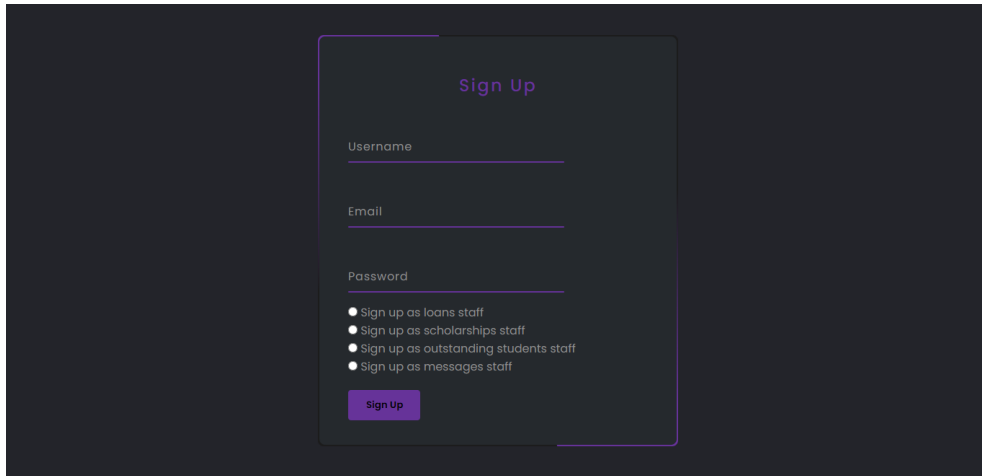


Figure 2: Admin/Employees Login page

Sign Up page allows to sign up in the website, its done by entering the username, email, password and choose the type of the employee he/she want to sign up as it then click on "Sign up" button. Then his/her request will go to "Employee's Request" in the admin page.



The image shows a dark-themed 'Sign Up' form. At the top, the title 'Sign Up' is displayed in a light blue font. Below the title are three input fields: 'Username', 'Email', and 'Password', each with a light blue underline. Under the 'Password' field, there is a list of four radio button options: 'Sign up as loans staff', 'Sign up as scholarships staff', 'Sign up as outstanding students staff', and 'Sign up as messages staff'. At the bottom of the form is a blue 'Sign Up' button.

Figure 3: Admin/Employees Sign Up page

The Reset Password page allows the administrator or the employee to reset their password.

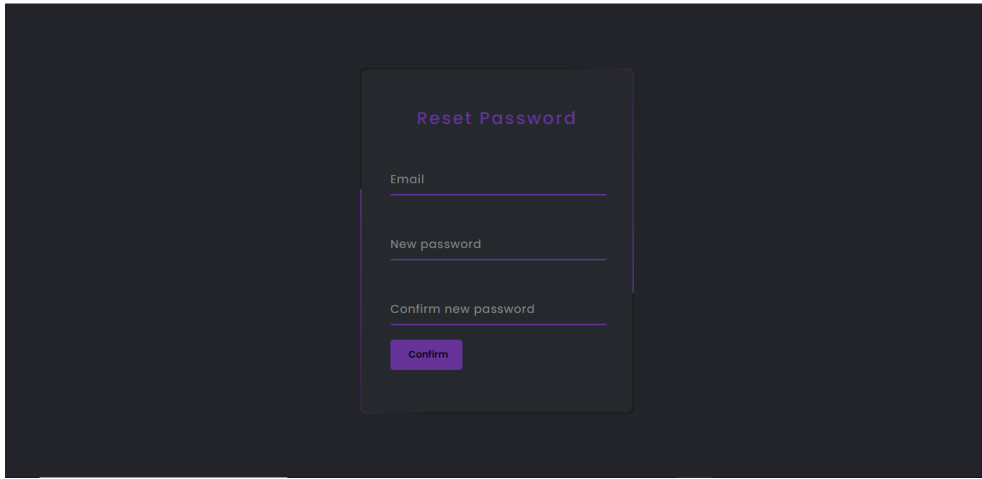


Figure 4: Admin/Employees Reset Password page

After logged in if the account is for scholarships staff, then this page will appear. Click the "Logout" button to exit the Scholarships staff page.

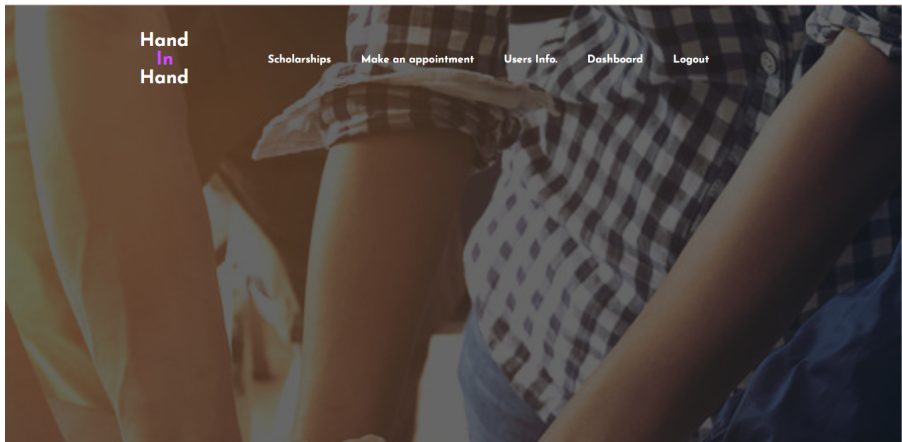


Figure 5: Scholarships staff page

To add a scholarship, click on the "Scholarships" in nav bar. Then enter the scholarship's name, start date and end date of submission, description, conditions, percentage, college, GPA, and attachments required to apply for this scholarship, then click on the "Save" button.

The screenshot shows a web application interface for adding a scholarship. The background is a dark image of hands being held together. At the top left, the logo "Hand In Hand" is visible. A navigation bar at the top contains the following items: "Scholarships", "Make an appointment", "Users Info", and "Dashboard". The main content area is titled "Scholarships" and contains the following form fields:

- Scholarship Name:** A text input field.
- Submission Period:** Two date pickers labeled "From" and "To", both showing the date "شنبه ۱۳۹۷/۰۷/۰۱".
- Description:** A large text area.
- Conditions:** A text area.
- Scholarship Percentage:** A text area.
- College:** A dropdown menu with the following options: "Business school", "Faculty of Educational Sciences", "Faculty of Pharmacy", and "Advocacy College".
- GPA:** A dropdown menu with the value "4" selected.
- + Add Attachment:** A button at the bottom of the form.

Figure 6: Add scholarships page

Some scholarship donors would like to interview the scholarship applicants to find out who is eligible to receive it. Through this page, the employee can schedule an appointment for each applicant for this scholarship.

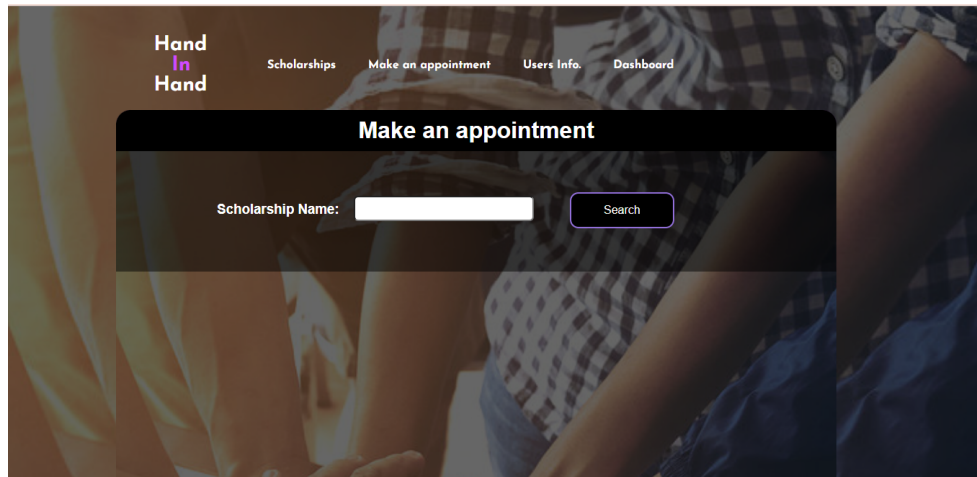


Figure 7: Make an appointment page

When entering a part of the scholarship name, the employee will see all the scholarships that contain this part, and he can when clicking on one of them, view the information of all applicants for this scholarship.

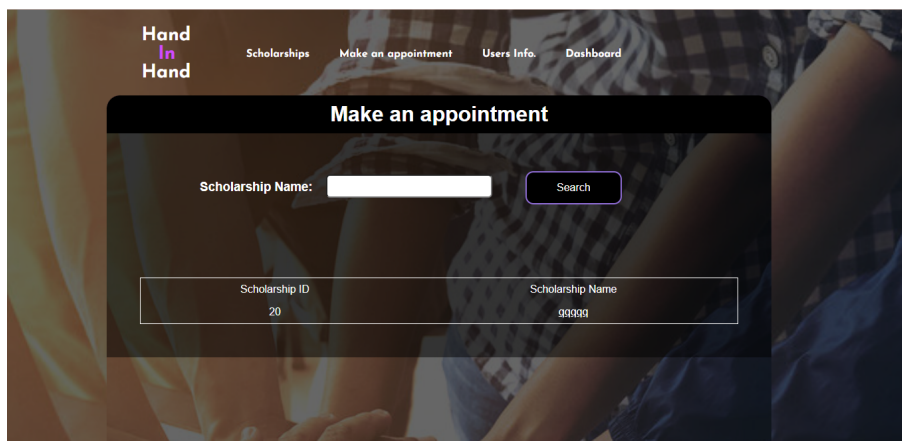


Figure 8: Make an appointment page

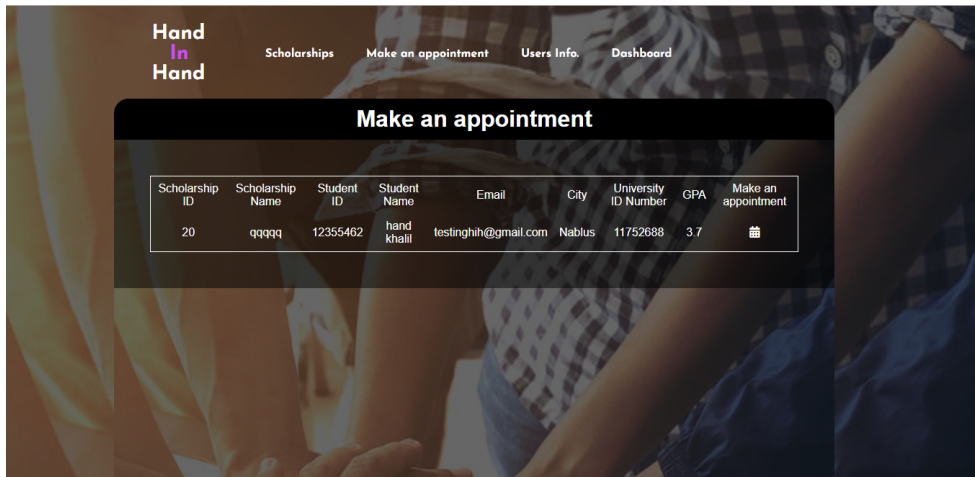


Figure 9: Make an appointment page

When you click on the "calendar" icon in Figure 9 above, this page will appear, through it the employee will schedule an interview with the scholarship applicant.

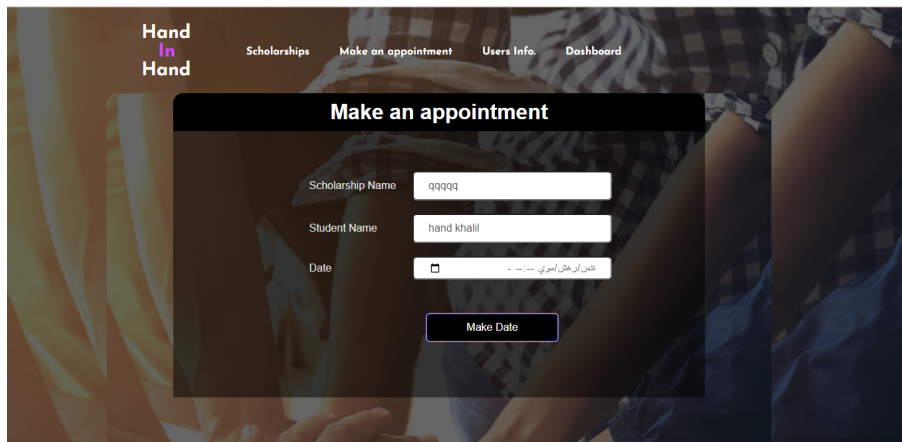


Figure 10: Make an appointment page

The employee can find out information about the users of the application by clicking on “User Info”. The information of a specific user is searched through the student id card number, which the employee can find by searching for it by entering the student name.

