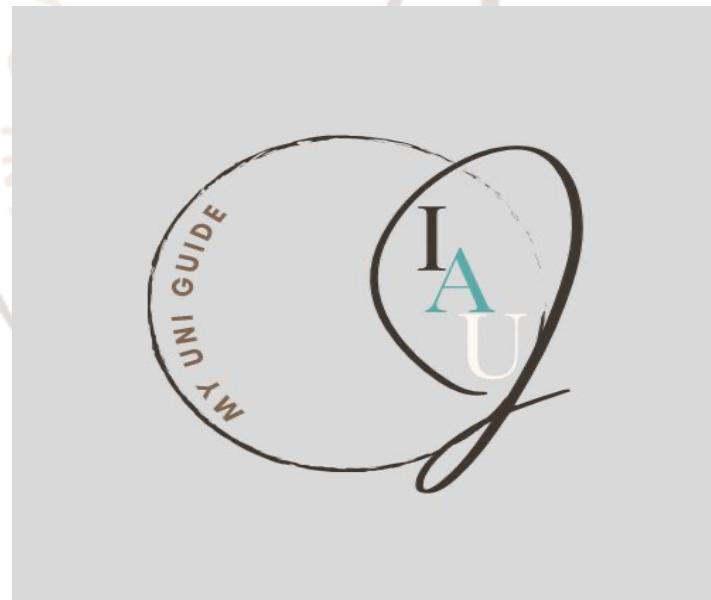


Kingdom of Saudi Arabia
Ministry of Education
Imam Abdulrahman bin Faisal University
Computer Science department
College of Science and Humanities

CS 411 – Software Engineering
Term 1 – 2022/2023

For

My Uni Guide



Version [1]

CIS Year 4, G4
Dr. Norah Alnaim
25 October 2022

This Software Design Specification was prepared and provided as a deliverable for [Software Engineering, CS411, term 1], and it will be used by IAU Students and Faculty Members. This document is based in part on the IEEE Recommended Practice for Software Design Descriptions.

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Table (1)

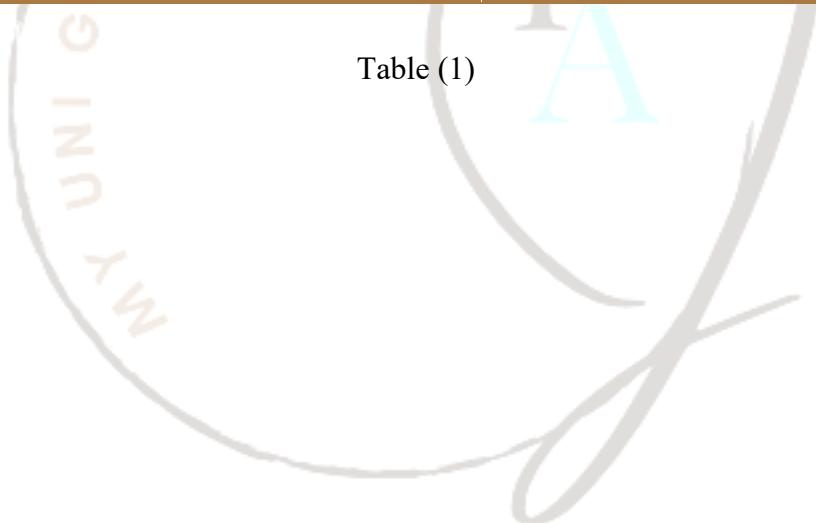
A large watermark logo is centered on the page. It features a stylized 'Y' shape composed of two curved lines. Inside the top curve, the word 'My' is written vertically in orange. Inside the bottom curve, the word 'Uni' is written vertically in orange. To the right of the 'Y', the letter 'A' is written in light blue.

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Revision History

Name	Date	Reason For Changes	Version
All members	Oct 21, 2022	Prepared initial version	0.1
All members	Oct 22, 2022	Updated section 1,2	0.2
All members	Oct 23, 2022	Updated section 3,4	0.3
All members	Oct 24, 2022	Updated section 5,6	0.4
All members	Oct 25, 2022	Updated section 7,8	0.5
All members	Oct 26, 2022	Updated section 9,10	0.6
All members	Oct 27, 2022	Complete review - Final version	1.0

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1. Introduction

The purpose of this document, software design specification (SDS), is to translate the SRS into data, architecture, interfaces, and objects for the My Uni Guide application software and interactive transaction application. This is the initial draft for the SDS, and it will be used for the extensions. The document explains how My Uni Guide's requirements will be met by the software. My Uni Guide aims to serve most of the IAU students community. My Uni Guide will be designed to provide students with many features. The main feature is that the user can find any information related to the college or specialization as well as such information about the subjects or faculty. Using IEEE Recommended Practice for software design specifications, this document was prepared by the team and will be presented to Dr. Norah Alnaim, the supervisor. During this section of SDS, we will discuss some aspects of the software design for My Uni Guide. The purpose and scope of this report will be defined. As well as list all definitions, acronyms, and abbreviations used in this report. Finally, all references used in this report will be addressed.



1.1 Purpose

The basis of this application is aimed to serve and guide the University students among themselves to enhance the cooperation element between them through a one page. This software system will be representation as an application for the local undergraduate of the university society. This system will be designed to maximize the students productivity by providing tools to assist in raising the students performance through providing any help for their needs. By maximizing the student's work, the efficiency and production will help the systems of university of Imam Abdulrahman Bin Faisal to meet the strength and stability.

To be more specifically, this system is designed to allow the students to manage and communicate with other students to share knowledge, their experience and advice. The software will facilitate the communication via a timeline any student can use and interact with. The timeline structure will be containing information about:

- University facilities

Providing a map that contains all the facilities of the university such as the library, the labs and classrooms, the clinic, the cafeteria, the lounge of the university, theater and offices the stuff including the building's numbers and it's locations.

- Trucks, majors, and colleges

Showing the available trucks in the university and it's college with all available majors in such as the science truck connected with the computer science college, business administration college, and science college each of these college have a variety majors.

- Courses and its specialization's

Specifying each course specialization from the previous requirements to the books, references, and tools of the course to what is related to courses must be taken during the studying semester.

- Exchange info and announcements

Enhancing the cooperation among the students through exchange, ask questions, and communicating with each other no matters the different of their academic level, this will aim in sharing experience and get benefits from older students to undergraduate.

- Publications and Advertisements

Supporting the students with any small project the like to announce about. Moreover, the ads could be used to announce any important events or new in the university.

- Private chat for inquiries

Providing an individual space for the students to inform about anything they want to know about.

1.2 Scope

My Uni Guide is stand-alone application that provide a good learning experience for the student. The program will first ask the user (student) to either sign in or sign up with academic ID and password specify whether the user who's trying to inter is student or not. When student enters, it will be moved to the main interface the timeline.

The interface will include the following functionalities for admin:

- Send announcements to students.
- Suspend an account.
- Certificate issuance center.
- Give approvals for students.
- Assure the system is protected by reporting to the developers.

The interface should include the following functionalities for the students:

- View other students' reviews.
- Trade books with other students.
- Join sessions one at a time.
- Send announcements to students.
- Write comments and rate
- Creating a special group for a specific year or major surely after having the approval by the admin.
- Offer sessions of subjects they have knowledge about.

1.3 Definitions, Acronyms, and Abbreviations

While this application serves IAU student data, we must first take a permit from the university to access the student database, such as the student's name, id, also the student phone number, to document it on the platform, and the reason for this process is to confirm the data of our subscribers because our program belongs to students only.

Acronyms	Definition
IAU	Imam Abdulrahman bin Faisal University
UNI	University
ID	Identification number
IEEE	The Institute of Electrical and Electronic Engineer
V&V	Verification and validation
SPMP	Software Project Management plans
SDD	Software Design Document
DESC	Description

Table (3)

1.4 References

- [1] Shevkani, K. *et al.* (2019) “Pulse proteins: Secondary structure, functionality and applications,” *Journal of Food Science and Technology* [Preprint]. Available at: <https://doi.org/10.1007/s13197-019-03723-8>.
- [2] Foster, J.E. *et al.* (2018) “Towards high throughput plasma based water purifiers: Design considerations and the pathway towards practical application,” *Journal of Physics D: Applied Physics*, 51(29), p. 293001. Available at: <https://doi.org/10.1088/1361-6463/aac816>.
- [3] Bjarnason, E. *et al.* (2013) “Challenges and practices in aligning requirements with verification and validation: A case study of six companies,” *Empirical Software Engineering*, 19(6), pp. 1809–1855. Available at: <https://doi.org/10.1007/s10664-013-9263-y>.
- [4] Sharma, T., Satija, S. and Bhushan, B. (2019) “Unifying Blockchian and IOT:security requirements, challenges, applications and future trends,” *2019 International Conference on Computing, Communication, and Intelligent Systems (ICCCIS)* [Preprint]. Available at: <https://doi.org/10.1109/icccis48478.2019.8974552>.
- [5] Poslad, S.J. (1995) “Life-cycle models for developing current and future client/server software: Procedural Centric vs. Data Centric (object-oriented) approach,” *International Seminar on Client/Server Computing* [Preprint]. Available at: <https://doi.org/10.1049/ic:19951142>.
- [6] S. Harizopoulos, D. J. Abadi, S. Madden, and M. Stonebraker, “Oltp through the looking Glass, and what we found there,” *Making Databases Work: the Pragmatic Wisdom of Michael Stonebraker*, pp. 409–439, 2018.
- [7] Penneys, N.S. (2006) Log-in/log-out time: A quality factor for a reference laboratory-prolonged times for skin pathology processing in managed care-authorized laboratories, *Journal of the American Academy of Dermatology*. Mosby. Available at: <https://www.sciencedirect.com/science/article/abs/pii/S019096229780285X> (Accessed: October 27, 2022).

2. System overview

My Uni Guide is intended to serve most of the IAU students community. My Uni Guide will be designed to provide students with many features. The main advantage is that the user can find any information related to the college or specialization as well as such information about the subjects or faculty. User can also apply for the courses presented on the home page.

System Functionality:

In this section, the functionality of the My Uni Guide system for user will be presented [1].

1. Registration:

All users can register into the software, either as student or admin.

2. Login:

After registration, the users can login by using their academic ID and password.

3. Account setting:

The user can edit and modify the information of his/her account also, the user has the authority to cancel his/her class or his/her subscription in any course applied for.

4. Language conversion:

The user can convert the language using an icon.

5. Home page:

The user can view different pages like chat page and events page also, the user can search about any events or groups or teachers.

6. Placing order:

Each user can place an order regarding to the establishment of a course or event in the application.

7. Managing orders:

The user can manage the orders and view them.

8. Direct chat:

The user can contact to each teacher or Group that he/she join into it.

9. System evaluation:

The user can evaluate each course or event or teacher after finishing his/her attending the event or the class with the teacher.

3. Design Considerations

This section focuses on examining the assumptions and dependencies of My Uni Guide and the general constraint that might impact the system [2].

3.1 Assumptions and Dependencies

In this section the assumptions or dependencies of the software will be categorized as following:

- Related software or hardware
- Operating systems
- End-user characteristics
- Possible and/or probable changes in functionality

- **Related software or hardware:**

The My Uni Guide system can run on devices such as mobile phones. Since the software is an application, it must be connected to the internet. Additionally, there will be software which will be associated with the system such as MySQL. This will allow a simple database to be designed to avoid data loss and protect system information. The database should expect thousands of different users to access the platform and make some changes at the same time. Also, NetBeans IDE is used to write and test the system. Based on hardware requirements, the system required a server machine with high-speed internet access. In order to ensure its availability all the time, the server machine will have a powerful CPU and high-speed internet access.

- **Operating systems:**

Our platform will be able to work on different types of operating system IOS and Android. For the developer team they will use Window 10 and IOS.

- **End-user characteristics:**

My Uni Guide users are students and the admin. The students, can offer sessions of subjects they have knowledge about, join sessions, write comments and rate, also can request an order to publishing their activities. Admin as a user has the authority to managing orders (add and delete).

- **Possible and/or probable changes in functionality:**

The final design may differ from the initial design and some functionality may be altered. In the future, the platform could be enhanced with some added features. As the project is time-bound, only minor changes can be made; otherwise, they will interfere with the schedule and deadline.

3.2 General Constraints

In this section presents the general constraints that affect the software design, which are:

- Hardware or software environment
- Interface/protocol requirements
- Data repository and distribution requirements
- Security requirements (or other such regulations)
- Performance requirements
- Network communications
- Verification and validation requirements (testing)

- **Hardware or software environment:**

The platform will work on both Android and IOS. As for the developers they will work on MacOS or Windows 10, will also need NetBeans IDE, and MySQL workbench to store and retrieve data. In addition, XAMAPP for build and test websites locally before deploying them to internet.

- **Interface/protocol requirements:**

The application should provide user-friendly interfaces that will be useful for a user, there are many affects for My Uni Guide interface:

- Accessibility
- Clarity
- Simplicity

- **Data repository and distribution requirements:**

The data will be stored in a database using MySQL workbench. also, MySQL workbench will be used to retrieve the data.

- **Security requirements (or other such regulations):**

Users must reassure that their personal information saved is in a secure place. Thus, the application will require the customer to register using his/her academic email, a strong password [4].

- **Performance requirements:**

When the user enters the application all the requirements specified before must be tested. Any further changes if one of the requirements fail will be handled correctly and changed.

- **Network communications:**

As any application, My Uni Guide must be entered by network. Otherwise, the application cannot work. My Uni Guide application needs a server to join and publish the application into network using XAMAPP.

- **Verification and validation requirements (testing):**

The aim of the V&V is to test, detect, and debug any error that conflict with the website specifications. As mentioned in SPMP document, this project uses the incremental model. Therefore, the client must compare the platform with the required specifications and deliver their feedback [3].

4. User Interface Design

4.1 Overview of User Interface

My Uni Guide platform will use user-friendly interfaces that are easy to understand and use. There are two types of users for the platform, which are admins, students, and teachers. Therefore, the interfaces of the platform might be the same for some functionality and distinct from one user to another.

Table (4) presents the common and distinct interfaces in the system.

User	Interfaces and icons
The Admins	<ul style="list-style-type: none"> - Registration - Login - Account Setting - Homepage "Timeline" - Notification - Manage Timeline - Offers page - Security page for managing content - Manage Orders and advertisements - Add icon - Statistical page
The Students	<ul style="list-style-type: none"> - Registration - Login - Account Setting - Homepage "Timeline" - Direct Chat - Search icon - Post icon - Home icon - Notification - Joined Activities - Orders - Likes and Replies

Table (4): Common and distinct interfaces and Icons.

4.2 Interface Design Rules

The platform will follow The Eight Golden Rules of interface design to reach a good, clear, well-organized, and user-friendly operational interface. This principle developed over three decades of experience and refinement necessitates validation and adjustment for specific design domains. The rules are:

4.2.1 Strive for consistency

Incomparable scenarios, equivalent action sequences are needed; identical language must be used in prompts, menus, and help screens; and consistent color, layout, capitalization, typefaces, and other design elements should be utilized throughout. Exceptions should be understandable and restricted in number, such as requiring confirmation of the delete command or not echoing passwords.

