QAU CS Alumni Network

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Chapter 1

Software Project Management Plan

1. Software Project Management Plan

1.1 Introduction

This introduction provides background information for the rest of the document. It briefly describes the project, the client deliverables, the project milestones, and expected document changes.

1.1.1 Project Overview

The project described within this document gives a detailed overview of QAU CS Alumni network and it is designed with the specific goal and aim to facilitate specifically the alumni of computer science department. This application is designed to fill gaps between alumni and provides them a platform to socially interact with each other. It also facilitates alumni to carry out new business plans with other alumni and express their ideas in the field of entrepreneurship. It also helps the department of computer science to visualize the employment ratio of their graduates. This document gives a preliminary plan for how we aims to achieve the above stated objectives and purposes.

1.1.2 Project Deliverables

Following table shows the project deliverables along with due dates.

Phases	Deliverables	Due Date
Phase 1	Software Project Management Plan and Software Requirement Analysis	18-11-2016
Phase 2	Software Design Description	4-1-2017

Table 1.1 Project Deliverables

1.2 Project Organization

1.2.1 Software Process Model

A (software/system) process model is a description of the sequence of activities carried out in an SE project, and the relative order of these activities. **[1]**

A process model for software engineering is chosen based on the nature of the project and application, the methods and tools to be used, and the controls and deliverables that are required. **[2]**

We are developing this system using water fall software process model. As this software process model reinforces good habits like design before design and design before code. So this software process model is the most accurate one for our project.

1.2.2 Roles and Responsibilities

- **Administrator**

  The Administrator can view all the alumni registered on QAU CS Alumni network. He can send notifications to all the registered alumni. However Administrator has right to delete any alumni from this social network. He can remove unwanted or spam posts, comments and material from this social network.

- **Alumni**

  Alumni has to register on QAU CS Alumni network. Alumni can after login can build his social interaction with other alumni by using functionality and feature of QAU CS Alumni network.

1.2.3 Tools and Techniques

The tools which help in accomplishing QAU CS Alumni network are RoboMongo, Node.js Command Prompt, Sublime Text 3.0, Star UML and Mongo Database.

The Technique used in making this project is dividing this project in sub modules and I am using Top down Technique to develop this application

1.3 Project Management Plan

PMP (Project Management Plan) provides processes and procedures that I am following. The procedures listed in following document are used to manage and monitor the performance and outcome.

1.3.1 Tasks

- Requirement gathering
    1. Establish goals and objectives
    2. Write it down
    3. Get details
- Requirement Analysis
    1. Develop Case Study
    2. Refinement of Case Study.
    3. Develop SRS.
- Develop Design.

1.3.1.1 Description

To accomplish the project effectively, it is divided into sub tasks. These sub tasks are further divided into different modules to simplify the tasks. Sub tasks are of three phases

1. Requirement Gathering.
2. Requirement Analysis.
3. Design Phase.

In requirement gathering our main focus is on the gathering of information regarding the QAU CS Alumni network. In requirement gathering we first establish the goal of the project and then write down the all relevant information we have gathered. Next phase is requirement analysis and in this phase we develop the software requirement specification of our project which includes introduction, specific requirement and software project features. The last phase is of Design that includes introduction and developing phase.

1.3.1.2 Deliverables and Mile Stones

- **Deliverables**
    1. Software project management plan.
    2. Software Requirement Analysis.
- **Mile Stones**
    1. Requirement Gathering.
    2. Develop Case Study.
    3. Review SRS.
    4. Submitting SRS.

The mile stones of the project is shown in the figure 1 and figure 2.

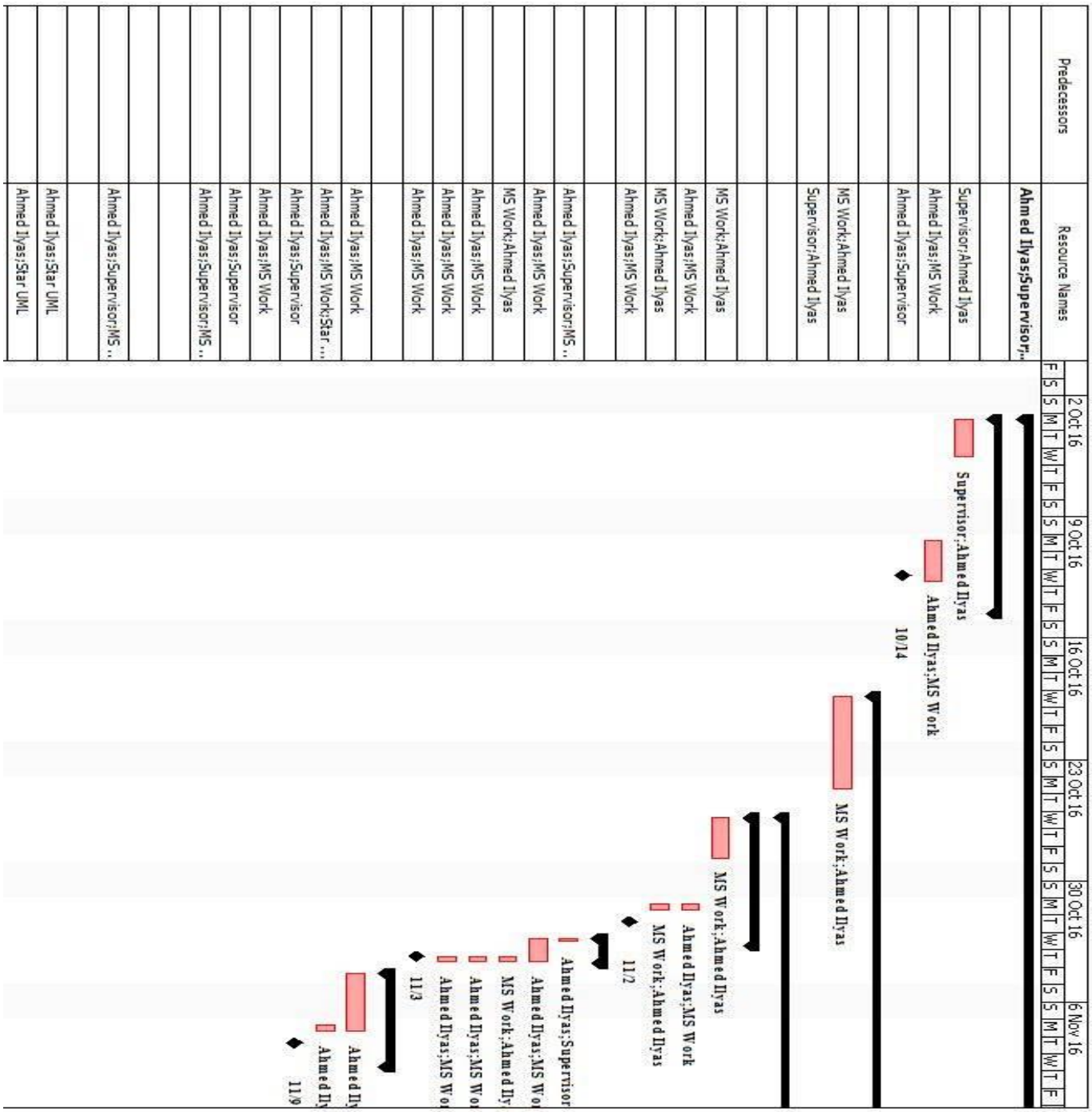


Figure 1-1 Milestone of Tasks

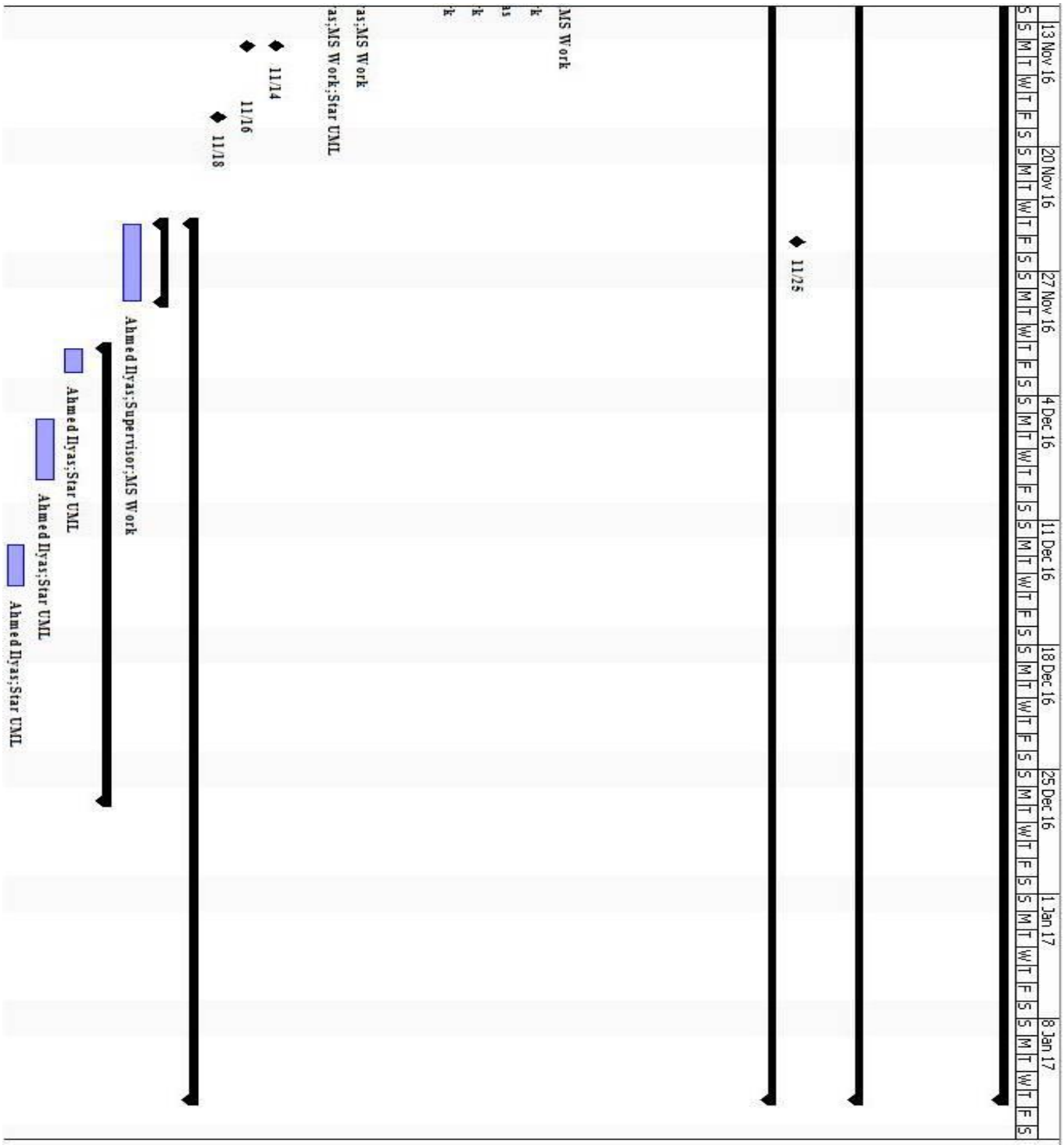


Figure 1-2 Milestone of Tasks (b)

1.3.1.3 Resource Needed

- Star UML.
- MS Word.

1.3.1.4 Dependencies and Constraints

Dependencies for the project are as follows:

- Record of Alumni in department of computer science.

Constraints of projects are as follows:

- Time.
- Availability of alumni data from 1976.

1.3.1.5 Assignment and Time Table

The Assignment and time table for the tasks of project is shown in the figure 1.1.

	Name	Duration	Start	Finish
1	**Requirement Gathering,Analysis and design**	**73.5 days?**	**10/3/16 8:00 AM**	**1/12/17 1:00 PM**
2	**Requirement gathering**	**9.5 days**	**10/3/16 8:00 AM**	**10/14/16 1:00 PM**
3	Establish goals and objectives	2.5 days	10/3/16 8:00 AM	10/5/16 1:00 PM
4	Write It Down	3 days	10/10/16 8:00 AM	10/12/16 5:00 PM
5	Get Details	2.5 days	10/12/16 8:00 AM	10/14/16 1:00 PM
6	**Requirement Analysis**	**61.5 days?**	**10/19/16 8:00 AM**	**1/12/17 1:00 PM**
7	Develop Case Study	4 days	10/19/16 8:00 AM	10/24/16 5:00 PM
8	Refinement of Case Study	0.5 days	11/25/16 8:00 AM	11/25/16 1:00 PM
9	**Develop SRS**	**56.5 days?**	**10/26/16 8:00 AM**	**1/12/17 1:00 PM**
10	**Introduction**	**6 days**	**10/26/16 8:00 AM**	**11/2/16 5:00 PM**
11	Motivation	3 days	10/26/16 8:00 AM	10/28/16 5:00 PM
12	Aims and Objective	1 day	10/29/16 8:00 AM	10/31/16 5:00 PM
13	Problem Definition	1 day	10/29/16 8:00 AM	10/31/16 5:00 PM
14	Product scope	2 days	11/1/16 8:00 AM	11/2/16 5:00 PM
15	**Specific Requirements**	**2 days**	**11/2/16 8:00 AM**	**11/3/16 5:00 PM**
16	Identify functional and Non functional Requirements	0.5 days	11/2/16 8:00 AM	11/2/16 1:00 PM
17	External Interface Requirements	2 days	11/2/16 8:00 AM	11/3/16 5:00 PM
18	User Interfaces	1 day	11/3/16 8:00 AM	11/3/16 5:00 PM
19	Hardware Interfaces	1 day	11/3/16 8:00 AM	11/3/16 5:00 PM
20	Software Interfaces	1 day	11/3/16 8:00 AM	11/3/16 5:00 PM
21	communication Interfaces	1 day	11/3/16 8:00 AM	11/3/16 5:00 PM
22	**Software Product Features**	**4 days**	**11/4/16 8:00 AM**	**11/9/16 5:00 PM**
23	Identifying Usecases	2 days	11/4/16 8:00 AM	11/7/16 5:00 PM
24	Writting down Use cases Description	1 day	11/7/16 8:00 AM	11/7/16 5:00 PM
25	Review Use cases	2 days	11/8/16 8:00 AM	11/9/16 5:00 PM
26	Software System Attributes	1 day	11/12/16 8:00 AM	11/14/16 5:00 PM
27	Review SRS	2.5 days	11/14/16 8:00 AM	11/16/16 1:00 PM
28	Make Changes in SRS	0.5 days	11/18/16 8:00 AM	11/18/16 1:00 PM
29	**Design Phase**	**35.5 days?**	**11/24/16 8:00 AM**	**1/12/17 1:00 PM**
30	**Introduction**	**3 days?**	**11/24/16 8:00 AM**	**11/28/16 5:00 PM**
31	Design overview	3 days?	11/24/16 8:00 AM	11/28/16 5:00 PM
32	**Develop Design**	**18 days?**	**12/1/16 8:00 AM**	**12/26/16 5:00 PM**
33	Develop Architectural Design	2 days?	12/1/16 8:00 AM	12/2/16 5:00 PM
34	Develop Interface Design	4 days?	12/5/16 8:00 AM	12/8/16 5:00 PM
35	Review Interface Design	3 days?	12/12/16 8:00 AM	12/14/16 5:00 PM

Figure 1-3 Work Element and Schedule

Chapter 2

Software Requirement Specifications

2. Software Requirement Specifications

2.1 Introduction

The System Requirements Specification (SRS) is a formal statement of the application functional and operational requirements. It serves as a contract between the developer and the customer for whom the system is being developed. The developers agree to provide the capabilities specified. The client agrees to find the product satisfactory if it provides the capabilities specified in the SRS. Sections 2.1.1 and 2.1.2 describe the purpose and scope of the QAU CS Alumni Network. Section 2.2 provides the specific requirements including external interface requirements, software product features and software system attributes.

2.1.1 Purpose

The purpose of the QAU CS Alumni network is to make a social networking site that brings alumni of computer science department closer by strengthening their mutual understanding and friendship zones. We believe that the increased connection between alumni of department through this site will lead to better understanding among alumni. These communications and understanding among alumni make this site as a business-focused social website. It helps alumni to establish new firms and carry out new business plans with other alumni. It also facilitates the alumni in their career counseling and focusing. This QAU CS Alumni network let you find other alumni, your class mates and colleagues. Once you've connected with other alumnus, you will then have access to their list of connections- this is called your "extended network". You can easily see the updated information about the alumnus personal, educational and professional life. You can send or receive messages to other alumni residing in your contact list.

This site also provides facility for the business minded people that they can establish new business relations with other alumni. Beside of all these purposes, this site also helps the department of computer science to increase their visibility for the employment ratio of their passed out batches. Finally, with the holding of these purposes, this alumni network can prove itself as a cornucopian

step towards betterment and consummation at different levels for both the alumni as well as for the department of computer science.

2.1.1.1 Motivation

Over the last decade, it's all about being in contact with people knowing about what they are doing and bring geographically-diverse users together. As a user of Social Networking websites I have been interested in this field since my interest in computing began. There are already multiple examples of successful, functioning social networking sites and facilitating their end users in decent manners but the motivation behind this system is somehow different. The major motivation is to facilitate specifically QAU CS Alumni so that they can establish and document networks of Alumni who are working in industry or in other professions. Profile page of any website is the main and most appealing part so keeping this in view this alumni networking site allows its registered alumnus to maintain their profile page, which emphasizes skills, employment history and education as well. On the contrary it also offers the registered Alumni to organize events, held workshops, make announcements and also to keep in touch with their department and fellow graduates as well.

"My transition from scientist to entrepreneur? Some would say that I still haven't made that transition." **Robert Moog**

This alumni website can play its leading role in the demesne of entrepreneurship which is an imperious platform for the people to connect, share and express their business ideas. It is a podium for entrepreneurs to carry out new ideas about latest technologies and todays' trend in markets about field of computer science with their fellows. It also helps alumni in terms of career counseling and focusing, which enable them to interact with alumni associated with different companies and take fruitful guidance for their future career planning.

Information searching techniques and advance searching systems are more imploring these days. Every social website is trying to facilitate its end users with in hand easy and advanced searching criteria, so the main motivation is to design QAU CS Alumni network considering searching criteria used by different famous social networking web sites to facilitate QAU CS Alumni network. This social alumni networking website has competent focus on searching mechanisms and provides an ease to Alumni that effectively retrieve relevant and specific information on every searching criteria.

This is a markup for the department to evaluate their performance by looking that at the employment ratio graphs of their graduates working in the industry or in other professions. It also helps department to keep an eye on that what is the current status of their students belonging from different pass out batches. These evaluating criteria helps department of computer science to improve their pursuance furthermore this social networking site can prove itself a step towards new glory of social interaction of QAU CS Alumni, entrepreneurship.

2.1.1.2 Problem Definition

We define social network sites as web-based services that allow individuals to construct a public or semi-public profile within a bounded systems, articulate a list of other users with whom they share a connection and view and traverse their list of connections and those made by others within the system. The nature and nomenclature of these connections may vary from site to site.

Since their introduction, social network sites (SNSs) are increasingly attracting the attention of academic and industry researchers. What makes social network sites unique is not that they allow individuals to meet strangers, but rather that they enable users to articulate and make visible their social networks. This can result in connections between individuals that would not otherwise be made. We all know that this era is all for making new social zones, carrying out new ideas and for this reason there is an imminent need of the computer science department of QAU to socially interact with their Alumni. As there is no such discernable platform available for former students of department to interact with their fellows and keep themselves in touch with their educational institution.

As of this writing there are hundreds of SNSs, with various technological ease of use, supporting a wide range of interest and practices. While their key technological features are fairly consistent, the cultures that emerge around SNSs are varied. Most sites support maintenance of pre-existing social networks, but other help strangers connect based on shared interests, political views, or activities. So keeping these in mind this alumni networking site hits specifically the former students of the department of computer science to strengthen the bond of alumni with themselves and also with the department.

One of the main problem these days is of searching for particular information and this particular information could be of any particular person or of any organization. We don't know on what perspective or on what criteria Alumni wants to search as there is no such effective mechanism that

cover all these perspective and satisfy the search criteria for the Alumni. There are two modes of accessing information one is push and other is pull. In push method we further define them in sub categories as browsing and querying. In QAU CS Alumni website search can be performed on the basic of different tags. These tags provide alumni basic search facilities such as finding batch mates, class mates working in industries and universities and the like.

Social networking sites are not only for communication or interaction with other people globally but, this is also one effective way for business promotion. A lot of business minded people these days are using social networking sites as for their business promotions. As there is no business platform available for the alumni of department of computer science so this alumni network web site is designed to do help in promoting entrepreneurship. It provides facilities for those who wants to carry out new business term. Some other highlighted problems are that for making new announcement about ideas, workshops and for other social activities alumni have to personally contact concern people of department which is a very time consuming process. Besides this, different alumnus are abroad and are not in contact with anyone and this is a hazard process to contact them so this will be a fruitful platform for every alumnus to stay in connect with each other to share their ideas. Beside this there is no such authenticated and effective way for the department to visual or determine the employment ratio of their graduates in different professional fields in every year. An important need for this platform is that the department of computer science has no recent information of their former students working in industries or in other professions. So with the forum of this platform department can contact their former students if needed. So keeping insight of all the problems and issues I have developed a system which can effectively overcome these problems and facilitate interaction within QAU CS community.