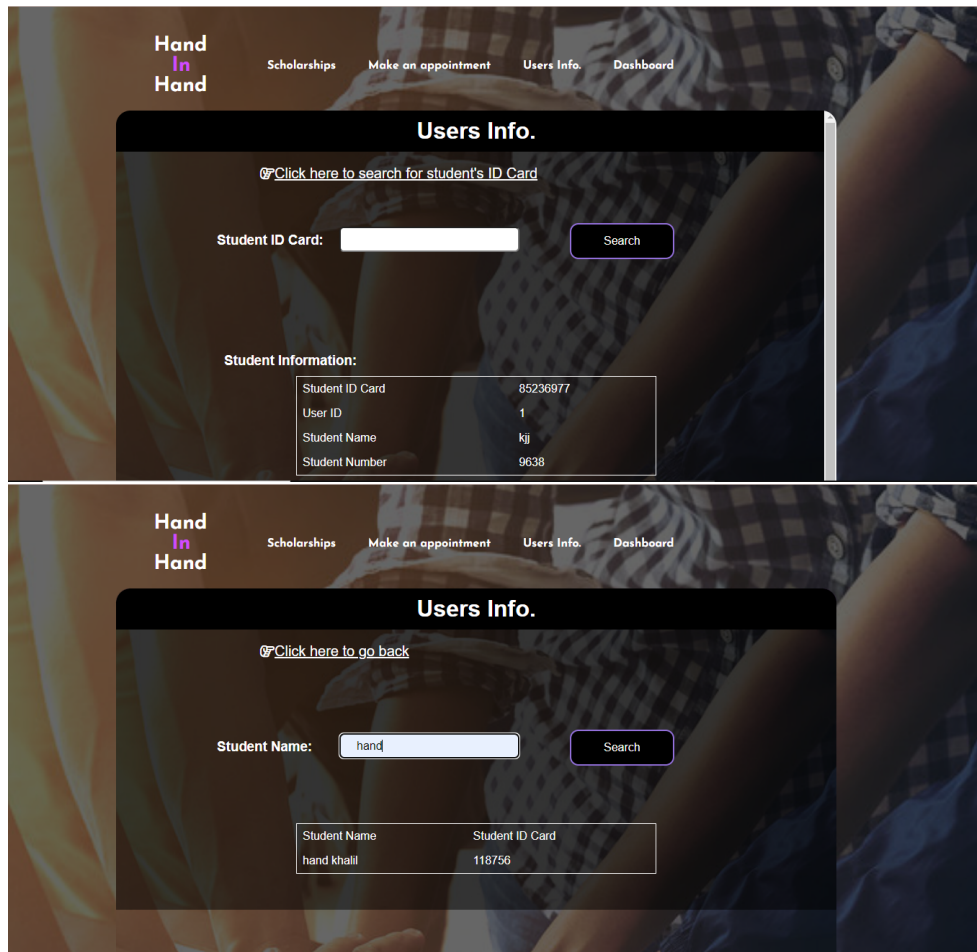


Figure 11: User Information page

Scholarship staff can see statistics about scholarships on the dashboard page. The dashboard page displays a chart of the number of scholarships and a chart of the number of applicants for a specific scholarship.

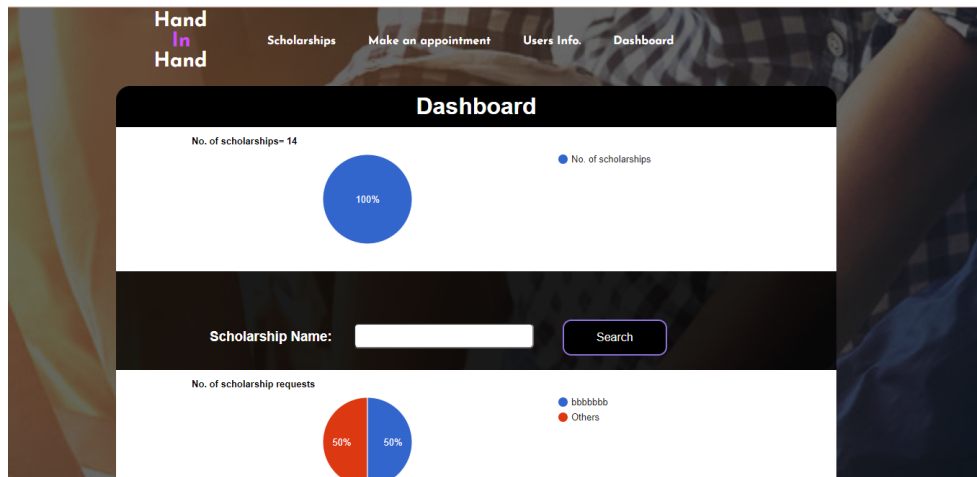


Figure 12: Scholarship staff dashboard

After logged in if the account is for loans staff, then this page will appear. Click the "Logout" button to exit the outstanding students staff page.

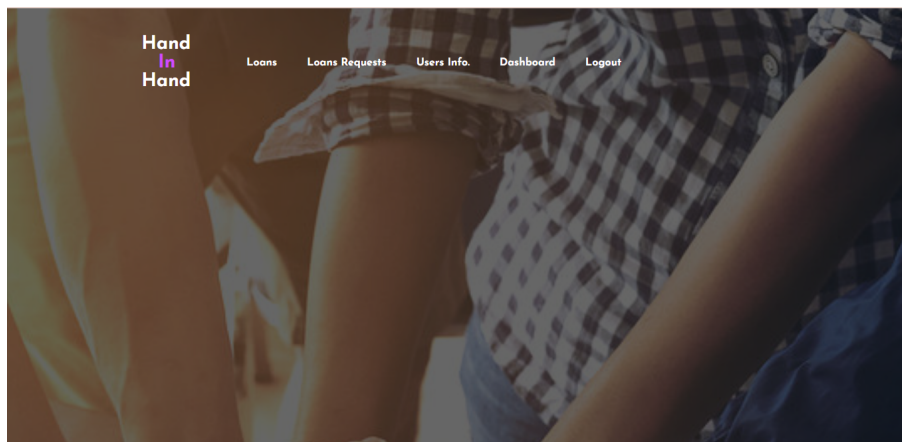


Figure 13: Loans staff page

To add a loans, click on the "Loans" in nav bar. Then enter the loan's name, start date and end date of submission, description, conditions, percentage, college, GPA, and attachments required to apply for this loan, then click on the "Save" button.

The screenshot shows the 'Add Loans' page within the 'Hand In Hand' application. The navigation bar at the top includes 'Loans', 'Loans Requests', 'Users Info.', and 'Dashboard'. The main form is titled 'Loans' and contains the following fields:

- Loan Name:** A text input field.
- Loan Period:** Two date pickers labeled 'From' and 'To', both showing the date '٢٠٢٠/٠١/٠١'.
- Description:** A large text area.
- Conditions:** A text area.
- Loan Percentage:** A text input field.
- College:** A dropdown menu with options: 'Business school', 'Faculty of Educational Sciences', 'faculty of Pharmacy', and 'Advocacy College'.
- GPA:** A text input field.

An '+ Add Attachment' button is positioned at the bottom of the form.

Figure 14: Add loans page

When entering a part of the loan name, the employee will see all the Loans that contain this part, and he can when clicking on one of them, view the information of all applicants for this loan.

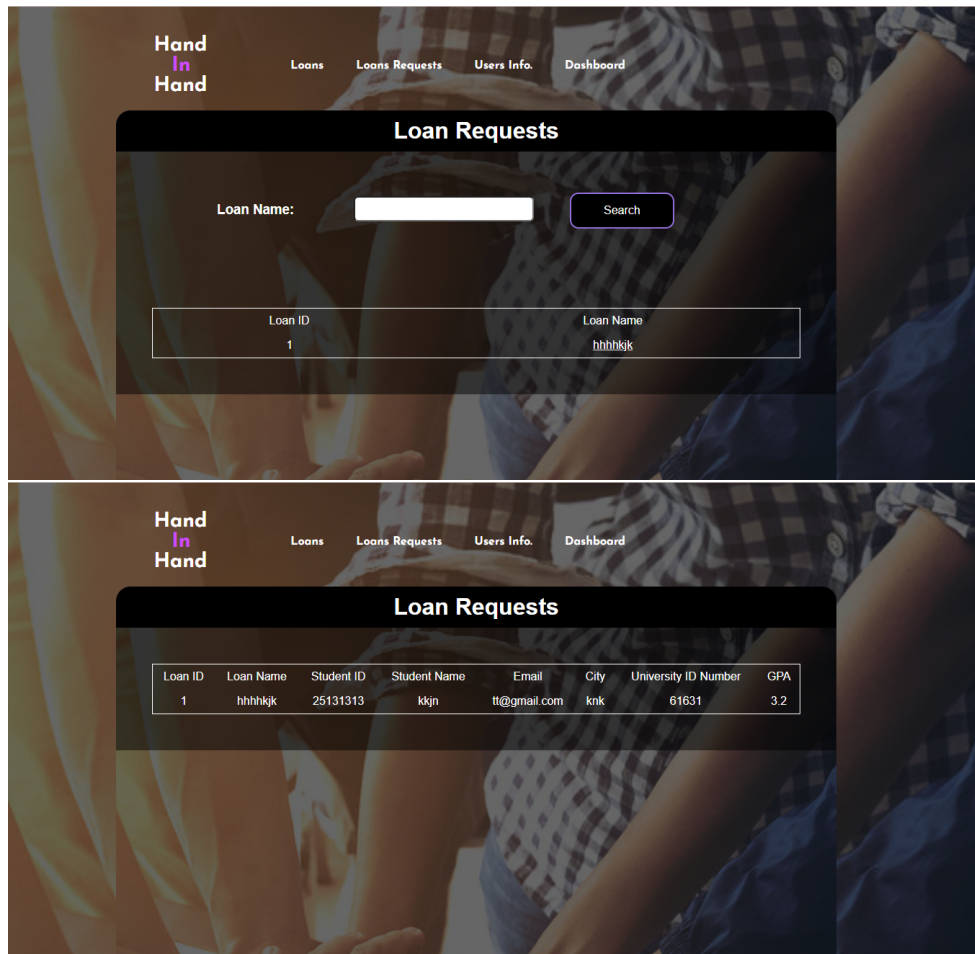


Figure 15: Loan Request page

Also, the loans staff can see all information about a specific student by clicking on "User Info," just like on the scholarships staff page.

Loans staff can see statistics about loans on the dashboard page. The dashboard page displays a chart of the number of loans and a chart of the number of applicants for a specific loan.

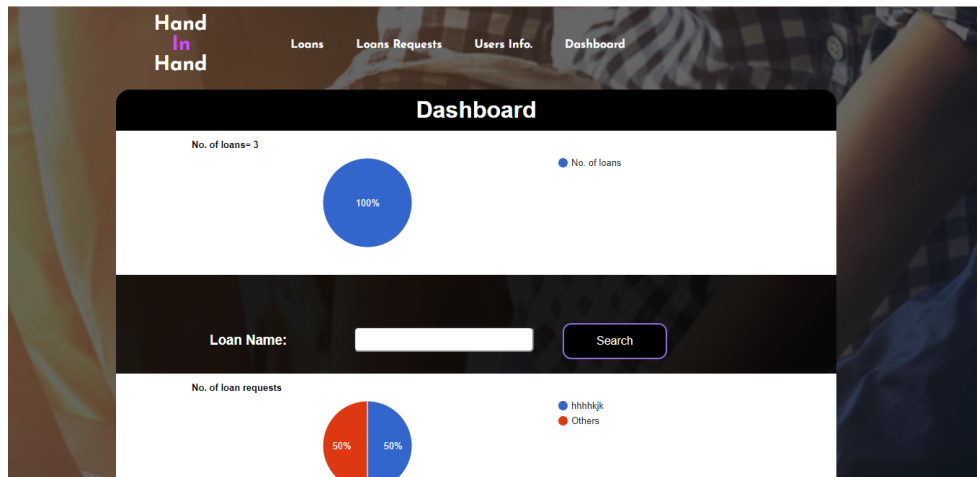


Figure 16: Loans staff dashboard

After logged in if the account is for outstanding students staff, then this page will appear.

