

# **SOCIAL NETWORK FOR UTAR ALUMNI**

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**UNIVERSITI TUNKU ABDUL RAHMAN**

**SOCIAL NETWORK FOR UTAR ALUMNI**

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**A project report submitted in partial fulfilment of the  
requirements for the award of Bachelor of Science  
(Honours) Software Engineering**

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Universiti Tunku Abdul Rahman**

**September 2023**

**DECLARATION**

I hereby declare that this project report is based on my original work except for citations and quotations which have been duly acknowledged. I also declare that it has not been previously and concurrently submitted for any other degree or award at UTAR or other institutions.

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**APPROVAL FOR SUBMISSION**

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## ABSTRACT

Alumni play an important and crucial role in the growth and prosperity of a higher educational institution. However, higher educational institutions nowadays have been facing challenges in effectively building long-term relationship with their Alumni. The University of Tunku Abdul Rahman (UTAR) also has had trouble in engaging with the Alumni as there is an lack of proper platform that could connect with the Alumni. The existing Alumni portal and website that UTAR has been using have prove ineffective in retaining alumni engagement due to the lack of interactivity functionality, resulting in gradual estrangement between UTAR and its Alumni. Moreover, the lack of security in authentication management for the existing UTAR Alumni system poses a serious concern as it may compromises the confidentiality and integrity of important alumni data. Therefore, a web-based social networking system is developed to address the issues mentioned. The web-based social networking system provides a number of interactive functionalities that could maximizes the interaction between each users, ultimately closing the gap between UTAR and its valued Alumni community. The system also will also implement a robust authentication management techniques such as personal login phrase, password policy, and lockout policy to safeguard user's account. Scrum methodology was selected for the development of this project. HTML, CSS, JavaScript, and Bootstrap are used for the front-end development while Laravel and Pusher API are used for the back-end development. Unit testing, User Acceptance Test, and Usability Testing has been conducted during the testing phase of this project and 6 users have participated in the testing process. In a nutshell, all the objectives of this project have been achieved and recommendations for future improvements are discussed.

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**LIST OF SYMBOLS / ABBREVIATIONS**

API	Application Programming Interface
CSS	Cascading Style Sheets
ERD	Entity Relationship Diagram
HEI	Higher Educational Institution
HTML	HyperText Markup Language
HTTP	Hypertext Transfer Protocol
MVC	Model-View-Controller
PHP	Hypertext Preprocessor
SDLC	Software Development Life Cycle
SUS	System Usability Scale
UTAR	Uuniversity of Tunku Abdul Rahman
WBS	Work Breakdown Structure

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## CHAPTER 1

### INTRODUCTION

#### 1.1 General Introduction

Alumni are one of the essential assets of the university that provides several benefits to both universities and students (Chi, Jones and Grandham, 2012). Acknowledging Alumni's importance to a university, University of Tunku Abdul Rahman (UTAR) is tremendously lacking a proper platform to maintain the relationship between the university and Alumni, resulting in losing contact with many Alumni over time. The impact of this problem has slowly grown over the years and can turn into a serious problem that could not be neglected. Neglecting the relation between the university and Alumni impacts not only the higher educational institution such as UTAR but also the existing student of the institution.

Unfortunately, building a long-term relationship with Alumni has been a major obstacle for a Higher Educational Institution (HEI) (Ebert, Axelsson and Harbor, 2015). HEI nowadays has started to acknowledge this problem as a serious matter by realizing the value of Alumni would bring to the university. Alumni can support the alma mater where the Alumni have graduated by providing support in non-monetary and monetary ways (Snijders et al., 2019). Besides, loyal Alumni can contribute to financial support such as donation, purchasing university products, and many more (McAlexander and Koenig, 2001), which can help HEI to improve the basic infrastructures and facilities.

Alumni are also one of the best advertisement sources for a HEI (Pedro, Mendes and Pereira, 2020). Alumni play a major role in building enrolments for a HEI by recommending the HEI to others such as friends, families, relatives and others. The reputation and visibility to the public of the HEI will eventually be raised as a result (McAlexander and Koenig, 2001). Other than that, Alumni provide valuable insights on the current situation of the institutions. Higher educational institutions may evaluate and analyse the feedback given by the Alumni to make changes accordingly.

Hence, there are several platforms that enable engagement between HEI and the Alumni. Platforms such as email and newsletter are some of the typical and conventional ways to interact with Alumni. Unfortunately, these platforms are not effective especially during the current technology era. Social media is one of the most iconic platforms in this era, widely used to connect people. Most people nowadays have obtained more information through social media platforms, thus, being active on social media platforms has become a daily norms and routines. Therefore, bringing social media platform to a higher educational institution will surely benefit the Alumni and respective HEI.

## **1.2 Project Background**

University of Tunku Abdul Rahman has had trouble engaging with the Alumni as there is a lack of a proper platform for the university to connect with the Alumni. Although there is an existing portal and website that were used for Alumni engagement, this platform was not effective enough. The existing portal and website used by UTAR does not provides any interactive elements resulting in reducing the retention rate of Alumni using the portal. From that, the relationship between UTAR and respective Alumni has gradually estranged. Therefore, UTAR has eventually lost contact with the Alumni, which is a great lose for UTAR since Alumni are one of the key aspects and factors towards UTAR's prosperity and longevity.

## **1.3 Problem Statement**

As mentioned previously, Alumni are one of the most important assets to the continuous development of a higher educational institution. Building a strong long-term relationship with Alumni after graduation has become a major obstacle for any higher educational institutions. UTAR is also struggling to connect with each Alumnus effectively throughout the years due to some problems such as lack of proper platform, lack of interactive functionality and lack of security in authentication management for the current UTAR Alumni portal and website. More details for each problem will be explained in the following points.

### **1.3.1 Lack of Proper Platform for UTAR to connect with Alumni.**

UTAR provides a portal, website and uses email to connect with the Alumni. The current UTAR Alumni system is limited to a portal and a website that provides access to basic information such as personal information, educational background, employment history, etc (Universiti Tunku Abdul Rahman, n.d.). The portal and website are static failing to encourage engagement and networking opportunities among the alumni, which becomes a major factor that led to alumni do not access the website and portal anymore.

There are also several disadvantages of connecting with Alumni through email such as Alumni ignoring the email sent and UTAR may not update the current Alumni email. The Alumni may not check the email sent by UTAR after graduation due to hectic work, personal life and etc. UTAR may never know whether Alumni has received the email or not. Next, UTAR also may not update the current Alumni email because of the person in charge may be busying on work and does not update the email. The impact of this problem may result to Alumni gradually alienated from UTAR.

Other than that, the lack of proper platform that could allow alumni to connect with others, exchange knowledges, and using one another's network to open up new opportunities is also one of the main factors. Besides, the current UTAR alumni portal does not support any of the activities which results to alumni using another various platform to connect with each other. Next, the lack of proper platform not only directly affect the development of UTAR but also indirectly affect the career improvement opportunities of the existing students. The lack of communication element in current UTAR alumni portal is the main factor to this problem. Alumni are not able to provide any networking opportunities, job opportunities, and career guidance which is a huge loss for the existing students' future career development. Therefore, proper platform needs to be proposed to provide better communication between UTAR and the Alumni.

### **1.3.2 Lack of Interactive Functionality in Current UTAR Alumni Portal.**

Next, the current Alumni portal of UTAR also lacks interactive functionality in the portal's system. According to Chi, Jones and Grandham (2012), Alumni

portal should be designed in a way that could facilitate the interactions between Alumni, existing students, and many others related individuals. The problem has eventually led to majority of the Alumni rarely or never uses the portal in the first place. According to University Tunku Abdul Rahman (n.d.), are some of the main features that the current UTAR Alumni portal provides :

1. Able to receive E-newsletter
2. Able to view events update and information regarding on UTAR
3. Profile management
4. Money donation
5. Job opportunity services

By looking at list of features that the current UTAR Alumni portal provides, a simple conclusion can be made which is the system is not engaging and static. The design of this system is simply conventional and typical. Current UTAR Alumni portal does not provide any interaction capability between each Alumni or any other related individuals. Instead, interaction capabilities only cover to the extent of only between Alumni and UTAR. Alumni nowadays rather go to the various popular social media platform such as Facebook and Instagram to obtain institution related information rather than using the portal. It was because social media nowadays are more engaging, able to communicate with friends and able to obtain information as well (Whiting and Williams, 2013). Hence, this problem has led to the Alumni losing interest to the system easily and eventually gave up on using the system which in result losing contact with UTAR.

### **1.3.3 Lack of Security in Authentication Management for the Current UTAR Alumni System.**

Lastly, the current UTAR alumni system is also lacking security in its authentication management. An alumni system contains several confidential and sensitive information such as alumni's personal information, educational background, employment history, donation history, etc. It is essential to have a robust authentication management to manage the authentication of users to prevent unauthorized access to the system. Strong authentication management also helps to maintain user trust in using the system. For example, a secure



system that could protect the data of its users from being leaked would increase the users' confidence in using the system.

The authentication of the current UTAR alumni system is implementing a simple authentication technique which is called the single factor authentication. This technique asks the user for just a single method to gain authentication (Contributor, 2015). In this case, current UTAR alumni system is only asking user's password to gain authentication to the system and utilizing reCAPTCHA from google to prevent spams and abuse from malicious individual. However, there is still a lot of room to improve as current level of security measures is not enough to ensure the safety of the users' accounts. Using reCAPTCHA is indeed able to prevent spams and automated bots attack such as brute force attack and dictionary attack, but hackers nowadays are capable to bypass the reCAPTCHA (Walker, 2022b). For example, by using technologies and techniques such as artificial intelligence, reCAPTCHA solving service, security bugs of the system and etc (Iyiola, 2022).

In summary, these are the several problems of this topic. The lack of platform that may allow UTAR to effectively connects with fellow Alumni is one of the main problems. By using portal, website, and email are not enough to provide engagement between UTAR and Alumni. Next, the current alumni system is limited to providing basic information and lacks the ability to encourage engagement and networking opportunities among alumni, which has led to a lack of interest in using the system. Additionally, the lack of communication element in the system means that alumni cannot provide networking, job opportunities, and career guidance which affects current students' future career development. Lastly, the current alumni system uses a simple authentication technique that is not strong enough to guarantee users' account security, potentially compromising sensitive information stored within the system. Hence, a web-based social networking system is proposed to solve these problems for UTAR.

## 1.4 Project Objectives

This project aims to develop a web-based social networking system for UTAR alumni so that UTAR is able to maintain an affinity with fellow UTAR's Alumni after graduation.

1. To analyse how social networking sites work as a complementary tool in engaging society in higher educational institutions.
2. To develop an interactive web-based social network for UTAR Alumni with a better authentication security management system and defined features.
3. To validate the functionalities of the web-based application through a user acceptance test.

## 1.5 Proposed Solution

For the purpose of solving the problems stated in the problem statement, a web-based social networking system is proposed in order to solve the problems with several key features as shown in Figure 1.1.

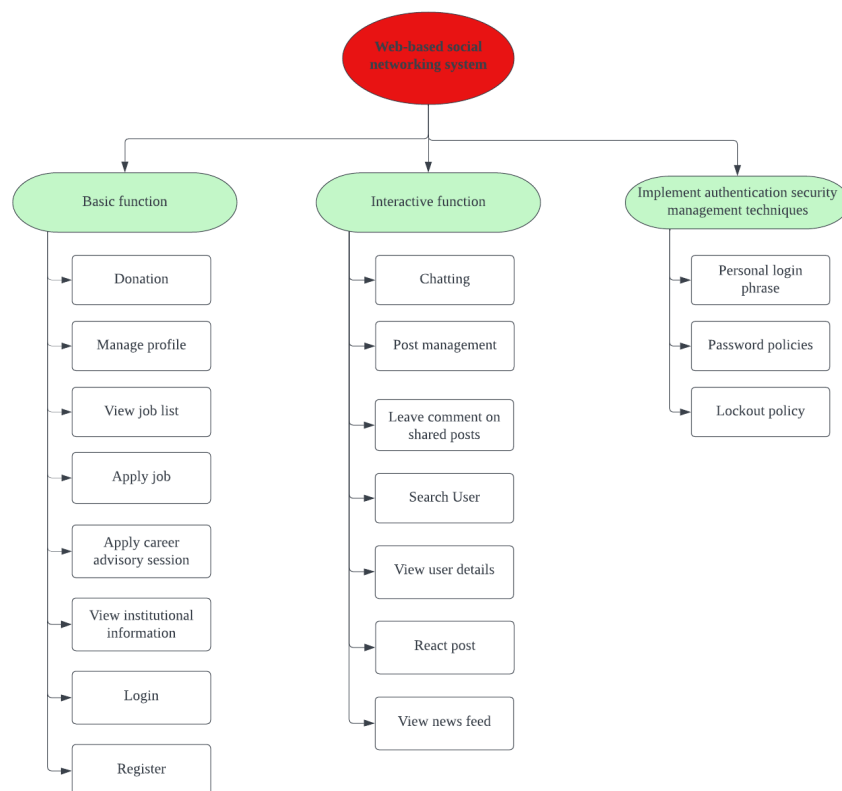


Figure 1.1: An overview of the features of the proposed system

The web-based social networking system will be providing features such as chatting with others, manage own post, view news feed, leave comment on a shared post, react to a post, search for a user and view the details of a user. These features provide more room for the users to interact with each other unlike the current UTAR alumni system that provide zero space for users to interact with other. Alumni is able to connect with friends during its university time and also able to obtain information regarding on UTAR through this system. By providing these features, the current students of UTAR are also able to connect with experienced alumni that can provide them valuable career support as well.

Other than that, as the web-based social networking system consist of confidential information such as company related information, personal information, and etc. This web-based social networking system aims to provide a secure authentication management that will further improve the security of the system. Firstly, the system will employ a personal login phrase technique during users' login. Users are required to enter the student id, identity card number and check the secret word. Once users acknowledged the secret word, users may proceed to enter the password. Other than that, users are also required to follow a set of password policy during account registration. Password policy aids in ensuring that the password set by the users is robust. Lastly, the system will also implement a lockout policy that will restrict user's number of login attempts and lock the login function if number of login attempts are exceeded.

## **1.6 Project Approach**

In order to develop a better quality of a web-based social networking system for UTAR to maintain affinity with the Alumni, there are a few of the software development life cycle (SDLC) methodologies that are able to be used such as waterfall, spiral, etc to accomplished it. The proposed SDLC methodology for this project will be to use scrum which is from the agile framework.



Figure 1.2: Full development processes using scrum methodology (Blake, 2021)

According to Figure 1.2, there are several processes that scrum methodology focuses on which are plan, design, develop, testing, deploy, and review. Scrum is a methodology that decompose the overall project into pieces of tasks. Sprint is the main core of scrum methodology that refers to focusing on completing specific tasks that would contribute to the overall system in a certain period of time before reviewing (Brunskill, 2019). After reviewing the deliverable and the deliverable met its sprint goal, it then moved on to the next sprint which focuses on completing another specific task as shown in Figure 1.2.

Scrum methodology is a perfect methodology to be chosen as it is a methodology which can facilitate efficiency during the software product development process. It is suitable for the development of this project as the project duration for this project is tight and short. It also able to provide a clearer picture of the overall project as it decomposes the project into few smaller tasks. Other than that, it also ensures that the final deliverable is a high-quality product as testing is being implemented at each sprint process (Simplilearn, 2023). Lastly, it is flexible methodology which is able to embrace changes based on feedback provided by stakeholders (Chandana, 2022).

## **1.7 Project scope**

In this section, the project scope is discussed with details such as the platform, target users, assumption, features covered, and features not covered for this project.

### **1.7.1 Platform**

This social networking system will be built only on a single platform which is on the web platform. The system consists of two type of users which are user and admin. Therefore, the system will provide comprehensive functions for both the user and admin side.

### **1.7.2 Target Users**

The main target users of this web-based social networking system are as follows:

1. Alumni of UTAR
2. Existing students of UTAR
3. Lecturer of UTAR

### **1.7.3 Assumption**

The following are the assumption of this project :

1. Users of this system must be either UTAR existing students or UTAR Alumni
2. Users are required to enter the student ID and Identity card number correctly during account registration in order to get verified as a student or Alumni of UTAR

### **1.7.4 Features Covered**

The following are the features covered in the web-based social networking system for both user and admin side :

#### **User features**

1. Login
2. Register

3. Make donation
4. Apply career advisory session
5. View institutional information
6. Manage profile
7. View job list
8. Apply job
9. Manage own post
10. React post
11. Leave comment
12. Chat
13. Search User
14. View user details
15. View news feed

#### **Admin features**

1. Manage user
2. Manage post
3. Manage job
4. Manage news
5. Manage event

#### **1.7.5 Features Not Covered**

The following are the features not covered in the web-based social networking system for both user and admin side :

#### **User features**

1. Video and voice call
2. Report post
3. Group chat

#### **Admin features**

1. Manage conversation and message created by the users

## **1.8 Conclusion**

In summary, this chapter has concluded the importance of Alumni to University Tunku Abdul Rahman and the needs to maintain an affinity with the Alumni. Several problems such as lack of proper platform, lack of interactive elements, and lack of authentication management in current UTAR Alumni portal and website are the main cause of preventing UTAR to maintain long-term relationship with the Alumni. A solution is proposed that is to develop a web-based social networking system for UTAR that will provide interactive features for the users and implement better authentication management techniques for the security of users' account.

## CHAPTER 2

### LITERATURE REVIEW

#### 2.1 Introduction

Social media has grown to be a popular way for individuals to communicate with one another in the current digital era. Compared to earlier times, technology has fundamentally transformed how individuals interact with one another. This platform has given people a practical means to communicate ideas, opinions, and experiences with others wherever they may be. Consequently, the creation of a social network for Alumni of University Tunku Abdul Rahman (UTAR) is the main topic of this literature study. It will examine a few of the current existing Alumni systems that are relevant to this project and pinpoint the salient functionalities that each system offers. Besides that, several authentication management techniques and software development methodologies are also studied in this chapter.

#### 2.2 Review on Existing Alumni System

For this section, several current top universities' Alumni system in Malaysia are selected to be reviewed in order to identify the common and unique features offered by each system.

##### 2.2.1 Existing Alumni System of University Tunku Abdul Rahman

Adopted from:

[<https://alumni.utar.edu.my/>](https://alumni.utar.edu.my/)

University Tunku Abdul Rahman (UTAR) is a non-profit private university that was established by Tan Sri Musa Mohammad and the Malaysia Chinese Association in 5 July 2001. UTAR is a university in Malaysia that provides over 131 programmes and currently has more than 21,000 students in the primary campuses which are in Kampar and Sungai Long. UTAR aims to engage with Alumni of UTAR and help Alumni in networking, receive information such as news and events, and share information. Therefore, to engage with Alumni, UTAR is utilizing an Alumni website and portal that can



only be accessed by individuals who studied at UTAR, and have been provided with a student ID and password by the university.



Figure 2.1: Home page of Alumni website for UTAR

Figure 2.2: Login page of Alumni portal for UTAR

Other than that, there are several features that are offered by the Alumni website and portal of UTAR which are as follows:

- a. The portal provides money donation features for the Alumni to contribute and support UTAR financially. Interested Alumni are able to donate









through several platform such as online banking, e-wallet, cheques, credit card and debit card transfer as shown in Figure 2.3.

Contributions can be made through any of the following:

**1. For Online Contributions through Credit Card / Debit Card / Public Bank E-Banking / FPX / Touch 'n Go / BOOST / ShopeePay / GrabPay / Union Pay**

Please complete the "Contribution to UTAR" form online ([click here](#)) to donate.

Modes of payment:

 <p><b>Credit Card / Debit Card</b> (All Commercial Bank Visa cards / MasterCard)</p>	 <p><b>PB e-banking</b> (Public Bank internet banking accounts only)</p>
 <p><b>FPX</b> (Real-time debit for internet banking account)</p>	 <p><b>Touch 'n Go</b> (Malaysian digital wallet and online payment platform)</p>
 <p><b>BOOST</b> (Lifestyle e-wallet via mobile phone transactions)</p>	 <p><b>ShopeePay</b> (Instant e-wallet payments)</p>
 <p><b>GrabPay</b> (Malaysia's leading e-wallet provider)</p>	 <p><b>Union Pay</b> (Largest card payment organization [debit &amp; credit cards combined] for mobile and online payments)</p>

**2. For Contributions by Cheques and Bank Online Fund Transfers and Notifications via Post / Fax / Email**

Please download and complete the "Contribution to UTAR" form first ([click here](#)) before making transfers or payment.

Donations through banking online transfers or bank-in cheques can be made to:

**Account Name: UTAR EDUCATION FOUNDATION**  
**Account No.: 3171115615**  
**Bank Name: Public Bank Berhad**

Please post, fax or email the **completed Contribution to UTAR form** together with your **cheque bank-in slip/online fund transfer slip** to the following:

UTAR Education Foundation (UEF)  
 Suite 705, Block A,  
 Kelana Business Centre,  
 97, Jalan SS7/2,  
 47301 Petaling Jaya, Selangor  
 Email: [uef@utar.edu.my](mailto:uef@utar.edu.my)  
 Tel: +603-7492 1166, Fax: +603-7492 2299

For donation enquiries, please contact Mr Lim Sweea Jen at Tel: +(60)16 223 3820  
 Email: [lsjen@utar.edu.my](mailto:lsjen@utar.edu.my)

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Figure 2.3: Donation feature provided by Alumni portal of UTAR

- b. The portal allows the Alumni to manage own profile based on personal information, education background, employment status, and achievement.
- c. The portal allows the Alumni to apply for a job by providing a list of available job vacancies from numerous companies through email. Email application of the selected job can be sent directly through the system. Alumni are able to search for a job in the list based on the company name, job title, location, specialization, level of job, employment type, and posted year as shown in Figure 2.4.

Job Location :

Job Specialisation :

Job Level :

Employment Type :

Year :  To

Company Name :

Job Title :

No.	Post Date	Company Name	Industry / Field	Location	Job Title	Deadline
1	27-03-2023	EPG ENGINEERING SYSTEM SDN BHD	-Construction/Building -Electrical & Electronics	-JOHOR	M&E Project Engineer (Mandarin Speaker)	27-05-2023
2	27-03-2023	GENPACT	-Call Center / IT-Enabled Services	-SELANGOR	Fresh Graduates_Accounts Receivable (OTC)	27-05-2023
3	27-03-2023	GENPACT	-Call Center / IT-Enabled Services	-SELANGOR	Fresh Graduate_Accounts Payable	27-05-2023
4	27-03-2023	HLB LER LUM CHEW	-Banking & Financial Services	-KUALA LUMPUR	TAX ASSOCIATE	27-04-2023
5	27-03-2023	HLB LER LUM CHEW	-Banking & Financial Services	-KUALA LUMPUR	AUDIT ASSOCIATE	27-04-2023
6	27-03-2023	JJ-Lurgi	-Consulting (Science, Engineering & Technical)	-OTHERS -SELANGOR	Procurement Executive	28-04-2023
7	24-03-2023	cblim & associates	-Consulting (Business & Management)	-KUALA LUMPUR	AUDIT AND TAX SENIOR / JUNIOR / SECRETARY;	24-05-2023

Figure 2.4: Job application feature provided by the Alumni portal of UTAR

- d. The website provides a feature for Alumni to apply for a career advisory session through email to help Alumni in career development as shown in Figure 2.5.



### Career Advisory Session

Take an active role in planning your career and professional development. Find out how to plan your career and what we ready for you. We provide advice on career planning, developing employability skills and resume / curriculum vitae screening.

Please make an appointment with us through a walk into our office or [email us](#). We will contact you within three (3) working days for the email appointment.

Figure 2.5: Career advisory session application feature provided by the Alumni website of UTAR

- e. The website and portal allow the Alumni to view information such as news, Alumni E-newsletter and events organized in UTAR. It also allows the Alumni to view archive of Alumni E-newsletter and events so that Alumni are able to look back at the E-newsletter and events posted in the past.
- f. The website allows the Alumni to share stories by sending email to UTAR and the stories shared by the Alumni will be posted on the E-newsletter of UTAR.

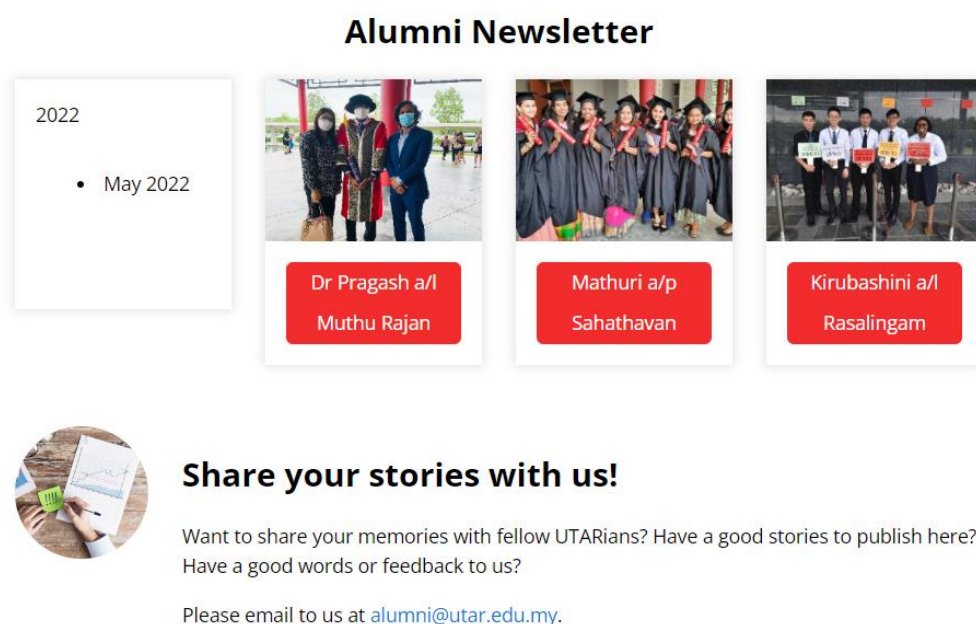


Figure 2.6: Story sharing feature provided by the Alumni website of UTAR

- g. The Alumni portal provided by UTAR uses single factor authentication which prompt users for username and password. It also uses the reCAPTCHA security technique developed by Google and implement it during the user login as shown in Figure 2.2.

### **Pros**

1. Alumni are able to donate through the Alumni portal directly which is convenient.

2. Alumni are able to manage own personal information which helps UTAR to engage and know more about each Alumni.
3. Alumni are able to apply for a job directly from the website without going to other job career service website.
4. Alumni are able to share stories to UTAR which allows UTAR to engage with the Alumni.

### **Cons**

1. Alumni are not able to interact with each other.
2. Authentication management of UTAR Alumni system is not secure due to utilizing only single factor authentication and reCAPTCHA.
3. Does not facilitate conveniency and efficiency as Alumni does not have a centralized platform to access Alumni resources.

### **2.2.2 Alumni System of Sunway University**

Adopted from:

<<https://student.sunway.edu.my/services/sunway-alumni-relations>>

Sunway University is also a non-profit private university that was not associated to the government. It was established by a company named Sunway Group who the chairman is Tan Sri Jeffrey Cheah in the year of 2004. The university is located at Sunway City, Kuala Lumpur and it placed among the top 2 percent of all universities around the world. The university is famous for its high-quality education that provides various undergraduate and postgraduate programs for the students. From that, it has over nine thousands of students studying in Sunway University that consist of local students and international students. Therefore, in order to maintain the relationship with the enormous number of graduated students, Sunway University provides an Alumni website and a career service site to engage with the Alumni.



Figure 2.7: Alumni website of Sunway University

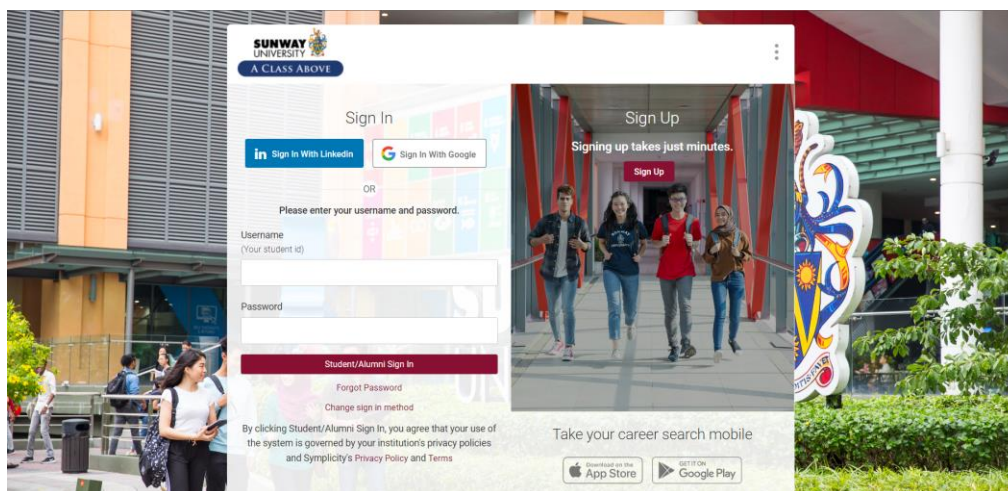


Figure 2.8: Alumni career service site of Sunway University

However, there are several features that these platforms used by Sunway University provides to the Alumni which are as follows:

- a. The Alumni website provided by Sunway University allows Alumni to donate by clicking on the “Donate Now !” link to navigate to another platform to actually complete the donation process. Hence, Alumni donation does not perform through the Alumni website.



### Alumni Giving Info

As Sunway Alumni, we believe that your success can have the power to motivate others to achieve their own personal goals and expand their horizons. Inspire your juniors and make a difference in the lives of your next generation. We invite you to join hands with us to support one of the most meaningful scholarships we offer, the Jeffrey Cheah Foundation Community Scholarship. It is awarded to students from children's welfare homes, NGOs and underprivileged communities, covering tuition fees, accommodation, and allowances. To date, over 200 bright students' hopes and dreams have been realised and they are appreciative of the opportunity for a tertiary education.

**How will your donation help our scholars?**

- RM20** PER MONTH CONTRIBUTES TO STUDY MATERIALS
- RM50** PER MONTH CONTRIBUTES TO MEALS
- RM100** PER MONTH CONTRIBUTES TO BOOKS

**Give our Community Scholars the opportunity at education by donating from as little as RM20 per month. Make your giving impact today! Donate now at [bit.ly/SunwayAlumniGiving](http://bit.ly/SunwayAlumniGiving)**

**Donate Now!**

Owned and governed by the Jeffrey Cheah Foundation

"I see higher education as a catalyst, an agent of change for individuals, families, communities and nations. I envision a community that recognizes the importance of educational attainment, and assures positive educational outcomes are accessible to all regardless of economic circumstances and races. In JCF, doors will not be closed to those who lack financial resources, and post secondary education will be available to all with the potential to succeed. With this vision that JCF has, I am proud to be part of this contribution to the society."

**Datuk Adrian Ooi**  
Sunway Alumnus, former Scholar and current donor to the Community Scholarship

Figure 2.9: Donation feature provided by Alumni website of Sunway University

- b. The Alumni career service site allows Alumni of Sunway University to apply for jobs. The Alumni career service site is powered by a third-party software called "Symplicity" and it allows external recruiters outside from the university to recruit Alumni by posting jobs and vacancies (Sunway University, n.d.). Therefore, Alumni of Sunway University are able to apply for a job through the site.
- c. Other than that, Alumni are able to view a list of careers advising services that were provided by Sunway University to the Alumni. Alumni are not able to make an appointment directly from the Alumni website as making an appointment needs to be done in another platform provided by Sunway.

#### Career Advising

Our Career Services team continues to offer their services to Sunway Alumni throughout their careers. Whether you are a young graduate or an experienced hire, you may make an appointment to have a chat with our friendly Career advisors. Among the services available are:

- Career Counselling
- Career & Interest Assessment
- Career Resources
- Resume Critique
- Mock Interview
- Career Fairs
- Job Ads
- Job Placement
- Internship



Figure 2.10: View career advising services feature provided by Alumni website of Sunway University

- d. Career service site of Sunway University uses two-factor authentication. The site will prompt Alumni for registered email first, and users are requested for an unique login verification code that will be sent to the inputted email by the Alumni.

#### **Pros**

1. Alumni are able to apply for a job directly from the career service site without going to other job career service website.

#### **Cons**

1. Alumni are not able to interact with each other.
2. Alumni career service site is powered by third party software which may result to data security and privacy concern.
3. Donation are done in different platform which is inconvenient and confusing for the Alumni.
4. Does not facilitate conveniency and efficiency as Alumni does not have an centralized platform to access Alumni resources.



### 2.2.3 Alumni System of Taylor University

Adopted from:

<<https://www.taylorsalumni.org/>>

Taylor university is a private university that was established in the year of 1969 (About Taylor, no date). Taylor university is part of the Taylor's Education Group which consist of other institutions such as Taylor's College Lakeside Campus, Garden International School, Australian International School Malaysia, Nexus International School Putrajaya, Nexus International School Singapore and Taylor's International School (Taylor University, n.d.). Taylor University is currently located at Subang Jaya, Selangor. Taylor University is also the number one private university in Malaysia and among the country in southeast asia that results in one of the favorite University that most students desired to study at (Taylor University, n.d.). From that, there are enormous number of students graduated from Taylor each year and it is accumulated to have over seventy thousands of Taylor's Alumni around the world that are valued by Taylor as they are one of the key aspects for Taylor's continuous growth and development. Hence, Taylor University provides a platform that allows engagement with the Alumni which is through an Alumni website that serves as an Alumni community. This platform aims to provide a platform for the Alumni to connect with each other, building network, increase career opportunities, and obtaining information.

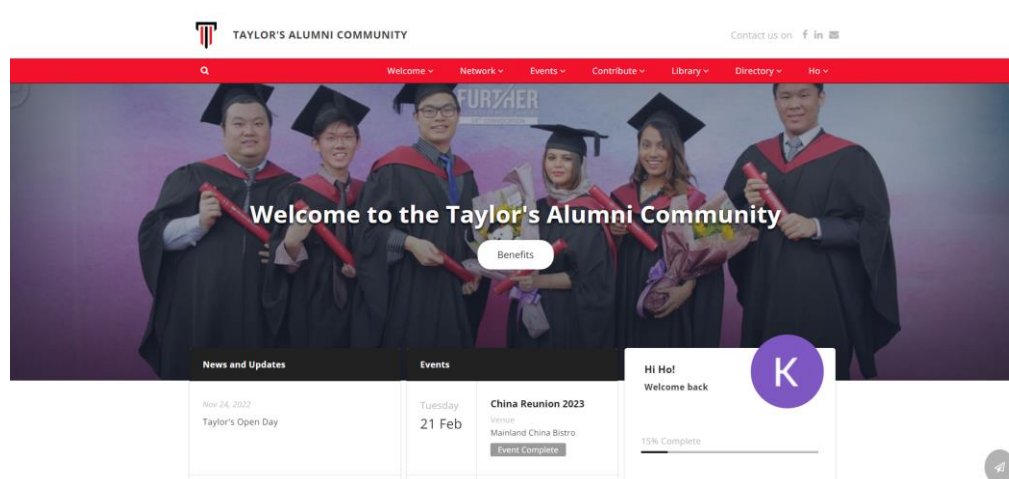


Figure 2.11: Alumni website provided by Taylor University

Therefore, there are several key features that the Alumni website provided by Taylor University offers to the Alumni which are as follows:

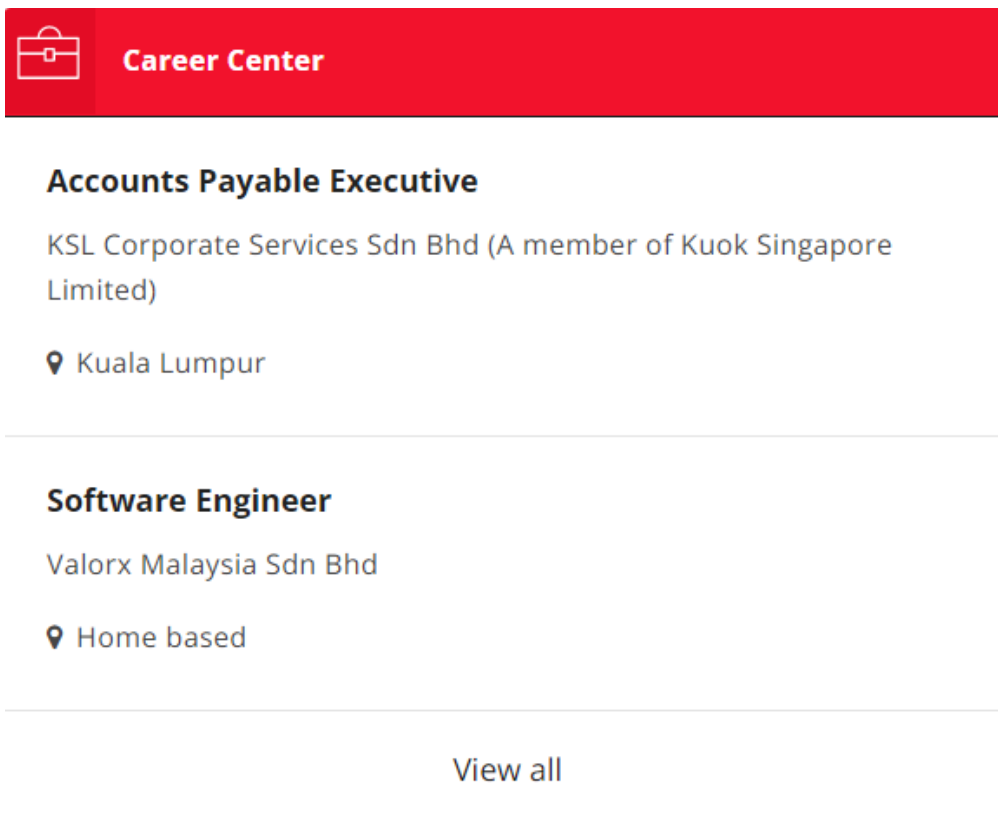
- a. Alumni website of Taylor allows the Alumni to manage own personal details after registering an account. Personal details such as name, email, location, profile picture, phone number, description about themselves, education status, employment status and experience as well as many others.

The screenshot displays a user profile management page. At the top, there is a 'Change Profile Picture' button. Below it, the user's current location is 'Shah Alam, Selangor, Malaysia'. The profile details are organized into several sections:

- Personal Details:** Fields for Title, First Name (Ho), Last Name (Ji Kenn), Suffix, and Current Location (Shah Alam, Selangor, Malaysia).
- Short bio:** A text area with a character count of '2000 Characters left'.
- Phone Number:** A field containing '+60 11-1628 1050'.
- Other Fields:** Middle Name, Maiden Name, and Nickname.
- Emails:** A section for managing email addresses. It shows an email 'hojikenn1@gmail.com' with options to 'Mark this as my primary email' (checked) and 'Allow login using this email'. There is an 'Add another email' button.
- Taylor's University & Taylor's College Education:** A section for educational details, including Institute, Program, School, Faculty, Year of Entry, and Year of Graduation.

Figure 2.12: Profile management feature provided by Taylor Univesity

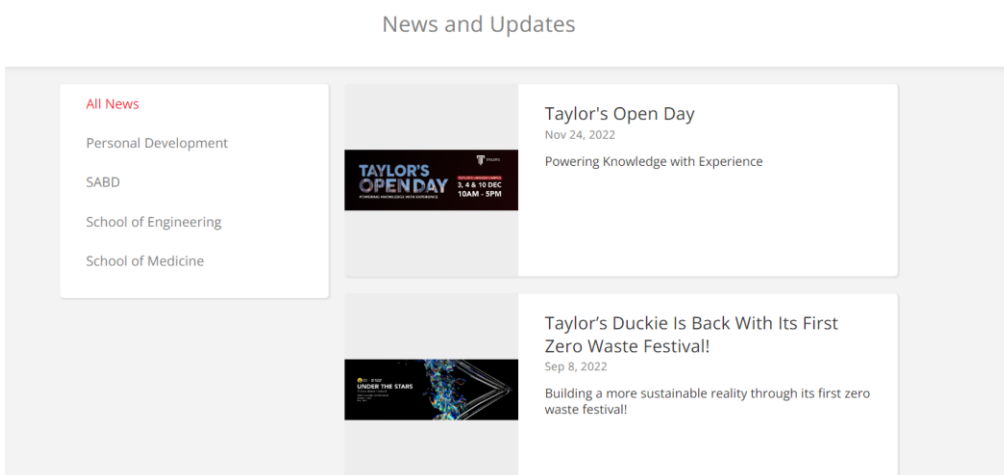
- b. Next, it also allows the Alumni to view list of job vacancies from various company that are looking for employees. Alumni of Taylor is able to apply for a job directly from the website which further increase the Alumni's job opportunities. It is beneficial for the Alumni as it is convenient and able to look for a job easily.



The screenshot shows a red header bar with a briefcase icon and the text "Career Center". Below the header, there are two job listings separated by horizontal lines. The first listing is for "Accounts Payable Executive" at "KSL Corporate Services Sdn Bhd (A member of Kuok Singapore Limited)" in "Kuala Lumpur". The second listing is for "Software Engineer" at "Valorx Malaysia Sdn Bhd" and is "Home based". At the bottom of the listings, there is a "View all" link.

Figure 2.13: Job application feature provided by Taylor University

- c. Other than that, it also allows the Alumni to view news and events of the institution. Alumni are able to organize own events as well by emailing to Taylor's Alumni department with details of the intended event.



The screenshot shows a "News and Updates" section. On the left, there is a vertical menu with the following items: "All News" (highlighted in red), "Personal Development", "SABD", "School of Engineering", and "School of Medicine". To the right of the menu, there are two news cards. The top card is titled "Taylor's Open Day" dated "Nov 24, 2022" with the subtitle "Powering Knowledge with Experience" and a thumbnail image for "TAYLOR'S OPENDAY 3, 4 & 10 DEC TOAM - SPH". The bottom card is titled "Taylor's Duckie Is Back With Its First Zero Waste Festival!" dated "Sep 8, 2022" with the subtitle "Building a more sustainable reality through its first zero waste festival!" and a thumbnail image for "UNDER THE STARS".

Figure 2.14: View news feature provided by Taylor University

## Events

**TBD**  
To Be Declared

**Test Event**

Completed events - All

Tuesday <b>21</b> Feb 2023	<b>China Reunion 2023</b> Venue: 2445 N University Dr, Coral Springs... 2 day event	Saturday <b>05</b> Nov 2022	<b>Taylor's Alumni Indonesia Soire...</b> Venue: Jakarta, Indonesia 1 day event
Saturday <b>27</b> Nov 2021	<b>Taylor's Alumni Malaysia Chapter</b> 1 day event	Friday <b>29</b> Oct 2021	<b>Taylor's Alumni China Virtual Re...</b> 1 day event

Figure 2.15: View events features provided by Taylor University

- e. Furthermore, the Alumni website also enable Alumni to share stories by filling up a form with fields such as name, email, year of study, story type, title of story, and description of the story. The admin will review the story share by the Alumni and posted it on the the Alumni story page.



## Stories Form

\* Name

Ho Ji Kenn

\* Email

hojikenn1@gmail.com

Class Year



What kind of story would you like to share?



\* Title of the Story

Figure 2.16: Share story features provided by Taylor University

Search

8 RESULTS **SORT**







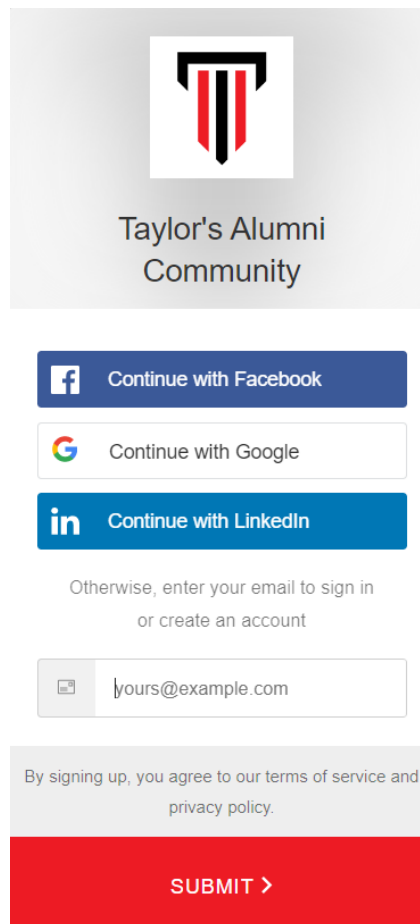
 <p>Date Mar 19, 2019</p> <p><b>Pioneer MBBS Graduate, Dr Minah Rashad Faiz awarded...</b></p> <p>Farizal Shawal</p>	 <p>Date Mar 1, 2019</p> <p><b>Evolving Through Sound - An Interview with Sid Murshid</b></p> <p>Joanna Cooper</p>	 <p>Date Jul 9, 2018</p> <p><b>Carving Dreams</b></p> <p>Amaar Adamaly</p>
 <p>Date Jun 27, 2018</p> <p><b>Communication to Collaboration: The birth of...</b></p>	 <p>Date Mar 22, 2018</p> <p><b>My Entrepreneurial Story by Mervin Chin, Taylor's Alumnus...</b></p>	 <p>Date Mar 22, 2018</p> <p><b>Young Achiever of Malaysia - Keith Nair</b></p>

Figure 2.17: Shared story posted on Alumni story page

- f. Lastly, the website implement email-based authentication and social login techniques for the user authentication of Alumni website. User are required to enter an email and a code will be sent to the email account entered by the user that can be used to login to the website. Next, it also allow the Alumni to login to the website through personal Facebook and LinkedIn account.



Taylor's Alumni Community

Continue with Facebook

Continue with Google

Continue with LinkedIn

Otherwise, enter your email to sign in or create an account

yours@example.com

By signing up, you agree to our terms of service and privacy policy.

SUBMIT >

Figure 2.18: Login page of Taylor University's Alumni website

### **Pros**

1. Alumni are able to manage personal information which helps Taylor to engage and know more about each Alumni.
2. Alumni are able to apply for a job directly from the website without going to other job career service website.
3. Alumni are able to share stories which allows Taylor to engage with the Alumni.

4. The website facilitates conveniency and efficiency as Alumni have a centralized platform to access Alumni resources.

### **Cons**

1. Alumni are not able to interact with each other.
2. Alumni are not able to make financial contribution.
3. Authentication management of Taylor Alumni website is not secure with the usage of email-based authentication since the malicious individual may hack the email to bypass the website.

## 2.2.4 Comparison Analysis

Table 2.1: Comparison of existing system

System Features	Alumni system of University Tunku Abdul Rahman	Alumni system of Sunway University	Alumni system of Taylor University	Proposed system
Platform	Website and portal	Website and career service site	Website	Website
Login	✓	✓	✓	✓
Register	✗	✓	✓	✓
Donation	✓	✗	✗	✓
Profile management	✓	✗	✓	✓
Job application	✓	✓	✓	✓
Career advisory	✓	✓	✗	✓
View institutional information	✓	✓	✓	✓
Interactive features	✗	✗	✗	✓
Authentication management	✓	✓	✓	✓

Alumni system of University of Tunku Abdul Rahman provides two platform to interact with the Alumni which are website and portal. The Alumni portal of UTAR allow Alumni to login to the portal by using the account registered by UTAR. Alumni are able to manage personal details as well to helps UTAR in getting to know more about each Alumni. Alumni are required



to access to resources and information such as jobs application, donation, career services, news and events through two different platform which is inconvenient. The only interactive element that UTAR Alumni system provide is that Alumni is able to share stories by emailing to the admin. Other Alumni are only able to view the posted content only and does not allow any other interactive features which are not interactive enough. Alumni system of UTAR uses single factor authentication and reCAPTCHA techniques for the authentication management.

As for the Alumni system of Sunway University, two platforms are being used to connect with the Alumni which are an Alumni website and a career service site. Alumni are able to login and register to the career service site. Profile management is not included in this system. It does not provide a centralized platform for the Alumni as donation and career service is required to be done in another platform, jobs application can be done through the career service site and news and events can be accessed through the website. The authentication management of the career service site used by Sunway utilize two-factor authentication through email to login the Alumni which is more secure than Alumni system of UTAR. Lastly, the system does not provide any interactive elements and features to interact with the Alumni unlike Alumni system of UTAR, Taylor and does not facilitate interaction between each Alumni.

However, Alumni system of Taylor university is far more optimal than Alumni system of UTAR and Sunway in terms of centralized platform. It provides only a single platform which is a website that allows Alumni to access to resources such as accessing news, events, and jobs application and it facilitate efficiency. Alumni are able to login and register to the system and enable profile management to the Alumni which helps Taylor to know more about each Alumni as well. Alumni are not able to donate in this website which is one of the disadvantages of Taylor's system. In terms of interactive elements, Taylor University is the same with UTAR as it does not provide more interactive features to facilitate engagement between each Alumni. As for the authentication management of the system, the security level is the same with Alumni system of Sunway but using email-based authentication technique.

Lastly, the proposed system is the most optimal system compared to the existing systems from UTAR, Sunway, and Taylor. Alumni are able to login to the system and not required to register for an account as account will be registered by UTAR automatically. Profile management is also included in the system. Alumni are able to access to every resource in a centralized platform such as job application, donation, career services, news and events. The system also maximizes the interaction between each Alumni by including features such as chatting, sharing post, leave comment on shared post, react to post, search and view user details and view news feed. The proposed system has the most secure ways to safeguard the system by implementing the combination of personal login phase, lockout policy and strong password policies that must be followed by the Alumni.

## **2.3 Review on Authentication Management Techniques**

To further enhance the security of a system, implementing authentication management techniques to a system is essential to ensure that a system is secure. Authentication management covers a wide range of procedure and techniques which can be from managing the password to strengthening the user authentication. Therefore, this chapter will focus on reviewing several techniques that includes one-way authentication, two-way authentication, password policies, and lockout policy. These techniques are reviewed, and an in-depth analysis of these techniques are implemented.

### **2.3.1 One-way Authentication Techniques**

Firstly, one-way authentication techniques also known as the one-factor authentication method is one of the most traditional and popular authentication method that have been used. The implementation of the single factor authentication is conducted in a way that only required to get a single credential from the users to verify the authenticity of the user (Feltner, 2023). This type of authentication method is widely utilized in several forms of techniques such as password-based authentication, personal identification numbers (PINs), graphic based authentication techniques, and etc (Khan and Zahid, 2010). However, the most widely used technique that most people are familiar with is the password-based authentication technique. This kind of technique usually required the login ID and password from the user. The system will verify the authenticity of the user by searching and matching the login ID and password in the database. User is able to access to the system if the provided login ID and password are match with one of the credentials in the database.

