Quaid-i-Azam University Community Guild

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In the name of Allah who is the most Merciful and Compassionate

بسم الله الرحمن الرحيم

QUAID-I-AZAM UNIVERSITY

DEPARTMENT OF COMPUTER SCIENCE

Dated: _____

FINAL APPROVAL

This is to certify that we have read the final report submitted by Shahroz Jamil and it is our judgment that this report is of sufficient standard to warrant its acceptance by the Quaid-I-Azam University, Islamabad for the degree of the Bachelors of Science in Computer Science.

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ACKNOWLEDGMNET

Abstract

In Quaid-I-Azam University people don't have any online source to give any ad for sharing their vehicle, book transport online, getting NEWS about jobs and activities of university clubs and there is a big problem to find suitable accommodation for those who can't get accommodation in university hostels.

This project involves development of a web based system that allows users to share their vehicles with students and university members, find suitable accommodations which are offered by registered private hostels, search new jobs which are offered by university and different companies, book University's transport for private or official purposes, watch the activities of university's clubs and provides student staff support facility which contains student counselling and day care centre on a single platform. The system will be helpful for administrator to maintain information of users.

This system is only for the community of Quaid-i-Azam University Islamabad which contains Faculty, Students, staff members and registered hostels and companies. People get registered themselves on this platform and then are able to avail the facilities being provided. Administrative registers users, so no one except registered users can use this platform.

There will always have a backup of the web application so administrators can use it in case of any web crash or data loss.

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Chapter 1

Introduction

In this chapter we shall discuss about the web application we are going to develop. Using this product community of Quaid-I-Azam University will be able to avail some, but useful facilities such as: students, staff and faculty members, who are interested to share their vehicles, find suitable accommodations, search new jobs, book University's transport, watch the activities of university's clubs and student staff support facility. It will be a user friendly web application and people will save their time by using it. The system has some boundaries such as it is for the only QAU community and it has only the above mentioned facilities.

1 Introduction

This chapter describes that why the QAU community guild system is needed and what its advantages are. It also outlines the major functions and objectives of the system and the major constraints associated with the system. In short, we can say that this chapter provides an overview of the proposed system.

1.1 Problem Definition

The Faculty members and students of the university who want to share their vehicle with other people, but sometimes they don't have any source to advertise properly and the other people who need this facility can't know the persons who want to share it. Also, those students who don't get allotment in the university's hostels they move towards private hostel and don't know where to go for suitable hostels. The new jobs announced in the university or different companies, but rarely people know about it. There is no online source to book the university's transport for private or official purposes. The students and staff members who have to book the transport for trips or other purposes, they have to go to transport office and ask for the availability of buses and that is time consuming, and there are no proper advertisement activates carried out by the different clubs (e.g. Adventure Club) of the university. Also students have no means for counselling so they can't get suitable solution and help about their problems.

1.2 Proposed System

This is a web based system that allows users to avail different facilities on a single platform. The main components of this system are: Users such as Faculty, staff and students can properly advertise their advertisements about vehicle sharing. Members such as registered companies and hostels can advertise about jobs and accommodation respectively. Students can find best suitable private hostels. Users are able to search the jobs easily. Users are able to book the transport for trips and other purposes easily without going from one person to another person. Users are able to see the different activities carried out by varsity club. Besides all these students can apply for counselling and there is a facility of day care centre for the kids of faculty members, they can apply for their kids in day care centre online.

1.3 Scope

This web-based application provides a platform for the community of Quaid-I-Azam University such as: faculty members, staff and students also members such as registered companies and hostels can use this system. Users can share their vehicles, find suitable accommodations, search new jobs, book University's transport, watch the activities of varsity club and student can apply for counselling. Faculty members can apply in day care centre for their kids.

1.4 Objective

The main objective of the system is to save the time of the user (faculty, staff, and student). The tasks related to this project can be done on a single platform. The main objective of this project is to facilitate the users with different services such as: vehicle sharing facility, accommodation listings, job portal, transport booking facility, student and staff support facility, and varsity club management using internet. In vehicle sharing members of Quaid-I-Azam will post ads to find a suitable partner to share the vehicle, in accommodation listing members of QAU who don't have a suitable place to stay such as hostel they can search the suitable places online. In job portal different companies can post their job advertisements, so the community of QAU can search different job and apply for them online. In transport booking members of QAU can apply to Book University's transport online. In student and staff support facility students can find suitable teacher and request online for counselling also faculty members can apply for their kids in day care centre and in varsity club management, updates of Adventure club are provided. The club can post their ads about different activities so other members can view those activities online and can apply for them.

1.5 Project Organization

Project organization describes about the process model being used, roles and responsibilities and it tells about the technologies being used to implement the system.