4.2.2 Seek universal usability

Recognize the demands of a wide range of users and design for adaptability, allowing information to be transformed easily. The spectrum of criteria that leads to design is enriched by novice to expert distinctions, age ranges, impairments, foreign variations, and technology variety. Adding elements for beginners, such as explanations, and features for experts, such as shortcuts and quicker pace, increases perceived quality and enriches the interface design.

4.2.3 Offer informative feedback

There should be user interface feedback for every user activity. The response can be small for regular and minor acts, but it should be more robust for rare and big ones. A useful environment for explicitly demonstrating changes is provided through visual presentation of the items of interest.

4.2.4 Design dialogs to yield closure

Action sequences should be divided into groups with a start, middle, and end. Informative feedback at the end of a set of tasks provides users with a sense of success, relief, a signal to forget about contingency plans, and a reminder to be ready for the next set of actions. Ecommerce websites, for example, guide customers through product selection to checkout, concluding with a clear confirmation page that completes the purchase.

4.2.5 Prevent errors

Design the interface as much as possible to prevent users from making major mistakes; for example, gray out menu options that aren't appropriate and don't allow alphabetic letters in numeric entry fields. If a user makes a mistake, the interface should provide easy, constructive, and precise recovery instructions.

4.2.6 Permit easy reversal of actions

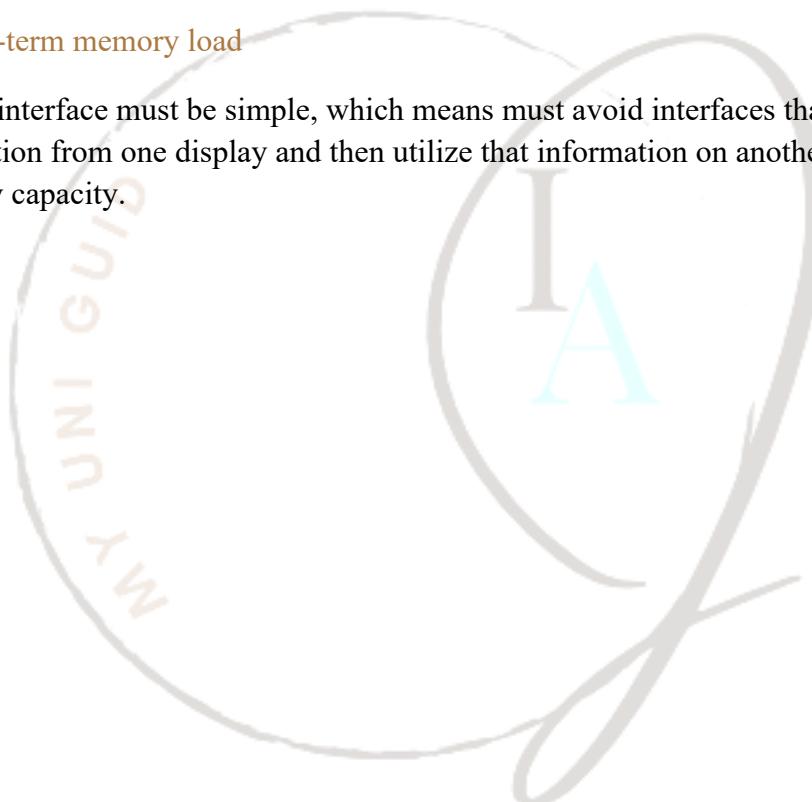
Actions should be reversible as much as feasible. This feature reduces anxiety by letting consumers know that mistakes may be reversed, and it encourages users to try out new possibilities. A single action, a data-entry task, or a whole series of operations, such as the entry of a name-address block, are examples of reversible units.

4.2.7 Keep users in control

Users with a lot of experience want to feel that they're in command of the interface and that it responds to their actions. They are irritated by long data-entry sequences, trouble getting sufficient information, and inability to generate the intended outcome, and they do not like surprises or changes in their usual behavior.

4.2.8 Reduce short-term memory load

In this project, the interface must be simple, which means must avoid interfaces that demand users to memorize information from one display and then utilize that information on another display due to short-term memory capacity.



4.3 Screen Images



Figure (1)

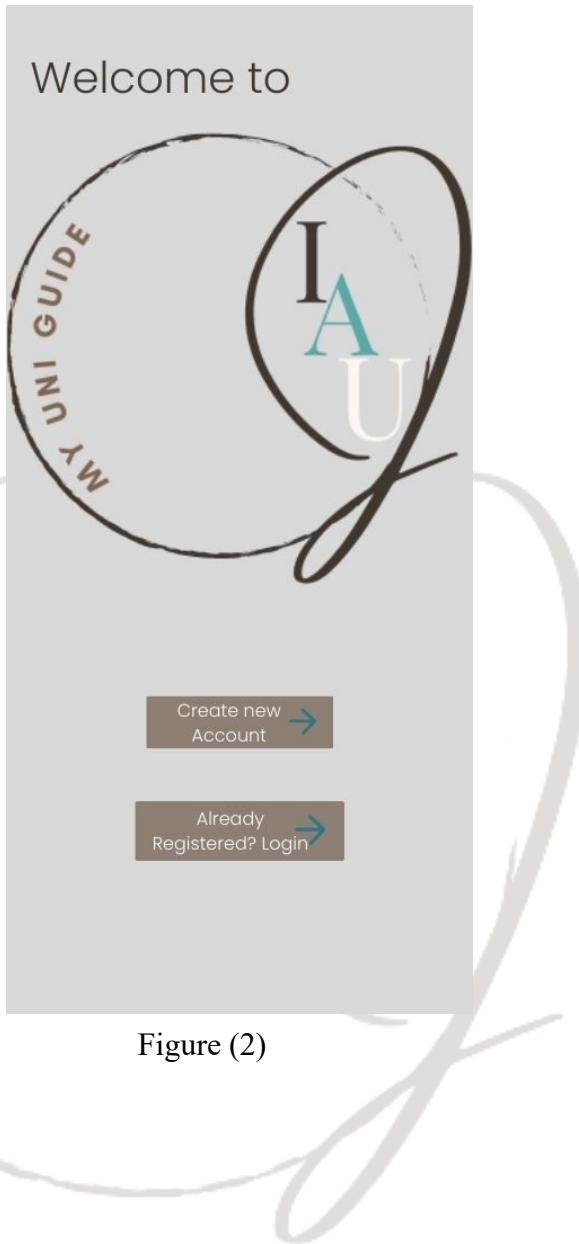


Figure (2)

Create new Account

PLEASE ENTER YOUR FIRST NAME
Jumana

PLEASE ENTER YOUR LAST NAME
Jumana

PLEASE ENTER VALID USERNAME
Jumana @6269

PLEASE ENTER YOUR ACADEMIC E-MAIL
2200006269@iau.edu.sa

PLEASE ENTER YOUR PASSWORD

CONFIRM PASSWORD

PHONE NUMBER
+966 5678900432

COLLEGE
College Of Engineering ▾

WHICH CITY?
Alkhobar, Alrakah ▾

PLEASE ENTER YOUR MAJOR
Computer Science

Sign Up →

BACK ↺

Figure (3)

Login

PLEASE ENTER YOUR ACADEMIC E-MAIL
2200006269@iau.edu.sa

PLEASE ENTER YOUR PASSWORD

FORGET PASSWORD?

Log In →

BACK ↺

Figure (4)

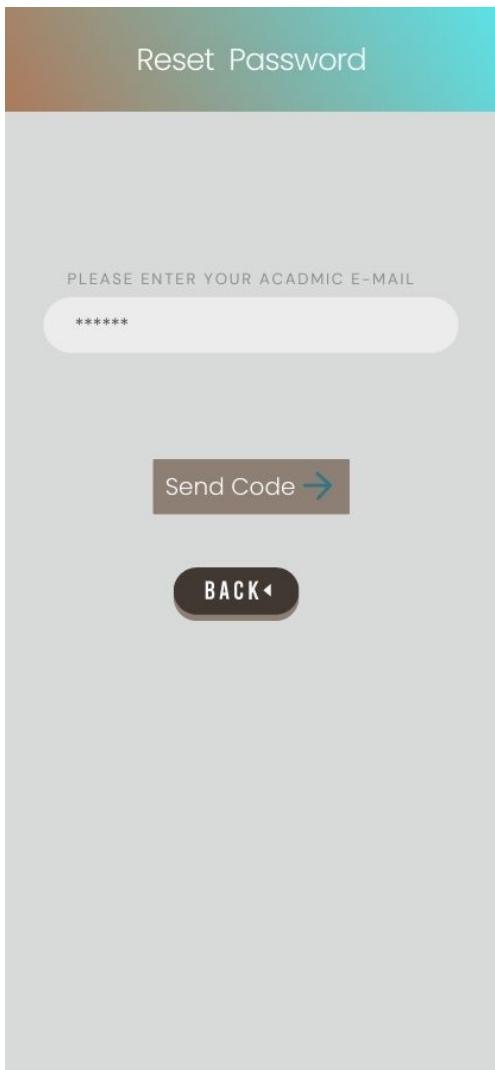


Figure (5)

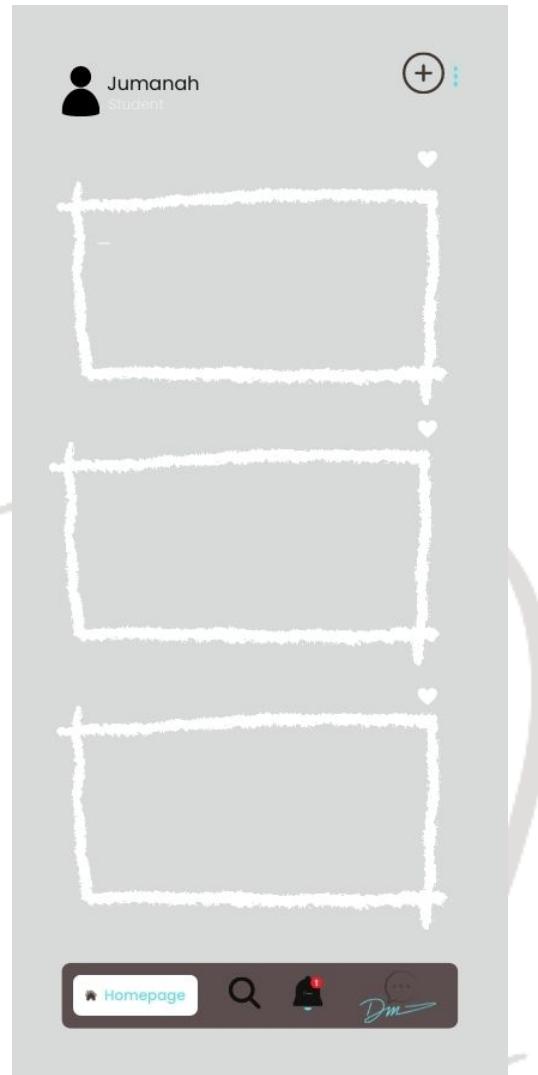


Figure (6)

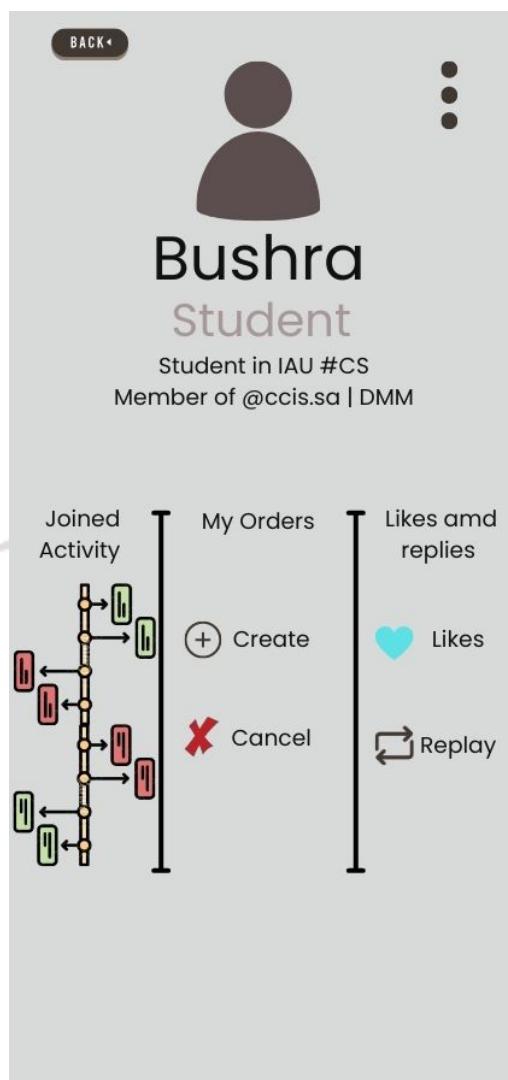


Figure (7)

Figure (8)

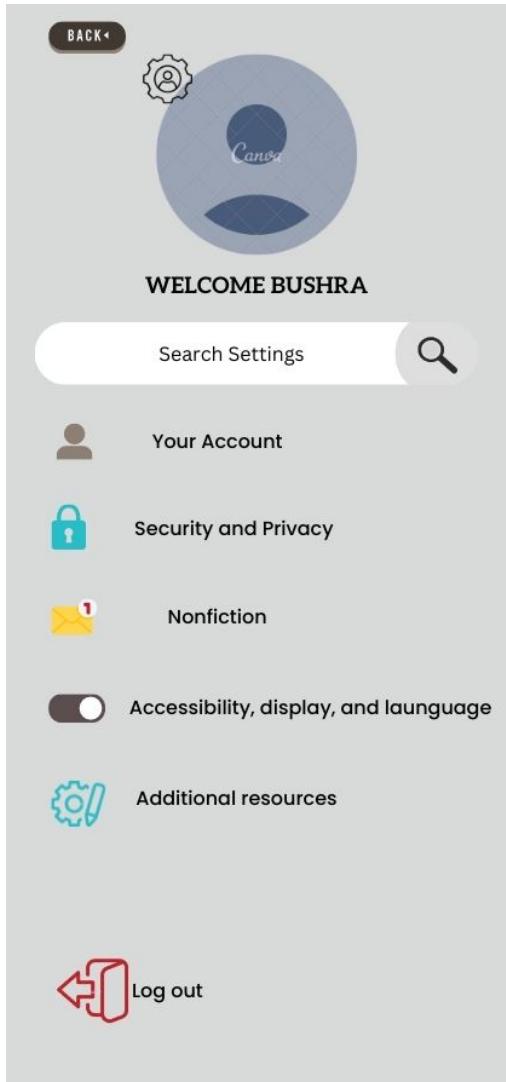


Figure (9)

Figure (10)