Click the "Logout" button to exit the outstanding students staff page. To add a

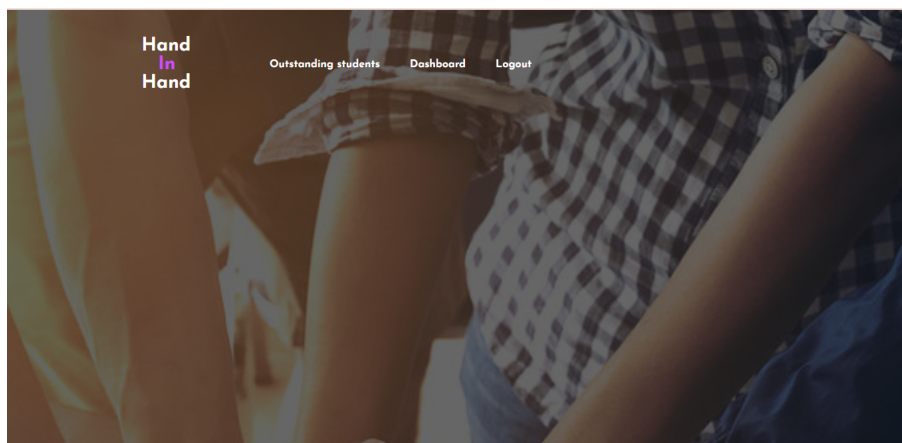
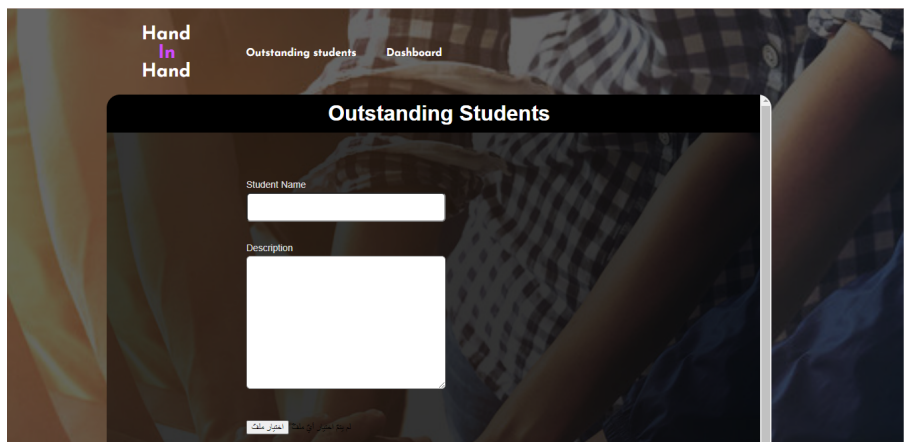


Figure 17: Outstanding Students staff page

outstanding student, click on the "Outstanding students" button. Then enter the

student's name, description and attach his/her picture, then click on the "Save" button.



The screenshot shows a web application interface. At the top left, the logo 'Hand In Hand' is displayed. To its right, there are navigation links for 'Outstanding students' and 'Dashboard'. The main content area is titled 'Outstanding Students' and contains a form with two input fields: 'Student Name' and 'Description'. Below the form, there is a button labeled 'الحفظ' (Save) in Arabic. The background of the page is a dark, textured image.

Figure 18: Add Outstanding Students page

Outstanding Students staff can see statistics about Outstanding Students on the dashboard page. The dashboard page displays a chart of the number of Outstanding Students.

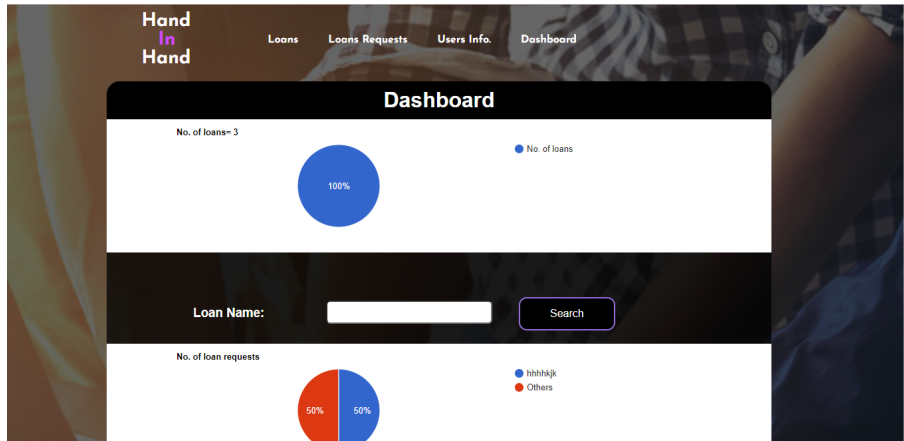


Figure 19: Outstanding Students staff dashboard

After logged in if the account is for messages staff, then this page will appear. Click the "Logout" button to exit the outstanding students staff page.

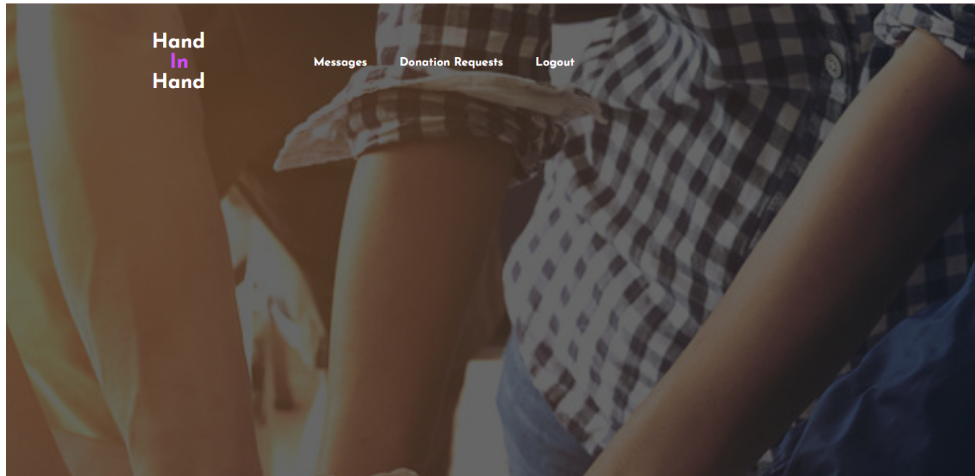


Figure 20: Messages staff page

When you click on the "Messages" button, scholarship staff can see the unread messages that application users have sent through the "contact us" page in the application. The employee can set it as a read message by clicking on the icon at the bottom of the "Read" column.

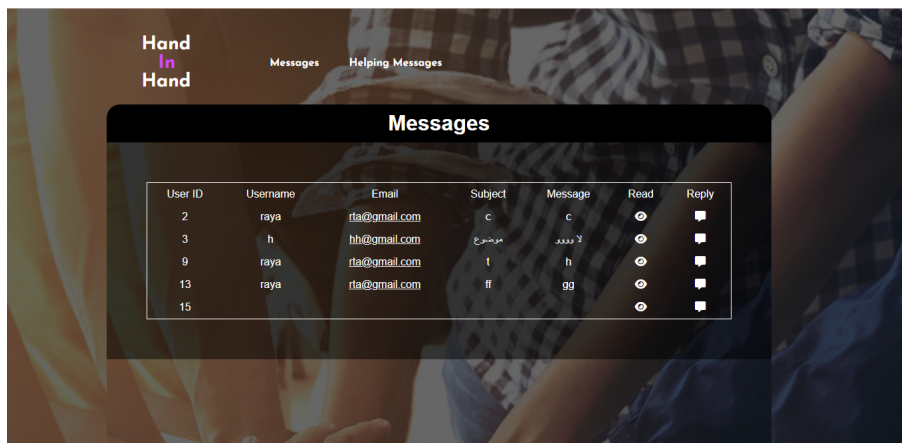


Figure 21: Messages page

In Figure 21, When clicking on a specific email, all read and unread messages will appear on this page, where the employee can set it as a read message by clicking on the icon at the bottom of the "Read" column, or cancel it as read by clicking on the icon at the bottom of the "Not Read" column, in addition to that he can reply to the message By clicking on the icon at the bottom of the "Reply" column.

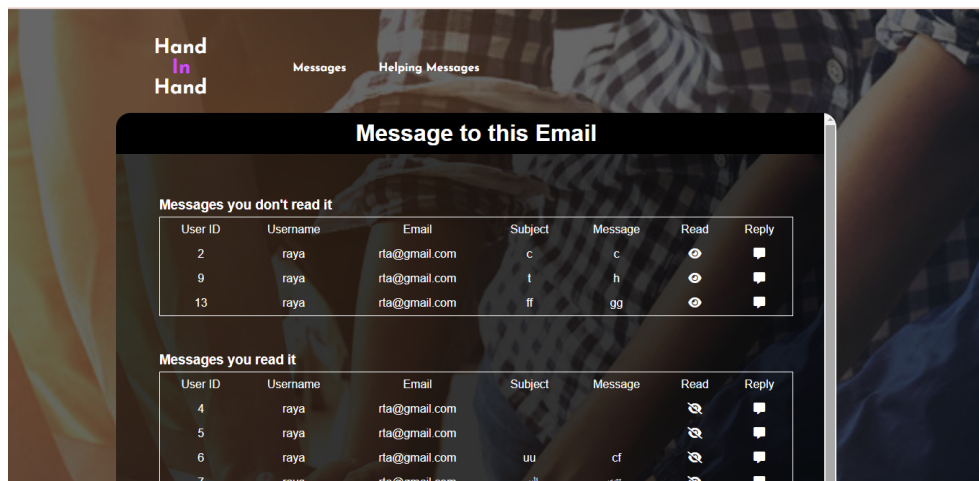


Figure 22: Messages page

When clicking on the "Reply" icon, this page will appear, the employee only has to write the message and send it to the user by pressing the "Send" button.

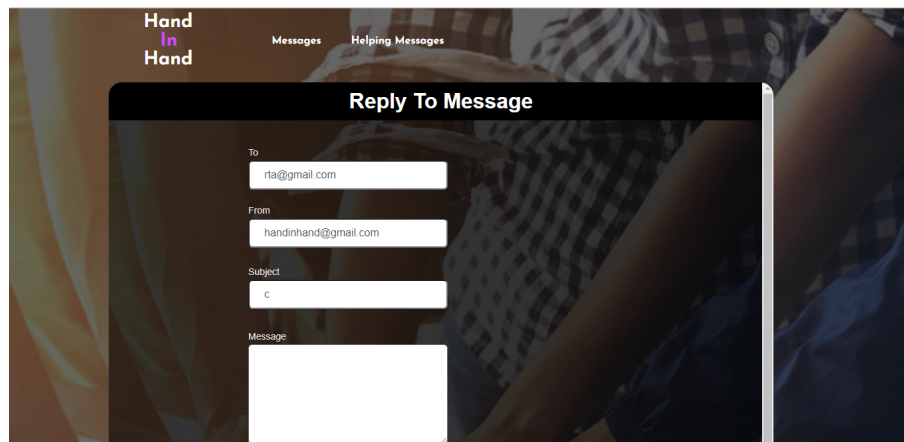


Figure 23: Messages page

Donation Requests page is allows to the staff and the admin see all the donation requests and accept them to appear to the users in the app.