2.1.1.3 Aims and Objectives

Today, social networking site use is a major activity for internet users from a wide range of demographic groups. Younger adults are especially avid adapters, but social networking continues to grow in popularity for older adults as well. Six out of ten user's ages 50-60 are social networking site users and 43% of those ages 65 and older. Although online seniors are less likely than other age groups to use social networking sites. All people belongs to different communities. A community can represent different age groups and QAU CS is one of those community that represent different age groups alumni because the department is established since 1976. The objective of this project is

designed such as to provide the facility specifically to the alumni of the department of computer sciences of QAU to socially interact with each other and with their institution as well. Knowing about what their fellow graduates are doing these days. There are many QAU CS Alumni pages or groups on social networking sites like Facebook and LinkedIn. All these pages do not provide basic search facilities such as finding batch mates and class mates working in industries and universities. So keeping this in view the main bourn is to remove ambiguous stuff from the searching and to provide an ease to alumni so that they can search on different criteria and find relevant information and these are the objective that make it different from other social web sites. Along with these searching facilities this site will facilitate department to keep track of ex-student and interact with them when needed. It provides information regarding the employment ratio of the graduates in their respective passing out years. Any developed and prosperous community is built under the shadow of their interactions and communications of people. One of the ulterior motive of this project is to arrange social gatherings, workshops, announcements and publish newsletters. This will help in making strong social network of former student not only with themselves but also with their department as well. This will enable in executing new ideas, carrying out new friendship zones and making a family like channel for the department of computer sciences of QAU.

2.1.2 Product Scope

This social networking website allows the alumni to register them and after their verification as an alumnus of department they will be allowed to login to their profile page which includes all educational, personal and their professional information as well. Alumni can search their fellow graduates and other alumni. Alumni has the authority to follow and add other alumni to their social circle. Alumni can also search any alumnus by batch name or year if he/she is unable to search that person by name or by any keyword. Alumni can find about in which different companies or organizations his/her fellow graduates are working these days. One of the most Interesting feature provided by this site is to evaluate the performance of department by looking at graphs showing employment ratio of their graduates. Other than this alumni can send messages to other alumni in order to contact personally. If some alumnus update job or event information then this will generate a notification for all those alumni in this social networking site. This social networking website has an admin who has administrative right to view the graphs based on batch as well as on years. Admin can register new alumnus to this social networking site using his/her administrative credentials.

The scope of this alumni network defines its functional diversity which gives alumni an experience to discover new social zones. These social zones can lead the community of department of computer science to new era of entrepreneurship and social interaction.

2.2 Specific Requirements

2.2.1 External Interface Requirements

This section provides a detailed description of all inputs into and outputs from the system. It also gives a description of the hardware, software, communication and user interface.

2.2.1.1 User Interfaces

1. Alumni can interact with the system using mouse while moving cursor on different pages and options
2. Alumni can interact with this system using keyboard by navigating through arrow keys.

2.2.1.2 Hardware Interfaces

Since the application must run over the internet, all the hardware requires to connect internet will be hardware interface for the system. As for e.g. Modem, WAN – LAN, Ethernet Cross-Cable.

2.2.1.3 Software Interfaces

Web Browsers:

Any web browser can be used while Google chrome and Mozilla is recommended else browser of any version is in its minimum requirements.

Operating Systems:

This application is platform independent.

Nature of Communication:

Communication is between client and server

2.2.1.4 Communications Interfaces

- Client (Alumni) on internet will be using HTTP/HTTPs protocol.
- Restful Api will be used for the communications among the protocols.

2.2.2 Software Product Features

Use Case Diagram

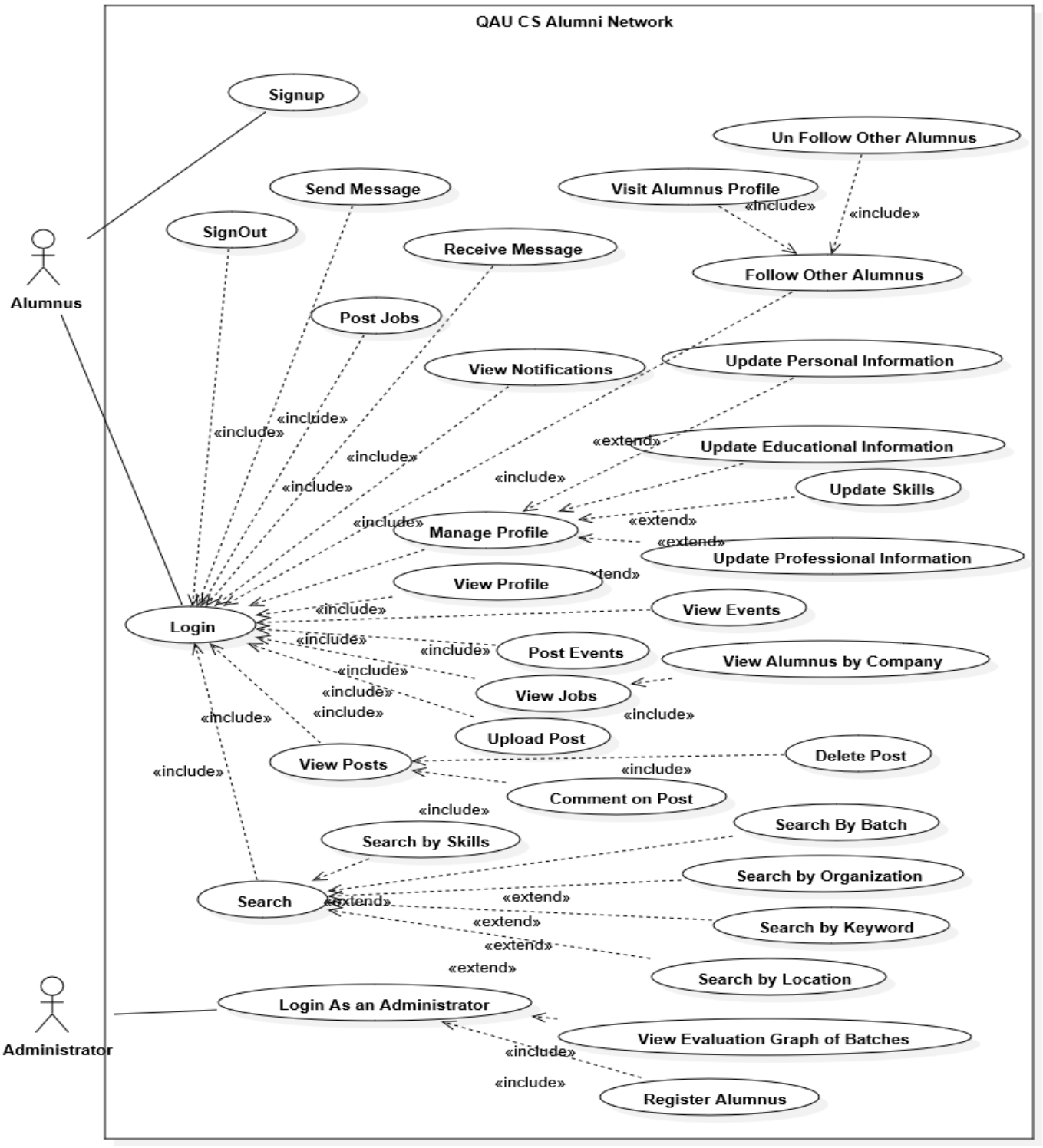


Figure 2-1 Use Case Diagram

Use case Description:

2.2.2.1 Login

ID	UC 1
Name	**Login**
Primary Actor	Alumnus
Pre-condition	System is connected to internet. Alumnus has already registered to an account.
Post-condition	1. Alumnus logged in successfully. 2. System display home page.
Main Success Scenario	1. System show login page in which it has alumnus email and password field. 2. Alumnus enters his credentials. 3. System verifies the Alumnus. 4. Alumnus login to system.
Extension	3.a If Alumnus has not been registered Alumni will be prompted to register first

2.2.2.2 Signup

ID	UC 2
Name	**Signup**
Primary Actor	Alumnus

Pre-condition	System is connected to internet
Post-condition	1. Alumnus successfully registered. 2. Alumnus is redirected to login page.
Main Success Scenario	1. Alumnus enter his/her data in given fields. 2. System verifies the Alumnus. 3. System redirects Alumnus to login page.
Extension	2.a The system prompts the Alumnus that he has not recognized as an alumni.

2.2.2.3 Approve Follow request

ID	**UC 3**
Name	**Approve Follow request**
Primary Actor	Alumnus
Pre-condition	Alumnus must be logged in.
Post-condition	Requested alumnus is added in the follower list of that alumnus.
Main Success Scenario	1. Alumnus will request the other alumnus to allow him/her to be in its follower by selecting follow option. 2. Requested Alumni approve the request.
Extension	2.a If requested Alumnus reject the request then he/she will not be able to follow that Alumni

2.2.2.4 Update personal Profile

ID	UC 4
Name	**Update personal profile**
Primary Actor	Alumnus
Pre-condition	Alumnus must be logged in.
Post-condition	Personal profile updated successfully.
Main Success Scenario	1. Alumnus selects an option of update profile from 'Personal Information'. 2. Alumnus will select the update personal profile option. 3. A form will appears with field including all personal information. 4. System validates the Alumnus data. 5. Profile updated successfully.
Extension	4.a If entered data is invalid system prompts an error and asks Alumnus to enter data again.

2.2.2.5 Update educational Profile

ID	UC 5
Name	**Update educational profile**
Primary Actor	Alumnus

Pre-condition	Alumnus must be logged in.
Post-condition	Profile updated successfully.
Main Success Scenario	1. Alumnus selects an option of update profile from 'Education' 2. Alumnus will select the edit educational profile option. 3. A form will appears with field including his all educational information. 4. System validates the Alumnus data. 5. Profile updated successfully.
Extension	4.a If entered data is invalid system prompts an error and asks Alumnus to enter data again.

2.2.2.6 Update professional profile

ID	**UC 6**
Name	**Update professional profile**
Primary Actor	Alumnus
Pre-condition	Alumnus must be logged in.
Post-condition	Profile updated successfully.
Main Success Scenario	1. Alumnus selects an option of update profile from 'Profession'. 2. Alumnus will select the update professional profile option. 3. A form will appears with field

	including his all professional information. 4. System validates the Alumnus data. 5. Profile updated successfully.
Extension	4.a If entered data is invalid system prompts an error and asks Alumnus to enter data again.

2.2.2.7 Send message

ID	**UC 7**
Name	**send message**
Primary Actor	Alumnus
Pre-condition	Alumnus must be a logged in.
Post-condition	Message sent successfully.
Main Success Scenario	1. Alumnus selects the message option from menu bar. 2. Alumnus enters the name of recipient. 3. Alumnus write the content of the message. 4. Alumnus press the send button or enter key to send the message.
Extension	2.a Entered name of recipient not found.

2.2.2.8 View message

ID	UC 8
Name	**view message**
Primary Actor	Alumnus
Pre-condition	Alumnus must be logged in.
Post-condition	Message viewed successfully.
Main Success Scenario	1. Alumnus see the notification that he/she has received the message on menu bar. 2. Alumnus clicks on the icon of message on the menu bar. 3. Alumnus view the message.
Extension	NIL

2.2.2.9 Request for follow

ID	UC 9
Name	**request follow**
Primary Actor	Alumnus
Pre-condition	Alumnus must be logged in.
Post-condition	Alumnus has been requested for follow.

Main Success Scenario	1. Alumnus search for specific person. 2. Alumnus open his/her profile page. 3. Alumnus click on the option of follow Alumnus. 4. That person has been requested for follow successfully.
Extension	NIL

2.2.2.10 Search class mates

ID	**UC 10**
Name	**Search class mates**
Primary Actor	Alumnus
Pre-condition	Alumnus must be logged in.
Post-condition	Alumnus searched his/her class mates successfully.
Main Success Scenario	1. Alumnus clicks on the search option. 2. Alumnus click on the classmate. 3. Alumnus successfully searched the class mates.
Extension	3.a Class mate not found.

2.2.2.11 Search by organization

ID	UC 11
Name	**search by organization**
Primary Actor	Alumnus
Pre-condition	Alumnus must be logged in.
Post-condition	Alumnus viewed the result successfully.
Main Success Scenario	1. Alumnus click on the search option from the menu bar. 2. Alumnus then click on the option of search by organization option. 3. Alumnus enter the name of organization. 4. Searched results viewed successfully.
Extension	NIL

2.2.2.12 Search by location

ID	UC 12
Name	**search by location**
Primary Actor	Alumnus
Pre-condition	Alumnus must be logged in.

Post-condition	Alumnus viewed the result successfully.
Main Success Scenario	1. Alumnus click on the search option from the menu bar. 2. Alumnus then click on the option of search by location option. 3. Alumnus enter the name of region. 4. Searched results viewed successfully.
Extension	NIL

2.2.2.13 Search by Skills

ID	**UC 13**
Name	**search by skills**
Primary Actor	Alumnus
Pre-condition	Alumnus must be logged in.
Post-condition	Alumnus viewed the result successfully.
Main Success Scenario	1. Alumnus click on the search option from the menu bar. 2. Alumnus then clicks on the option of search by skill option. 3. Searched results viewed successfully.
Extension	NIL

2.2.2.14 Search colleagues

ID	UC 14
Name	**search colleagues**
Primary Actor	Alumnus
Pre-condition	Alumnus must be logged in.
Post-condition	Alumnus viewed the result successfully.
Main Success Scenario	1. Alumni click on the search option from the menu bar. 2. Alumni then clicks on the option of search colleague's option. 3. Searched results viewed successfully.
Extension	NIL

2.2.2.15 Search by batch

ID	UC 15
Name	**search by batch**
Primary Actor	Alumnus
Pre-condition	Alumnus must be logged in.
Post-condition	Alumnus viewed the searched result successfully.

Main Success Scenario	1. Alumnus click on the search option from the menu bar. 2. Alumnus then clicks on the option of search by batch option. 3. Alumnus selects the year of batch. 4. Searched results viewed successfully.
Extension	NIL

2.2.2.16 View Notifications

ID	**UC 16**
Name	**View Notifications.**
Primary Actor	Alumnus
Pre-condition	Alumnus must be logged in.
Post-condition	Notification viewed successfully.
Main Success Scenario	1. Alumnus click on the 'notification' option from the menu bar. 2. Notification viewed successfully.
Extension	NIL

2.2.2.17 Search by keyword

ID	UC 17
Name	**search by keyword**
Primary Actor	Alumnus
Pre-condition	Alumnus must be logged in.
Post-condition	Alumni viewed the searched result successfully.
Main Success Scenario	1. Alumnus click on the search option from the search bar. 2. Alumnus enter the name of person. 3. Searched results viewed successfully.
Extension	NIL

2.2.2.18 Visit Alumnus Profile

ID	UC 18
Name	**Visit Alumnus Profile**
Primary Actor	Alumnus
Pre-condition	Alumnus must be logged in.
Post-condition	Alumnus viewed the profile successfully.

Main Success Scenario	1. Alumnus click on the alumnus name. 2. Suggestions viewed successfully.
Extension	NIL

2.2.2.19 Delete Posts

ID	**UC 19**
Name	**Delete posts**
Primary Actor	Alumnus
Pre-condition	Alumnus must be logged in.
Post-condition	Posts deleted successfully.
Main Success Scenario	1. Alumnus click on delete icon on the posts. 2. Posts deleted successfully.
Extension	NIL

2.2.2.20 Login as an Administrator

ID	UC 20
Name	**Login as an Administrator**
Primary Actor	Administrator/visitor
Pre-condition	System is connected to internet. Administrator has already registered.
Post-condition	1. Administrator logged in successfully. 2. System display Dashboard page.
Main Success Scenario	1. System show login page in which it has Administrator name and password field. 2. Administrator enters his credentials. 3. System verifies the Administrator. 4. Alumni login to system.
Extension	3. If Administrator has not been registered Administrator will be prompted to register first

2.2.2.21 View Posts

ID	UC 21
Name	**view posts**
Primary Actor	Alumnus

Pre-condition	Alumnus must be logged in.
Post-condition	Alumnus successfully view the posts.
Main Success Scenario	1. Alumnus view main page. 2. Posts viewed successfully.
extension	NIL

2.2.3 System Sequence Diagrams

Use case describes how external actors interacts with the software system we are interested in creating. In system sequence diagram actor generates system events to a system, usually requesting some system operations to handle the events.
System sequence diagrams for some important use case scenarios are given below.