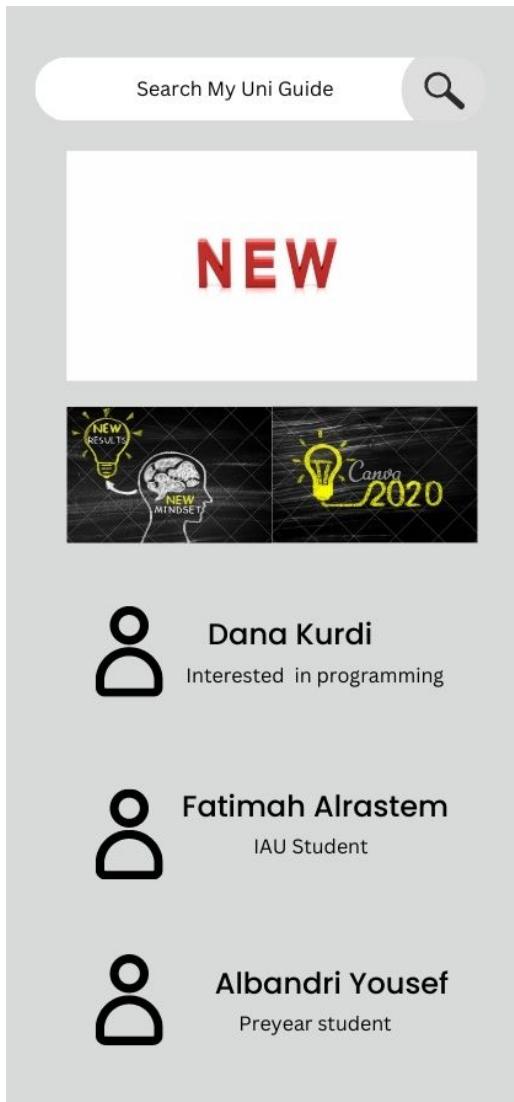


Figure (11)

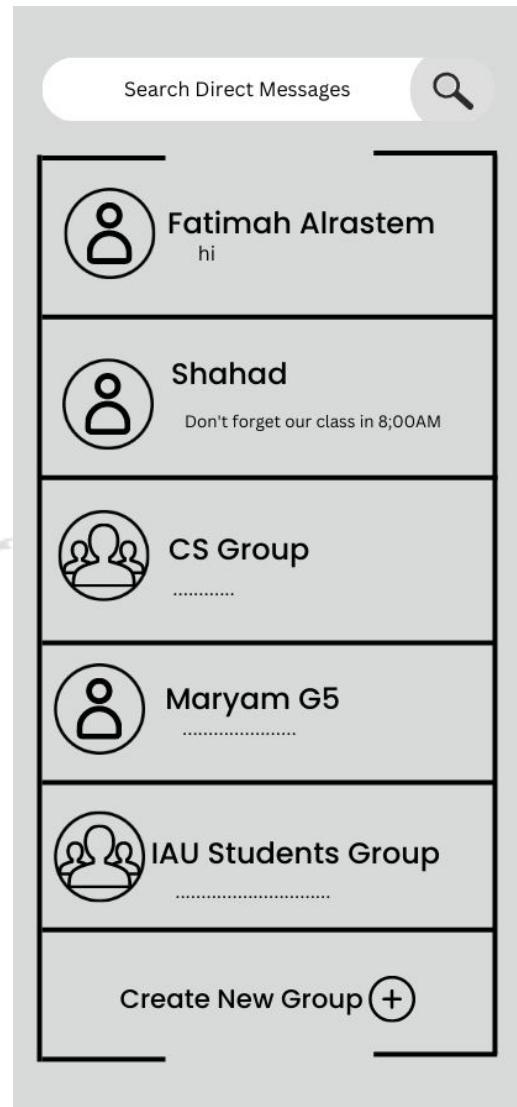
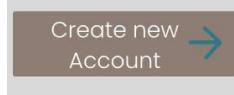
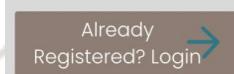
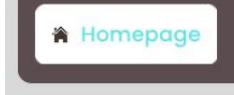
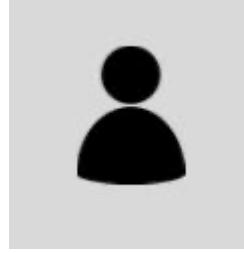
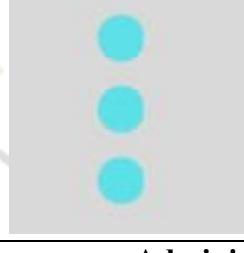
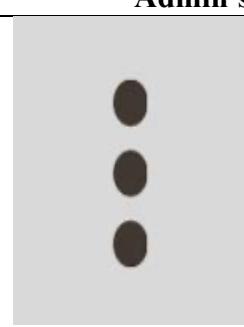


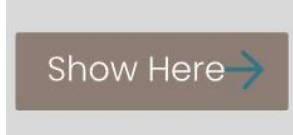
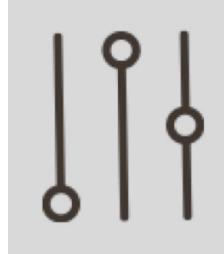
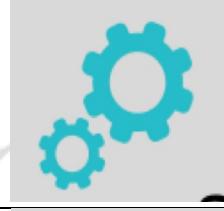
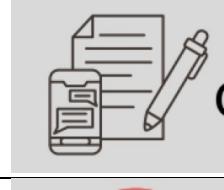
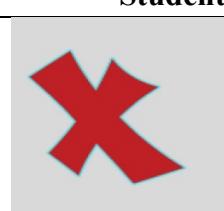
Figure (12)

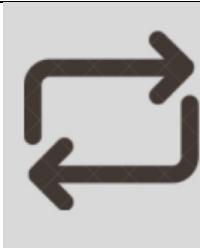
4.4 Screen Objects and Actions

This section presents the objects used in our platform, their types, and their actions as shown in Table (5).

#NO	Icon	Type	Action
Welcoming Page			
1		Button	If the user is a new student, must create an account to enter the homepage so move to the create account page.
2		Button	if the user active student, move to the log-in page.
Signing up Page			
3		Button	Creating a new account page.
Logging in Page			
4		Button	Logging in for students by academic e-mail and password.
Resetting Password			
5		Button	Verification code if the user active student but forgets the password must log in by code.
Homepage "Timeline"			
6		Button	Move and update to the Homepage.
7		Text Filed	Has multiple views based on the student search asks

8			Button	all available news, the student will receive.
9			Button	Move to the Direct chat page.
10			Button	Move to the likes page.
11			Button	Move to the profile page.
12			Dialog	View settings options in the homepage.
Admin's Interface View				
13			Dialog	View settings options in the profile.

14	 A grey rectangular button with a dark grey rounded rectangle in the center containing the text "Show Here" in white and a blue arrow pointing to the right.	Button	Provide a chart for the admin to show the using Statistics chart.
15	 Three vertical sliders with circular handles and vertical tick marks.	Button	Move to Edit page.
16	 Two interlocking blue gears.	Button	Move to Settings page.
17	 A green shield divided into four quadrants by a diagonal line.	Button	As Verification Dialog.
18	 A document with a pen resting on it.	Button	Manage the information page.
19	 A red magnifying glass over a document with the letters "AD" on it.	Button	Accept and check all income advertisements.
20	 A blue delivery box with a location pin on it.	Button	Move to the Manage orders page.
Student's Interface View			
21	 A large red "X" mark.	Button	Delete existing orders with all information.

22			Button	List of likes in the profile page.
23			Button	All the participants the student interaction with or comment on.
Settings				
24			Button	Check out other places for helpful information to learn more about the platform's products and services.
25			Button	Convert the platform's accessibility.
26			Button	Move to Account Setting page.
27			Button	The user logged out from the account.
28			Button	See information about your account, download an archive of your data, or learn about your account deactivation options.

29		Button	Manage your account's security and keep track of your account's usage including apps that you have connected to your account. Privacy and safety Manage what information you see and share on the platform.
30		Button	Select the kinds of notifications you get about your activities, interests, and recommendations. Accessibility, display, and languages Manage how content is displayed to you.
Managing Profile Page			
31		Button	Save the new states after every change.
Common Icons in Multiple Pages			
32		Search Bar Text Field	1- Search for news 2- Search for DM Search
33		Button	Moves to the previous page.
34		Button	Used in multiple ways to add\create.

Table (5): Screen Objects and Actions

4.5 Other Interfaces

This section is not applicable to the project.

5. System Architecture

This section provides an overview of the System Architecture without deep details. My Uni Guide platform has two users, Students, and Admins. There are some common functionalities and interfaces between them such as the homepage, sign-up, login, password retrieve, and the verification step. Also, there are distinct features as well. Figure (13) shows the system architecture for each user.

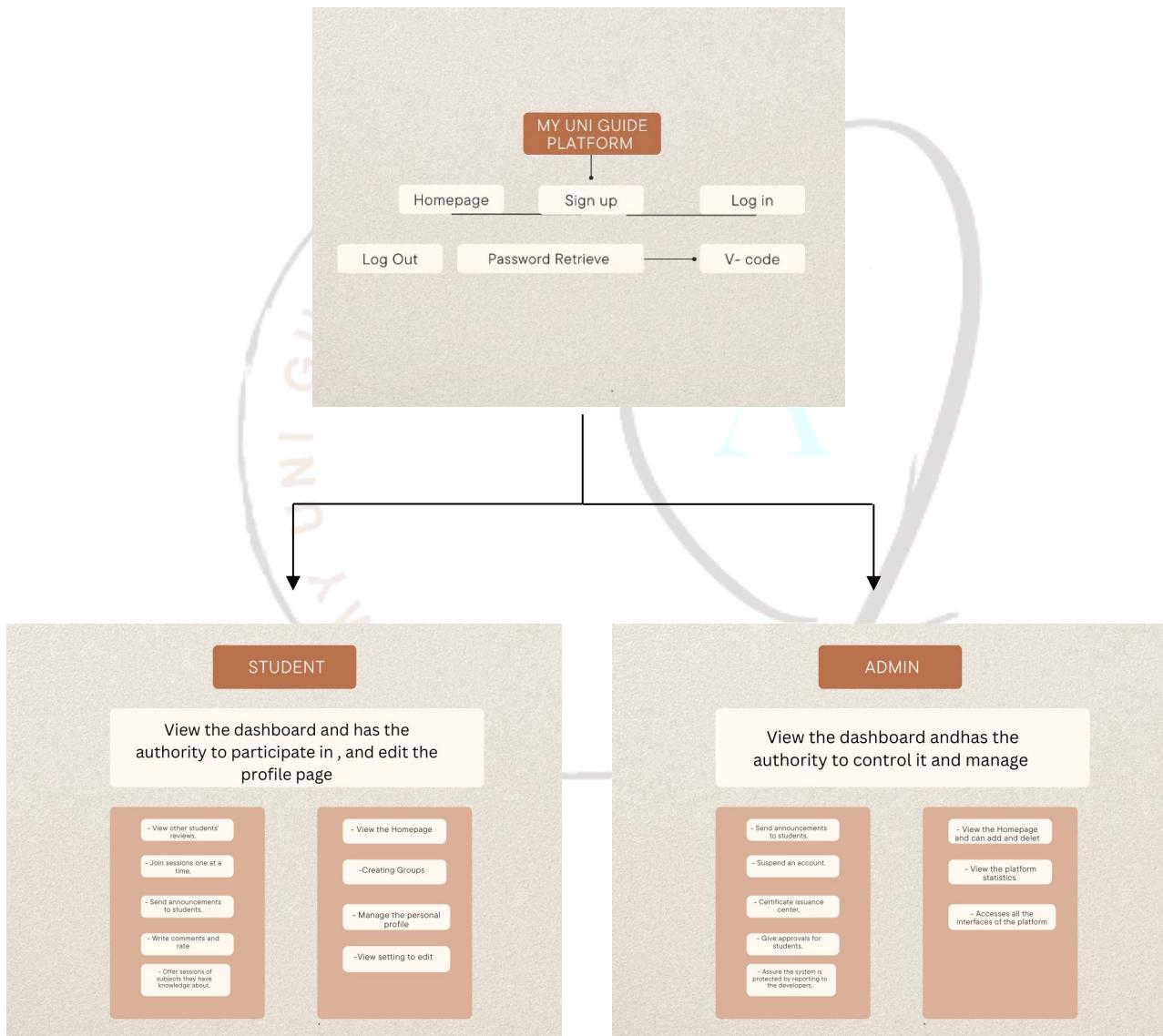


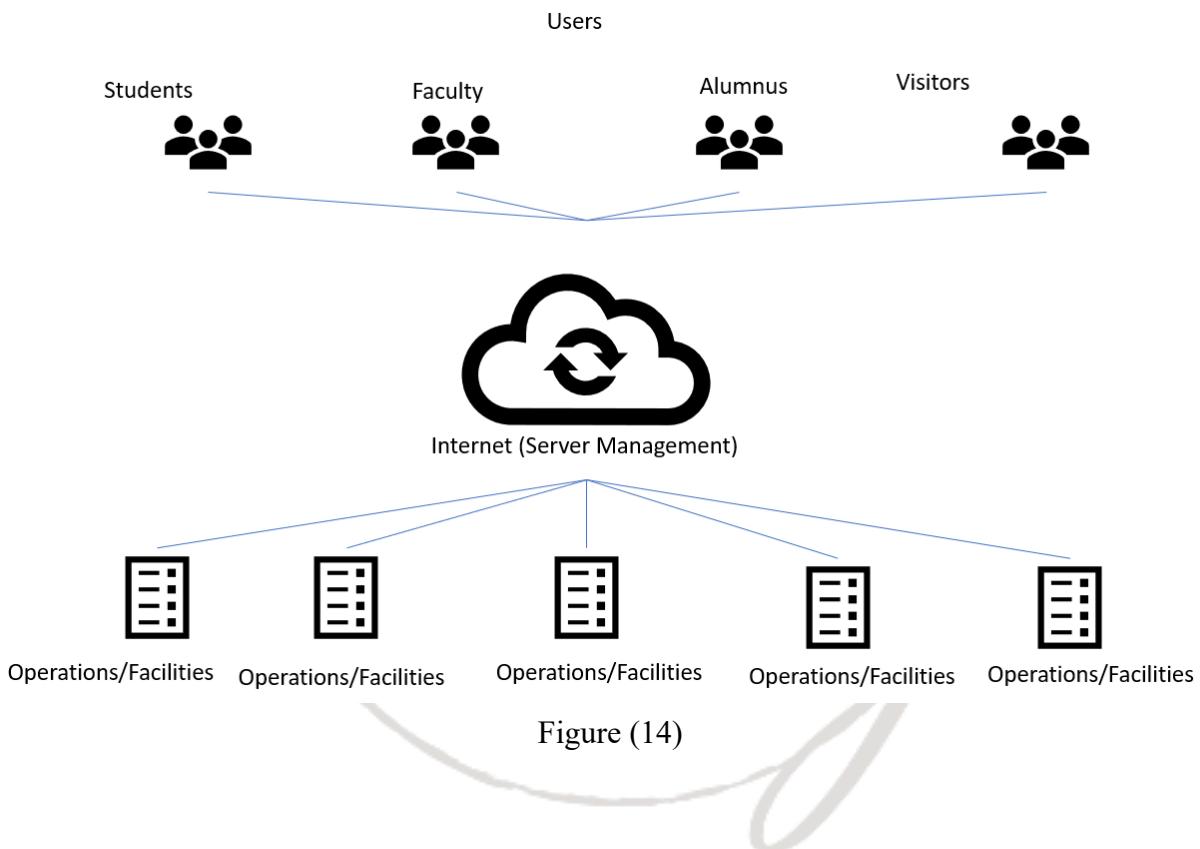
Figure (13)

5.1 Architectural Design Approach

the best architectural technique layout for My Uni Guide system is the client-server structure. This approach is more suitable with allotted gadget model which suggests the facts processing. The pattern is prepared into services and set of customers which call on these services. The network is needed to get right of entry to the server [5].