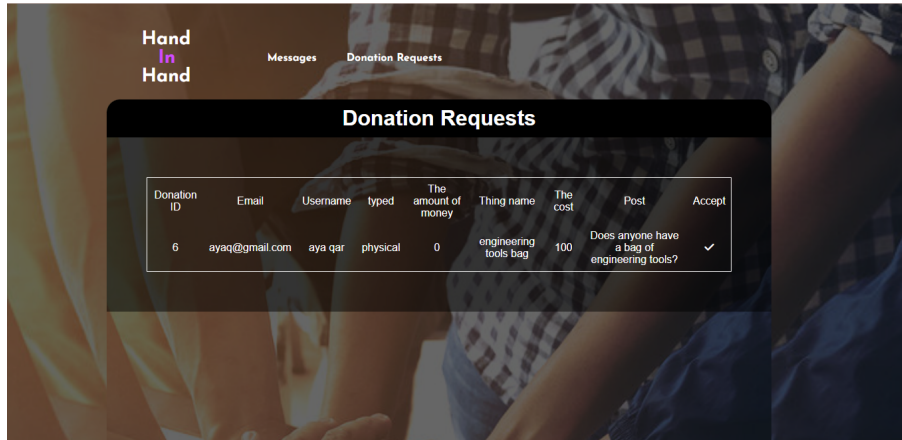


Figure 24: Donation requests page

After logged in if the account is for the admin, then this page will appear. The above pages are also on the admin page. Click the "Logout" button to exit the outstanding students staff page.

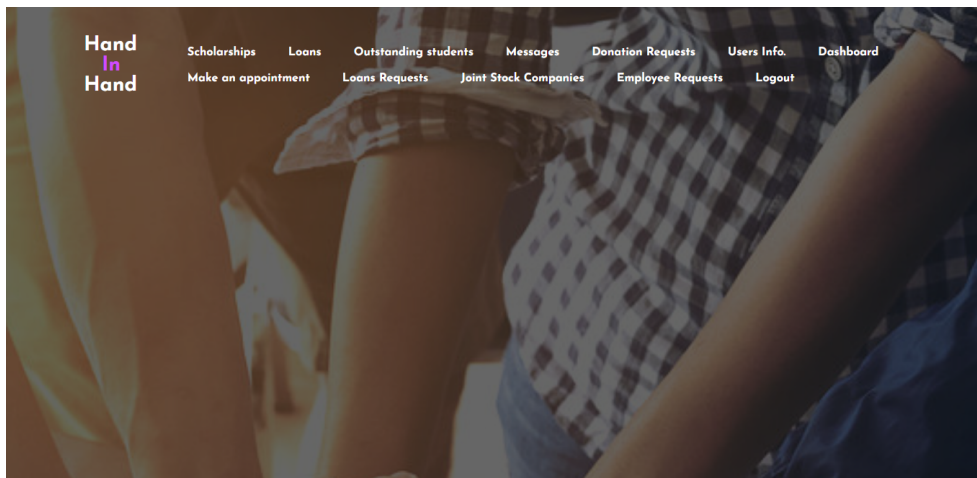


Figure 25: Admin page

Joint Stock Companies page allows the admin to add a new joint stock company in the app. This aims to announce the companies that contribute to the success of the application and help students. Its done by enter the company's name, description of it and image for it.

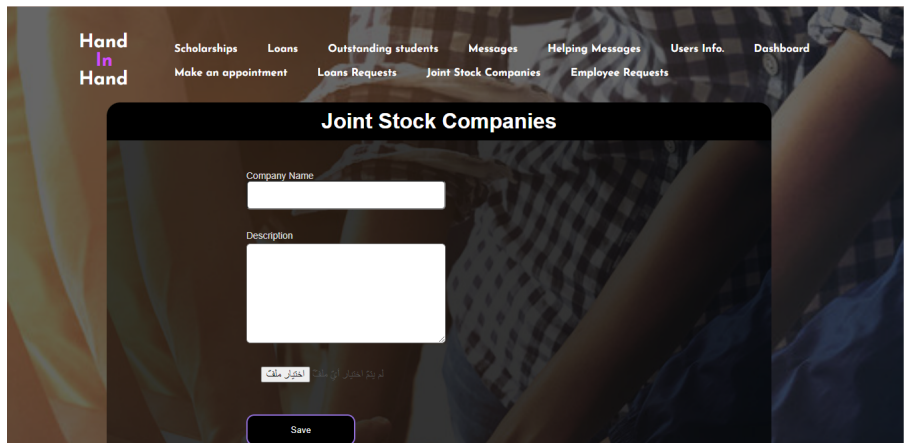


Figure 26: Add Joint Stock Companies page

Employee's Request page allows the admin to see all the requests whose owners want to become employees, and he can accept the request by clicking on the icon at the bottom of the "accept" column.

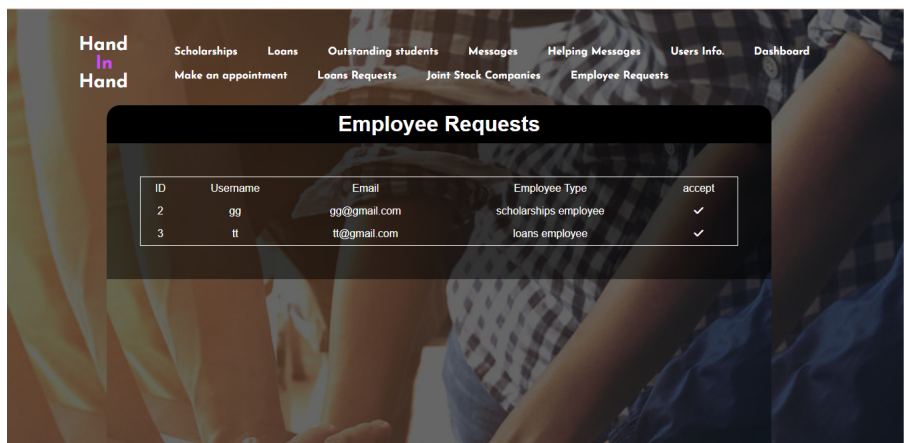


Figure 27: Employee's Request page

The admin can see all statistics about scholarships ,loans and outstanding Students on the dashboard page. The dashboard page displays a chart of the number of scholarships, and a chart of the number of applicants for a specific scholarship, a chart of the number of loans and a chart of the number of applicants for a specific loan and a chart of the number of outstanding Students.

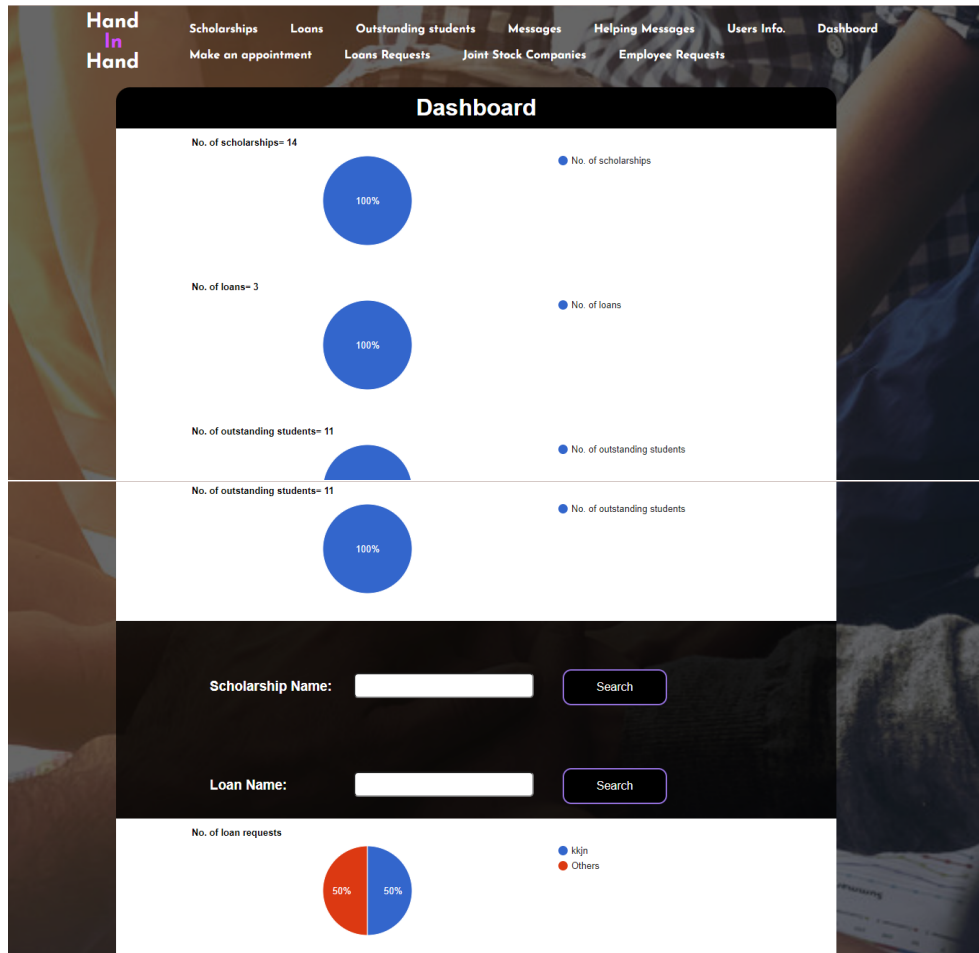


Figure 28: Admin Dashboard page

### 4.3.2 Users Application

Login page allows the user to log in to the application if he/she has an account, this is done by entering his/her email password in the fields then click on "Login" button. When he/she enters an email or password in wrong format, an alert message will appear to the user. If the user forget his/her password he/she can change it by clicking on "Forget Password?". In addition, if he/she doesn't have an account he/she can create one by clicking on "Create" button.

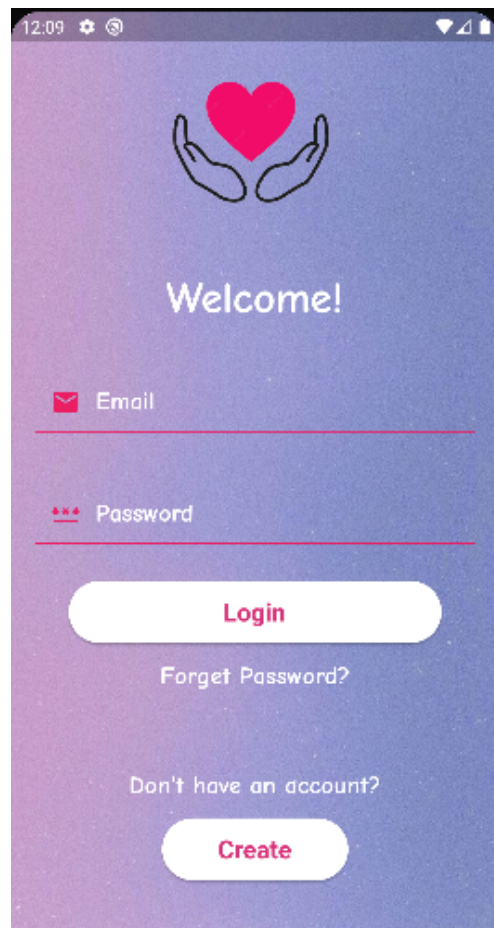


Figure 29: Login page

Sign Up page allows the user to create an account if he/she doesn't have one by entering username, email password in the fields then click on "Create Account" button. When he/she enters an email or password in wrong format, an alert message will appear to the user.

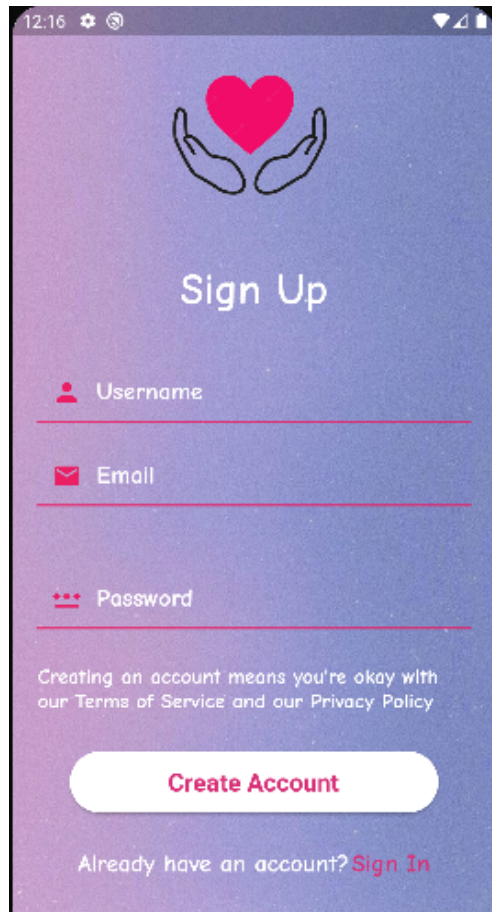


Figure 30: Signup page

Forget Password page allows the user to recover his/her password if he/she forgot it by enter his/her email in the field then click on "Recover Password" button. The new password will appears to the user in an alert dialog. When he/she enters an email in wrong format, an alert message will appear to the user.