#### **Pros**

1. One-way authentication is the easiest technique to be implemented to a system to strengthen the security.
2. The technique is compatible to any system.
3. User is able to understand quickly and easily what is required to be entered which is user-friendly.

## Cons

1. One-way authentication method is less secure as malicious individuals are able to perform brute-force attack, phishing, and etc to gain access to the system (TechTarget, n.d.).
2. It is not flexible in countering the continuous changing of the security threat.

### 2.3.2 Two-way Authentication Techniques

On the other hand, two-way authentication technique which also known as the two-factor authentication technique is a more superior version of the one-way authentication technique. This method is slightly different from the one-way authentication techniques as it requires two credentials from the user in order to be verified as an authenticated user of the system (Feltner, 2023). The two credentials are normally password and other factors such as SMS authentication, biometric based authentication, tokens, and etc (Reese, K. et al., 2019). However, three types of techniques will be further discussed in this section which are the personal login phrase technique, SMS authentication, and biometric based authentication. Firstly, personal login phrase is a technique that is required to be specified by the users when the users register for an account. Therefore, it is a secret word that is only known by the user (Public Bank Berhad, n.d.).

JTKDEV abcd1234

Is your Personal Login Phrase correct?

Yes  No

JTKUAT

Password

For added security, please use our On-Screen Keyboard

Back Login Forgot Password

[First Time Login](#) | [FAQ](#) | [Need Assistance?](#)

Figure 2.19: Personal login phrase example used in Public Bank Berhad  
(Public Bank Berhad, n.d.)

Figure 2.19 shows an example on the personal login phrase technique that was used by Public Bank Berhad (Public Bank Berhad, n.d.). It is a very helpful technique against phishing as if user did not see the correct personal login phrase, user is able to acknowledge that it is a fake website created by hackers in order to get their password. Therefore, personal login phrase technique is able to add an additional layer to the security of the system and ensure that user's account is safe. Next, SMS authentication is a technique that requires user to provide an additional code that was sent to the user in their mobile phone to be authenticated to the system. This technique is one of the most popular methods that were used as people nowadays has their mobile phone in hand allowing this technique to be applicable in most circumstances. However, SMS authentication method has several flaws such as the SMS messages is not encrypted which hackers may intercept it to obtain the SMS message easily, and also phishing attacks that hackers may send a fake SMS code to trick user into giving credential informations (Authgear, 2023). Furthermore, biometric based authentication is a method that uses user's physical characteristic to verify user's authenticity. Physical characteristic such as fingerprint, facial features, voice, and etc are used as an identifier to verify the user (LoginTC, n.d.). This type of authentication is very secure as biometric traits will not be able to be stolen easily, but it is also relatively more expensive compared to other authentication method.

### **Pros**

1. Two-ways authentication technique enhance the security of the system.
2. Safeguard user's account which provides confidence to the user using the system.

### **Cons**

1. May concern the usability of the system as user may be annoyed when trying to access to the system.
2. Dependent to third party software that may lead to security risk.

### 2.3.3 Password Policies

Other than that, password policies are also one of the authentication management techniques that helps to increase the security of the users' account. Password policies are actually a collection of standards that is mandatory to be followed by each user of the system during registration. By implementing this technique, the password of each user is able to be enforced so that hackers are not able to steal it easily. The development of the standards of the password policy is normally based on certain criteria such as the length of the password, complexity of the password, period of password changes and etc. These standards are able to enhance the users' password strength so that hackers will not easily crack the password. Table 2.2 shows an example of a password policy's rules.

Table 2.2: Example of a password policy

Criteria	Description
Password length	Required to be at least 8 characters long
Period of change	Required to be change after 1 year
Complexity of password	Required to have at least one special characters, one uppercase letter and one lower case letter

#### Pros

1. Able to strengthen user's password which safeguard user's account.

#### Cons

1. Usability of the system is concerned as user might not understand the rules for the password.
2. Brute force attack, dictionary attack, and hybrid attack can easily penetrated user's account if the policy is weak (Summers and Bosworth, 2004).

### 2.3.4 Lockout Policy

Furthermore, lockout policy is one of the authentication security measure that is widely used nowadays. Lockout policy is mainly used for the purpose of

protecting users' account from any unauthorized access (Szentgyorgyi-Siklosi, 2023). When user enters an excessive amount of incorrectly password continuously, lockout policy will take place and lock the account of the user or the login function to restrict user from logging in for a certain amount of time. With the implementation of lock out policy, users' account are more secure as malicious individuals are not able to perform any password guessing attack like brute-force attack, dictionary attack, and etc (Windows Active Directory, n.d.). In order to implement the lockout policy, several criterias are required to be specify such as lockout duration, lockout threshold and reset of lockout counter (Donegan, 2020). Firstly, lockout duration in lockout policy is to specify the duration of the lockout process when lockout happens. Next, lockout threshold indicates the number of failed login attempt allowable for the user. Lastly, reset of lockout counter refers to the process of resetting the counter for the failed login attempt normally happens after user logging in to the system or after designated waiting period has passed following the exceeding of maximum number of failed login attempts or through some sort of verification to quickly reset the counter.

### **Pros**

1. Able to provide additional protection to safeguard users' account from any automated password guessing attack such as brute force attack, dictionary attack and etc.
2. Does not requires any third parties software for the implementation which brings cost-effectiveness.

### **Cons**

1. User of the system may find it bothersome if users constantly entering wrong password.

### **2.3.5 Conclusion**

In conclusion, these are the several authentication management techniques that have been reviewed in this section. Four of the discussed techniques have unique feature, strength, and weaknesses. In terms of a more secure way to safeguard a system and user's account, two-way authentication technique is a

far more optimal technique to be implemented. Personal login phrase will be the selected authentication technique to be used in the proposed system. However, a strong password policy and lockout policy will also be developed and implemented in the proposed system to strengthen user's password and protect their account from malicious user.

## **2.4 Review on Software Development Methodologies**

Software development life cycle (SDLC) is an important aspect of developing a software product that serve as a constructive approach for software developer to produce a software product. Software development life cycle decomposes the activities to be performed in a software development process into six phases which includes Requirement analysis and planning, design, implementation, testing, deploy, and maintenance (Altvater, 2023). Software developers are capable to ensure that the software products are able to be produced within the deadlines and meet the expected quality standard by following these phases defined in the SDLC. Thus, there are several software development life cycle methodologies out there that software developers are able to select and use based on the project characteristic. However, this section will only cover the waterfall methodology, prototyping methodology, and scrum methodology.

### **2.4.1 Prototyping Methodology**

Prototyping methodology is a methodology that is primarily focuses more on coding. This methodology aims to build prototypes before building out the final product. The initial phase of this methodology is to gather the requirements until it is sufficient to move on to the next phase. After that, it will start to build out the prototype based on the requirements gathered during the initial phase. Prototype created will be tested and improved based on the feedback received from the project owner. Final product will be developed by using the improved version of the prototype as a foundation. The main advantage of using prototyping methodology is that it helps to identify functionality early and obtain feedback early which helps to reduce development risk (Saeed et al., 2019). However, based on Saeed et al. (2019), the main



disadvantage of prototyping methodology is that it cost time and money since a lot of prototypes will be built.

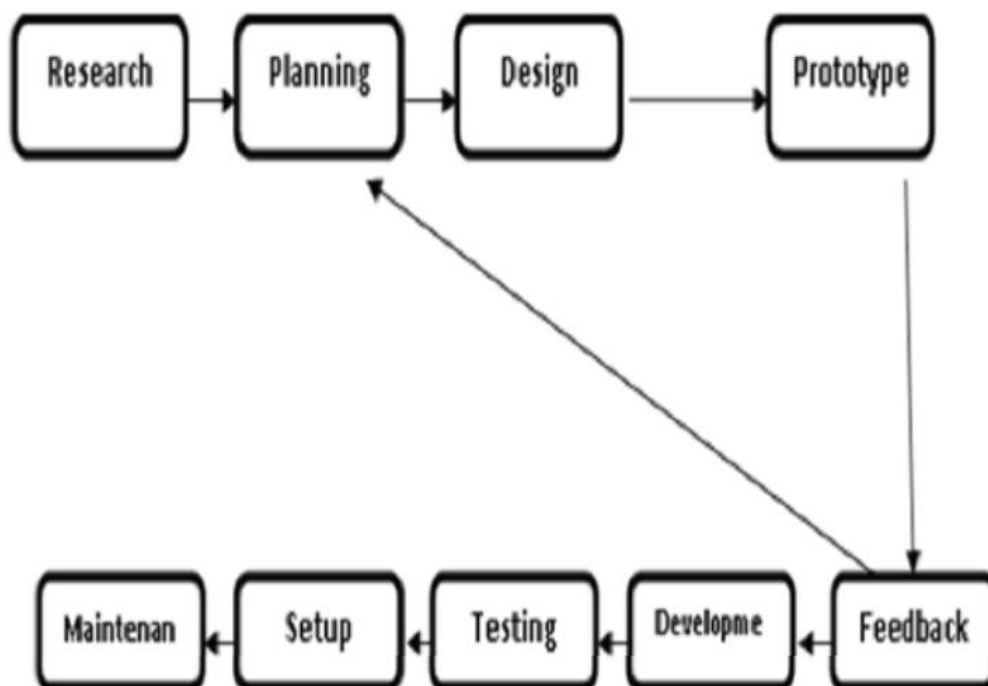


Figure 2.20: Prototyping methodology in SDLC (Saeed et al., 2019)

#### 2.4.2 Waterfall Methodology

Waterfall methodology is a sequential software development methodology that is one of the oldest methodology out there. The methodology defined the software development process into a series of processes that must be done in order. Each process implemented in the waterfall methodology have to be done in order to continue to the next process. According to Fagarasan et al. (2021), the main advantage of Waterfall methodology is that a well-defined software requirement specification will be produced as a lot of time will be taken to produce the requirements. From that, it helps to define the requirement adequately and completely at the early stage of the software development process. On the contrary, the primary disadvantage of Waterfall methodology is that the project duration will be long which will increase the cost of the project. The project duration will be long due to a lot of time will be taken for each phase to ensure that the deliverable for each phase is adequate.

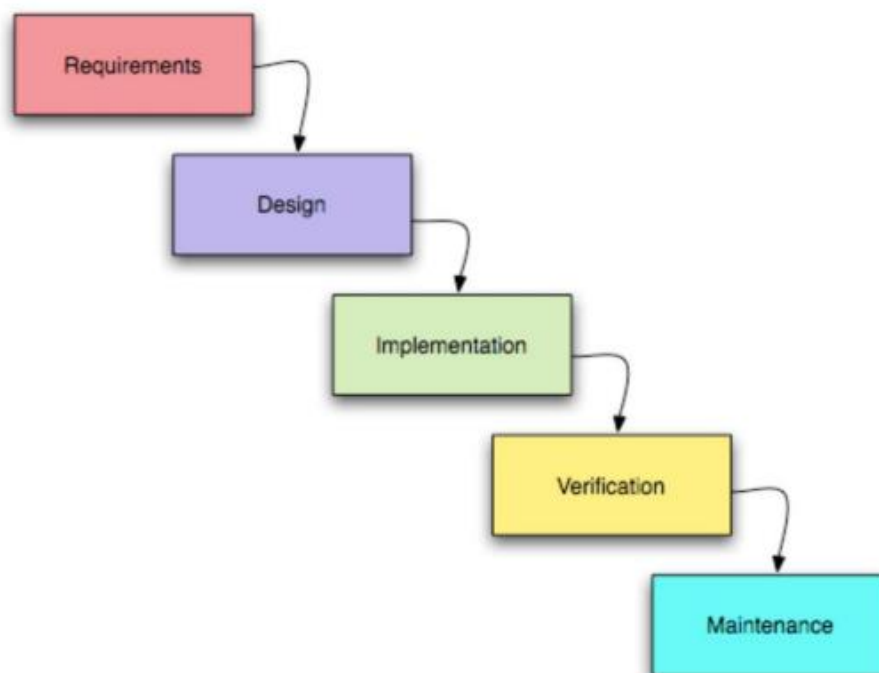


Figure 2.21: Waterfall methodology in SDLC (Fagarasan et al., 2021)

### 2.4.3 Scrum Methodology

Scrum methodology is a framework that is derived from the agile methodology. This methodology decomposes the project into smaller pieces which is the sprint backlog by analyzing the project backlog that is normally provided by the project owner. The project backlog consists of the overall project features, functions, and any other deliverables. After identifying the task to do in the sprint backlog, the development team starts to focus entirely on the task specified in the sprint log. Periodic meeting will also be held within the scrum team during the sprint to make sure every member of the scrum team work on the same page (Fagarasan et al., 2021). Feedback will be given from the project owner after the end of each sprint. Therefore, the scrum team is able to modify the deliverable in the next sprint. Final product will be produced after all the requirements specified in the project backlog are satisfied and approved by the stakeholders. The main advantage of using scrum is that it is able to adapt to constant changing requirements (Saeed et al., 2019). In contrary, the main disadvantages of scrum methodology is that it

highly relies on skilled scrum team members in order to effectively make use of this methodology (Saeed et al., 2019).

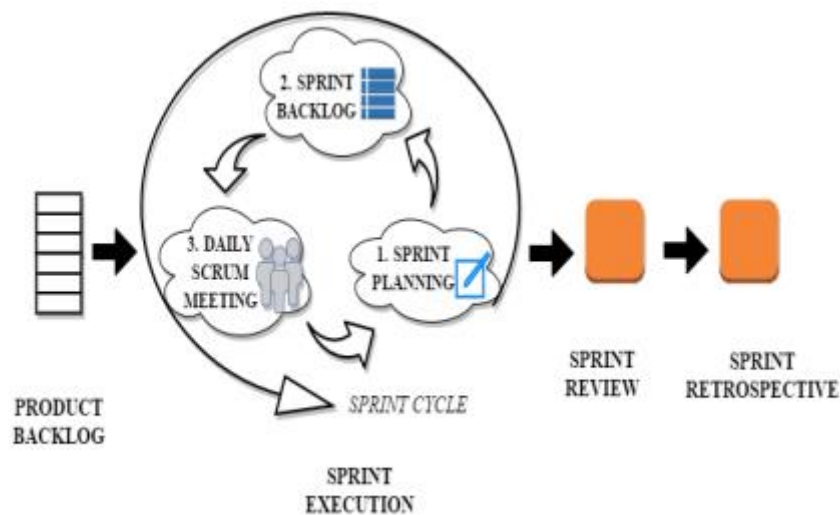


Figure 2.22: Scrum methodology in SDLC (Cervone, 2011b)

#### 2.4.4 Conclusion

In conclusion, a total of three software development methodologies have been reviewed in this section. Each of these methodologies have provide different approaches to software development. These methodologies also have different advantages and disadvantages. Compared to Scrum methodology, waterfall and prototyping methodology are slow that may lead to project delay. Therefore, scrum methodology will be the chosen software development methodology in this project.

## CHAPTER 3

### METHODOLOGY AND WORK PLAN

#### 3.1 Introduction

Several software development methodologies have been reviewed and have concluded that the scrum methodology is the most suitable methodology to be selected for this project. Besides that, this chapter also includes a Gantt chart, Work Breakdown Structure (WBS) diagram and some detailed explanation of development tools that will be used for the development of this project.

#### 3.2 Scrum Methodology

In order to ensure that a software is built correctly and adequately satisfy stakeholders' needs, developers needs to adapt to a software development methodology while building a software. Software development methodology provides a structured approach in building a software. Thus, the software development methodology that is selected for this project is Scrum methodology.

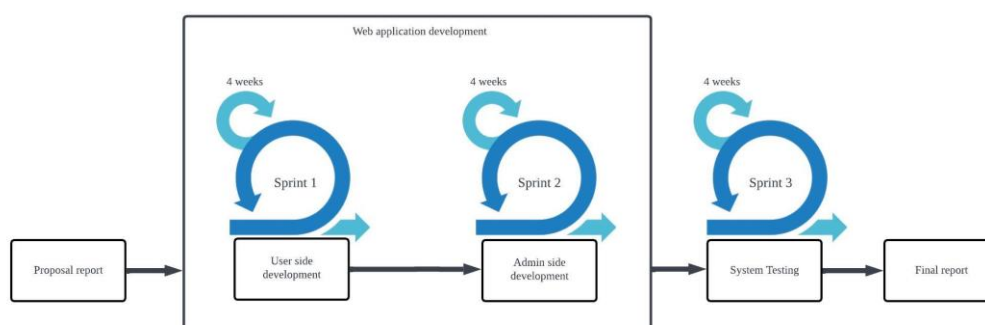


Figure 3.1: A visual figure on how scrum methodology is implemented for this project

Figure 3.1 outlines how scrum methodology will be implemented in this project. There will be a total of 3 sprints and 4 phases included in this project which includes project report phase, web application development phase, system testing phase, and final report phase. For the initial phase focuses on producing a proposal report that consists of detailed planning on

delivering the system with defined design of the system. This phase is important as it provides the next following phase a detailed guideline on developing the system. In the second which is the web application development phase that mainly focuses on developing the system according to the proposal report produced in the previous phase. However, there are two sprints involve in this phase. The first sprint focuses on the user side development which covers the development of all the user's functions, and the second sprint focuses on the admin side development which covers the development of all the admin's functions offers in this system. After finishing the web application development phase, the third sprint will be initiated focusing on performing testing on the developed system. Finally, the final report will be produced by summarizing all the findings on the development of this project.

### **3.2.1 Initiation**

Initiation stage which consists of the proposal report phase as mentioned previously. During this stage, the feasibility study was carried out to look into the background of the project so that the necessity of this project is provided. From that, problem statements are determined by analysing the project background. Therefore, the objectives of this project are determined which can address the problem stated in the problem statement. After defining the objective of this project, the proposed approach, proposed solutions, and project scope that specifies the coverage of this project are determined accordingly for this project. Requirement gathering and analysis are implemented during this phase which results in the identification of the system's functional and non-functional requirements. These deliverables are able to help the project to be able to be executed in a structured way and effectively. As a result, the project's desired outcome can be achieved.

### **3.2.2 Planning**

After that, a work plan is produced that consist of two components which are the Work Breakdown Structure and Gantt chart. A clear picture of the activities that are included in this project is provided through developing WBS.

From that, a Gantt chart will also be developed that outlines the timeline for each task specified in the Work Breakdown Structure. Developing this work plan ensures that the project can be finished within the timeline that was given before the initiation of the project. Apart from that, several research paper that are related to the software development methodology and 3 existing system has been reviewed and assessed during this stage. Hence, the literature review helps to establish the context for the study, assess the existing research and eventually solidify the foundation of the proposed approach and solution.

### **3.2.3 Design**

This stage focuses more on the design of the system that contributes to providing a clearer understanding of the system architecture. Use case diagram and use case description was developed according to the functional requirements that describe how the stakeholders interact with the system with detailed flow of the interaction made by the stakeholders. Based on the functional requirements, a use case diagram is created. Use case descriptions are then created according to the use cases defined in the use case diagram. Through creating use case diagram and descriptions, a clearer picture of how the stakeholders interact with the system is visualize. Other than that, system architecture diagram was developed to illustrate the design of the system architecture. Moreover, entity relationship diagram was also developed to illustrate the database design used for this system and data flow diagram was developed to illustrate how data flow through the system. In these documents, the different interactions between stakeholders and the system are described in depth, along with each step taken by the stakeholders and the response made by the system.

### **3.2.4 Development**

In the development stage, there are a total of 2 sprints that are included which consist of user-side development and admin-side development. At the starting of each sprint, a sprint planning meeting is conducted to determine the objective to be achieved for the current sprint. During each sprint process, a weekly meeting was held with the project owner to discuss the progress of the

project. Thus, the first sprint will be focuses on developing the front-end and back-end development for the user of this system that includes the user side interface, features, logic, and code structure that was offered to the user of this system. On contrary, the same activities are performed during the admin side development. The features offered to the user and admin are defined during the planning stage.

### **3.2.5 Testing**

After the web application development stage is completed, the last sprint is conducted which is focuses on performing unit testing. Each functionality provided to the user and admin of this project are tested. Test cases will be developed before the start of the testing stage. Results are recorded and rectification are done accordingly. Sprint meeting is also held weekly for reporting on progress and issue. Other than that, user acceptance test and usability test are also conducted.

### **3.2.6 Closure**

In the final stage, the final web application is produced with comprehensive functionality defined during the planning and design stage. The final report was prepared with finding, limitation and conclusion of this project are documented. Final report will be submitted to the project owner, which was the supervisor and concluded the project.

## **3.3 Software development tools**

This section provides several software development tools used for the development of this system with detailed description on each of the tools such as Visual studio code, Bootstrap, Laravel, Wampserver, Axure RP 9, mySQL, and various front-end languages.

### **3.3.1 Visual studio code (VS Code)**

VS Code is a well-known open-source code editor that are commonly used by developers. VS Code is an effective code editor that is able to support mobile and web development capabilities and it is developed by a well-known tech

company that is leading the world in technology trend which is Microsoft. HTML, CSS, JavaScript, Python, PHP, and various other programming languages are supported by VS Code. VS Code also provides various comprehensive features such as Git support, text editing tools, built in terminal, debugger and etc (Cameron, 2021). Therefore, VS Code is chosen as the code editor for the development of this project due to its user-friendly interface and comprehensive features.

### **3.3.2 Bootstrap**

Bootstrap which is a popular front-end framework that most developer used to design a website. Bootstrap provides various component such as modal, navigation bar, button, icon, and etc that developers are able to use them directly. Thus, Bootstrap is chosen to be used for the front-end development of this project due to its conveniency and efficiency of building a responsive website.

### **3.3.3 Laravel**

Laravel is a well-known back-end framework that is developed based on PHP. Laravel provides various features such as routing, authentication, authorization, and several others features. The framework is developed based on the MVC architecture which stands for Model, View, Controller components. By following the MVC architecture, it provides a clear distinction between each component that makes code more structured and manageable. Therefore, Laravel is chosen to be used for the back-end development for this project.

### **3.3.4 Wampserver**

WampServer is a popular web development tool allowing web developers to develop and host a websites locally. WampServer supports Apache, MySQL, and PHP components allowing web development to build web applications quickly and efficiently. Therefore, WampServer is chosen to be used in the development of this project as the website can host locally during the development phase.



### **3.3.5 Axure RP 9**

Prototyping tools like Axure RP 9 are well-known and popular among software developers all around the world. Axure RP 9 is normally used for creating high fidelity prototype like wireframes. These high-fidelity prototypes are able to provide stakeholders a more detailed and realistic prototypes that are similar to the final product so that more precise feedback is able to be given that can help development team to make sure that the product is built correctly according to stakeholders needs. From that, Axure RP 9 is chosen to be use for the purpose of prototyping in this project.

### **3.3.6 Front-end Languages**

There are several front-end languages that will be used for the development of this project which are HTML, CSS, JavaScript. First of all, HTML, or Hypertext Markup Language, is a markup language. HTML is a commonly used language for creating websites. The language known as CSS, or Cascading Style Sheets, is used to style web pages. CSS allows web developers to add style to a web pages such as adding colour, size, changing fonts, and many more. However, JavaScript which is a scripting language that allows web developers to web pages that are dynamic. By applying JavaScript to the web page, user is able to interact with the web pages such as clicking the button, drag or drop a component, and etc. Therefore, these languages are selected to be the front-end languages for this project.

### **3.3.7 MySQL**

MySQL is one of the most popular database systems that is widely used by developers nowadays. It is the selected database system that will be used for this project as it allows storing, retrieving, and manipulating the data. The database that will be used in this project will be the phpMyAdmin database as it is supported by WampServer.

## **3.4 Project Plan**

This section discussed the project plan by illustrating the work breakdown structure and gantt chart.

### **3.4.1 Work Breakdown Structure**

#### 1.0 Initiation Phase

##### 1.1 Conduct initial study

- 1.1.1 Perform feasibility study
- 1.1.2 Investigate project background
- 1.1.3 Determine problem statements
- 1.1.4 Identify the project objectives

##### 1.2 Establish the proposed solution and approach

- 1.2.1 Define proposed solution
- 1.2.1 Research on existing software development approach
- 1.2.2 Define proposed approach

##### 1.3 Define scope of project

- 1.3.1 Identify project platform
- 1.3.2 Identify target users
- 1.3.3 Establish functional and non-functional requirement
  - 1.3.3.1 Identify user side functional requirements
  - 1.3.3.2 Identify admin side functional requirements
- 1.3.4 Determine project assumption and limitation

#### 2.0 Planning phase

##### 2.1 Conduct literature review

- 2.1.1 Review on existing system
  - 2.1.1.1 Review on UTAR Alumni system
  - 2.1.1.2 Review on Sunway University Alumni system
  - 2.1.1.3 Review on Taylor University Alumni system
- 2.1.2 Review on password management techniques
  - 2.1.2.1 One-way authentication technique review
  - 2.1.2.2 Two-way authentication technique review
  - 2.1.2.3 Password policies review
- 2.1.3 Review on software development methodologies
  - 2.1.3.1 Review on Prototyping methodology
  - 2.1.3.2 Review on Waterfall methodology
  - 2.1.3.3 Review on Scrum methodology

## 2.2 Improve proposed solution and approach

## 2.3 Establish work plan

### 2.3.1 Construct a Work Breakdown Structure

### 2.3.2 Create Gantt Chart

## 3.0 Design phase

### 3.1 Develop Use Case

#### 3.1.1 Refined functional and non-functional requirements

#### 3.1.2 Identify actors of the system

#### 3.1.3 Develop use case diagram

#### 3.1.4 Produce use case description

### 3.2 Develop prototype of the system

#### 3.2.1 Develop user side interface prototype

#### 3.2.2 Develop admin side interface prototype

## 4.0 Development phase

### 4.1 Conduct web application development

#### 4.1.1 Implement user-side development

##### 4.1.1.1 Identify sprint goals

##### 4.1.1.2 Perform user-side front-end development

##### 4.1.1.3 Perform user-side back-end development

##### 4.1.1.4 Conduct weekly meeting

###### 4.1.1.4.1 Report on user-side development progress

###### 4.1.1.4.2 Report on user-side development issue

#### 4.1.2 Implement admin-side development

##### 4.1.2.1 Identify sprint goals

##### 4.1.2.2 Perform admin-side front-end development

##### 4.1.2.3 Perform admin-side back-end development

##### 4.1.2.4 Conduct weekly meeting

###### 4.1.2.4.1 Report on admin-side development progress

###### 4.1.2.4.2 Report on admin-side development issue

## 5.0 Testing phase

### 5.1 Identify sprint goals

### 5.2 Develop test cases

5.2.1 Develop test cases for user-side module

5.2.2 Develop test cases for admin-side module

### 5.3 Implement unit testing

5.3.1 User side functionality testing

5.3.2 Admin side functionality testing

### 5.4 Implement user acceptance testing

### 5.5 Implement usability testing

### 5.6 Record test results

### 5.7 Perform rectification for the unsuccessful test cases

### 5.8 Conduct weekly meeting

5.6.1 Report on testing progress

5.6.2 Report on issue

## 6.0 Closure

### 6.1 Prepare final report documentation

6.2.1 Documentation of project findings

6.2.2 Documentation of project limitation

6.2.3 Documentation of conclusion

### 6.3 Submit the final report

### 3.4.2 Gantt Chart

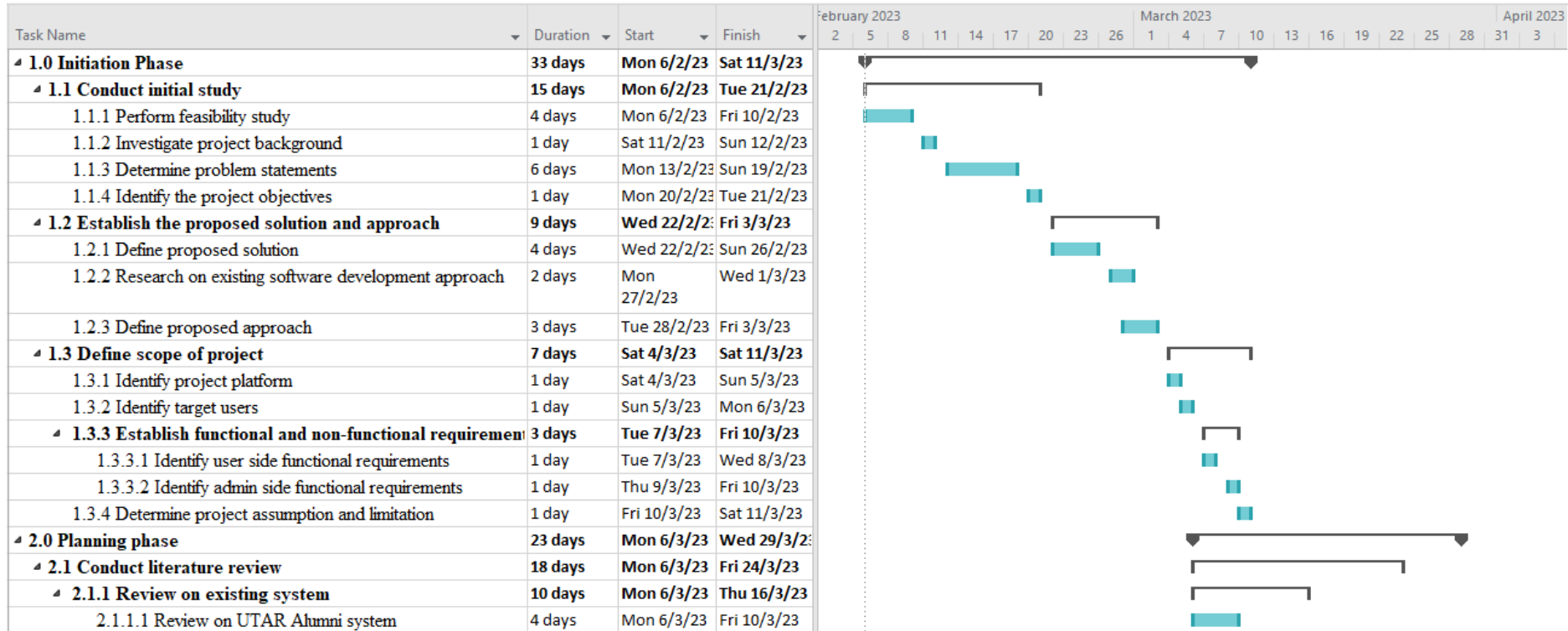


Figure 3.2: Gantt Chart (Part-A)

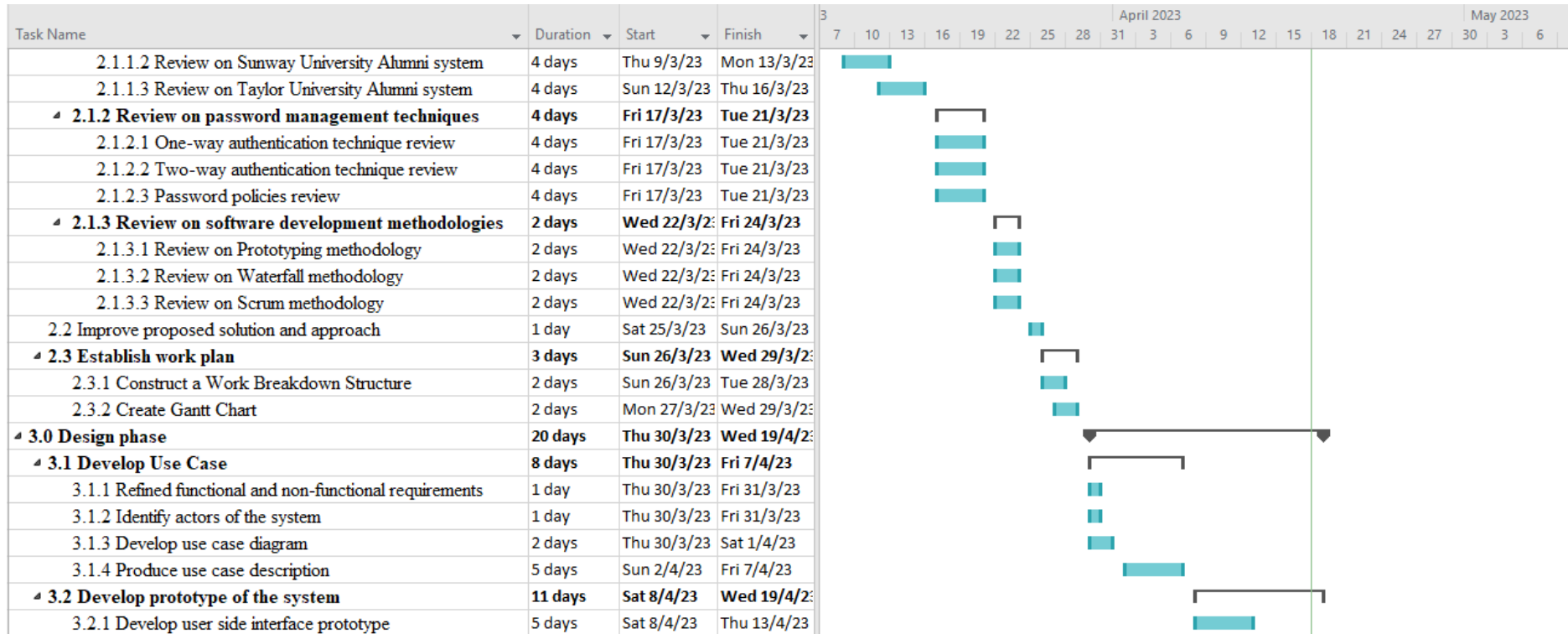


Figure 3.3: Gantt Chart (Part-B)

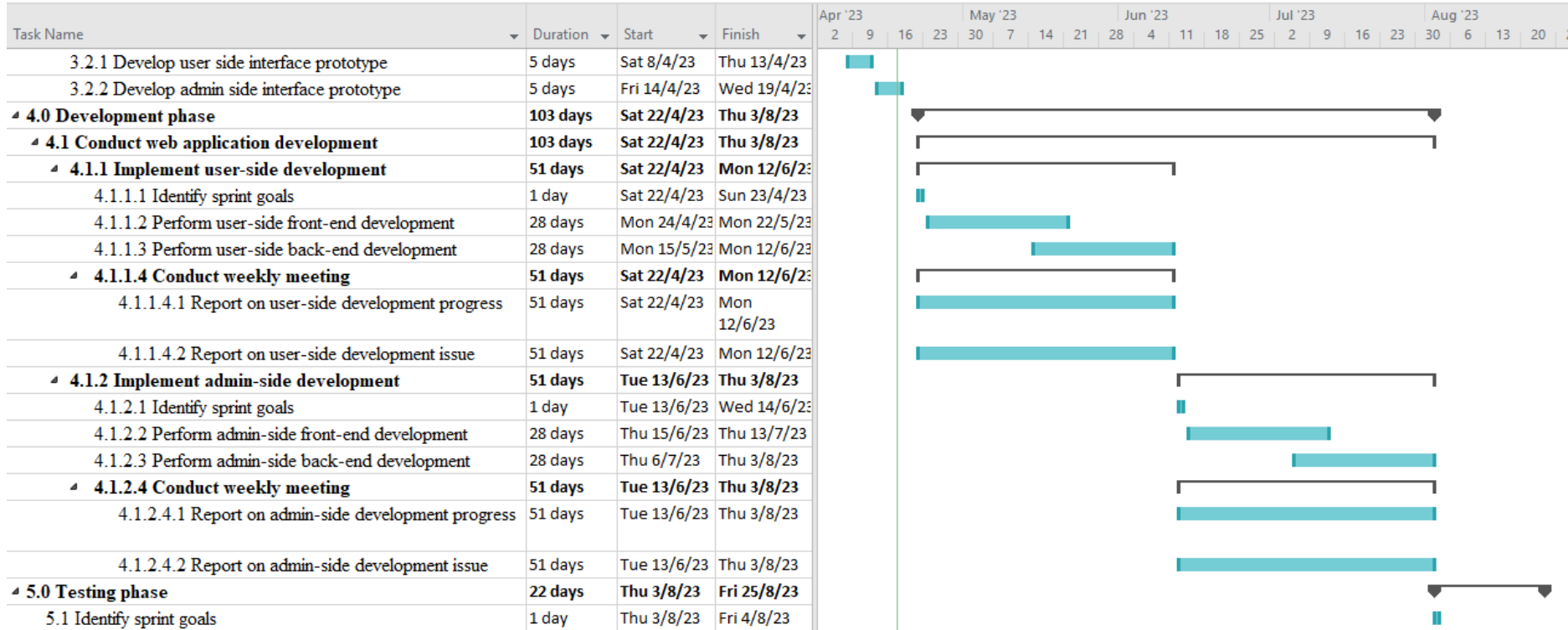


Figure 3.4: Gantt Chart (Part-C)

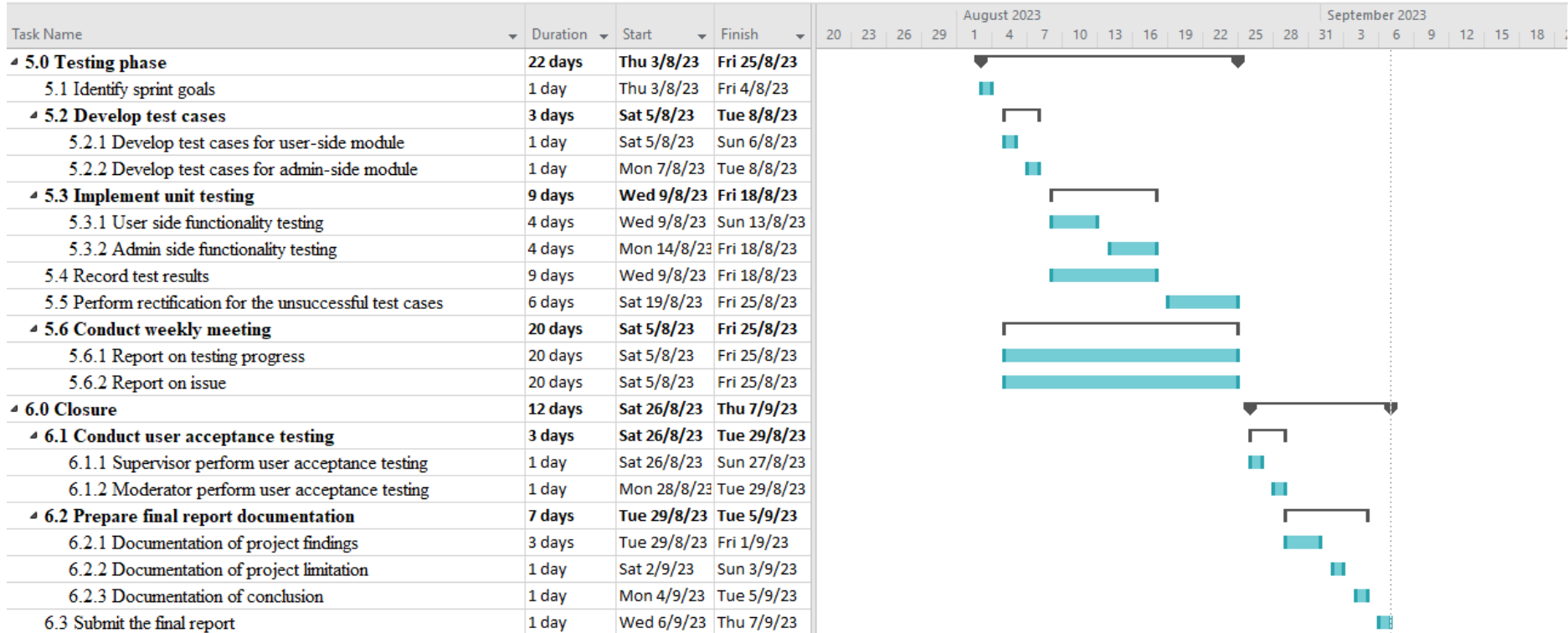


Figure 3.5: Gantt Chart (Part-D)



## CHAPTER 4

### RESULTS AND DISCUSSION

#### 4.1 Introduction

The design of the propose web-based social networking system id the main topic of this chapter. This chapter consists of several sections which are the method for requirement discovery, requirement specification, use case diagram of the system, use case description, and prototype of the system.

#### 4.2 Requirement Discovery

This section discuss about the technique that has been used for the purpose of gathering the requirements of the proposed system which is through conducting literature review.

In order to perform literature review, several existing systems in Malaysia that are related to the proposed web-based social networking system has been investigated and 3 existing system are chosen to be the subjects of the literature review. These 3 selected existing systems are the Alumni system of UTAR, Alumni system of Taylor University, and Alumni system of Sunway University. These 3 systems are reviewed, analysed, and compared based on features each system provides, platform, and authentication management technique each system used. After conducting a comprehensive literature review of the chosen Alumni system, each Alumni's unique strength and weakness are able to be identified.

Therefore, the insight that are able to be obtained through analysing these existing systems helps into ensuring the development of a quality web-based social networking system. A more in-depth literature review of the existing system is provided in chapter 2.2.

#### 4.3 Requirement Specification

This section discuss about the requirement specification for the proposed system. A clear description of functional requirements from user-side, admin-side and non-functional requirements included in this system are described.

### **4.3.1 Functional Requirements**

#### **4.3.1.1 User-side Functions**

##### a) Login

1. The system shall allow user to login to the system.
2. The system shall show the user's personal login phrase after user enters the student id.
3. The system shall navigate user to user's home page after successfully login.

##### b) Register

1. The system shall allow the user to register for an account using student id of UTAR and user's Identity card number.
2. The system shall prompt user to fill up details such as name, student id, Identity card number, email, phone number, personal login phrase, password during account registration.
3. The system shall allow user to view password policies.

##### c) Make donation

1. The system shall allow user to make donation.
2. The system shall prompt user to fill up details such as name, email, card number, cvc, expiration month, expiration amount and donation amount.

##### d) Apply career advisory session

1. The system shall allow user to apply for career advisory session.
2. The system shall present several types of career advisory session services and guidelines on how to apply for a session.

##### e) View institutional information

1. The system shall allow user to view institutional information like news and events.
2. The system shall allow user to view more details on a specific news/events.
3. The system shall allow user to sort the news/events based on the year of the news/events were posted.
4. The system shall allow users to apply for an event via google form.

## f) Manage profile

1. The system shall allow user to manage personal details.
2. The system shall display several categories of manageable details such as profile, education background, and work experiences.
3. The system shall allow user to manage any categories of details.

## g) View job list

1. The system shall display a job list for user to view.
2. The system shall allow user to sort the job list based on industry and employment type.
3. The system shall display details of a job that includes company name, company website, industry, employer email, company background, company address, job position, employment type, salary, job requirements, job responsibilities and application deadline.

## h) Apply job

1. The system shall allow user to apply for a job.
2. The system shall allow user to submit a job application by sending user's resume that includes details such as education background, work experience and personal details.

## i) Manage own post

1. The system shall allow the user to manage own post.
2. The system shall allow the user to add a post that will be include in the news feed.
3. The system shall allow user to delete a post that is created by the user.
4. The system shall allow the user to edit a post that is created by the user.

## j) React post

1. The system shall allow user to react to post by liking and disliking a post.

## k) Leave comment

1. The system shall allow user to leave comment on a shared post shared on the news feed.

l) Chat

1. The system shall allow user to chat with another user.

m) Search User

1. The system shall allow the user to search for a user in the system based on user's name.

2. The system shall display the search result by displaying the user's name.

n) View user details

1. The system shall allow user to view other user's personal details such as name, profile picture, student id, faculty, course, email, gender, date of birth, marital status, nationality, and location.

o) View news feed

1. The system shall allow user to view post that are created by all the users of the system.

2. The system shall allow user to view the number of likes for a post and number of comments on a post.

#### **4.3.1.2 Admin-side Functions**

a) Login

1. The system shall allow admin to login to the system.

2. The system shall show the admin's personal login phrase after admin enters the login id.

3. The system shall navigate admin to the admin's home page after successfully login.

b) Manage user

1. The system shall allow admin to manage the user in the system.

2. The system shall display a list of users of the system.

3. The system shall allow admin to add a user to the system by specifying fields such as student id, identity card number, name, email, phone number, email verification date, faculty, course, gender, date of birth, marital status, nationality, profile picture, personal login phrase, password, address line, state, postal code, country.
4. The system shall allow admin to delete a specific user.
5. The system shall allow admin to edit a user's details such as personal details, education background, and work experiences.

c) Manage post

1. The system shall allow admin to manage all the posts that were created by all the users of the system.
2. The system shall list out all the posts that are created by entire users of the system.
3. The system shall allow admin to add a post to the list of post by specifying fields such as caption and image.
4. The system shall allow admin to delete a post from the list of posts.
5. The system shall allow admin to edit a post's details such as captions and image.

d) Manage job

1. The system shall allow admin to manage the job in the job list.
2. The system shall display a list of job offered in the system.
3. The system shall allow admin to add a job to the list of job by specifying the company name, company website, industry, employer email, company background, company address, job position, employment type, minimum salary, maximum salary, job requirements, job responsibilities and application deadline.
4. The system shall allow admin to delete a job from the list of jobs.
5. The system shall allow admin to edit a job's details such as company name, company website, industry, employer email, company background, company address, job position, employment type, minimum salary,

maximum salary, job requirements, job responsibilities and application deadline.

e) Manage news

1. The system shall allow admin to manage the news.
2. The system shall display a list of news for admin to view.
3. The system shall enable admin to create a news by specifying the title of the news, description of the news and the poster of the news.
4. The system shall allow admin to delete a news.
5. The system shall allow admin to perform editing on news' details such as title of the news, description of the news and the poster of the news.

f) Manage event

1. The system shall allow admin to be able to manage the events.
2. The system shall display a list of events for the admin to view.
3. The system shall allow admin to create an event by specifying the title of the event, event application deadline, description, google form link, start date of event, end date of event, and poster of the event.
4. The system shall allow admin to delete an event.
5. The system shall allow admin to edit event's details such as title of the event, event application deadline, description, google form link, start date of event, end date of event, and poster of the event.

### **4.3.2 Non-functional Requirements**

#### a) Performance

1. The system shall be able to handle at least 10000 users and at best 15000 users at a time.
2. The system shall be able to response to user's action within 2 second.

#### b) Usability

1. The system shall provide a simple interface and is easy to use so that users are able to learn to use the system within 3 days.

#### c) Security

1. The system shall implement a strict password policy that users are required to follow during registration.
2. The system shall implement two-factor authentication method to ensure user's authentication.
3. The system shall implement a lockout policy to prevent any password guessing based attack.
4. The system shall ensure that unauthenticated user is not able to enter the system.

#### d) Maintainability

1. The system shall able to be updated and modified easily to the code structure and interface.

#### e) Availability

1. The system shall be accessible by user 99.99 percent of the time and will not experience significant downtime.

## 4.4 Use Case Diagram

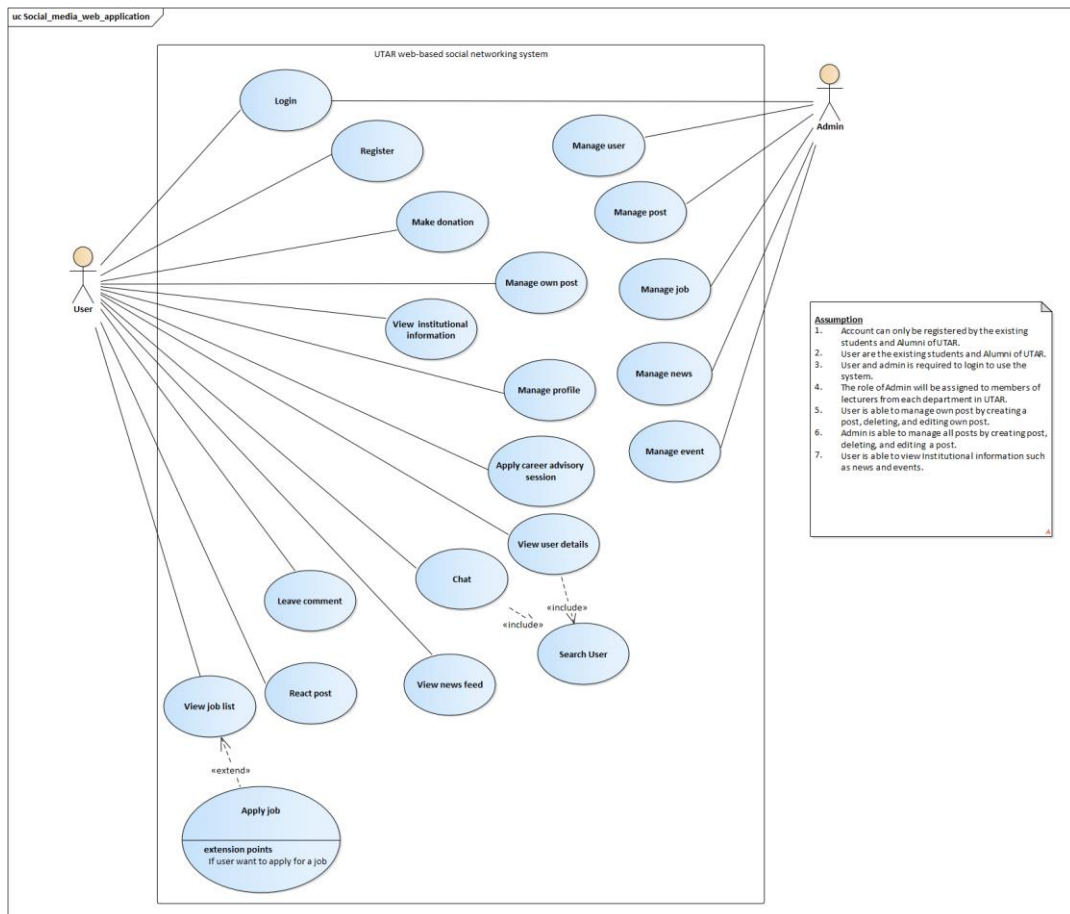


Figure 4.1: Use case diagram



## 4.5 Use Case Description

Table 4.1: Use case - Login

Use case name: Login	ID: UC01	Primary Actor: User and admin
Use Case Type: Detail, essential	Important level: high	
<p>Stakeholders and interests:</p> <p>User – wants to login to the system.</p> <p>Admin – wants to login to the system.</p>		
<p>Brief description:</p> <p>This use case describes how user and admin will login to the system.</p>		
<p>Trigger:</p> <p>The user and admin need to access the system.</p>		
<p>Relationship:</p> <p>Association : User and admin</p> <p>Include : N/A</p> <p>Extend : N/A</p> <p>Generalization : N/A</p>		
<p>Normal flow of events:</p> <ol style="list-style-type: none"> <li>1. User and admin visit the system.</li> <li>2. The system prompt user or admin the id. <ul style="list-style-type: none"> <li>If the role is admin, admin enters the assigned login id.</li> <li>If the role is user, user enters the student id.</li> </ul> </li> <li>3. The system shows the personal login phrase according to the entered id and prompt the user or admin to verify the validity of the login phrase. <ul style="list-style-type: none"> <li>If confirm the validity of the login phrase, perform sub-flows 3.1.</li> <li>If cancel the validity of the login phrase, repeat step 1.</li> </ul> </li> <li>4. User or admin enter the password. <ul style="list-style-type: none"> <li>If password is correct, the system login the user.</li> <li>If password is incorrect for the first time, perform step 4.</li> <li>If password is incorrect for the second time, perform step 4.</li> <li>If password is incorrect for the third time, perform sub-flows 4.1.</li> </ul> </li> </ol>		
Sub-flows:		

3.1. The system prompts the user or admin the password.

4.1. The system navigates user to the login page and locks the login attempt.

Alternate/Exceptional flows: -

Table 4.2: Use Case - Register

Use case name: Register	ID: UC02	Primary Actor: User
Use Case Type: Detail, essential		Important level: high
Stakeholders and interests: User – wants to register an account.		
Brief description: This use case describes how user will register an account in the application.		
Trigger: The user needs an account to access the system.		
Relationship: Association : User Include : N/A Extend : N/A Generalization : N/A		
Normal flow of events: 1. The user visits the register account page of the system. 2. The system prompt the user for details. 3. User enters the required fields, if fields are entered incorrectly, perform sub-flow 3.1. 4. If required field are entered correctly, the system will send an email verification request to the user and navigates user to email verification page. 5. User verifies the email and the system navigate user to the user home page.		
Sub-flows: 3.1. The system prompts an error message to the user.		
Alternate/Exceptional flows: 3a. User are required to fill up required fields such as name, student id, identity card number, phone number, password, email, personal login phrase. 3b. The system displays “Student cannot be found. Please made sure to enter your correct IC and student ID !” when user correctly entered all fields but entered a non-existed student id and identity card number of a student/Alumni.		