5.2 Architectural Design

Figure (14) shown below is an example of how Client-server join servers, many users (clients) can enter in web, store their data, and request a service.



5.3 Subsystem Architecture

This section describes the functions of the system and how the data of the platform will be stored in the database.

Users of the system:

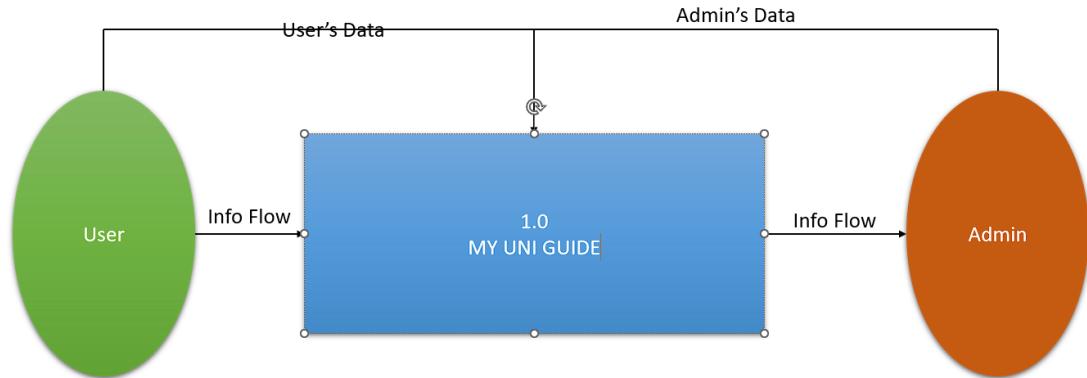


Figure (15)

Users Subsystem:

The data flow diagram in Figure below shows the functionalities that appear for the users (both user and admin). All users can register or login in the platform and reset new password in case they forgot it.

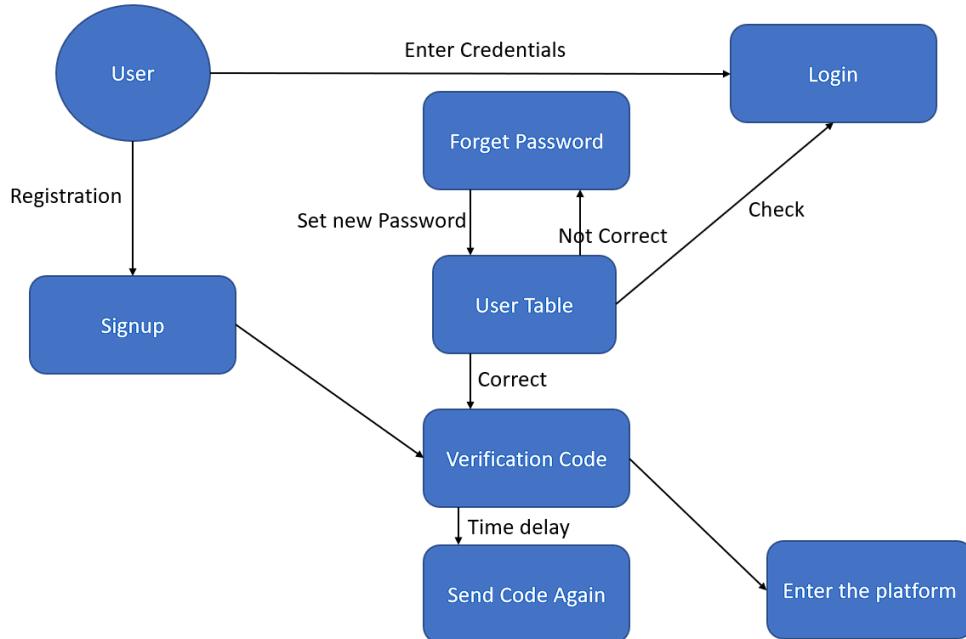


Figure (16)

Admin subsystem

Figure shows the data flow diagram below represents the admin subsystem. The admin can view user information and profile information. For the user information can use for different purpose such as operations, facilities. Also, the admin needs to view user information for any update:

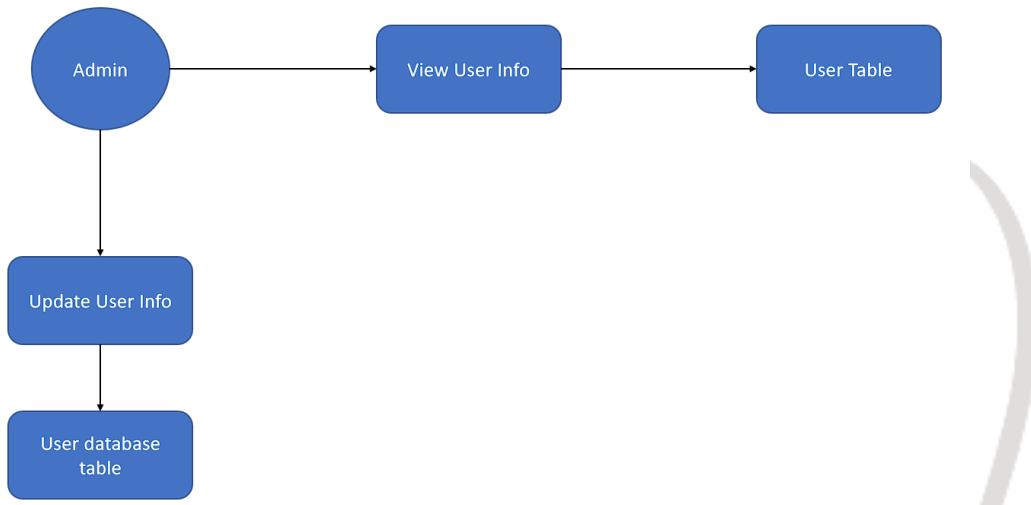


Figure (17)

6. Data Design

Data design is a major part of the proposed solution. This section describes the study of the basic information such as the data description covering all the aspects of entities etc. The data dictionary is also covered in this section and the database description is also defined. As the application is helping in the providing the proper guide of the university timeline therefore the information is aligned according to such scenario.

6.1 Data Description

The data description in this case provides the information of the entities, fields, and the datatypes for the case of the app design concerning the university guide. The complete information can be seen below:

Student:

Field	Type	Null	Key	Default
User_ID	decimal(50,0)	No	PRI	NULL
User_type	varchar(45)	No		NULL
Password	decimal(50,0)	No		NULL
Education	varchar(45)	No		NULL
Day	date	No		NULL
Month	date	No		NULL
Year	date	No		NULL
Address	varchar(45)	No	MUL	NULL
Course	varchar(45)	No	MUL	NULL
Email	varchar(45)	No		NULL
Facility	varchar(45)	No	MUL	NULL
Phone	varchar(15)	No	PRI	NULL

Table (6)

Alumnus:

Field	Type	Null	Key	Default
User_ID	decimal(50,0)	No	PRI	Null
User_name	varchar(35)	No		Null
User_Pass	int	No		Null
User_Role	varchar(35)	No		Null
Level	varchar(35)	No		Null
Description	varchar(35)	No		Null
Education_level	varchar(35)	No		Null
GPA	float	No		Null
Roll_num	float	No		Null
Pic	varchar(35)	No		Null
College_ID	decimal(50,0)	No	MUL	Null

Table (7)

Visitor:

Field	Type	Null	Key	Default
User_type	varchar(45)	No	PRI	NULL
User_ID	decimal(50,0)	No	PRI	NULL

Table (8)

Faculty:

Field	Type	Null	Key	Default
User_ID	decimal(50,0)	No	PRI	Null
User_name	varchar(35)	No		Null
User_Pass	int	No		Null
User_Role	varchar(35)	No		Null
Level	varchar(35)	No		Null
Description	varchar(35)	No		Null
Pic	varchar(35)	No		Null
Faculty_ID	decimal(50,0)	No	MUL	Null

Table (9)

6.2 Data Dictionary

The data dictionary is the proper procedure of explaining data existing in the MY UNI GUIDE platform. The details are:

Entity	Field	Description		
Student	User ID	Every student will be allotted a unique ID after registering for the app.		
	User type	The type will define the user kind, either active student or alumnus etc.		
	Password	The password will be created		
	Education	The previous education results		
	Day	Day of the month for the birth records		
	Month	Month of the birth		
	Year	Year of the birth		
	Address	Present and permanent address for records		
	Course	Courses enrolled		
	Email	Email details		
	Facility	Facility required such as sports, library, hostel etc		
	Phone	Phone details		
	Year	Enrolled year and left time to graduate		
Visitor	User type	Visitor is Parent/guardian or External Teacher/student etc		
	User ID	Assigned visitor Identity		

faculty	User ID	The identity locked by administration to distinguish
	Username	Username set by the users
	User Pass	Password created to access information
	User Role	Role such as senior, junior etc
	Level	Level such as instructor or professor
	Description	Description such as which subject and course
	Pic	Picture to identify user
	Faculty ID	The ID provided by the app to set data records
Alumnus	User ID	User Identity for keeping app records
	Username	Name parsed by user
	User Pass	Password set to login
	User Role	Alumnus data such as company serving etc
	Level	Position in the company
	Description	Major studied
	Education level	Educational information such as the higher education, researcher etc
	GPA	GPA at the time of graduation
	Roll num	Roll number of classes attended
	Pic	Picture to identify
	College ID	College ID for accessing college records from database.

Table (10)

6.3 Database Description

Database description is an important aspect for software design tools to access the planning and strategy of completion of the project. Therefore, the Entity relation Diagram (ERD), Entity Relation mapping and the database pseudo code was used for the MY UNI GUIDE system utilizing MySQL.

The ERD diagram can be seen below:

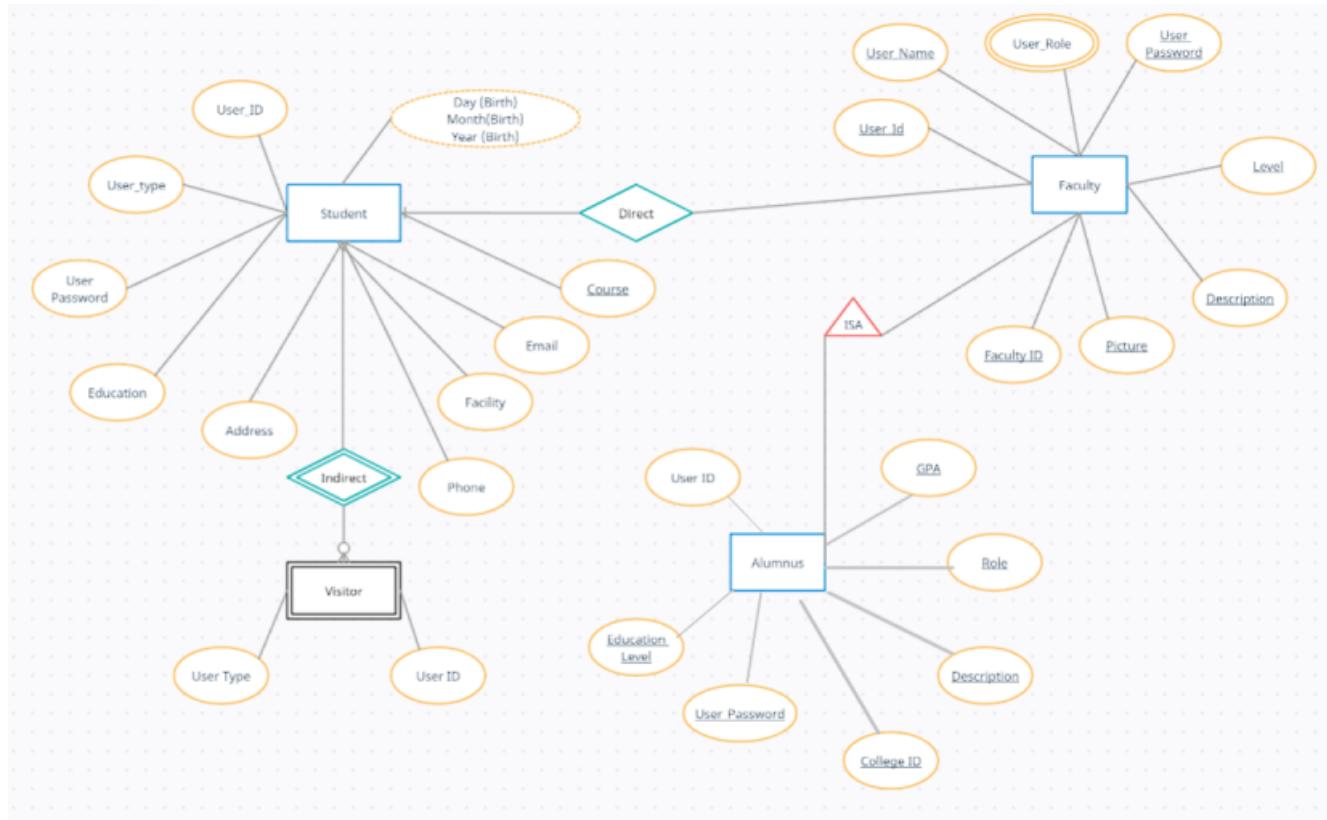


Figure (18)

The ER Mapping can be seen as:

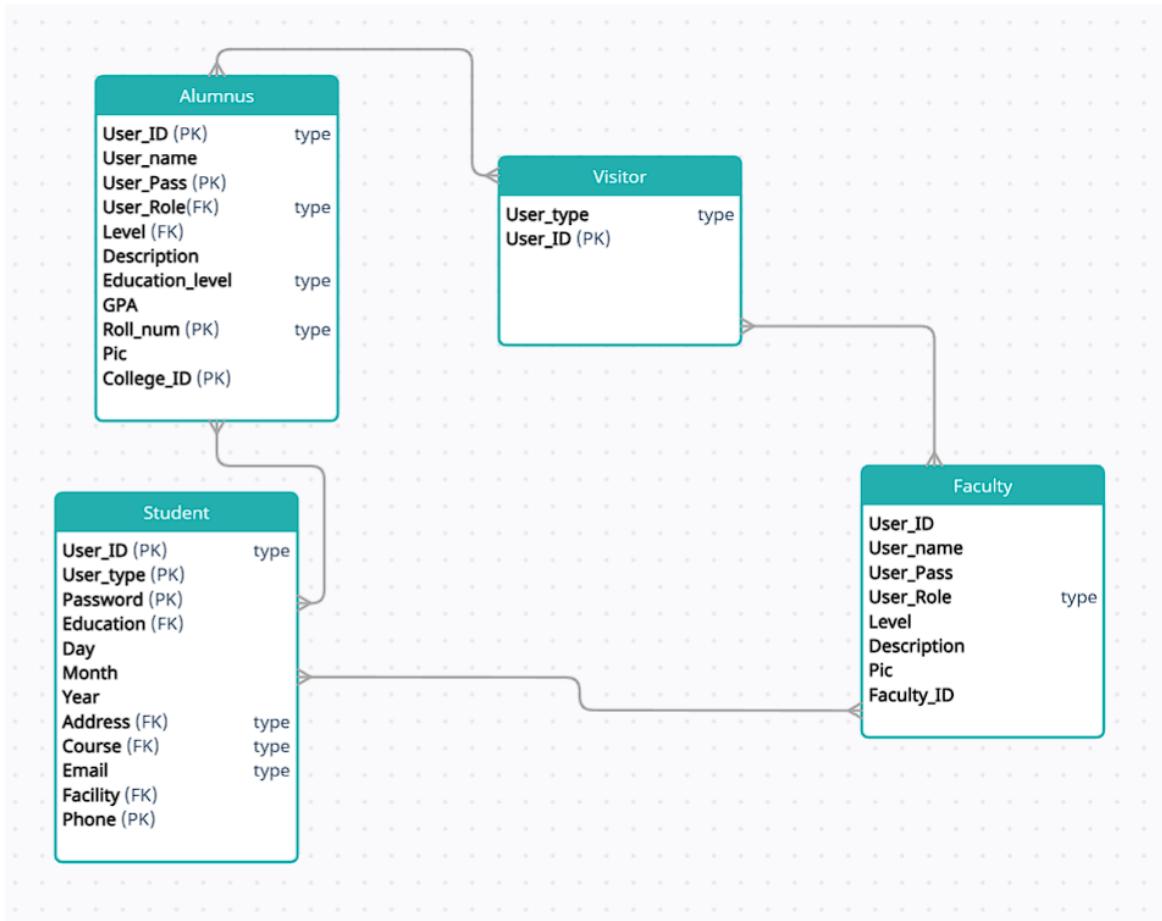


Figure (19)