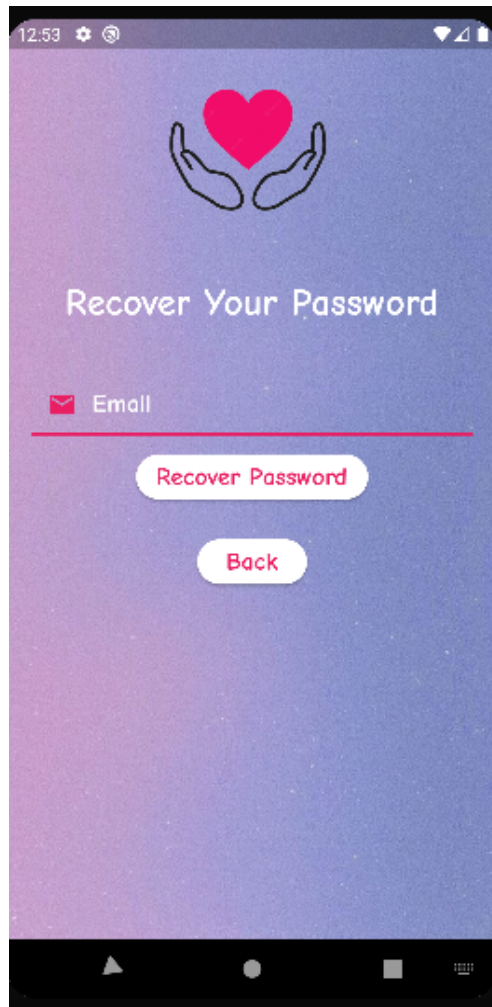


Figure 31: Forget Password page

After logging in, we will see Home page that include notifications and chat in the app bar. In the body, he/she can see the appropriate scholarships and the loans based on his/her college and GPA that are added by the admin. In addition, the companies contributing to the provision of aid to students. When the user click on one of them then it will move to scholarship's or loan's page. The user can also search for a specific scholarship or loan through the search bar. If the language of the app is English and when the user swipe to the right the drawer will appear, and vice versa if it is Arabic.

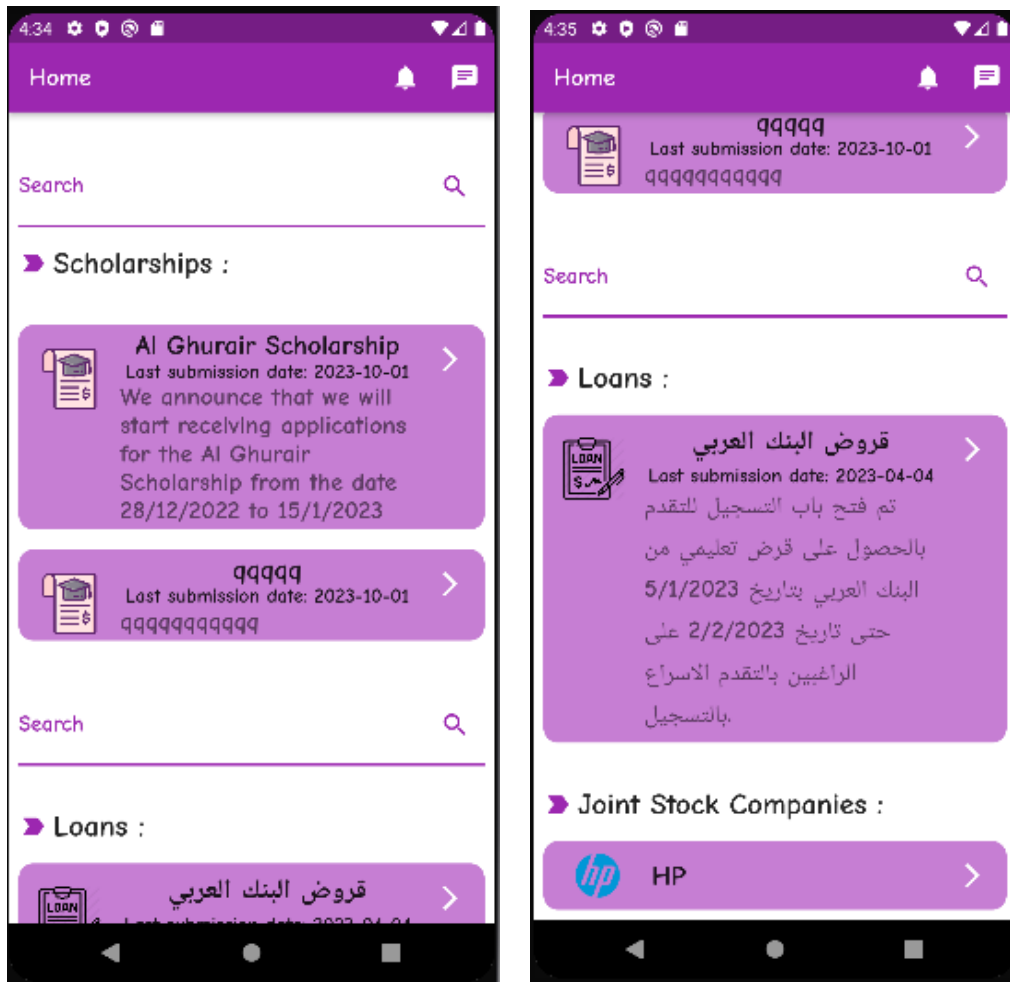


Figure 32: Home page

By the drawer the users will be able to open any page in the application.

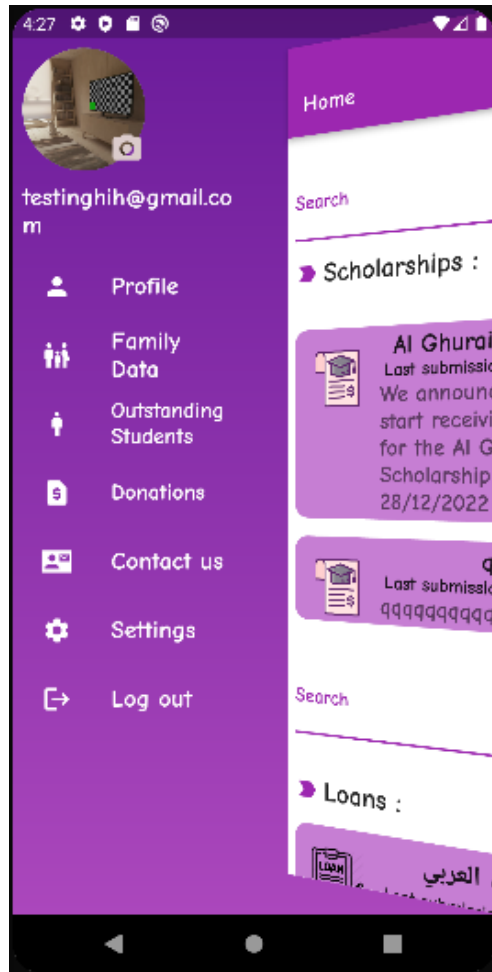


Figure 33: Drawer page

When the user choose one of the scholarship, he/she will able to see 3 sections of this scholarship. the first one is the condition of this scholarship, the second one is the percentage of this scholarship and finally he/she will able to request to this scholarship by attaches the attachments of this scholarship and save them then click on "Scholarship Request" button (he/she must be filled the profile information before that). If he/she request to it without attach the attachments or fill the profile info. an alert message will appear to him/her.

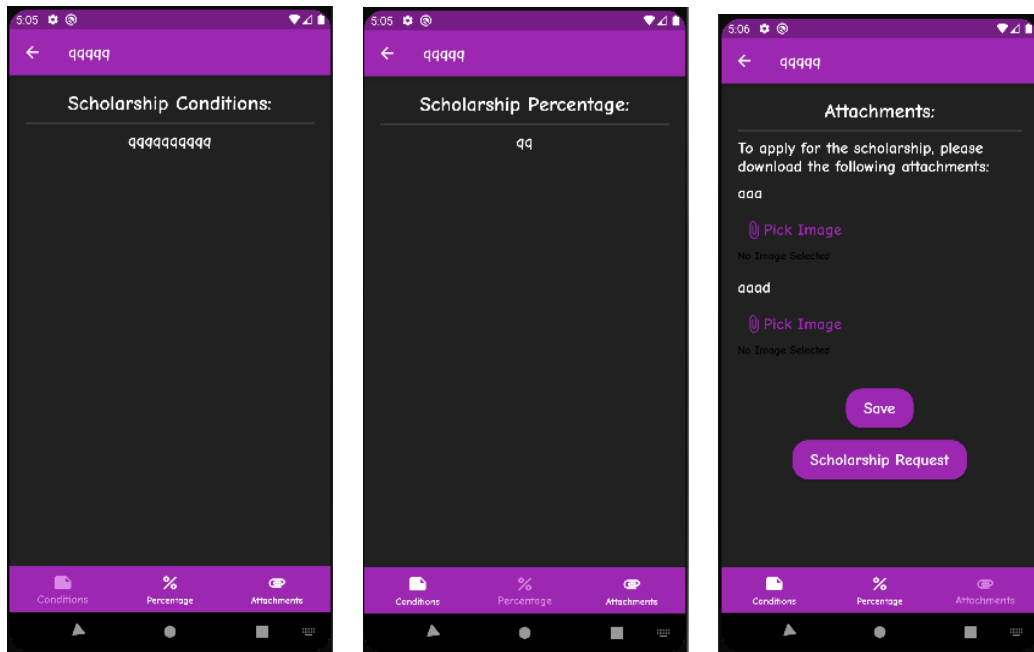


Figure 34: Scholarship Sections

When the user choose one of the Loan, he/she will able to see 3 sections of this Loan. the first one is the condition of this Loan, the second one is the percentage of this Loan and finally he/she will able to request to this Loan by attaches the attachments of this Loan and save them then click on "Loan Request" button (he/she must be filled the profile information before that). If he/she request to it without attach the attachments or fill the profile info. an alert message will appear to him/her.

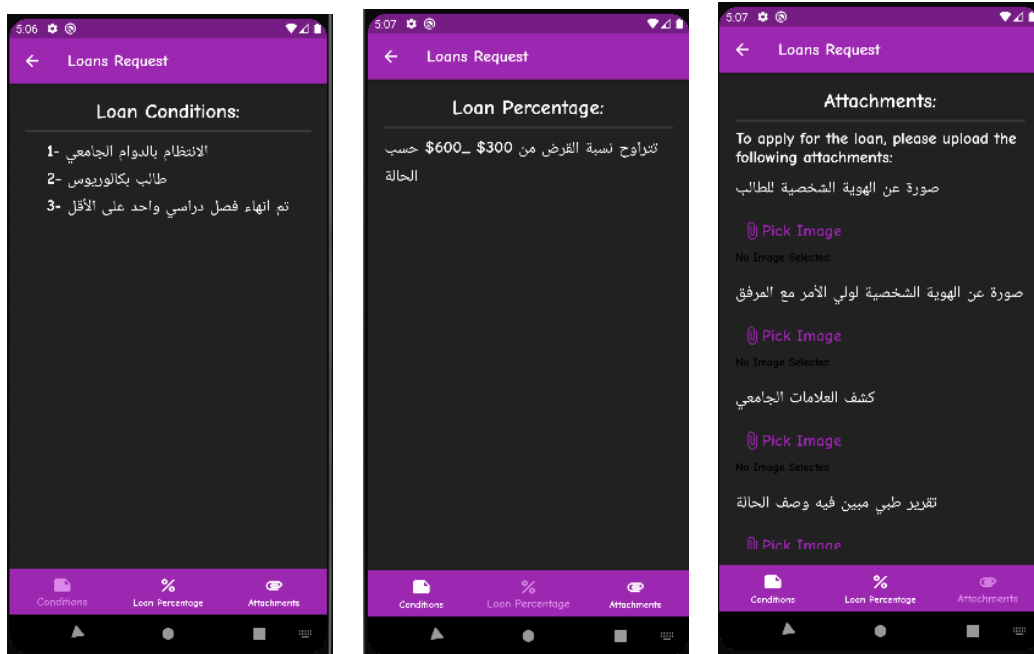


Figure 35: Loans Sections

In this page, the user will be able to see the information of the joint stock company that he/she choose it in the home page.