Table 4.3: Use Case - Make donation

Use case name: Make donation	ID: UC03	Primary Actor: User
Use Case Type: Detail, essential	Important level: high	
Stakeholders and interests: User – wants to make donation.		
Brief description: This use case describes how user will make donation in the system.		
Trigger: The user wants to make donation in the system.		
Relationship: Association : User Include : N/A Extend : N/A Generalization : N/A		
Normal flow of events: 1. User enters the make donation page. 2. The system display a form and prompt user to enter all the required details. 3. User fill up all the required fields and submit the form. 4. The system process the payment. 5. The donation has been successfully made.		
Sub-flows: 4.1. System aborts the payment process if failed.		
Alternate/Exceptional flows: 3a. User are required to fill up fields such as name, email, amount of donation, card number, cvc, expiration month and expiration date. 4.1a. The system display corresponding error message on input fields that are invalid.		

Table 4.4: Use Case - Apply career advisory session

Use case name: Apply career advisory session	ID: UC04	Primary Actor: User
Use Case Type: Detail, essential	Important level: high	
Stakeholders and interests: User – wants to apply for a career advisory session.		
Brief description: This use case describes how user will apply for a career advisory session.		
Trigger: The user wants to apply for a career advisory session through the system.		
Relationship: Association : User Include : N/A Extend : N/A Generalization : N/A		
Normal flow of events: 1. User enters the career advisory application page. 2. The system display several types of career advisory services and guidelines to apply for it. 3. User 2. The system display a form for users to fill up all the required fields. 3. User enters all the required fields. 4. User submit the form. If the details entered are incorrectly, perform sub-flow 3.1. If the details entered are correct, the application is successfully submitted.		
Sub-flows: 4.1. The system prompts an error message.		
Alternate/Exceptional flows: 3a. User are required to fill up all the required fields such as name, student id, faculty, course name, date, time, contact number.		

Table 4.5: Use Case - View institutional information

Use case name: View institutional information	ID: UC05	Primary Actor: User
Use Case Type: Detail, essential	Important level: high	
Stakeholders and interests: User – wants to view institutional information.		
Brief description: This use case describes how user will view institutional informations.		
Trigger: The user wants to view institutional information such as news and events.		
Relationship: Association : User Include : N/A Extend : N/A Generalization : N/A		
Normal flow of events: 1. User enters the view institutional information page. 2. The system display all the news and events. If the user wants to search news or events based on year, perform sub flow 2.1. 3. If user select to view a news, perform sub-flow 3.1. 4. If user select to view an event, perform sub-flow 4.1.		
Sub-flows: 2.1. User sort the news or events by year. 3.1. The system displays the details of the news. 4.1. The system displays details of the event with google form link for user to apply for the event.		
Alternate/Exceptional flows: -		

Table 4.6: Use Case - Manage profile

Use case name: Manage profile	ID: UC06	Primary Actor: User
Use Case Type: Detail, essential	Important level: high	
Stakeholders and interests: User – wants to manage personal details.		
Brief description: This use case describes how user will manage personal details in the system.		
Trigger: The user wants to update, delete, add personal details.		
Relationship: Association : User Include : N/A Extend : N/A Generalization : N/A		
Normal flow of events: <ol style="list-style-type: none"> <li>1. User enters the update profile page.</li> <li>2. The system display several manageable details categories.</li> <li>3. User chooses which category to manage. <ol style="list-style-type: none"> <li>a. Add details <ol style="list-style-type: none"> <li>1. The system display a list of fields for user to fill up.</li> <li>2. User fill up all the required field.</li> <li>3. User confirm to add the details.</li> </ol> </li> <li>b. Edit personal details <ol style="list-style-type: none"> <li>1. The system display a list of fields that contains original data of the fields.</li> <li>2. User edit any desired fields.</li> <li>3. User confirm to update the personal details.</li> </ol> </li> <li>c. Delete personal details <ol style="list-style-type: none"> <li>1. User selects to delete a particular detail.</li> <li>2. The system prompt user for confirmation.</li> </ol> </li> </ol> </li> </ol>		

3. User confirms to delete the particular details.
Sub-flows: -
Alternate/Exceptional flows: 2a. Manageable categories such as personal details, education background, work experiences.



Table 4.7: Use Case - View job list

Use case name: View job list	ID: UC07	Primary Actor: User
Use Case Type: Detail, essential	Important level: high	
Stakeholders and interests: User – wants to view job vacancy list.		
Brief description: This use case describes how user will view job vacancy list in the system.		
Trigger: The user wants to view list of job vacancies in the system.		
Relationship: Association : User Include : N/A Extend : Apply job, search job Generalization : N/A		
Normal flow of events: 1. User wants to view a list of job vacancies. 2. User enters the job zone page. 3. The system display a list of jobs available. 4. If user wants to apply for a job, perform UC12 Apply job.		
Sub-flows: -		
Alternate/Exceptional flows: 3a. The system allows the user to sort the job based on industry of the company, and employment type.		

Table 4.8: Use Case - Apply job

Use case name: Apply job	ID: UC08	Primary Actor: User
Use Case Type: Detail, essential	Important level: high	
Stakeholders and interests: User – wants to apply for a job.		
Brief description: This use case describes how user will apply for a job.		
Trigger: The user wants to apply for a job in the job list.		
Relationship: Association : User Include : N/A Extend : N/A Generalization : N/A		
Normal flow of events: 1. User wants to apply for a job. 2. User selects a job in the list. 3. The system display the details of the job. 4. User confirms the application. 5. The system submits the user’s details such as personal details, education background, and work experience.		
Sub-flows: -		
Alternate/Exceptional flows: -		

Table 4.9: Use Case - Manage own post

Use case name: Manage own post	ID: UC09	Primary Actor: User
Use Case Type: Detail, essential		Important level: high
Stakeholders and interests: User – wants to manage own post.		
Brief description: This use case describes how user will manage own post.		
Trigger: The user wants to add a post, delete and edit own post.		
Relationship: Association : User Include : N/A Extend : N/A Generalization : N/A		
Normal flow of events: 1. User enters the manage post page. 2. The system display posts that are created by the user.  a. Add post 1. User select to add a post. 2. The system display a pop-up window that allows user to enter words or insert picture. 3. User enters words or picture. 4. User confirm to post it to news feed.  b. Edit post 1. User selects to edit a post. 2. The system display a pop-up window that contains the selected post's data in it. 3. User is able to edit the data in the pop-up window. 4. User confirm to edit the post.		

c. Delete post

1. User selects a post.
2. The system display a pop-up window that contains the selected post's data in it.
3. User select the delete button.
4. User confirms to delete the post.

Sub-flows: -

Alternate/Exceptional flows:-

Table 4.10: Use Case - React post

Use case name: React post	ID: UC10	Primary Actor: User
Use Case Type: Detail, essential	Important level: high	
Stakeholders and interests: User – wants to react on shared posts.		
Brief description: This use case describes how user will react on shared posts.		
Trigger: The user wants to react on shared posts.		
Relationship: Association : User Include : N/A Extend : N/A Generalization : N/A		
Normal flow of events: 1. The user wants to react on shared post. 2. User is able to like a post. 3. User is able to dislike a post.		
Sub-flows: -		
Alternate/Exceptional flows:-		

Table 4.11: Use Case - Leave comment

Use case name: Leave comment	ID: UC11	Primary Actor: User
Use Case Type: Detail, essential	Important level: high	
Stakeholders and interests: User – wants to leave comments on shared posts.		
Brief description: This use case describes how user will leave comments on shared posts.		
Trigger: The user wants to make comments on shared posts.		
Relationship: Association : User Include : N/A Extend : N/A Generalization : N/A		
Normal flow of events: 1. User wants to leave comment on a shared post. 2. User select “comment” on a shared post. 3. User make a comment by entering words to the comment box. If comment is empty, perform sub-flows 3.1. If comment is not empty, perform sub-flows 3.2. 4. User is able to make another comment by repeating step 3.		
Sub-flows: 3.1. The system does not allow user to make a comment. 3.2. The system allow user to make a comment.		
Alternate/Exceptional flows:-		

Table 4.12: Use Case - Chat

Use case name: Chat	ID: UC12	Primary Actor: User
Use Case Type: Detail, essential	Important level: high	
Stakeholders and interests: User – wants to chat with another user.		
Brief description: This use case describes how user will chat with another user of the system.		
Trigger: The user wants chat with another user of the system.		
Relationship: Association : User Include : UC09 Search user Extend : N/A Generalization : N/A		
Normal flow of events: 1. User wants to chat with another user in the system. 2. Perform UC09 Search user. 3. User clicks the user displayed in the result list. 4. The system display a chat room with the selected user. 5. User enters any words to make conversation with the selected user.		
Sub-flows: -		
Alternate/Exceptional flows:-		

Table 4.13: Use Case - Search user

Use case name: Search user	ID: UC13	Primary Actor: User
Use Case Type: Detail, essential	Important level: high	
Stakeholders and interests: User – wants to search for a user.		
Brief description: This use case describes how user will search for a user in the system.		
Trigger: The user wants search for a user in the system.		
Relationship: Association : User Include : N/A Extend : N/A Generalization : N/A		
Normal flow of events: 1. User enters a name to the search bar. 2. If name can be found, the system displays the entered user's name as a search result. 3. If name cannot be found in the system, the system displays "User not found." to the user. 4. User is able to continue searching for a user by performing step 1.		
Sub-flows: -		
Alternate/Exceptional flows:-		



Table 4.14: Use Case - View user details

Use case name: View user details	ID: UC14	Primary Actor: User
Use Case Type: Detail, essential	Important level: high	
Stakeholders and interests: User – wants to view a user’s details.		
Brief description: This use case describes how user view a user’s details.		
Trigger: The user wants to view a specific user’s details.		
Relationship: Association : User Include : UC09 Search user Extend : N/A Generalization : N/A		
Normal flow of events: 1. User wants to view a specific user’s personal details. 2. Perform UC09 search user use case. 3. User clicks the user displayed in the result list in order to view the details. 4. The system displayed the details of the selected user.		
Sub-flows: -		
Alternate/Exceptional flows:-		

Table 4.15: Use Case - View news feed

Use case name: View news feed	ID: UC15	Primary Actor: User
Use Case Type: Detail, essential	Important level: high	
Stakeholders and interests: User – wants to view news feed.		
Brief description: This use case describes how user will view news feed.		
Trigger: The user wants to view news feed.		
Relationship: Association : User Include : N/A Extend : N/A Generalization : N/A		
Normal flow of events: 1. User enters the home page. 2. The system display all the posts created by every user of the system. 3. User is able to view all the posts created by every users in the system.		
Sub-flows: -		
Alternate/Exceptional flows: 2a. The system allows user to sort the posts based on date of the post and order of the post.		

Table 4.16: Use Case - Manage user

Use case name: Manage user	ID: UC16	Primary Actor: Admin
Use Case Type: Detail, essential		Important level: high
Stakeholders and interests: Admin – wants to manage user.		
Brief description: This use case describes how admin can manage the user of the system.		
Trigger: Admin wants to add, delete a user, and edit user details.		
Relationship: Association : Admin Include : N/A Extend : N/A Generalization : N/A		
Normal flow of events: 1. Admin enters the manage user page. 2. The system display a list of users of the system.  a. Add user 1. Admin selects to add a user. 2. The system display a form that consist of fields such as student id, identity card number, name, email, phone number, email verification date, faculty, course, gender, date of birth, marital status, nationality, profile picture, personal login phrase, password, address line, state, postal code, country.  3. Admin enters all the required details. 4. Admin confirms to add the user.  b. Delete user 1. Admin selects to delete a user in the user list. 2. The system prompt admin for confirmation. 3. Admin confirms the deletion request.		

c. Edit user details

1. Admin selects to edit a user's details in the user's list.
2. The system allow admin to edit user's personal details, education background and work experiences.
3. Admin confirms to update the user's details.

Sub-flows: -

Alternate/Exceptional flows:-

Table 4.17: Use Case - Manage post

Use case name: Manage post	ID: UC17	Primary Actor: Admin
Use Case Type: Detail, essential		Important level: high
Stakeholders and interests: Admin – wants to manage posts in the post list.		
Brief description: This use case describes how admin can manage posts in the post list.		
Trigger: Admin wants to add, delete post from the post list.		
Relationship: Association : Admin Include : N/A Extend : N/A Generalization : N/A		
Normal flow of events: 1. Admin enters the manage post page. 2. The system display the post list.  a. Add post 1. Admin selects to add a post. 2. The system display a pop-up window that allows admin to enter caption or insert picture. 3. Admin enters caption or picture. 4. Admin confirms to add it to the post list.  b. Delete post 1. Admin selects to delete a post in the post list. 2. The system prompts for confirmation. 3. Admin confirms to delete the post.  c. Edit post 1. Admin selects to edit a post.		

- |  |
|--|
| 2. The system allows admin to edit post's details such as caption and image. |
| 3. Admin confirms to update the post.  |

Sub-flows: -
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Alternate/Exceptional flows:-
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Table 4.18: Use Case - Manage job

Use case name: Manage job	ID: UC18	Primary Actor: Admin
Use Case Type: Detail, essential		Important level: high
Stakeholders and interests: Admin – wants to manage job.		
Brief description: This use case describes how admin can manage the job in the job list.		
Trigger: Admin wants to add, delete a job and edit job's details in the job list.		
Relationship: Association : Admin Include : N/A Extend : N/A Generalization : N/A		
Normal flow of events: 1. Admin enters the manage job page. 2. The system display a list of job.  a. Add job 1. Admin selects to add a job. 2. The system display a form that consist of fields such as company name, company website, industry, employer email, company background, company address, job position, employment type, minimum salary, maximum salary, job requirements, job responsibilities and application deadline. 3. Admin enters all the job details. 4. Admin confirms to add the job.  b. Delete job 1. Admin selects to delete a job in the job list. 2. The system prompt admin for confirmation. 3. Admin confirms the deletion request.		

c. Edit job details

1. Admin selects to edit a job's details in the job list.
2. The system display a form for admin to edit the job's details.
3. Admin edit selected job's details based on company name, company website, industry, employer email, company background, company address, job position, employment type, minimum salary, maximum salary, job requirements, job responsibilities and application deadline.
4. Admin confirms to update the job's details.

Sub-flows: -

Alternate/Exceptional flows:-



Table 4.19: Use Case - Manage news

Use case name: Manage news	ID: UC19	Primary Actor: Admin
Use Case Type: Detail, essential		Important level: high
Stakeholders and interests: Admin – wants to manage news in the news list.		
Brief description: This use case describes how user and admin are able to manage the news.		
Trigger: Admin wants to add, delete, update a news from the news list.		
Relationship: Association : Admin Include : N/A Extend : N/A Generalization : N/A		
Normal flow of events: 1. Admin enters the manage news page. 2. The system display list of news.  a. Add news 1. Admin select to add a news. 2. The system display a list of fields for admin to fill up such as title of the news, description of the news and the poster of the news. 3. Admin fill up all the required field. 4. Admin confirms to add the news.  b. Edit news 1. Admin selects to edit a news. 2. The system display a list of fields for admin to edit the details of the news. 3. Admin edit any desired fields. 4. Admin confirms to edit the news content.  c. Delete news		

1. Admin chooses to delete a specific news. 2. The system prompt admin for deletion confirmation. 3. Admin confirms to delete the particular news.
Sub-flows: -
Alternate/Exceptional flows:-

Table 4.20: Use Case - Manage event

Use case name: Manage event	ID: UC20	Primary Actor: Admin
Use Case Type: Detail, essential		Important level: high
Stakeholders and interests: Admin – wants to manage events in the event list.		
Brief description: This use case describes how user and admin are able to manage event.		
Trigger: Admin wants to add, delete, update an event from the event list.		
Relationship: Association : Admin Include : N/A Extend : N/A Generalization : N/A		
Normal flow of events: <ol style="list-style-type: none"> <li>1. Admin enters the manage event page.</li> <li>2. The system display list of events. <ol style="list-style-type: none"> <li>a. Add event <ol style="list-style-type: none"> <li>1. Admin select to add an event.</li> <li>2. The system display a list of fields for admin to fill up such as title of the event, event application deadline, description, google form link, start date of event, end date of event, and poster of the event.</li> <li>3. Admin fill up all the required field.</li> <li>4. Admin confirms to add the event.</li> </ol> </li> <li>b. Edit event <ol style="list-style-type: none"> <li>1. Admin selects to edit an event.</li> <li>2. The system display a list of fields for admin to edit the details of the events.</li> <li>3. Admin edit any desired fields.</li> <li>4. Admin confirms to edit the event.</li> </ol> </li> </ol> </li> </ol>		

c. Delete event

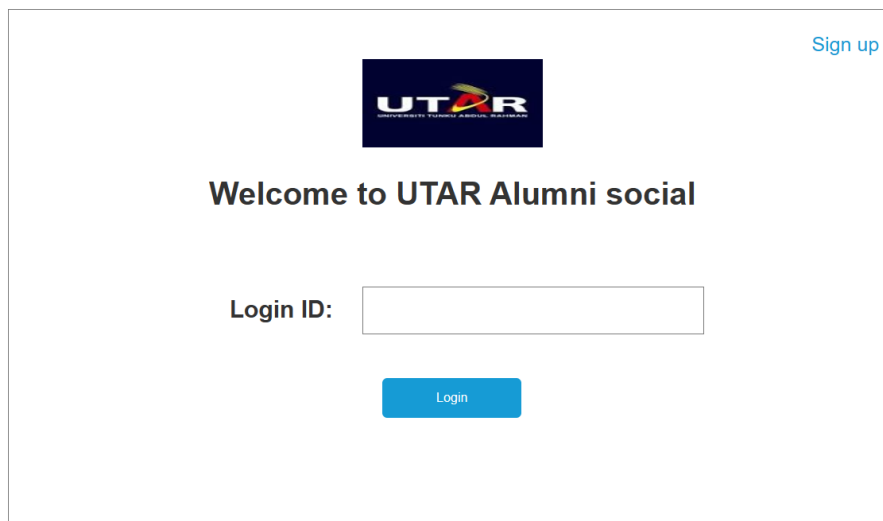
1. Admin choose to delete an event.
2. The system prompt the admin for confirmation.
3. Admin confirms to delete the selected event.

Sub-flows: -

Alternate/Exceptional flows:-

## 4.6 System Prototype

### 4.6.1 User-side Module Prototype



Sign up

**UTAR**  
UNIVERSITI TEKNOLOGI MARA

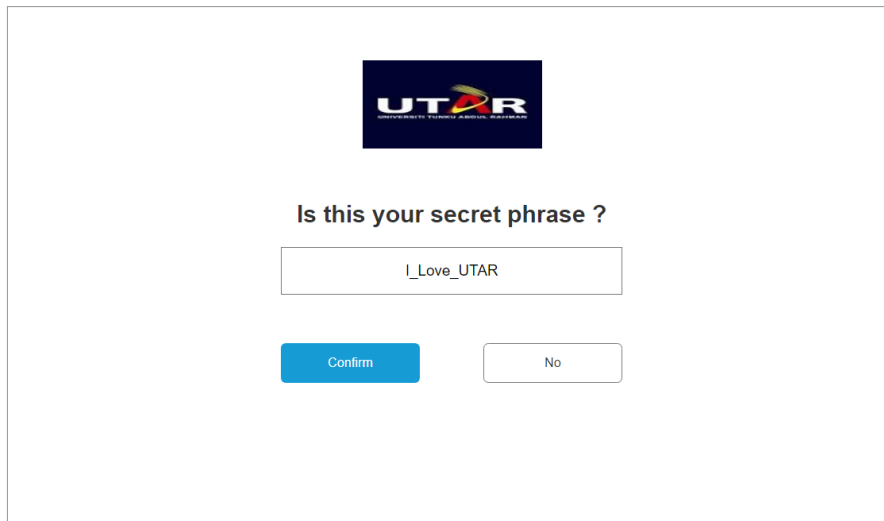
**Welcome to UTAR Alumni social**


Login ID:

Login

Figure 4.1: Login page

---

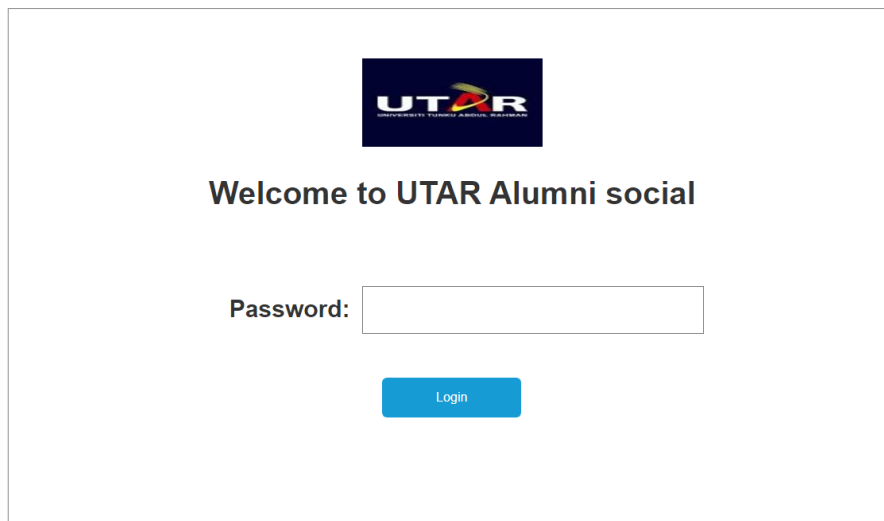





Is this your secret phrase ?

Figure 4.2: Personal login phase authentication

---





Welcome to UTAR Alumni social

Password:

Figure 4.3: Enter password page

---

### Register for an account here ! [Login](#)

Name :	<input type="text"/>	Phone number:	<input type="text"/>
Student ID:	<input type="text"/>	Email address:	<input type="text"/>
Faculty :	<input type="text"/>	Course :	<input type="text"/>
Password:	<input type="text"/>	Confirm password:	<input type="text"/>

Personal login phrase:

[Sign up](#)

Figure 4.4: Register page

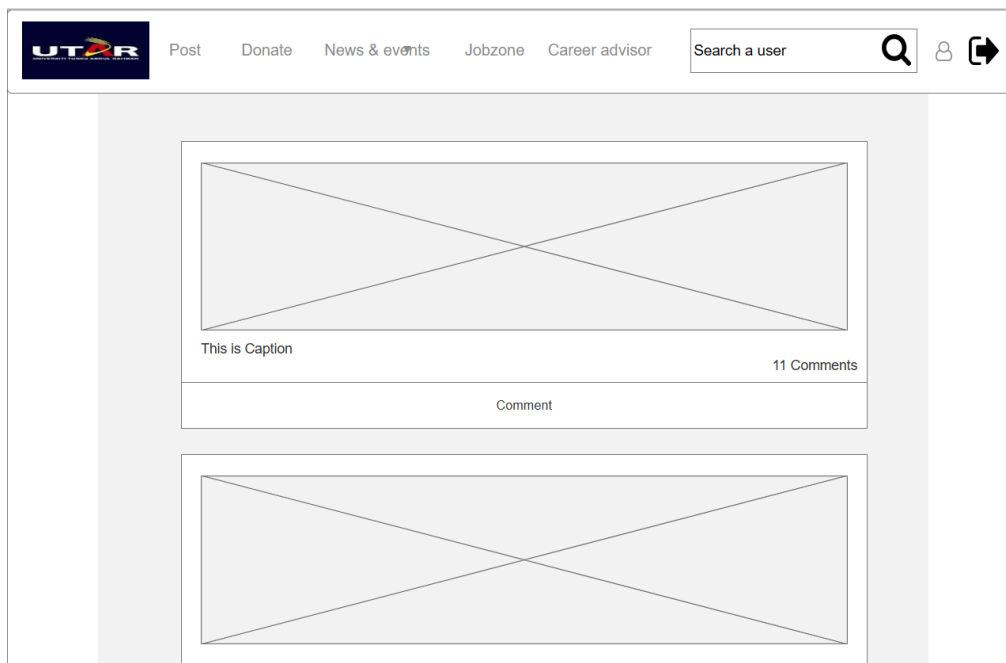


Figure 4.5: View news feed page

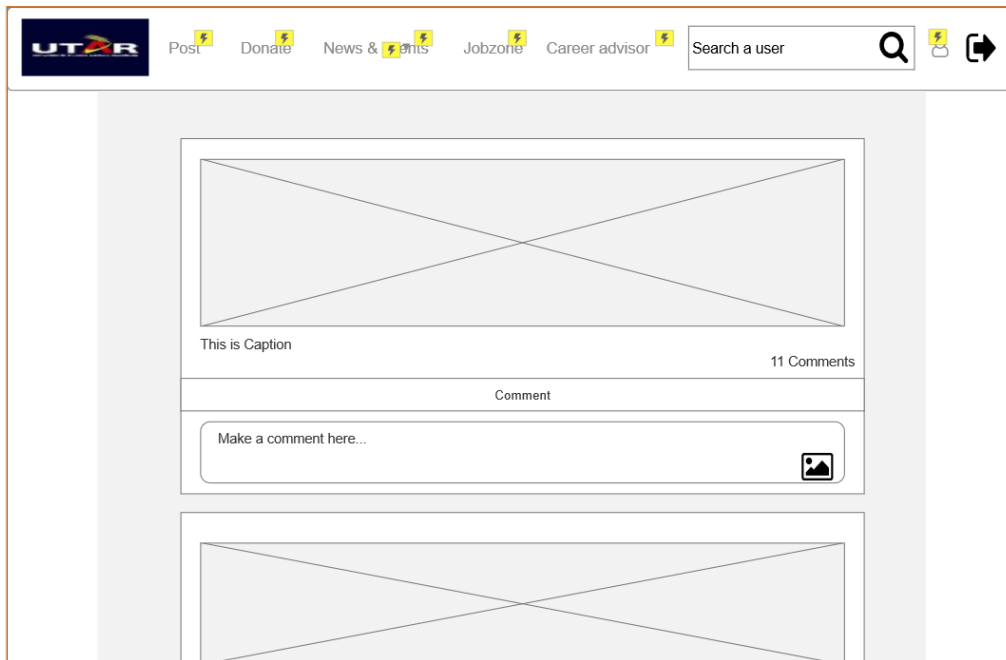


Figure 4.6: Leave comment function

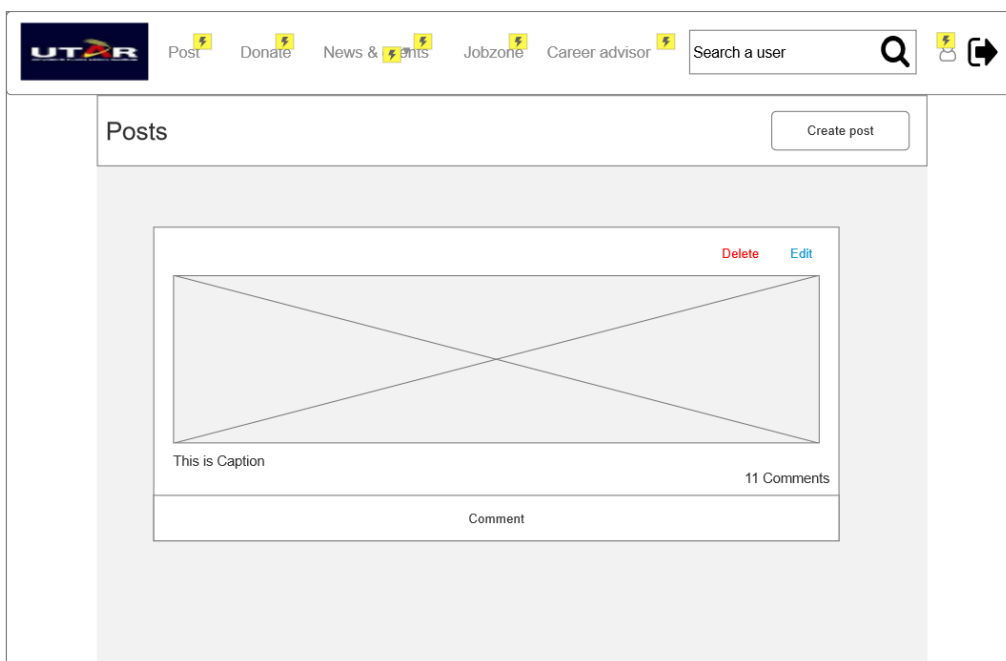


Figure 4.7: Manage own post page

UTAR

Post Donate News & Events Jobzone Career advisor Search a user

### Donate here !

**Fill up all the details here**

Name :

Contribution type :

IC number :

Email address :

Contact no:

Amount :  Payment method:

Figure 4.8: Make donation page

UTAR

Post Donate News & Events Jobzone Career advisor Search a user

### Career advisory session

**Fill up all the details in order to apply !**

Name :

Student id:

Faculty :

Course name :

Contact no:

Date :  Time :

Figure 4.9: Apply career advisory session page



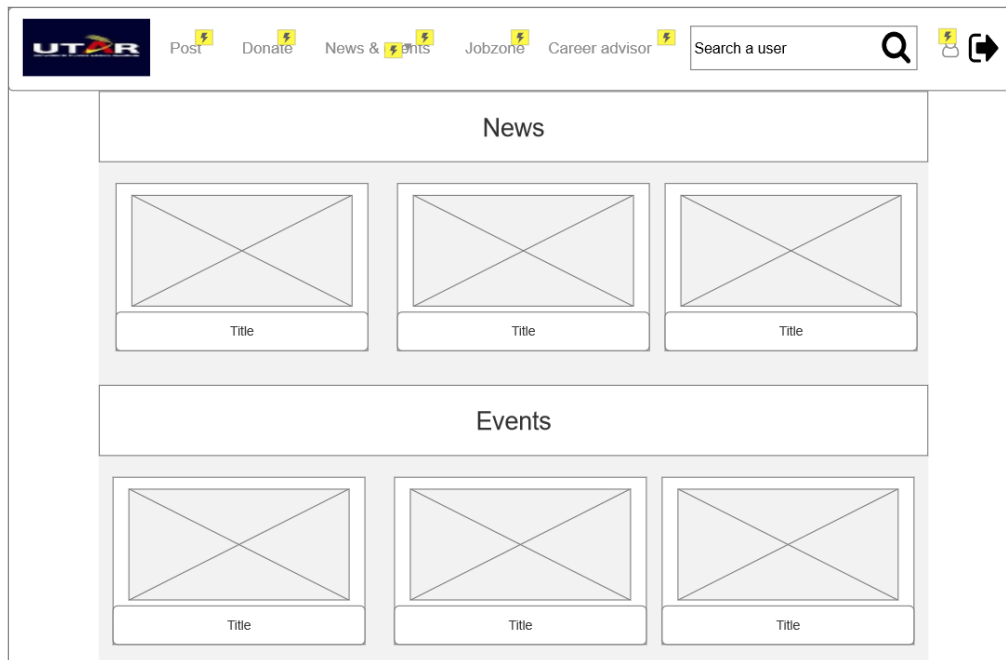


Figure 4.10: View institutional information page

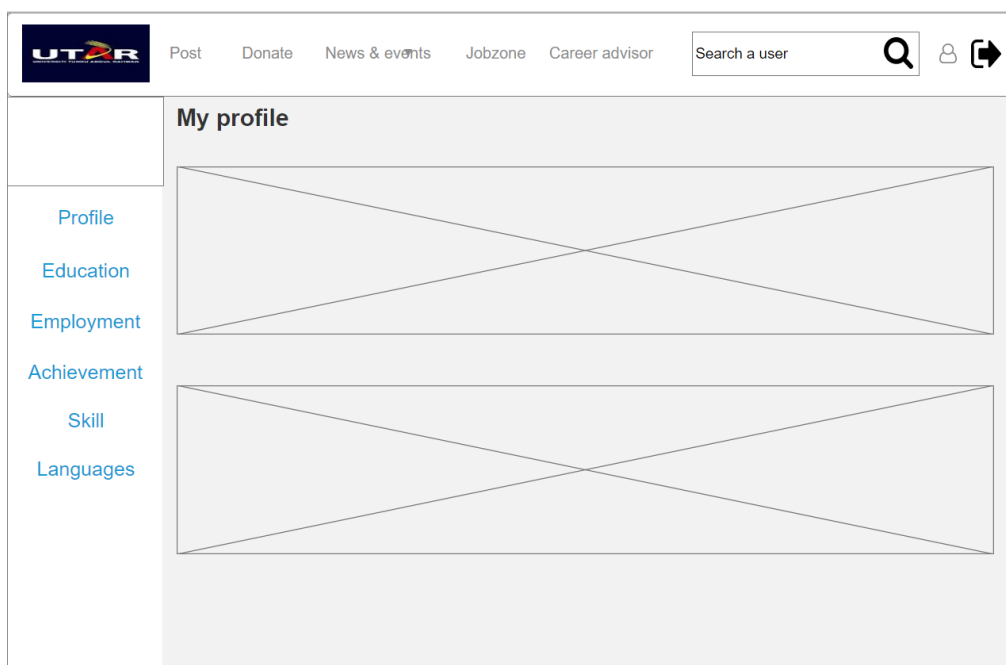
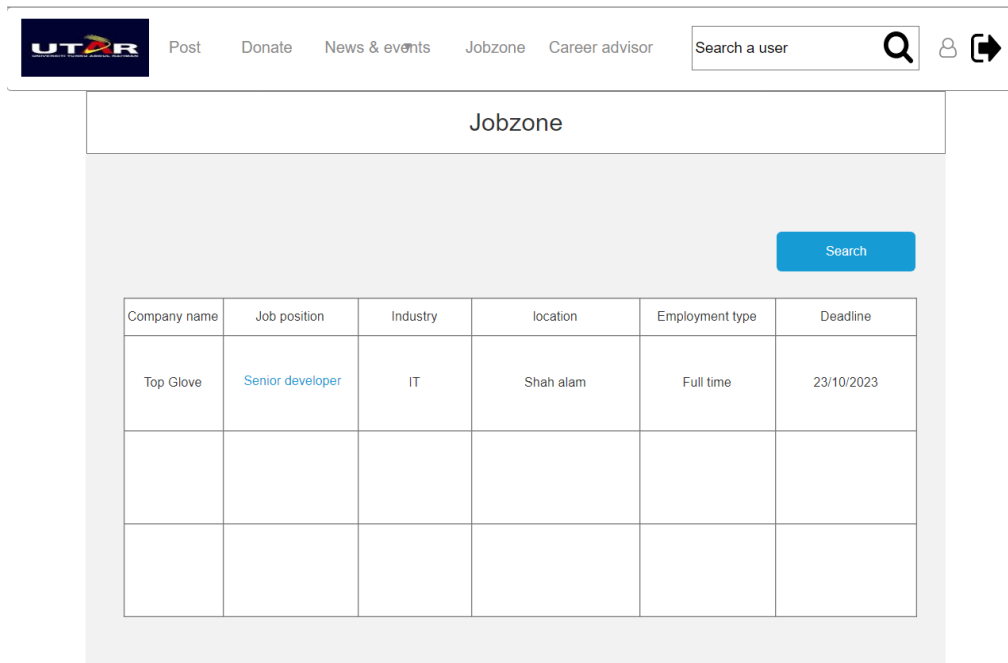


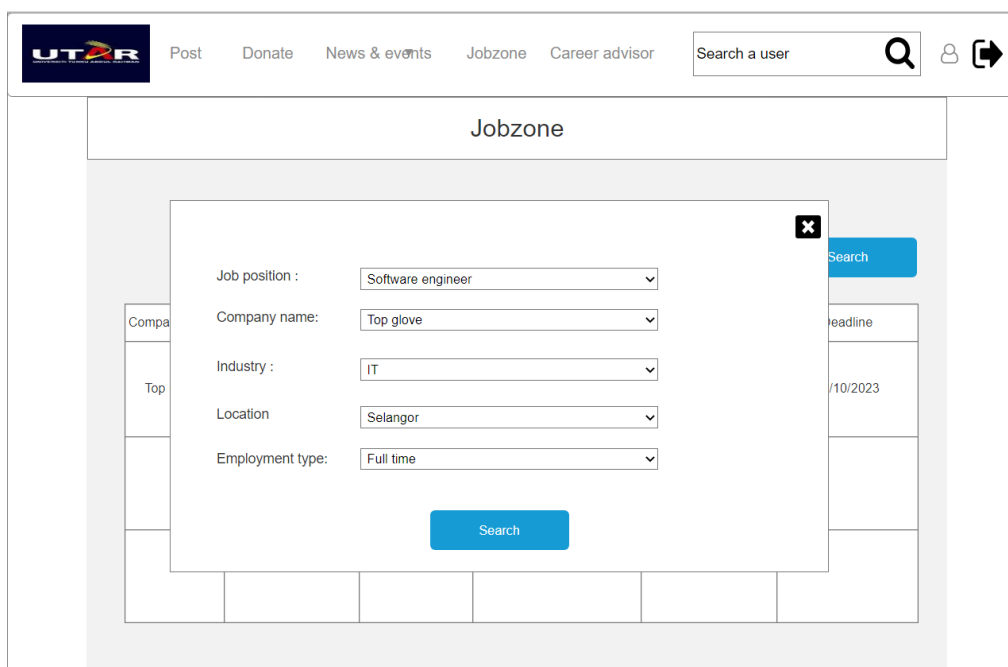
Figure 4.11: Manage profile page



The screenshot shows the 'Jobzone' page with a navigation bar at the top containing the UTAAR logo and links for Post, Donate, News & events, Jobzone, and Career advisor. A search bar labeled 'Search a user' is also present. Below the navigation bar, the 'Jobzone' title is centered. A blue 'Search' button is located in the top right corner of the job listing area. The main content is a table with the following data:

Company name	Job position	Industry	location	Employment type	Deadline
Top Glove	Senior developer	IT	Shah alam	Full time	23/10/2023

Figure 4.12: View job list page



The screenshot shows the 'Jobzone' page with a search modal open. The modal contains the following search criteria:

- Job position : Software engineer
- Company name: Top glove
- Industry : IT
- Location : Selangor
- Employment type: Full time

A blue 'Search' button is located at the bottom of the modal. The background table from Figure 4.12 is partially visible behind the modal.

Figure 4.13: Search job function

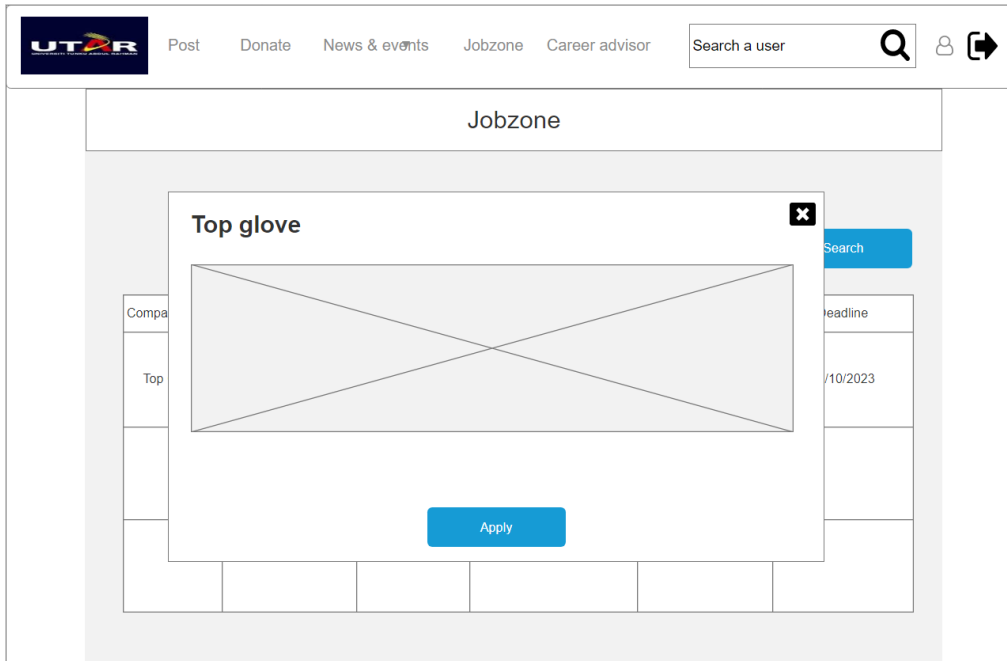


Figure 4.14: Apply job function

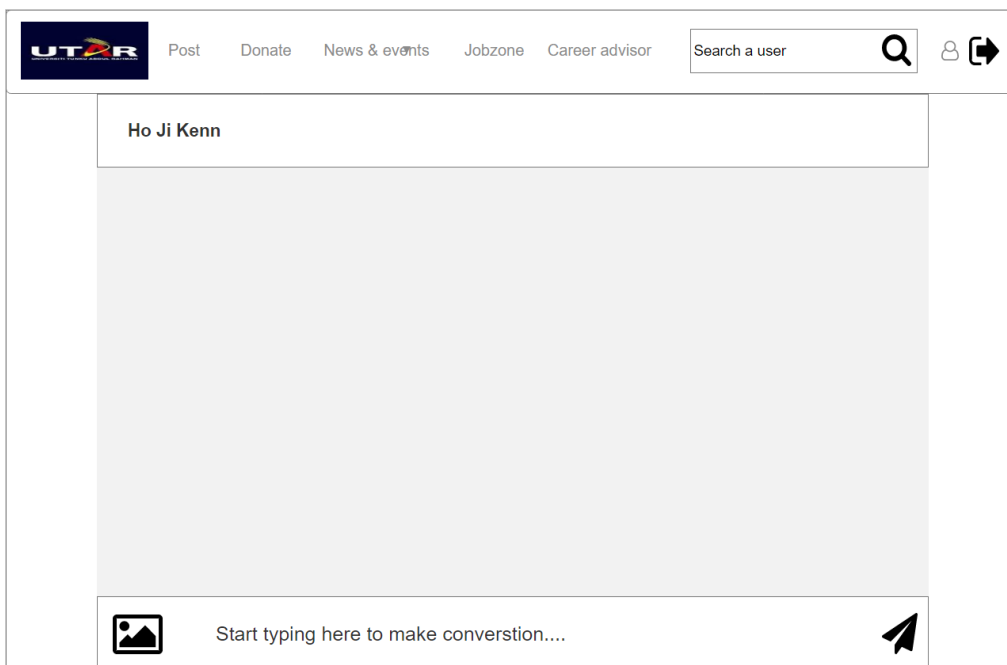


Figure 4.15: Chat function

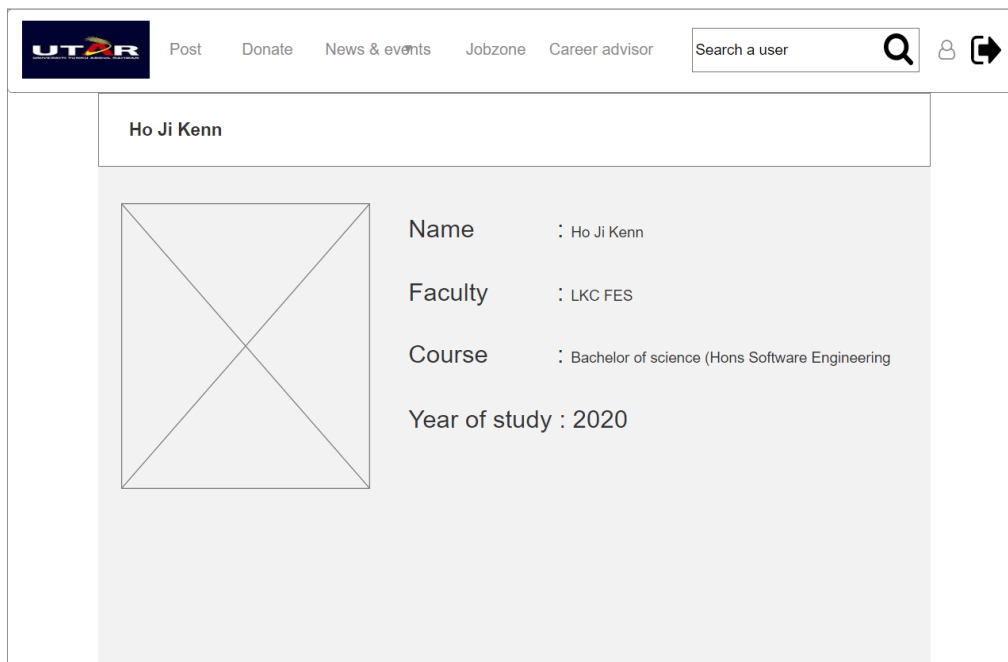


Figure 4.16: View user details

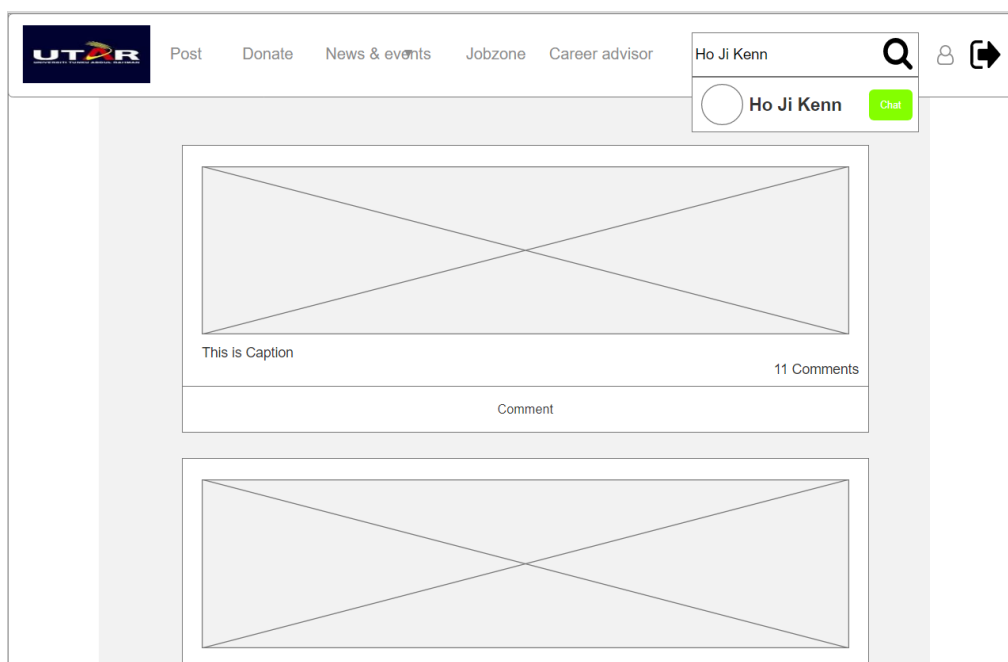
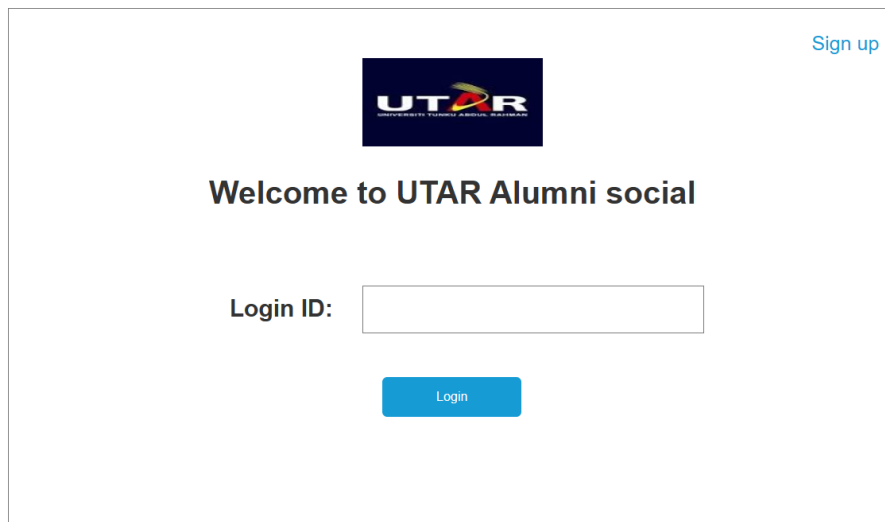


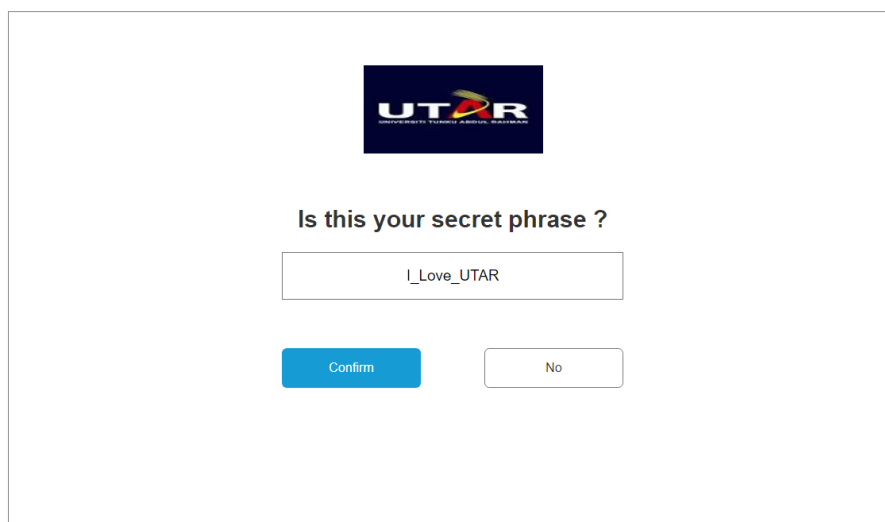
Figure 4.17: Search user function

#### 4.6.2 Admin-side Module Prototype




The screenshot shows a login page for the UTAR Alumni social platform. At the top right, there is a blue link labeled "Sign up". In the center, the UTAR logo is displayed above the heading "Welcome to UTAR Alumni social". Below the heading, there is a label "Login ID:" followed by a white text input field. Underneath the input field is a blue button with the text "Login".