This part presents MySQL code for MY UNI GUIDE database entities with all required data using MySQL Workbench.

create database MY_UNI_GUIDE;

use MY_UNI_GUIDE;

CREATE STUDENT Account

(

User_ID decimal(50,0) NoNULL

User_typevarchar(45) NoNULL

Passworddecimal(50,0) NoNULL

Educationvarchar(45) NoNULL

DaydateNo NULL

MonthdateNo NULL

Yearchar(45) NULL

Addressvarchar(45)NoNULL

Coursevarchar(45)NoNULL

FOREIGN KEY Emailvarchar(45)NoNULL

Facilityvarchar(45)NoNULL

FOREIGN KEY Phonevarchar(15)NoNULL

);

CREATE Alumnus Account

(

User_ID decimal(50,0) NoNull

User_namevarchar(35) NoNull

User_Passint NoNull

User_Rolevarchar(35)NoNull

Levelvarchar(35) NoNull

Descriptionvarchar(35) NoNull

FOREIGN KEY Education_level varchar(35) NoNull

GPAfloat NoNull

Roll_numfloat NoNull

FOREIGN KEY Picvarchar(35) NoNull

FOREIGN KEY College_IDdecimal(50,0) NoNull);

CREATE VISTOR Account

(

User_typevarchar(45) NoNULL

User_ID decimal(50,0) NoNULL);

CREATE Faculty Account

(

Primary Key User_ID decimal(50,0) NoNull

User_name varchar(35) NoNull

User_Pass int NoNull

User_Role varchar(35) NoNull

Level varchar(35) NoNull

Description varchar(35) NoNull

Pic varchar(35) NoNull

Faculty_ID decimal(50,0) NoNull

);

7. Component Design

The component design section consists of programming language pseudo code and the natural language processed therefore the logical method is presented below to understand the operational and functional capability of the application. It is to be noted that the specific dev-Ops method was proposed to concern the state-of-the-art conventional technique.

Common functions

Login

```
login () {
```

Enter username and password

If username and password found in database

Then go to the page interface

Else

Show Error message “Incorrect username or password, please try again!”

```
}
```

Forgot password

```
forgotPassword () {
```

Choose a way to get the verification code

If email has chosen

Then enter the email address

If the email found in database

Then send a verification code to the email

Else if phone has chosen

Then enter the phone number

If the phone number found in database

Then send a verification code to the phone number

Else

Show Error message “Invalid, please try again!”

}

Change password

changePassword () {

Enter the old password

If the old password found in database

Then enter the new password, confirmed password

If (new password == confirm password)

Update the old password in database

Else

Show Error message “The new password doesn’t match the confirmed password!”

Else

Show Error message “Invalid password!”}

Edit profile (Student, Faculty, Alumnus)

editProfile () {

If there is invalid input

Then show Error message “Invalid input, check the format!” Else

Update the fields in database

}

User functions

createProfile () {

Enter the user name, user ID, password, profile picture, owner name, entity type, phone number, , email, phone number, password, confirmed password

If some fields missing

Show warning message the missing filed

Else if phone number is not in this format “+#####”

Show warning message “Check the phone number format !”

Else

Save in database

move to the facility page

}

Access Facility Operations

AccessingOperations () {

If there is invalid input

Then show Error message “Invalid input, check the format!” Else

Update the fields in database

}

Add new Operation

addNewOperation () {

if user click on Add button

Enter the operation type, details, timing, description, picture, category

If the user clicked Save button

If some fields missing

Show red asterisk next to the missing filed

Else

Update the operation page

}

8. Detailed System Design

The detailed system design provides the details about the buttons and information provided for the functional and operational capability. The low level and subcategory system is provided to understand the working principle of the application system architecture. Also, it is to be noted that the information included also provides the detailed systematic study of the attributes etc.

8.1 & 8.2 Definition and Classification

<u>components</u>	<u>classification</u>	<u>definition</u>
Common function		
Create new account	function	This the function will allow the user to access by create new account to put their all information
login	function	This the function will allow the user to access their account by entering the email and password
Reset password	function	This function will allow the user to retrieve the password by e-mail or phone number.
Log out	function	This function will allow the user to end the access to get out of the platform
Student function		
create	function	That function will allowed the student to create or to have a new order
cancel	function	This function will allowed the student to cancel an order
Replay & likes	function	This function will allow the student to write and respond a comment
Joined activity	function	This function will help the student to see what the activities participation in
Admin function		
Manage timeline	function	This function will help to control the sitting and editing the activities
Security page for managing content	function	this function will help to keep the page secure not infringe on any information

Manage orders and ads	function	This function will add and delete ads, the orders if some teaches want to give classes
-----------------------	----------	--

Table (11) [7]



8.3 Responsibilities

Components	Responsibilities
Create new account	It will allow the student to create an account by filling in all the required information
Reset password	Allow the user to reset their account password
login	Allows the user who has already registered before to login to his account via email and password
Search settings	It allows you to search for the required settings directly
Account settings	Allows you to change or modify the personal data of the user
Security and privacy	Allows modification to the privacy of user information, account, and publications
Notification	Allows you the ability to control application notifications
Accessibility, display, and language	Allows you to modify the vision, presentation, and language of the application
Additional resources	It provides you with useful information from other places to learn more about the platform and its services
Log out	Log out of the user account and return to the main page
Search direct message	It allows you to search and create private messages with users or advertisers
Create group	Allows the creation of a group of several users, and each user can participate and send messages
Student Functions	
Create, Cancel order	Allows the student to create orders and delete existing orders with its information
Joined activists	Show the activities that the student participated in
Likes, Replies	It shows all the likes on the page and all the student interactions and comments
Admin Functions	
Settings and editing	Allows the admin to manage and modify the timeline
Security, Content	Allows the admin to access the security page to ensure the correctness and appropriateness of the content
Advertise, Orders	It allows the admin to access advertisements and orders, ensure their integrity and credibility, and then approve them
Show here	Displays to the admin a chart to show the using Statistics chart

Table (12)

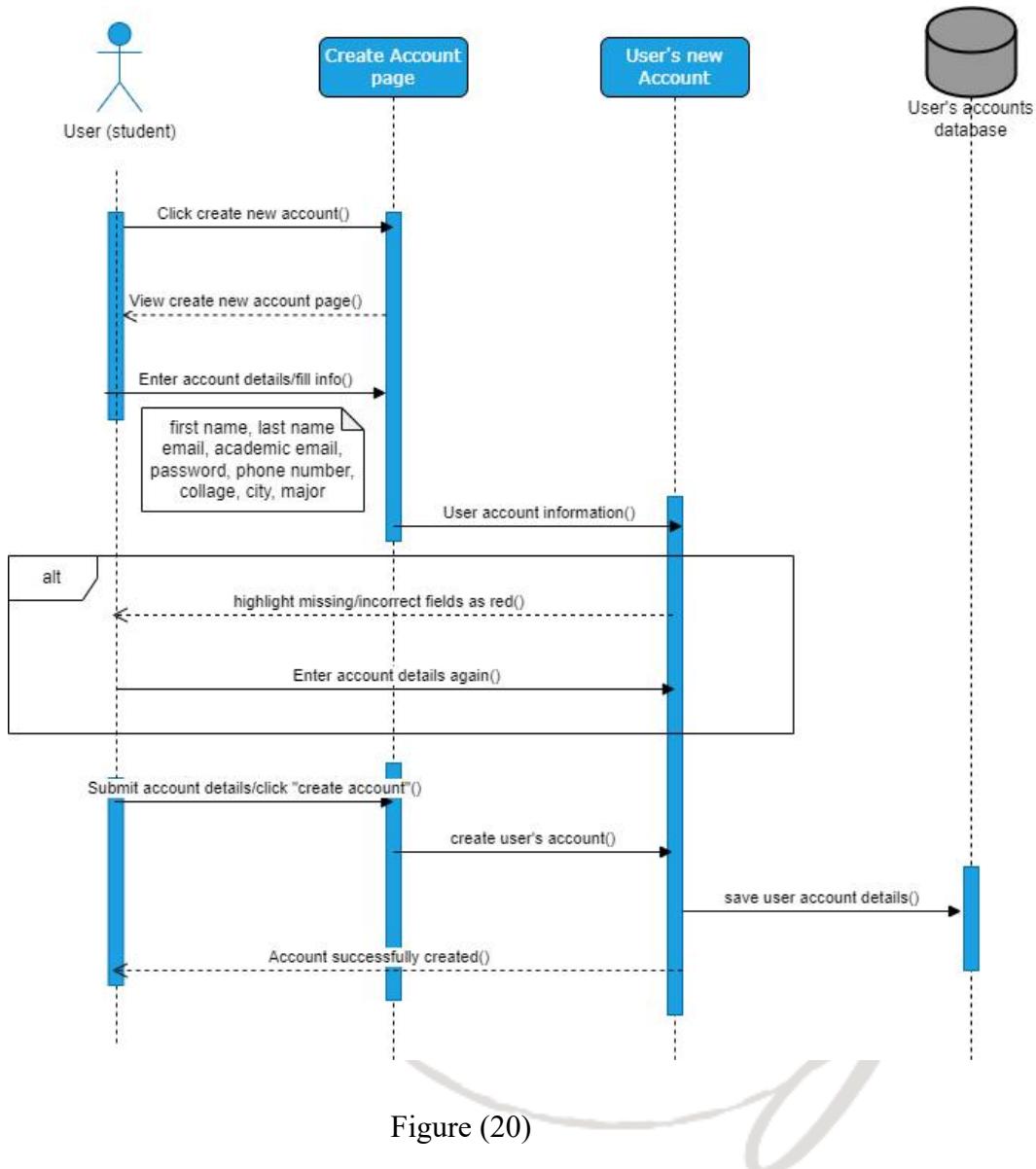
8.4 & 8.5 Constraints and Composition

Components	Constraints	Pre-condition	Post-condition
Create new account	Registration must be done using an academic email	None	Send verification code
Reset Password	The user enters the email	Make sure it's an official academic email and already registered	The password will be updated
login	The user must have an account	Enter Email and password	Send verification code
Search settings	Using letters and numbers	None	None
Account settings	Must be a valid data	Enter the needed personal information	Save and store the data
Security and privacy	None	None	None
Notification	None	None	None
Accessibility, display, and language	None	None	None
Additional resources	None	None	None
Log out	None	None	None
Search direct message	Search for the desired user/group	Your chat request must be accepted	Write and you're your message
Create group	None	A message requesting to join the group to all the added members	Group will be created with members who have accepted the request
Student Functions			
Create, Cancel order	The user must fill out and complete all order procedures, and can cancel the existing orders	The user must obtain the consent of the admin on the orders and cancel them	Create/cancel order
Joined activists	None	Share appropriate content	None
Likes, Replies	None	None	None
Admin Functions			
Settings and editing	None	None	None
Security, Content	If the content is sensitive and inappropriate	Send an alert to the user and work to delete it	Remove inappropriate content from the app
Advertise, Orders	The sender must have an account that contains the full information	Ensure the integrity and credibility of the request	Approval and registration of the request
Show here	None	None	None

Table (13)

8.6 Uses/Interactions

8.6.1 Create account



8.6.2 Login functionality

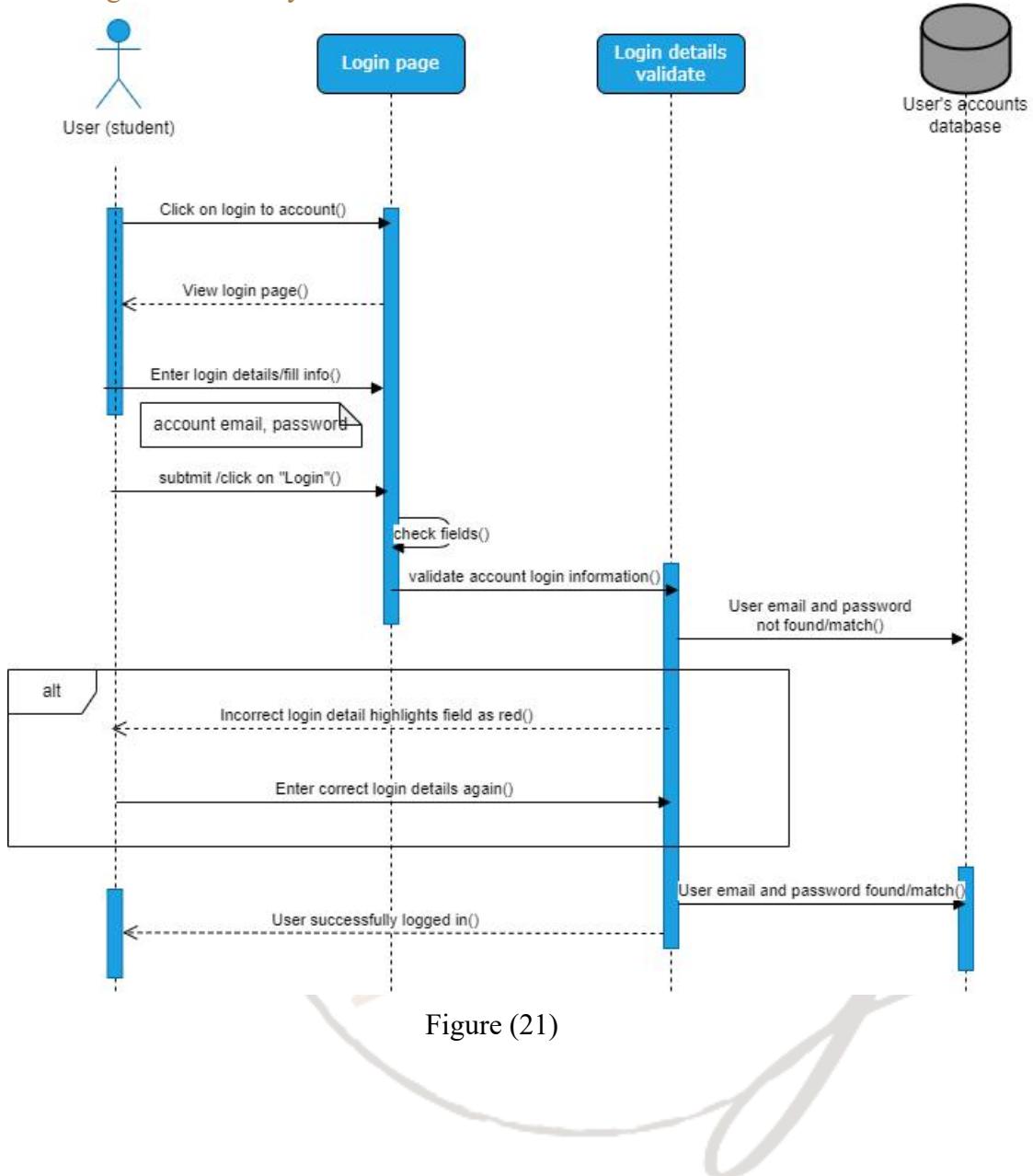


Figure (21)