1. **Search Alumnus by Keyword**

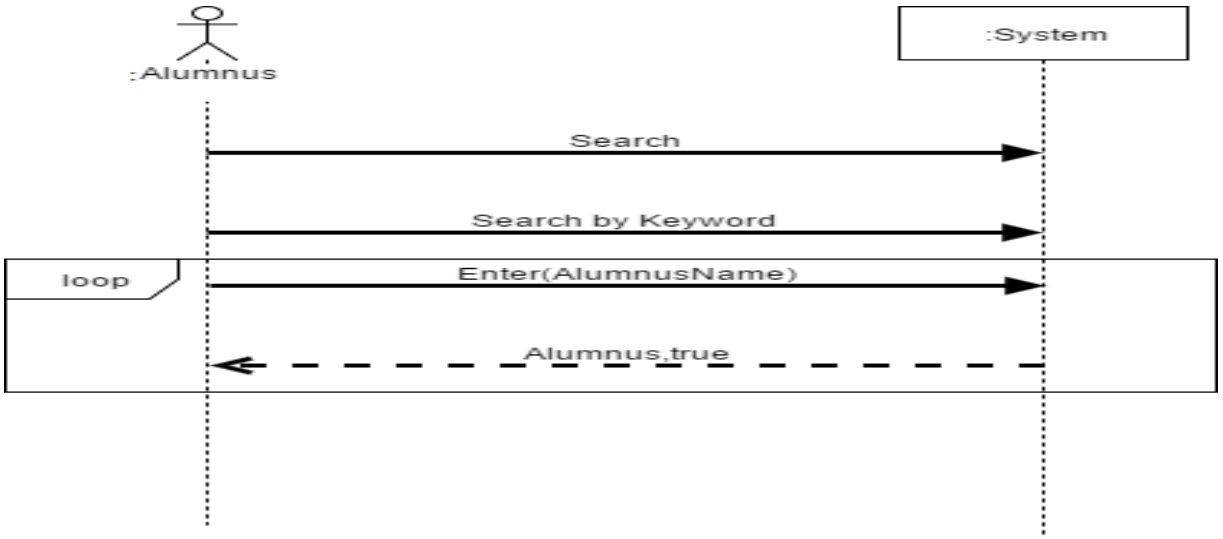


Figure 2-2 SSD Search Alumnus by Keyword

2. Send Message

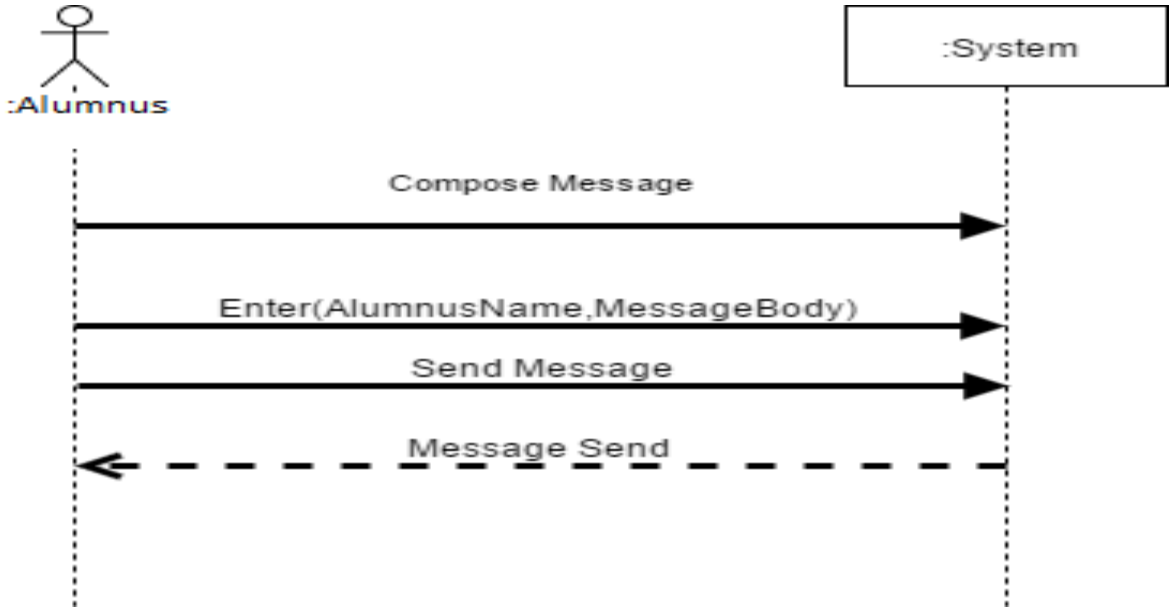


Figure 2-3 SSD Send Message

3. Follow other Alumnus

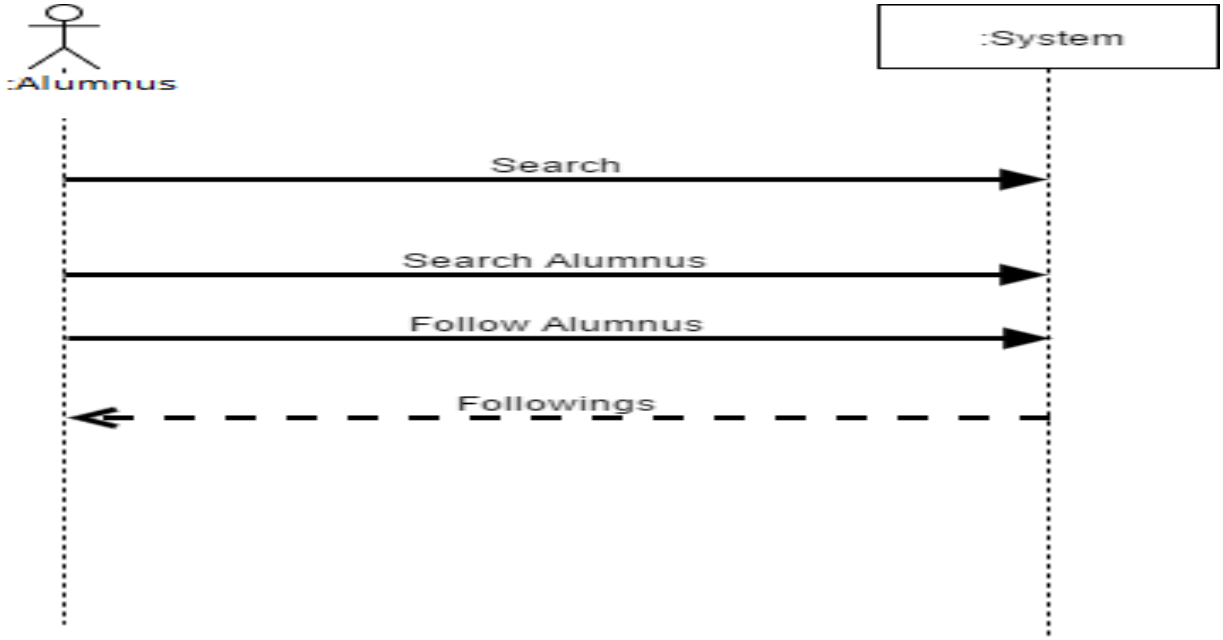


Figure 2-4 SSD Follow Alumnus

4. Search Alumnus by Organization

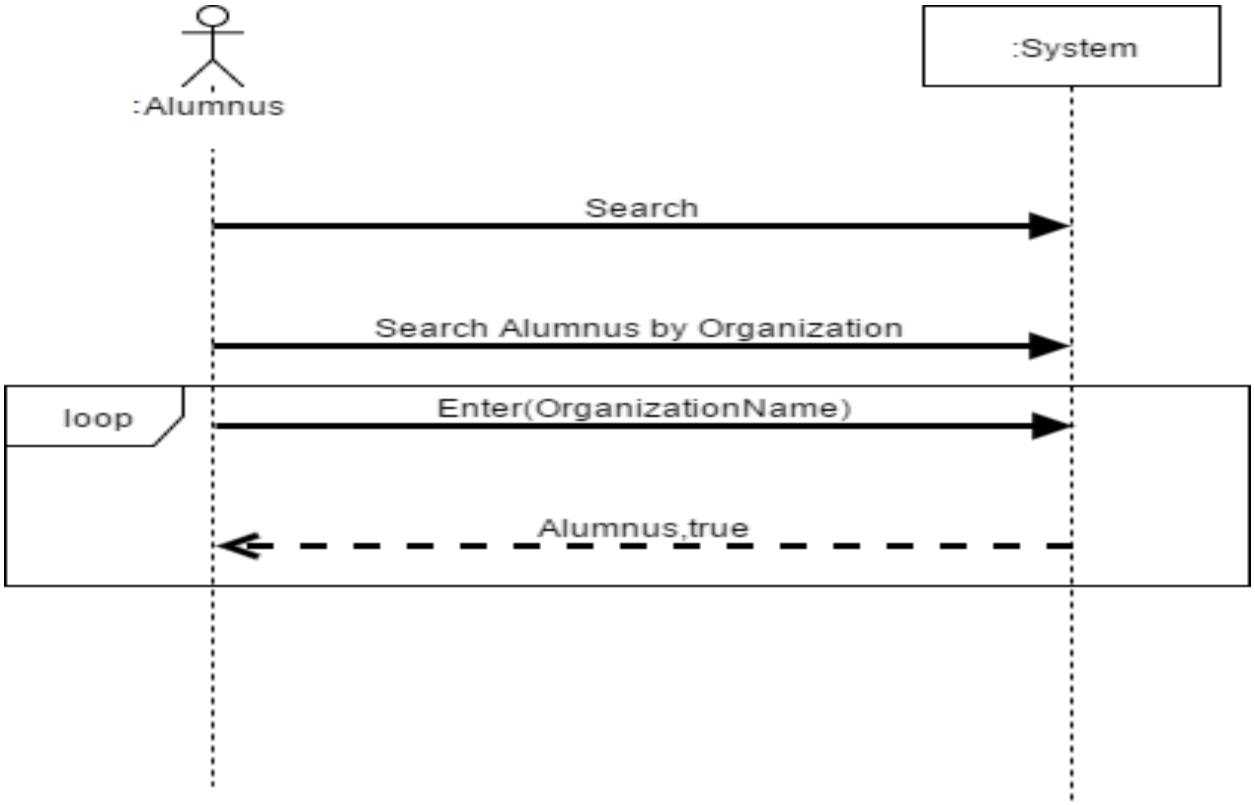


Figure 2-5 SSD Search Alumnus by Organization

5. Login

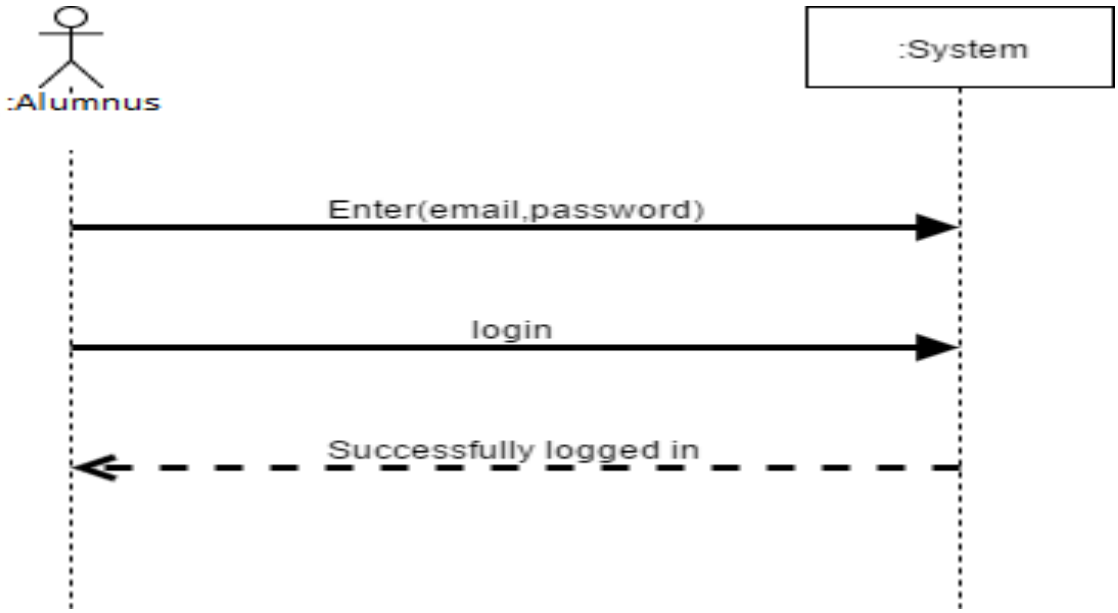


Figure 2-6 SSD Login

6. Registration

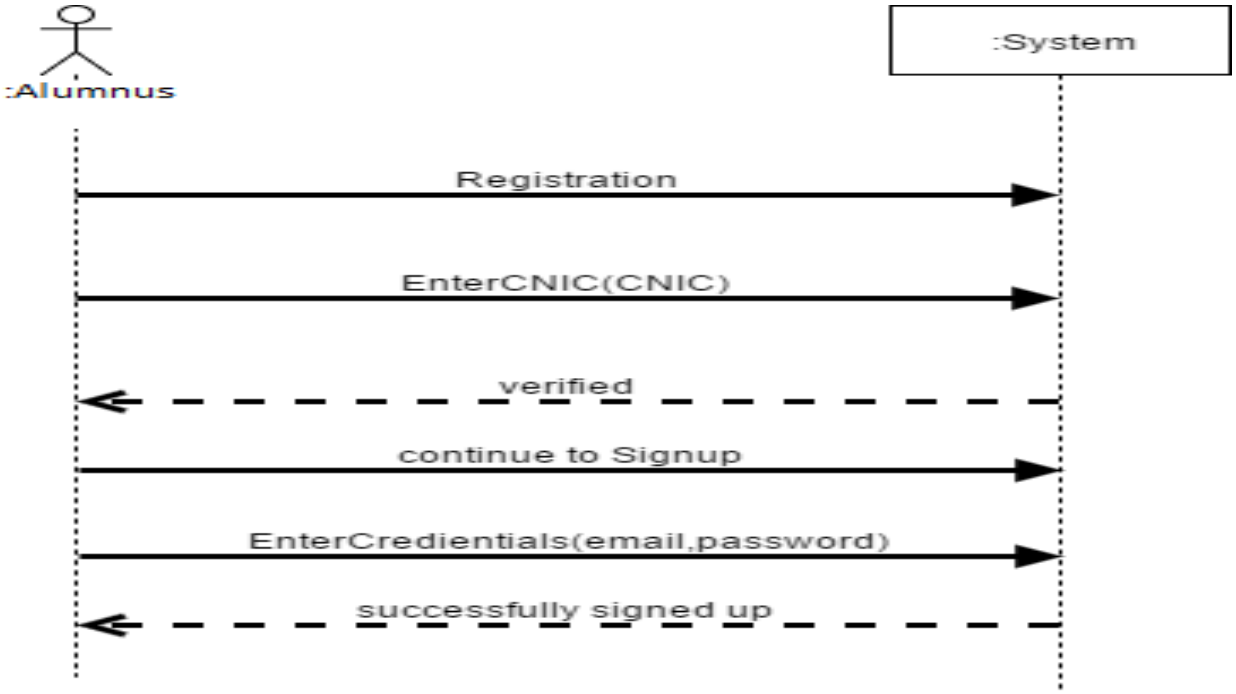


Figure 2-7 SSD Registration

7. Search Alumnus By Batch

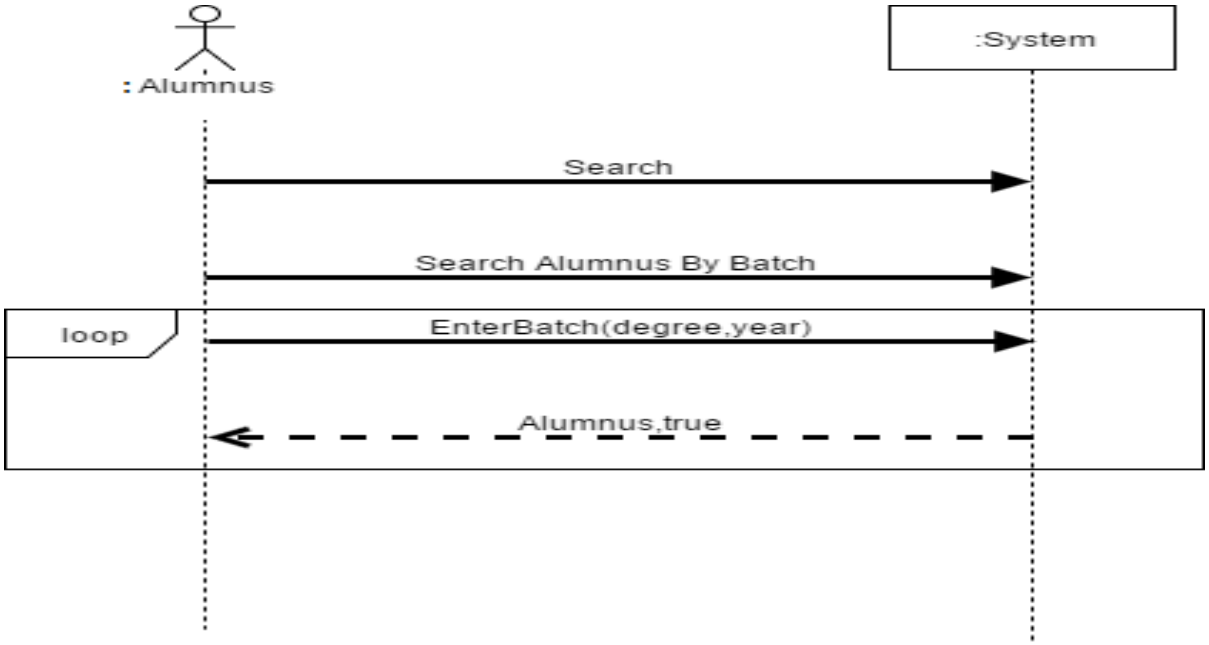


Figure 2-8 SSD Search Alumnus by Batch

2.3 Software System Attributes

2.3.1 Reliability

The application operates without failure for a specified number of uses. The application provides graceful service to Alumni and ensures reliability.
The system is 90% reliable.

2.3.2 Availability

The system will be available at 24/7/365.

2.3.3 Security

"An increasing number of software organizations recognize that developing security requirements is more important than designing protections because paying attention to security requirements in the early stages of the software lifecycle potentially saves millions of dollars." **Qian GAO [3]**
As per this system unauthenticated alumni are not allowed to use this application. In order to use certain features of the system, user must first authenticate themselves by name and password. The system does not allows if the user fails to provide correct login information. Physical access to computer(s) storing the Alumni database is restricted to authorized persons only.

2.3.4 Maintainability

The system provides the capability to back-up the data however hardware maintenance on the server infrastructure will be maintained by the current IT staff, in the main department of computer science.

2.3.5 Performance

Software performance requirements is about the performance and scalability context for getting the design and development right for your web application. It is the measure of the efficiency of the system that is how system is responding to the Alumni. The performance measuring criteria for this alumni networking site is the Alumni experience and response from the Alumni when they get indulged in the functions and feature of the website.

2.3.6 Portability

No other specific portability requirements have been identified.

2.3.7 Database Requirements

This system uses Mongo database to store data. It is no SQL database. The detail description of Database is covered in chapter 3.

2.4 Domain Model

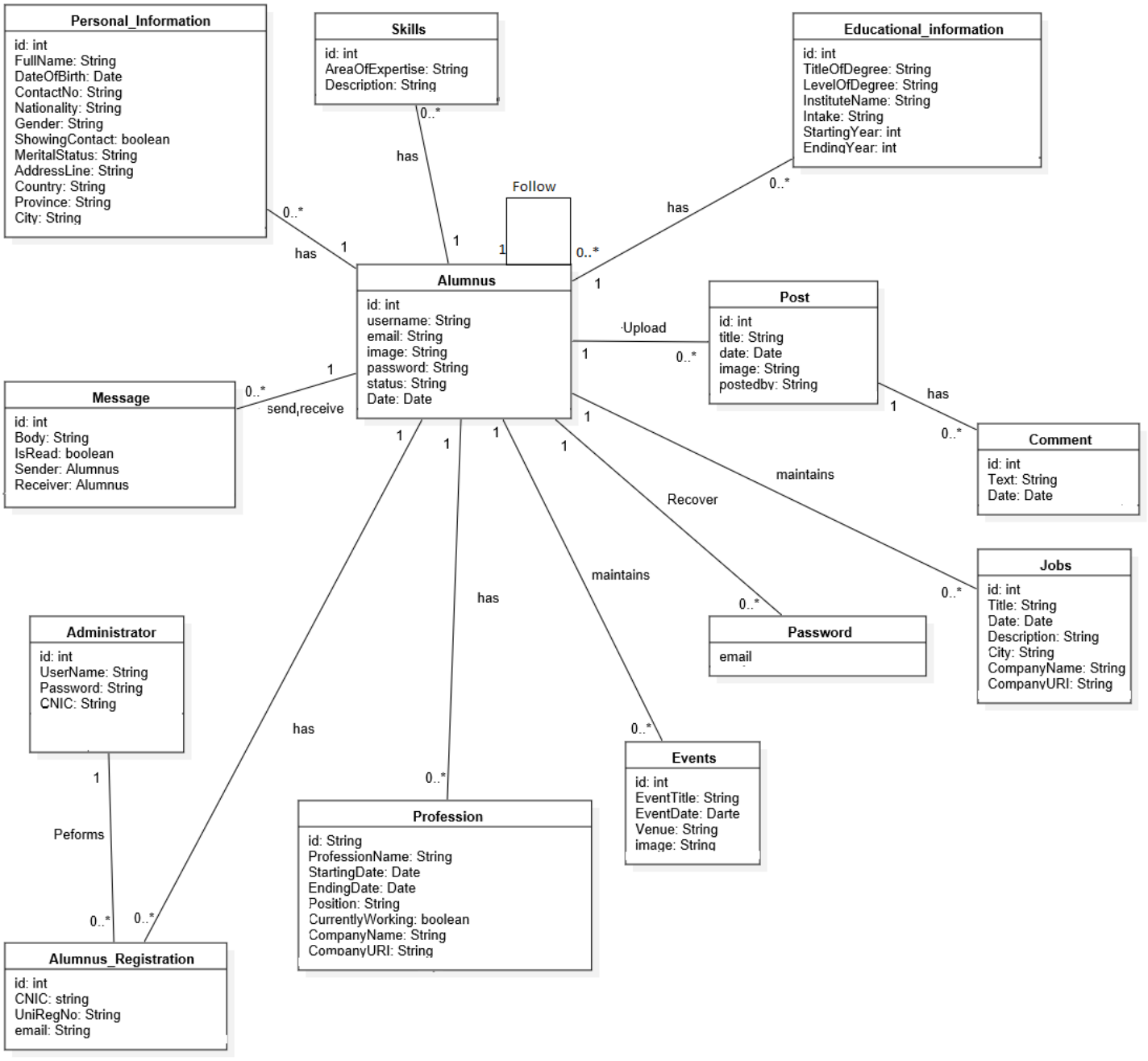


Figure 2-9 Domain Model

Chapter 3

Software Design Description

3. Software Design Description

3.1 Introduction

The Software design sits at the technical Kernel of Software engineering and is applied regardless of the software process model that is used. The goal of Design is to produce a model or representation that exhibits firmness, commodity and delight. **[1]**
This chapter cover all the design description needed for the QAU CS alumni network.

3.1.1 Design Overview

Software Design is an iterative process through which requirements are translated into the "blueprint" for constructing software. **[1]**
This design documents is divided into four major sections. Each of which are elaborated one by one as follows:

3.1.1.1 System Architecture Design

The Architecture design of system is like the floor plan of house. The System architecture design for QAU CS Alumni network depicts that how subsystems are interconnected.

3.1.1.2 Data Design

This Sections describes the data design (sometimes refer to as data architecting), which creates a model of data and/or information that is represented at a high level of abstraction. **[1]** Likewise this document describes the data design for the QAU CS Alumni network. It includes the abstract representation of data models including conceptual entity relations diagrams.

3.1.1.3 Component-Level Design

The component-level design for software is the equivalent to a set of detailed drawings for each room in the house. Within the context of Object-oriented software engineering, a component is represented in UML diagrammatic forms. **[1]** This documents contains same UML diagrams for QAU CS alumni network including Class diagram, Component diagram and Sequence diagrams.

3.1.1.4 User Interface Design

This design includes all the screens and interfaces of QAU CS Alumni network, which user or alumnus will experience to interact with.

3.1.2 Requirement Traceability Matrix

Req. ID	Requirement Description	Use case Name	Class Name	Sequence Diagram	Test Case	Achieved
1	Alumnus will be logged in.	Login	Alumnus	Login	Login	Yes
2	Alumnus will be verified by entering his CNIC	Signup	Alumnus	Signup	Signup	Yes
3	Alumnus can message other Alumnus	Send Message	Message	Send Message	Send Message	Yes
4	Alumnus can view Message	Receive Message	Message	View Message	View Message	Yes
5	Alumnus can follow other Alumnus	Follow other Alumnus	Alumnus	Follow other Alumnus	Follow other Alumnus	Yes
6	Post a Job so that other alumnus can view Jobs.	Post a Job	Jobs	Post Jobs	Post Jobs	Yes
7	Alumnus can search other alumnus by keyword	Search by keyword	Filtered Results	Search alumnus by keyword	Search alumnus by keyword	Yes
8	Alumnus can search his or her batch mates	Search Classmates	Filtered Results	Search classmates	Search Classmates	Yes
9	Administrator registers alumnus	Register alumnus	Alumnus Registration	Alumnus registration	Alumnus Registratio n	Yes

3.2 System Architecture Design

The software architecture of a program or computing system is the structure or structures of a system, which comprise of software components, the externally visible properties of those components and the relationship among them.
QAU CS Alumni network is designed using “Three Tier Architecture”.

1. **Presentation Layer**
   The presentation layer is what does the final work of providing the display and interaction to the human user. It provides the binding of the data from the service layer to HTML templates. This would ultimately be presented to the user on a computer or mobile device of some type. Angular.js provides a declarative style for declaring your display code. You focus on the relationships you want between the service layer and what appears on the screen, and Angular does the work of keeping them in sync.

2. **Service Layer**
   This is where a Web API service would be exposed that is the doorway to all business logic and data storage. It would perform workflows that require more complicated computations and sequencing of operations. These might be user event driven, or could be scheduled to run periodically. Node.js was specifically designed to run scalable server-side Web Applications. Express.js is an add-on module to Node.js that simplifies the building of a web service layer with request and response routing.

3. **Data access Layer**
   This is where you persist your data. Data can be stored, retrieved, updated or deleted. MongoDB is what is called a “document-based” database and has a JavaScript API available to interact with it.