Figure 4.18: Login page



The screenshot shows a personal login phase authentication page. At the top center, the UTAR logo is displayed. Below the logo, the question "Is this your secret phrase ?" is shown. Underneath the question is a white text input field containing the text "I\_Love\_UTAR". Below the input field are two buttons: a blue button labeled "Confirm" and a white button labeled "No".

Figure 4.19: Personal login phase authentication




**Welcome to UTAR Alumni social**

Password:

[Login](#)

Figure 4.20: Enter password page



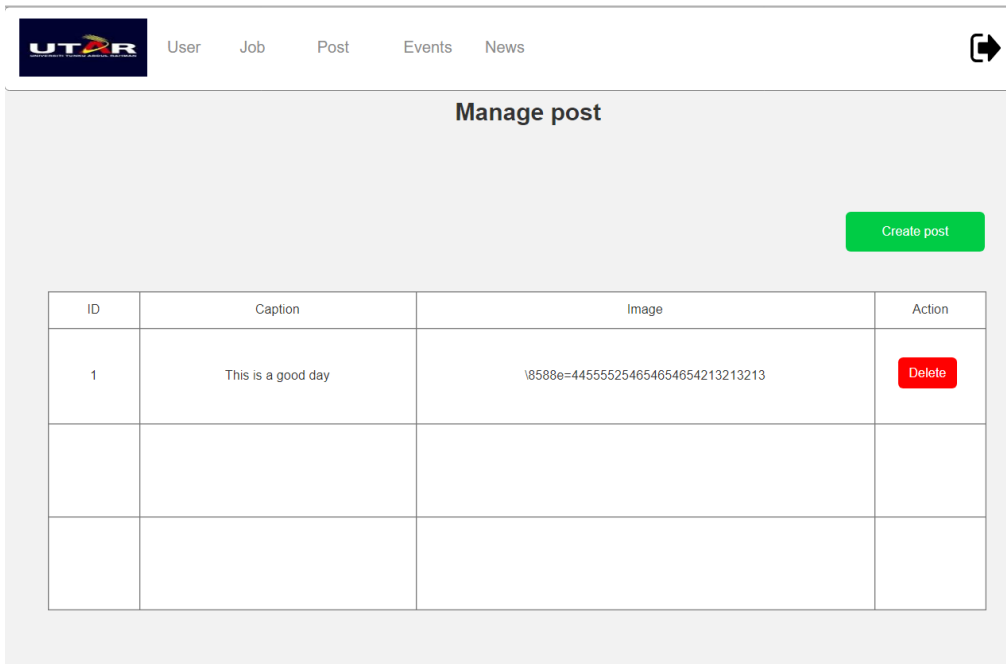
User Job Post Events News ➔

### Manage user

[Create user](#)

Name	Student id	password	email	Faculty	Course	Contact no.	Action
Ji Keen	201245	\$%#@43%^13:(12\$%	hojkenn@email.com	Full time	Bachelor of science(Hons) Software Engineering	012563456	<a href="#">Delete</a> <a href="#">Edit</a>

Figure 4.21: Manage user page



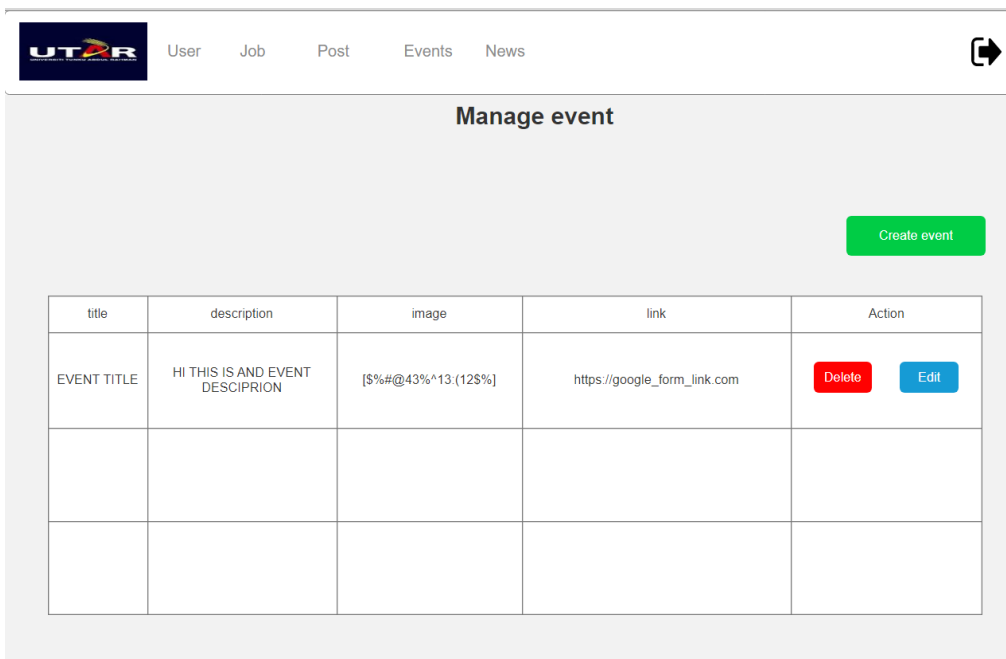
UTAR User Job Post Events News

### Manage post

Create post

ID	Caption	Image	Action
1	This is a good day	v8588e=445555254654654213213213	Delete

Figure 4.22: Manage post page



UTAR User Job Post Events News

### Manage event

Create event

title	description	image	link	Action
EVENT TITLE	HI THIS IS AND EVENT DESCIPRION	[\$#@43%^13 (12\$%)	https://google_form_link.com	Delete Edit

Figure 4.23: Manage event page

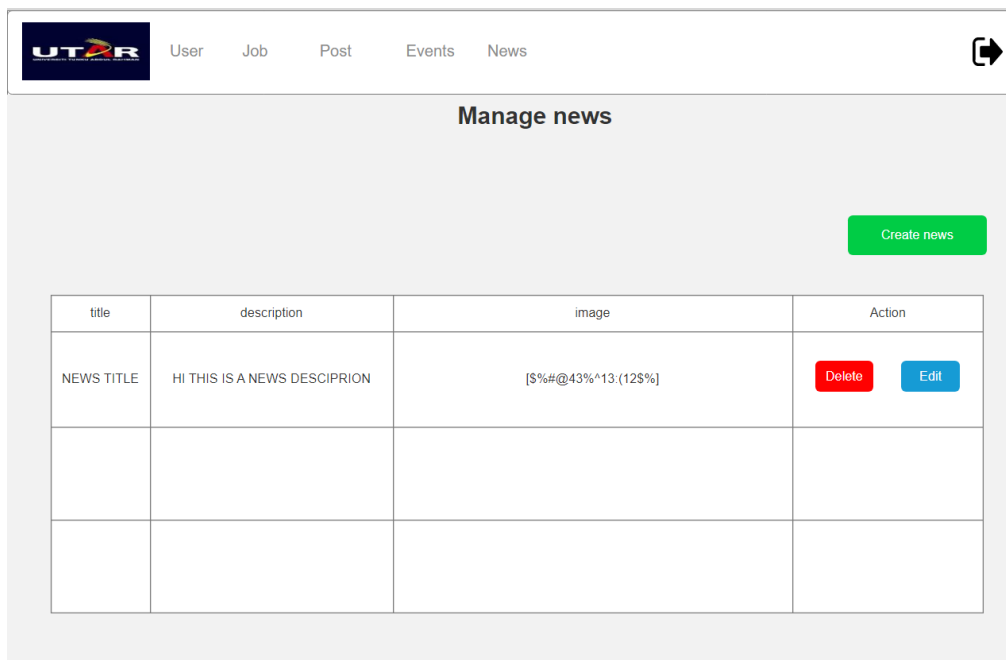


Figure 4.24: Manage news page

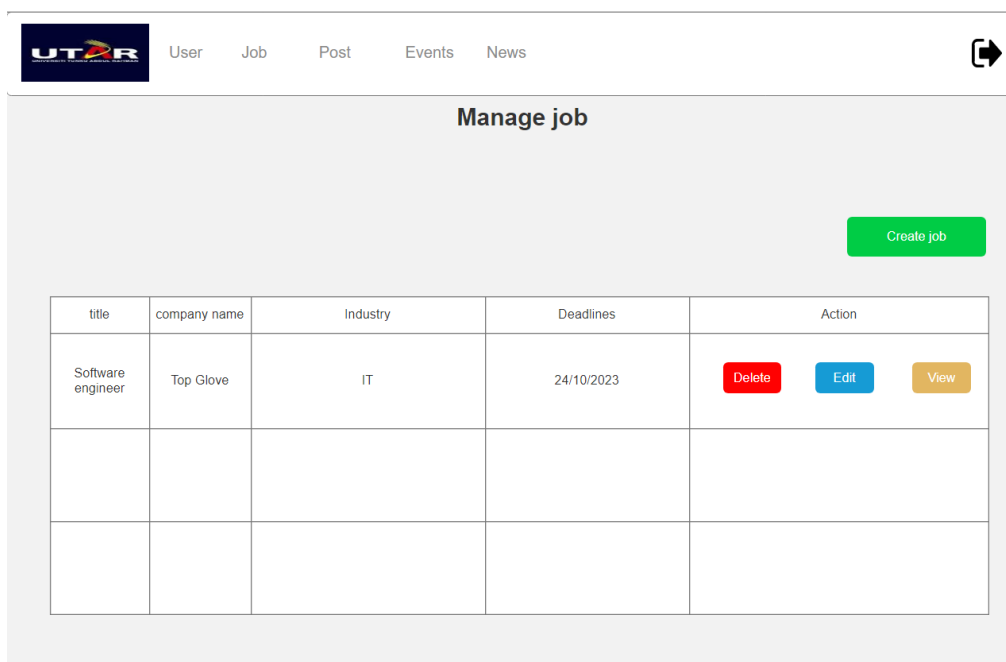


Figure 4.25: Manage job page

## 4.7 Conclusion

Therefore, this chapter has shown the functional and non-functional requirement for the proposed system using the selected requirement discovery method. A use case diagram has also been developed to outline how the user interact with the system with detailed description for each use cases. Prototype



of the proposed system has also been developed to show how the final product will look like.

## CHAPTER 5

### SYSTEM DESIGN

#### 5.1 Introduction

In this chapter, a comprehensive overview of the system's design is presented with diagrams such as system architecture diagram that shows the design of the system architecture, entity relationship diagram that shows a logical view of how the data model in the system interact with each other and data dictionaries to emphasize more on the database design in detail.

#### 5.2 System Architecture

Figure 5.1 illustrates the system architecture design for the social networking system. The social networking system adopts a three-tier architecture which consists of three layers which are presentation layer, application layer, and data layer. Firstly, the presentation layer is the first layer where user and admin interact with the social networking system directly. In the presentation layer, HTML, CSS, JavaScript, Bootstrap are used for the front-end development responsible to display the user interface to the system and collect user's input. Next, the application layer is the second layer which will be interacting with both the presentation layer and data layer which is the third layer. In the application layer, Laravel framework is used for the back-end development where the server handle the HTTP Request and make responses by retrieving the corresponding data from the database so that the data are sent to the presentation layer to display them to users. On the other hand, the Pusher API makes it possible for real time communication by broadcasting event to all connected clients. Lastly, mySQL database is used for the data layer that stores all the data of the system.

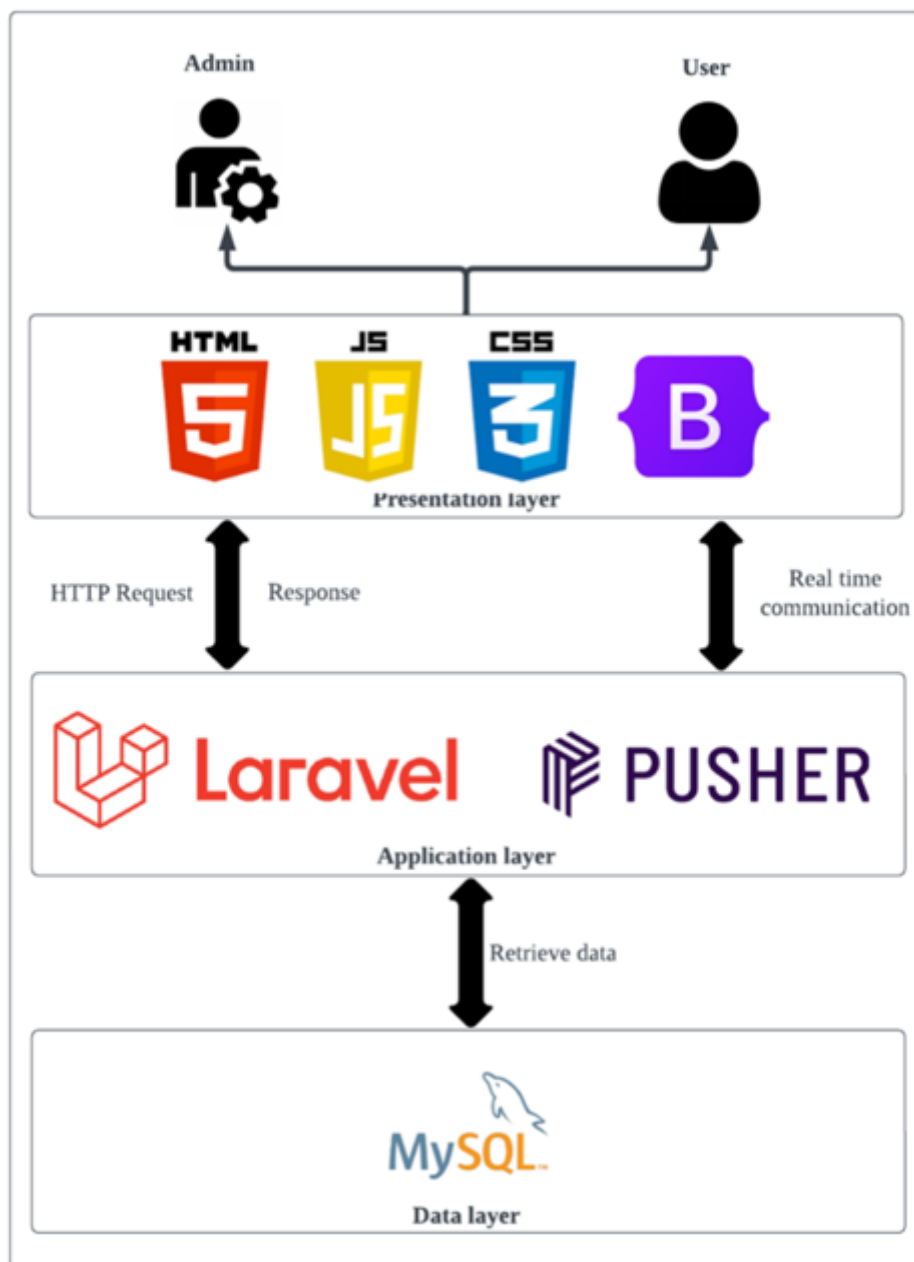


Figure 5.1: System architecture diagram

### 5.3 Entity Relationship Diagram (ERD)

This section illustrates the database design for the social networking system using two diagrams which are physical entity relationship diagram and a logical entity relationship diagram. The purpose of the diagrams are to provide a clear view on the relationship between 10 of the entities flows within this system which include User, Message, Conversation, Experience, Education, Comment, Post, News, Event, and Job.

### 5.3.1 Physical Entity Relationship Diagram

Figure 5.2 illustrates the physical entity relationship diagram that visualizes the physical structure of the database used for this system. Physical ERD includes more details by showing all the attributes from each entity, the constraints of the attributes, relationship between each entity, and cardinality of the relationships.

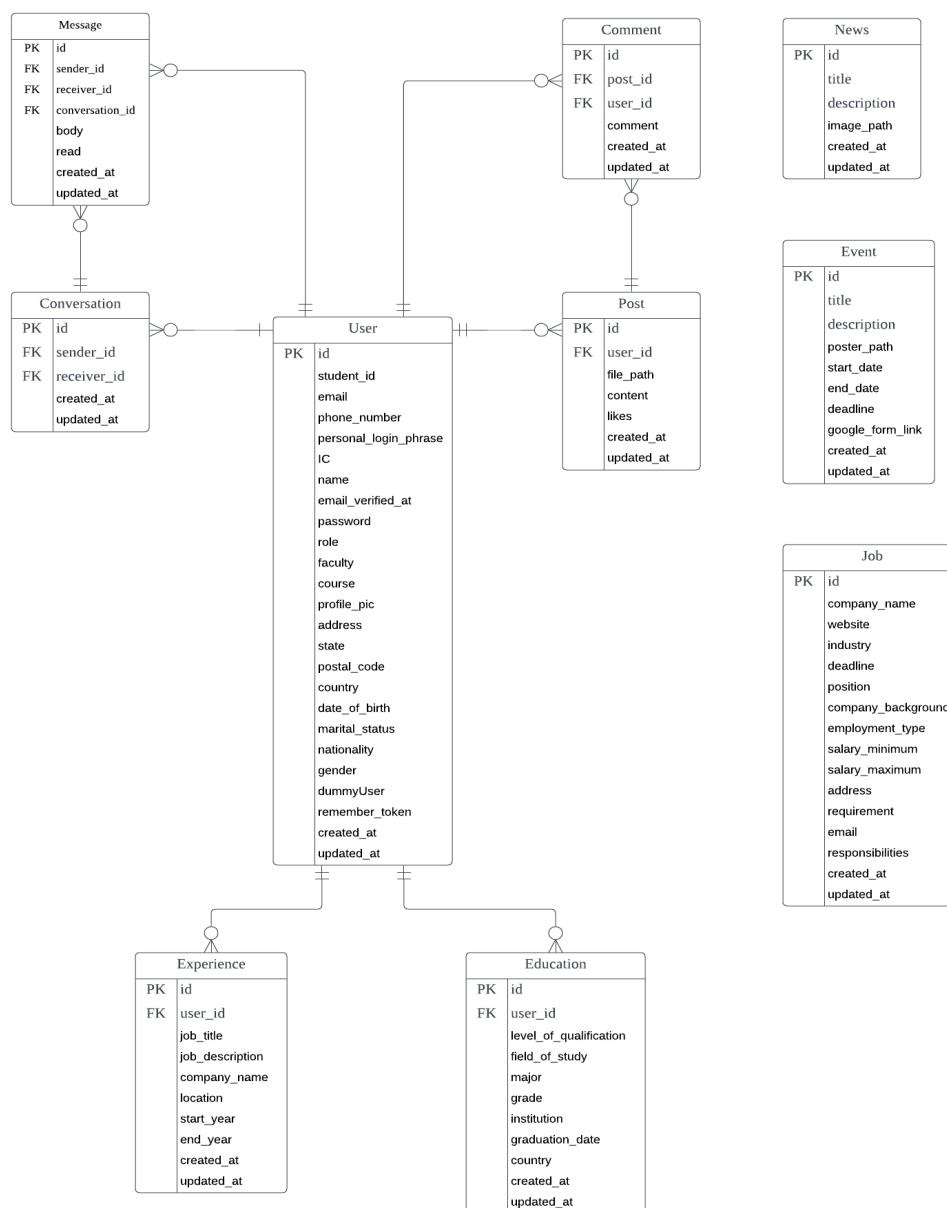


Figure 5.2: Physical ERD diagram

### 5.3.2 Logical Entity Relationship Diagram

Figure 5.3 shows the logical ERD diagram that visualize the structure of the database in a simplified way. Logical ERD helps to ensure individuals without a technical background are able to understand the diagram easily.

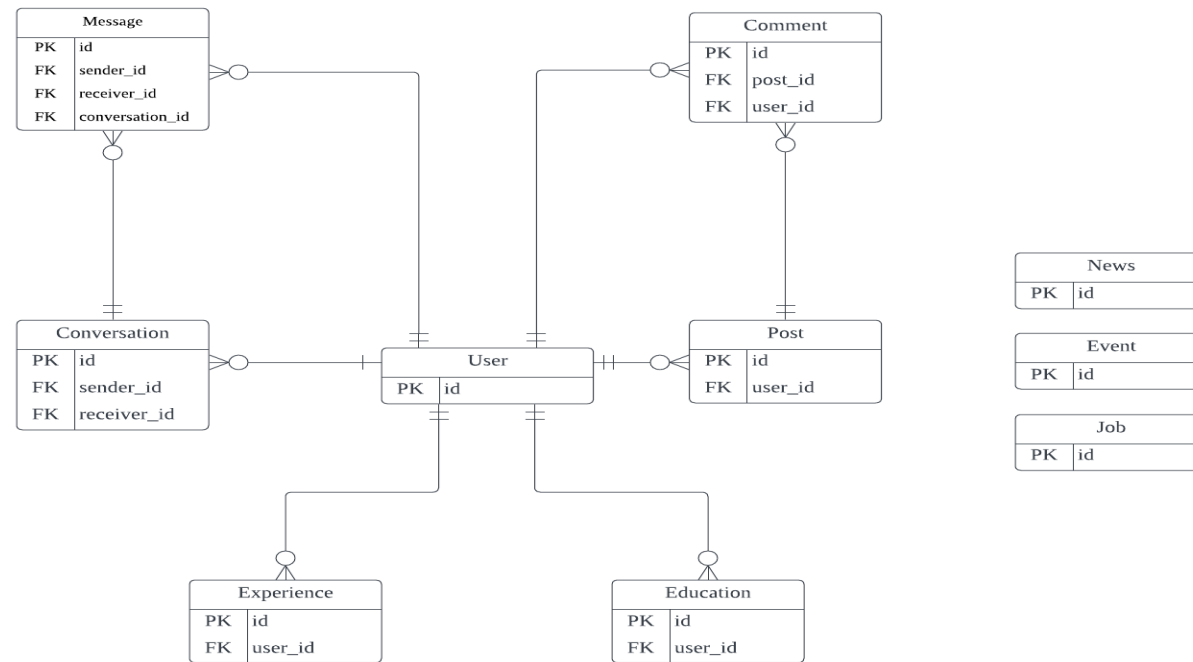


Figure 5.3: Logical ERD diagram

## 5.4 Data Flow Diagram

In this section will illustrate how the data flow in the system through data flow diagram. Context diagram and level 0 diagram are drawn in following section.

### 5.4.1 Context Diagram

Figure 5.4 shows the context diagram that was developed to shows the overview of the data flow in the system.

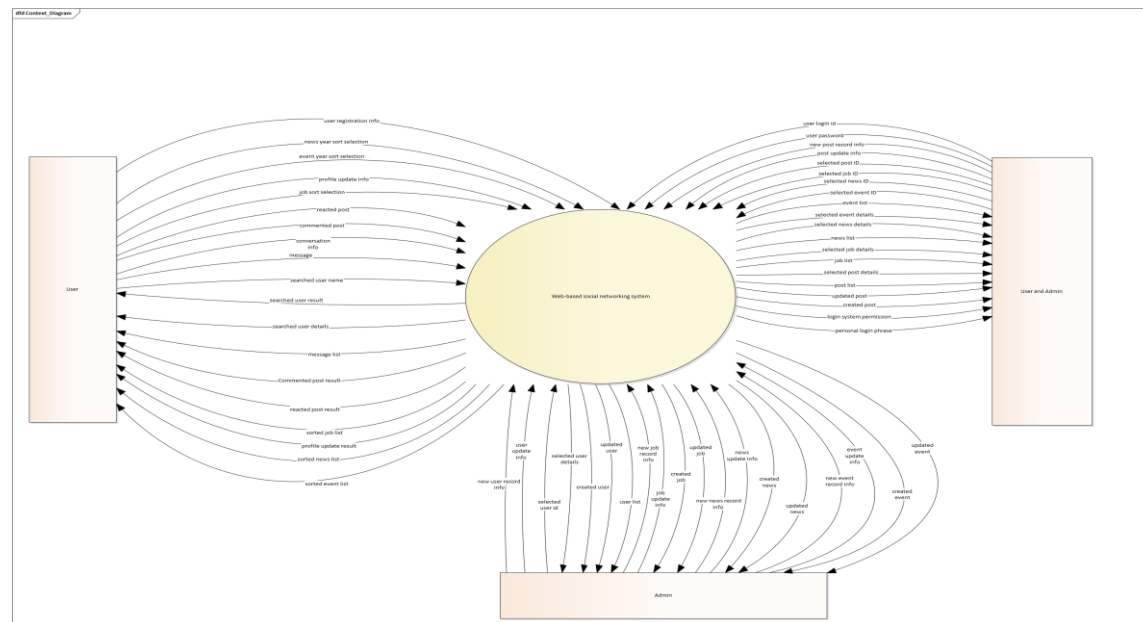


Figure 5.4: Context diagram

### 5.4.2 Level 0 Data Flow Diagram

Figure 5.5 shows the level 0 data flow diagram that consist more details on how the data flows through each major processes of the system.

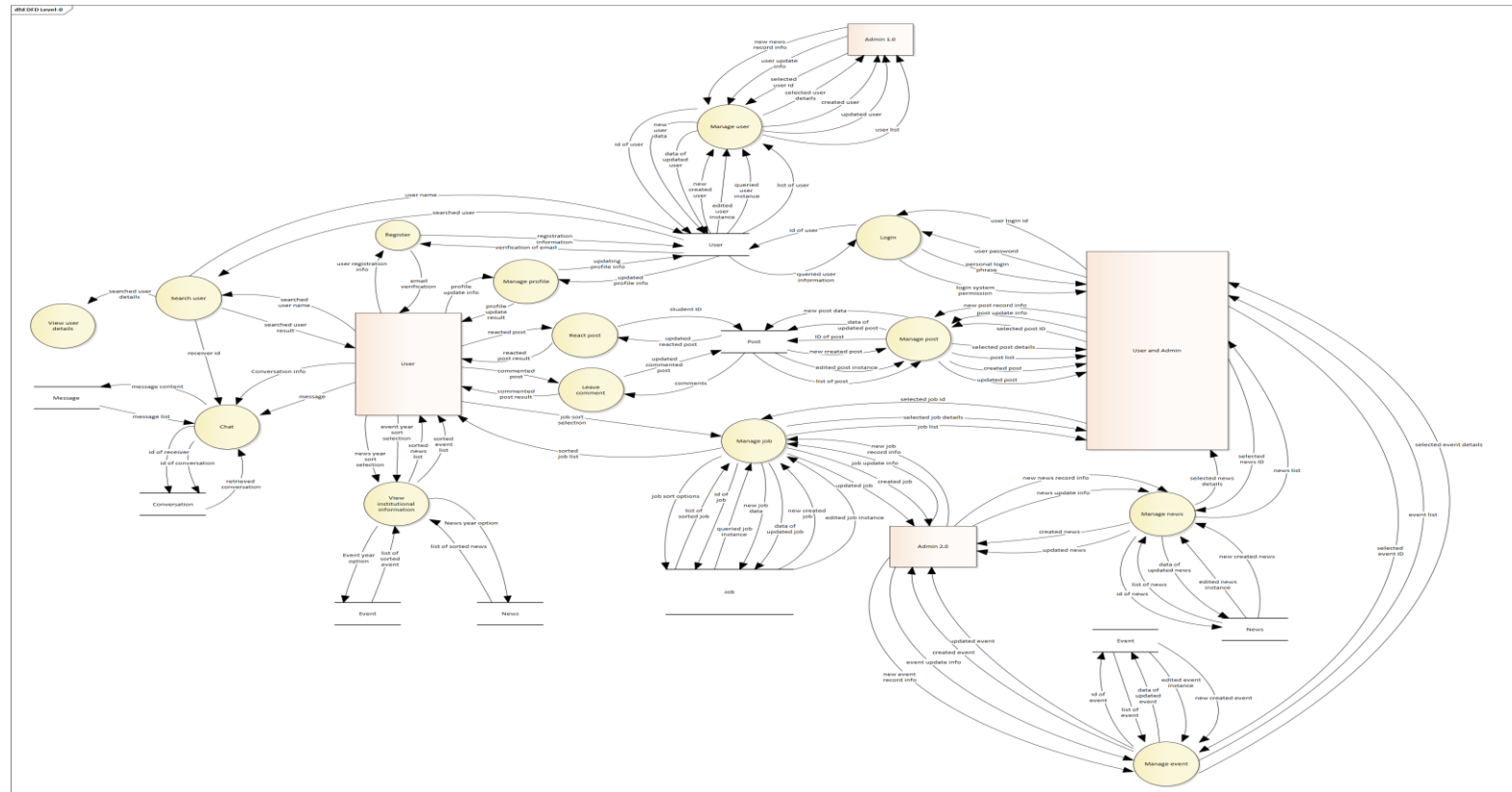


Figure 5.5: Level 0 Data flow diagram

## 5.5 Data Dictionary

In this section, several data dictionaries have been created for all the entities mentioned in the previous section. The data dictionaries are developed for the purposes of providing a clear description for each table in the database which includes the attributes, data type of the attribute, constraint, short description, and an example each of the attribute may contains.

### 5.5.1 User

The user table is used to store each user of the system with their personal details. The table consist of 25 attributes including id, name, student\_id, email, email\_verified\_at, password, role, phone\_number, faculty, course, personal\_login\_phrase, profile\_pic, IC, address, state, postal\_code, country, date\_of\_birth, marital\_status, nationality, gender, dummyUser, remember\_token, created\_at, updated\_at.

Table 5.1: User table

Attribute name	Data type	Contrain	Description	Example values
<b>id</b>	BIGINT	Primary key, auto increment	A unique identifier used to identify each user	5
<b>name</b>	VARCHAR(191)	Not null	Name of the user	Ali
<b>student_id</b>	VARCHAR(191)	Unique key	UTAR's student id of the user	2000000



<b>email</b>	VARCHAR(191)	Unique key	Email of the user	ali@gmail.com
<b>email_verified_at</b>	TIMESTAMP	Nullable	Date and time of the user verifying their email	2023-01-01 00:00:00
<b>password</b>	VARCHAR(191)	Nullable	Password for the user's account	Ali_Ala@1111
<b>role</b>	ENUM("user", "admin")	Not null	Role of the user in the system	User
<b>phone_number</b>	VARCHAR(191)	Unique key	Phone number of the user	0125687495
<b>faculty</b>	VARCHAR(191)	Nullable	Faculty of the user in UTAR	LKC FES
<b>course</b>	VARCHAR(191)	Nullable	Course of the user in UTAR	Bachelor of Science (Hons) Software Engineering
<b>personal_login_phrase</b>	VARCHAR(191)	Unique key	Security phrase specified by the user	I love UTAR
<b>profile_pic</b>	VARCHAR(191)	Not null	Url / Folder path of the profile picture	uploaded_Images/KqKhjEgEar1LkFAk.JPG

<b>IC</b>	VARCHAR(191)	Unique key	Identity card number of the user	055555-22-5858
<b>address</b>	VARCHAR(191)	Not null	Home address line of the user	5, Jalan Sungai Long
<b>state</b>	VARCHAR(191)	Not null	The state where user is located	Selangor
<b>postal_code</b>	VARCHAR(191)	Not null	Postal code of the user's address	41258
<b>country</b>	VARCHAR(191)	Not null	The country where the user is located	Malaysia
<b>date_of_birth</b>	VARCHAR(191)	Not null	The date of birth of the user	07-05-2000
<b>marital_status</b>	VARCHAR(191)	Not null	The current marital status of the user	Single
<b>nationality</b>	VARCHAR(191)	Not null	The nationality of the user	Malaysian
<b>gender</b>	ENUM("male", "female")	Not null	The gender of the user	Male

<b>dummyUser</b>	ENUM(“true”, ”false”)	Not null	The current user is a dummy user or a real user	False
<b>remember_token</b>	VARCHAR(100)	Nullable	Random generated token for automatic login.	das54d5a4sd6a54s6d5a4sd
<b>created_at</b>	TIMESTAMP	Nullable	Date and time of user’s account creation	2023-08-21 12:03:58
<b>updated_at</b>	TIMESTAMP	Nullable	Date and time of user’s account modification	2023-08-21 12:15:47

### 5.5.2 Post

The post table is used to store the posts created by the user of the system. The table consist of 7 attributes including id, user\_id, file\_path, content, likes, created\_at, updated\_at.

Table 5.2: Post table

Attribute name	Data type	Constraint	Description	Example values
<b>id</b>	BIGINT	Primary key, auto increment	A unique identifier used to identify each post	10
<b>user_id</b>	BIGINT	Foreign key	User id	5
<b>file_path</b>	VARCHAR(191)	Nullable	The folder path for the post's image	uploaded_Images/yHUyj0A8VgouGHJW.jpg
<b>content</b>	TEXT	Not null	The content of the post	Hi there
<b>likes</b>	JSON	Not null	Likes of the post	["2202465","2004965"]
<b>created_at</b>	TIMESTAMP	Nullable	Date and time of the creation of post	2023-08-30 11:21:10
<b>updated_at</b>	TIMESTAMP	Nullable	Date and time of post's modification	2023-08-31 13:58:02

### 5.5.3 Comment

The comment table is used to store each comment made to any posts in the system. The table consists of 6 attributes including `id`, `post_id`, `user_id`, `comment`, `created_at`, `updated_at`.

Table 5.3: Comment table

Attribute name	Data type	Contraint	Description	Example values
<b>id</b>	BIGINT	Primary key, auto increment	A unique identifier used to identify each comment	11
<b>post_id</b>	BIGINT	Foreign key	Post id	10
<b>user_id</b>	BIGINT	Foreign key	User id	5
<b>comment</b>	TEXT	Not null	Comment of the user	Nicely drawn !
<b>created_at</b>	TIMESTAMP	Nullable	Date and time of the creation of comment	2023-08-26 15:50:18
<b>updated_at</b>	TIMESTAMP	Nullable	Date and time of comment's modification	2023-08-26 15:50:18

### 5.5.4 Conversation

The conversation table is used to store the conversation information between two users of the system. The table consists of 5 attributes including `id`, `sender_id`, `user_id`, `created_at`, `updated_at`.

Table 5.4: Conversation table

Attribute name	Data type	Contraint	Description	Example values
<b>id</b>	BIGINT	Primary key, auto increment	A unique identifier used to identify each conversation	4
<b>sender_id</b>	BIGINT	Foreign key	User id	2
<b>user_id</b>	BIGINT	Foreign key	User id	1
<b>created_at</b>	TIMESTAMP	Nullable	Date and time of the creation of conversation	2023-08-27 00:20:29
<b>updated_at</b>	TIMESTAMP	Nullable	Date and time of conversation's modification	2023-08-27 00:20:29

### 5.5.5 Message

The message table is used to store all the messages sent by the users of the system. This table consists of 8 attributes including id, sender\_id, user\_id, conversation\_id, body, read, created\_at, updated\_at.

Table 5.5: Message table

Attribute name	Data type	Contraint	Description	Example values
<b>id</b>	BIGINT	Primary key, auto increment	A unique identifier used to identify each message	11
<b>sender_id</b>	BIGINT	Foreign key	User id	2
<b>user_id</b>	BIGINT	Foreign key	User id	1
<b>conversation_id</b>	BIGINT	Foreign key	Conversation id	4
<b>body</b>	TEXT	Nullable	Content of the message	Hi user2
<b>read</b>	TINYINT(1)	Not null	Message is read or not	0
<b>created_at</b>	TIMESTAMP	Nullable	Date and time of the creation of message	2023-08-27 00:20:29

<b>updated_at</b>	TIMESTAMP	Nullable	Date and time of message's modification	2023-08-27 00:20:29
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### 5.5.6 Education

The education table is used to store the education background created by the users of the system. This table consists of 11 attributes including id, user\_id, level\_of\_qualification, field\_of\_study, major, grade, institution, graduation\_date, country, created\_at, updated\_at.

Table 5.6: Education table

Attribute name	Data type	Contraint	Description	Example values
<b>id</b>	BIGINT	Primary key, auto increment	A unique identifier used to identify each education	2
<b>user_id</b>	BIGINT	Foreign key	User id	1
<b>level_of_qualification</b>	VARCHAR(191)	Not null	Level of qualification of the user	Bachelor
<b>field_of_study</b>	VARCHAR(191)	Not null	Field of study of the user	Engineering (Civil)



<b>major</b>	VARCHAR(191)	Not null	Academic major of the user	Bachelor of engineering civil engineering
<b>grade</b>	VARCHAR(191)	Not null	Academic grade of the user	Merit
<b>institution</b>	VARCHAR(191)	Not null	Institution where the user studied at	UTAR
<b>graduation_date</b>	VARCHAR(191)	Not null	Graduation date of the user's study	October 2023
<b>country</b>	VARCHAR(191)	Not null	Country where the institution located at	Malaysia
<b>created_at</b>	TIMESTAMP	Nullable	Date and time of the creation of education	2023-08-30 12:14:45
<b>updated_at</b>	TIMESTAMP	Nullable	Date and time of education's modification	2023-08-30 12:14:45

### 5.5.7 Experience

The experience table is used to store the work experiences specified by the users of the system. This table consists of 10 attributes including id, user\_id, job\_title, job\_description, company\_name, location, start\_year, end\_year, created\_at, updated\_at.

Table 5.7: Experience table

Attribute name	Data type	Constraint	Description	Example values
<b>id</b>	BIGINT	Primary key, auto increment	A unique identifier used to identify each work experience	3
<b>user_id</b>	BIGINT	Foreign key	User id	5
<b>job_title</b>	VARCHAR(191)	Not null	Job position of the work experience	Senior developer
<b>job_description</b>	TEXT	Not null	Description of the work experience from the job	1. Analyze network stability 2. Debug software
<b>company_name</b>	VARCHAR(191)	Not null	Name of the company of the work experience	Test Sdn. Bhd.

<b>location</b>	VARCHAR(191)	Not null	Location of the work experience	Shah Alam, Selangor.
<b>start_year</b>	VARCHAR(191)	Not null	Starting year of the work experience	2020
<b>end_year</b>	VARCHAR(191)	Not null	Ending year of the work experience	2022
<b>created_at</b>	TIMESTAMP	Nullable	Date and time of the creation of work experience	2023-08-31 15:29:11
<b>updated_at</b>	TIMESTAMP	Nullable	Date and time of work experience's modification	2023-08-31 15:30:30

### 5.5.8 Job

This table is used to store the jobs vacancies created by the admin of the system. This table consists of 16 attributes including id, company\_name, website, email, industry, deadline, position, company\_background, employment\_type, salary\_manimum, salary\_maximum, address, requirement, responsibility, created\_at, updated\_at.

Table 5.8: Job table

Attribute name	Data type	Constraint	Description	Example values
<b>id</b>	BIGINT	Primary key, auto increment	A unique identifier used to identify each job	11
<b>company_name</b>	TEXT	Not null	Company name who offer the job	Test Sdn. Bhd.
<b>website</b>	VARCHAR(191)	Not null	Website of the company	<a href="https://test-company/home">https://test-company/home</a>
<b>email</b>	VARCHAR(191)	Not null	Employer's email address	employer@gmail.com
<b>industry</b>	VARCHAR(191)	Not null	The industry related to the job	Clerical / General Administration
<b>deadline</b>	TIMESTAMP	Not null	Deadline of the job application	2023-10-26 00:00:00
<b>position</b>	TEXT	Not null	Position of the job offering	Senior manager
<b>company_background</b>	TEXT	Not null	Background of the	Testing Sdn Bhd is a software company who

			company who offer the job	focus on providing easy and useful software to their customer.
<b>employment_type</b>	VARCHAR(191)	Not null	Employment type of the job	Full time
<b>salary_minimum</b>	VARCHAR(191)	Not null	Minimum salary of the job	1500
<b>salary_maximum</b>	VARCHAR(191)	Unique key	Maximum salary of the job	3000
<b>address</b>	TEXT	Not null	Address of the company who offer the job	5e, jalan teluk intan, 40568 Shah alam, Selangor
<b>requirement</b>	JSON	Not null	Requirement of applying for the job	[ "1. Be able to speak chinese", "Be able to speak english" ]
<b>responsibilities</b>	JSON	Not null	Responsibilities coverage of the job	[ "Create a website" ]

<b>created_at</b>	TIMESTAMP	Nullable	Date and time of user's account creation	2023-08-23 16:28:51
<b>updated_at</b>	TIMESTAMP	Nullable	Date and time of user's account modification	2023-08-23 16:28:51

### 5.5.9 News

The news table is used to store the news created by the admin in the system. The table consists of 6 attributes including id, title, description, image\_path, created\_at, updated\_at.

Table 5.9: News table

Attribute name	Data type	Constraint	Description	Example values
<b>id</b>	BIGINT	Primary key, auto increment	A unique identifier used to identify each news	22
<b>title</b>	VARCHAR(191)	Not null	Title of the news	UTAR Alumni gathering
<b>description</b>	TEXT	Not null	Description of the	Alumni gathering will be held every year,

			news	looking forward in invitng every Alumni together and make a happy memory with each other.
<b>image_path</b>	VARCHAR(191)	Not null	Folder path of the image being stored	uploaded_Images/ulRNta37iIjiBU3R.PNG
<b>created_at</b>	TIMESTAMP	Nullable	Date and time of the creation of news	2023-09-01 00:00:00
<b>updated_at</b>	TIMESTAMP	Nullable	Date and time of the news' modification	2023-09-09 00:00:00

### 5.5.10 Events

The events table is used to store the events created by the admin in the system. The table consists of 10 attributes including id, start\_date, end\_date, deadline, title, description, google\_form\_link, poster\_path, created\_at, updated\_at.

Table 5.10: Event table

Attribute name	Data type	Contrain	Description	Example values
<b>id</b>	BIGINT	Primary key, auto increment	A unique identifier used to identify each	15

			event	
<b>start_date</b>	TIMESTAMP	Not null	Starting date of the event	2023-08-15 00:00:00
<b>end_date</b>	TIMESTAMP	Not null	Ending date of the event	2023-08-20 00:00:00
<b>deadline</b>	TIMESTAMP	Not null	Deadline of the event application	2023-08-10 00:00:00
<b>title</b>	VARCHAR(191)	Not null	Title of the event	Testing party
<b>description</b>	TEXT	Not null	Description of the event	Join us to enjoy testing software and making software developers' heart break ya !
<b>google_form_link</b>	VARCHAR(191)	Nullable	Google form link for the application of the event	<a href="https://forms.google.com/testing-registration">https://forms.google.com/testing-registration</a>
<b>poster_path</b>	VARCHAR(191)	Not null	Folder path for the event poster	uploaded_Images\ulRNta37iljiBU3R.PNG
<b>created_at</b>	TIMESTAMP	Nullable	Date and time of the creation of event	2023-08-01 00:00:00
<b>updated_at</b>	TIMESTAMP	Nullable	Date and time of	2023-08-02 00:00:00



			event's modification	
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## CHAPTER 6

### SYSTEM IMPLEMENTATION

#### 6.1 Introduction

This chapter focuses on the implementation of the system. The implementation will be discussed in few sections including demonstrating the implementation with images of the system and will also discuss more on the authentication implementation, password policies implementation, and real-time chat implementation.

#### 6.2 Features of the system

There are two types of users in the system: users who uses the interactive features provided by the system to connect with UTAR and fellow Alumni / Existing students, and admin who have the administrative rights to manage various data in the system. Table 6.1 illustrates the various modules and the corresponding features offered by the system to the targeted user.

Table 6.1: System modules and features

Role of user	Module	Features
User and Admin	Account	- Login
User	User account	- Register account
	User profile	- Manage profile - Search user - View user details
	Donation	- Make donation
	Career advisory session	- Apply career advisory session
	Institutional information	- View, sort news - View, sort, apply events
	Job	- View job list - Apply job

	Post	<ul style="list-style-type: none"> <li>- Manage own post</li> <li>- View news feed</li> <li>- Leave comment</li> <li>- React post</li> </ul>
	Chat	<ul style="list-style-type: none"> <li>- Create conversation</li> <li>- Create messages</li> <li>- Receive messages</li> <li>- Receive notifications</li> </ul>
Admin	User management	<ul style="list-style-type: none"> <li>- Create, delete user</li> <li>- Edit personal details, educations, work experiences of user</li> </ul>
	Job management	<ul style="list-style-type: none"> <li>- View job list</li> <li>- Create, edit, and delete job</li> </ul>
	Post management	<ul style="list-style-type: none"> <li>- View post list</li> <li>- Create, edit, and delete post</li> </ul>
	News management	<ul style="list-style-type: none"> <li>- View news list</li> <li>- Create, edit, and delete news</li> </ul>
	Event management	<ul style="list-style-type: none"> <li>- View event list</li> <li>- Create, edit, and delete event</li> </ul>

### 6.3 User and Admin Side Modules

This section focuses on the implementation demonstration for modules that both user and admin interact with.

#### 6.3.1 Account Module

User and admin share the same login page as the system implements role-based access control for the authentication. In the login page, user and admin have to enter the id in order to login to the system. User needs to enter the student ID of UTAR while admin needs to enter the account ID given to them beforehand. After entering the ID, user and admin may proceed to click on the “Login” button.

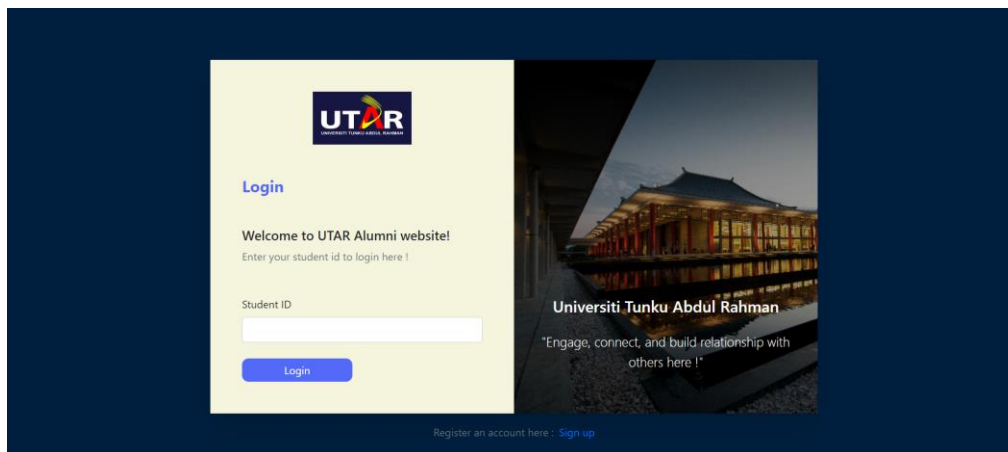


Figure 6.1: Login page

After clicking the “Login” button, user and admin are able to see the personal login phrase of their account. The personal login phrase of user is set up by themselves while admin’s is given to them beforehand as well. User and admin may click on the “Yes” button on the pop up modal to proceed with entering their password or click on the “No” button to remain in the login page.

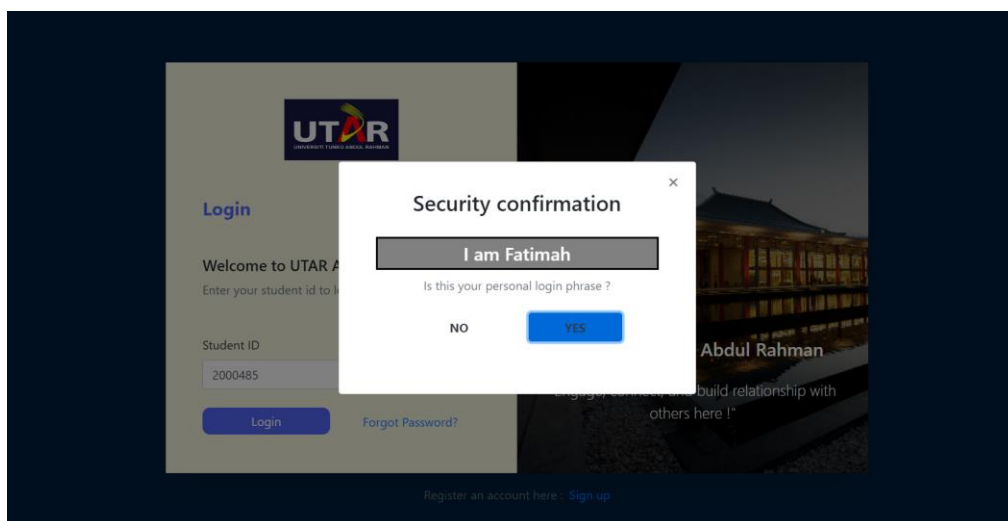


Figure 6.2: Display personal login phrase

After clicking “Yes” button to navigate to login page, user and admin are redirected to the password page. In the password page, entered student ID is displayed and user and admin can enter their password. The system also limit the maximum login attempt by three attempts for the user and admin. User and admin may navigate to login page by clicking on the “Back to login” link.