Figure 36: Joint Stock Companies Section

In this page, the user will be able to chatting with other users.



Figure 37: Chat page

In this section, the user will be able to store his/her personal information.

1:02

Profile

Person Information

Full Name:  
hand khalil

ID:  
12355462

Birth Date:  
1999-12-07

Birth Place:  
Rafidya Hospital

City:  
Nablus

Average Income:  
500-1000 NIS

Personal Info Contact Info Educational Info

Figure 38: Profile page - Personal Information

In this section, the user is able to store his/her contact information.

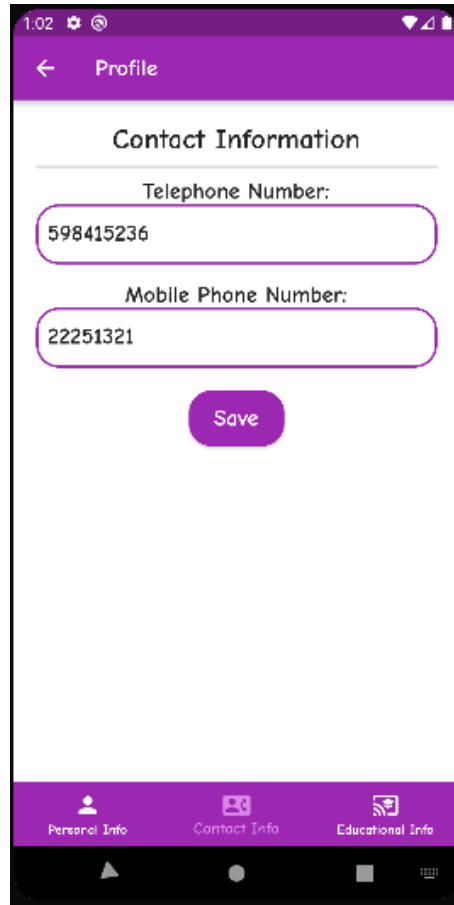


Figure 39: Profile page - Contact Information

In this section, the user is able to store his/her educational information and he/she can join to the donors by clicking on "join to donors" button.

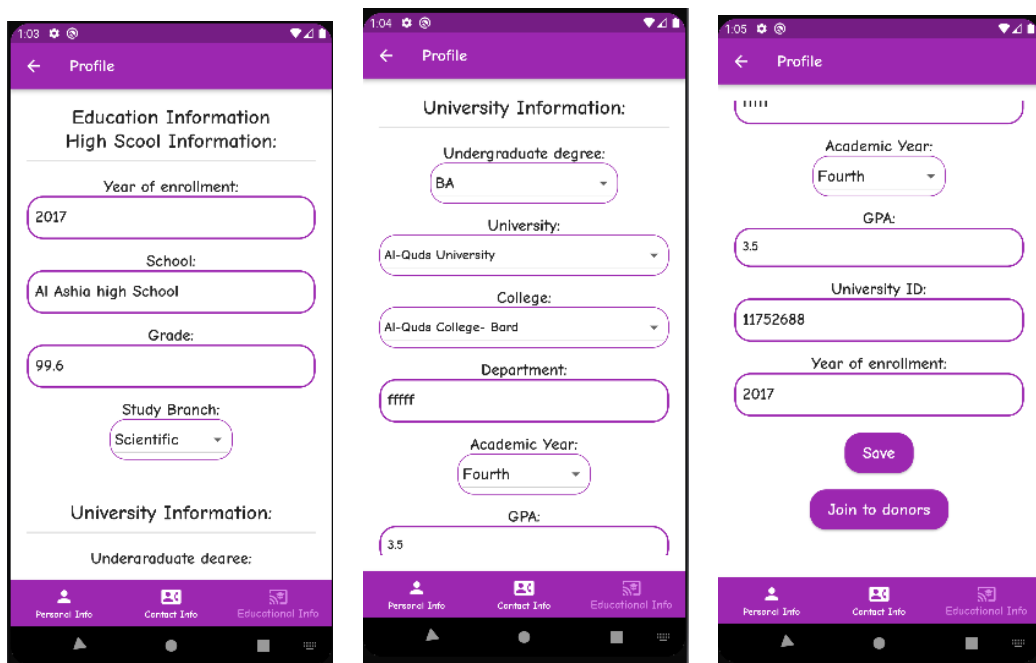


Figure 40: Profile page - Educational Information

In the first section of family data, the user stores some information related to him at the beginning of the page and all the data related to his family members including mother, father and husband/wife data if he is married. For each member, we store the name, id card and all the related information to the member's career. When the user finishes inserting this data he clicks the save button at end of the page to save this information inside local and remote databases. We have two types of data to insert mandatory like data related to the father and mother and optional like adding notes, if the user clicks on the save button and one of the mandatory data is not inserted, the operation will be refused until all the mandatory data are inserted. when the user opens the app another time all the data will be retrieved from the local database and displayed on the page. The user can edit any piece of information on this page and then click on the save button to save the changes. For the job dropdown list, there is a search feature through the list because this list has many options, so this feature makes the operation faster for the user.

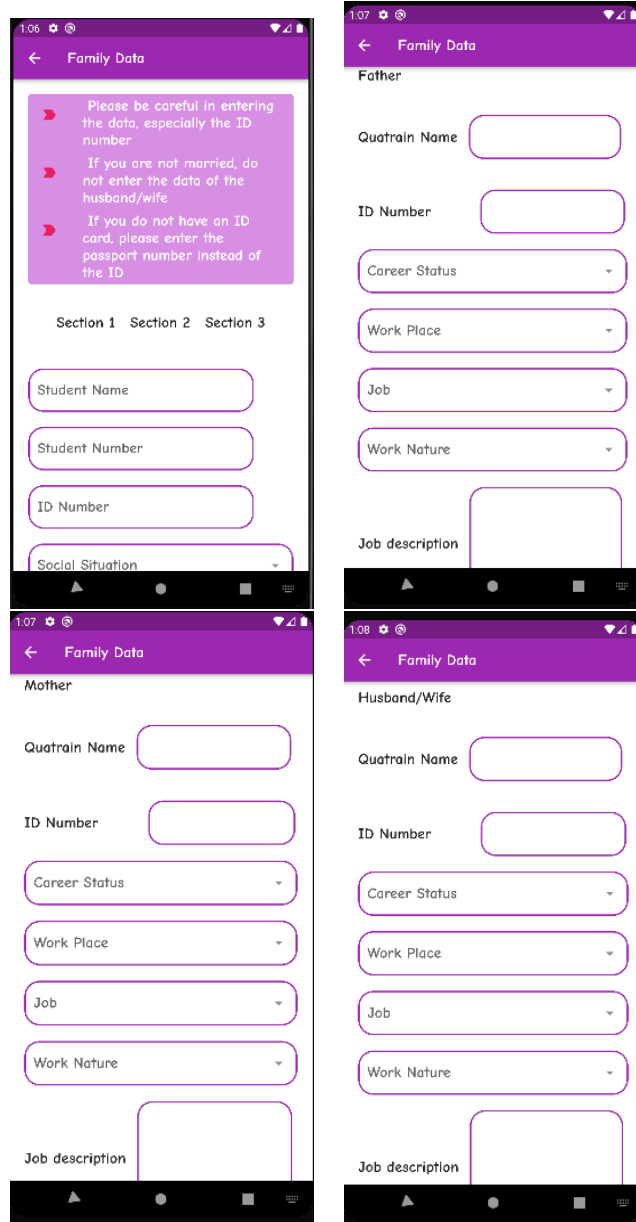


Figure 41: Family Data page - section 1

The second section of family data is about the funder of the university costs, if the user's choice from the dropdown list is other then he should insert all the required information about the funder, if he clicks on the save button before inserting all the information about the funder except the notes as it is optional, the operation will be refused. Other features like editing, verifying the insertion of mandatory data, searching through job list and retrieving data next time, all of them like in the first section of family data.

The screenshot shows a mobile application interface for 'Family Data'. At the top, there is a purple header with a back arrow and the text 'Family Data'. Below the header, there are three tabs: 'Section 1', 'Section 2', and 'Section 3', with 'Section 2' being the active tab. The main content area is titled 'The funder of university costs'. It features a dropdown menu labeled 'Relative Relation' with a downward arrow. Below this, a text prompt reads: 'If the relationship is other, please fill in the following data:'. This is followed by several input fields: 'Quatrain Name' (text input), 'ID Number' (text input), 'Work Place' (dropdown menu), and 'Job' (dropdown menu). At the bottom, there is a 'Note' label and a large text area for entering notes. The bottom of the screen shows the standard Android navigation bar.

Figure 42: Family Data page - section 2

The last section of family data requires from user to insert data about different topics some of them about himself, and others about his family. One of the questions is about the number of his siblings who are at the university, here if the inserted number is larger than zero we will notice at the end of the page a dynamic number of groups will be appeared each of them consisting 4 text fields to insert student name, registration number, collage name and university name for each sibling. The number of groups depends on the number of siblings who are at the university. Other features like editing, verifying the insertion of mandatory data and retrieving data next time, all of them like in the first and second sections of family data.

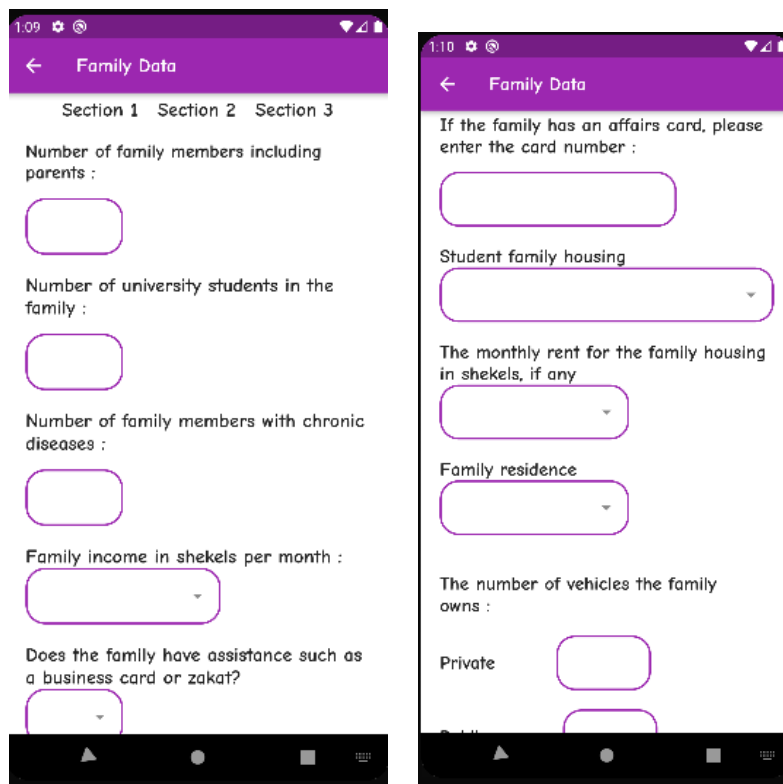


Figure 43: Family Data page - section 3

In this page, the users will be able to see the outstanding students and some description about them. In addition, they can search about specific student by search icon in the appbar.

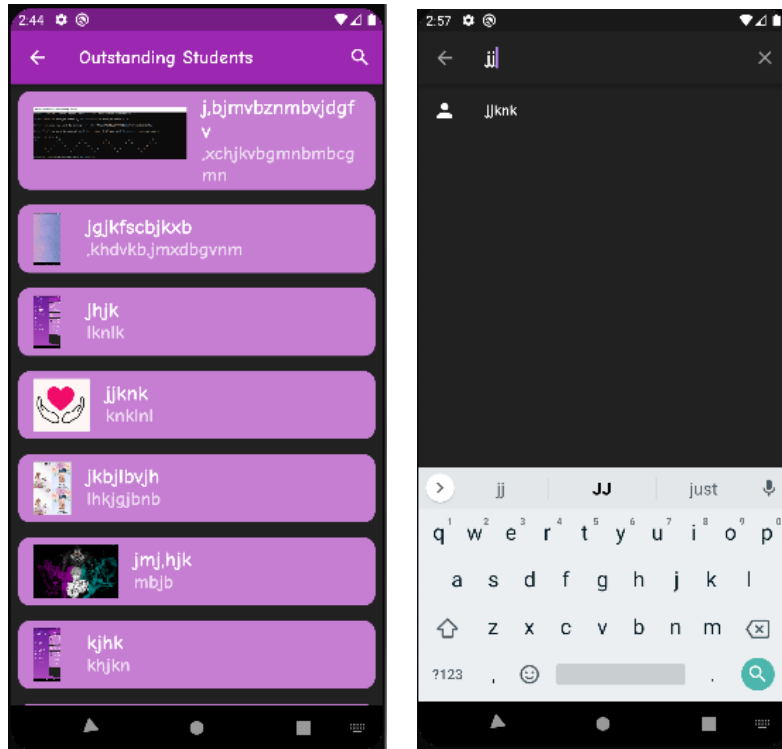


Figure 44: Outstanding Students page

Users can view all donations that the admin or staff have accepted and the remaining amount of money that is not equal to zero on the Donations page.