3.2.1 System Architecture Diagram

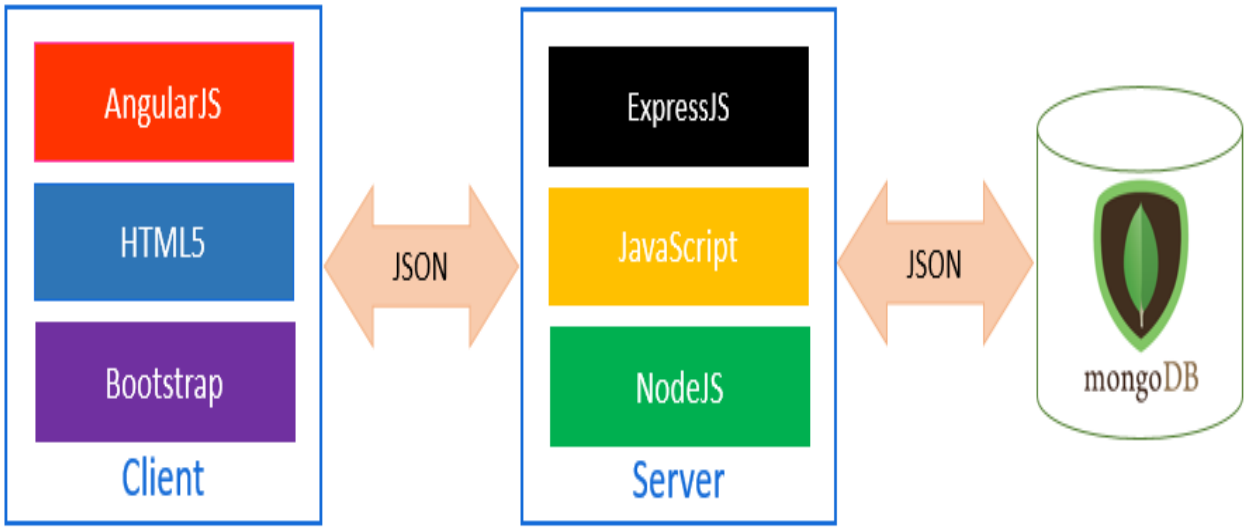


Figure 3-1 Architecture Diagram [3]

The above diagram shows the general architecture diagram of the applications that build using MEAN stack. The figure below shows the architecture diagram of QAU CS alumni network.

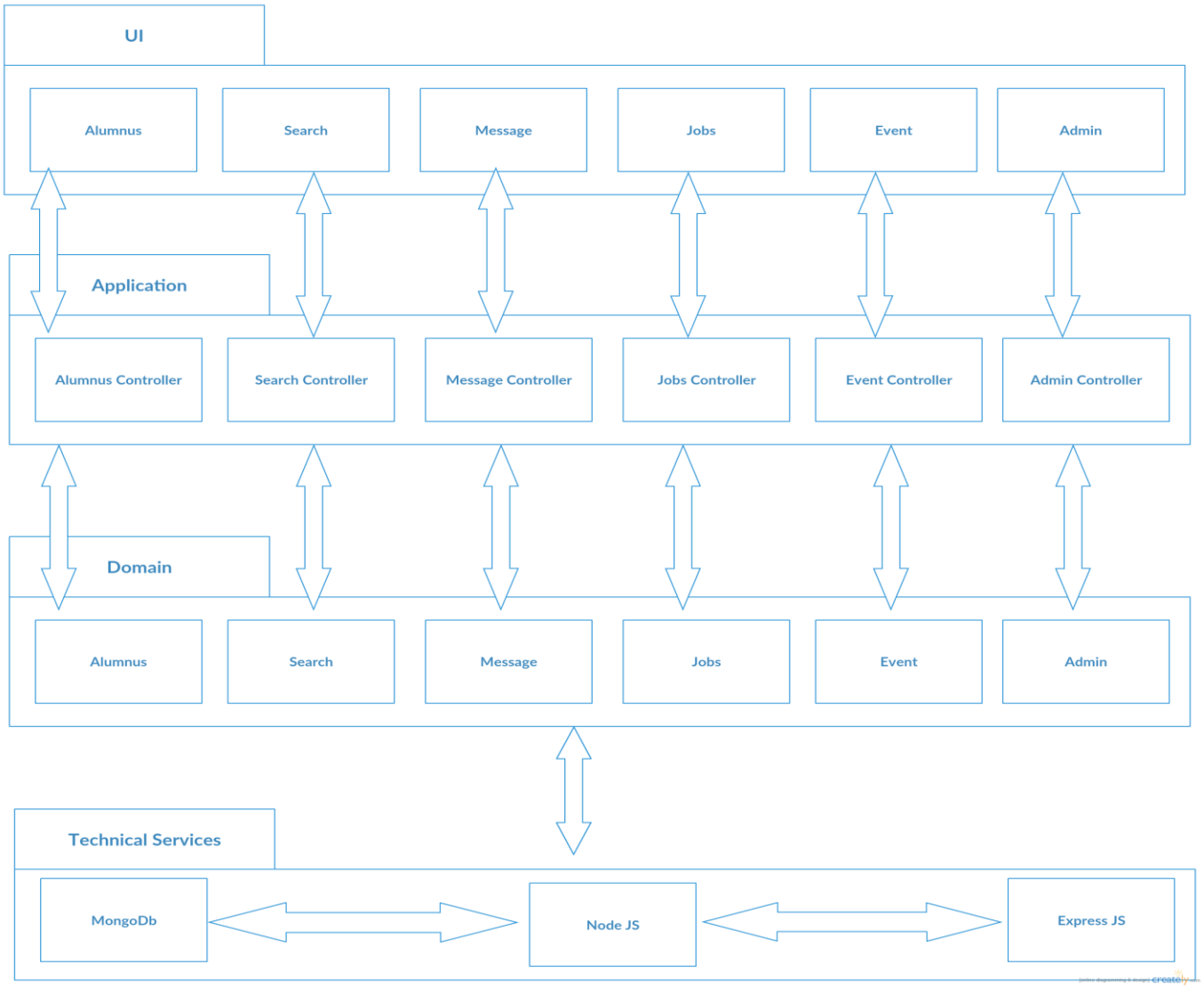


Figure 3-2 QAU CS Architecture Diagram

3.2.2 Software Architecture pattern

MVVM (Model-View-View Model)

QAU CS Alumni network is using MVVM architecture pattern. The main motivations behind using this pattern is are as follows:

1. It provides separation of concerns. Tightly coupled, change resistant, brittle code causes all sorts of long-term maintenance issues that ultimately result in poor customer satisfaction with the delivered software. A clean separation between application logic and the UI will make an application easier to test, maintain, and evolve. It improves code re-use opportunities and enables the developer-designer workflow.

2. It enables a developer-designer workflow. When the UI XAML is not tightly coupled to the code-behind, it is easy for designers to exercise the freedom they need to be creative and make a good product.

3. It increases application testability. Moving the UI logic to a separate class that can be instantiated independently of a UI technology makes unit testing much easier.

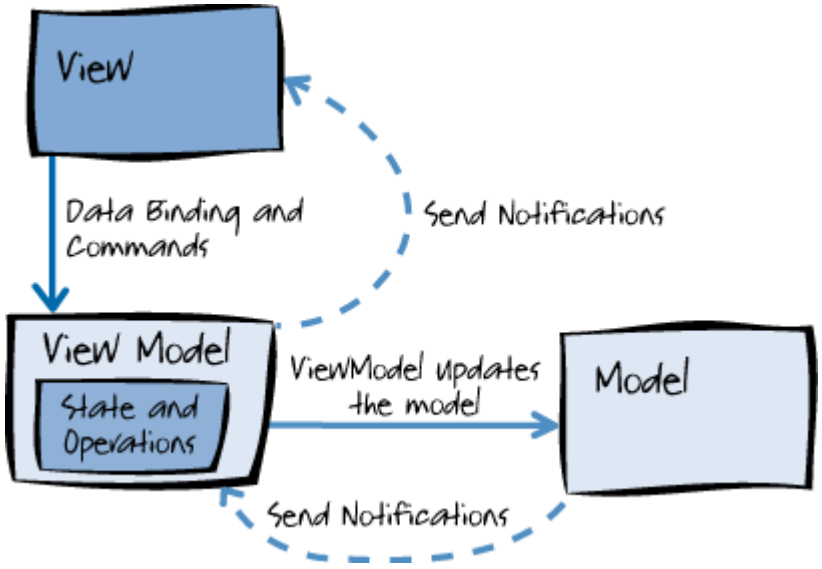


Figure 3-3 Architectural Pattern.

3.2.3 System Interface Description

The logical communication between the interfaces of software product and the bigger system is called System Interface.
The Following Table shows the internal and external entities that act as an interface for the QAU CS Alumni network.

Internal	External
Messaging	Alumnus

Verification	Administrator
Friendship	Database
Searching	
Registration	

Table 3.1 Internal and External Entities of System

1. **Messaging**
   QAU CS Alumni network allows its registered alumnus to avail the facility of the messaging. Alumnus can send or receive messages from other alumnus.
2. **Verification**
   To verify the user as an alumnus of computer science department this verification parts has important role. After the verification of user from the database, user will be considered as an alumnus and will be allowed to further register him/her.
3. **Friendship**
   The QAU CS Alumni network aims to connect diverse alumnus together at one place. So that this social website play its role and offer registered alumnus to follow other alumnus and broaden the relationships.
4. **Searching**
   QAU CS Alumni network allows its registered user to search other alumnus weather they are their classmates, colleagues and other alumnus.
5. **Registration**
   To prove as an alumnus it is necessary for alumnus to be registered by the administrator.

Following Diagram shows the Interaction of these Entities to the interfaces of the System.

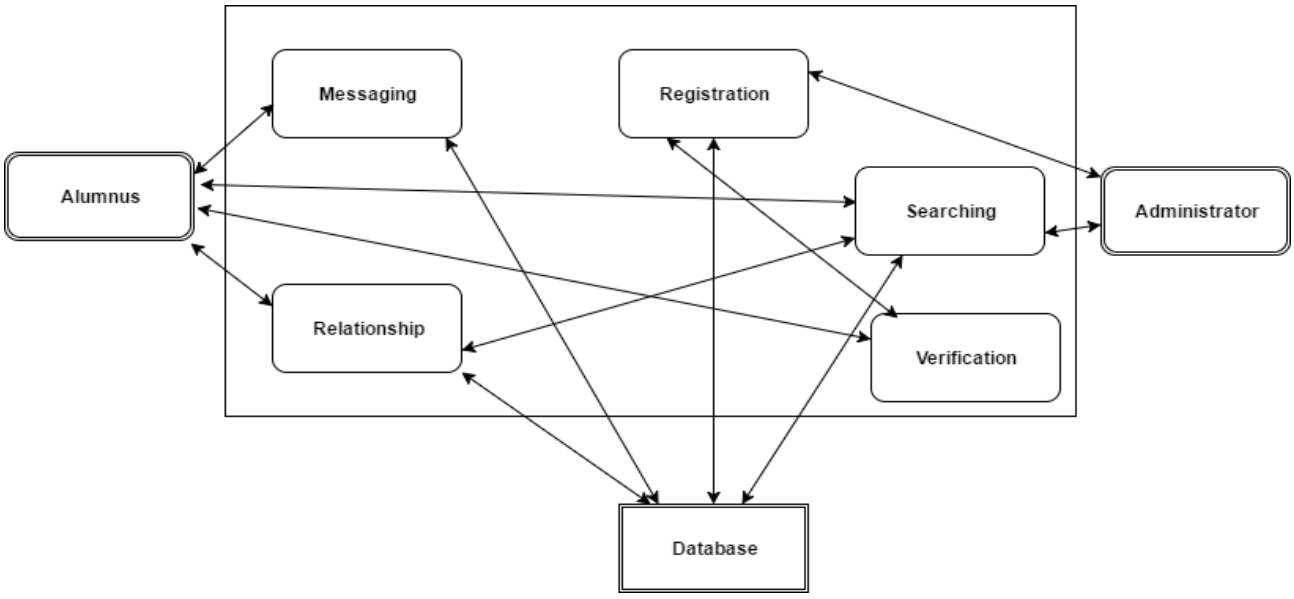


Figure 3-4 System Interface Interaction

3.3 System Data Design

The Structure of data has always been an important part of software engineering. In many software application, the architecture of the data will have a profound influence on the architecture of the software that must process it. **[1]**

QAU CS Alumni network is designed and implemented on NOSQL database called “MongoDb”.It is no SQL database. It has documents and collections. Like MySQL, MongoDB offers a rich set of features and functionality far beyond those offered in simple key-value stores. MongoDB has a query language, highly-functional secondary indexes (including text search and geospatial), a powerful aggregation framework for data analysis, and more. With MongoDB you can also make use of these features across more diverse data types than with a relational database, and at scale.

Mongdb Offer his users to use Demoralization of data inside the documents which offer fast query mechanisms.

The data design of QAU CS Alumni network is shown below:

Entity Relationship Diagram

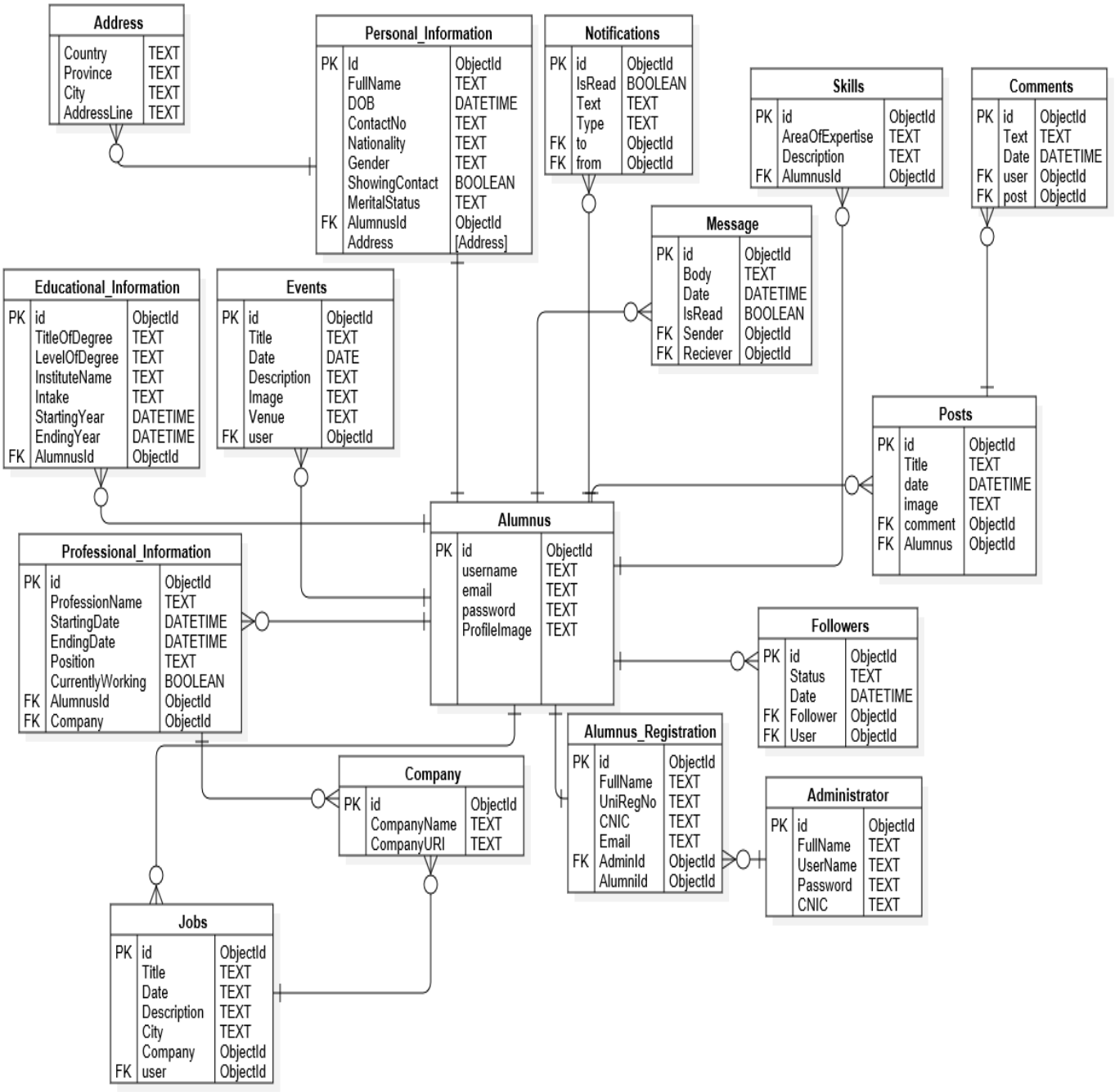


Figure 3-5 Logical Entity Relationship Diagram

3.4 UML Diagrams

3.4.1 Sequence Diagram

Sequence Diagram is an interaction diagram which shows interaction as two dimensional chart. Sequence diagrams are designed to specify different scenarios. Following sequence diagrams show different scenarios.