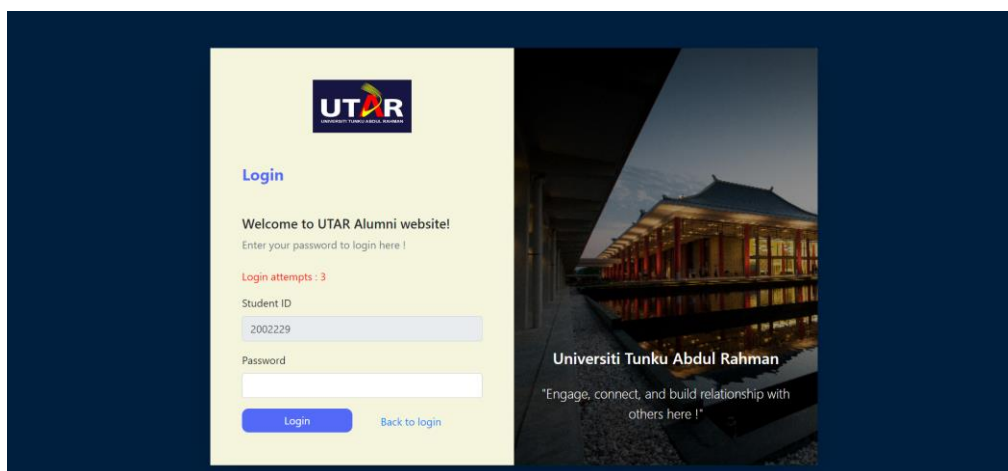


Figure 6.3: Password page

If user exceed the maximum login attempt, the system will automatically navigate user back to the login page with message showing the number of seconds left to allow attempt login to the system. On the other hand, if user or admin entered the correct password for the account, user and admin may login to the system.

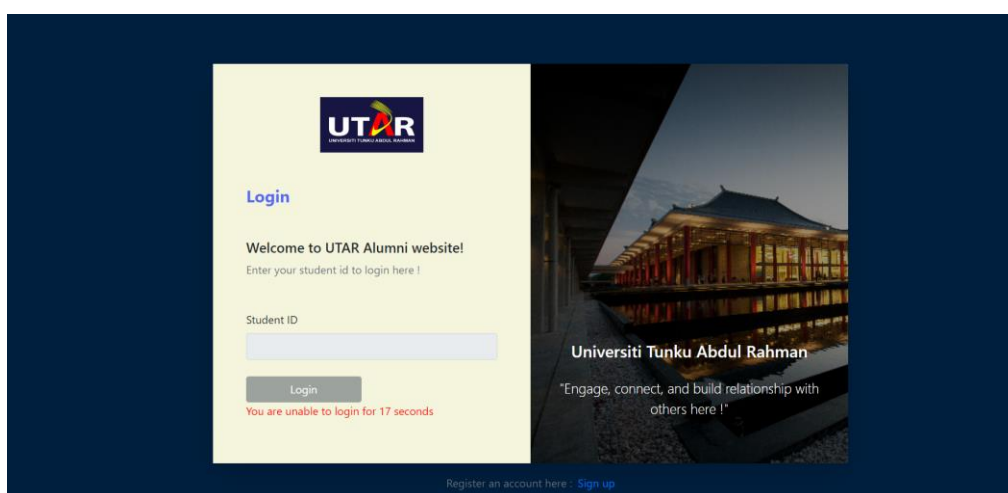


Figure 6.4: Locked login attempt page

## 6.4 User Side Module

This section focuses on the implementation demonstration for modules that user interact with.

### 6.4.1 User Account Module

In the register page, user is able to see several fields that are required to fill up in order to register for an account.

The screenshot shows a registration form titled "REGISTER AN ACCOUNT HERE!". On the left is a photograph of a UTAR building. The form fields on the right are:

- Name :** \* (Please enter your name)
- Identity card :** \* (Please enter your Identity card number (ex:000000-00-0000))
- Student ID :** \* (Please enter your UTAR student ID)
- Email :** \* (Please enter an email address (ex: xxxxx@email.com))
- Phone number :** \* (Please enter your phone number here (ex: 0123456789))
- Personal login phrase :** \* (Please entered your preferred personal login phrase to secure your account)
- Password :** \* ⓘ (Please enter a password (Note: Must follow the password policies))
- Re-enter password :** \* (Please enter your password again)

At the bottom right, there is a blue button labeled "Create your account" and a link "Already Registered? Login".

Figure 6.5: Register page

User may also check the password policies that restrict the password enter by the user to increase the password complexity through clicking on the question mark icon beside the password input label.

The screenshot shows the same registration form as Figure 6.5, but with a "Password Guidelines" popup window overlaid on the password field. The guidelines are:

1. Must contains at least 8 characters.
2. Must contains at least 1 upper case letter.
3. Must contains at least 1 lower case letter.
4. Must contains at least 1 digit.
5. Must contains at least 1 character.
6. Must contains at least 1 special character. (Ex: @!\$%^&\*()-)
7. Password must not contains spaces.

Figure 6.6: Password policies display

If user entered incorrect field for each of the fields, error message will be shown underneath the input fields correspondingly.

REGISTER AN ACCOUNT HERE !

Name : \*  
Please enter your name  
The name field is required.

Identity card : \*  
Please enter your identity card number (ex:000000-00-0000)  
This is a field is required.

Student ID : \*  
Please enter your UTAR student ID  
The student id field is required.

Email : \*  
Please enter an email address (ex: xxxxx@email.com)  
The email field is required.

Phone number : \*  
Please enter your phone number here (ex: 0123456789)  
The phone number field is required.

Personal login phrase : \*  
Please entered your preferred personal login phrase to secure your account.  
The personal login phrase field is required.

Password : \* (P)  
Please enter a password (Note: Must follow the password policies)  
The password field is required.

Re-enter password : \*  
Please enter your password again.

Create your account  
Already Registered? Login

Figure 6.7: Error message for all input

If the student Id and identity card entered by the user is not validated as an UTAR student's id and corresponding identity card number, the system will display an error showing the student cannot be found.

REGISTER AN ACCOUNT HERE !

Name : \*  
Ho J Kevin

Identity card : \*  
022222-22-2222  
This has already been taken.

Student ID : \*  
2000000  
Student cannot be found. Please make sure to enter your correct IC and student ID !

Email : \*  
hojkevin1@gmail.com

Phone number : \*  
0115628502

Personal login phrase : \*  
I Love UTAR

Password : \* (P)  
Please enter a password (Note: Must follow the password policies)

Re-enter password : \*  
Please enter your password again.

Create your account  
Already Registered? Login

Figure 6.8: Invalid student ID and IC error message

If the password entered by the user does not follow the password policies regulation, the system will display an error showing the policy that the user did not followed.

The screenshot shows a registration form for UTAR University. The form fields are: Identity card (011111-11-1111), Student ID (2004965), Email (hojkenn1@gmail.com), Phone number (0111111111), Personal login phrase (I love utar), Password (Please enter a password (Note: Must follow the password policies) with an error message: Must contain at least one upper and lower case letter, one digit, and one special character), and Re-enter password (Please enter your password again). A blue button labeled 'Create your account' is at the bottom right. The background image shows a UTAR sign and a building.

Figure 6.9: Invalid password entered error message

After all the required input fields entered by the user is correct, user may click on the “Create your account” button and the system will navigate user to the email verification page. If user does not receive the email, user may click on the “Click here to request another” link to receive another email verification link.

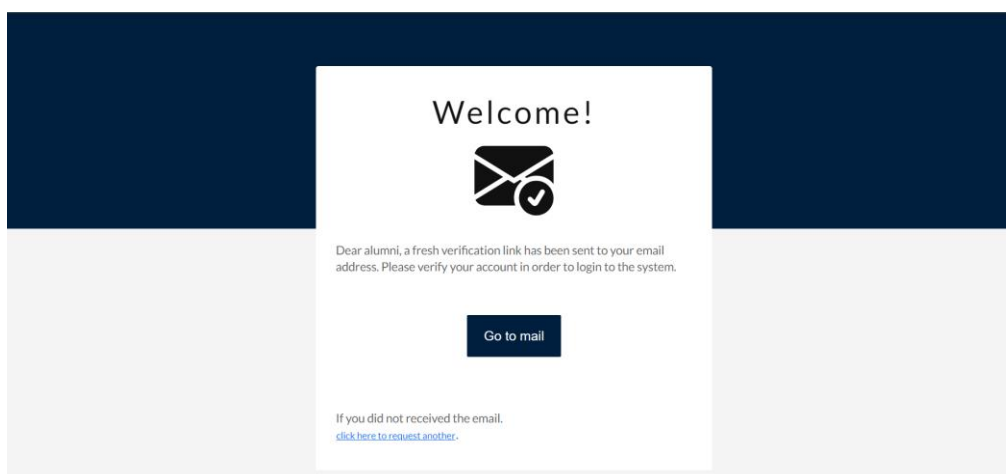


Figure 6.10: Email verification page

After user has verified the email, user will be navigated to the news feed page.

#### 6.4.2 User Profile Module

In the profile page, users may see several categories under the manage personal information categories which include manage profile, manage



education, and manage work experience. User also may view some details of themselves at the top left corner of the box.

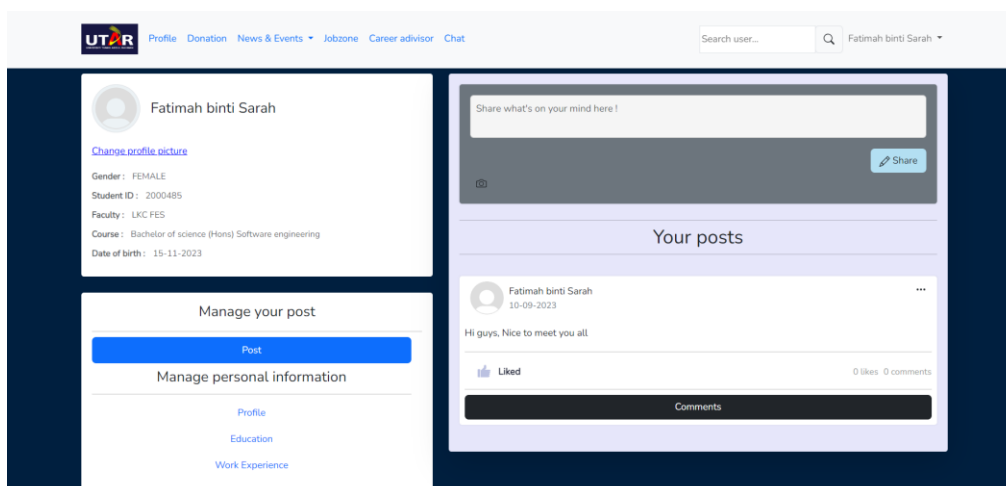


Figure 6.11: Manage profile page

User may change their profile picture by clicking on the “Change profile picture” link and user may change profile picture from there.

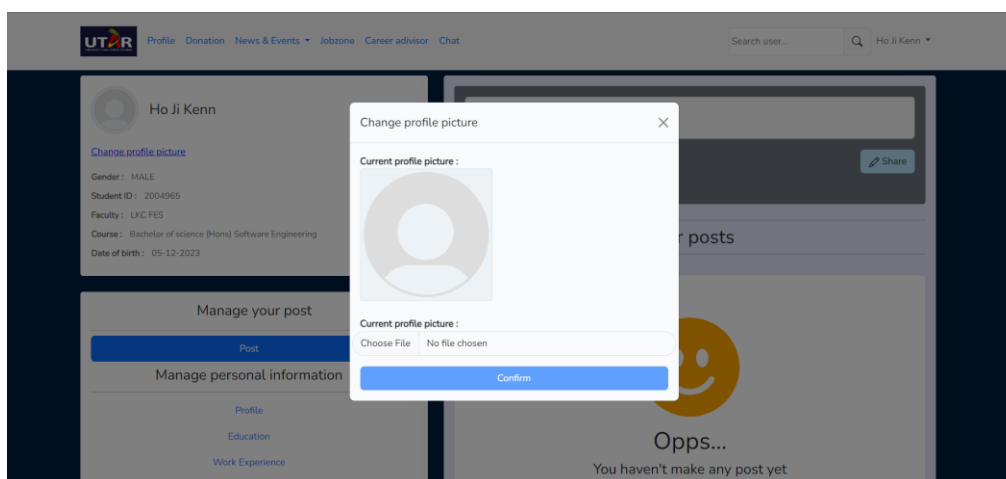


Figure 6.12: Edit profile picture display

If user wish to change their personal details, user may click on the “Profile” category and update their personal details by clicking on the “Edit” button.

Figure 6.13: Update personal details page

If user wish to manage their education background, user may click on the “Education” category and add their education background by clicking on the “Add” button after filling up the required field or delete an education background by clicking on the trash icon of a education background.

Qualification	Field	Major	Grade	Institution	Graduation date	Country
Bachelor	Computer Science/Information Technology	Bachelor of Science (Informatics) Software engineering	First class	UTM	March 2022	Malaysia

Figure 6.14: Manage education background page

If user wish to manage their work experiences, user may click on the “Work Experience” category and add their work experiences by clicking on the “Add” button after filling up the required field or delete a work experience by clicking on the trash icon of a work experience.

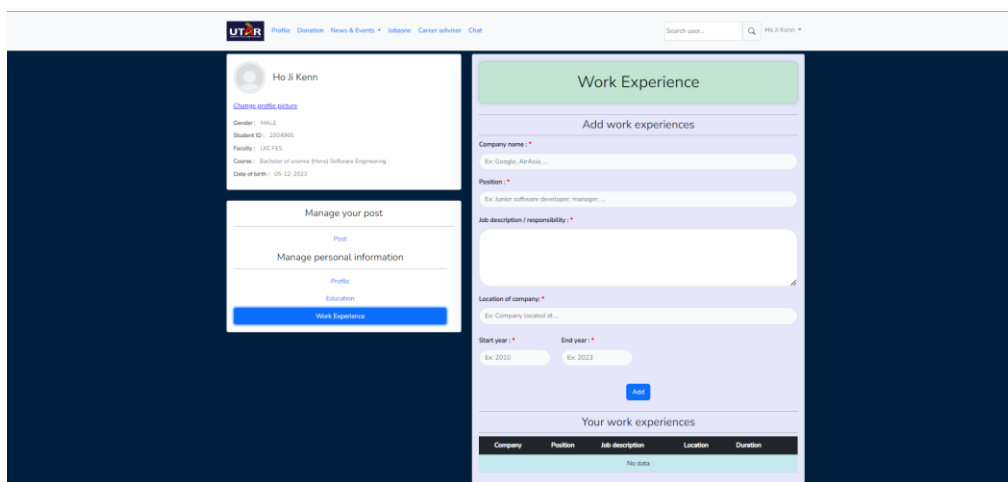


Figure 6.15: Manage work experience page

User may also search for a user through the search bar on the navigation bar.

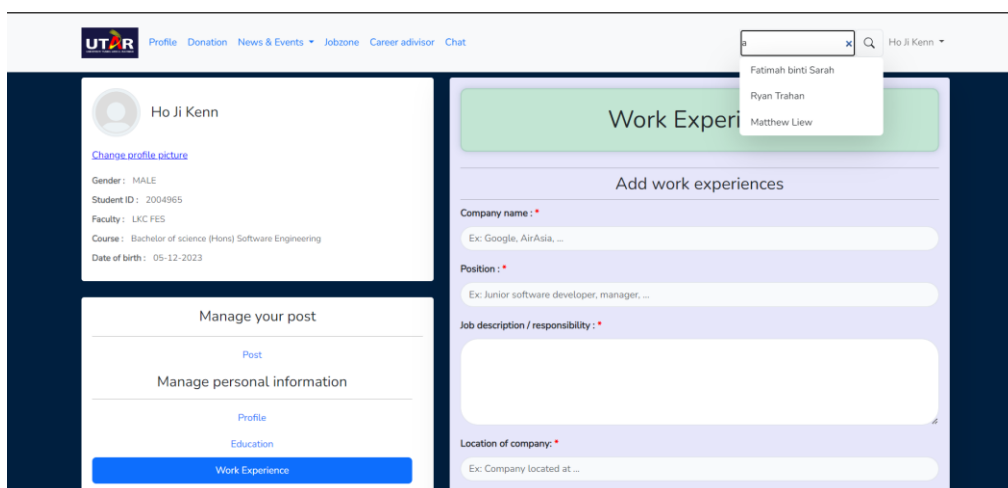


Figure 6.16: Search user display

After selecting a user from the search user result list at the search bar, the system navigates user to the view selected user details page.

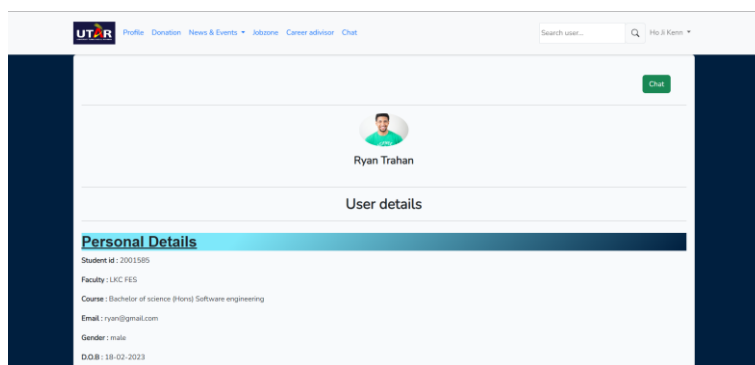


Figure 6.17: View user details page

User can view the details of the selected user and also may chat with the user by clicking on the “Chat” button at the top right corner of the page.

### 6.4.3 Donation Module

In the donation page, a form will be displayed for the user to fill up. User are required to fill all the required field in order to make a donation.

 A screenshot of the 'Make a Donation' page on the UTAR website. The page has a dark blue header with the UTAR logo and navigation links. The main content is divided into two columns. The left column is titled 'Make a contribution to UTAR' and contains several paragraphs of text explaining the university's mission and the impact of donations. The right column is titled 'Make a Donation' and contains a form with the following fields: Name (required), Email address (To make further contact with you) (required, with example xxx@gmail.com), Donation amount (required, with RM and a note 'Note: Must be more than RM 2'), Card number (required), CVC (required, with example ex. 311), Expiration month (required, with MM), and Expiration year (required, with YYYY). A blue 'Donate' button is located at the bottom of the form.

Figure 6.18: Make donation page

### 6.4.4 Career Advisory Session Module

In the career advisory session page, user is able to view information on the type of career advisory services UTAR provides.

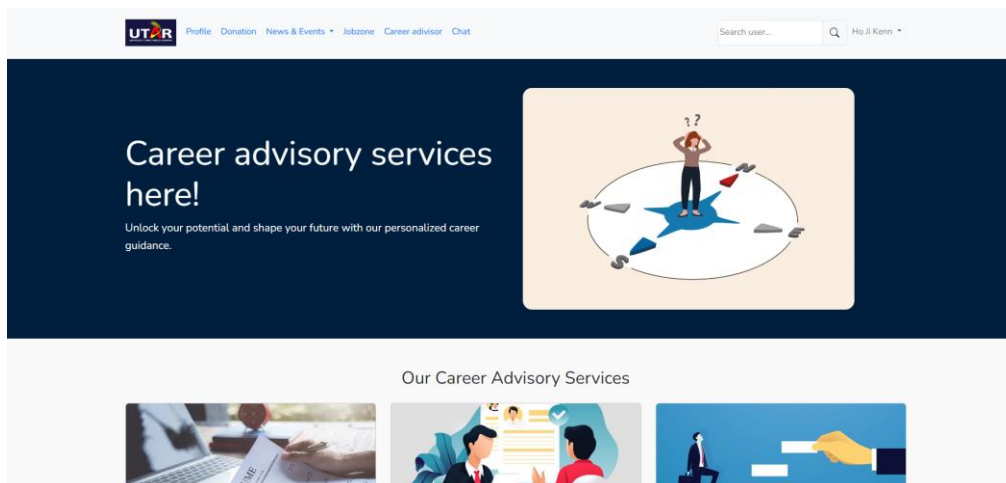


Figure 6.19: Apply career advisory session page - 1

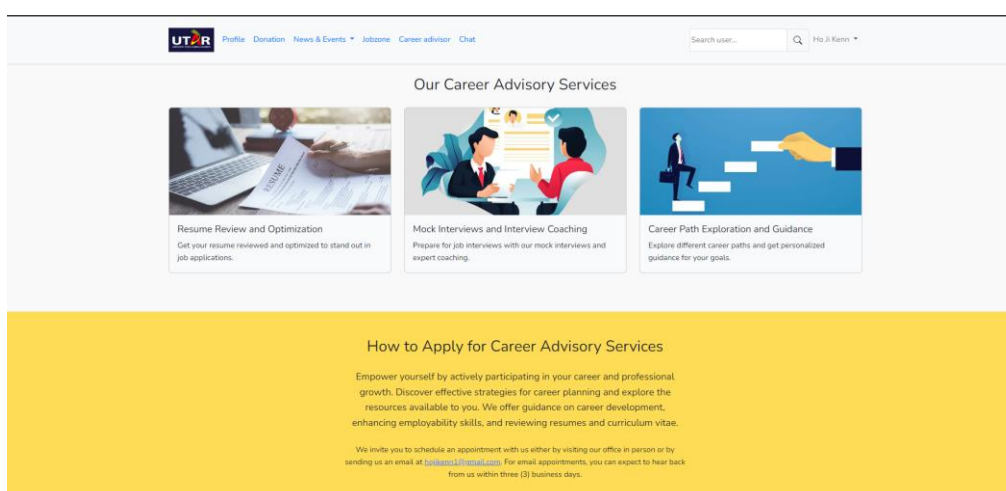


Figure 6.20: Apply career advisory session page - 2

### 6.4.5 Institutional Information Module

There are two type of institutional information that users are able to view which are news and events. User is able to view the news of UTAR in the view news page. User may also sort the news based on the year the news was posted.

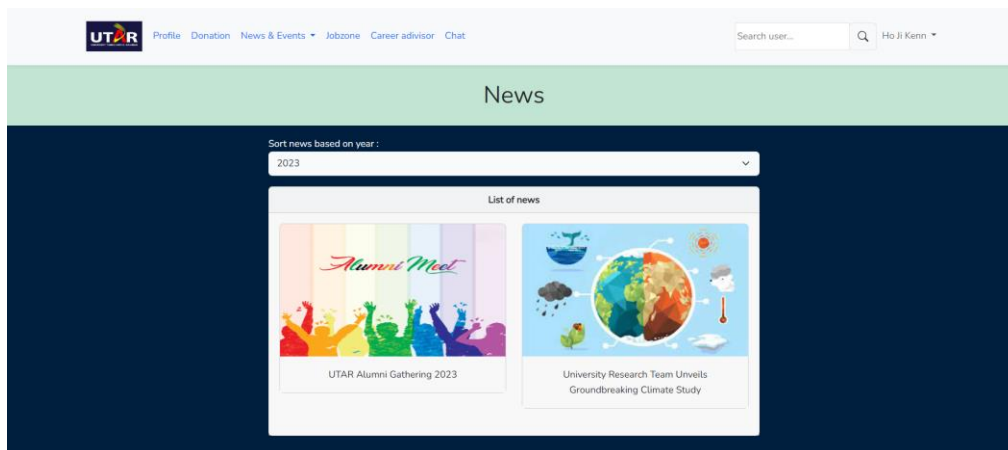


Figure 6.21: View news page

If the user wish to view more details on the news, user is able to click on the news and system will navigate user to a page that display more details on the news.

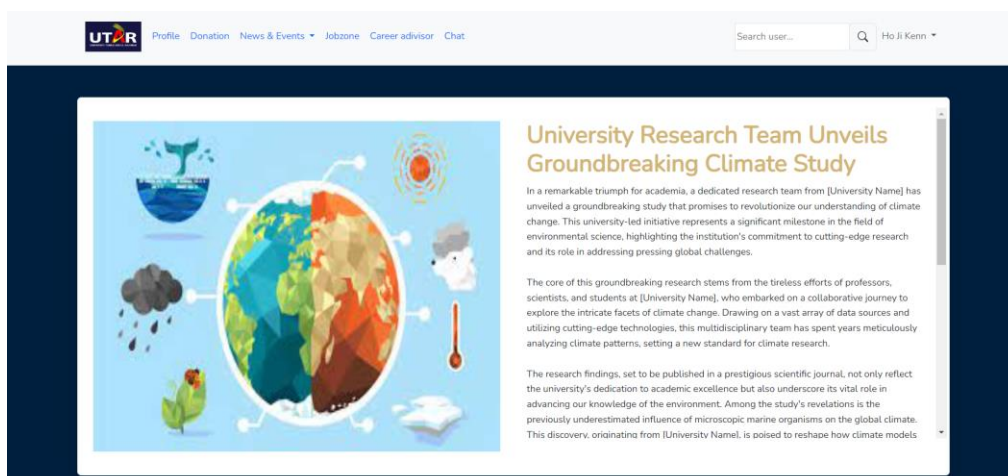


Figure 6.22: View news details page

User is also able to view the event held by UTAR in the view event page. User may also sort the event based on the year the event post was posted.

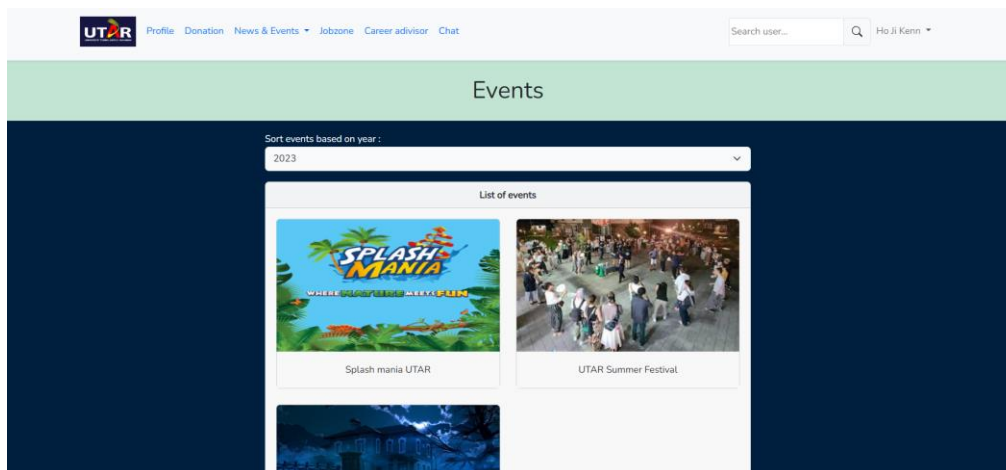


Figure 6.23: View event page

If the user wish to view more details on the event, user is able to click on the event and system will navigate user to a page that display more details on the event.

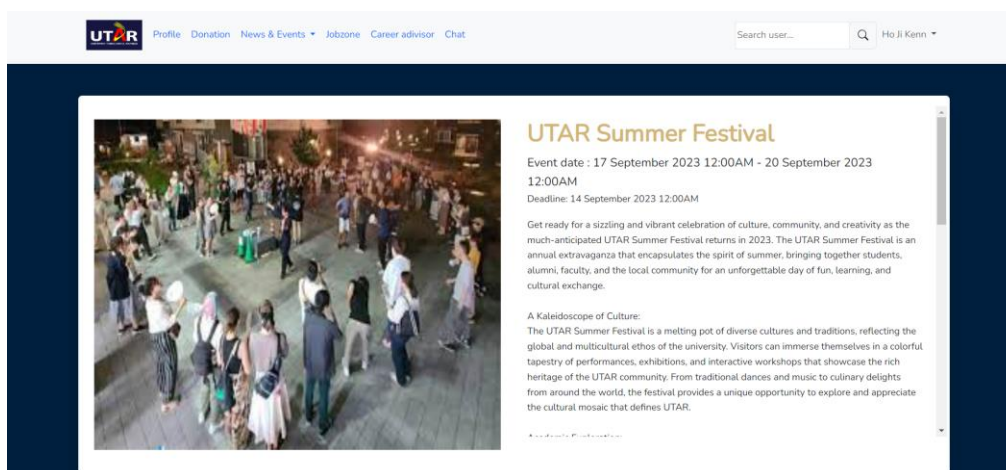


Figure 6.24: View event details page - 1

User may also apply for the selected event if the event is still applicable by clicking on the “Register Now” button.

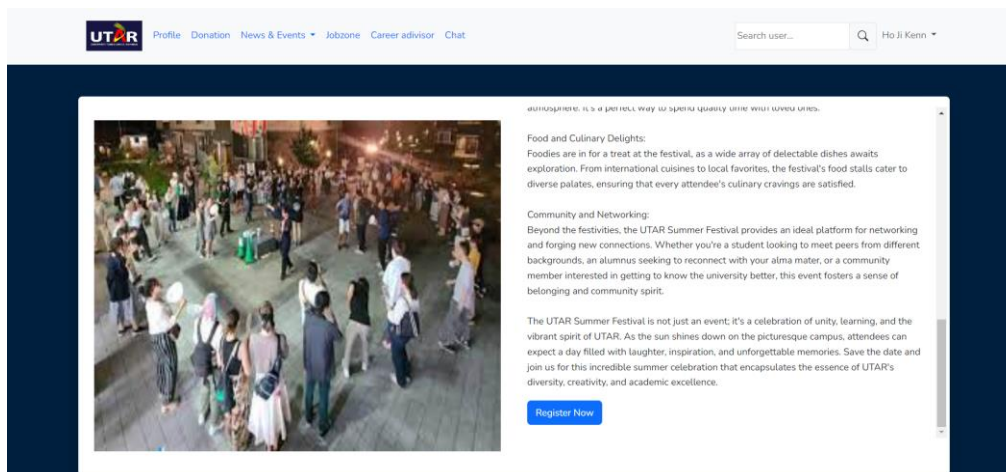


Figure 6.25: View event details page - 2

### 6.4.6 Job Module

In the jobzone page, user is able to view a list of job vacancies. User is allow to filter the job list based on the industry of the company who are offering the job and based on employment type of the job. After selecting the industry or employment type, user can click on the “Filter” button to filter the job list.

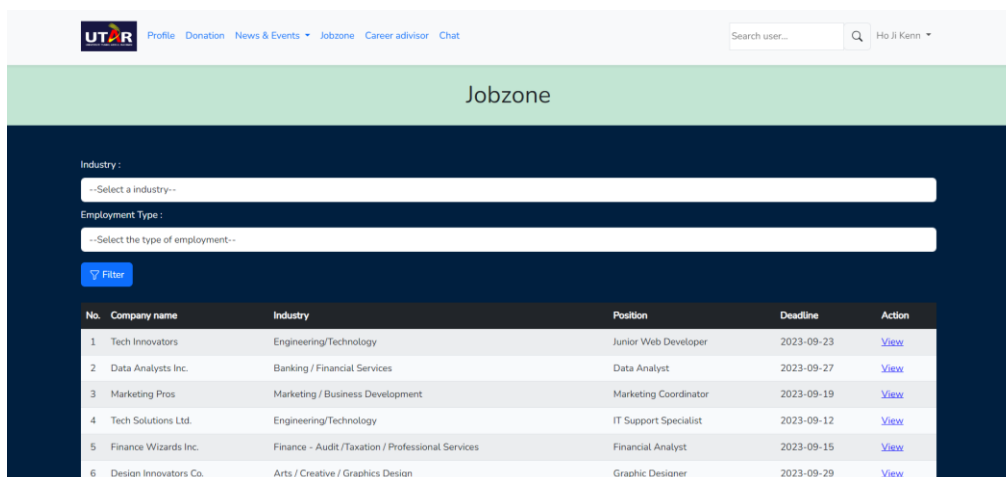


Figure 6.26: View job list page

User is able to view details of the job by clicking on the “View” link of a specific job.



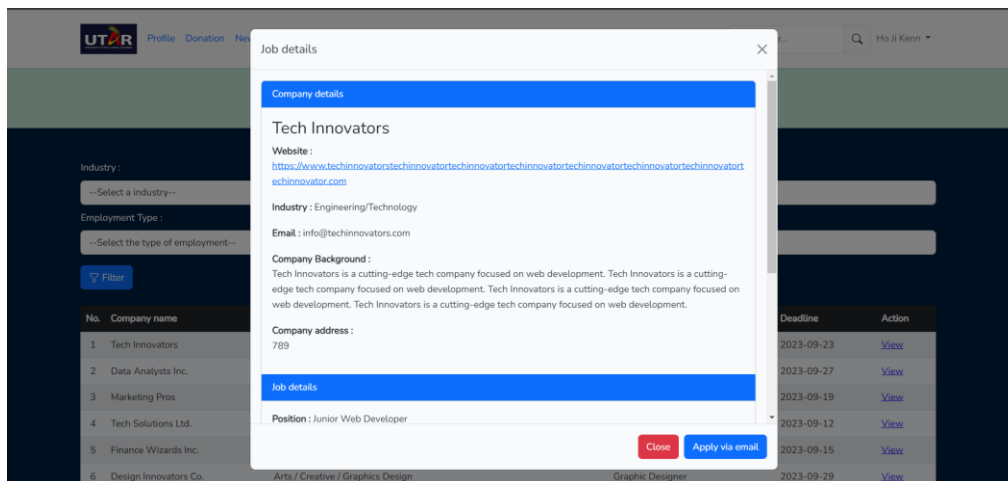


Figure 6.27: View job details page

If user wants to apply for the job, user may click on the “Apply via email” button and the system will navigate the user to the view resume page.

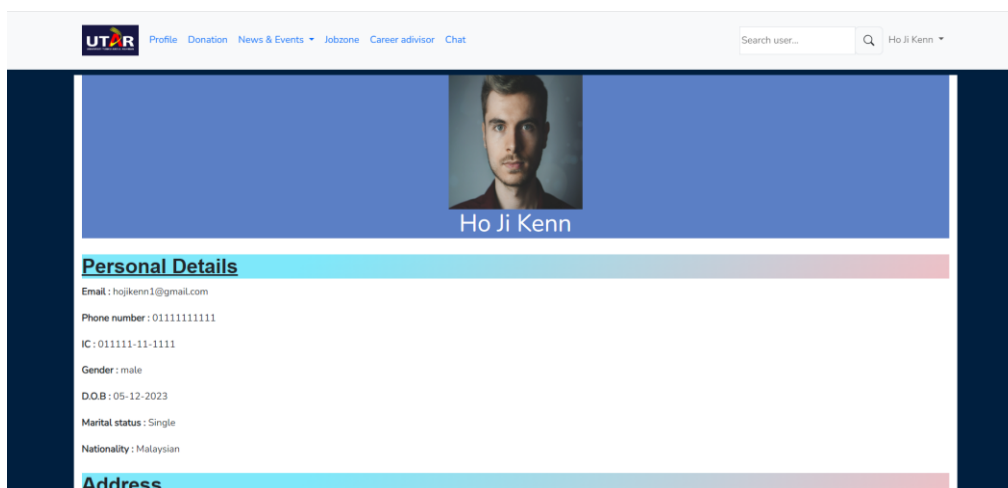


Figure 6.28: View resume page

In the view resume page, user may scroll down and click on the “Confirm Application” button in order to confirm the job application. Once job application email has been sent successfully, the system navigates user to the job application email successfully sent page.

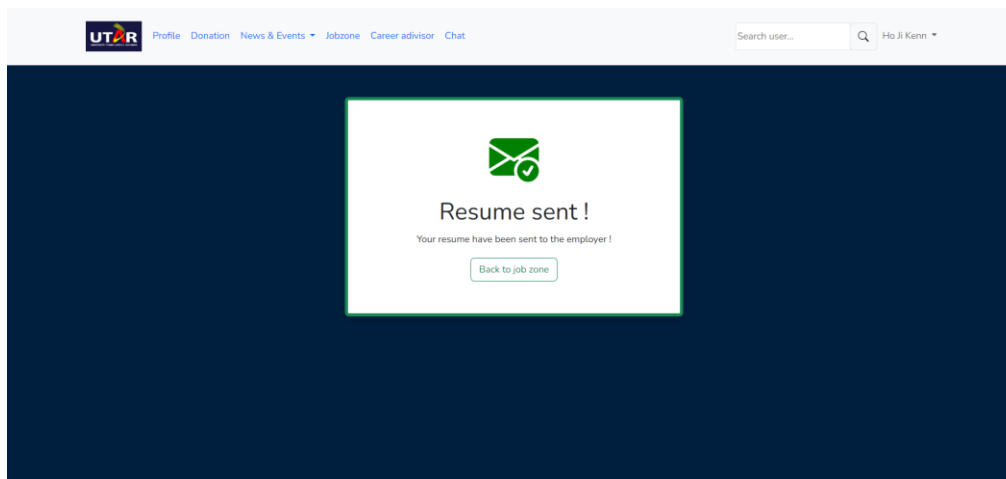


Figure 6.29: Message sent successful page

### 6.4.7 Post Module

In the profile page, user may select the “Post” category under the “Manage your post” section. User is able to view own posts that have been created before.

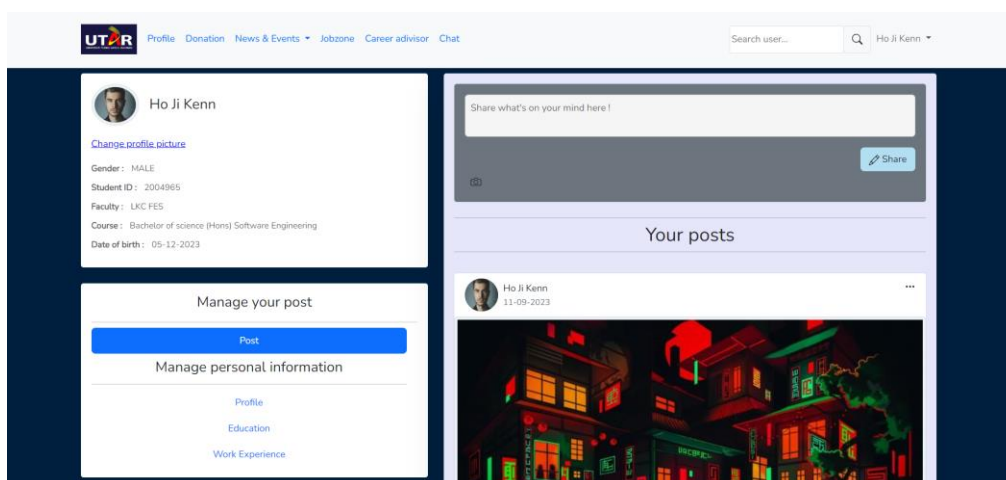


Figure 6.30: Manage own post page

User is able to create a post either by entering some caption on the input field at the top right corner of the card and click on the “Share” button, or may insert an image and caption by clicking on the camera icon.

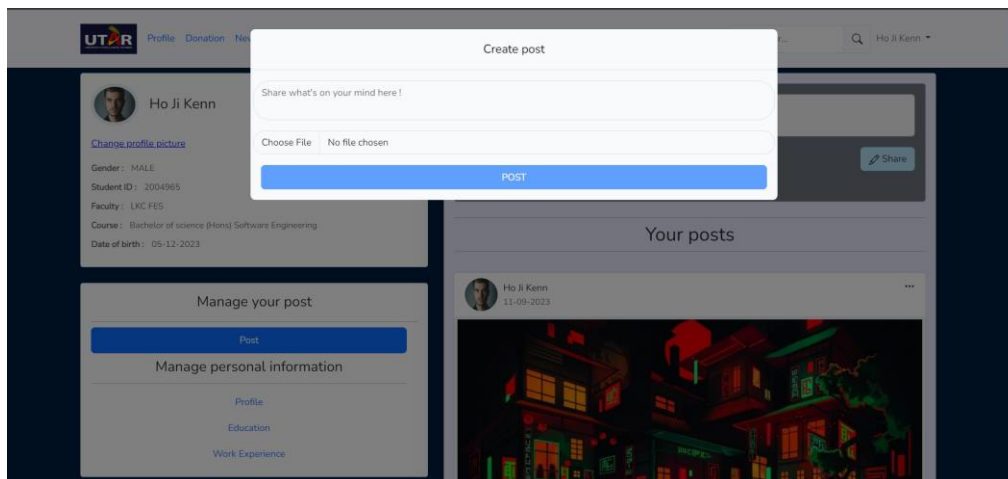


Figure 6.31: Create post display

If user wants to edit a post, user may click on the “three dot” icon in the top right corner of a specific post and clicks the “Edit” button. From here, user may edit the post as they want either by changing the caption or the image of the post. Afterward, user may confirm the changes made to the post.

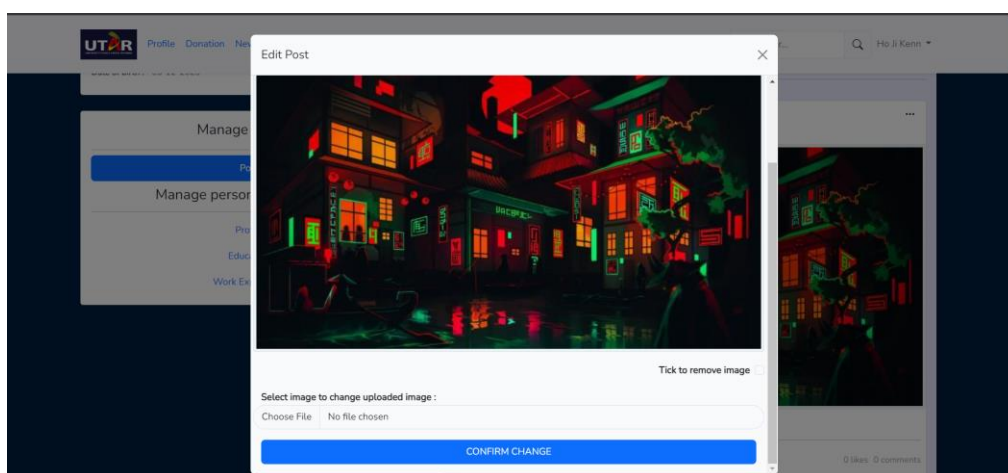


Figure 6.32: Edit post display

If user wants to delete a post, user also may click on the “three dot” icon in the top right corner of a specific post and clicks the “Delete” button. In the pop up modal, user may confirm to delete the post by clicking on the “Delete button”.

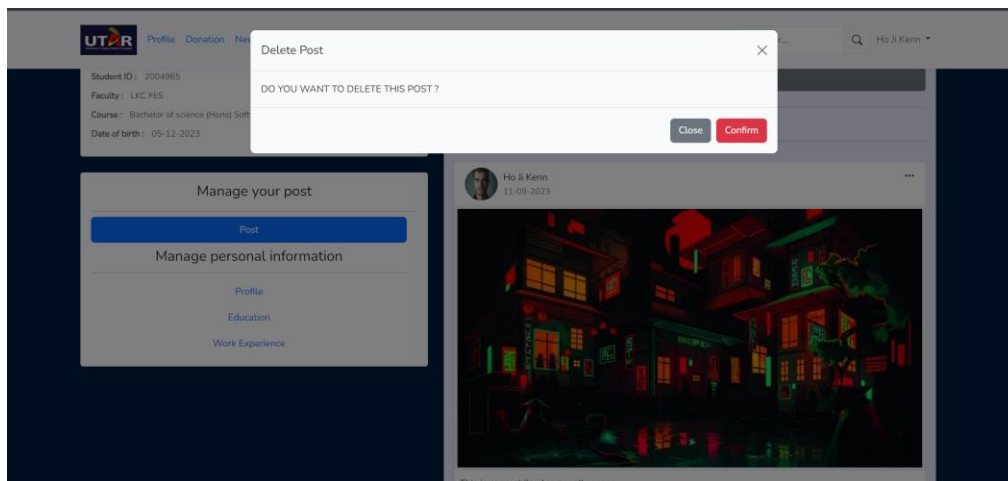


Figure 6.33: Delete post display

Next, user is able to see news feed in the news feed page which consist of all the post made by the users of the system.

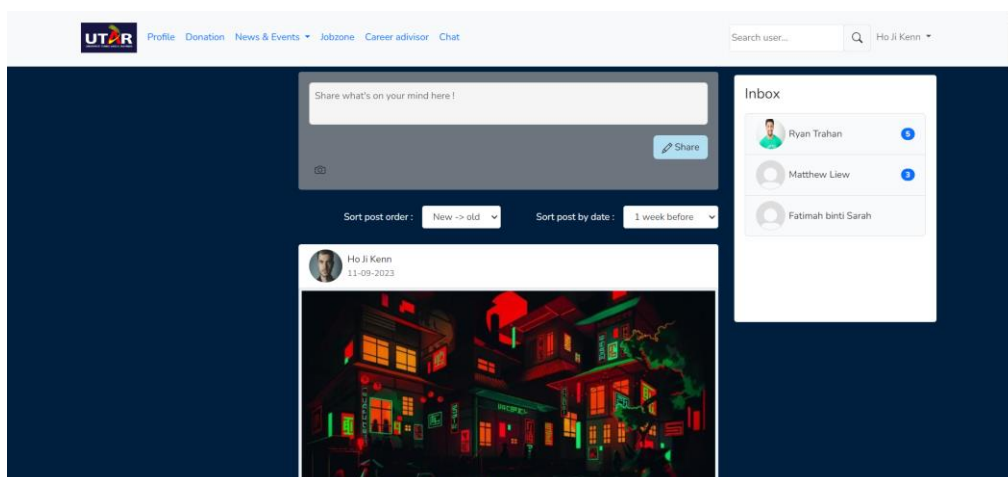


Figure 6.34: View news feed page

User is able to like a post or dislike a post by clicking on the “Liked” button on the post. When the liked button is blue, means that user has already liked the post, and if not, means the user has not liked the post yet. Users are also able to see the number of likes on the post, and number of comments made on the post as well.

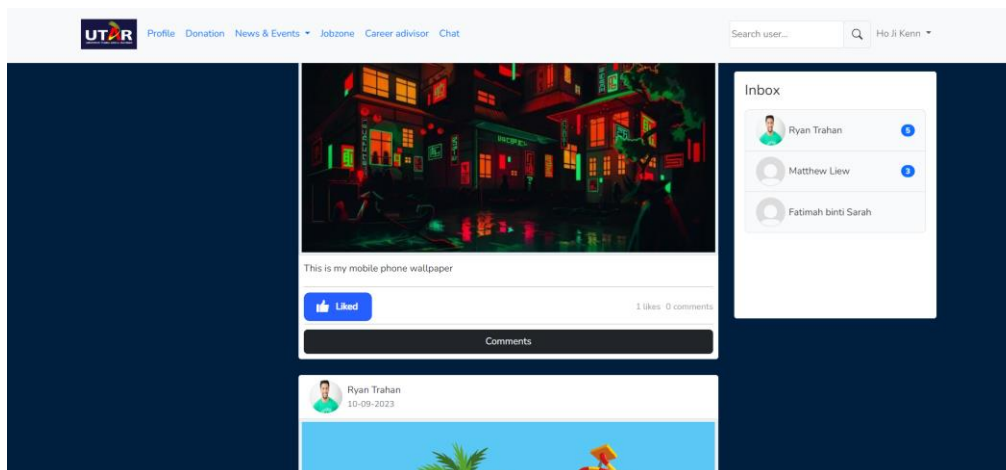


Figure 6.35: React post display

User is also able to make a comment to a post by clicking on the “Comments” button underneath the post. A list of comments associated with the post is shown and user may make a comment by typing something into the comment box.

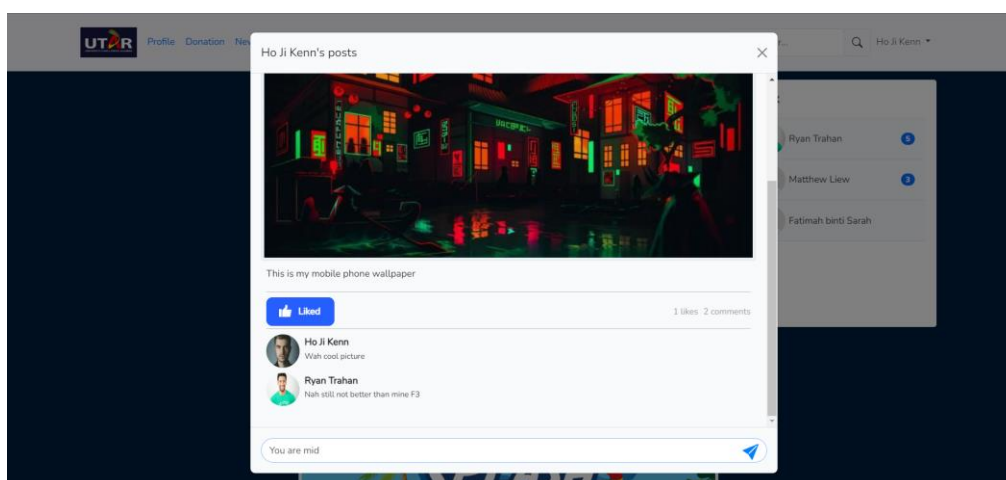


Figure 6.36: Leave comment display

#### 6.4.8 Chat Module

In the chat page, user may search for a user to chat with in the search user bar on the left corner side of the card.

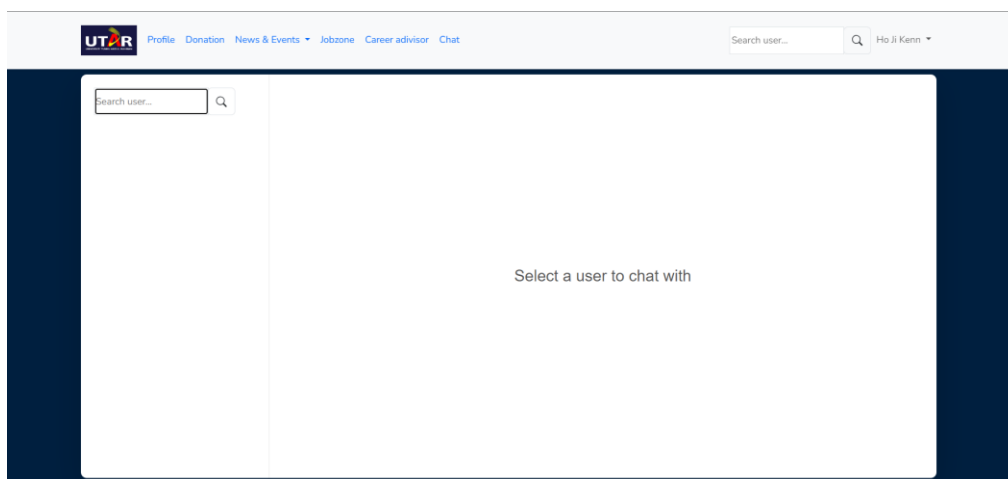


Figure 6.37: Chat page

After selecting a user to chat with, a conversation between the user and the selected user is created.