8.6.3 Reset password

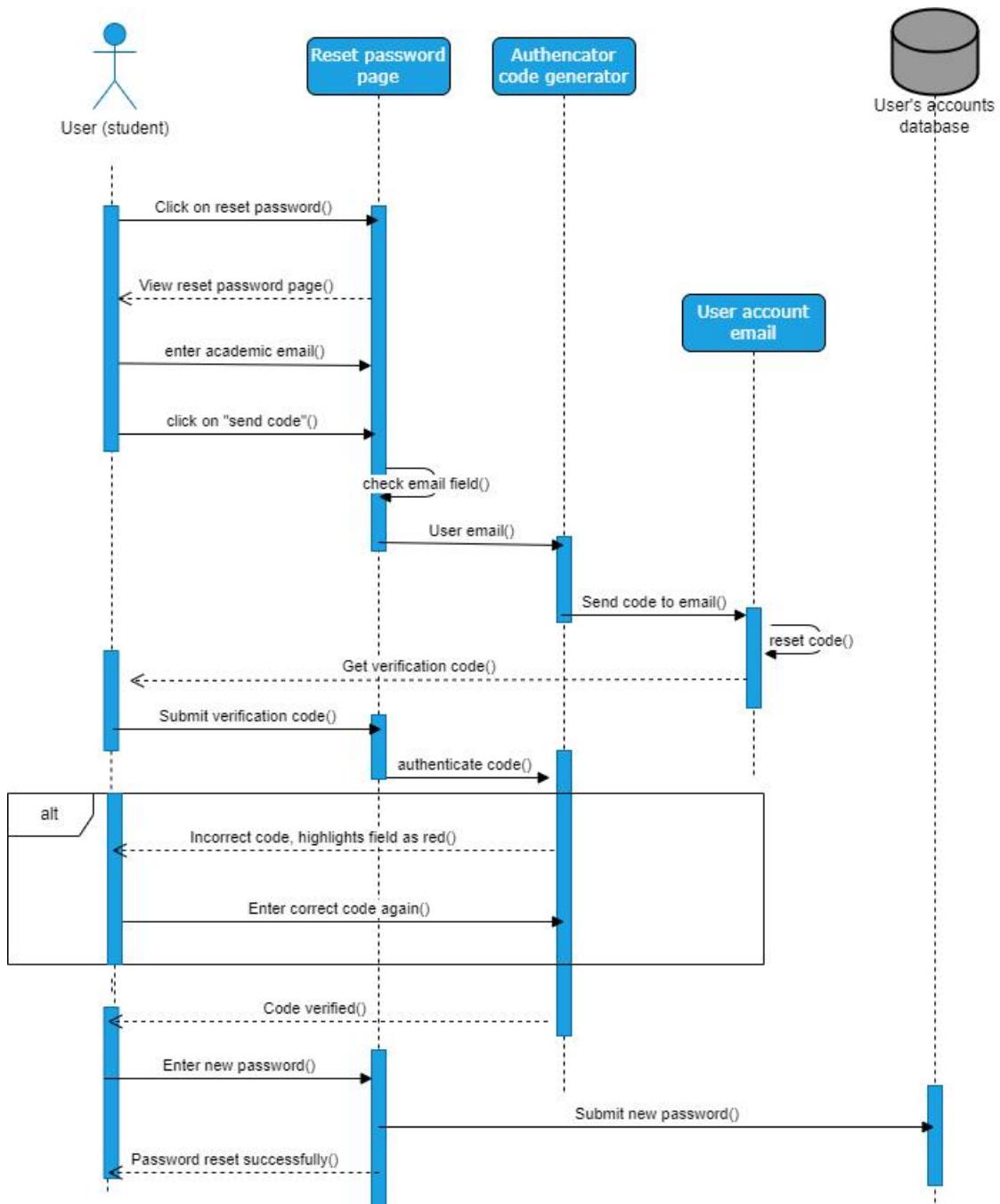


Figure (22)

8.6.4 User account setting

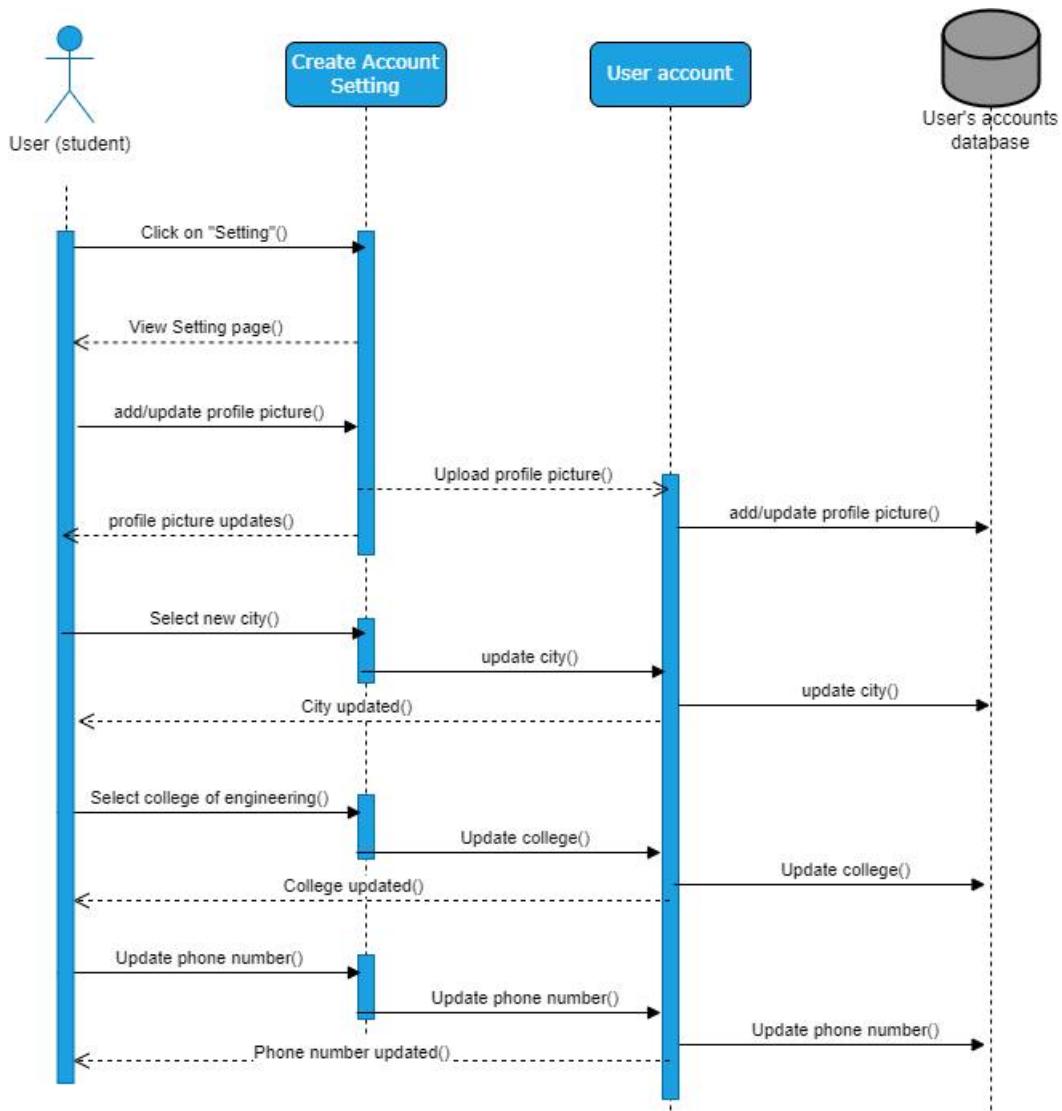


Figure (23)

8.6.5 Direct message

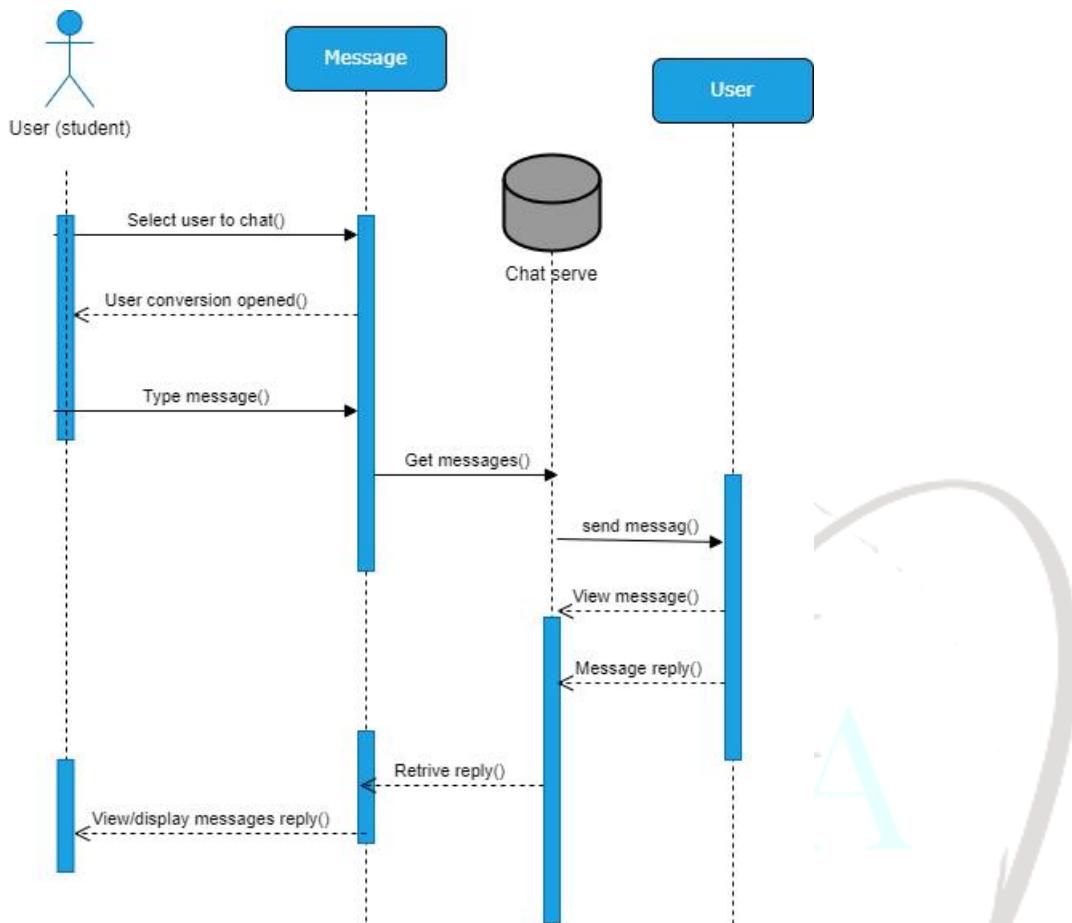


Figure (24)

8.6.6 Search user to chat functionality

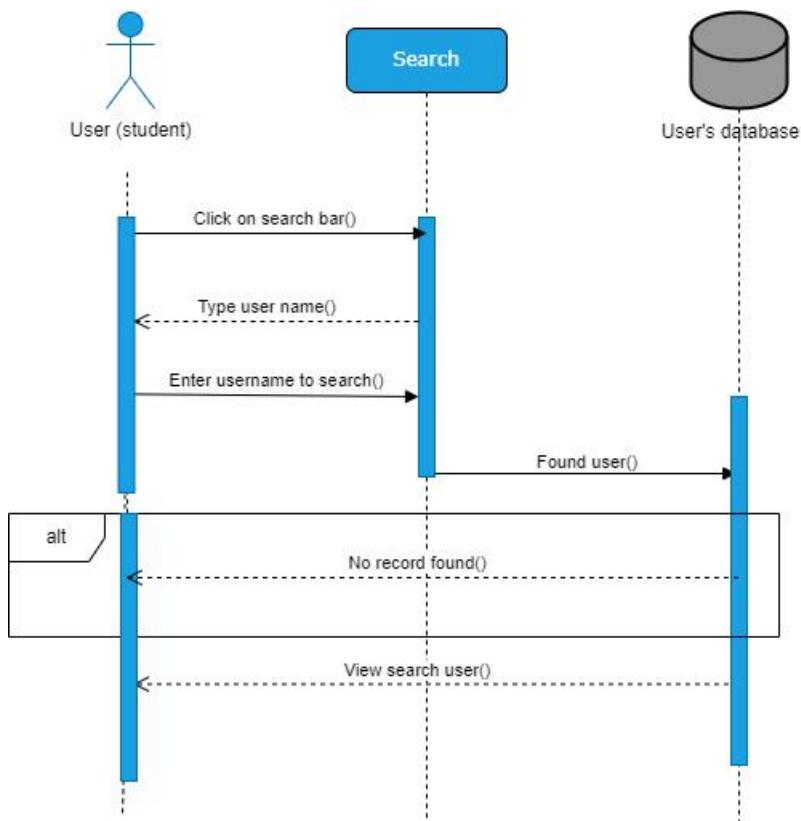


Figure (25)

8.7 Resources

The following table shows the external entity resources and their specifications for My Uni Guide application [6].

Type	Resources
Operating System	IOS, android.
Memory Storage	2GB or 3GB recommended.
Database	MySQL.
Server	XAMPP
Transaction	OLTP (Online Transaction Processing Systems)
Internet connection	Network.

Table (14)

8.8 Processing

This section presents the components of My Uni Guide application with their description, input, output.

8.8.1 Create new account

Description	The user can create new account in the application.
Input	User first name, last name, username, academic email, password, phone number, college, city, and major.
Output	Enters the user account page.
Constraint	User must use valid username and academic email.

Table (15)

8.8.2 Login

Description	The registered user can login to the application.
Input	User email, password.
Output	Enters the user account page.
Constraint	Must enter the correct data (email and password).

Table (16)

8.8.3 Reset password

Description	The user can reset their account password.
-------------	--

Input	User academic email then click on send code button.
Output	Change password.
Constraint	If the user enters wrong password.