1. Upload an Event

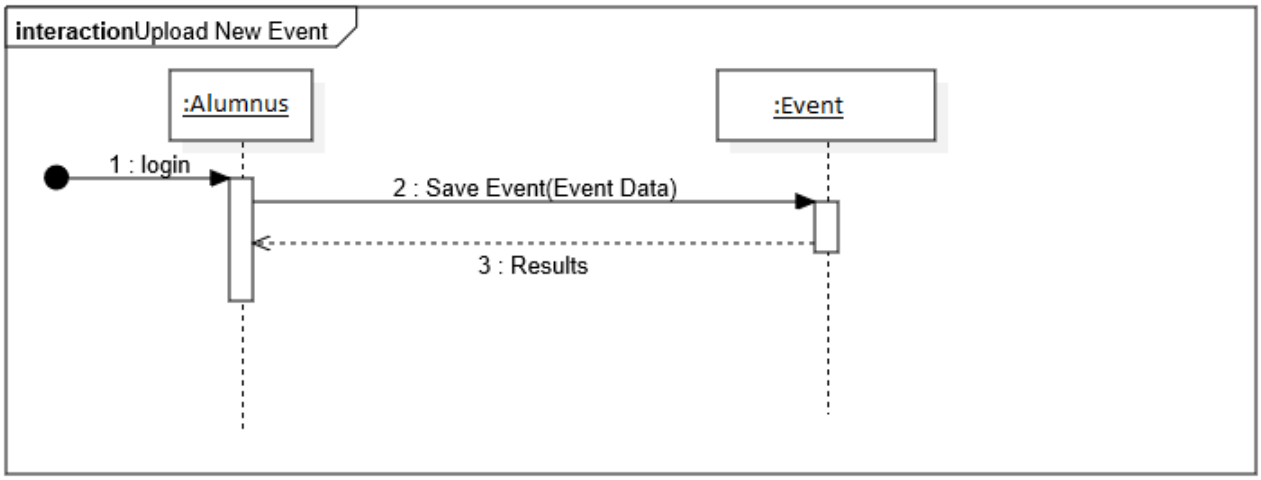


Figure 3-6 Sequence Diagram of Upload an Event

2. Upload New Job

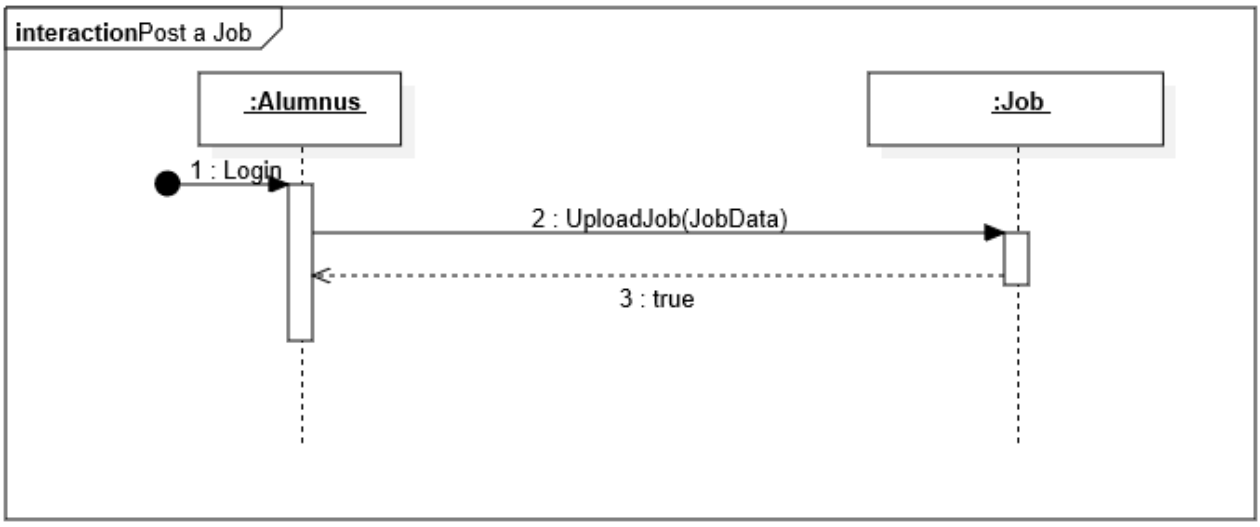


Figure 3-7 Sequence diagram of upload new job

3. Send Message

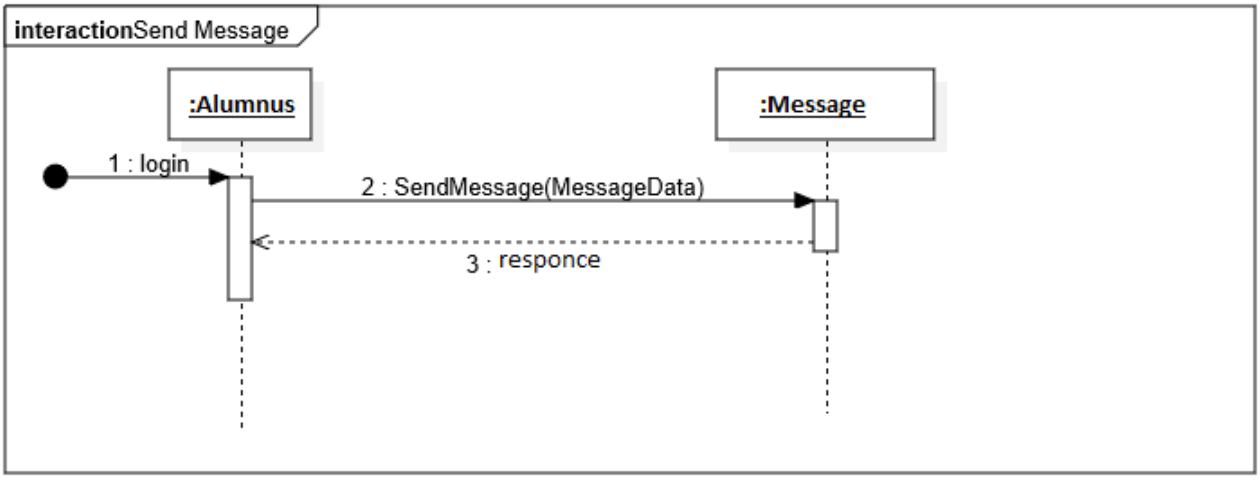


Figure 3-8 Sequence Diagram of Send Message

4. Search Alumnus by Batch

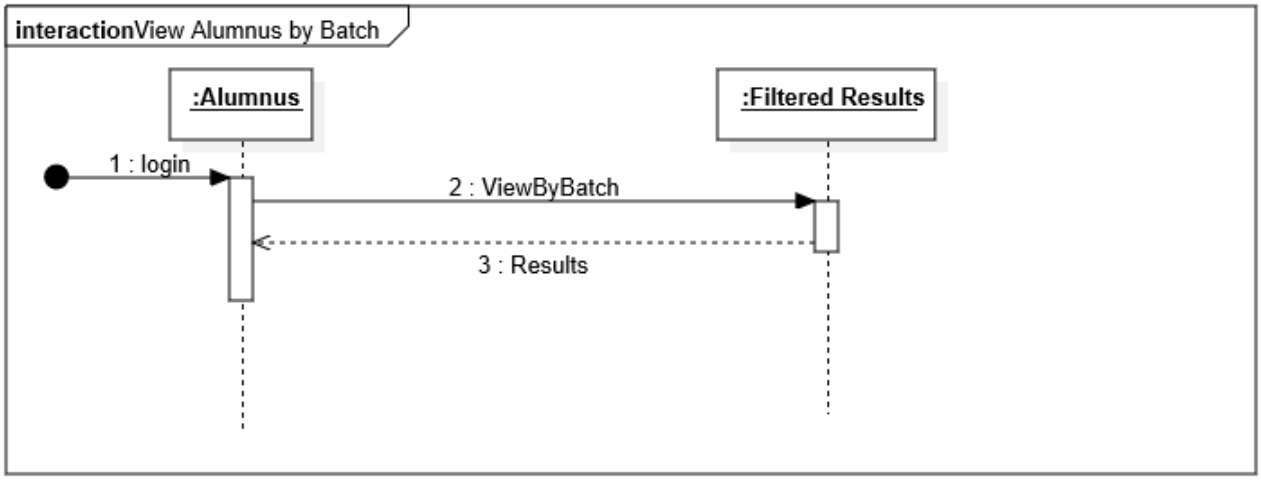


Figure 3-9 Sequence Diagram of Search Alumnus by batch

5. Delete Educational Information

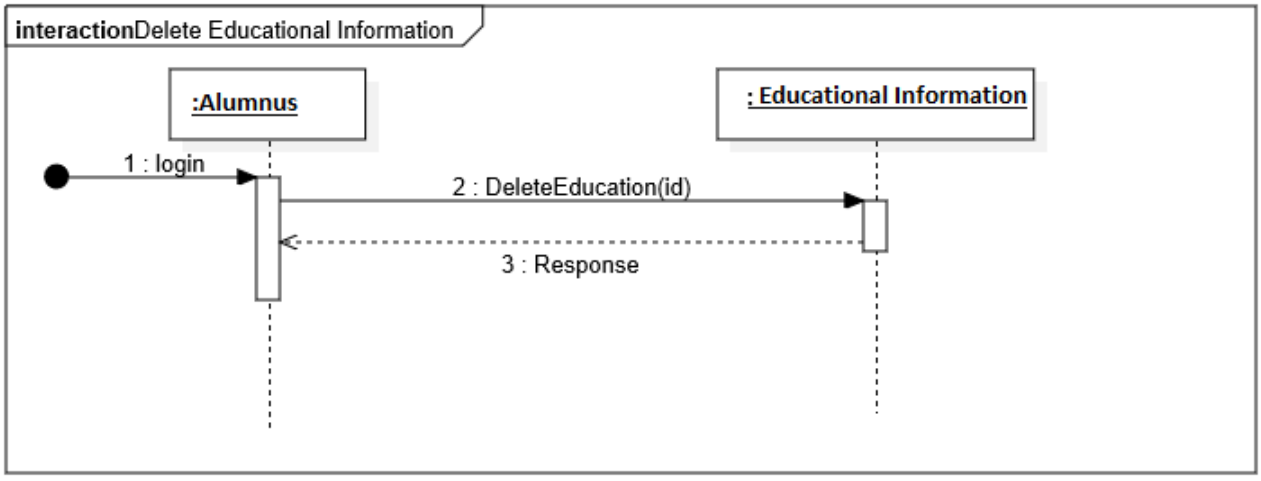


Figure 3-10 Sequence diagram of Delete Education

6. Upload New Post

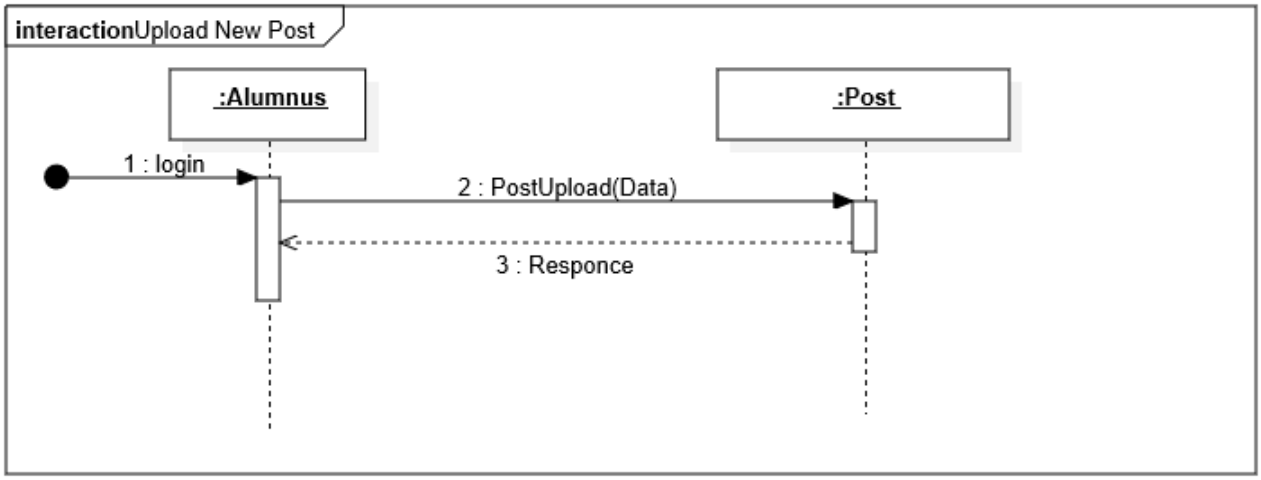


Figure 3-11 Sequence Diagram of Upload New Post

7. Update Professional Profile

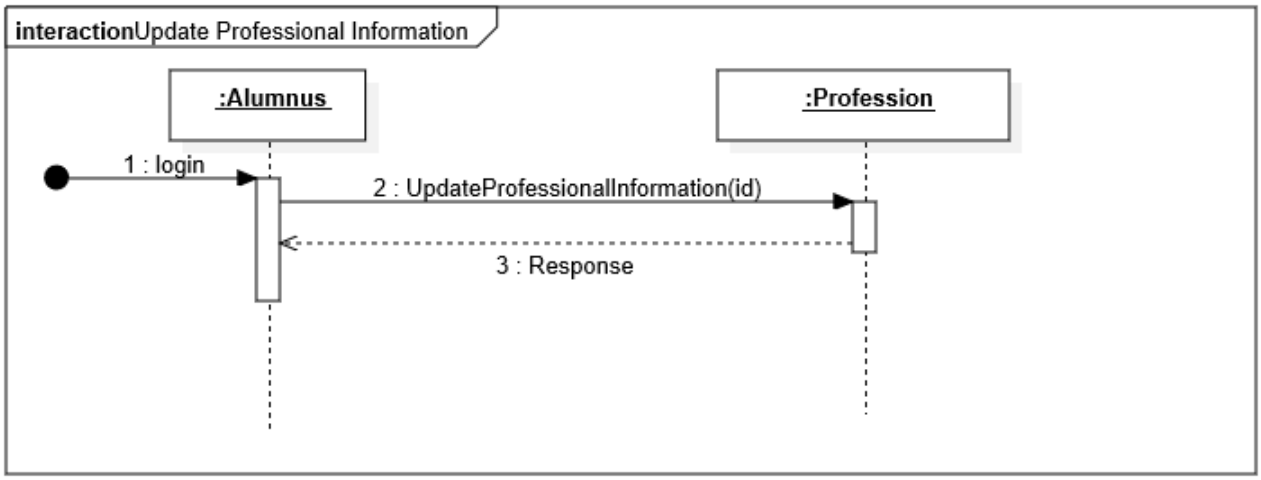


Figure 3-12 Sequence Diagram of Update Professional Profile

8. View Evaluation Graph.

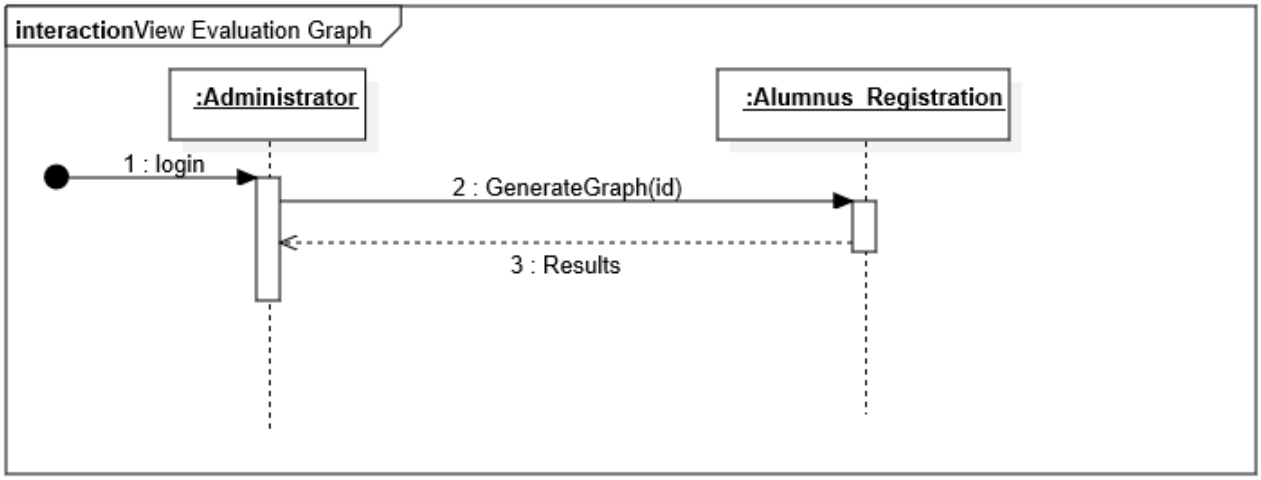


Figure 3-13 Sequence diagram of Evaluation Graph

9. View Colleagues

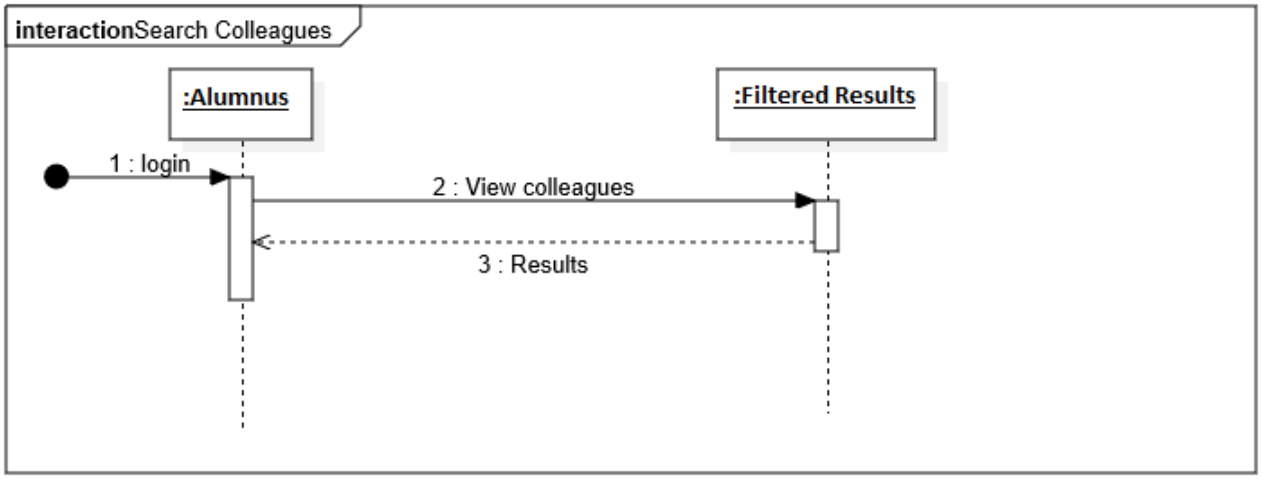


Figure 3-14 Sequence Diagram of Search Colleagues

10. Search Classmates

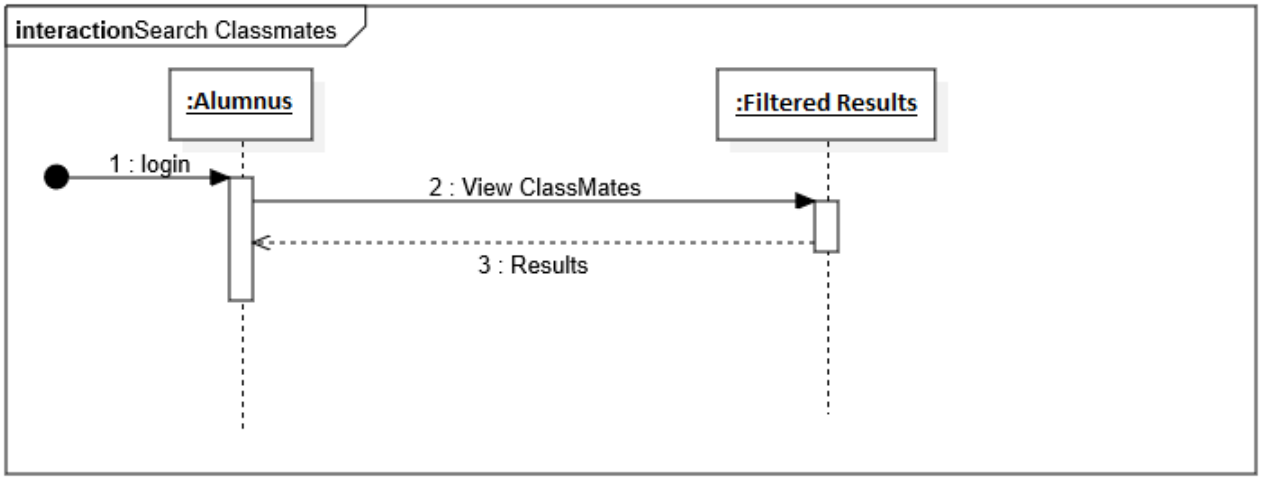


Figure 3-15 Search classmates

3.4.2 Class Diagram

Class diagram illustrates classes, interfaces and their associations. They are used for static object modeling. Requirement specifications help us to identify classes. These classes further contains certain operations and attributes. In QAU CS Alumni system these classes play their roles in determining functionality of the system. The description of the classes and their visual representation is as follows:

1. **Alumnus**
   This class determines all the actions of the alumnus. This class has a key role. It contains attributes like email and password. While this class has further associations with other classes as well.

2. **Messaging**
   Alumnus can send or receive message. Keeping this scenario in mind we make this class which has association with alumnus. We know that alumnus is a sender as well as receiver. Message can be send by one alumnus while this one alumnus can send message to many other alumnus. This class has attribute like text of message and sender as well as receiver information. While its operations include sending and receiving message.

3. **Filtered Results**
   The QAU CS Alumni network gives facility to the alumnus to broaden as well as strengthen their relationships. So giving facility to alumnus to search on basis of different criteria e.g. search on basis of classmates, colleagues and other. This class has attributes and functions that fulfills this need.

4. **Educational Information**
   This class contains all the educational information of the alumnus including title of the degree, starting year of the degree, ending date of the degree and institute name as well. It offers operations like adding, updating, searching and deleting any educational information.

5. **Skills**
   It contains all the skills and expertise of the alumnus.

6. **Profession**
   This class offers alumnus to add his or her information regarding to profession and occupations of the alumnus. It contains all the professional information of alumnus including name of profession, the title associated with the title of the profession, its starting and the ending date and the company or organizations where alumnus is doing this profession.

7. **Jobs**
   Alumnus can upload or announce jobs for other alumnus so that other alumnus can apply for those jobs. This class contains all the information about the jobs which are announced by different organizations and the companies. Registered alumnus can upload or view jobs. That is why this class has operations like adding, deleting, searching job announcements.

8. **Events**
   This Class has same functionality like Jobs the only difference is that, this class provide information about the events instead of jobs.

9. **Post**
   Alumnus can post any information on his or her profile wall so that other alumnus remains updated about his or her doings. This class contains description and other information about the post of the alumnus, while it offers certain operations like adding, deleting and updating posts.

10. Company

This class contains name as well as URL of the companies where different alumnus are doing jobs.

11. Personal Information

This class contains all basic information about the alumnus personal life like full name, gender, date of birth, CNIC and profile image. This class has association with address class with a sign of composition. It describes that this address is embedded in the personal information class. Like other classes this class also offers adding, searching, updating and deleting operations on personal information.

12. Administrator

Like alumnus class this class contains all the basic information regarding administrator.

13. Alumnus Registration

This class play its roles when user has to be verified as an alumnus of department of computer science. At the time of clearance the administrator enter CNIC, email and university registration number of the alumnus. This class contains above describe attributes and also offers operations of adding, deleting, updating and searching of alumnus registration.

Class Diagram

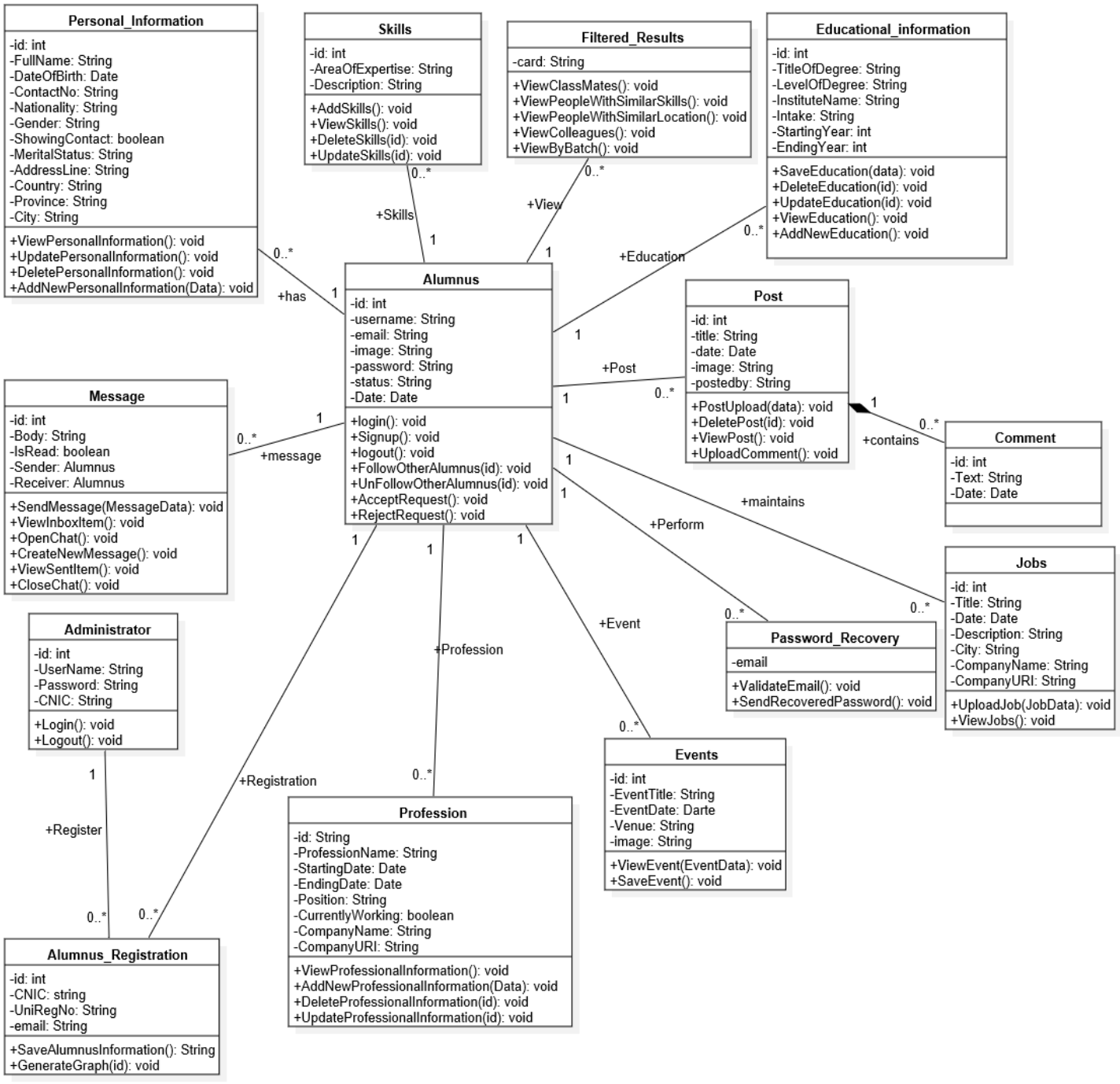


Figure 3-16 Class Diagram

3.5 Component Level Design

3.5.1 Component Diagram

A component is a modular building block for the computer software. A component can contains a set of collaborating classes. **[1]**

The QAU CS Alumni network is divided into different component as per the definition of component diagram. In QAU CS Alumni network there are 8 interrelated components that help system to achieve different functionalities. The following UML diagram shows these interrelated components.