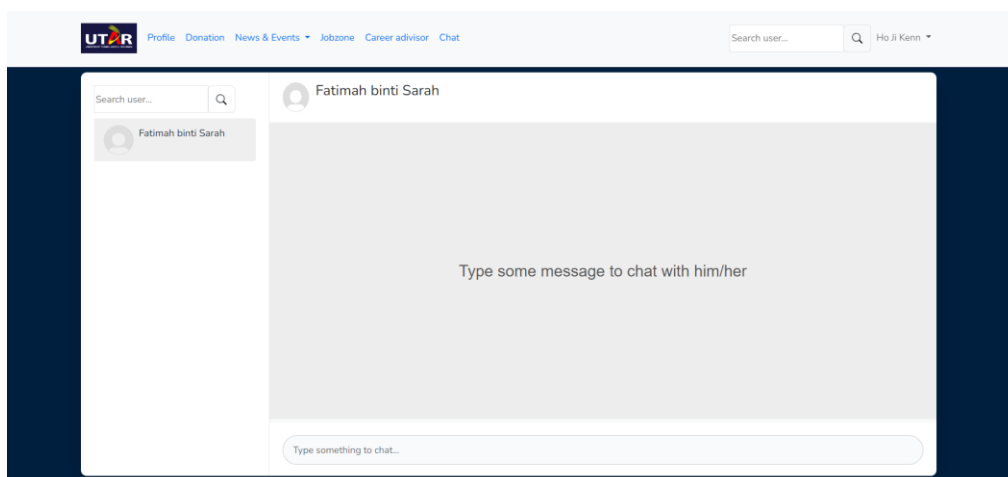


Figure 6.38: Create conversation display

If user wish to talk to the selected user, user may type some message in the message box and the message will be sent to the selected user in real time.

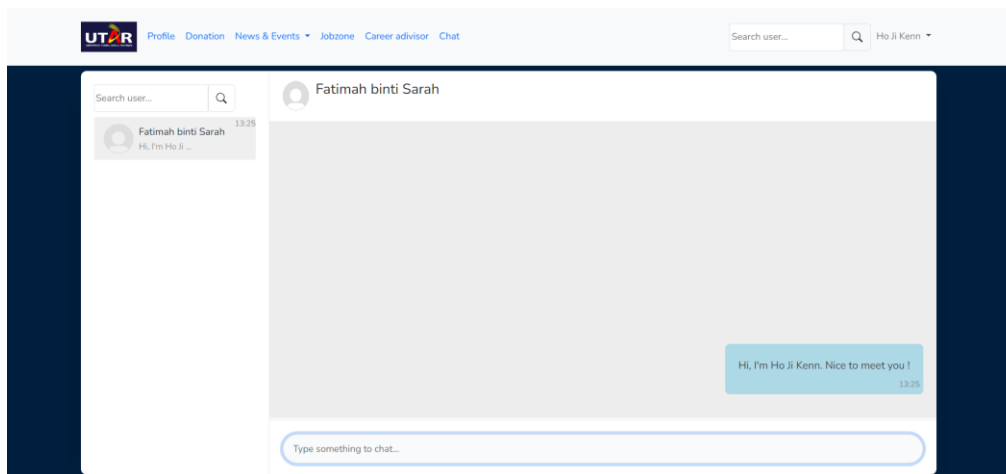


Figure 6.39: Send message display

User can also receive message from the any user.

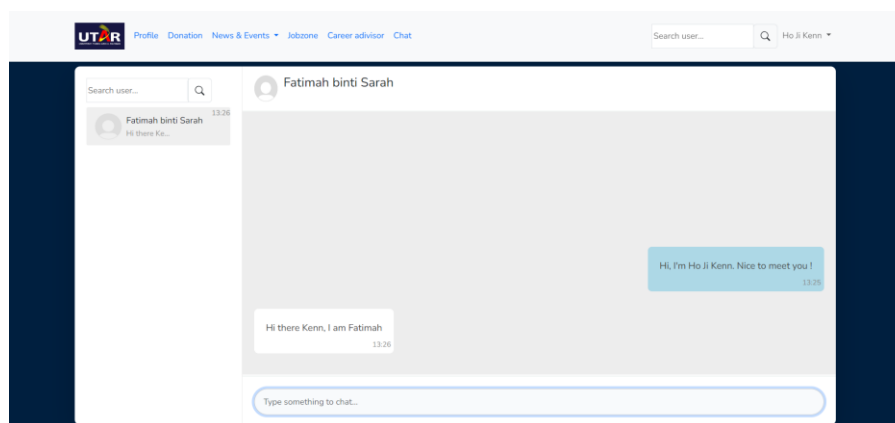


Figure 6.40: Receive message display

Other than that, user may also receive message unread notification from other users if user has not saw the message. The notification is shown with the number of messages that are not yet read by the user.

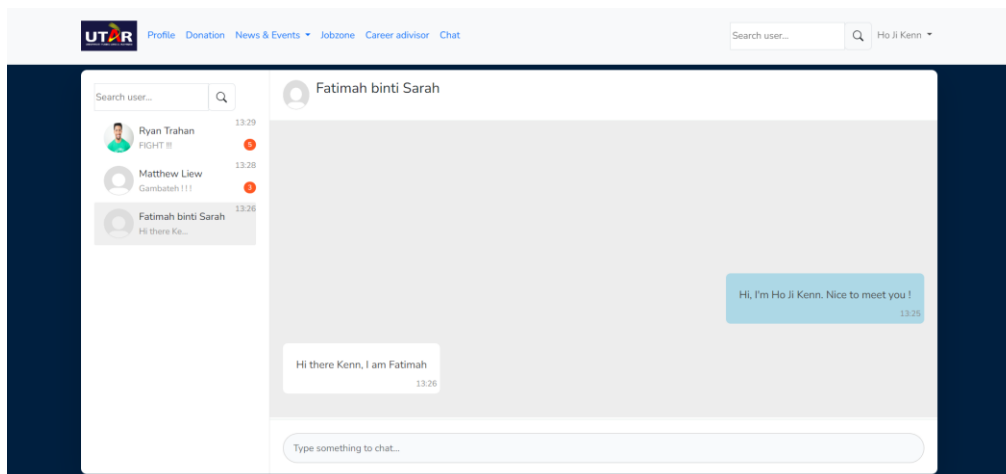


Figure 6.41: Receive notification display

## 6.5 Admin Side Module

This section focuses on the implementation demonstration for modules that admin interact with.

### 6.5.1 User Management Module

In the user management page in admin side, admin is able to view a list of user that are registered in the system. They are able to either add, delete or update a specific user.

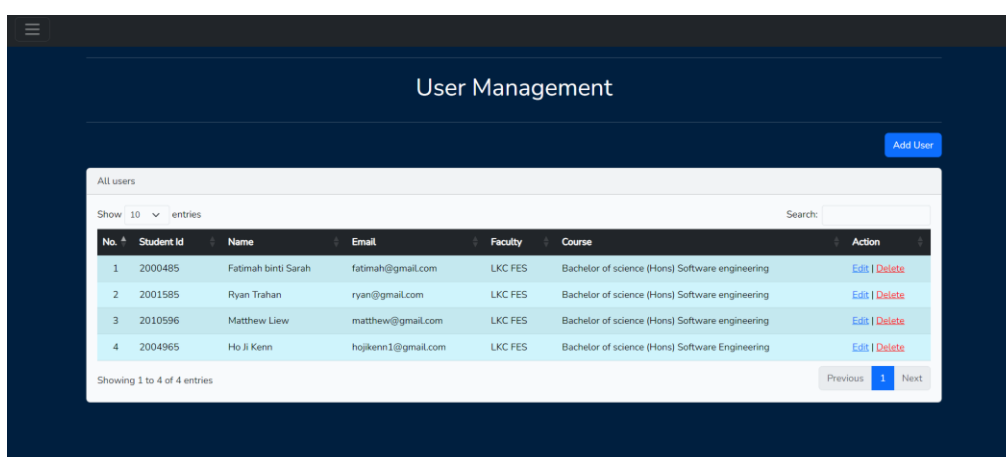


Figure 6.42: User management page

If admin wants to add a user, admin may click on the “Add user” button and the system will navigates admin to the add user page. Admin are required to fill up all the required field while making sure the student ID and Identity card



are from a UTAR student in order to add a user to the system. After that, admin may click on the “Add” button and system will add a user to the system.

**Add User**

User's details

**Student ID :** \*  
Please enter your UTAR student ID

**Identity card :** \*  
Please enter your Identity card number (ex:000000-00-0000)

**Name :** \*

**Email :** \*

**Phone number :** \*  
Please enter phone number here (ex: 0123456789)

**Email verified at :**  
dd/mm/yyyy

**Faculty :** \*  
Choose faculty of the user

**Course :** \*  
Please select the faculty first

**Gender :** \*  
Please select gender of the user

**Date of birth :** \*  
dd/mm/yyyy

**Marital status :** \*  
Please select marital status of the user

**Nationality :** \*  
Select nationality of the user

Figure 6.43: Add user page – 1

**Faculty :** \*  
Choose faculty of the user

**Course :** \*  
Please select the faculty first

**Gender :** \*  
Please select gender of the user

**Date of birth :** \*  
dd/mm/yyyy

**Marital status :** \*  
Please select marital status of the user

**Nationality :** \*  
Select nationality of the user

**User's profile picture :**  
Choose File | No file chosen

**Personal login phrase :** \*

**Password :** \* ⓘ  
Please enter a password (Note: Must follow the password policies)

**Re-enter password :** \*  
Please enter your password again

User's Address

**Address :**  
Please enter user address here!

**State :** \*  
Please select the state

**Postal Code :** \*  
Ex: 99999

**Country :** \*  
Please select the country

**Add**

Figure 6.44: Add user page – 2

If admin wants to edit a specific user details, admin may click on the “Edit” link on a specific user in the table. System will navigates admin to the edit user personal details page. Admin is able to edit the user’s details based on three categories such as profile, education background, and work experience.

Fatimah binti Sarah's details

Profile Education Work Experience

My profile

Personal Details

Name: Fatimah binti Sarah Student ID: 2000485  
 Email: fatimah@gmail.com IC: 022222-22-2222  
 Faculty: LKC FES Course: Bachelor of science (Hons) Software engineering  
 Gender: female Date of Birth: 15-11-2023  
 Phone Number: \*  
 0125687485  
 Marital Status: \* Single Nationality: \* Malaysian

Your Address

Figure 6.45: Edit user's details page

If admin wants to delete a specific user, admin may click on the “Delete” link on a specific user in the table and confirm the deletion by clicking the “Confirm” button in the pop up modal. The system will delete the user from the database.

Delete User

Confirmed to delete this user from database?

Close Confirm

All users

Show: 10 entries Search:

No.	Student Id	Name	Email	Faculty	Course	Action
1	2000485	Fatimah binti Sarah	fatimah@gmail.com	LKC FES	Bachelor of science (Hons) Software engineering	Edit   Delete
2	2001585	Ryan Trahan	ryani@gmail.com	LKC FES	Bachelor of science (Hons) Software engineering	Edit   Delete
3	2010596	Matthew Liew	matthew@gmail.com	LKC FES	Bachelor of science (Hons) Software engineering	Edit   Delete
4	2004965	Ho Ji Kenn	hojikenn1@gmail.com	LKC FES	Bachelor of science (Hons) Software Engineering	Edit   Delete

Showing 1 to 4 of 4 entries Previous 1 Next

Figure 6.46: Delete user display

## 6.5.2 Job Management Module

In the job management page, admin is able to view a list of job visualize in table format. Admin is also able to add a job, edit a job details, and delete a job from the job list.

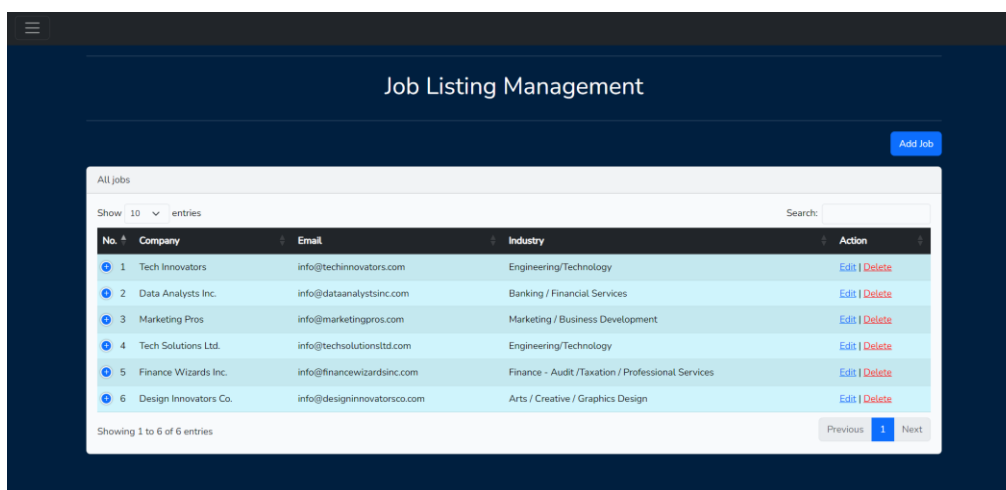


Figure 6.47: Job management page

If admin wants to add a job, admin may clicks on the “Add job” button. System will navigates admin to the add job page. In the add job page, admin is required to fill up all the required field in order to successfully add a job to the job list. After filling all the details, admin may click on the “Add” button and system will add the job in the database.

The screenshot shows the 'Add Job' form. It contains several input fields with red asterisks indicating required fields: Company, Email, Industry (dropdown), Position, Employment Type (dropdown), Website Link, Company address, Company background, Minimum salary, and Highest salary.

Figure 6.48: Add job page - 1

The screenshot displays a form for adding job details. At the top, there are two input fields for 'Minimum salary' and 'Highest salary'. Below them is a 'Deadline' field with a date format 'dd/mm/yyyy' and a calendar icon. The 'Job requirement' section has a text input field and an 'Add Requirement' button. Below this is a table header '# Job requirements' with a message 'No requirements for this job'. The 'Job Responsibility' section has a text input field and an 'Add Responsibility' button. Below this is a table header '# Job responsibility scope' with a message 'No responsibility scope for this job'. At the bottom left, there is an 'Add' button.

Figure 6.49: Add job page – 2

If the admin wants to edit a specific job's details, admin may click on the “Edit” link on a specific job in the job list. System may navigates admin to the edit job details page and the original data of the job details will be shown on each field. Admin is able to edit any details of the job in the page. After finishing updating, admin may click on the “Edit” button in the bottom of the page. The system will update the job in the database.

The screenshot shows the 'Edit Job details' page. The title is 'Edit Job details'. The form contains several fields: 'Company' (Tech Innovators), 'Email' (info@techinnovators.com), 'Industry' (Engineering/Technology), 'Position' (Junior Web Developer), 'Employment Type' (Full Time), 'Website Link' (https://www.techinnovatorstechinnovatorstechinnovatorstechinnovatorstechinnovatorstechinnovatorstechinnovator.com), 'Company address' (789), and 'Company background' (Tech Innovators is a cutting-edge tech company focused on web development. Tech Innovators is a cutting-edge tech company focused on web development. Tech Innovators is a cutting-edge tech company focused on web development. Tech Innovators is a cutting-edge tech company focused on web development.). At the bottom, there are 'Minimum salary' and 'Highest salary' fields.

Figure 6.50: Edit job details page - 1

Figure 6.51: Edit job details page - 2

If admin wants to delete a specific job, admin may click on the “Delete” link of a specific job in the job list. Admin may confirm to delete the job and system will delete the job from the database.

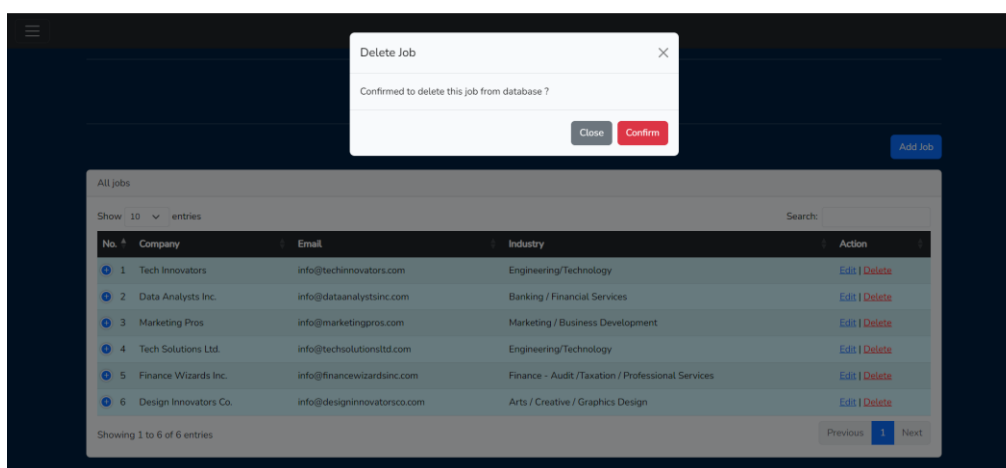


Figure 6.52: Delete job display

### 6.5.3 Post Management Module

In the post management page, admin is able to view list of post that have created by all the users of the system. Admin is able to add a post, edit a post, and delete a post.

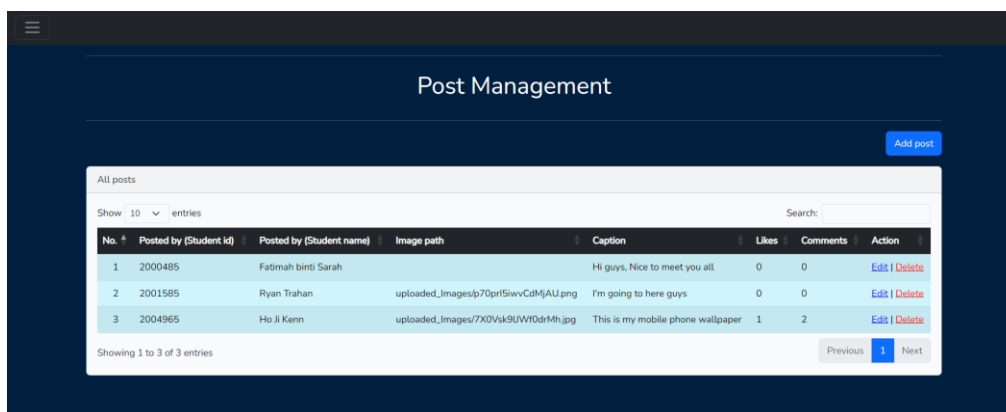


Figure 6.53: Post management page

If the admin wants to add a post, admin may click on the “Add post” button and pop up modal will be shown allowing admin to enter a caption or insert an image. After entering a caption or inserting an image, admin is able to create the post by clicking on the “POST” button. System will add the post to the database.

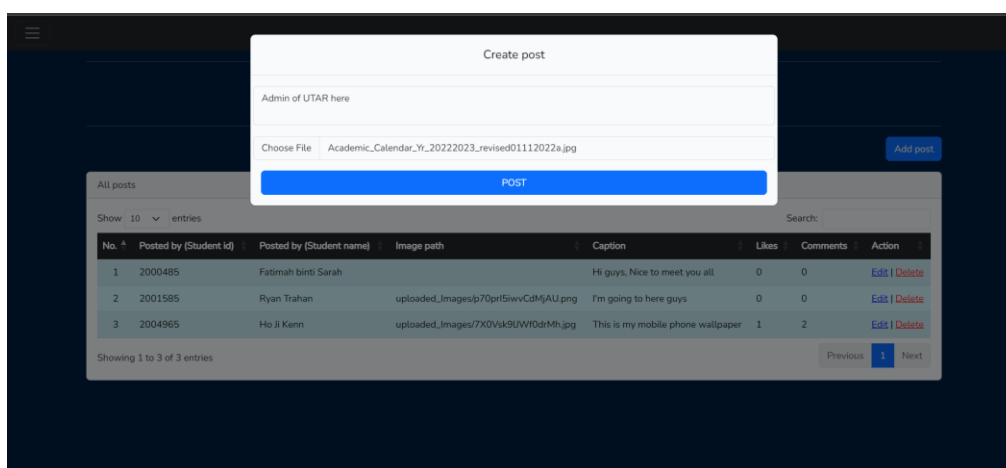


Figure 6.54: Add post display

If the admin wants to edit a specific post, admin may click on the “Edit” link on a specific post among the post list. Admin is able view original data of the post and admin is able to edit any details of the post. Admin may tick the “Tick to remove image” checkbox to remove image on the post. After finishing updating, admin may click on the “CONFIRM CHANGE” button and system will update the post in the database.

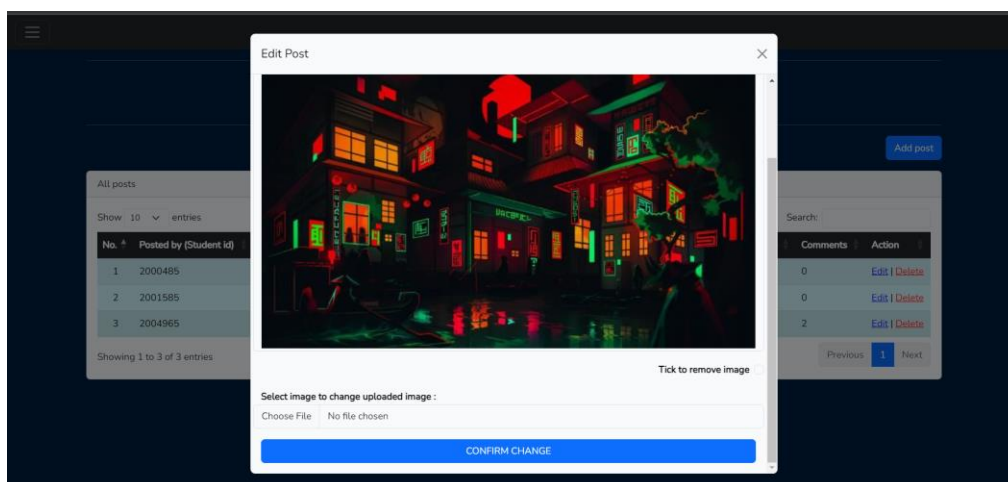


Figure 6.55: Edit post details display

If admin wants to delete a specific post, admin may click on the “Delete” link of a specific post in the post list. System shows the details of the post and admin may click on the “DELETE” button to confirm deletion of post. The system will delete the post in the database.

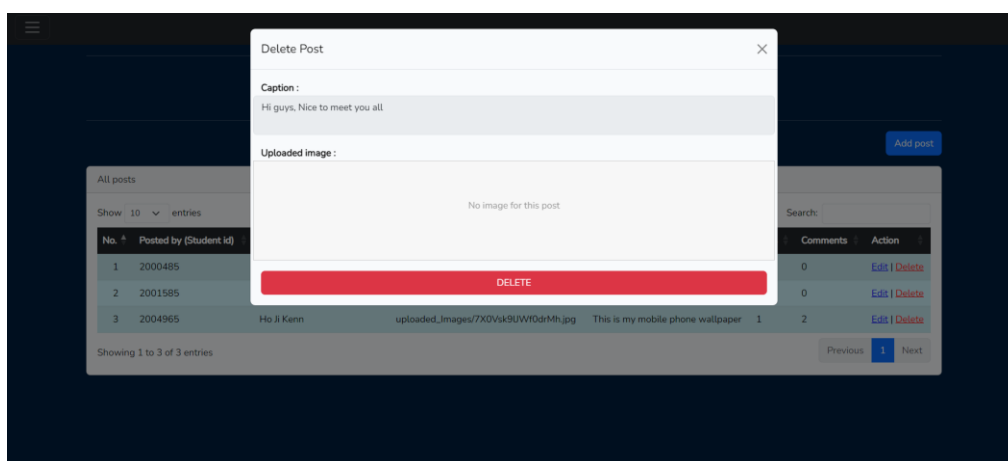


Figure 6.56: Delete post display

#### 6.5.4 News Management Module

In the news management page, the system will display a list of news for the admin to view. Admin is able to add a news, edit details of a news, and delete a news from the news list.

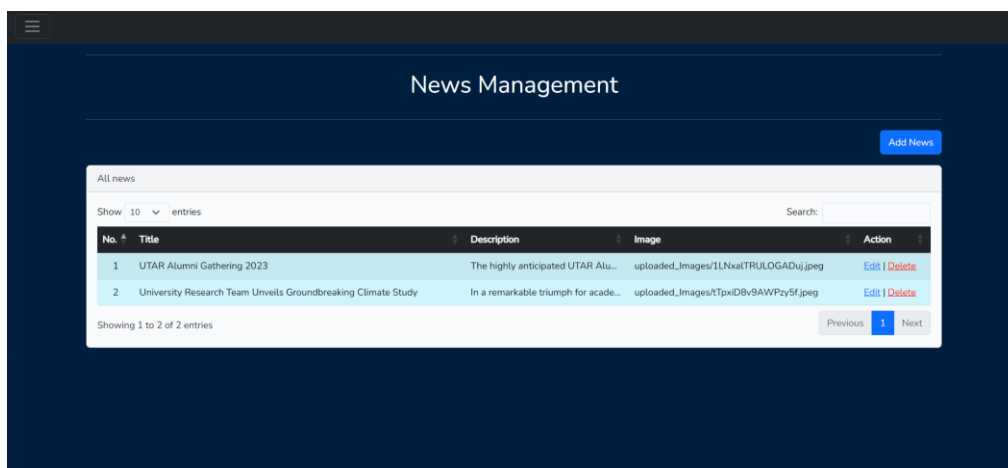


Figure 6.57: News management page

If the admin wants to add a news, admin may click on the “Add News” button and system will navigate the admin to the add news page. Admin is required to fill up all the field and click on the “Add” button to add a news to the news list. After that, system will add the news to the database.



Figure 6.58: Add news page

If the admin wants to edit a specific news, admin may click on the “Edit” link on a specific news in the news list. Admin is able view original data of the news and admin is able to edit any details of the news. Admin may click on the “Edit” button and system will update the news in the database.



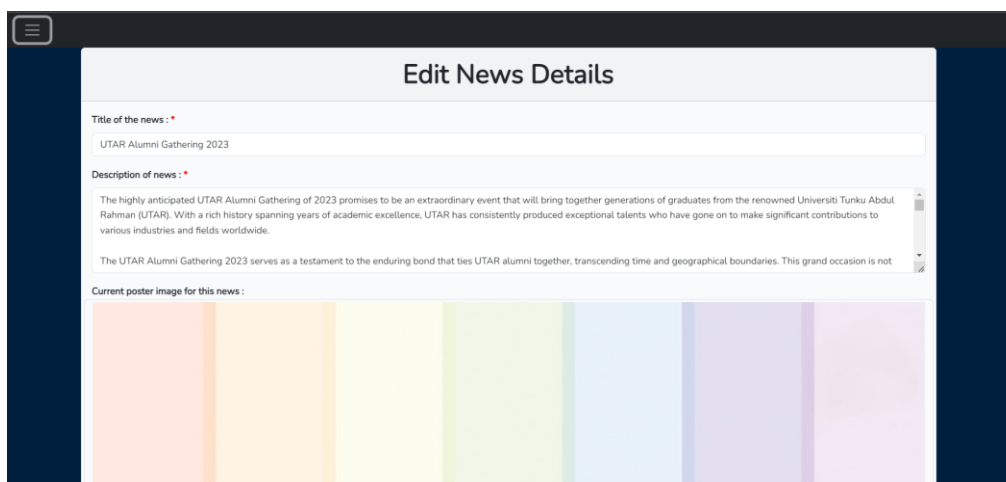


Figure 6.59: Edit news details page - 1



Figure 6.60: Edit news details page - 2

If admin wants to delete a specific news, admin may click on the “Delete” link of a specific news in the news list. System shows the details of the news and admin may click on the “DELETE” button to confirm deletion of the selected news. The system will delete the news in the database.



Figure 6.61: Delete news display

### 6.5.5 Event Management Module

In the event management page, the system display a list of event for the admin to view. Admin is also able to add an event to the event list, edit details of an event, and delete an event.

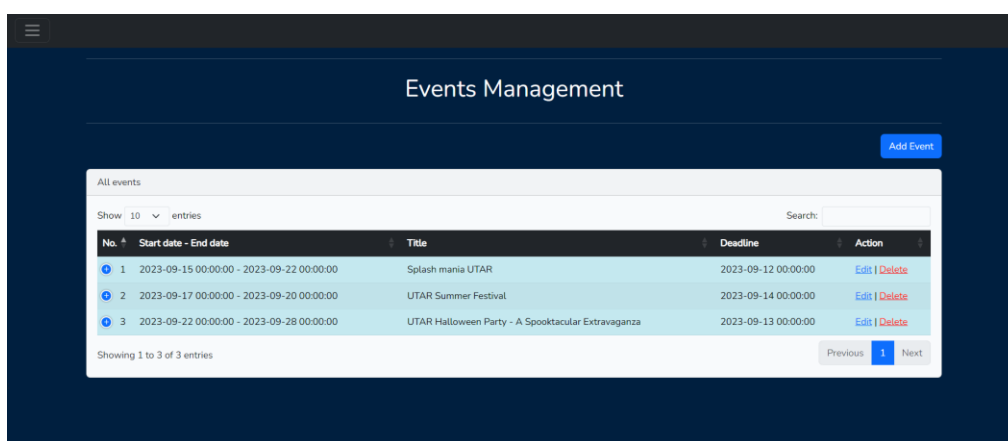


Figure 6.62: Event management page

If admin wants to add an event, admin may click on the “Add Event” button and system will navigate admin to the add event page. After filling up all the required field, admin should click on the “Add” button and system will add the event to the database.

Figure 6.63: Add event page

If the admin wants to edit a specific event, admin may click on the “Edit” link on the specific event in the event list. System will navigate admin to the edit event page with original data of the event being filled up on each input. Admin may edit any details of the event. After finished updating, admin may click on the “Edit” button at the bottom of the page and system will update the event in the database.

Figure 6.64: Edit event details page - 1

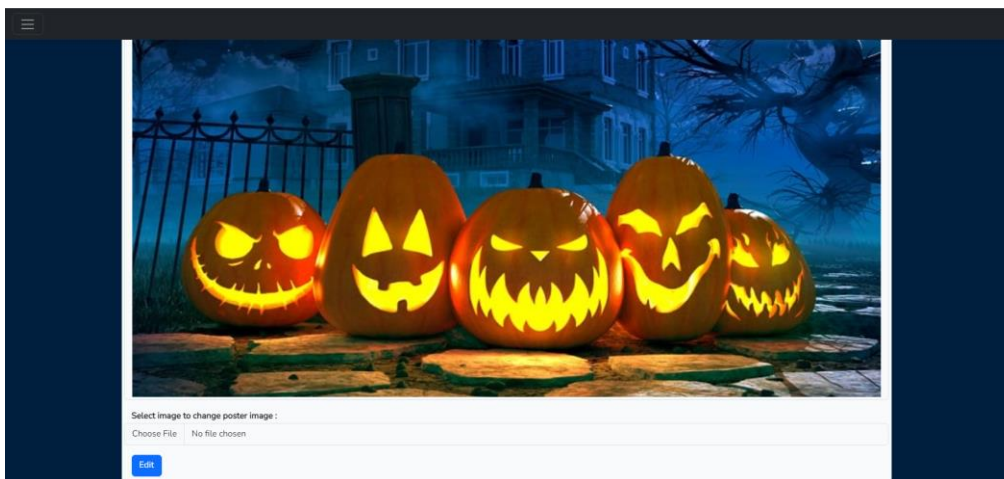


Figure 6.65: Edit event details page - 2

If admin wants to delete a specific event, admin may click on the “Delete” link of a specific event in the event list. System shows the details of the event and admin may click on the “DELETE” button to confirm deletion of the selected event. The system will delete the event in the database.

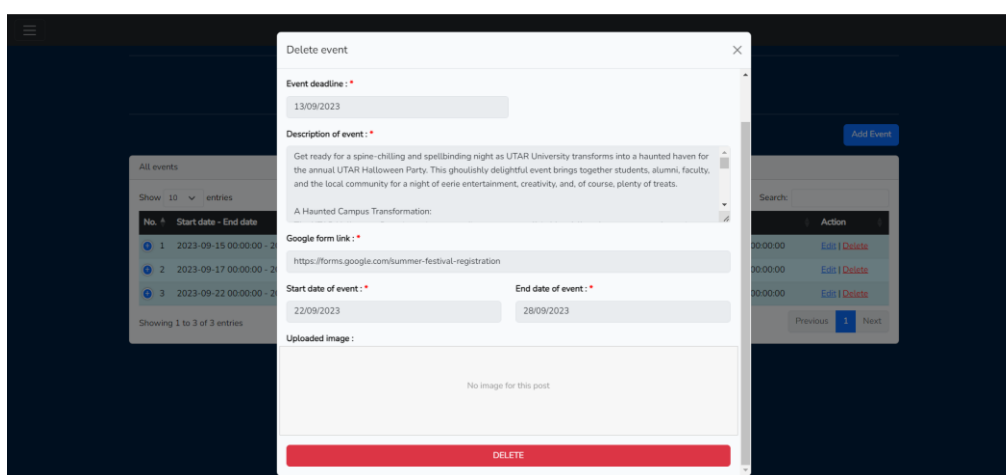


Figure 6.66: Delete event display

## 6.6 Authentication Implementation

As mentioned in the previous chapter, this system implements the personal login phrase technique and lockout policy for the authentication design implementation. Livewire which is one of the Laravel’s framework is used to implement the authentication. When the user or admin entered an id to the system, the system will first check whether the entered id is existed in the

database. If the entered id is existed, the system retrieved the personal login phrase of the entered id and display it to the user. If it is not existed, the system will create a user with the entered id but set the user as a dummy user and assign a random personal login phrase that are constructed from a file named “words.txt” that contains dictionary words. Therefore, if the id is an invalid id, the system will still show the personal login phrase but the user or admin will never able to login to the system regardless of the password entered. Figure 6.67 shows the code segment for implementing the personal login phrase authentication method.

```

public function login() {
    if($this->student_id != '') {
        $this->hidden = 'hidden';
        $file = public_path('dictionary/words.txt');
        $file_arr = file($file);
        $i = 0;
        $number_of_word = rand(1, 5);
        $personal_login_phrase = '';
        while (User::where('personal_login_phrase', $personal_login_phrase)->exists() || $personal_login_phrase == '') {
            $i = 0;
            $personal_login_phrase = '';
            while($i < $number_of_word) {
                $rand_text = $file_arr[rand(0, count($file_arr)-1)];
                $rand_text = str_replace(["\n", "\r"], '', $rand_text);
                $personal_login_phrase .= ($i === 0 ? '' : ' ') . $rand_text;
                $i = $i + 1;
            }
            $personal_login_phrase = trim($personal_login_phrase);
        }
        $user = User::where('student_id', $this->student_id)->first();
        if(empty($user)) {
            $newUser = new User;
            $randomName = Str::random(20);
            while (User::where('email', $randomName)->exists()) {
                $randomName = Str::random(20);
            }
            $newUser->name = $randomName;
            $newUser->student_id = $this->student_id;
            $newUser->password = null;
            $newUser->faculty = null;
            $newUser->course = null;
            $newUser->dummyUser = 'true';
            $newUser->personal_login_phrase = $personal_login_phrase;
            $randomEmail = Str::random(20);
            while (User::where('email', $randomEmail)->exists()) {
                $randomEmail = Str::random(20);
            }
            $newUser->email = $randomEmail;
            $randomPhoneNumber = Str::random(20);
            while (User::where('email', $randomPhoneNumber)->exists()) {
                $randomPhoneNumber = Str::random(20);
            }
            $newUser->phone_number = $randomPhoneNumber;
            $randomIC = Str::random(20);
            while (User::where('email', $randomIC)->exists()) {
                $randomIC = Str::random(20);
            }
            $newUser->IC = $randomIC;
            $newUser->save();
            $this->user_plp = $personal_login_phrase;
            $this->dispatchBrowserEvent('openPlpModal');
        } else {
            $this->user_plp = $user->personal_login_phrase;
            $this->dispatchBrowserEvent('openPlpModal');
        }
    } else {
        $this->hidden = '';
    }
}

```

Figure 6.67: Back-end code segment for implementation of personal login phrase

After that, the user or admin will be navigated to the password page after confirming that the personal login phrase is theirs. In the password page, the system only allow a maximum amount of 3 login attempt. If the login attempts have exceeded 3 times, the system will navigate the user or admin back to the login page and lockout the login attempt for 30 seconds. This function is done with the help of Laravel's built in features called "throttle" middleware and session. Figures below show the code segment on how the lockout feature is implemented during authentication.

```
public function login(Request $req)
{
    $validate = Validator::make($req->all(), [
        'password' => 'required',
    ]);
    if ($validate->fails()) {
        return redirect()->back()->withErrors($validate)->withInput(); // RETURN ERROR AND INPUT ENTERED BY USER
    }

    if ($this->hasTooManyLoginAttempts($req)) {
        $this->fireLockoutEvent($req);
        return $this->sendLockoutResponse($req);
    }

    if (auth()->attempt($req->only(['student_id', 'password']))) {
        session()->put('std_id', $req['student_id']);
        session()->put('password', $req['password']);
        return redirect('home');
    } else {
        $this->incrementLoginAttempts($req);
        $attempts = $this->limiter()->attempts($this->throttleKey($req));
        session()->put('loginAttempt', $attempts);
        return redirect()->back()->withErrors(['password' => 'Invalid Login'])->withInput();
    }
}
```

Figure 6.68: Back-end code segment for implementation of lockout policy – 1

```
protected function sendLockoutResponse(Request $request)
{
    $secondsUntilRetry = $this->limiter()->availableIn(
        $this->throttleKey($request)
    );
    session()->put('secondsUntilRetry', $secondsUntilRetry);
    $this->clearLoginAttempts($request);
    return redirect('/');
}
```

Figure 6.69: Back-end code segment for implementation of lockout policy - 2

```

@if(session('secondsUntilRetry'))
<p style="color: red; text-align: center;">You are unable to login for <span id="countdown"></span> seconds.</p>
</script>
<script>
function startCountdown(seconds) {
    let countdown = seconds;
    const countdownElement = document.getElementById('countdown');
    let studentID_input = document.getElementById('student_id');
    let login_btn = document.getElementById('login_btn');
    login_btn.disabled = true;
    login_btn.className = "btn btn-block btn-secondary";
    studentID_input.disabled = true;

    const countdownInterval = setInterval(() => {
        countdownElement.textContent = countdown;
        countdown--;
        localStorage.setItem('countdownTime', countdown);

        if (countdown < 0) {
            clearInterval(countdownInterval);
            localStorage.setItem('countdownTime', null);
            fetch("{{ route('updateSession') }}", {
                method: 'POST',
                headers: {
                    'Content-Type': 'application/json',
                    'X-CSRF-TOKEN': '{{ csrf_token() }}'
                },
                body: JSON.stringify({ deleteLock: 'true' })
            }).then((data) => {
                window.location.href = "{{ route('loginPage') }}";
            });
        }
    }, 1000); // Update every second

    startCountdown(localStorage.getItem('countdownTime') == null || localStorage.getItem('countdownTime') == 'null' ? 30 : localStorage.getItem('countdownTime'));
}
</script>
</endif>

```

Figure 6.70: Front end code segment for implementation of lockout policy

## 6.7 Password Policies Implementation

Password policies which is also one of the authentication management technique that is implemented in this system as mentioned before. In this system, password policies are implemented by providing user to directly view the password policies established and the server will validate and ensure the entered password meet the predefined criteria. Figures below shows the code segment of the modal used to display the password policies to the user and the server validating the password based on the predefined password policies.

```

<!-- PASSWORD GUIDELINES MODAL -->
<div class="modal fade" id="passwordModal" tabindex="-1"
aria-labelledby="passwordModallabel" aria-hidden="true">
<div class="modal-dialog modal-dialog-centered">
<div class="modal-content">
<div class="modal-header" style="background-color: red; color: aliceblue">
<h5 class="modal-title" id="passwordModallabel">Password Guidelines</h5>
<button type="button" class="btn-close" data-bs-dismiss="modal"
aria-label="Close" style="color: aliceblue"></button>
</div>
<div class="modal-body">
<p>1. Must contains at least 8 characters.</p>
<p>2. Must contains at least 1 upper case letter.</p>
<p>3. Must contains at least 1 lower case letter.</p>
<p>4. Must contains at least 1 digit.</p>
<p>5. Must contains at least 1 character.</p>
<p>6. Must contains at least 1 special character. (Ex: @!#$%^&*()-)</p>
<p>7. Password must not contains spaces.</p>
</div>
</div>
</div>
</div>

```

Figure 6.71: Front-end code segment for implementation of password policies with modal

```
protected function validator(array $data)
{
    return Validator::make($data, [
        'name' => ['required', 'string', 'max:255', 'unique:users'],
        'email' => ['required', 'string', 'email', 'max:255', 'unique:users'],
        'password' => [
            'required',
            'min:8',
            'not_regex:/\s/',
            'regex:/^(?=.*[a-z])(?=.*[A-Z])(?=.*\d)(?=.*[@!%*#?&])[A-Za-z\d@!%*#?&]+$/ ',
            'confirmed',
        ],
        'student_id' => ['required', new CheckUserDummyTable($data['student_id'], $data['ic'])],
        'phone_number' => ['required', 'regex:/^(?:\d{10})\d{11}$/ ', 'unique:users', 'min:10', 'max:12'],
        'personal_login_phrase' => ['required', 'unique:users'],
        'ic' => ['required', 'regex:/^\d{6}-\d{2}-\d{4}$/ ', 'unique:users', new CheckUserDummyTable($data['student_id'], $data['ic'])]
    ], [
        'phone_number.numeric' => 'Phone number must contain number only',
        'password.regex' => 'Must contain at least one upper and lower case letter, one digit, and one special character',
        'password.not_regex' => 'Password must not contains space in it'
    ]);
}
```

Figure 6.72: Back-end code segment for implementation of password policies

- 1

```
<?php
namespace App\Rules;

use Illuminate\Contracts\Validation\Rule;
use App\Models\UserDummy;

class CheckUserDummyTable implements Rule
{
    protected $studentId;
    protected $ic;

    public function __construct($studentId, $ic)
    {
        $this->studentId = $studentId;
        $this->ic = $ic;
    }

    public function passes($attribute, $value)
    {
        if($attribute == 'ic'){
            return UserDummy::where('IC', $value)
                ->where('student_id', $this->studentId)
                ->count() > 0;
        } else {
            return UserDummy::where('student_id', $value)
                ->where('IC', $this->ic)
                ->count() > 0;
        }
    }

    public function message()
    {
        return "Student cannot be found. Please made sure to enter your correct IC and student ID !";
    }
}
```

Figure 6.73: Back-end code segment for implementation of password policies

- 2

## 6.8 Real-time Chat Implementation

The chat feature provided to the user is done using Laravel's livewire framework, Laravel's Echo library and Pusher API. Livewire is used mainly to help build an interactive page that can handle user interaction like sending the message, receiving the message, create conversation, and receive notifications. On the other hand, Laravel's Echo and Pusher API are used mainly to support



the real-time communication aspect of the chat feature. To implement the real time chat function, an event named “MessageSent” is created and used for the purpose of broadcasting the message to a dedicated user through a private channel named “chat.<receiver\_id>”. The private channel is initiated through the “broadcastOn” function and the “broadcastWith” function will holds the data of the message that will be broadcasted together with the event as shown in figure 6.74.

```

class MessageSent implements ShouldBroadcast
{
    use Dispatchable, InteractsWithSockets, SerializesModels;

    public $curr_User;
    public $message;
    public $conversation;
    public $receiver;

    public function __construct(User $user, Message $message, Conversation $conversation, User $receiver)
    {
        $this->curr_User = $user;
        $this->message = $message;
        $this->conversation = $conversation;
        $this->receiver = $receiver;
    }

    public function broadcastWith()
    {
        return [
            'user' => $this->curr_User->id,
            'message_id' => $this->message->id,
            'conversation_id' => $this->conversation->id,
            'receiver_id' => $this->receiver->id,
        ];
    }

    public function broadcastOn()
    {
        return new PrivateChannel('chat.' . $this->receiver->id);
    }
}

```

Figure 6.74: Message sent event

Next, figure 6.75 shows a segment of code from a livewire component named “ChatList” that handles the chat features. One of the function from the component named “sendMessage” function, allows the user to send a message by broadcasting the “MessageSent” event mentioned above with data such as logged in user id, message, conversation id, and the selected user id. Therefore, when a user send a message, the event will be broadcasted through Pusher and can be viewed in the debug console of the Pusher dashboard. The event is show as an API message as shown as figure 6.76.

```

public function sendMessage()
{
    //====IF MESSAGE INPUT HAVE SOME MESSAGE IN IT, CREATE A NEW MESSAGE====
    if($this->messageInput != ''){
        $this->messageSent = Message::create([
            'sender_id' => auth()->user()->id,
            'receiver_id' => $this->selectedUser->id,
            'conversation_id' => $this->selectedConversation->id,
            'body' => $this->messageInput,
        ]);
        $this->loadConversations();
        $this->loadMessages();
        $this->emitSelf('dispatchMessageSent');
    }

    //====RESET MESSAGE INPUT====
    $this->messageInput = '';
}

public function dispatchMessageSent()
{
    broadcast(new MessageSent(auth()->user(), $this->messageSent, $this->selectedConversation, $this->selectedUser));
}

```

Figure 6.75: Send message function

EVENT	DETAILS	TIME
API message	Channel: private-chat.1, Event: App\Events\MessageSent	14:58:28
<pre> {   "user": 13,   "message_id": 22,   "conversation_id": 8,   "receiver_id": 1 } </pre>		

Figure 6.76: Debug console showing the broadcasted event

Lastly, the event listeners function that is also in the “ChatList” livewire component named “getListeners” is able to listen to the event broadcasted to pusher through Echo. Hence, if the logged in user is subscribed to the channel name “chat.<receiver\_id>”, it will proceed with a callback function named “broadcastedMessageListen” that will listen and process the received message.

```

public function getlisteners(){
    $user_id = auth()->user()->id;

    return [
        "echo-private:chat.{$user_id},MessageSent" => 'broadcastedMessageListen',
        'conversationCreated' => 'loadConversations', 'selectUser' => 'selectedUser', 'dispatchMessageSent'
    ];
}

```

Figure 6.77: Event listeners function

```

public function broadcastedMessageListen($event)
{
    if($this->selectedConversation != ''){
        if((int) $this->selectedConversation->id === (int) $event['conversation_id']){
            $this->selectedConversation->messages()
            ->where('read', 0)
            ->update(['read' => 1]);
        }
    }

    $this->loadConversations();

    $conversation = Conversation::with(['messages' => function ($query) {
        | $query->orderBy('created_at', 'asc');
        | }])->find($event['conversation_id']);

    $this->messages = $conversation->messages;
}

```

Figure 6.78: Listen broadcasted message function

As a result, users of the system are able to communicate with each other in real-time.

## 6.9 Summary

In summary, this section outlines the overall implementation of the system by demonstrating the system with images and detailed description of the implementation. Furthermore, critical component of the system are further discussed with code snippet to clearly illustrate the implementation of authentication technique including personal login phrase and lockout policy technique, implementation of password policies technique and the implementation of real-time chat features offered by the system.

## CHAPTER 7

### SYSTEM TESTING

#### 7.1 Introduction

This chapter focuses on the system testing. Firstly, the testing objective is identified followed by the testing scope and testing types. Next, the selected testing types are conducted and discussed in this chapter. Lastly a traceability matrix has been developed to provide a clear overview of the relationship between unit test cases, user acceptance test cases, functional requirements and uses cases that were documented in the previous chapter.

#### 7.2 Testing Objectives

The objectives of performing testing for this project is to assess all the functionalities offered to the user and admin by the social networking system. The main goal is to make sure that all the functionalities are working as expected and could met the functional requirements mentioned in the previous chapter.

#### 7.3 Testing Scope

This section focuses on defining the elements that will be tested and elements that will not be tested. Two roles of user will involve in this testing process which are user and admin. The following are the elements that are needed to be tested and not to be tested in this testing process.

##### **Elements to be tested**

##### 1. User side features

- This includes all the functionality offered to the user of the system.

##### 2. Admin side features

- This includes all the functionality offered to the admin of the system.

##### 3. Usability

- This involve assessing the system’s efficiency, effectiveness, and user friendliness.

#### 4. User satisfaction

- This involve assessing the user’s acceptance level towards using the system.

### **Elements not to be tested**

#### 1. Security test

- This involve evaluating the security of the system against security attack.

### **7.4 Testing Type**

There are a total of three significant types of testing that have been selected which consist of unit testing, user acceptance test and usability testing. Unit testing are crucial to our project as this testing helps to evaluate each functional component and non-functional component of our system working as expected and met the predefined specification. User acceptance test helps to evaluate the correctness of the system by involving end user of the system while usability testing will evaluate the user friendliness of the system.

### **7.5 Unit Testing**

Unit testing helps to perform testing on each module of the system. Each module is tested in an isolated environment to make sure that it is working as it supposed to. Table 7.1 shows an overview of the unit test cases that were carried out which covers all the module of the system with information including test case ID, test case title, and status of the test case.