Table (17)

8.8.4 Search direct message

Description	User can search for users and send messages.
Input	Send message request.
Output	Start a conversation between the users.
Constraint	Message request must be accepted.

Table (18)

8.8.5 Create group

Description	User can create a group pf multiple users to chat.
Input	Send a message request to all selected users.
Output	A group of all members will be created.
Constraint	Only members who agree to the request will be added.

Table (19)

8.8.6 Create, Cancel order

Description	User can create orders and delete existing orders with its information.
Input	The user must fill in all required fields to complete it.
Output	Create/delete order.
Constraint	Admin approval.

Table (20)

8.8.7 Security, Content

Description	Admin can access the security page to ensure the correctness and appropriateness of the content.
Input	-

Output	The selected content will be modified or deleted.
Constraint	Only content that does not fit the content of the application will be reviewed.

Table (21)

8.8.8 Advertise, Orders

Description	Admin can access advertisements and orders to give approval.
Input	The admin will receive every order and advertisement that is submitted.
Output	Confirmation of orders and advertisements approved.
Constraint	The sender's account must contain the full information, verify the credibility.

Table (22)

8.9 Interface/Exports

8.9.1 Create new account interface:

Actors	- User (Student)
Description	The user can create an account in the application by completing the required data entry using their personal and academic information.
Data	<ul style="list-style-type: none"> - User first name - User last name - Username - Academic email - Password - Phone number - College - City - Major
Stimulate	Click on Sign up button.
Response	Create the account and access the user's personal page.
Comments	If the user enters an email that is not an academic or official email, the account will not be created and "Invalid email" message will appear.

Table (23)

8.9.2 Login interface:

Actors	- User (Student)
Description	The user can access their account by entering the email and password, the entries must correspond to the data registered for the user in the database.
Data	- Academic email

	- Password
Stimulate	Click on Log in button.
Response	Access to the user's personal page.
Comments	If the user does not enter a valid email or password, the message "The information you entered is incorrect, try again" will appear, or they can choose (forget password?) that appears on the screen.

Table (24)

8.9.3 Reset password interface:

Actors	- User (Student)
Description	The user enters his academic email and if he is registered in the database, the recovery code will be sent to the email.
Data	- Academic email
Stimulate	Click on Send code button.
Response	A password reset code will be sent to the user's email
Comments	If the entered email does not exist in the database, this means that the user does not have an account, then the message "Sorry, there is no account with this email" will appear.

Table (25)

8.9.4 Timeline interface:

Actors	- Users (Students)
Description	It will show the latest updates and publications also through it the user will create and share content, access the homepage, search, notifications, access to direct messages.
Data	-
Stimulate	Create post, homepage, search, notifications, direct message buttons.
Response	-
Comments	-

Table (26)

8.9.5 Admin interface:

Actors	- Admin
Description	The main admin page from which he can access the account settings, manage timeline, access the security page for managing content, manage orders and advertisements and display statistics chart.
Data	-
Stimulate	Setting, editing, security, content, advertise, orders and show here buttons.
Response	-
Comments	-

8.9.6 User homepage interface:

Actors	- User (Student)
Description	The user's homepage where the name and academic information will appear and can access their account settings, joined activities, orders, likes and replies.
Data	-
Stimulate	Setting, create order, cancel order, likes, replies buttons.
Response	-
Comments	-

Table (28)

8.9.7 User settings interface:

Actors	- User (Student)
Description	The user's settings page through which he can search for the required settings or access the user's account data to modify them or modify the account privacy, notifications, accessibility, display and language, access to other resources, and log out of the account.
Data	-
Stimulate	Your account, security and privacy, notifications, accessibility, display, and language, additional resources, and log out buttons.
Response	-
Comments	-

Table (29)

8.9.8 Account settings interface:

Actors	- User (Student)
Description	A page through which the user can update his personal data. He can modify the name, username, password, email, city, college, phone number.
Data	Fields to be updated.
Stimulate	The user clicks on Save button to save the changes.
Response	The information will be updated.
Comments	-

Table (30)

8.9.9 Direct message interface:

Actors	- User (Student)
Description	A page where the user can create chats with other users and create groups.
Data	-

Table (31)

Stimulate	Search for users through the search bar or create a group through the Create new group button.
Response	-
Comments	-



8.10 Detailed Subsystem Design

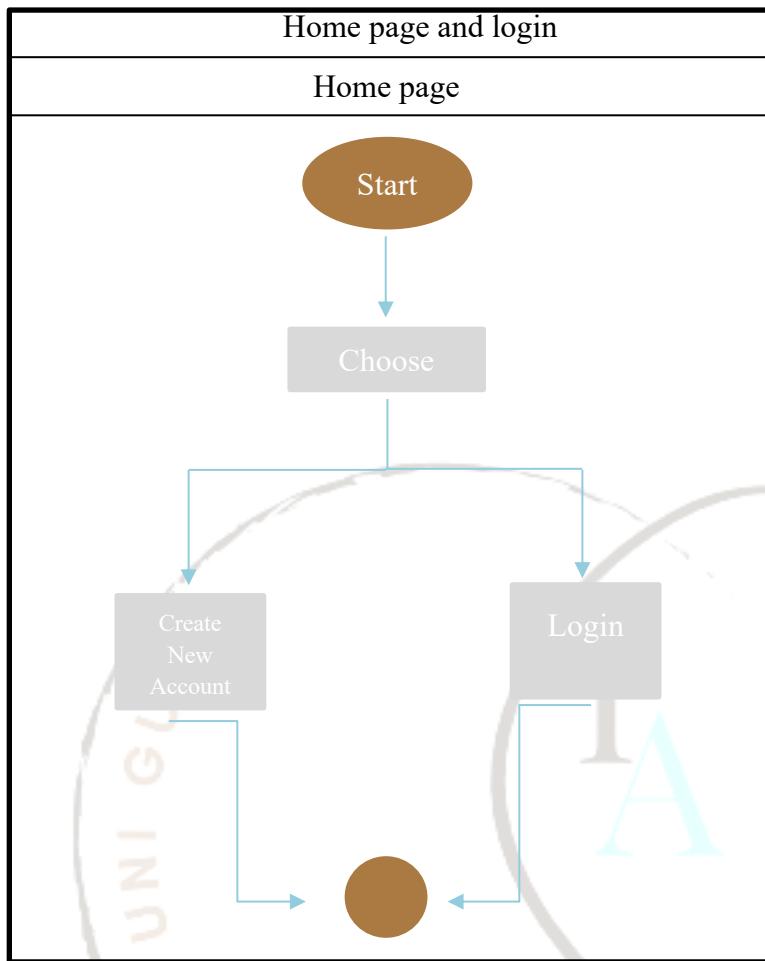


Figure (26)

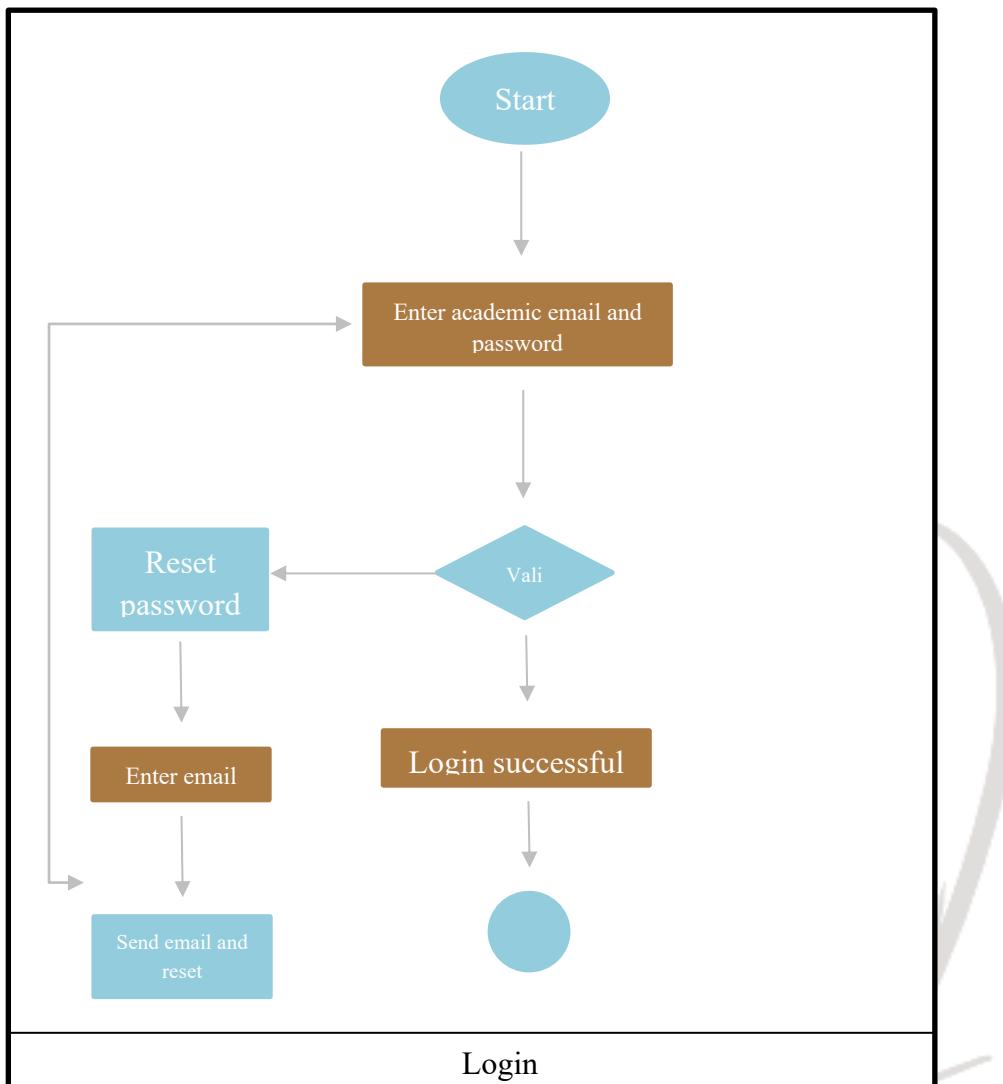


Figure (27)

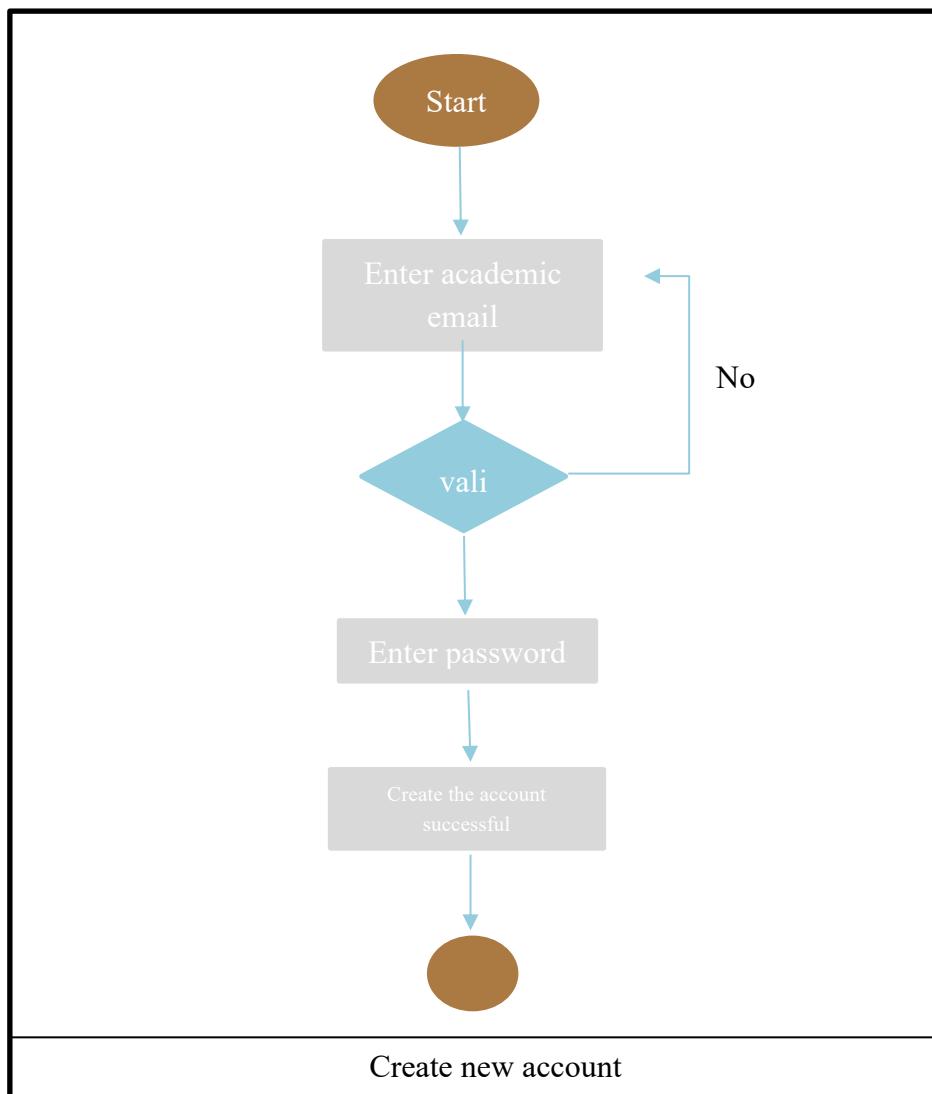


Figure (28)