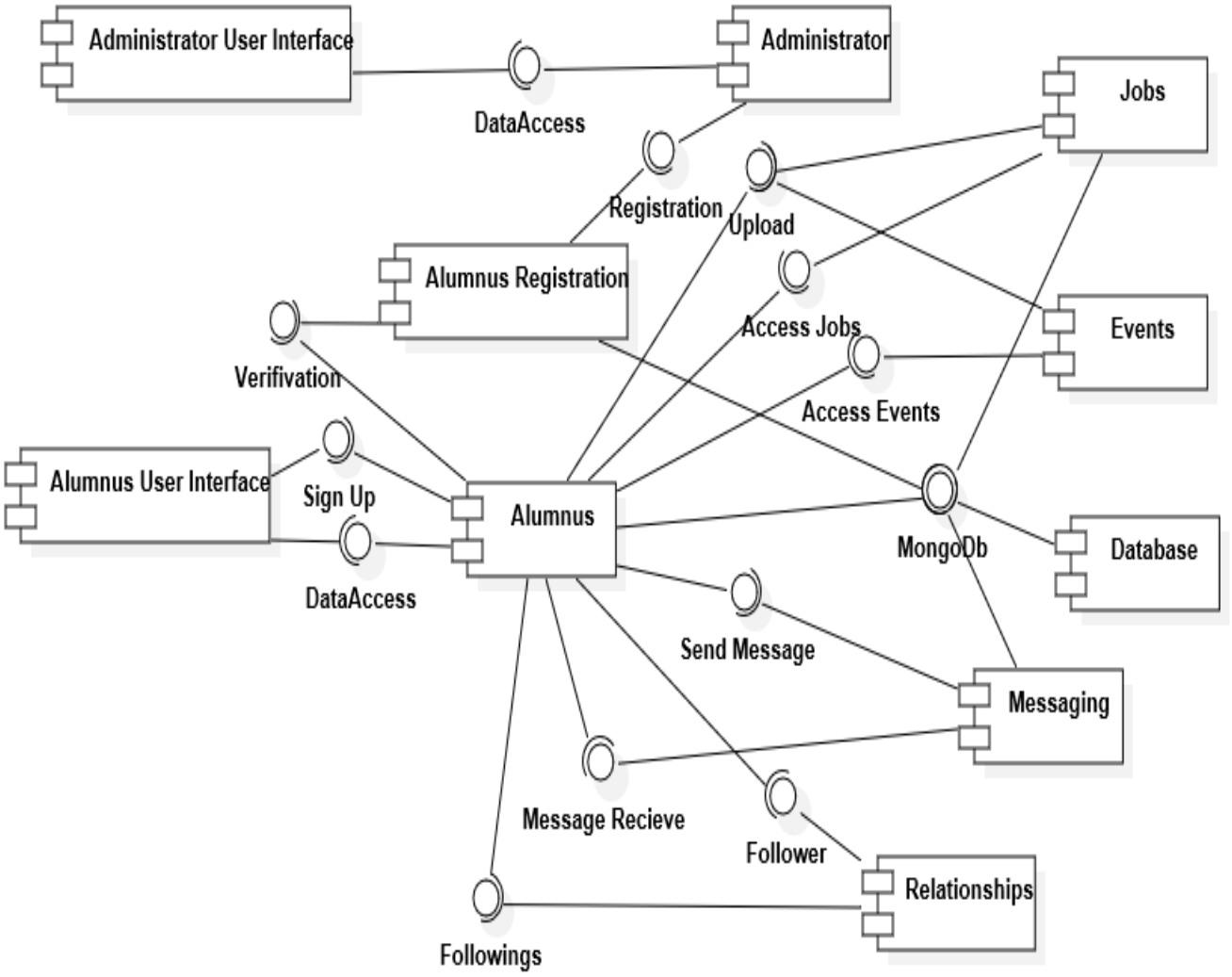


Figure 3-17 Component Diagram

3.5.2 Detailed Description of Components

3.5.2.1 Administrator

Administrator is a key component in component diagram. Its major role is to register the alumnus at the time of his or her clearance from the university. The Administrator component interacts with alumnus registration and also with interface component of administrator.

3.5.2.2 Alumnus

Alumnus is another key component in component diagram which interacts with all most every components in the system. Alumnus can search other alumnus for followings. Alumnus can send or receive messages from other alumnus. Alumnus can view or upload jobs and events, he or she has to be verified as an alumnus at the time when he gets registered.

3.5.2.3 Jobs

The presence of Job component in component diagram ensures that alumnus can use this system for searching latest jobs.

3.5.2.4 Events

There are certain events that alumnus need to be informed like workshops, latest conferences and much more. So alumnus can interact with this component by uploading and searching for latest components.

3.5.2.5 Relationships

To build strong and diverse relations alumnus has to follow other alumnus. Following of other alumnus will increase the relationships and make alumnus to know about the latest updates of his or her classmates, batch mates and others.

3.5.2.6 Alumnus Registration

Alumnus registration provides facility to administration of computer science department to verify every registering user as an alumnus.

3.5.2.7 Messaging

Messaging is the most important components of this alumni system. Alumnus can send or receive messages from the alumnus who are in contact list of that alumnus.

3.5.2.8 Database

Database is used to save and retrieve information or data from every other component.

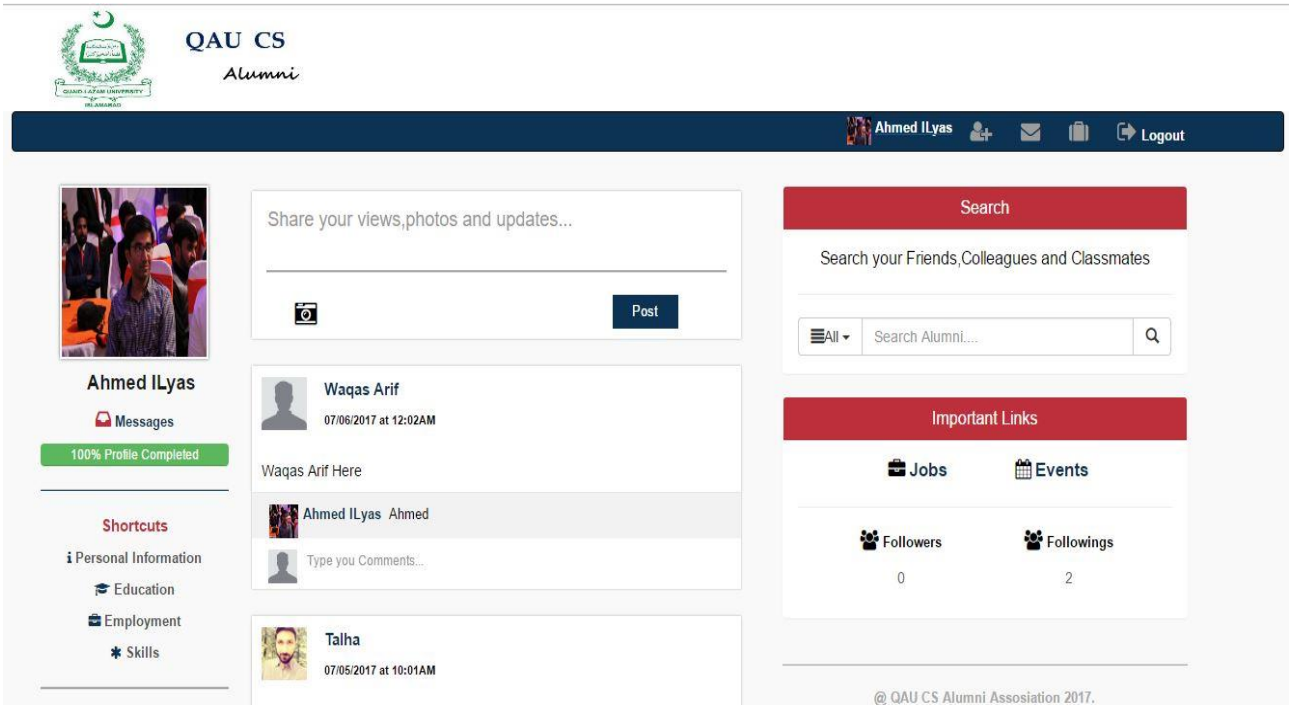
3.6 User Interface Design

User interface design create an effective communication medium between a human and a computer. There are three "**golden rule**" for user interface design. **[1]**

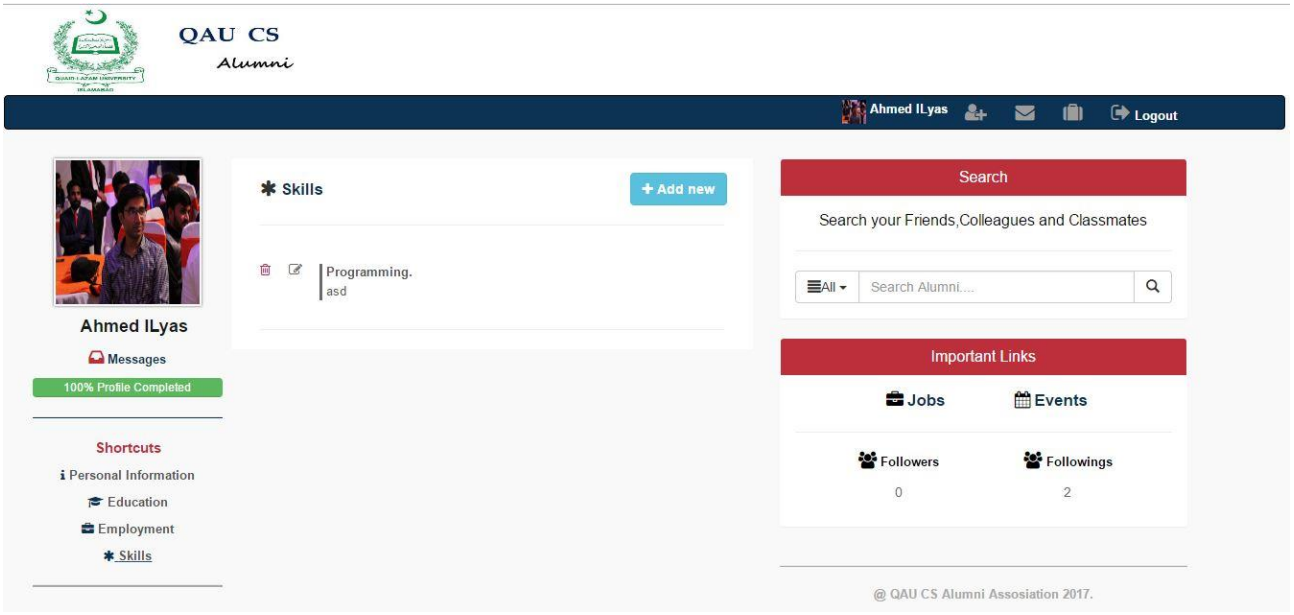
1. Place the user in control.
2. Reduce the user's memory load.
3. Make the interface consistent.

   Following are some user interface designed for QAU CS Alumni network keeping above rule in mind.

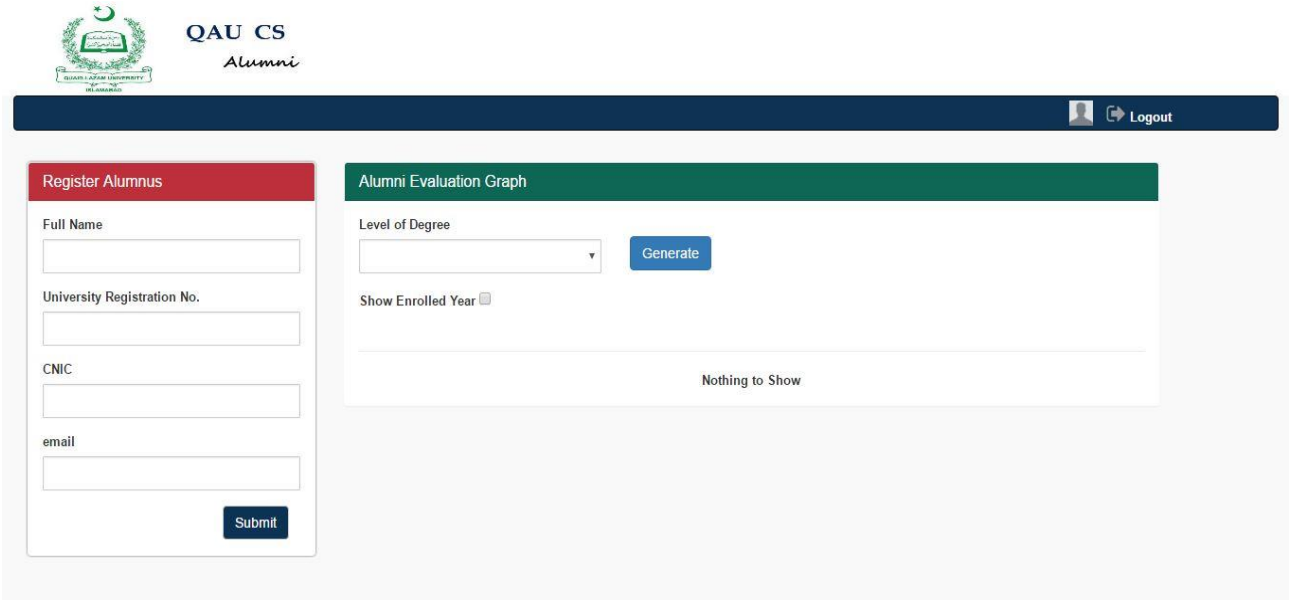
1. Main Page or Home Page of Alumnus User Interface



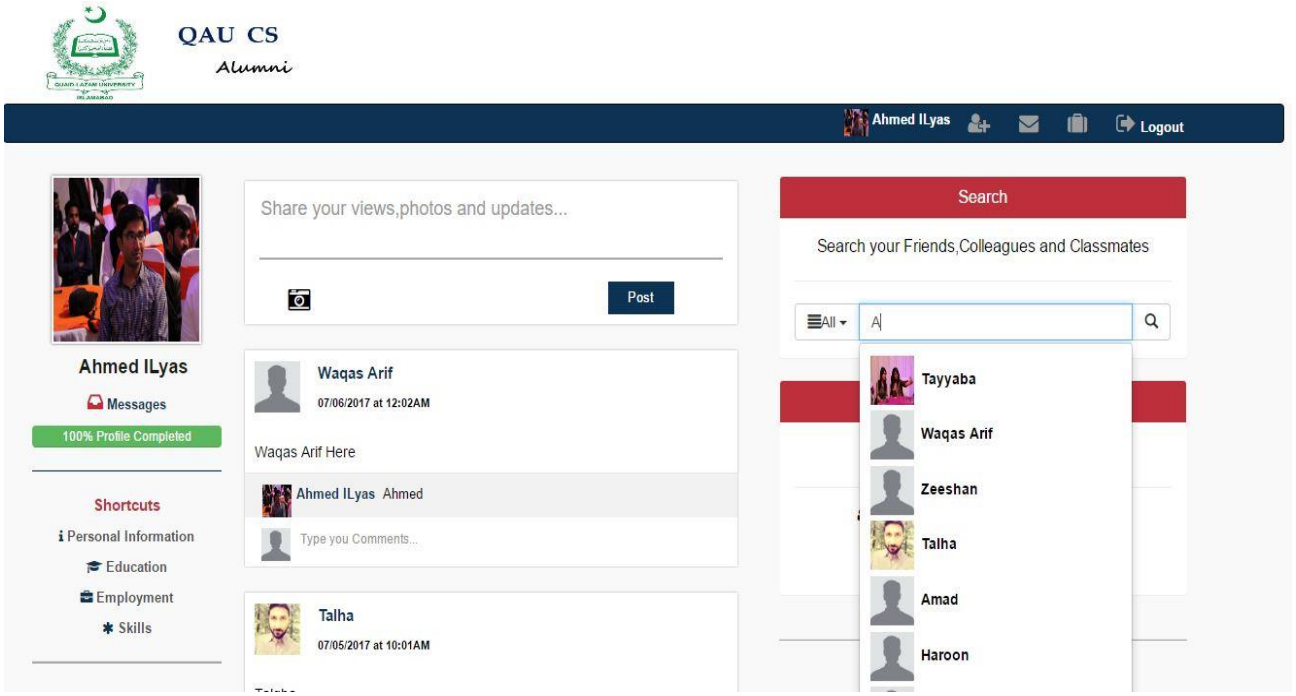
2. Alumnus Skills Panel User Interface



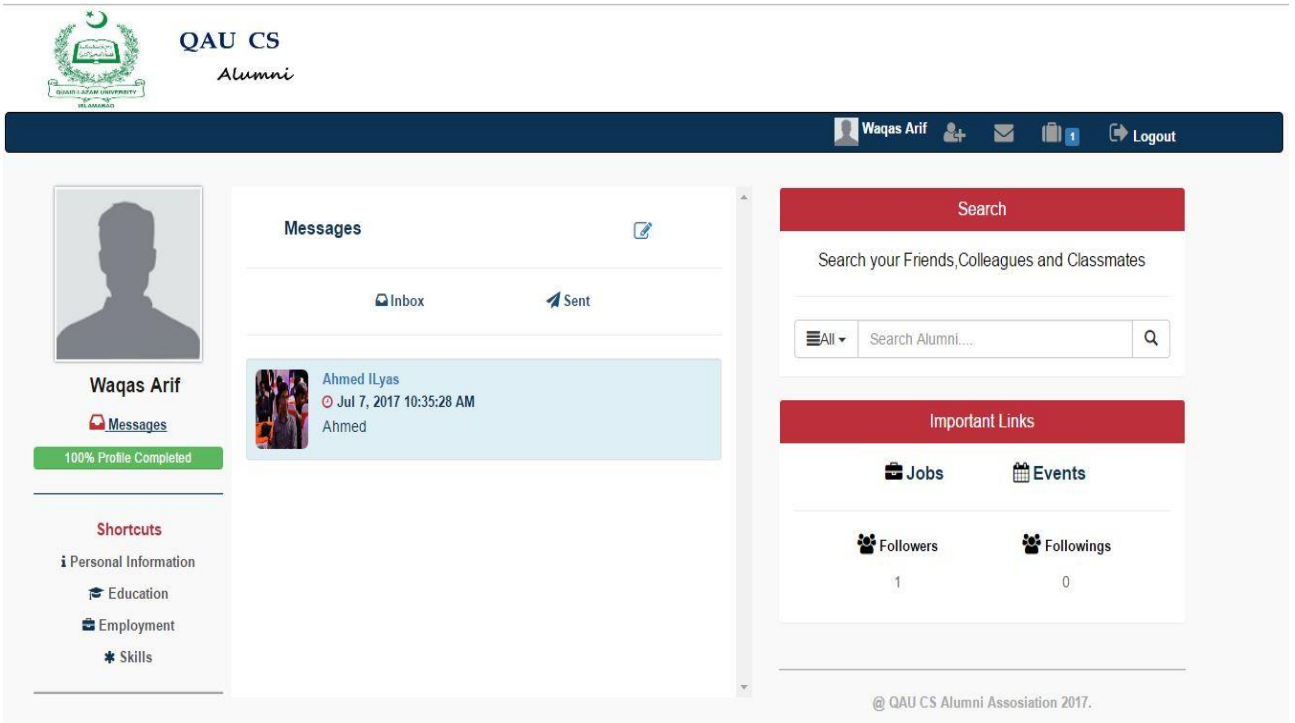
3. Admin Registers Alumnus at time of Clearance User Interface



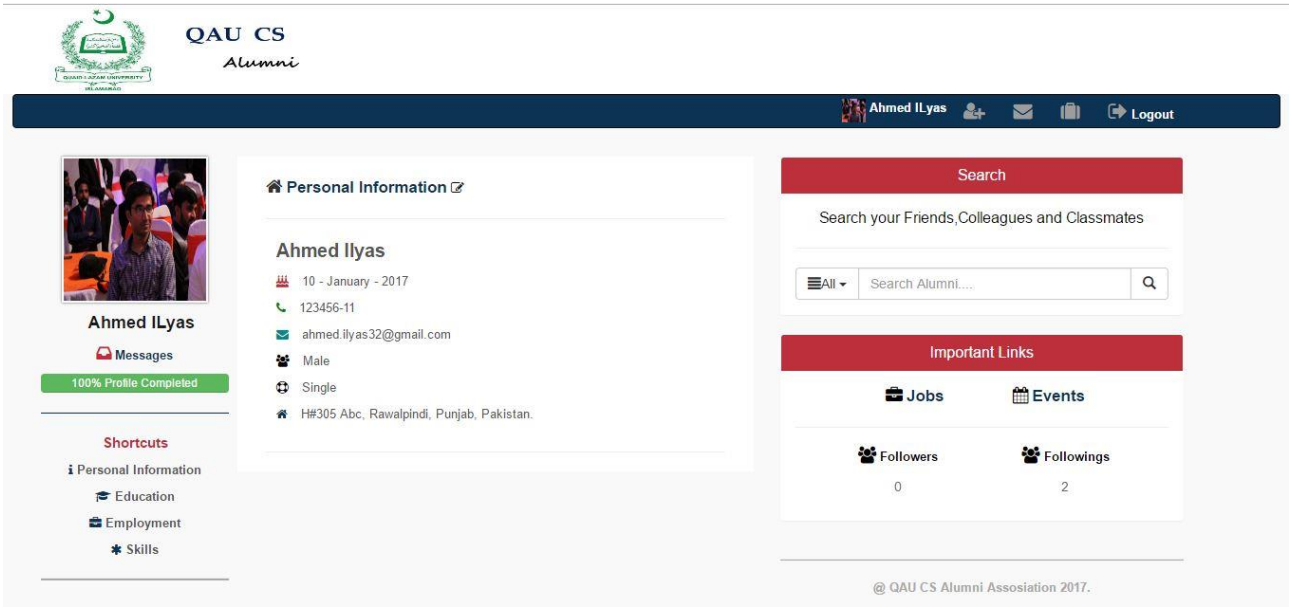
4. Alumnus search any alumnus user Interface