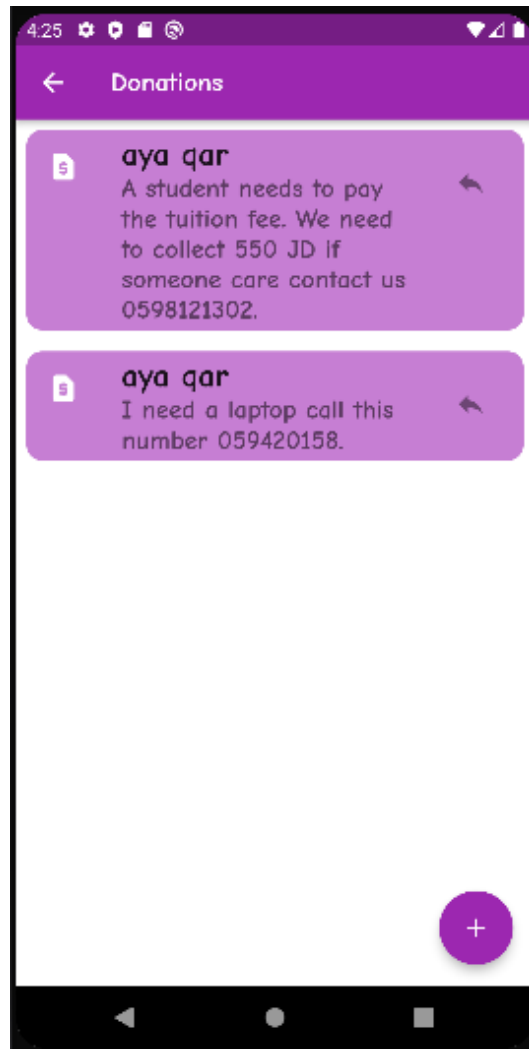
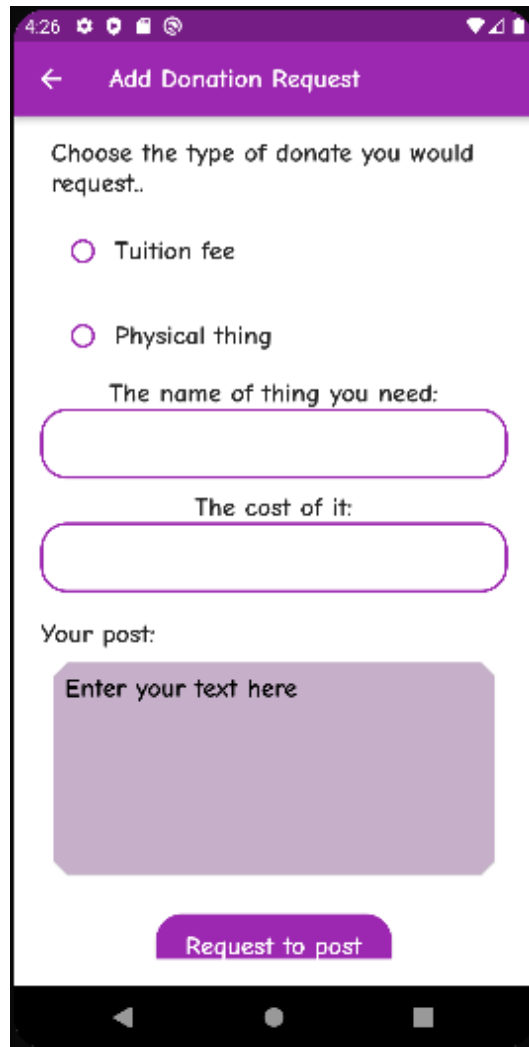


Figure 45: Donations page

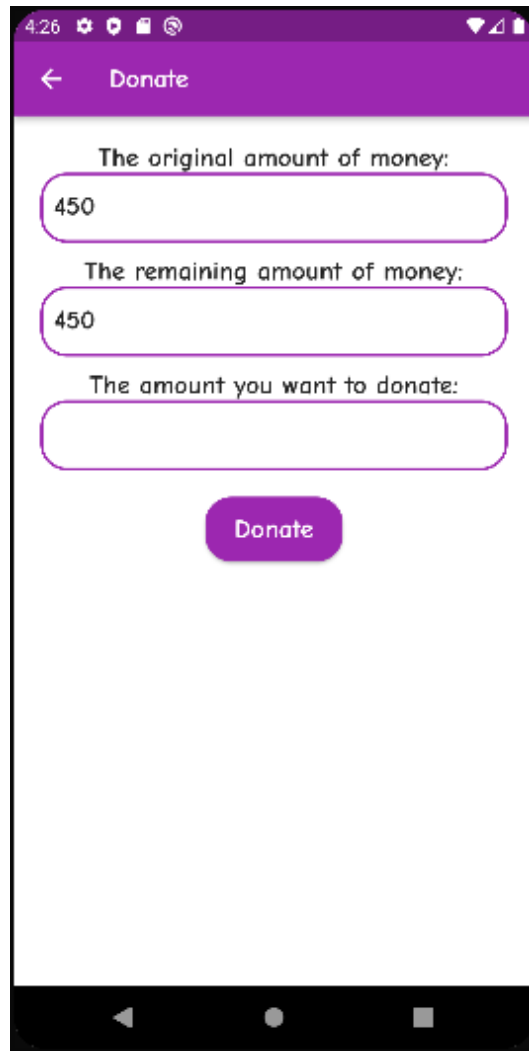
Users will be able to request a donation when they click on the "+" button in Figure 44. The user should choose the type of donation, then fill in the fields depending on it.



The screenshot shows a mobile application interface for adding a donation request. At the top, there is a purple header bar with a back arrow and the text "Add Donation Request". Below the header, the instruction "Choose the type of donate you would request.." is displayed. Two radio button options are listed: "Tuition fee" and "Physical thing". Below these options, there are two text input fields: "The name of thing you need:" and "The cost of it:". Underneath the input fields, there is a section labeled "Your post:" with a large, light purple rounded rectangular area containing the placeholder text "Enter your text here". At the bottom of the form, there is a purple button with the text "Request to post". The entire form is set against a white background with a thin purple border.

Figure 46: Add Donation Requests page

Users will be able to donate when they click on the reply icon in Figure 45. The user will see the original and remaining amounts of money; in addition, he or she can enter the amount of money that he or she wants to donate.



The screenshot shows a mobile application interface for a donation page. The top status bar displays the time 4:26 and various system icons. The app's header is purple with a white back arrow and the text 'Donate'. The main content area is white and contains three text input fields. The first field is labeled 'The original amount of money:' and contains the number '450'. The second field is labeled 'The remaining amount of money:' and also contains '450'. The third field is labeled 'The amount you want to donate:' and is currently empty. Below these fields is a purple button with the text 'Donate' in white. The bottom of the screen shows the standard Android navigation bar with back, home, and recent apps icons.

Figure 47: Donate page

The Settings page allows the user to change the app's language and theme, as well as reset his or her password.

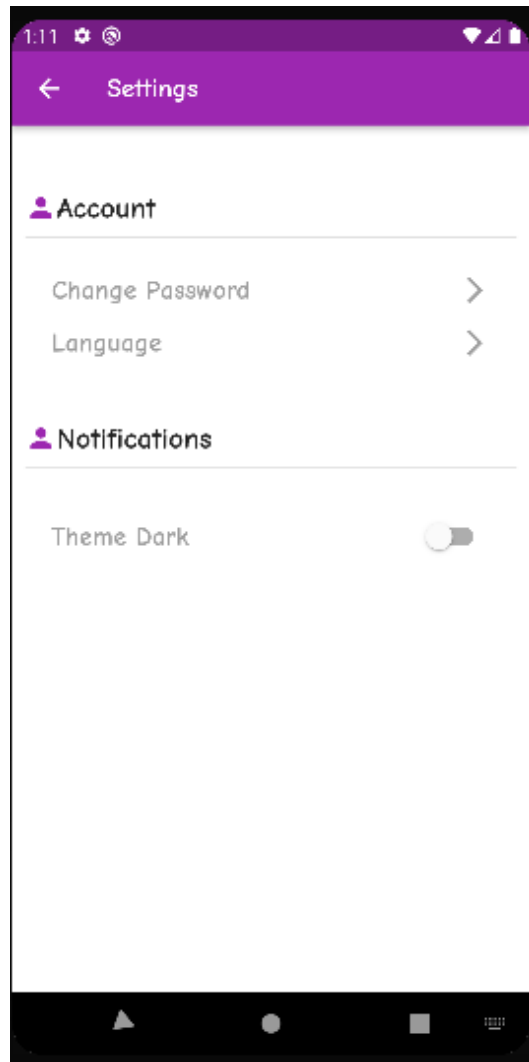


Figure 48: Settings page

Reset Password page allows the user to reset his/her password by entering his/her email, old password new password. When he/she enters an email or password in wrong format, an alert message will appear to the user.

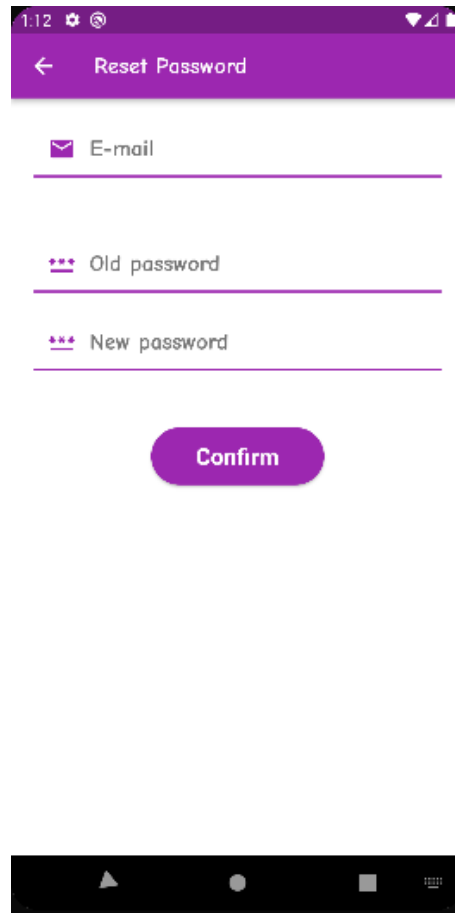


Figure 49: Reset Password page

By this popup window, the user able to change app's language to Arabic or English language.

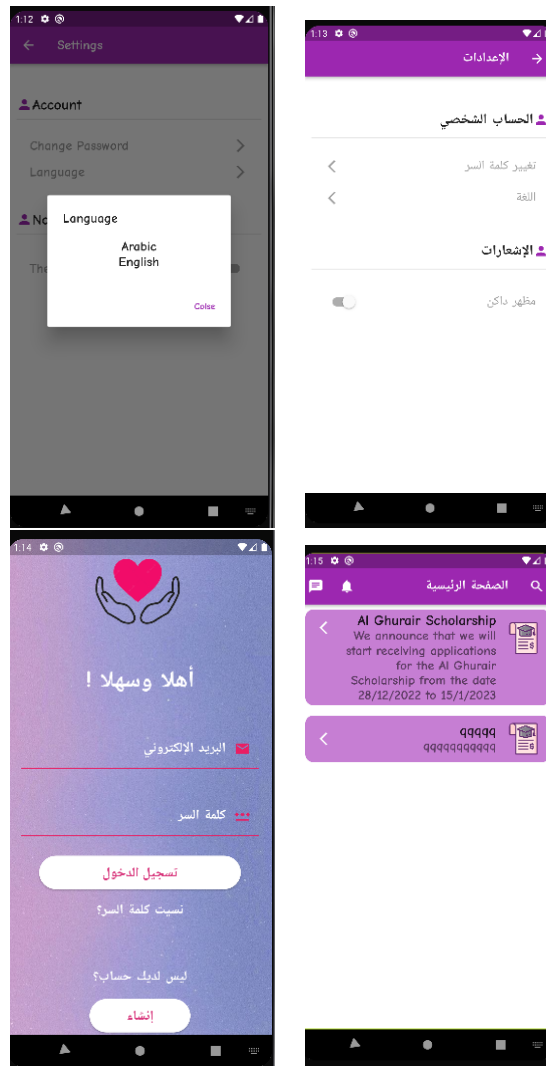


Figure 50: Language Feature

By clicking on the switch, the user can change the app's theme to a light or dark theme.