Table 7.1: Unit test case table

<b>Test Case ID</b>	<b>Test Case Title</b>	<b>Status</b>
TC-001	Login account test case	Pass
TC-002	Register user account test case	Pass

TC-003	Make donation test case	Pass
TC-004	View institutional information test case	Pass
TC-005	Manage profile test case	Pass
TC-006	View job list test case	Pass
TC-007	Apply job test case	Pass
TC-008	Manage own post test case	Pass
TC-009	React post test case	Pass
TC-010	Leave comment test case	Pass
TC-011	Chat test case	Pass
TC-012	Search user test case	Pass
TC-013	View user details test case	Pass
TC-014	View news feed test case	Pass
TC-015	Manage user test case	Pass
TC-016	Manage post test case	Pass
TC-017	Manage job test case	Pass
TC-018	Manage news test case	Pass
TC-019	Manage event test case	Pass

### 7.5.1 Unit Test Case for User Side Module

Table 7.2: Test case for unit testing - Login account

<b>Project Name:</b>		Web-based social networking system			<b>Test designed by:</b>		Ho Ji Kenn	
<b>Test Case ID:</b>		TC-001			<b>Test designed date:</b>		06-09-2023	
<b>Test Case Title:</b>		Login account test case			<b>Test executed by:</b>		Ho Ji Kenn	
<b>Pre-condition:</b>		User has registered an account in the system.			<b>Test execution date:</b>		07-09-2023	
<b>Test Case#</b>	<b>Test Summary</b>	<b>Test Case</b>	<b>Test steps</b>	<b>Test Data</b>	<b>Expected result</b>	<b>Post Condition</b>	<b>Actual result</b>	<b>Status</b>
TC_LOGI N_1	To validate the login functionality.	Login to an account using valid student ID and password.	<ol style="list-style-type: none"> <li>1. Enter student ID</li> <li>2. Click on the “Login” button</li> <li>3. Click “YES” for the pop out</li> </ol>	<ol style="list-style-type: none"> <li>1. Student ID: 2004965</li> <li>2. Password: Jikenn@0000</li> </ol>	System navigates user to the user home page.	User successfully login to the system.	User being redirected to the user home page upon successfully login.	Pass

			modal shown 4. Enter the password					
TC_LOGI N_2		Login to an account using invalid student ID, password and exceed the 3 times maximum login attempt limit	1. Enter student ID 2. Click on the "Login" button 3. Click "YES" for the pop out modal shown 4. Enter the password for three times	1. Student ID: invalid 2. Password: 12345678, 55555555,88888 888	System shows an error for the password field on every invalid attempt and navigates user back to the login page and user are not able to login to the system for 30 seconds.	User failed to login to the system.	User being redirected to the login page when exceed the login attempt limit and is not able to login to the system for 30 seconds.	Pass



TC_LOGI N_3		Login to an account with valid student ID but with incorrect password that exceed the 3 times maximum login attempt limit	<ol style="list-style-type: none"> <li>1. Enter student ID</li> <li>2. Click on the “Login” button</li> <li>3. Click “YES” for the pop out modal shown</li> <li>4. Enter the password for three times</li> </ol>	<ol style="list-style-type: none"> <li>1. Student ID: 2004965</li> <li>2. Password: jK!hereaa, jKjkjkjk!, Jikenn@0000</li> </ol>	System shows an error for the password field on every invalid attempt and navigates user back to the login page and user are not able to login to the system for 30 seconds.	User failed to login to the system.	User being redirected to the login page when exceed the login attempt limit and is not able to login to the system for 30 seconds.	Pass
TC_LOGI N_4		Login to an account with valid student ID and	<ol style="list-style-type: none"> <li>1. Enter student ID</li> <li>2. Click on the “Login”</li> </ol>	<ol style="list-style-type: none"> <li>1. Student ID: 2004965</li> <li>2. Password: jK!hereaa,</li> </ol>	System shows an error for the password field on every invalid	User successfully login to the system.	User being redirected to the user home page upon successfully	Pass

		password but failed to enter correct password for few times but did not exceed the 3 times maximum login attempt limit.	button 3. Click “YES” for the pop out modal shown 4. Enter incorrect password 5. Enter correct password	jKjkjkjk!, Jikenn@1111	attempt and navigates user to the user home page upon valid password being entered.		login.	
TC_LOGI N_5		Login to an account without entering the student ID.	1. Click on the “Login” button	1. Student ID: null	Error message is shown for the student ID input field.	User failed to login to the system.	An error message saying “Please enter your student ID” is shown under the student ID input field.	Pass

Table 7.3: Test case for unit testing - Register user account

<b>Project Name:</b>		Web-based social networking system			<b>Test designed by:</b>		Ho Ji Kenn	
<b>Test Case ID:</b>		TC-002			<b>Test designed date:</b>		06-09-2023	
<b>Test Case Title:</b>		Register user account test case			<b>Test executed by:</b>		Ho Ji Kenn	
<b>Pre-condition:</b>		User are one of the Alumni / student of UTAR			<b>Test execution date:</b>		07-09-2023	
<b>Test Case#</b>	<b>Test Summary</b>	<b>Test Case</b>	<b>Test steps</b>	<b>Test Data</b>	<b>Expected result</b>	<b>Post Condition</b>	<b>Actual result</b>	<b>Status</b>
TC_REGI STER_1	To validate the register functionality.	Register an account without specifying any input fields.	1. Click on the "Create your account" button	1. Name: null 2. Identity card: null 3. Student ID: null 4. Email: null 5. Phone number: null 6. Personal login phrase: null	Error messages will be shown under each input fields accordingly.	Users are not able to register an account.	All the input fields have an error message underneath each of them.	Pass

				7. Password: null 8. Re-enter password: null				
TC_REGI STER_2		Register an account with valid name, email, phone number, personal login phrase, password, and existing UTAR student ID, and corresponding Identity	1. Enter the name 2. Enter the identity card 3. Enter the student ID 4. Enter the email 5. Enter the phone number 6. Enter the personal	1. Name: Ali 2. Identity card: 011111-11-1111 3. Student ID: 2004888 4. Email: ali@gmail.com 5. Phone number: 01111225587 6. Personal login phrase: I love UTAR 7. Password:	System navigates the user to email verification page.	Users successfully created an account.	User being directed to the email verification page by the user.	Pass

		card number.	login phrase 7. Enter the password 8. Type the password again in the “Re-enter password” field 9. Click on the “Create your account” button.	AliAli@0000 8. Re-enter password: Ali@0000				
TC_REGI STER_3		Register an account with non-existing student ID	1. Enter the name 2. Enter the identity	1. Name: Ali 2. Identity card: 022558-55-5555 3. Student ID:	Error messages will be shown for the student ID and Identity	Users are not able to create an account.	An error message that shows “Student cannot be found. Please	Pass

		and corresponding identity card but with valid input for other field.	card 3. Enter the student ID 4. Enter the email 5. Enter the phone number 6. Enter the personal login phrase 7. Enter the password 8. Type the password again in the “Re-enter password”	1111111 4. Email: ali@gmail.com 5. Phone number: 01111225587 6. Personal login phrase: I love UTAR 7. Password: AliAli@0000 8. Re-enter password: Ali@0000	card input fields.		made sure to enter your correct IC and student ID !” is shown underneath both student ID and Identity card field.	
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			field 9. Click on the “Create your account” button					
TC_REGI STER_4		Register an account with valid name, email, phone number, personal login phrase, with existing UTAR student ID, and corresponding	1. Enter the name 2. Enter the identity card 3. Enter the student ID 4. Enter the email 5. Enter the phone number	1. Name: Ali 2. Identity card: 011111-11-1111 3. Student ID: 2004888 4. Email: ali@gmail.com 5. Phone number: 01111225587 6. Personal login phrase: I love	Error message will be shown for the password input field.	Users are not able to create an account.	An error message that shows “Must contain at least one upper and lower case letter, one digit, and one special character” is shown underneath the password field.	Pass

		g Identity card number but with invalid password.	6. Enter the personal login phrase 7. Enter the password 8. Type the password again in the “Re-enter password” field 9. Click on the “Create your account” button	UTAR 7. Password: 12345678 8. Re-enter password: 12345678				
TC_REGI STER_5		Register an account with	1. Enter the name	1. Name: Ali 2. Identity card:	Error message will be shown	Users are not able to create	An error message that shows “The	Pass



		at least one valid input and at least one invalid input in any fields.	<p>2. Enter the identity card</p> <p>3. Enter the student ID</p> <p>4. Enter the email</p> <p>5. Enter the phone number</p> <p>6. Enter the personal login phrase</p> <p>7. Enter the password</p> <p>8. Type the password again in the</p>	<p>011111-11-1111</p> <p>3. Student ID: 2004888</p> <p>4. Email: ali@gmail.com</p> <p>5. Phone number: 01111225587</p> <p>6. Personal login phrase: I am Fatimah</p> <p>7. Password: 12345678</p> <p>8. Re-enter password: 12345678</p>	for the personal login phrase input field.	an account.	personal login phrase has already been taken.” is shown underneath the personal login phrase input field.	
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			“Re-enter password” field 9. Click on the “Create your account” button					
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Table 7.4: Test case for unit testing - Make donation

<b>Project Name:</b>		Web-based social networking system			<b>Test designed by:</b>		Ho Ji Kenn	
<b>Test Case ID:</b>		TC-003			<b>Test designed date:</b>		06-09-2023	
<b>Test Case Title:</b>		Make donation test case			<b>Test executed by:</b>		Ho Ji Kenn	
<b>Pre-condition:</b>		User is logged in to the system.			<b>Test execution date:</b>		07-09-2023	
<b>Test Case#</b>	<b>Test Summary</b>	<b>Test Case</b>	<b>Test steps</b>	<b>Test Data</b>	<b>Expected result</b>	<b>Post Condition</b>	<b>Actual result</b>	<b>Status</b>
TC_DON	To verify	Make a	1. Click on	1. Name: null	System will	User is not	An error message	Pass

ATOIN_1	the make donation functionality.	donation without specifying any input field.	the “Donate” button.	2. Email: null 3. Donation amount: null 4. Card number: null 5. CVC: null 6. Expiration month: null 7. Expiration year: null	display an error message to the user indicating failed donation attempt.	able to make a donation.	showing “Please enter all the required field and try again.” is display at the bottom of the form.	
TC_DONATION_2		Make a donation with valid name, email address, donation amount, card number, cvc,	1. Enter name 2. Enter email address 3. Enter donation amount	1. Name: Ali 2. Email: ali@gmail.com 3. Donation amount: 100 4. Card number: 4242424242424242	System will display a donate successful message to the user.	User successfully make a donation.	A “Payment successful!” message is shown indicating the user has successfully make a donation.	Pass

		expiration month, and expiration year.	<ol style="list-style-type: none"> <li>4. Enter card number</li> <li>5. Enter cvc</li> <li>6. Enter expiration month</li> <li>7. Enter expiration year</li> <li>8. Click on the “Donate” button</li> </ol>	<ol style="list-style-type: none"> <li>5. CVC: 123</li> <li>6. Expiration month: 12</li> <li>7. Expiration year: 2025</li> </ol>				
TC_DONATION_3		Make a donation with invalid donation	<ol style="list-style-type: none"> <li>1. Enter name</li> <li>2. Enter email</li> </ol>	<ol style="list-style-type: none"> <li>1. Name: Ali</li> <li>2. Email: ali@gmail.com</li> <li>3. Donation</li> </ol>	System will display an error message to the user indicating	User is not able to make a donation.	A “Amount must be more than RM2.00” message is shown	Pass

		amount	address 3. Enter donation amount 4. Enter card number 5. Enter cvc 6. Enter expiration month 7. Enter expiration year 8. Click on the “Donate” button	amount: 1 4. Card number: 4242424242424 242 5. CVC: 123 6. Expiration month: 12 7. Expiration year: 2025	invalid donation amount.		indicating unsuccessful donation attempt.	
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TC_DON ATION_4		Make a donation with invalid card number.	<ol style="list-style-type: none"> <li>1. Enter name</li> <li>2. Enter email address</li> <li>3. Enter donation amount</li> <li>4. Enter card number</li> <li>5. Enter cvc</li> <li>6. Enter expiration month</li> <li>7. Enter expiration year</li> </ol>	<ol style="list-style-type: none"> <li>1. Name: Ali</li> <li>2. Email: ali@gmail.com</li> <li>3. Donation amount: 1</li> <li>4. Card number: 121212121212121212</li> <li>5. CVC: 123</li> <li>6. Expiration month: 12</li> <li>7. Expiration year: 2025</li> </ol>	System will display an error message to the user indicating invalid card number.	User is not able to make a donation.	A “Your card number is incorrect” message is shown indicating unsuccessful donation attempt.	Pass
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			8. Click on the “Donate” button					
TC_DONATION_5		Make a donation with invalid expiration month.	<ol style="list-style-type: none"> <li>1. Enter name</li> <li>2. Enter email address</li> <li>3. Enter donation amount</li> <li>4. Enter card number</li> <li>5. Enter cvc</li> <li>6. Enter expiration</li> </ol>	<ol style="list-style-type: none"> <li>1. Name: Ali</li> <li>2. Email: ali@gmail.com</li> <li>3. Donation amount: 1</li> <li>4. Card number: 4242424242424242</li> <li>5. CVC: 123</li> <li>6. Expiration month: 125</li> <li>7. Expiration year: 2025</li> </ol>	System will display an error message to the user indicating invalid expiration month.	User is not able to make a donation.	A “Your card’s expiration month is invalid” message is shown indicating unsuccessful donation attempt.	Pass

			<p>month</p> <p>7. Enter expiration year</p> <p>8. Click on the “Donate” button</p>					
TC_DONATION_6		Make a donation with invalid expiration year.	<p>1. Enter name</p> <p>2. Enter email address</p> <p>3. Enter donation amount</p> <p>4. Enter card</p>	<p>1. Name: Ali</p> <p>2. Email: ali@gmail.com</p> <p>3. Donation amount: 1</p> <p>4. Card number: 4242424242424242</p> <p>5. CVC: 123</p> <p>6. Expiration</p>	System will display an error message to the user indicating invalid expiration year.	User is not able to make a donation.	A “Your card’s expiration year is invalid” message is shown indicating unsuccessful donation attempt.	Pass



			number 5. Enter cvc 6. Enter expiration month 7. Enter expiration year 8. Click on the “Donate” button	month: 12 7. Expiration year: 2000				
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Table 7.5: Test case for unit testing - View institutional information

<b>Project Name:</b>	Web-based social networking system	<b>Test designed by:</b>	Ho Ji Kenn
<b>Test Case ID:</b>	TC-004	<b>Test designed date:</b>	06-09-2023
<b>Test Case Title:</b>	View institutional information test case	<b>Test executed by:</b>	Ho Ji Kenn
<b>Pre-condition:</b>	User is logged in to the system.	<b>Test execution</b>	07-09-2023

					date:			
Test Case#	Test Summary	Test Case	Test steps	Test Data	Expected result	Post Condition	Actual result	Status
TC_VIEW_INSTITUTIONAL_INFORMATION_1	To validate the view institutional information functionality.	View a list of news based on year.	1. Click on the sort news based on year input. 2. Select the year, "2022".	-	System display a list of news that are in the year of 2022.	User is able to see a list of news that are in year 2022.	A list of news that are posted in the year of 2022 are being listed out.	Pass
TC_VIEW_INSTITUTIONAL_INFORMATION_2		View details of a news.	1. Click on a news that has the title of "UTAR Alumni gathering"	-	System navigate user to a page where details of the news is shown.	User is able to see details of the news.	User is being navigated to a page where details of the news is shown.	Pass
TC_VIEW		View a list of	1. Click on	-	System display a	User is able	A list of events	Pass

_INSTITUTIONAL_INFORMATION_3		event based on year.	the sort events based on year input. 2. Select the year, "2022".		list of events that are in the year of 2022.	to see a list of events that are in year 2022.	that are posted in the year of 2022 are being listed out.	
TC_VIEW_INSTITUTIONAL_INFORMATION_4		View details of an event.	1. Click on an event that has the title of "UTAR splash marathon"	-	System navigate user to a page where details of the event is shown.	User is able to see details of the event.	User is being navigated to a page where details of the event is shown.	Pass

Table 7.6: Test case for unit testing - Manage profile

<b>Project Name:</b>	Web-based social networking system	<b>Test designed by:</b>	Ho Ji Kenn
<b>Test Case ID:</b>	TC-005	<b>Test designed date:</b>	06-09-2023

<b>Test Case Title:</b>		Manage profile test case			<b>Test executed by:</b>		Ho Ji Kenn	
<b>Pre-condition:</b>		User is logged in to the system.			<b>Test execution date:</b>		07-09-2023	
<b>Test Case#</b>	<b>Test Summary</b>	<b>Test Case</b>	<b>Test steps</b>	<b>Test Data</b>	<b>Expected result</b>	<b>Post Condition</b>	<b>Actual result</b>	<b>Status</b>
TC_MAN AGE_PRO FILE_1	To validate the manage profile functionality.	Edit any personal details.	1. Select the "Profile" category. 2. Edit any personal details. 3. Click on "Edit" button.	1. Phone number: 0125258745 2. Marital status: Married 3. Nationality: Singaporean 4. Address: 31, Jalan Sungai wan 5. State: Selangor 6. Postal code:	The system shows an alert message showing that user's personal details have been updated.	User's personal details were updated successfully.	User's personal details were updated successfully and an alert message showing "Successfully modified" was displayed.	Pass

				45285 7. Country: Malaysia				
TC_MAN AGE_PRO FILE_2		Add an education background.	1. Select the “Education” category. 2. Select the level of qualificatio n 3. Select field of stufy 4. Enter major 5. Enter grade 6. Enter	1. Level of qualification: Bachelor 2. Field of study: Computer Science/Informa tion technology 3. Major: Bachelor of Science (Hons) Software Engineering 4. Grade: First class 5. Institution:	The system shows an alert message showing the education background has been added successfully.	User successfully added an education background. background.	User successfully added an education background and listed under user’s education background list while the system display an alert message showing “Successfully added”.	Pass

			institution 7. Specify graduation month 8. Select country 9. Click on “Add” button.	Sunway University 6. Graduation date: December 2021 7. Country: Malaysia				
TC_MAN AGE_PRO FILE_3		Delete a specific education background.	1. Select the “Education” category. 2. Click on the “trash can” icon on education background	-	The system display a pop up modal when user clicks on the “trash can” icon and the selected education background is	User successfully deleted an education background.	An education background has been deleted by the user successfully.	Pass

			number “1”. 3. Select “Confirm” button.		deleted from the user’s education background list.			
TC_MAN AGE_PRO FILE_4		Add a work experience.	1. Select the “Work Experience” category. 2. Enter company name 3. Enter job position 4. Enter job description / responsibilit y 5. Enter	1. Company name: Google 2. Position: Senior developer 3. Job description/resp onsibility: Help junior in developing coding mindset, Debugging, and etc 4. Location of	The system adds a work experience to user’s work experiences list.	User successfully added a work experience.	User successfully added a work experience and listed under user’s work experiences list.	Pass

			location of company 6. Enter start year 7. Specify end year 8. Click on “Add” button.	company: USA 5. Start year: 2000 6. End year: 2010				
TC_MAN AGE_PRO FILE_5		Delete a specific work experience.	1. Select the “Work Experience” category. 2. Click on the “trash can” icon on work experience	-	The system display a pop up modal when user clicks on the “trash can” icon and the selected work experience is deleted from the	User successfully deleted a work experience.	A work experience has been deleted by the user successfully.	Pass



			number “5”. 3. Select “Confirm” button.		user’s work experience list.			
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Table 7.7: Test case for unit testing - View job list

<b>Project Name:</b>		Web-based social networking system			<b>Test designed by:</b>		Ho Ji Kenn	
<b>Test Case ID:</b>		TC-006			<b>Test designed date:</b>		06-09-2023	
<b>Test Case Title:</b>		View job list test case			<b>Test executed by:</b>		Ho Ji Kenn	
<b>Pre-condition:</b>		User is logged in to the system.			<b>Test execution date:</b>		07-09-2023	
Test Case#	Test Summary	Test Case	Test steps	Test Data	Expected result	Post Condition	Actual result	Status
TC_VIEW_JOB_LIST_1	To validate the view job list functionality.	View a list of job based on industry.	1. Click on the industry select input field. 2. Select	-	The system shows a list of jobs that are related to “IT / Computer -	User is able to see a list of jobs that are related to “IT / Computer -	A list of jobs that are related to “IT / Computer - Software” industry are	Pass

			“IT / Computer - Software” industry 3. Click on the “Filter” button		Software” industry.	Software” industry.	shown.	
TC_VIEW _JOB_LIS T_2		View a list of job based on an employment type.	1. Click on the employment select input field. 2. Select “Full time” 3. Click on the “Filter” button	-	The system shows a list of full time job vacancies.	User is able to see a list of list of full time job vacancies.	A list of full time job vacancies are shown.	Pass
TC_VIEW		View a list of	1. Click on	-	The system	User is able	A list of full time	Pass

_JOB_LIS T_3		jobs based on industry and employment type.	<p>the industry select input field.</p> <p>2. Select “IT / Computer - Software” industry</p> <p>3. Click on the employment select input field.</p> <p>4. Select “Full time”</p> <p>5. Click on the “Filter” button</p>		<p>shows a list of full time job vacancies that are related to “IT / Computer - Software” industry.</p>	<p>to see a list of list of full time job vacancies that are related to “IT / Computer - Software” industry</p>	<p>job vacancies that are related to “IT / Computer - Software” industry are shown.</p>	
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TC_VIEW _JOB_LIS T_4		View full list of jobs.	<ol style="list-style-type: none"> <li>1. Click on the industry select input field.</li> <li>2. Select “—Select a industry--” industry</li> <li>3. Click on the employment select input field.</li> <li>4. Select “—Select the type of employment</li> </ol>	-	The system shows a full list of jobs available.	User is able to see a full listing of every jobs available.	A full list of jobs available are shown.	Pass

			--" 5. Click on the "Filter" button					
TC_VIEW_JOB_LIS T_4		View details of a specific job.	1. Select "View" button from a job in the job list that has the company named "Company ltd".	-	The system display details of the job selected.	User is able to view details of the job selected.	A pop up modal is being shown with details of the job selected.	Pass

Table 7.8: Test case for unit testing - Apply job

<b>Project Name:</b>		Web-based social networking system			<b>Test designed by:</b>		Ho Ji Kenn	
<b>Test Case ID:</b>		TC-007			<b>Test designed date:</b>		06-09-2023	
<b>Test Case Title:</b>		Apply job test case			<b>Test executed by:</b>		Ho Ji Kenn	
<b>Pre-condition:</b>		User is logged in to the system and has selected a job to view.			<b>Test execution date:</b>		07-09-2023	
Test Case#	Test Summary	Test Case	Test steps	Test Data	Expected result	Post Condition	Actual result	Status
TC_APPL Y_JOB_1	To validate the apply job functionality.	Apply a job that its application deadline has not passed yet.	1. Click on the “Apply via email” button 2. Click on the “Confirm application” button	-	The system navigate the user to the email successfully sent page.	User send the job application successfully via email.	User is being navigated to the job application successfully sent page.	Pass
TC_APPL		Apply a job	1. Click on	-	The “Apply via	User is not	User is being	Pass

Y_JOB_2		that its application deadline has already passed.	the “Apply via email” button		email” button is not able to be clicked.	able to apply the job.	restricted to click on the “Apply via email” button.	
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Table 7.9: Test case for unit testing - Manage own post

<b>Project Name:</b>		Web-based social networking system			<b>Test designed by:</b>		Ho Ji Kenn	
<b>Test Case ID:</b>		TC-008			<b>Test designed date:</b>		06-09-2023	
<b>Test Case Title:</b>		Manage own post test case			<b>Test executed by:</b>		Ho Ji Kenn	
<b>Pre-condition:</b>		User is logged in to the system.			<b>Test execution date:</b>		07-09-2023	
Test Case#	Test Summary	Test Case	Test steps	Test Data	Expected result	Post Condition	Actual result	Status
TC_MANAGE_OW_N_POST_1	To validate the manage own post functionalit	Add a new post without adding an image into	1. Enter the caption	1. Caption: Hi, good morning guys	The system add a new post created by the user to the news	User successfully created a post.	The post created by the user that has only caption is shown in the	Pass

	y.	the post.			feed.		news feed.	
TC_MAN AGE_OW N_POST_ 2		Add a new post with an image.	1. Click on the camera icon. 2. Enter caption 3. Add an image by selecting an image from local folder	1. Caption:This is me 2. Image: me.jpg	The system add a new post created by the user to the news feed.	User successfully created a post.	The post created by the user that has both caption and image is shown in the news feed.	Pass
TC_MAN AGE_OW N_POST_ 3		Edit a specific post.	1. Click on the three dot icon at the right side of a post. 2. Select "Edit"	1. Caption: That is not me 2. Image: sorry.jpg	A pop up modal will be displayed after clicking "Edit" from the three dot icon and the post is updated	User successfully updated a post details.	The details of the post has been successfully updated.	Pass



			<p>3. Edit any fields of the post</p> <p>4. Click on the “CONFIRM CHANGE”</p>		<p>after the user confirmed to update the post.</p>			
<p>TC_MANAGE_OWNER_POST_4</p>		<p>Delete a specific post.</p>	<p>1. Click on the three dot icon at the right side of a post.</p> <p>2. Select “Delete”</p> <p>3. Select “Confirm”</p>	-	<p>A pop up modal will be displayed after clicking “Delete” from the three dot icon and the post is deleted after user confirmed to delete the post.</p>	<p>User successfully deleted a post.</p>	<p>The selected post has been deleted from the post list that has all the posts created by the user.</p>	<p>Pass</p>

Table 7.10: Test case for unit testing - React post

<b>Project Name:</b>		Web-based social networking system			<b>Test designed by:</b>		Ho Ji Kenn	
<b>Test Case ID:</b>		TC-009			<b>Test designed date:</b>		06-09-2023	
<b>Test Case Title:</b>		React post test case			<b>Test executed by:</b>		Ho Ji Kenn	
<b>Pre-condition:</b>		User is logged in to the system.			<b>Test execution date:</b>		07-09-2023	
Test Case#	Test Summary	Test Case	Test steps	Test Data	Expected result	Post Condition	Actual result	Status
TC_REACT_POST_1	To validate the react post functionality	Like a post.	1. Click on the “Liked” button on a post.	-	The “Liked” button will turn into blue color.	User successfully like a post.	The “Liked” button turned blue and number of likes on the post has increased by 1.	Pass
TC_REACT_POST_2		Dislike a post.	1. Click on the “Liked” button on post.	-	The “Liked” button will turn back to original color on second	User successfully dislike a post.	The “Liked” button turned back to original color and number	Pass

			2. Click again the “Liked” button.		click.		of likes on the post has decreased by 1.	
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Table 7.11: Test case for unit testing - Leave comment

<b>Project Name:</b>		Web-based social networking system			<b>Test designed by:</b>		Ho Ji Kenn	
<b>Test Case ID:</b>		TC-010			<b>Test designed date:</b>		06-09-2023	
<b>Test Case Title:</b>		Leave comment test case			<b>Test executed by:</b>		Ho Ji Kenn	
<b>Pre-condition:</b>		User is logged in to the system.			<b>Test execution date:</b>		07-09-2023	
<b>Test Case#</b>	<b>Test Summary</b>	<b>Test Case</b>	<b>Test steps</b>	<b>Test Data</b>	<b>Expected result</b>	<b>Post Condition</b>	<b>Actual result</b>	<b>Status</b>
TC_LEAVE_COMMENT_1	To validate the leave comment functionality	Leave a comment with a non-empty value.	1. Click the “Comments” button for Fatimah’s post	1. Comment: Hi	System display the comment written by user under comment section.	User successfully make a comment to the selected	The comment made by user is displayed under the comment section.	Pass

			<p>2. Enter a comment</p> <p>3. Click on the send icon at the right side of the comment input.</p>			post.		
TC_LEAVE_COMMENT_2		Leave a comment with an empty value.	<p>1. Click the “Comments” button for Fatimah’s post</p> <p>2. Click on the send icon at the right side of</p>	-	System does not allow user to click on the send icon.	User is not able to make a comment.	The send icon beside the comment input is not allow to be clicked by the user.	Pass

			the comment input.					
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Table 7.12: Test case for unit testing - Chat

<b>Project Name:</b>		Web-based social networking system			<b>Test designed by:</b>		Ho Ji Kenn	
<b>Test Case ID:</b>		TC-011			<b>Test designed date:</b>		06-09-2023	
<b>Test Case Title:</b>		Chat test case			<b>Test executed by:</b>		Ho Ji Kenn	
<b>Pre-condition:</b>		User is logged in to the system.			<b>Test execution date:</b>		07-09-2023	
Test Case#	Test Summary	Test Case	Test steps	Test Data	Expected result	Post Condition	Actual result	Status
TC_CHAT_1	To validate the chat function.	Create a conversation by searching a user's name.	1. Enter name in the search bar 2. Select the user	1. Name: Ryan Trahan	The system will display the user of the entered name and a conversation box will be	User successfully created a conversation with the searched	A conversation box is created with the user of the entered name.	Pass

					created when user clicked the user in the search result list.	user.		
TC_CHAT_2		Send a message to a user in real time.	<ol style="list-style-type: none"> <li>1. Select “Ryan Trahan” in the list of conversation.</li> <li>2. Enter a message in the message box</li> <li>3. Press enter</li> </ol>	1. Message: Hi ryan !	The system will show the message sent to the selected user while the selected user is able to see the message immediately.	User successfully send a message.	A message is sent to the selected user which is “Ryan Trahan”, and Ryan Trahan is able to see the message immediately.	Pass

Table 7.13: Test case for unit testing - Search user

<b>Project Name:</b>		Web-based social networking system			<b>Test designed by:</b>		Ho Ji Kenn	
<b>Test Case ID:</b>		TC-012			<b>Test designed date:</b>		06-09-2023	
<b>Test Case Title:</b>		Search user test case			<b>Test executed by:</b>		Ho Ji Kenn	
<b>Pre-condition:</b>		User is logged in to the system.			<b>Test execution date:</b>		07-09-2023	
<b>Test Case#</b>	<b>Test Summary</b>	<b>Test Case</b>	<b>Test steps</b>	<b>Test Data</b>	<b>Expected result</b>	<b>Post Condition</b>	<b>Actual result</b>	<b>Status</b>
TC_SEAR CH_USER _1	To validate the search user functionality.	Search for a user with valid name.	1. Click on the search bar in the navigation bar 2. Enter the name of the user	1. Name: Fatimah binti shah	The system shows the user of the entered name.	User is able to search for the user.	The user of the entered name is shown to the user under the search bar.	Pass
TC_SEAR CH_USER		Search for a user with	1. Click on the search	-	The system does not shows any	User is not able to see	Search result does not shown to the	Pass

_2		empty value.	bar in the navigation bar		user.	any search result.	user under the search bar.	
TC_SEARCH_USER_3		Search for a list of user that their name start with "F".	1. Click on the search bar in the navigation bar 2. Enter the name of the user	1. Name: F	The system shows a list of users that their name start with "F".	User is able to see the search result.	A list of users that name start with "F" are shown to the user.	Pass

Table 7.14: Test case for unit testing - View user details

<b>Project Name:</b>	Web-based social networking system	<b>Test designed by:</b>	Ho Ji Kenn
<b>Test Case ID:</b>	TC-013	<b>Test designed date:</b>	06-09-2023
<b>Test Case Title:</b>	View user details test case	<b>Test executed by:</b>	Ho Ji Kenn
<b>Pre-condition:</b>	User is logged in to the system and has already search for a user.	<b>Test execution date:</b>	07-09-2023



Test Case#	Test Summary	Test Case	Test steps	Test Data	Expected result	Post Condition	Actual result	Status
TC_VIEW_USER_DETAILS_1	To validate the view user details functionality.	View a specific user details.	1. Click on the user in the search result.	-	The system display the details of the selected user.	User is able to view the details of the selected user.	Details of the selected user is being shown to the user.	Pass

Table 7.15: Test case for unit testing - view news feed

<b>Project Name:</b>		Web-based social networking system			<b>Test designed by:</b>		Ho Ji Kenn	
<b>Test Case ID:</b>		TC-014			<b>Test designed date:</b>		06-09-2023	
<b>Test Case Title:</b>		View news feed test case			<b>Test executed by:</b>		Ho Ji Kenn	
<b>Pre-condition:</b>		User is logged in to the system.			<b>Test execution date:</b>		07-09-2023	
Test Case#	Test Summary	Test Case	Test steps	Test Data	Expected result	Post Condition	Actual result	Status
TC_VIEW_NEWS_F	To validate the view	View a list of posts based	1. Click on the “Sort	1. Date: 2 weeks before	The system shows a list of	User are able to see a list of	A list of posts from the oldest to	Pass

EED_1	news feed functionalit y.	on date and the order of the post.	post by date” select input field 2. Select a sort option from the “Sort post by date” options. 3. Click on the “Sort post by order” select input field 4. Select a sort option from the	2. Order: Old -> news	post from the oldest to the newest that are posted within this past 2 weeks.	post from the oldest to the newest that are posted within this past 2 weeks.	the newest that are posted within this past 2 weeks are shown.	
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			“Sort post by order” options.					
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### 7.5.2 Unit Test Case for Admin Side Module

Table 7.16: Test case for unit testing - Manage user

<b>Project Name:</b>		Web-based social networking system			<b>Test designed by:</b>		Ho Ji Kenn	
<b>Test Case ID:</b>		TC-015			<b>Test designed date:</b>		07-09-2023	
<b>Test Case Title:</b>		Manage user test case			<b>Test executed by:</b>		Ho Ji Kenn	
<b>Pre-condition:</b>		Admin is logged in to the system.			<b>Test execution date:</b>		08-09-2023	
Test Case#	Test Summary	Test Case	Test steps	Test Data	Expected result	Post Condition	Actual result	Status
TC_MAN AGE_USE R_1	To validate the manage user	Add a user.	1. Click on the “Add User”	1. Student ID: 2004965 2. Identity card:	The system display an alert message	Admin successfully added a user.	An alert message showing “The user has been	Pass

	functionalit y.		button. 2. Enter the student ID 3. Enter Identity card number 4. Enter name 5. Enter email 6. Enter phone number 7. Select date of email verification	011111-11-1111 3. Name: Ho Ji Kenn 4. Email: hojikenn@gmail .com 5. Phone number: 0111111111 6. Email verification date: 15/05/2023 7. Faculty: LKC FES 8. Course: Bachelor of Science (Honours)	showing user successfully added to the system.		created successfully.” is displayed.	
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			8. Enter faculty 9. Select course 10. Enter gender 11. Select date of birth 12. Select marital status 13. Select nationality 14. Choose profile picture 15. Enter personal	Software Engineering 9. Gender: Male 10. Date of birth: 05/12/2001 11. Marital status: Single 12. Nationality: Malaysian 13. User's profile picture: Jikenn.jpg 14. Personal login phrase: I love UTAR 15. Password: Jikenn@0000				
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			login phrase 16. Enter password 17. Enter password again 18. Enter address 19. Enter state 20. Enter postal code 21. Enter country 22. Select “Add” button.	16. Address: 11, Jalan Tun Razak 17. State: Selangor 18. Postal code: 40158 19. Country: Malaysia				
TC_MAN		Delete a	1. Select the	-	The system	Admin	The selected user	Pass

AGE_USE R_2		specific user.	“Delete” link on user’s id, “2”. 3. Select “Confirm” button.		delete the selected user from the user list.	successfully deleted the user.	is deleted from the user list displaying an alert message showing “The selected user has been deleted successfully.”.	
TC_MAN AGE_USE R_3		Edit any personal details of a specific user.	1. Select the “Edit” link on user’s id, “10”. 2. Select the “Profile” category. 3 Edit any personal details.	1. Phone number: 0558241896 2. Marital status: Single 3. Nationality: Malaysian 4. Address: 31, Jalan Pehah alah 5. State:	The system shows an alert message showing that the selected user’s personal details have been updated.	Admin successfully modify selected user’s personal details.	Selected user’s personal details were updated successfully and an alert message showing “Successfully modified” was displayed.	Pass

			4. Click on “Edit” button.	Selangor 6. Postal code: 41115 7. Country: Malaysia				
TC_MAN AGE_USE R_4		Add an education background to a specific user.	1. Select the “Edit” link on user’s id, “15”. 2. Select the “Education” category. 3. Select the level of qualification 4. Select field of	1. Level of qualification: Bachelor 2. Field of study: Computer Science/Information technology 3. Major: Bachelor of Science (Hons) Software Engineering 4. Grade: Merit	The system shows an alert message showing the education background has been added successfully to the selected user.	Admin successfully added an education background to the selected user.	An education background has been added to the selected user and listed under selected user’s education background list while the system display an alert message showing “Successfully added”.	Pass



			<p>study</p> <p>5. Enter major</p> <p>6. Enter grade</p> <p>7. Enter institution</p> <p>8. Specify graduation month</p> <p>9. Select country</p> <p>10. Click on “Add” button.</p>	<p>5. Institution: Sunway University</p> <p>6. Graduation date: December 2021</p> <p>7. Country: Malaysia</p>				
TC_MAN AGE_USE R_5		Delete a specific education	1. Select the “Edit” link on user’s id,	-	The system display a pop up modal when	Admin successfully deleted an	An education background from the selected user’s	Pass

		background from user's education background list.	<p>“6”.</p> <p>2. Select the “Education” category.</p> <p>3. Click on the “trash can” icon on education background number “2”.</p> <p>4. Select “Confirm” button.</p>		admin clicks on the “trash can” icon and the selected education background is deleted from the selected user's education background list.	education background fom user's education background list.	education background list has been deleted by the admin successfully.	
TC_MAN AGE_USE R_6		Add a work experience to a specific user.	1. Select the “Edit” link on user's id, “7”.	1. Company name: Google 2. Position: Senior	The system adds a work experience to the selected	Admin successfully added a work experience to	A work experience has been added successfully to	Pass

			<p>1. Select the “Work Experience” category.</p> <p>2. Enter company name</p> <p>3. Enter job position</p> <p>4. Enter job description / responsibility</p> <p>5. Enter location of company</p> <p>6. Enter start year</p>	<p>developer</p> <p>3. Job description/responsibility: Help junior in developing coding mindset, Debugging, and etc</p> <p>4. Location of company: USA</p> <p>5. Start year: 2000</p> <p>6. End year: 2010</p>	<p>user’s work experiences list.</p>	<p>the selected user.</p>	<p>the selected user by the admin.</p>	
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			7. Specify end year 8. Click on “Add” button.					
TC_MAN AGE_USE R_7		Delete a specific work experience from a specific user’s work experience list.	1. Select the “Edit” link on user’s id, “8”. 2. Select the “Work Experience” category. 3. Click on the “trash can” icon on work experience	-	The system display a pop up modal when admin clicks on the “trash can” icon and the selected education background is deleted from the selected user’s work experience list.	Admin successfully deleted an work experience fom user’s work experience list.	A work experience from the selected user’s work experience list has been deleted by the admin successfully.	Pass

			number “3”. 4. Select “Confirm” button.					
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Table 7.17: Test case for unit testing - Manage post

<b>Project Name:</b>		Web-based social networking system			<b>Test designed by:</b>		Ho Ji Kenn	
<b>Test Case ID:</b>		TC-016			<b>Test designed date:</b>		07-09-2023	
<b>Test Case Title:</b>		Manage post test case			<b>Test executed by:</b>		Ho Ji Kenn	
<b>Pre-condition:</b>		Admin is logged in to the system.			<b>Test execution date:</b>		08-09-2023	
Test Case#	Test Summary	Test Case	Test steps	Test Case#	Test Summary	Test Case	Test steps	Status
TC_MANAGE_POST_1	To validate the manage post functionality.	Add a new post.	1. Click o the “Add post” button 2. Enter the caption	TC_MANAGE_POST_1	To validate the manage post functionality.	Add a new post.	1. Click o the “Add post” button 2. Enter the caption 3. Insert an image	Pass

			3. Insert an image 4. Click on the “POST” button				4. Click on the “POST” button	
TC_MAN AGE_POS T_2		Edit the details of a specific post.	1. Click on the “Edit” link on the post id “1”. 2. Edit any details of the selected post. 3. Click the “Confirm change” button.	1. Caption: Hi there 2. Tick to remove image: true 3. Image: null	The system will show a pop up modal showing details of the selected post after the “Edit” link is clicked and post is updated after admin confirm the changes.	The selected post will be updated in the list of posts.	The details of the selected post is updated successfully and an alert message showing “The selected post has been updated successfully.”	Pass
TC_MAN		Delete a	1. Click on	-	The system will	The selected	The post has been	Pass

AGE_POS T_3		specific post.	the “Delete” link on the post id “5”. 2. Click the “DELETE” button.		shows a pop up modal showing details of the selected post after the “Delete” link is clicked and post is deleted after admin confirm to delete.	post will be deleted in the list of posts.	successfully deleted from the list of posts and an alert message showing “The selected post has been deleted successfully.” is displayed.	
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Table 7.18: Test case for unit testing - Manage job

<b>Project Name:</b>		Web-based social networking system			<b>Test designed by:</b>		Ho Ji Kenn	
<b>Test Case ID:</b>		TC-017			<b>Test designed date:</b>		07-09-2023	
<b>Test Case Title:</b>		Manage job test case			<b>Test executed by:</b>		Ho Ji Kenn	
<b>Pre-condition:</b>		User is logged in to the system.			<b>Test execution date:</b>		08-09-2023	
<b>Test</b>	<b>Test</b>	<b>Test Case</b>	<b>Test steps</b>	<b>Test Data</b>	<b>Expected result</b>	<b>Post</b>	<b>Actual result</b>	<b>Status</b>

Case#	Summary					Condition		
TC_MAN AGE_JOB _1	To validate the manage post functionalit y.	Add a job.	1. Select the “Add job” function. 2. Enter company name 3. Enter email 4. Select industry 5. Enter position 6. Select employment type 7. Enter website link	1. Company name: Company test Sdn Bhd 2. Email: employer@emai l.com 3. Industry: Education 4. Position: Manager 5. Employment type: Full time 6. Website link: https://company- ltd.com 7. Company address:7e,	The system add a job to the job list and display an alert message.	Admin successfully added a job.	A job has successfully added by the admin to the job list and an alert message showing “The job has been created successfully”.	



			8. Enter company address 9. Enter company background 10. Enter minimum salary 11. Enter maximum salary 12. Choose the date of deadline 13. Add job requirement 14. Add job	Setiawan 8. Company background: This company was founded in 2002 9. Minimum salary: 1500 10. Maximum salary: 3000 11. Deadline: 10/10/2023 12. Job requirement: Need to be smart 13. Job responsibility:				
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			responsibility 15. Select the “Add” button.	Help senior in debugging code				
TC_MAN AGE_JOB _2		Edit the details of a specific job.	1. Select the “Edit” link of job’s id, “5”. 2. Enter company name 3. Enter email 4. Select industry 5. Enter position	1. Company name: Company test again Sdn Bhd 2. Email: employer2@email.com 3. Industry: IT / Computer - Software 4. Position: Senior developer	The system will update the job’s details and display an alert message to the admin.	Admin successfully updated a specific job in the job list.	The selected job has been updated successfully by the admin and the system display an alert message showing “The job has been updated successfully.”.	Pass

			<p>6. Select employment type</p> <p>7. Enter website link</p> <p>8. Enter company address</p> <p>9. Enter company background</p> <p>10. Enter minimum salary</p> <p>11. Enter maximum salary</p> <p>12. Choose</p>	<p>5. Employment type: Full time</p> <p>6. Website link: <a href="https://company-ltd.com">https://company-ltd.com</a></p> <p>7. Company address: 7e, Setiawan</p> <p>8. Company background: This company was founded in 2002</p> <p>9. Minimum salary: 1500</p> <p>10. Maximum salary: 3000</p> <p>11. Deadline:</p>				
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			the date of deadline 12. Job 13. Add job requirement 14. Add job responsibility 15. Select the "Add" button.	10/10/2023 12. Job requirement: Need to be smart 13. Job responsibility: Help senior in debugging code				
TC_MAN AGE_JOB _3		Delete a specific job.	1. Select the "Delete" link of a job whose id is 15. 2. Select "Confirm" button.	-	The system will display a pop up modal once admin clicks on the "Delete" link and selected job is deleted from the job list once	Admin successfully deleted a job from the job list.	The selected job has been deleted from the job list and an alert message showing "The job has been deleted successfully" is	Pass

					admin confirms to delete.		displayed.	
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Table 7.19: Test case for unit testing - Manage news

<b>Project Name:</b>		Web-based social networking system			<b>Test designed by:</b>		Ho Ji Kenn	
<b>Test Case ID:</b>		TC-018			<b>Test designed date:</b>		07-09-2023	
<b>Test Case Title:</b>		Manage news test case			<b>Test executed by:</b>		Ho Ji Kenn	
<b>Pre-condition:</b>		User is logged in to the system.			<b>Test execution date:</b>		08-09-2023	
Test Case#	Test Summary	Test Case	Test steps	Test Data	Expected result	Post Condition	Actual result	Status
TC_MANAGE_NEWS_1	To validate the manage news functionality.	Add a news.	1. Click on the “Add news” button 2. Enter the title of the news	1. Title of the news: UTAR Alumni gathering 2. Description of the news: UTAR Alumni holds	The system will navigate the admin to the add news page once admin clicks the “Add news” button and news	The news is added into the list of news.	The news has been successfully added to the list of news and an alert message showing “The news has been	Pass

			<p>3. Enter the description of the news</p> <p>4. Select an image for the poster of the news</p> <p>5. Click on the “Add” button</p>	<p>every year during this time around, its fun to meet u guys and looking forward to meet yall</p> <p>3. Poster image: Alumni-gathering.jpg</p>	<p>is added after admin entered all the required field and click on the “Add” button.</p>		<p>created successfully.” is displayed.</p>	
TC_MAN AGE_NE WS_2		Edit details of a specific news.	<p>1. Click on the “Edit” link on the news id “10”.</p> <p>2. Edit any details of</p>	<p>1. Title of the news: 2022-UTAR Alumni gathering</p> <p>2. Description of the news: UTAR Alumni holds</p>	<p>The system will navigate the admin to the edit news page once admin clicks the “Edit” link and news is updated</p>	The selected news is updated.	The details of the selected news is updated and an alert message showing “The news has been edited	Pass

			the selected news. 3. Click the “Edit” button.	every year during this time around, its fun to meet u guys and looking forward to meet yall 3. Poster image: Alumni-2022-gathering.jpg	once admin clicks on the “Edit” button.		successfully.’ is displayed.	
TC_MAN AGE_NE WS_3		Delete a specific news.	1. Click on the “Delete” link on the news id “12”. 2. Click the “DELETE”	-	The system will display a pop up modal showing the details of the selected news and news is deleted once	The selected news is deleted.	The selected news is deleted from the list of news and an alert message showing “The selected news has been	Pass

			button.		admin clicks on the “DELETE” button.		deleted successfully.” Is displayed.	
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Table 7.20: Test case for unit testing - Manage event

<b>Project Name:</b>		Web-based social networking system			<b>Test designed by:</b>		Ho Ji Kenn	
<b>Test Case ID:</b>		TC-019			<b>Test designed date:</b>		07-09-2023	
<b>Test Case Title:</b>		Manage event test case			<b>Test executed by:</b>		Ho Ji Kenn	
<b>Pre-condition:</b>		User is logged in to the system.			<b>Test execution date:</b>		08-09-2023	
Test Case#	Test Summary	Test Case	Test steps	Test Data	Expected result	Post Condition	Actual result	Status
TC_MAN AGE_EVE NT_1	To validate the manage events functionality.	Add an event.	1. Click o the “Add event” button 2. Enter the title of the	1. Title of the event: UTAR splash mania 2. Event deadline: 12/09/2023	The system will navigates the admin to the add event page once admin clicks the ”Add event”	The event is added into the list of events.	The event has been successfully added to the list of events and an alert message showing “The	Pass



			<p>event</p> <p>3. Select the deadline of event</p> <p>4. Enter the description of event</p> <p>5. Enter the google form link</p> <p>6. Enter the event start date</p> <p>7. Enter the event end date</p> <p>8. Select an image for</p>	<p>3. Description of the news: Invite you guys in joining splash mania that was held by UTAR</p> <p>4. Google form link: <a href="https://google-form.com">https://google-form.com</a></p> <p>5. Start date of event: 15/09/2023</p> <p>6. End date of event: 18/09/2023</p> <p>7. Poster image: Splash-</p>	<p>button and event is added after admin entered all the required field and click on the “Add” button.</p>		<p>event has been created successfully.” is displayed.</p>	
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			the poster of the event 9. Click on the “Add” button	mania.jpg				
TC_MAN AGE_EVE NT_2		Edit details of a specific event.	1. Click on the “Edit” link on the post id “5”. 2. Edit any details of the selected event. 3. Click the “Edit” button.	1. Title of the event: UTAR splash mania 2023 2. Event deadline: 11/09/2023 3. Description of the news: Invite you guys in joining splash mania that was	The system will navigate the admin to the edit event page once admin clicks the “Edit” link and event is updated once admin clicks on the “Edit” button.	The selected event is updated.	The details of the selected event is updated and an alert message showing ‘The event has been edited successfully.’ is displayed.	Pass

				<p>held by UTAR ya</p> <p>4. Google form link: <a href="https://google-form-splash-mania.com">https://google- form-splash- mania.com</a></p> <p>5. Start date of event: 14/09/2023</p> <p>6. End date of event: 17/09/2023</p> <p>7. Poster image: Splash-mania- poster.jpg</p>					
TC_MAN		Delete	a	1. Click on	-	The system will	The selected	The selected	Pass

AGE_EVE NT_3		specific event.	the “Delete” link on the event id “12”. 2. Click the “DELETE” button.		display a pop up modal showing the details of the selected event and event is deleted once admin clicks on the “DELETE” button.	event is deleted.	event is deleted from the list of events and an alert message showing “The selected event has been deleted successfully.” Is displayed.	
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**7.6 User Acceptance Test**

User acceptance testing was also conducted for this project. This type of testing validates whether the system works as expected in the real-world scenarios and is often tested by the end-users of the system (Gillis, 2022). In this project, six individuals have been selected to perform the user acceptance test to test all the modules covered by the system that are from the user and admin side. Three of the individuals are assigned to perform the user acceptance test for user side modules while another three individuals will perform the user acceptance test for admin side modules. In section 7.3.1 and section 7.3.2 shows the templates used for the user acceptance test cases for both admin and user side modules and the results of the UAT test cases will be displayed in the appendix. If the participants are able to perform the test successfully, the status of the test will be marked as “Pass”; In contrast, the status of the test will be marked as “Fail”.