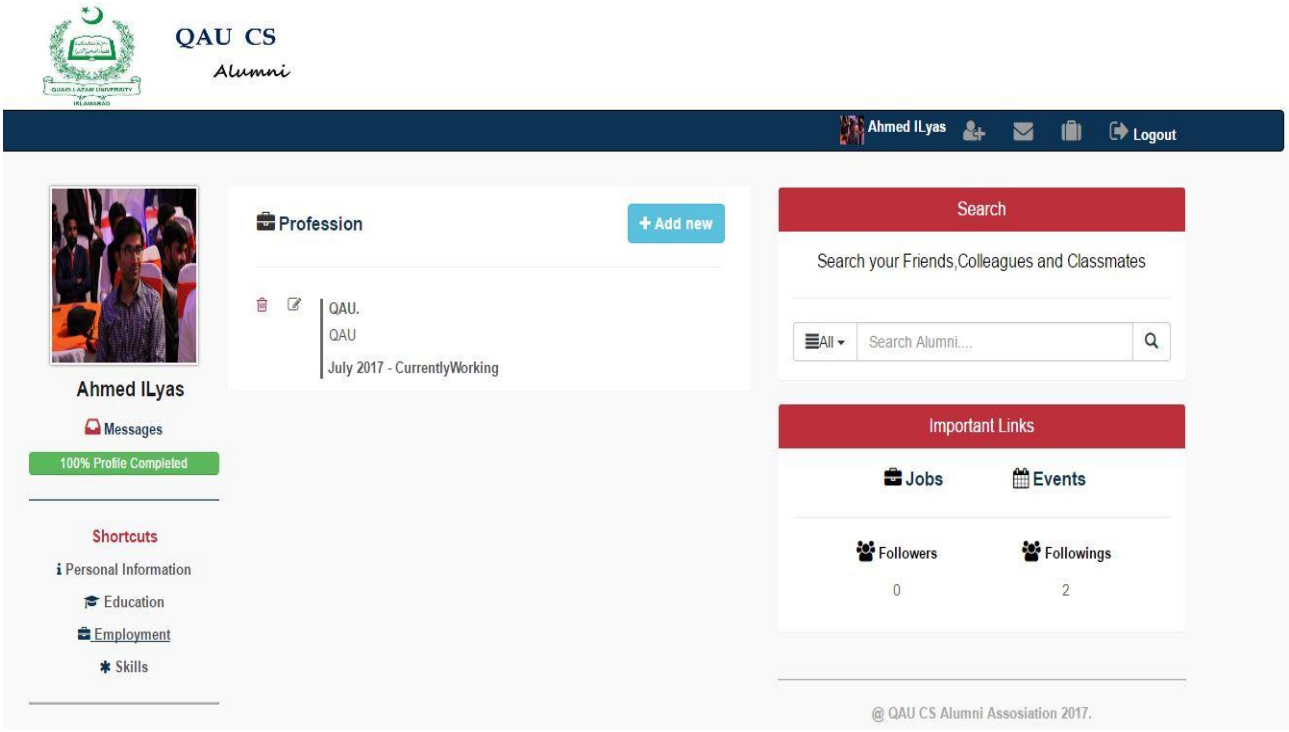
5. Message Panel or View user Interface



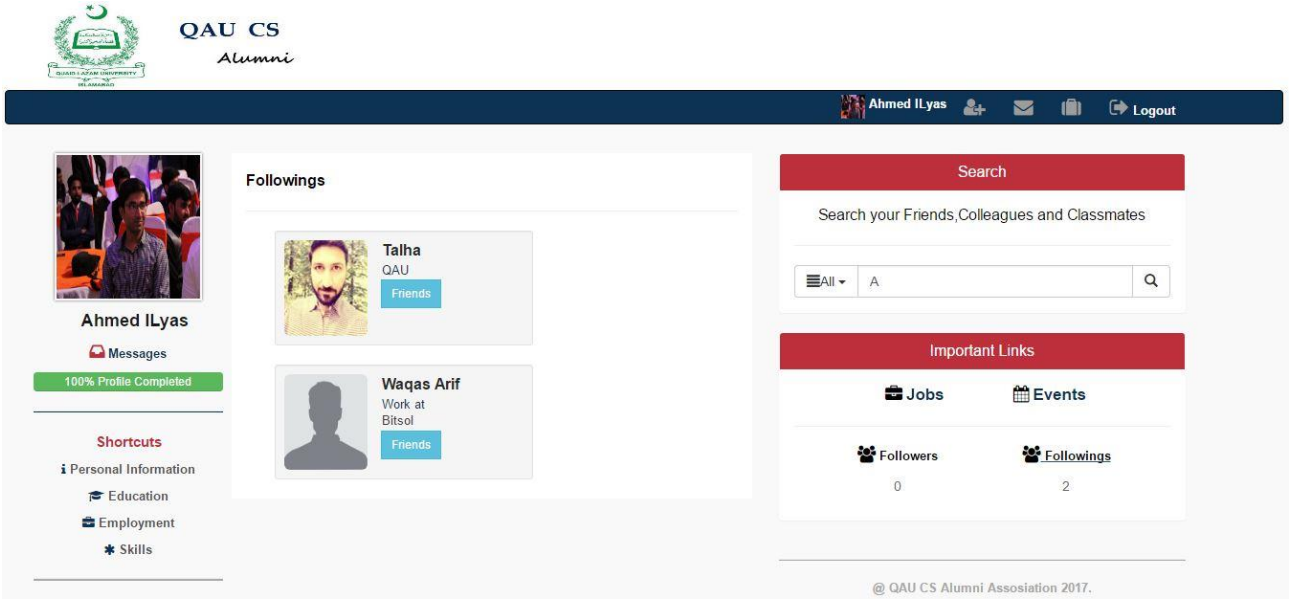
6. Personal Information User Interface



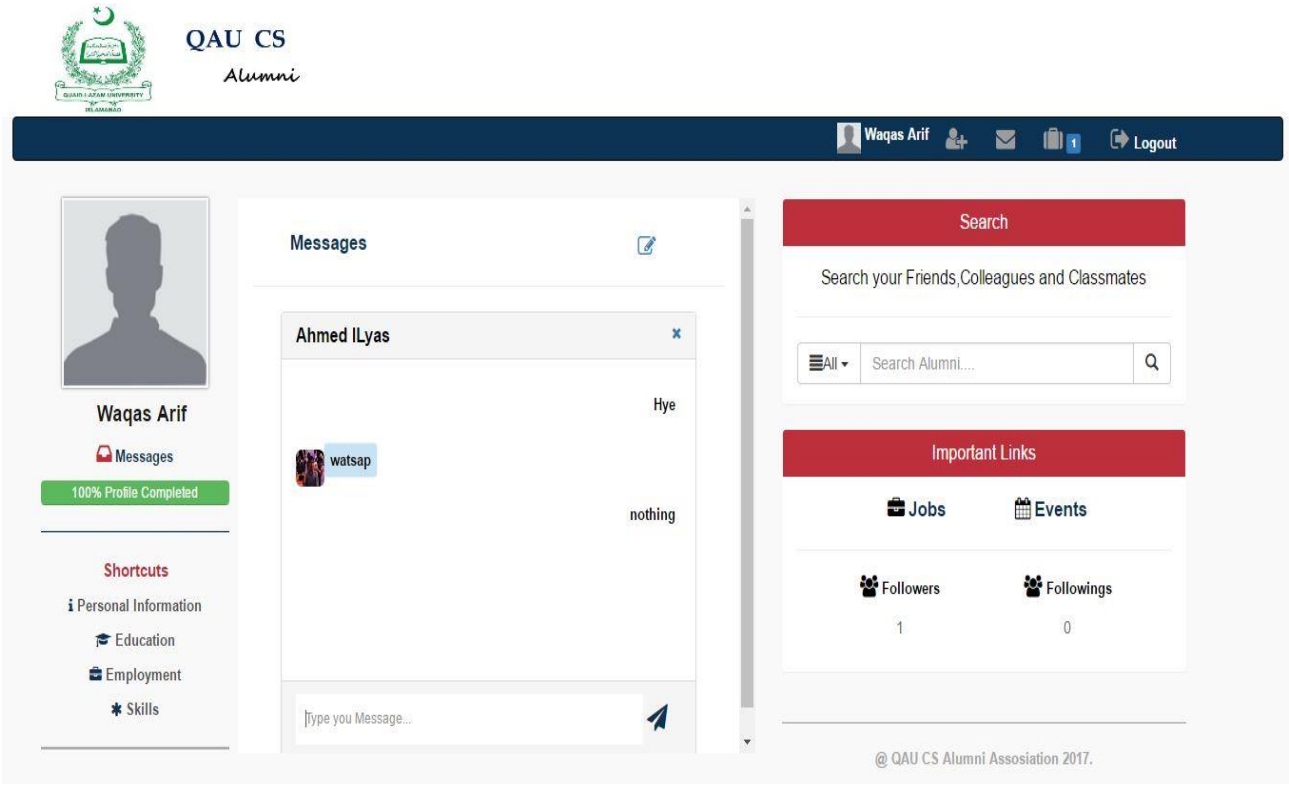
7. Profession User Interface



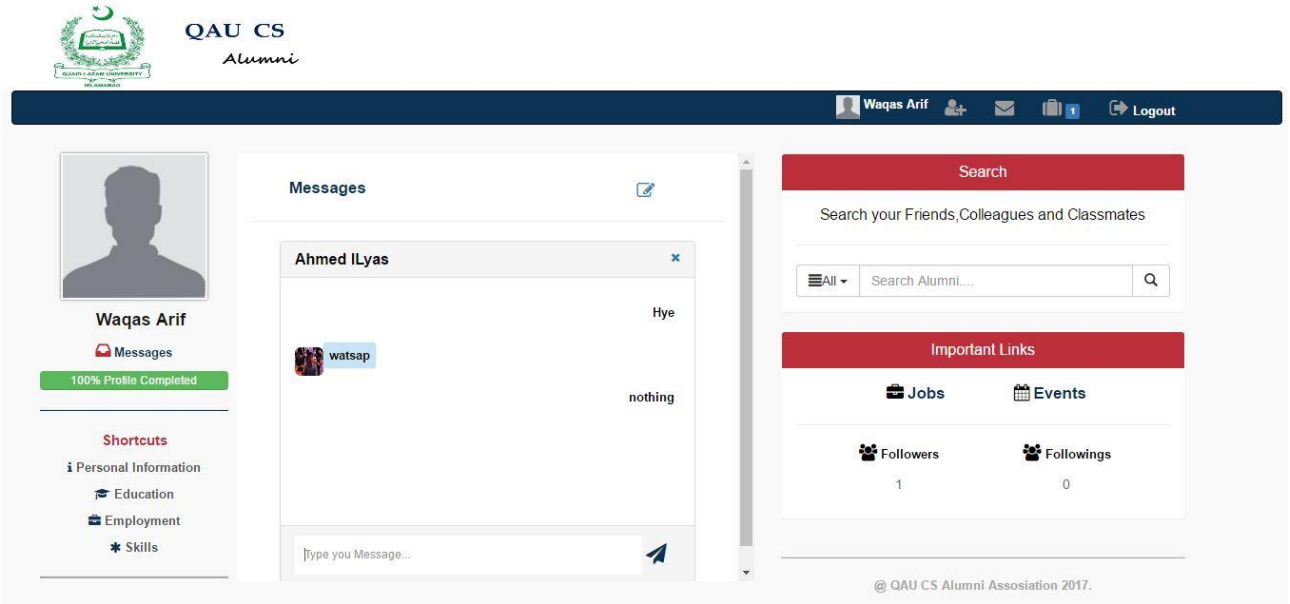
8. Followers Interface



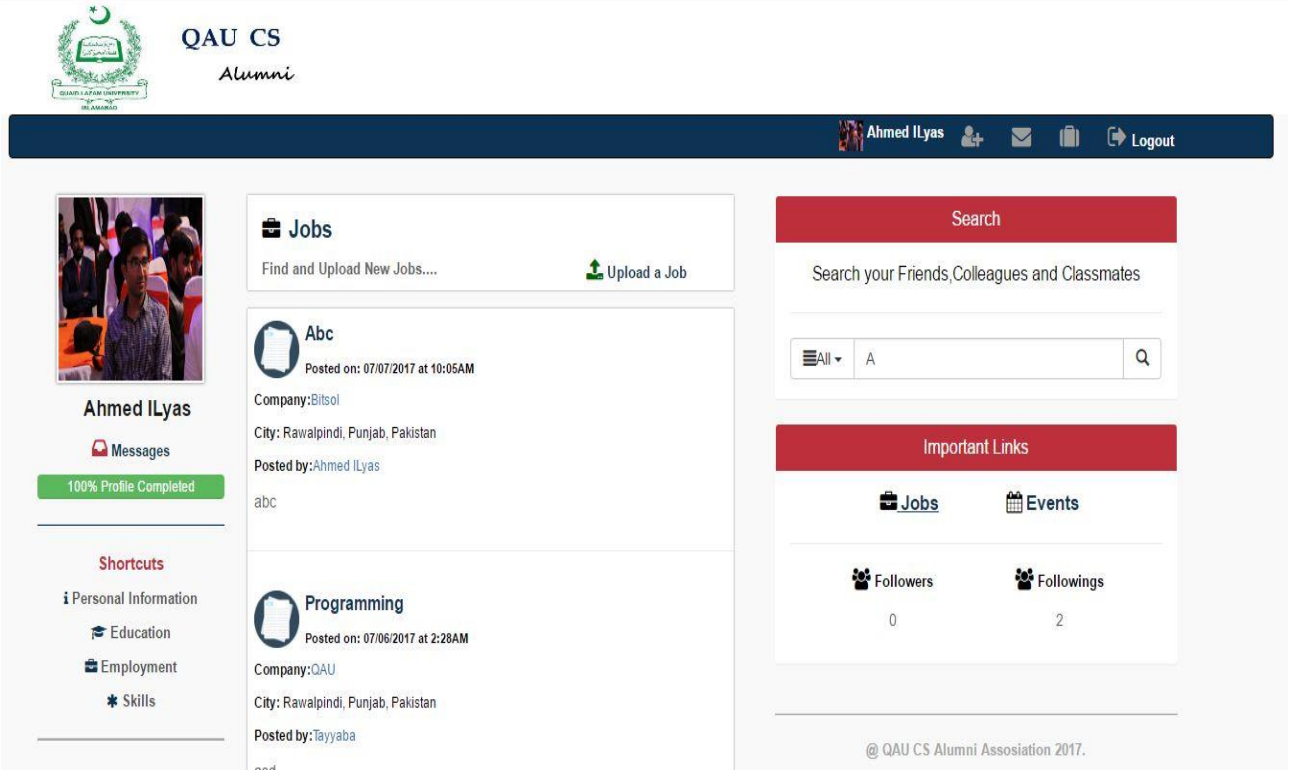
9. Education user Interface



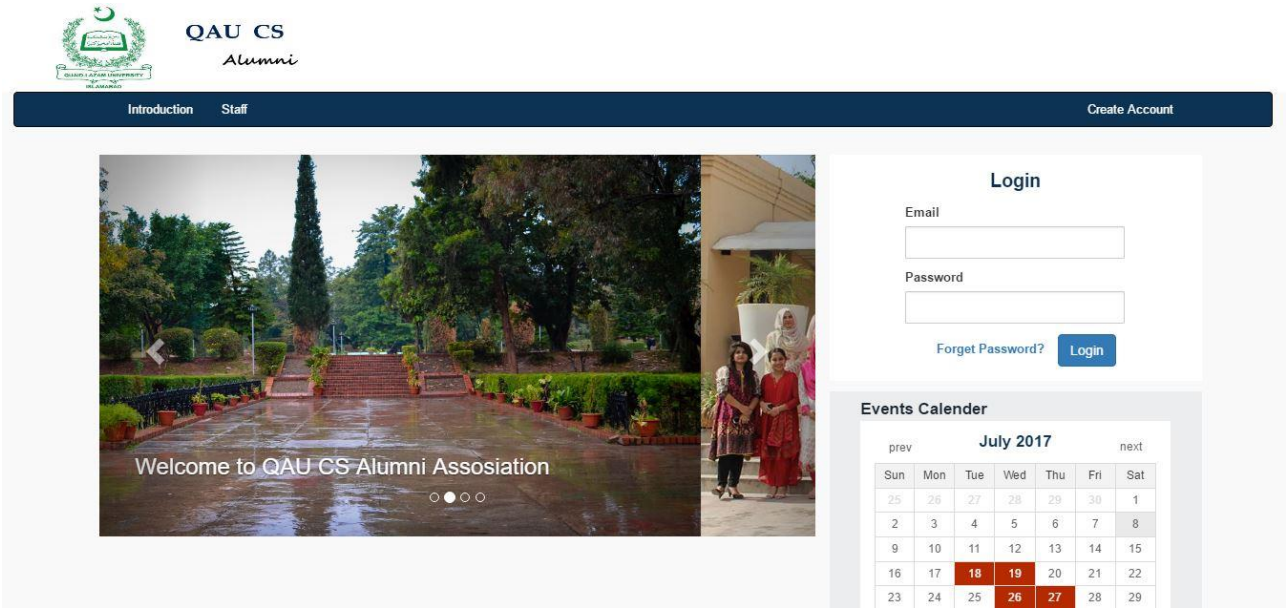
10. Messaging Inbox user Interface



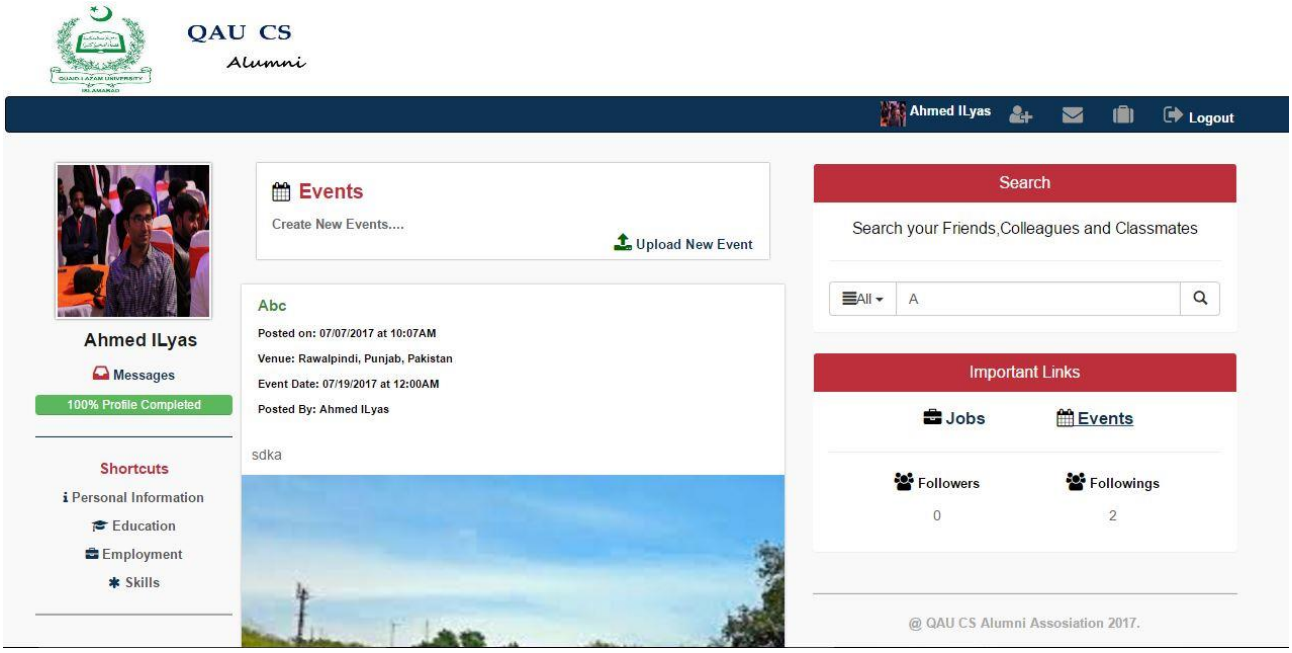
11. Job user Interface



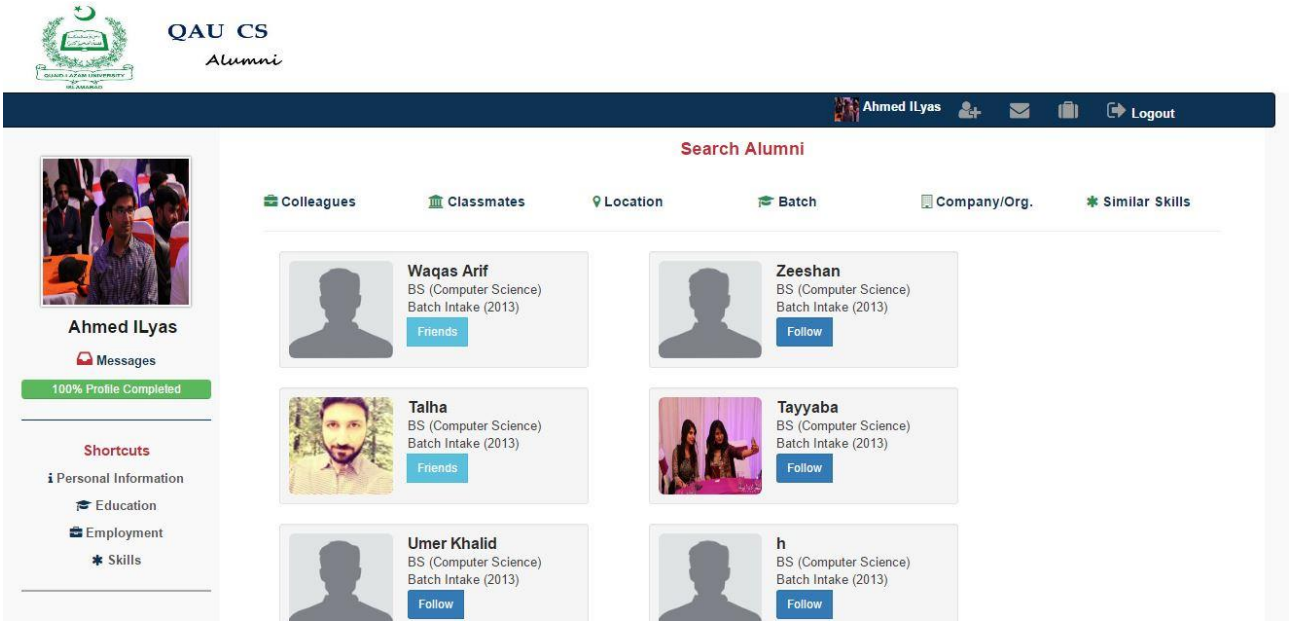
12. Login user Interface



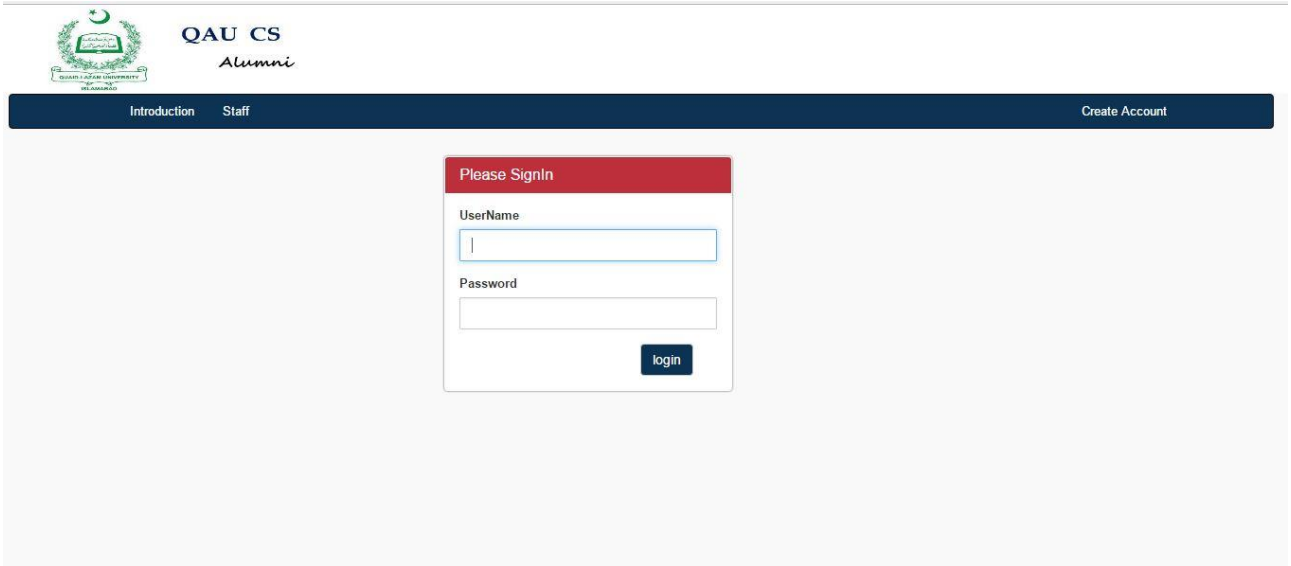
13. Events user Interface



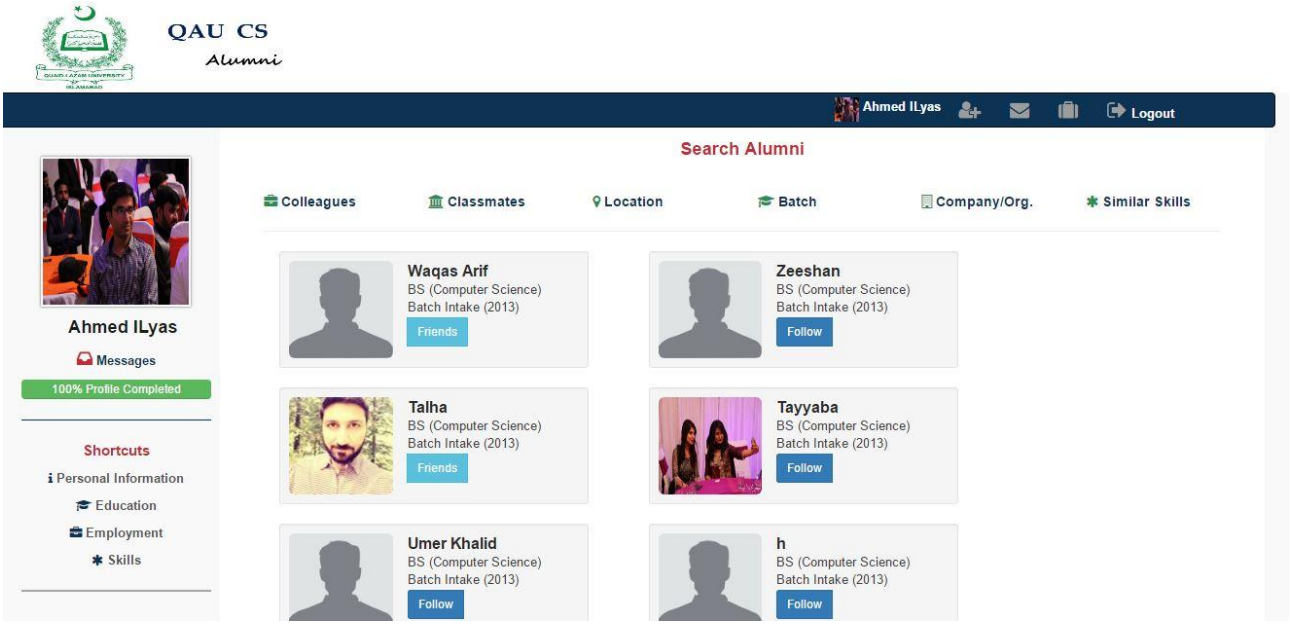
14. Search Filter user Interface



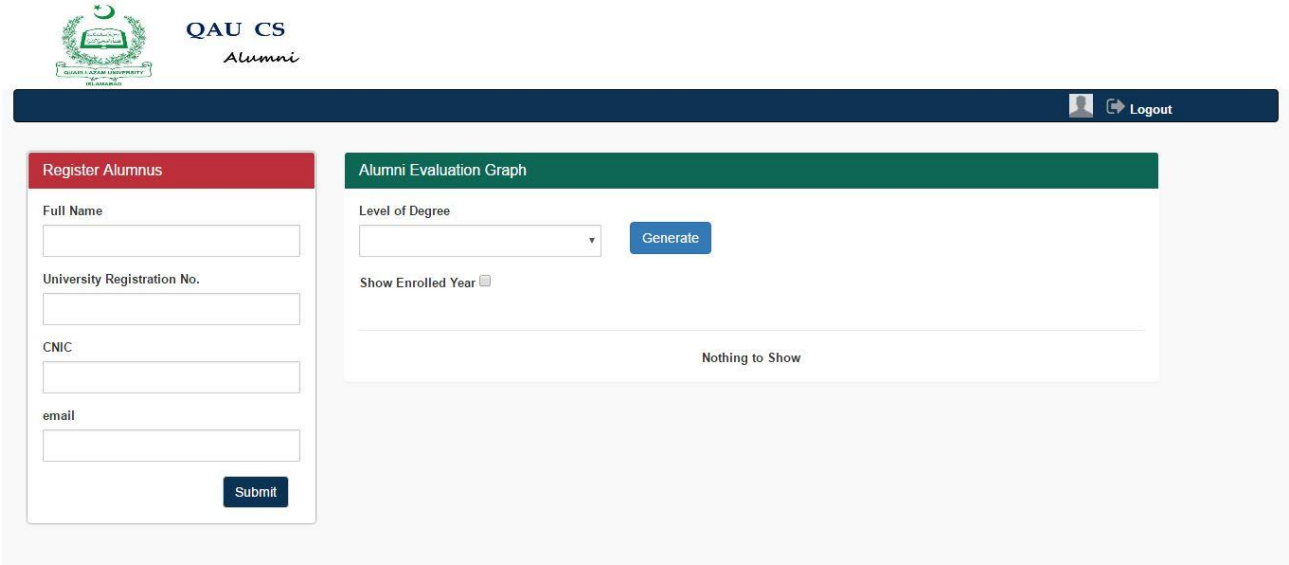
15. Staff Login user Interface



16. Search Class Mates user Interface



17. Admin dashboard user Interface



Chapter 4

System Implementation Documentation

4. Software Implementation Document

4.1 Introduction

Implementation Phase follows the design Phase. The implementation phase takes the design phase products and implements them using appropriate technologies. The purpose of the implementation is to transform design of the system into working software. Coding is quite difficult and complex phase of software development. It needs a strong hold on required language and tool. This chapter describes the implementation phase in detail and also describes the selection of language and different tools used for implementation.

4.2 Technology Selection

MEAN.JS is a full-stack JavaScript solution that helps to build fast, robust, and maintainable production web applications using MongoDB, Express, AngularJS, and Node.js.

4.2.1 Why MEAN:

MongoDB is built for the cloud

This modern database comes equipped with automatic sharding and full cluster support, right out of the box. Plug in MongoDB and it spreads across your cluster of servers to offer failover support and automatic replication. MongoDB gives the ease with which apps can be developed, tested, and hosted in the cloud.

MySQL's structure is confining (and overrated)

Like all relational databases, MySQL forces you to push your data into tables. This isn't a problem if every single entry fits into exactly the same format, but how often is the world that generous? What if two people share the same address but not the same account? What if you want to have three lines to the address instead of two? Who hasn’t tried to fix a relational database by shoehorning too much data into a single column? Or else you end up adding yet another column, and the table grows unbounded.

MongoDB, on the other hand, offers a document structure that is far more flexible. Want to add a new bit of personal information to your user profiles? Simply add the field to your form, roll it up with the rest of the data in a JSON document, and shove it into your MongoDB collection. This is great for projects in flux and for dealing with data that may ultimately prove tricky to constrain in table form.

Disk space is cheap

Among the great revelations of relational databases was the JOIN command. With JOIN, we could save disk space by removing repeated fields like city, state, and ZIP code. By storing this frequently accessed and repeated data in separate tables that can be included in future results through a JOIN, we keep our database tidy and our disks slim.

But JOINs can be tricky for some and hard on RAM, and though it's still a good idea to isolate and access data in separate tables through JOINs, there's not as much need to save disk space now that disk drives are measured in multiple terabytes. The space is so cheap that some database designers end up denormalizing their data because the JOINs are too slow. Once you do that, you don't need a relational database as much. Why not use MongoDB instead?

Node.js simplifies the server layer

The MEAN stack's reliance on Node.js put a kind of pipework all in one place, all in one language, and all in one pile of logic. Having everything in one layer means less confusion and less chance of strange bugs created by weird interactions between multiple layers.

MEAN makes code isomorphic

The simplicity doesn't stop with using JavaScript on the server. By going MEAN, you can enjoy that same JavaScript on the client side. If you write code for Node and decide its better placed in AngularJS, you can move it over with ease, and it's almost certain to run the same way. This flexibility makes programming MEAN-based apps significantly easier.

JSON everywhere

AngularJS and MongoDB both speak JSON, as do Node.js and Express.js. The data flows neatly among all the layers without rewriting or reformatting. MEAN uses the same JSON format for data everywhere, which makes it simpler and saves time reformatting as it passes through each layer. Plus, JSON's ubiquity through the MEAN stack makes working with external APIs that much easier: GET, manipulate, present, POST, and store all with one format.

Node.js is superfast

Apache was great, but these days, Node.js is often flat-out faster. A number of benchmarks show that Node.js offers better performance, while doing much more. Perhaps it's the age of the code. Perhaps the Node.js event-driven architecture is quicker. It doesn't matter. These days, especially among impatient mobile device users, shaving even milliseconds off your app's performance is important and Node.js can do that, while offering a Turing-complete mechanism for reprogramming it.

Depth matters

The Node.js package manager, **NPM**, makes it even easier to share code, and the public repositories targeting Node.js are growing quickly.

AngularJS is fresh

AngularJS was built by folks with 20 years of experience building Web apps. They knew well enough to leave the design work to HTML and CSS. They also figured out how to add a bit of JavaScript to scan the HTML. The designers of AngularJS looked at what humans do well, then tailored the JavaScript to support the humans. The templating system and the logic layers are dramatically cleaner than what we've seen before, in part because the team figured out simpler ways to leverage the local power of JavaScript to guess what you are doing.

4.3 Language Selection

4.3.1 JavaScript

JavaScript is used to create backend and frontend of the software.

4.3.2 Bootstrap library

Bootstrap library is used to illustrate the system attractively.

4.4 Software Selection

4.4.1 MongoDB

MongoDB is an open-source document database and leading NoSQL database.

4.4.2 Node js.

NodeJS is the server that runs your application, NodeJS is an event-driven I/O server-side JavaScript environment based on Google's V8 engine.

4.4.3 Sublime 3.0

Sublime is a text editor and source code editor for windows which help to create new files for working on software.

Chapter 5

Software Test Documentation

5. Software Test Documentation

5.1 Introduction

5.1.1 System Overview

QAU CS Alumni is a three-tier application. In which different component tied-up to make system functional. Every function of the function is tested to increase the reliability of the system.