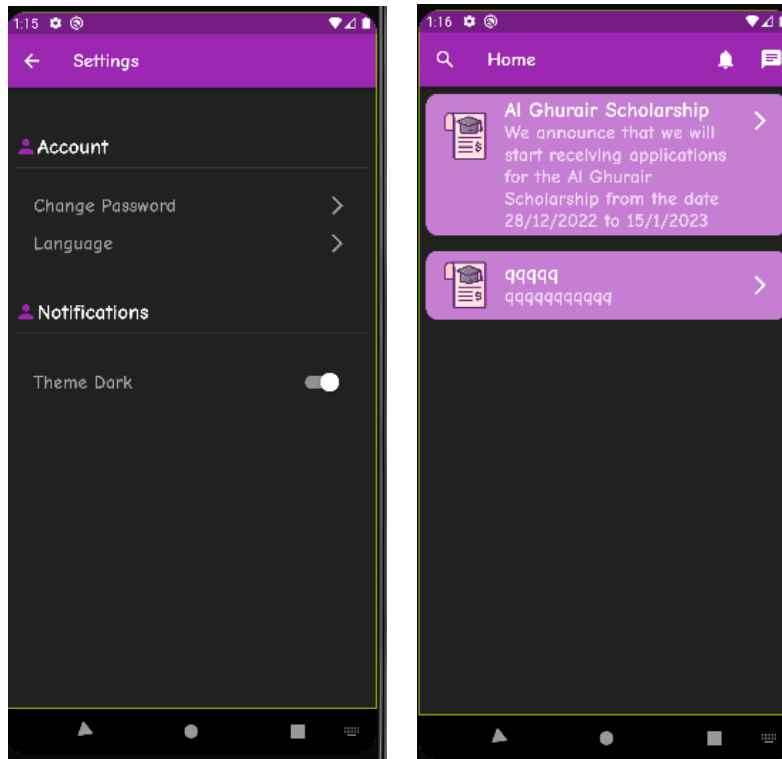


Figure 51: Dark Theme Feature

On this page, there are 2 sections. The Send Message section is the first. In this section, the user will be able to contact the admin. He or she enters the subject of the message and the message, then clicks on the "Send" button to send it.

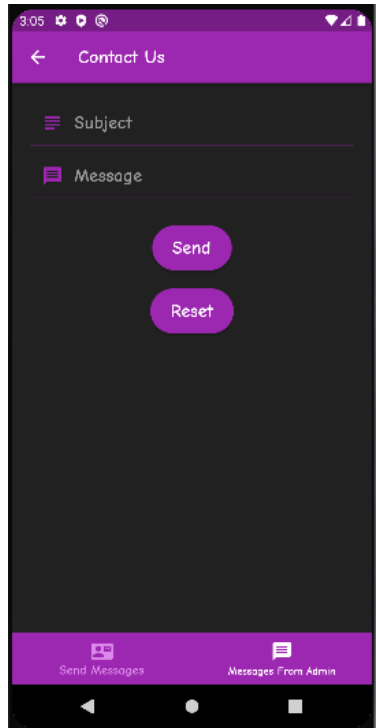


Figure 52: Contact Us page - Send Message Section

The second section is "Messages from Admin." In this section, the user will be able to see the replies to his or her messages from the admin. When you click on one of them, the whole message will appear.

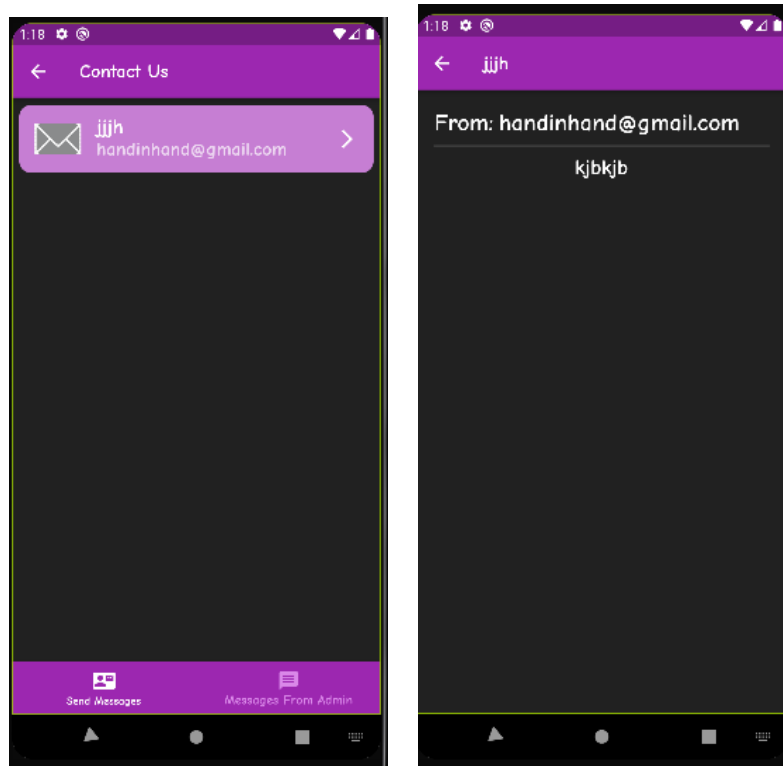


Figure 53: Contact Us page - Messages From Admin Section

Notifications are sent to users in several cases. The first one is when a new scholarship or loan is published here notifications will be sent to students who fulfill the conditions of this scholarship or loan in terms of GPA and college. The second one when a donation request is published, notifications will be sent to all users affiliated with the donors. The third one when an appointment is set for an interview for one of the users who applied for a grant, the appointment will be sent as a notification. The last one when an administrator responds to a person's message, the user will be notified.

We tried to cover the different cases of receiving notifications. If the app is opened and in the foreground, if the app is opened and in the background (the user uses another app for example) and finally if the app is closed totally.

Here we show how the notification appears in the previous cases.

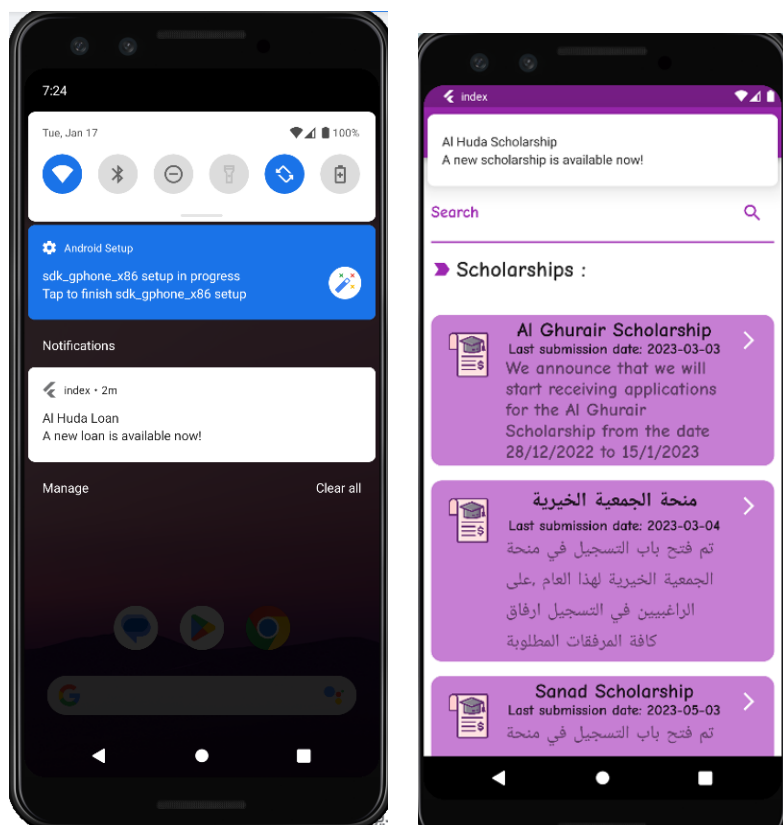


Figure 54: Receiving Notifications

The user will be taken to this page when clicking on the notification icon at the app bar of the home page. The notifications page displays all the notifications that are received.

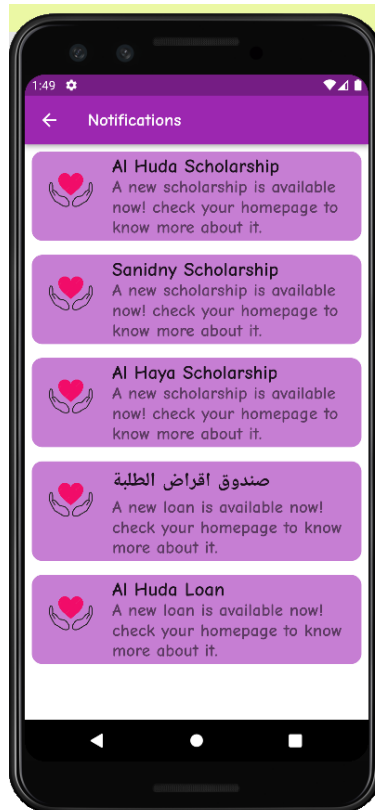


Figure 55: Notifications page

## 5 Results and Discussion

The Hand in Hand Project is a loan and scholarship application for students and a website for staff that aims to simplify the process of managing this financial support for staff and searching for scholarships or loans for students at all Palestinian universities.

We learned a lot and gained many experiences in a short period of time, where we learned to interview employees in the student aid department, and we learned how to ask the right questions that helped us. finally, we learned programmatically a lot of things.

## 6 Conclusion

### 6.1 Summary

In conclusion, we have created an application that works on several platforms and a website. The project facilitates the lives of university students who are unable to pay tuition fees or provide things that help them study. Also, the project replaces paper transactions with electronic transactions.

### 6.2 Future Work

The future work is represented by adding more features to our project, that make the application and the website more efficient and comfortable to use for the students and the staff. Some of these features include building a system that analyzes the requests for loans and scholarships and shows employees the order of the requests from the highest priority to the lowest priority for getting a scholarship or a loan, Adding iOS version development, and expanding the application to include abroad scholarships.

## References

- [1] “Sqflite,” <https://pub.dev/packages/sqflite>, [Online; accessed 2022-01-12].
- [2] “Firebase,” <https://firebase.flutter.dev/docs/overview/>, [Online; accessed 2022-01-12].
- [3] W. Abo Hamza, “learn dart from scratch 2021 - from zero to hero - course,” [http://www.youtube.com/playlist?list=PL93xoMrxRJIc9L0XBSaiiuq01JTMQ\\_o](http://www.youtube.com/playlist?list=PL93xoMrxRJIc9L0XBSaiiuq01JTMQ_o), dec 17 2020, [Online; accessed 2022-09].
- [4] —, “( 2021 ) learn flutter from zero to hero -course - project - tutorial,” [http://www.youtube.com/playlist?list=PL93xoMrxRJItdRumqolHX0UT-LHK8\\_39N](http://www.youtube.com/playlist?list=PL93xoMrxRJItdRumqolHX0UT-LHK8_39N), apr 13 2021, [Online; accessed 2022-09].
- [5] “Flutter documentation,” <https://docs.flutter.dev/>, [Online; accessed 2022-1].
- [6] (2008) Student loans fund. [Online]. Available: <https://eservices.iqrad.edu.ps/>
- [7] (2022) sondok for scholarships. [Online]. Available: <https://www.sondok.co/>