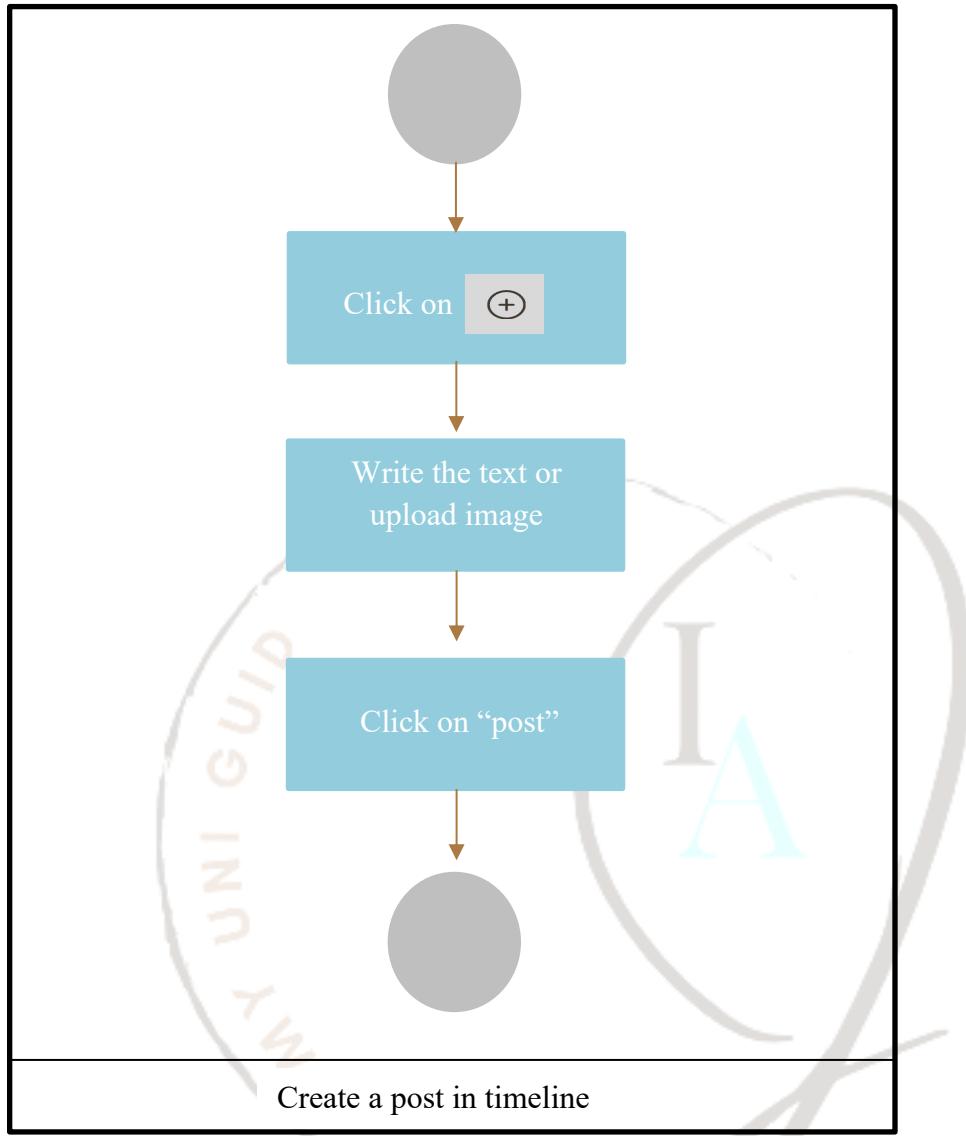


Figure (29)

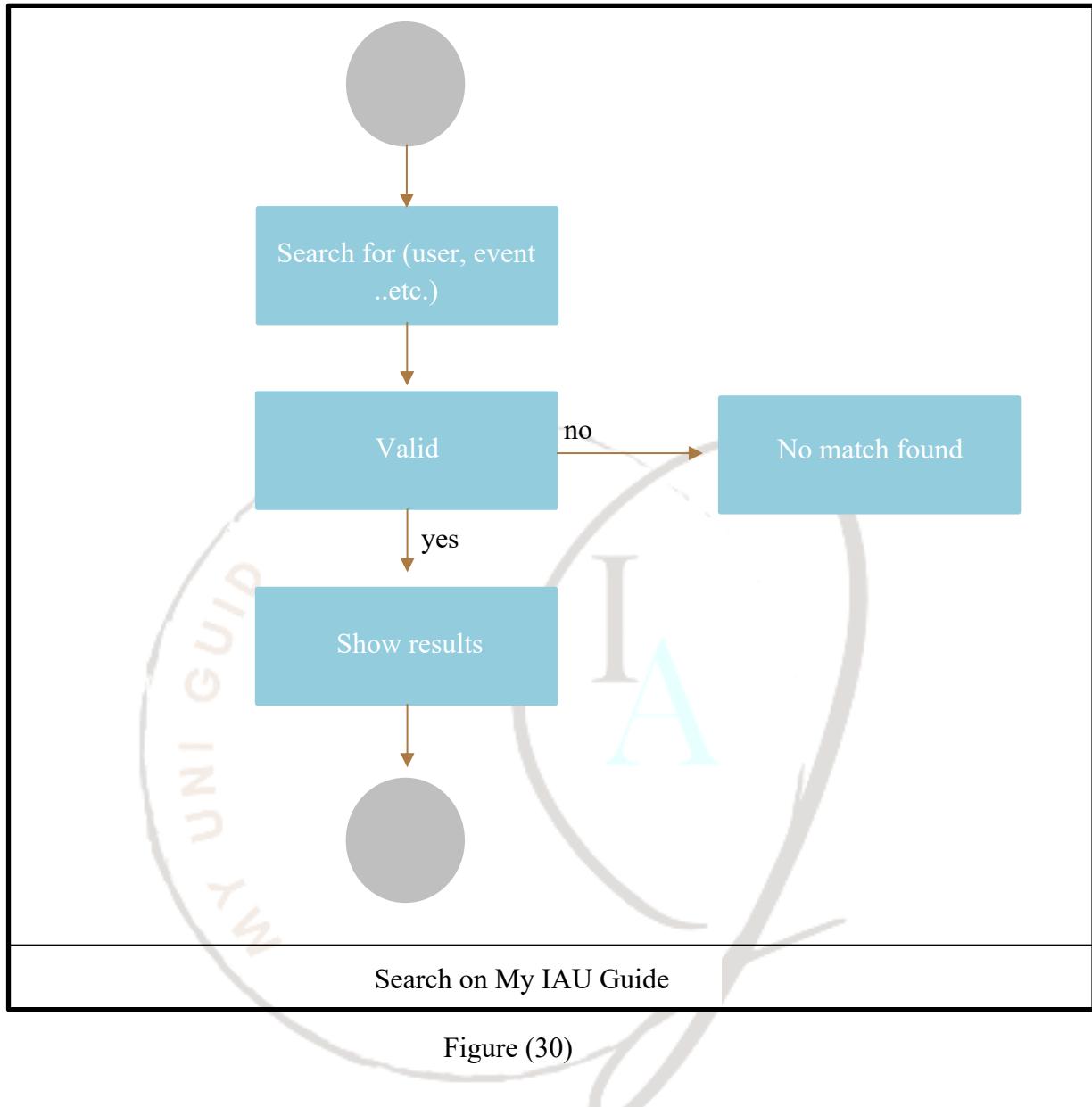


Figure (30)

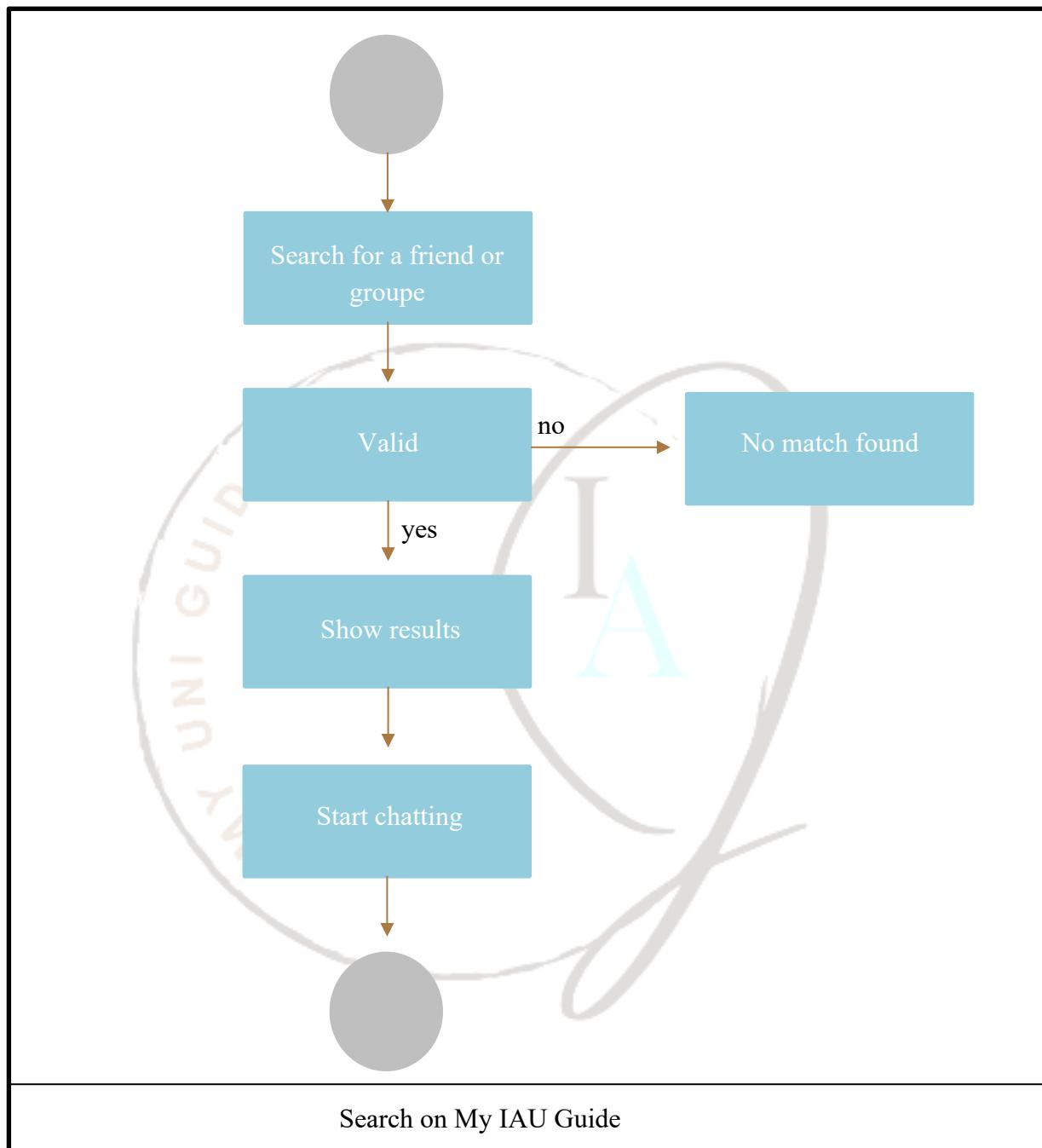


Figure (31)

9. Other Design Features

My Uni Guide used client server for the whole system. However, some subsystems and interactions will use different architectures and styles. as an example, checkout, evolution, and viewing Statistics of application users at a particular time. My Uni Guide platform used pipe and filter pattern for these operations.

10. Requirements Traceability Matrix

Here are the requirements that specify all the My Uni Guide fundamental actions.

Functional requirement 1

ID: FR1

TITLE: User Registration.

ACTORS: user

DESC: The user should be able to register. The user must provide first name, last name, password, academic email, and major.

Functional requirement 2

ID: FR2

TITLE: Log-in

ACTORS: user

DESC: given that a user has registered, then the user should be capable of log in to 'My Uni guide'. The log-in information will be stored at the phone and in the future the user needs to be logged in automatically.

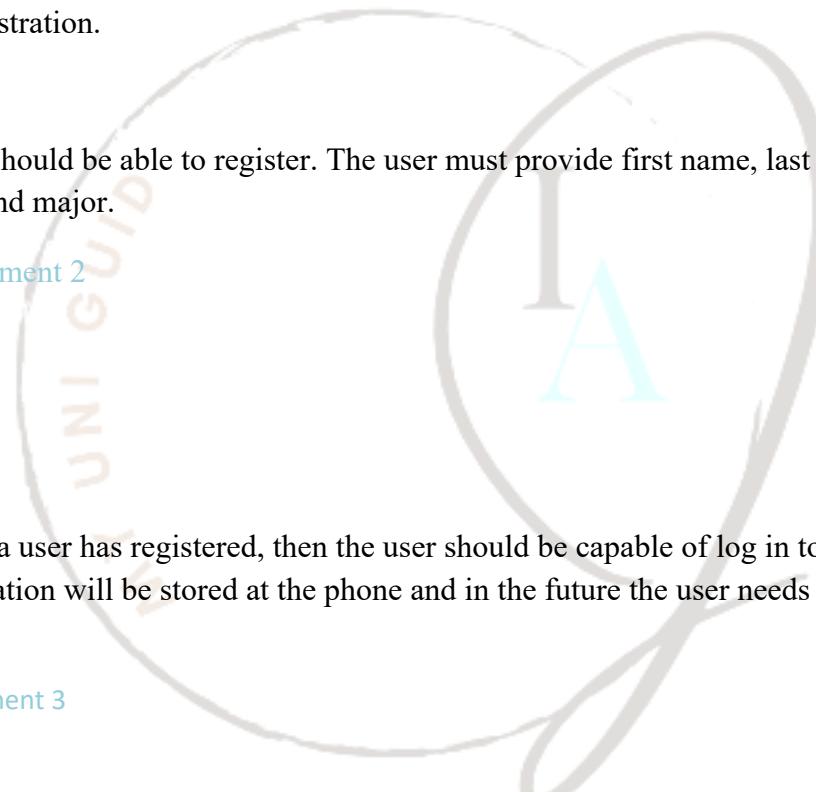
Functional requirement 3

ID: FR3

TITLE: password retrieve

ACTORS: user

DESC: given that the person has registered, then the person may be capable of retrieve the password by his educational email.



Functional requirement 4

ID: FR4

TITLE: Homepage

ACTORS: Admin and user

DESC: Several pages appear that the user can navigate between them when clicking on what he wants. A page for registration, login, timeline, direct messages, account information, admins accounts and other pages.

Functional requirement 5

ID: FR5

TITLE: admin page

ACTORS: Admin

DESC: On this page appears several commands that the admin can do, such as managing requests, coordinating advertisements, and controlling timeline settings.

Functional requirement 6

ID: FR6

TITLE: student profile

ACTORS: user (students)

DESC: the account settings appear, such as modifying the information entered during registration, changing the account picture, controlling privacy and others

Functional requirement 7

ID: FR7

TITLE: Search in My Uni Guide page

ACTORS: user (students)

DESC: The user can search for what he needs, such as searching for friends and classmates, or searching for the latest news and advertisements.

Functional requirement 8

ID: FR8

TITLE: direct messages page

ACTORS: user (students)

DESC: Search in Direct Messages, choose a friend or group to start a new conversation.

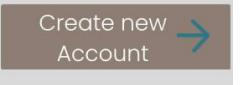
Functional requirement 9

ID: FR9

TITLE: timeline page

ACTORS: user (students)

DESC: The user can publish daily news about the college or post topics and pictures of whatever he wants. He can also browse and read the posts of the rest of the students, ads and posts will appear after which he can like or repost them. At the end of the page there are several buttons such as notifications, direct messages, and search.

Observed in	Associated ID in SRS	Technical Assumptions and/or User needs	Functional requirement	System component
Common	FR4	several pages seem that the person can navigate among them whilst clicking on what he wishes. A page for registration, login, timeline, direct messages, account data, admins accounts and different pages.	Homepage	
	FR1	The user can be registered by providing first name, last name, password, academic email, and major.	user Registration.	
	FR2	The user can login by providing correct email and password.	Log-in	

User	FR3	Given that the user has registered, then the user will be able to retrieve the password by e-mail.	password retrieve	Send Code →
	FR6	It shows the user options to modify his account, privacy, and notification settings	student profile	View student profile page
	FR7	user can search for what he needs, such as searching for friends and classmates, or searching for the latest news and advertisements.	Search in My Uni Guide page	View search page
	FR8	Student can Search in Direct Messages and Choose a friend or group to start a new conversation.	direct messages page	View direct messages page
	FR9	Student can post daily news about the college. He can also browse and read the posts of the rest of the students, ads and posts will appear after which he can like or repost them. At the end of the page there are several buttons such as notifications, direct messages and search.	timeline page	View timeline page
Admin	FR5	The administrator has several options, including settings in general and managing requests and advertisements.	admin page	View admin page

Table (32)