### 7.6.1 User Acceptance Test Case for User Side Module

Table 7.21: Test case for UAT - Login account

<b>Test Case ID:</b>	UAT-U-001		
<b>Test Module:</b>	Login account		
<b>Participant's Name:</b>			
<b>Test Execution Date:</b>			
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>	
Able to show personal login phrase of entered id			
Able to lock the login attempt after exceeding maximum login attempt			
Able to show a personal login phrase even if entered id is not existed			
Able to attempt login after login attempt being locked			

Table 7.22: Test case for UAT - Register account

<b>Test Case ID:</b>	UAT-U-002
<b>Test Module:</b>	Register account

<b>Participant's Name:</b>		
<b>Test Execution Date:</b>		
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>
Able to register an account using valid student ID and IC		
Able to show error message when registration credentials are invalid		
Able to show password policies		

Table 7.23: Test case for UAT - Make donation

<b>Test Case ID:</b>	UAT-U-003	
<b>Test Module:</b>	Make donation	
<b>Participant's Name:</b>		
<b>Test Execution Date:</b>		
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>
Able to make a donation		

Table 7.24: Test case for UAT - Apply career advisory session

<b>Test Case ID:</b>	UAT-U-004
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<b>Test Module:</b>	Apply career advisory session		
<b>Participant's Name:</b>			
<b>Test Execution Date:</b>			
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>	
Able to view career advisory session services and application guidelines.			

Table 7.25: Test case for UAT - View institutional information

<b>Test Case ID:</b>	UAT-U-005		
<b>Test Module:</b>	View institutional information		
<b>Participant's Name:</b>			
<b>Test Execution Date:</b>			
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>	
Able to view list of news			
Able to view details of news			
Able to view list of events			
Able to view details of event			

Able to sort the news and events list based on year		
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Table 7.26: Test case for UAT - Manage profile

<b>Test Case ID:</b>	UAT-U-006	
<b>Test Module:</b>	Manage profile	
<b>Participant's Name:</b>		
<b>Test Execution Date:</b>		
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>
Able to view personal details		
Able to view personal education background list		
Able to view personal work experiences		
Able to edit personal details		
Able to add an education background		
Able to delete a personal education background		
Able to add a personal work experience		
Able to delete a personal work experience		



Table 7.27: Test case for UAT - View job list

<b>Test Case ID:</b>	UAT-U-007		
<b>Test Module:</b>	View job list		
<b>Participant's Name:</b>			
<b>Test Execution Date:</b>			
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>	
Able to view job list			
Able to view job's details			
Able to sort the job list based on industry and employment type			

Table 7.28: Test case for UAT - Apply job

<b>Test Case ID:</b>	UAT-U-008		
<b>Test Module:</b>	Apply job		
<b>Participant's Name:</b>			
<b>Test Execution Date:</b>			
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>	
Able to apply a job through email			

Able to view generated resume		
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Table 7.29: Test case for UAT - Manage own post

<b>Test Case ID:</b>	UAT-U-009	
<b>Test Module:</b>	Manage own post	
<b>Participant's Name:</b>		
<b>Test Execution Date:</b>		
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>
Able to add a post		
Able to edit own post		
Able to delete own post		

Table 7.30: Test case for UAT - React post

<b>Test Case ID:</b>	UAT-U-010	
<b>Test Module:</b>	React post	
<b>Participant's Name:</b>		
<b>Test Execution Date:</b>		

<b>Test Description</b>	<b>Status</b>	<b>Comment</b>
Able to like a post		
Able to dislike a post		

Table 7.31: Test case for UAT - Leave comment

<b>Test Case ID:</b>	UAT-U-011	
<b>Test Module:</b>	Leave comment	
<b>Participant's Name:</b>		
<b>Test Execution Date:</b>		
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>
Able to add a comment on a post		

Table 7.32: Test case for UAT - Chat

<b>Test Case ID:</b>	UAT-U-012	
<b>Test Module:</b>	Chat	
<b>Participant's Name:</b>		
<b>Test Execution Date:</b>		

<b>Test Description</b>	<b>Status</b>	<b>Comment</b>
Able to create a conversation with a user		
Able to send a message to another user in real time		
Able to receive a message from another user in real time		
Able to receive notification		

Table 7.33: Test case for UAT - Search user

<b>Test Case ID:</b>	UAT-U-013	
<b>Test Module:</b>	Search user	
<b>Participant's Name:</b>		
<b>Test Execution Date:</b>		
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>
Able to search for a user based on name		
Able to view list of users based on the input		

Table 7.34: Test case for UAT - View user details

<b>Test Case ID:</b>	UAT-U-014
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<b>Test Module:</b>	View user details		
<b>Participant's Name:</b>			
<b>Test Execution Date:</b>			
<b>Test Description</b>	<b>Status</b>		<b>Comment</b>
Able to view details of a user.			

Table 7.35: Test case for UAT - View news feed

<b>Test Case ID:</b>	UAT-U-015		
<b>Test Module:</b>	View news feed		
<b>Participant's Name:</b>			
<b>Test Execution Date:</b>			
<b>Test Description</b>	<b>Status</b>		<b>Comment</b>
Able to view list of shared posts			
Able to sort the news feed based on date and order			

## 7.6.2 User Acceptance Test Case for Admin Side Module

Table 7.36: Test case for UAT - Admin login

<b>Test Case ID:</b>	UAT-A-016		
<b>Test Module:</b>	Admin login		
<b>Participant's Name:</b>			
<b>Test Execution Date:</b>			
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>	
Able to login to the account			
Able to view personal login phrase			

Table 7.37: Test case for UAT - Manage user

<b>Test Case ID:</b>	UAT-A-017		
<b>Test Module:</b>	Manage user		
<b>Participant's Name:</b>			
<b>Test Execution Date:</b>			
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>	

Able to view all users in the user list.		
Able to add a new user		
Able to delete a user from the user list		
Able to edit a specific user's personal details in the user list		
Able to add an education background and work experience to a specific user		
Able to delete a specific education background and work experience from a specific user		
Able to sort the user list by any attribute		

Table 7.38: Test case for UAT - Manage post

<b>Test Case ID:</b>	UAT-A-018		
<b>Test Module:</b>	Manage post		
<b>Participant's Name:</b>			
<b>Test Execution Date:</b>			
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>	
Able to add a post			
Able to delete a post from the post list			
Able to edit a specific post's details in the post list			
Able to sort the post list by any attribute			

Table 7.39: Test case for UAT - Manage job

<b>Test Case ID:</b>	UAT-A-019		
<b>Test Module:</b>	Manage job		
<b>Participant's Name:</b>			
<b>Test Execution Date:</b>			
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>	



Able to add a job		
Able to delete a job from the job list		
Able to edit a specific job's details in the job list		
Able to sort the job list by any attribute		

Table 7.40: Test case for UAT - Manage news

<b>Test Case ID:</b>	UAT-A-020	
<b>Test Module:</b>	Manage news	
<b>Participant's Name:</b>		
<b>Test Execution Date:</b>		
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>
Able to add a news		
Able to delete a news from the news list		
Able to edit details of a specific news in the news list		
Able to sort the news list by any attribute		

Table 7.41: Test case for UAT - Manage event

<b>Test Case ID:</b>	UAT-A-021	
<b>Test Module:</b>	Manage event	
<b>Participant's Name:</b>		
<b>Test Execution Date:</b>		
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>
Able to add an event		
Able to delete an event from the event list		
Able to edit a specific event in the event list		
Able to sort the event list by any attribute		

## 7.7 Usability Testing

There are various ways that could measure the usability of a software nowadays. In this project, System Usability Scale (SUS) is selected for measuring the usability of this system. SUS was created by John Brooke in 1986 and is a widely used standardized questionnaire that helps to evaluate the usability of a system in terms of efficiency, effectiveness, and overall ease of use (Will, 2021). SUS is selected to measure the usability of this system due to SUS can be applicable to any system which is versatile, easy to use, and quick to implement (Bhat, n.d.). Hence, the SUS questionnaire were distributed to 6 of the testers that performed the user acceptance test through google form. Table 7.42 below shows the summarized version of the result collected from each user and the result of the usability test questionnaire are shown in the Appendix.

Table 7.42: SUS Score from each participant and result

Testers	Questions										Score
	1	2	3	4	5	6	7	8	9	10	
1	4	3	4	4	4	4	4	1	4	4	90
2	4	0	4	4	4	4	4	4	4	4	90
3	3	3	3	2	4	4	3	3	4	4	82.5
4	3	3	3	3	3	4	3	3	3	3	77.5
5	4	2	3	3	4	2	4	4	3	2	77.5
6	4	3	4	3	3	4	3	3	3	4	85
<b>Average SUS Score</b>											83.75

As shown in table 7.42, the average SUS score for this system has achieved an average of 83.75 and this score reflect that the user who uses this system has an positive impression on the system's usability. Therefore, the SUS score of 83.75 for this system is considered as excellent as shown in figure 7.1.

SUS Score	Grade	Adjective Rating
> 80.3	A	Excellent
68 – 80.3	B	Good
68	C	Okay
51 – 68	D	Poor
< 51	F	Awful

Figure 7.1: Interpretation of SUS Score (Will, 2021)

## 7.8 Requirement Traceability Matrix

This section emphasizes the traceability between use cases, unit test cases, user acceptance test and the functional requirements that were specified in the previous chapter.

### 7.8.1 Use Case Table

Table 7.43 shows a table that consist of each use cases with corresponding use case ID and name.

Table 7.43: Use case table

Use Case ID	Use Case Name
UC001	Login
UC002	Register
UC003	Make donation
UC004	Manage own post
UC005	View institutional information
UC006	Manage profile
UC007	Apply career advisory session
UC008	View user details
UC009	Search user
UC010	Chat
UC011	View news feed
UC012	Leave comment
UC013	React post
UC014	View job list
UC015	Apply job
UC016	Manage user
UC017	Manage post
UC018	Manage job
UC019	Manage news
UC020	Manage event

## 7.8.2 Functional Requirements Table

Table 7.44 shows a table that consist of each functional requirements with its corresponding functional requirement ID and statement.

Table 7.44: Functional requirements table

<b>Functional Requirement ID</b>	<b>Functional Requirement Statement</b>
FR001	The system shall allow user to login to the system.
FR002	The system shall show the user's personal login phrase after user enters the student id.
FR003	The system shall navigate user to user's home page after successfully login.
FR004	The system shall allow the user to register for an account using student id of UTAR and user's Identity card number.
FR005	The system shall prompt user to fill up details such as name, student id, Identity card number, email, phone number, personal login phrase, password during account registration.
FR006	The system shall allow user to view password policies.
FR007	The system shall allow user to make donation.
FR008	The system shall prompt user to fill up details such as name, email, card number, cvc, expiration month, expiration amount and donation amount.
FR009	The system shall allow user to apply for career advisory session.
FR010	The system shall present several types of career advisory session services and guidelines on how to apply for a session.
FR011	The system shall allow user to view institutional information like news and events.
FR012	The system shall allow user to view more details on a specific news/events.

FR013	The system shall allow user to sort the news/events based on the year of the news/events were posted.
FR014	The system shall allow users to apply for an event via google form.
FR015	The system shall allow user to manage personal details.
FR016	The system shall display several categories of manageable details such as profile, education background, and work experiences.
FR017	The system shall allow user to manage any categories of details.
FR018	The system shall display a job list for user to view.
FR019	The system shall display details of a job that includes company name, company website, industry, employer email, company background, company address, job position, employment type, salary, job requirements, job responsibilities and application deadline.
FR020	The system shall allow user to apply for a job.
FR021	The system shall allow user to submit a job application by sending user's resume that includes details such as education background, work experience and personal details.
FR022	The system shall allow the user to manage own post.
FR023	The system shall allow the user to add a post that will be include in the news feed.
FR024	The system shall allow user to delete a post that is created by the user.
FR025	The system shall allow the user to edit a post that is created by the user.
FR026	The system shall allow user to react to post by liking and disliking a post.
FR027	The system shall allow user to leave comment on a shared post shared on the news feed.

FR028	The system shall allow user to chat with another user.
FR029	The system shall allow the user to search for a user in the system based on user's name.
FR030	The system shall display the search result by displaying the user's name.
FR031	The system shall allow user to view other user's personal details such as name, profile picture, student id, faculty, course, email, gender, date of birth, marital status, nationality, and location.
FR032	The system shall allow user to view post that are created by all the users of the system.
FR033	The system shall allow user to view the number of likes for a post and number of comments on a post.
FR034	The system shall allow admin to login to the system.
FR035	The system shall show the admin's personal login phrase after admin enters the login id.
FR036	The system shall navigate admin to the admin's home page after successfully login.
FR037	The system shall allow admin to manage the user in the system.
FR038	The system shall display a list of users of the system.
FR039	The system shall allow admin to add a user to the system by specifying fields such as student id, identity card number, name, email, phone number, email verification date, faculty, course, gender, date of birth, marital status, nationality, profile picture, personal login phrase, password, address line, state, postal code, country.
FR040	The system shall allow admin to delete a specific user.
FR041	The system shall allow admin to edit a user's details such as personal details, education background, and work experiences.
FR042	The system shall allow admin to manage all the posts that



	were created by all the users of the system.
FR043	The system shall list out all the posts that are created by entire users of the system.
FR044	The system shall allow admin to add a post to the list of post by specifying fields such as caption and image.
FR045	The system shall allow admin to delete a post from the list of posts.
FR046	The system shall allow admin to edit a post's details such as captions and image.
FR047	The system shall allow admin to manage the job in the job list.
FR048	The system shall display a list of job offered in the system.
FR049	The system shall allow admin to add a job to the list of job by specifying the company name, company website, industry, employer email, company background, company address, job position, employment type, minimum salary, maximum salary, job requirements, job responsibilities and application deadline.
FR050	The system shall allow admin to delete a job from the list of jobs.
FR051	The system shall allow admin to edit a job's details such as company name, company website, industry, employer email, company background, company address, job position, employment type, minimum salary, maximum salary, job requirements, job responsibilities and application deadline.
FR052	The system shall allow admin to manage the news.
FR053	The system shall display a list of news for admin to view.
FR054	The system shall enable admin to create a news by specifying the title of the news, description of the news and the poster of the news.
FR055	The system shall allow admin to delete a news.

FR056	The system shall allow admin to perform editing on news' details such as title of the news, description of the news and the poster of the news.
FR057	The system shall allow admin to be able to manage the events.
FR058	The system shall display a list of events for the admin to view.
FR059	The system shall allow admin to create an event by specifying the title of the event, event application deadline, description, google form link, start date of event, end date of event, and poster of the event.
FR060	The system shall allow admin to delete an event.
FR061	The system shall allow admin to edit event's details such as title of the event, event application deadline, description, google form link, start date of event, end date of event, and poster of the event.

### 7.8.3 Traceability Matrix

Table 7.45 demonstrate the traceability matrix that clearly shows the relationship between unit test cases, user acceptance test cases, functional requirements and uses cases that were documented in the previous chapter.

Table 7.45: Traceability matrix

Use Case ID	Functional Requirement ID	Unit Test Case ID	UAT Test Case ID
UC001	FR001, FR002, FR003, FR034, FR035, FR036	TC-001	UAT-U-001, UAT-A-016
UC002	FR004, FR005, FR006	TC-002	UAT-U-002
UC003	FR007, FR008	TC-003	UAT-U-003
UC005	FR011, FR012, FR013, FR014	TC-004	UAT-U-005
UC006	FR015, FR016, FR017	TC-005	UAT-U-006

UC014	FR018, FR019	TC-006	UAT-U-007
UC015	FR020, FR021	TC-007	UAT-U-008
UC004	FR022, FR023, FR024, FR025	TC-008	UAT-U-009
UC013	FR026	TC-009	UAT-U-010
UC012	FR027	TC-010	UAT-U-011
UC010	FR028	TC-011	UAT-U-012
UC009	FR029, FR030	TC-012	UAT-U-013
UC008	FR031	TC-013	UAT-U-014
UC011	FR032, FR033	TC-014	UAT-U-015
UC016	FR037, FR038, FR039, FR040, FR041	TC-015	UAT-A-017
UC017	FR042, FR043, FR044, FR045, FR046	TC-016	UAT-A-018
UC018	FR047, FR048, FR049, FR050, FR051	TC-017	UAT-A-019
UC019	FR052, FR053, FR054, FR055, FR056	TC-018	UAT-A-020
UC020	FR057, FR058, FR059, FR060, FR61	TC-019	UAT-A-021
UC007	FR009, FR010	-	UAT-U-004

## CHAPTER 8

### CONCLUSIONS AND RECOMMENDATIONS

#### 8.1 Introduction

This chapter emphasizes on concluding this project. This project has taken approximately of 7 months to complete from February 2023 to September 2023. In the initiation phase of this project, problem statements of this project were researched which resulted in the identification of project objectives, project scope, proposed solution and approach. In the planning phase, several literature reviews have been conducted that researched on several topics including review on similar existing system, authentication management techniques, and software development methodologies. Requirements have been gathered by conducting the literature review. Next, diagrams such as use case diagram, use case description, system architecture diagram, and system prototype were drawn in the design phase for illustrating the design of the system. In the development phase, the development of the system has been separated into two phase including user side and admin side development. After the development phase has completed, the testing phase is conducted immediately. Several types of testing are implemented during the testing phase involving unit testing, user acceptance test and usability test as discussed in Chapter 7. At the end of this project, the proposed web-based social networking system is developed.

In the following section of this chapter will discuss on the achievement of objectives specified in the previous chapter and the limitation and recommendation of this project.

#### 8.2 Objective Achievement

Fulfilling the objectives that were established in the beginning of this project are the main purpose of this project. Hence, all the objectives of this project have been achieved and the details are described below:

The first objective is to analyse how social networking sites work as a complementary tool in engaging society in higher educational institutions.

This objective is achieved through the research on the problem statement and proposed solution in Chapter 1 and the literature review on existing Alumni system in Chapter 2. As discussed and analysed in the section of problem statement, proposed solution and the literature review in existing Alumni system, social networking sites are far more engaging due to its nature of interactivity that allow user to maximize the interaction with each other and may obtain information quickly in a centralized platform. In result, social networking sites are more effective in engaging society in higher educational institution than the use of typical Alumni system.

The second objective is to develop an interactive web-based social network for UTAR Alumni with a better authentication security management system and defined features. This objective is achieved by developing a web-based social networking system that provides interactive features such as chat, react post, create post, view news feed, leave comment on post and many other features that were defined in the functional requirements. The developed web-based social networking system has also implemented a strong authentication security management system which includes techniques such as personal login phrase technique, lockout policy, and password policy.

The third objective which is to validate functionalities of the web-based application through a user acceptance test. This objective is also achieved by developing a comprehensive user acceptance test cases and inviting six participants to act as the tester to perform the user acceptance test as shown in Chapter 7.

### 8.3 Limitation and Recommendation

Even though the developed social networking system has already met the objectives of this project, there are still limitations found in the system. This section discusses on the limitation that were found in this system and the suggested recommendation to improve it in the future.

Table 8.1: Limitations of project and Recommendations for improvement

No.	Limitation	Recommendation
1.	Lack of voice / video	The system could include a voice/video

	calling feature	calling feature that would enhance the interactivity between users of the system as user is able to call another user to talk to with instead of sending message. By including this feature, users are able to talk to another user when they have their hands full which provides conveniency to the user. Other than that, it is an essential feature for this system as those Alumni who are looking for employee for their company may directly interview the user through the system instead of going to other platform such as Zoon, Microsoft Team to conduct the interview session.
2.	Lack of group chat feature	Group chat feature is one of the main features for a social networking application. The system could include a group chat feature that allow multiples user to be in a conversation room instead of only one-to-one communication. With this feature, user can simultaneously convey important message to multiple users at the same time without sending to each user one by one.
3.	Lack of report post feature	As the current system does not restrict user from posting any content, some users may abuse the privileges by posting inappropriate content like violent and pornographic content. Therefore, the system could include a feature that allows user to report the post if the user found that the content is inappropriate. And then, admin may view the reported post and delete the post accordingly.

4.	Personalized post recommendation is not included	The system may also integrate a personalized post recommendation algorithm that helps to recommend post to user based on their preferences. The algorithm may dynamically recommend post to the user based on user's course name, faculty name, or liked post. Therefore, users are able to view preferred post in the news feed page.
5.	Lack of graphical data display in admin side	The system may include some graphic data display through some data visualization tools in the dashboard. By including graphical data visualization, admin is able to analyse the data efficiently that could help in decision making to make the system performance better. Admin could also quickly address to new trends and customise the content recommended to the users.

#### 8.4 Summary

In summary, this chapter concluded this project by discussing the overall task that have been carried out in this project, the achievement of objectives, the limitations that have been found in this project and several recommendations that could improve this project in the future.

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[article#advantages\\_and\\_disadvantages\\_of\\_scrum\\_project\\_management](https://www.simplilearn.com/scrum-project-management-article#advantages_and_disadvantages_of_scrum_project_management)>

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[Addressing-too-many-failed-login-](https://www.techtarget.com/searchsecurity/answer/Account-lockout-policy-Addressing-too-many-failed-login-attempts#:~:text=Account%20lockout%20policy%20features&text=These%20policy%20settings%20help%20prevent,attacks%20on%20an%20organization's%20network)

[attempts#:~:text=Account%20lockout%20policy%20features&text=These%20](https://www.techtarget.com/searchsecurity/answer/Account-lockout-policy-Addressing-too-many-failed-login-attempts#:~:text=Account%20lockout%20policy%20features&text=These%20policy%20settings%20help%20prevent,attacks%20on%20an%20organization's%20network)

[policy%20settings%20help%20prevent,attacks%20on%20an%20organization'](https://www.techtarget.com/searchsecurity/answer/Account-lockout-policy-Addressing-too-many-failed-login-attempts#:~:text=Account%20lockout%20policy%20features&text=These%20policy%20settings%20help%20prevent,attacks%20on%20an%20organization's%20network)

[s%20network](https://www.techtarget.com/searchsecurity/answer/Account-lockout-policy-Addressing-too-many-failed-login-attempts#:~:text=Account%20lockout%20policy%20features&text=These%20policy%20settings%20help%20prevent,attacks%20on%20an%20organization's%20network)> [Accessed: 9 September 2023].

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[FA\)%3F,\(credential\)%20to%20a%20username.](https://delinea.com/blog/sfa-mfa-difference#:~:text=What%20is%20Single%2Dfactor%20Authentication%20(SFA)%3F,(credential)%20to%20a%20username.)> [Accessed: 15 March 2023].

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## APPENDICES

### APPENDIX A: SUS Questionnaires

Email *						
kennyong628@1utar.my						
I think I would like to use this system regularly. *						
	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Strongly Agree
I found the social networking system unnecessarily complex. *						
	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree
I thought the social networking system was easy to use. *						
	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Strongly Agree
I think that I would need the support of a technical person to be able to use this social networking system. *						
	1	2	3	4	5	
Strongly Disagree	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree
I found the various functions in the social networking system were well integrated. *						
	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Strongly Agree
I thought there was too much inconsistency in this social networking system. *						
	1	2	3	4	5	
Strongly Disagree	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree

I imagine that most people would learn to use this social networking system very quickly. \*

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Strongly Agree

I found the social networking system very awkward to use. \*

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Strongly Agree

I felt very confident using the social networking system. \*

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Strongly Agree

I needed to learn a lot of things before I could get going with this social networking system. \*

	1	2	3	4	5	
Strongly Disagree	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree

Email \*

I think I would like to use this system regularly. \*

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Strongly Agree

I found the social networking system unnecessarily complex. \*

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Strongly Agree

I thought the social networking system was easy to use. \*

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Strongly Agree

I think that I would need the support of a technical person to be able to use this social networking system. \*

	1	2	3	4	5	
Strongly Disagree	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree

I found the various functions in the social networking system were well integrated. \*

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Strongly Agree

I thought there was too much inconsistency in this social networking system. \*

	1	2	3	4	5	
Strongly Disagree	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree

I imagine that most people would learn to use this social networking system very quickly. \*

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Strongly Agree

I found the social networking system very awkward to use. \*

	1	2	3	4	5	
Strongly Disagree	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree

I felt very confident using the social networking system. \*

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Strongly Agree

I needed to learn a lot of things before I could get going with this social networking system. \*

	1	2	3	4	5	
Strongly Disagree	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree



Email \*

sixthmikey@gmail.com

I think I would like to use this system regularly. \*

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Strongly Agree

I found the social networking system unnecessarily complex. \*

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree

I thought the social networking system was easy to use. \*

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Strongly Agree

I think that I would need the support of a technical person to be able to use this social networking system. \*

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree

I found the various functions in the social networking system were well integrated. \*

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Strongly Agree

I thought there was too much inconsistency in this social networking system. \*

	1	2	3	4	5	
Strongly Disagree	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree

I imagine that most people would learn to use this social networking system very quickly. \*

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Strongly Agree

I found the social networking system very awkward to use. \*

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree

I felt very confident using the social networking system. \*

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Strongly Agree

I needed to learn a lot of things before I could get going with this social networking system. \*

	1	2	3	4	5	
Strongly Disagree	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree

Email \*

alvinhai@1utar.my

I think I would like to use this system regularly. \*

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Strongly Agree

I found the social networking system unnecessarily complex. \*

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree

I thought the social networking system was easy to use. \*

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Strongly Agree

I think that I would need the support of a technical person to be able to use this social networking system. \*

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree

I found the various functions in the social networking system were well integrated. \*

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Strongly Agree

I thought there was too much inconsistency in this social networking system. \*

	1	2	3	4	5	
Strongly Disagree	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree

I imagine that most people would learn to use this social networking system very quickly. \*

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Strongly Agree

I found the social networking system very awkward to use. \*

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree

I felt very confident using the social networking system. \*

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Strongly Agree

I needed to learn a lot of things before I could get going with this social networking system. \*

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree

Email *						
janicetan822@gmail.com						
I think I would like to use this system regularly. *						
	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Strongly Agree
I found the social networking system unnecessarily complex. *						
	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree
I thought the social networking system was easy to use. *						
	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Strongly Agree
I think that I would need the support of a technical person to be able to use this social networking system. *						
	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree
I found the various functions in the social networking system were well integrated. *						
	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Strongly Agree
I thought there was too much inconsistency in this social networking system. *						
	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree

I imagine that most people would learn to use this social networking system very quickly. *						
	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Strongly Agree

I found the social networking system very awkward to use. *						
	1	2	3	4	5	
Strongly Disagree	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree

I felt very confident using the social networking system. *						
	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Strongly Agree

I needed to learn a lot of things before I could get going with this social networking system. *						
	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree

Email *						
sunshuai0604@gmail.com.....						
I think I would like to use this system regularly. *						
	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Strongly Agree
I found the social networking system unnecessarily complex. *						
	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree
I thought the social networking system was easy to use. *						
	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Strongly Agree
I think that I would need the support of a technical person to be able to use this social networking system. *						
	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree
I found the various functions in the social networking system were well integrated. *						
	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Strongly Agree
I thought there was too much inconsistency in this social networking system. *						
	1	2	3	4	5	
Strongly Disagree	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree

I imagine that most people would learn to use this social networking system very quickly. *						
	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Strongly Agree

---

I found the social networking system very awkward to use. *						
	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree

---

I felt very confident using the social networking system. *						
	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Strongly Agree

---

I needed to learn a lot of things before I could get going with this social networking system. *						
	1	2	3	4	5	
Strongly Disagree	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree



## APPENDIX B: User Acceptance Test Results

Tester 1:

<b>Test Case ID:</b>	UAT-U-001	
<b>Test Module:</b>	Login account	
<b>Participant's Name:</b>	Yong Zheng Heng	
<b>Test Execution Date:</b>	08-09-2023	
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>
Able to show personal login phrase of entered id	Pass	
Able to lock the login attempt after exceeding maximum login attempt	Pass	
Able to show a personal login phrase even if entered id is not existed	Pass	
Able to attempt login after login attempt being locked	Pass	

<b>Test Case ID:</b>	UAT-U-002		
<b>Test Module:</b>	Register account		
<b>Participant's Name:</b>	Yong Zheng Heng		
<b>Test Execution Date:</b>	08-09-2023		
<b>Test Description</b>	<b>Status</b>		<b>Comment</b>
Able to register an account using valid student ID and IC	Pass		
Able to show error message when registration credentials are invalid	Pass		
Able to show password policies	Pass		

<b>Test Case ID:</b>	UAT-U-003		
<b>Test Module:</b>	Make donation		
<b>Participant's Name:</b>	Yong Zheng Heng		
<b>Test Execution Date:</b>	08-09-2023		
<b>Test Description</b>	<b>Status</b>		<b>Comment</b>
Able to make a donation	Pass		

<b>Test Case ID:</b>	UAT-U-004	
<b>Test Module:</b>	Apply career advisory session	
<b>Participant's Name:</b>	Yong Zheng Heng	
<b>Test Execution Date:</b>	08-09-2023	
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>
Able to view career advisory session services and application guidelines.	Pass	

<b>Test Case ID:</b>	UAT-U-005	
<b>Test Module:</b>	View institutional information	
<b>Participant's Name:</b>	Yong Zheng Heng	
<b>Test Execution Date:</b>	08-09-2023	
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>
Able to view list of news	Pass	
Able to view details of news	Pass	
Able to view list of events	Pass	
Able to view details of event	Pass	
Able to sort the news and events list based on year	Pass	

<b>Test Case ID:</b>	UAT-U-006	
<b>Test Module:</b>	Manage profile	
<b>Participant's Name:</b>	Yong Zheng Heng	
<b>Test Execution Date:</b>	08-09-2023	
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>
Able to view personal details	Pass	
Able to view personal education background list	Pass	
Able to view personal work experiences	Pass	
Able to edit personal details	Pass	
Able to add an education background	Pass	
Able to delete a personal education background	Pass	
Able to add a personal work experience	Pass	
Able to delete a personal work experience	Pass	

<b>Test Case ID:</b>	UAT-U-007		
<b>Test Module:</b>	View job list		
<b>Participant's Name:</b>	Yong Zheng Heng		
<b>Test Execution Date:</b>	08-09-2023		
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>	
Able to view job list	Pass		
Able to view job's details	Pass		
Able to sort the job list based on industry and employment type	Pass		

<b>Test Case ID:</b>	UAT-U-008		
<b>Test Module:</b>	Apply job		
<b>Participant's Name:</b>	Yong Zheng Heng		
<b>Test Execution Date:</b>	08-09-2023		
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>	
Able to apply a job through email	Pass		
Able to view generated resume	Pass		

<b>Test Case ID:</b>	UAT-U-009		
<b>Test Module:</b>	Manage own post		
<b>Participant's Name:</b>	Yong Zheng Heng		
<b>Test Execution Date:</b>	08-09-2023		
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>	
Able to add a post	Pass		
Able to edit own post	Pass		
Able to delete own post	Pass		

<b>Test Case ID:</b>	UAT-U-010		
<b>Test Module:</b>	React post		
<b>Participant's Name:</b>	Yong Zheng Heng		
<b>Test Execution Date:</b>	08-09-2023		
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>	
Able to like a post	Pass		
Able to dislike a post	Pass		

<b>Test Case ID:</b>	UAT-U-011	
<b>Test Module:</b>	Leave comment	
<b>Participant's Name:</b>	Yong Zheng Heng	
<b>Test Execution Date:</b>	08-09-2023	
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>
Able to add a comment on a post	Pass	

<b>Test Case ID:</b>	UAT-U-012	
<b>Test Module:</b>	Chat	
<b>Participant's Name:</b>	Yong Zheng Heng	
<b>Test Execution Date:</b>	08-09-2023	
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>
Able to create a conversation with a user	Pass	
Able to send a message to another user in real time	Pass	
Able to receive a message from another user in real time	Pass	
Able to receive notification	Pass	



<b>Test Case ID:</b>	UAT-U-013		
<b>Test Module:</b>	Search User		
<b>Participant's Name:</b>	Yong Zheng Heng		
<b>Test Execution Date:</b>	08-09-2023		
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>	
Able to search for a user based on name	Pass		
Able to view list of users based on the input	Pass		

<b>Test Case ID:</b>	UAT-U-014		
<b>Test Module:</b>	View user details		
<b>Participant's Name:</b>	Yong Zheng Heng		
<b>Test Execution Date:</b>	08-09-2023		
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>	
Able to view details of a user.	Pass		

<b>Test Case ID:</b>	UAT-U-015		
<b>Test Module:</b>	View news feed		
<b>Participant's Name:</b>	Yong Zheng Heng		
<b>Test Execution Date:</b>	08-09-2023		
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>	
Able to view list of shared posts	Pass		
Able to sort the news feed based on date and order	Pass		

Tester 2:

<b>Test Case ID:</b>	UAT-U-001	
<b>Test Module:</b>	Login account	
<b>Participant's Name:</b>	Cindy Wee Zi Wei	
<b>Test Execution Date:</b>	06-09-2023	
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>
Able to show personal login phrase of entered id	Pass	
Able to lock the login attempt after exceeding maximum login attempt	Pass	
Able to show a personal login phrase even if entered id is not existed	Pass	
Able to attempt login after login attempt being locked	Pass	

<b>Test Case ID:</b>	UAT-U-002		
<b>Test Module:</b>	Register account		
<b>Participant's Name:</b>	Cindy Wee Zi Wei		
<b>Test Execution Date:</b>	06-09-2023		
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>	
Able to register an account using valid student ID and IC	Pass		
Able to show error message when registration credentials are invalid	Pass		
Able to show password policies	Pass		

<b>Test Case ID:</b>	UAT-U-003		
<b>Test Module:</b>	Make donation		
<b>Participant's Name:</b>	Cindy Wee Zi Wei		
<b>Test Execution Date:</b>	06-09-2023		
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>	
Able to make a donation	Pass		

<b>Test Case ID:</b>	UAT-U-004	
<b>Test Module:</b>	Apply career advisory session	
<b>Participant's Name:</b>	Cindy Wee Zi Wei	
<b>Test Execution Date:</b>	06-09-2023	
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>
Able to view career advisory session services and application guidelines.	Pass	

<b>Test Case ID:</b>	UAT-U-005	
<b>Test Module:</b>	View institutional information	
<b>Participant's Name:</b>	Cindy Wee Zi Wei	
<b>Test Execution Date:</b>	06-09-2023	
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>
Able to view list of news	Pass	
Able to view details of news	Pass	
Able to view list of events	Pass	
Able to view details of event	Pass	
Able to sort the news and events list based on year	Pass	

<b>Test Case ID:</b>	UAT-U-006	
<b>Test Module:</b>	Manage profile	
<b>Participant's Name:</b>	Cindy Wee Zi Wei	
<b>Test Execution Date:</b>	06-09-2023	
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>
Able to view personal details	Pass	
Able to view personal education background list	Pass	
Able to view personal work experiences	Pass	
Able to edit personal details	Pass	
Able to add an education background	Pass	
Able to delete a personal education background	Pass	
Able to add a personal work experience	Pass	
Able to delete a personal work experience	Pass	

<b>Test Case ID:</b>	UAT-U-007	
<b>Test Module:</b>	View job list	
<b>Participant's Name:</b>	Cindy Wee Zi Wei	
<b>Test Execution Date:</b>	06-09-2023	
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>
Able to view job list	Pass	
Able to view job's details	Pass	
Able to sort the job list based on industry and employment type	Pass	

<b>Test Case ID:</b>	UAT-U-008	
<b>Test Module:</b>	Apply job	
<b>Participant's Name:</b>	Cindy Wee Zi Wei	
<b>Test Execution Date:</b>	06-09-2023	
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>
Able to apply a job through email	Pass	
Able to view generated resume	Pass	



<b>Test Case ID:</b>	UAT-U-009		
<b>Test Module:</b>	Manage own post		
<b>Participant's Name:</b>	Cindy Wee Zi Wei		
<b>Test Execution Date:</b>	06-09-2023		
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>	
Able to add a post	Pass		
Able to edit own post	Pass		
Able to delete own post	Pass		

<b>Test Case ID:</b>	UAT-U-010		
<b>Test Module:</b>	React post		
<b>Participant's Name:</b>	Cindy Wee Zi Wei		
<b>Test Execution Date:</b>	06-09-2023		
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>	
Able to like a post	Pass		
Able to dislike a post	Pass		

<b>Test Case ID:</b>	UAT-U-011	
<b>Test Module:</b>	Leave comment	
<b>Participant's Name:</b>	Cindy Wee Zi Wei	
<b>Test Execution Date:</b>	06-09-2023	
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>
Able to add a comment on a post	Pass	

<b>Test Case ID:</b>	UAT-U-012	
<b>Test Module:</b>	Chat	
<b>Participant's Name:</b>	Cindy Wee Zi Wei	
<b>Test Execution Date:</b>	06-09-2023	
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>
Able to create a conversation with a user	Pass	
Able to send a message to another user in real time	Pass	
Able to receive a message from another user in real time	Pass	
Able to receive notification	Pass	

<b>Test Case ID:</b>	UAT-U-013	
<b>Test Module:</b>	Search User	
<b>Participant's Name:</b>	Cindy Wee Zi Wei	
<b>Test Execution Date:</b>	06-09-2023	
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>
Able to search for a user based on name	Pass	
Able to view list of users based on the input	Pass	

<b>Test Case ID:</b>	UAT-U-014	
<b>Test Module:</b>	View user details	
<b>Participant's Name:</b>	Cindy Wee Zi Wei	
<b>Test Execution Date:</b>	06-09-2023	
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>
Able to view details of a user.	Pass	

<b>Test Case ID:</b>	UAT-U-015	
<b>Test Module:</b>	View news feed	
<b>Participant's Name:</b>	Cindy Wee Zi Wei	
<b>Test Execution Date:</b>	06-09-2023	
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>
Able to view list of shared posts	Pass	
Able to sort the news feed based on date and order	Pass	

Tester 3:

<b>Test Case ID:</b>	UAT-U-001	
<b>Test Module:</b>	Login account	
<b>Participant's Name:</b>	Mikey Koh	
<b>Test Execution Date:</b>	05-09-2023	
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>
Able to show personal login phrase of entered id	Pass	
Able to lock the login attempt after exceeding maximum login attempt	Pass	
Able to show a personal login phrase even if entered id is not existed	Pass	
Able to attempt login after login attempt being locked	Pass	

<b>Test Case ID:</b>	UAT-U-002		
<b>Test Module:</b>	Register account		
<b>Participant's Name:</b>	Mikey Koh		
<b>Test Execution Date:</b>	05-09-2023		
<b>Test Description</b>	<b>Status</b>		<b>Comment</b>
Able to register an account using valid student ID and IC	Pass		
Able to show error message when registration credentials are invalid	Pass		
Able to show password policies	Pass		

<b>Test Case ID:</b>	UAT-U-003		
<b>Test Module:</b>	Make donation		
<b>Participant's Name:</b>	Mikey Koh		
<b>Test Execution Date:</b>	05-09-2023		
<b>Test Description</b>	<b>Status</b>		<b>Comment</b>
Able to make a donation	Pass		

<b>Test Case ID:</b>	UAT-U-004	
<b>Test Module:</b>	Apply career advisory session	
<b>Participant's Name:</b>	Mikey Koh	
<b>Test Execution Date:</b>	05-09-2023	
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>
Able to view career advisory session services and application guidelines.	Pass	

<b>Test Case ID:</b>	UAT-U-005	
<b>Test Module:</b>	View institutional information	
<b>Participant's Name:</b>	Mikey Koh	
<b>Test Execution Date:</b>	05-09-2023	
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>
Able to view list of news	Pass	
Able to view details of news	Pass	
Able to view list of events	Pass	
Able to view details of event	Pass	
Able to sort the news and events list based on year	Pass	



<b>Test Case ID:</b>	UAT-U-006		
<b>Test Module:</b>	Manage profile		
<b>Participant's Name:</b>	Mikey Koh		
<b>Test Execution Date:</b>	05-09-2023		
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>	
Able to view personal details	Pass		
Able to view personal education background list	Pass		
Able to view personal work experiences	Pass		
Able to edit personal details	Pass		
Able to add an education background	Pass		
Able to delete a personal education background	Pass		
Able to add a personal work experience	Pass		
Able to delete a personal work experience	Pass		

<b>Test Case ID:</b>	UAT-U-007		
<b>Test Module:</b>	View job list		
<b>Participant's Name:</b>	Mikey Koh		
<b>Test Execution Date:</b>	05-09-2023		
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>	
Able to view job list	Pass		
Able to view job's details	Pass		
Able to sort the job list based on industry and employment type	Pass		

<b>Test Case ID:</b>	UAT-U-008		
<b>Test Module:</b>	Apply job		
<b>Participant's Name:</b>	Mikey Koh		
<b>Test Execution Date:</b>	05-09-2023		
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>	
Able to apply a job through email	Pass		
Able to view generated resume	Pass		

<b>Test Case ID:</b>	UAT-U-009		
<b>Test Module:</b>	Manage own post		
<b>Participant's Name:</b>	Mikey Koh		
<b>Test Execution Date:</b>	05-09-2023		
<b>Test Description</b>	<b>Status</b>		<b>Comment</b>
Able to add a post	Pass		
Able to edit own post	Pass		
Able to delete own post	Pass		

<b>Test Case ID:</b>	UAT-U-010		
<b>Test Module:</b>	React post		
<b>Participant's Name:</b>	Mikey Koh		
<b>Test Execution Date:</b>	05-09-2023		
<b>Test Description</b>	<b>Status</b>		<b>Comment</b>
Able to like a post	Pass		
Able to dislike a post	Pass		

<b>Test Case ID:</b>	UAT-U-011	
<b>Test Module:</b>	Leave comment	
<b>Participant's Name:</b>	Mikey Koh	
<b>Test Execution Date:</b>	05-09-2023	
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>
Able to add a comment on a post	Pass	

<b>Test Case ID:</b>	UAT-U-012	
<b>Test Module:</b>	Chat	
<b>Participant's Name:</b>	Mikey Koh	
<b>Test Execution Date:</b>	05-09-2023	
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>
Able to create a conversation with a user	Pass	
Able to send a message to another user in real time	Pass	
Able to receive a message from another user in real time	Pass	
Able to receive notification	Pass	

<b>Test Case ID:</b>	UAT-U-013		
<b>Test Module:</b>	Search User		
<b>Participant's Name:</b>	Mikey Koh		
<b>Test Execution Date:</b>	05-09-2023		
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>	
Able to search for a user based on name	Pass		
Able to view list of users based on the input	Pass		

<b>Test Case ID:</b>	UAT-U-014		
<b>Test Module:</b>	View user details		
<b>Participant's Name:</b>	Mikey Koh		
<b>Test Execution Date:</b>	05-09-2023		
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>	
Able to view details of a user.	Pass		

<b>Test Case ID:</b>	UAT-U-015		
<b>Test Module:</b>	View news feed		
<b>Participant's Name:</b>	Mikey Koh		
<b>Test Execution Date:</b>	05-09-2023		
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>	
Able to view list of shared posts	Pass		
Able to sort the news feed based on date and order	Pass		

Tester 4:

<b>Test Case ID:</b>	UAT-A-016	
<b>Test Module:</b>	Admin Login	
<b>Participant's Name:</b>	Alvin Hai Yong Guang	
<b>Test Execution Date:</b>	11-09-2023	
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>
Able to login to the account	Pass	
Able to view personal login phrase	Pass	

<b>Test Case ID:</b>	UAT-A-017	
<b>Test Module:</b>	Manage User	
<b>Participant's Name:</b>	Alvin Hai Yong Guang	
<b>Test Execution Date:</b>	11-09-2023	
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>
Able to view all users in the user list.	Pass	
Able to add a new user	Pass	
Able to delete a user from the user list	Pass	
Able to edit a specific user's personal details in the user list	Pass	
Able to add an education background and work experience to a specific user	Pass	
Able to delete a specific education background and work experience from a specific user	Pass	
Able to sort the user list by any attribute	Pass	



<b>Test Case ID:</b>	UAT-A-018		
<b>Test Module:</b>	Manage Post		
<b>Participant's Name:</b>	Alvin Hai Yong Guang		
<b>Test Execution Date:</b>	11-09-2023		
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>	
Able to add a post	Pass		
Able to delete a post from the post list	Pass		
Able to edit a specific post's details in the post list	Pass		
Able to sort the post list by any attribute	Pass		

<b>Test Case ID:</b>	UAT-A-019		
<b>Test Module:</b>	Manage Job		
<b>Participant's Name:</b>	Alvin Hai Yong Guang		
<b>Test Execution Date:</b>	11-09-2023		
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>	
Able to add a job	Pass		
Able to delete a job from the job list	Pass		
Able to edit a specific job's details in the job list	Pass		
Able to sort the job list by any attribute	Pass		

<b>Test Case ID:</b>	UAT-A-020		
<b>Test Module:</b>	Manage News		
<b>Participant's Name:</b>	Alvin Hai Yong Guang		
<b>Test Execution Date:</b>	11-09-2023		
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>	
Able to add a news	Pass		
Able to delete a news from the news list	Pass		
Able to edit details of a specific news in the news list	Pass		
Able to sort the news list by any attribute	Pass		

<b>Test Case ID:</b>	UAT-A-021		
<b>Test Module:</b>	Manage Events		
<b>Participant's Name:</b>	Alvin Hai Yong Guang		
<b>Test Execution Date:</b>	11-09-2023		
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>	
Able to add an event	Pass		
Able to delete an event from the event list	Pass		
Able to edit a specific event in the event list	Pass		
Able to sort the event list by any attribute	Pass		

Tester 5:

<b>Test Case ID:</b>	UAT-A-016	
<b>Test Module:</b>	Admin Login	
<b>Participant's Name:</b>	Janice tan	
<b>Test Execution Date:</b>	10-09-2023	
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>
Able to login to the account	Pass	
Able to view personal login phrase	Pass	

<b>Test Case ID:</b>	UAT-A-017	
<b>Test Module:</b>	Manage User	
<b>Participant's Name:</b>	Janice tan	
<b>Test Execution Date:</b>	10-09-2023	
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>
Able to view all users in the user list.	Pass	
Able to add a new user	Pass	
Able to delete a user from the user list	Pass	
Able to edit a specific user's personal details in the user list	Pass	
Able to add an education background and work experience to a specific user	Pass	
Able to delete a specific education background and work experience from a specific user	Pass	
Able to sort the user list by any attribute	Pass	

<b>Test Case ID:</b>	UAT-A-018		
<b>Test Module:</b>	Manage Post		
<b>Participant's Name:</b>	Janice tan		
<b>Test Execution Date:</b>	10-09-2023		
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>	
Able to add a post	Pass		
Able to delete a post from the post list	Pass		
Able to edit a specific post's details in the post list	Pass		
Able to sort the post list by any attribute	Pass		

<b>Test Case ID:</b>	UAT-A-019		
<b>Test Module:</b>	Manage Job		
<b>Participant's Name:</b>	Janice tan		
<b>Test Execution Date:</b>	10-09-2023		
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>	
Able to add a job	Pass		
Able to delete a job from the job list	Pass		
Able to edit a specific job's details in the job list	Pass		
Able to sort the job list by any attribute	Pass		



<b>Test Case ID:</b>	UAT-A-020		
<b>Test Module:</b>	Manage News		
<b>Participant's Name:</b>	Janice tan		
<b>Test Execution Date:</b>	10-09-2023		
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>	
Able to add a news	Pass		
Able to delete a news from the news list	Pass		
Able to edit details of a specific news in the news list	Pass		
Able to sort the news list by any attribute	Pass		

<b>Test Case ID:</b>	UAT-A-021		
<b>Test Module:</b>	Manage Events		
<b>Participant's Name:</b>	Janice tan		
<b>Test Execution Date:</b>	10-09-2023		
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>	
Able to add an event	Pass		
Able to delete an event from the event list	Pass		
Able to edit a specific event in the event list	Pass		
Able to sort the event list by any attribute	Pass		

Tester 6:

<b>Test Case ID:</b>	UAT-A-016	
<b>Test Module:</b>	Admin Login	
<b>Participant's Name:</b>	Lee Teck Guan	
<b>Test Execution Date:</b>	09-09-2023	
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>
Able to login to the account	Pass	
Able to view personal login phrase	Pass	

<b>Test Case ID:</b>	UAT-A-017	
<b>Test Module:</b>	Manage User	
<b>Participant's Name:</b>	Lee Teck Guan	
<b>Test Execution Date:</b>	09-09-2023	
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>
Able to view all users in the user list.	Pass	
Able to add a new user	Pass	
Able to delete a user from the user list	Pass	
Able to edit a specific user's personal details in the user list	Pass	
Able to add an education background and work experience to a specific user	Pass	
Able to delete a specific education background and work experience from a specific user	Pass	
Able to sort the user list by any attribute	Pass	

<b>Test Case ID:</b>	UAT-A-018		
<b>Test Module:</b>	Manage Post		
<b>Participant's Name:</b>	Lee Teck Guan		
<b>Test Execution Date:</b>	09-09-2023		
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>	
Able to add a post	Pass		
Able to delete a post from the post list	Pass		
Able to edit a specific post's details in the post list	Pass		
Able to sort the post list by any attribute	Pass		

<b>Test Case ID:</b>	UAT-A-019		
<b>Test Module:</b>	Manage Job		
<b>Participant's Name:</b>	Lee Teck Guan		
<b>Test Execution Date:</b>	09-09-2023		
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>	
Able to add a job	Pass		
Able to delete a job from the job list	Pass		
Able to edit a specific job's details in the job list	Pass		
Able to sort the job list by any attribute	Pass		

<b>Test Case ID:</b>	UAT-A-020		
<b>Test Module:</b>	Manage News		
<b>Participant's Name:</b>	Lee Teck Guan		
<b>Test Execution Date:</b>	09-09-2023		
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>	
Able to add a news	Pass		
Able to delete a news from the news list	Pass		
Able to edit details of a specific news in the news list	Pass		
Able to sort the news list by any attribute	Pass		

<b>Test Case ID:</b>	UAT-A-021		
<b>Test Module:</b>	Manage Events		
<b>Participant's Name:</b>	Lee Teck Guan		
<b>Test Execution Date:</b>	09-09-2023		
<b>Test Description</b>	<b>Status</b>	<b>Comment</b>	
Able to add an event	Pass		
Able to delete an event from the event list	Pass		
Able to edit a specific event in the event list	Pass		
Able to sort the event list by any attribute	Pass		