5.1.2 Test Approach

The choice of test approaches or test strategy is one of the most powerful factor in the success of the test effort and the accuracy of the test plans and estimates. This factor is under the control of the testers and test leaders.
Black-box testing is a method of software testing that examines the functionality of an application based on the specifications. It is also known as Specifications based testing. Independent Testing Team usually performs this type of testing during the software testing life cycle and we are choosing this method.

5.2 Test Plan

5.2.1 Features to be tested

1. Searching.
2. Authentication of Alumnus.
3. Messaging.
4. Follow and Followings Mechanisms.
5. Saving and updating operations on Database.

5.2.2 Feature not to be tested

There are not certain features identified till now which are not to be tested.

5.3 Test Cases

5.3.1 Sign up

ID	TC1	TC1
Use Case	**Signup**	**Signup**
Input(CNIC)	123-532-123434	----------
Expected Output	Verified	Please fill this field.
Actual Output	Verified	Please fill this field.
Verdict	Pass	Pass
Frequency	Passed: 3 times Failed : 1 time	Passed: 2 times Failed: 1 time

5.3.2 Registration

ID	TC2	TC2
Use Case	**Registration**	**Registration**
Input(email)	ahmed@123@yahoo.com	----------
Input(password)	1232441Ag	12
Expected Output	Successfully Registered.	Please fill the field
Actual Output	Successful Registered.	Please fill the field
Verdict	Pass	Pass

Frequency	Passed: 2 times Failed : 1 time	Passed: 2 times Failed : none

5.3.3 Send Message

ID	**TC3**	**TC3**
Use Case	**Send Message**	**Send Message**
Input(Alumnus Name)	Steve Robert	----------
Input(Message Body)	Hey this is me	----------
Expected Output	Message Sent	Message cannot be sent due to empty text in message body.
Actual Output	Message Sent.	Message body cannot be displayed to write message.
Verdict	Pass	Pass
Frequency	Passed: 4 times Failed : 2 time	Passed: 2 times Failed : 1 time

5.3.4 Login

ID	**TC4**	**TC4**
Use Case	**Login**	**Login**
Input(email)	Ahmed@yahoo.com	Ahmed@yahoo.com
Input(password)	1234-1aav	12

Expected Output	Alumnus will be logged in.	Wrong Password or email.
Actual Output	Alumnus will be logged in.	Wrong Password or email.
Verdict	Pass	Pass
Frequency	Passed: 4 times Failed : 1 time	Passed: 3 times Failed: none

5.3.5 Search other Alumnus by keyword

ID	**TC5**	**TC5**
Use Case	**Search other Alumnus by Keyword**	**Search other Alumnus by Keyword**
Input(Alumnus Name)	Steve Robert	Steve John Roberts
Expected Output	Alumnus Found	Nothing to Show.
Actual Output	Alumnus Found	Nothing to Show.
Verdict	Pass	Pass
Frequency	Passed: 3 times Failed: 1 time	Passed: 3 times Failed : 2 time

5.3.6 Search Alumnus by batch

ID	TC6	TC6
Use Case	**Search other Alumnus by batch**	**Search other Alumnus by batch**
Input(year)	2016	2016
Expected Output	Alumnus list will be shown	Nothing to Show.
Actual Output	Alumnus list will be shown	Nothing to Show.
Verdict	Pass	Pass
Frequency	Passed: 5 times Failed :3 times	Passed: 4 times Failed : 3 times

5.3.7 Search Colleagues

ID	TC7	TC7
Use Case	**Search Colleagues**	**Search Colleagues**
Input(select colleagues)	----------	----------
Expected Output	Alumnus list will be shown who are colleagues	Result not.
Actual Output	Alumnus list will be shown who are colleagues	Result not found.
Verdict	Pass	Pass

Frequency	Passed: 2 times Failed: 1 time	Passed: 1 times Failed: 0 time

5.3.8 Search Alumnus by Organization

ID	**TC8**	**TC8**
Use Case	**Search other Alumnus by organization**	**Search other Alumnus by organization**
Input(organization)	Bit Sol	Netflix
Expected Output	Alumnus list will be shown	Result not found.
Actual Output	Alumnus list will be shown	Result not found.
Verdict	Pass	Pass
Frequency	Passed: 1 times Failed : 1 time	Passed: 2 times Failed : 1 time

5.3.9 Follow other Alumnus

ID	**TC9**	**TC9**
Use Case	**Follow other Alumnus**	**Follow other Alumnus**
Input(Alumnus name)	Robert	Robert

Input(Press Follow)	Follow	----------
Expected Output	Followings	----------
Actual Output	Following	----------
Verdict	Pass	Pass
Frequency	Passed: 3 times Failed : 1 time	Passed: 5 times Failed : 1 time

5.3.10 Login as an Administrator

ID	**TC10**	**TC10**
Use Case	**Login as an administrator**	**Login as an administrator**
Input(username)	Ahmed	----------
Input(password)	123asdsdg.	123asdsdg
Expected Output	Admin will be redirected to profile view.	Sorry username not correct
Actual Output	Admin will be redirected to profile view.	Sorry username not correct.
Verdict	Pass	Pass
Frequency	Passed: 3 times Failed : 1 time	Passed: 2 times Failed : none

5.3.11 Register Alumnus

ID	TC11	TC11
Use Case	**Register Alumnus**	**Register Alumnus**
Input (Uni. Regnum.)	Bf13-12123123	Bf13-231231-231
Input(CNIC)	213-213123-1231	----------
Expected Output	Successfully Registered	Sorry Fill all fields
Actual Output	Successfully Registered.	Sorry Fill all fields.
Verdict	Pass	Pass
Frequency	Passed: 3 times Failed : 1 time	Passed: 3 times Failed: none

5.3.12 Post a Job

ID	TC12	TC12
Use Case	**Post a Job**	**Post a Job**
Input (Title)	Need a .Net Developer	Need a .Net Developer
Input(Date)	12-1-2017	----------

Input(Description)	A highly skilled Person is needed	A highly Skilled Person is needed.
Input(Company)	Google	Google
Expected Output	Successfully Registered	Sorry enter Date to apply for the job
Actual Output	Successfully Registered.	Sorry enter Date to apply for the job.
Verdict	Pass	Pass
Frequency	Passed: 2 times Failed : 1 time	Passed: 3 times Failed : 1 times

Chapter 6

Conclusion and Future Enhancements

6. Conclusion and Future Enhancements

6.1 Conclusion

The main purpose of QAU CS Alumni network is to create social network of alumni of computer science department. This application helps to fills the gap between alumni and provides them a platform to socially interact with each other and increase their communications. This can help alumni to share their thoughts, ideas and views with other alumnus. Alumnus can easily find their classmates, colleagues and batch mates to whom they can easily interact.
Another aspect of this application is to evaluate the pass out batches of department by looking at the graph generated by this application. This can help department of computer science to evaluate their performance and also this helps administration to evaluate the usage of this application.

6.2 Future Enhancements

- Real data from social networks sites can be taken to build basic profiles of alumnus.
- Job and events on this application can also be shared on other social networks.
- This web based application can be enhanced as an android application.

7. References

[1] Software Engineering Roger Pressman.

[2] Chapter 31, 16 Applying UML and Patterns.

[3] Web Applications Development with MEAN Stack, Web Applications Development with MEAN Stack - Webinar Learn Node.js Development with Project – Dot Net Tricks Training Program “Full-Stack JavaScript Solution”.

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