1.5.1 Software Process Model

In this system V model (Verification and Validation) is being used. V - Model is an extension of the waterfall model and is based on the association of a testing phase for each corresponding development stage. This means that for every single phase in the development cycle, there is a directly associated testing phase. This is a highly disciplined model and next phase starts only after completion of the previous phase. The V-shaped model should be used for small to medium sized projects where requirements are clearly defined and fixed [1].

1.5.2 Roles and Responsibilities

The administrator is playing a major role in this web application. Admin registers new users and keep their information stored in database also he/she can see the user's activities and can handle the different problems occurring in this application.

1.5.3 Tools and Technology

In this web app Visual studio is being used to implement Asp.net and to handle the database SQL server is being used.

1.6 PROJECT MANAGENT PLAN

The purpose of such a document is to provide a comprehensive baseline of what has to be achieved by the project, how it is to be achieved, who will be involved, how it will be reported and measured and how information will be communicated. It should be used as a reference for any decision that is made on the project and for clarification of unclear areas.

	ⓘ	Name	Duration	Start	Finish	Predecesso...	Resource Names
1	✔	⊟QAU Community Guild	69 days?	04/10/16 08:00	06/01/17 17:00		
2	✔	Understand Problem	1 day?	04/10/16 08:00	04/10/16 17:00		Shahroz Jamil
3	▦ ✔	Making of SPMP Doucment	6 days?	05/10/16 08:00	12/10/16 17:00	2	Shahroz Jamil;MS Word;Project Libre
4	✔	⊟Analysis Phase	31 days?	10/10/16 08:00	21/11/16 17:00		
5	▦ ✔	Gather Requirements	2 days?	10/10/16 08:00	11/10/16 17:00		Shahroz Jamil
6	▦ ✔	Refine Requirements	2 days?	12/10/16 08:00	13/10/16 17:00	5	Shahroz Jamil;Project Supervisor
7	▦ ✔	Making of Document V1	1 day?	14/10/16 08:00	14/10/16 17:00	5;6	Shahroz Jamil;MS Word
8	▦ ✔	⊟Identify Specific Requirements	2 days?	17/10/16 08:00	18/10/16 17:00		
9	✔	⊟External Interface Requirements	2 days?	17/10/16 08:00	18/10/16 17:00		
10	✔	User Interface	1 day?	17/10/16 08:00	17/10/16 17:00		Shahroz Jamil
11	✔	Hardware Interface	1 day?	17/10/16 08:00	17/10/16 17:00		Shahroz Jamil
12	✔	Software Interface	1 day?	17/10/16 08:00	17/10/16 17:00		Shahroz Jamil
13	✔	Communication Protocols	1 day?	17/10/16 08:00	17/10/16 17:00		Shahroz Jamil
14	▦ ✔	Making of Document V2	1 day?	18/10/16 08:00	18/10/16 17:00	7;10;11;12;13	Shahroz Jamil;MS Word
15	✔	⊟ Software Product Features	12 days?	18/10/16 08:00	02/11/16 17:00		
16	▦ ✔	Identiy Use Cases	2 days?	18/10/16 08:00	19/10/16 17:00		Shahroz Jamil
17	▦ ✔	Refine Use Cases	8 days?	20/10/16 08:00	31/10/16 17:00	16	Shahroz Jamil;Project Supervisor
18	▦ ✔	Making of Document V3	2 days?	01/11/16 08:00	02/11/16 17:00	14;16	Shahroz Jamil;MS Word
19	✔	⊟Software System Functions	4 days?	02/11/16 08:00	07/11/16 17:00		
20	▦ ✔	Identify System Functions	2 days?	02/11/16 08:00	03/11/16 17:00		Shahroz Jamil
21	▦ ✔	Refine System Functions	1 day?	04/11/16 08:00	04/11/16 17:00	20	Shahroz Jamil;Project Supervisor
22	▦ ✔	Making of Document V4	1 day?	07/11/16 08:00	07/11/16 17:00	20;21;18	Shahroz Jamil;MS Word
23	▦ ✔	⊟Identify Software System Attributes	2 days?	08/11/16 08:00	09/11/16 17:00		
24	✔	Reliability	1 day?	08/11/16 08:00	08/11/16 17:00		Shahroz Jamil
25	✔	Availability	1 day?	08/11/16 08:00	08/11/16 17:00		Shahroz Jamil
26	✔	Security	1 day?	08/11/16 08:00	08/11/16 17:00		Shahroz Jamil
27	✔	Maintainability	1 day?	08/11/16 08:00	08/11/16 17:00		Shahroz Jamil
28	✔	Portability	1 day?	08/11/16 08:00	08/11/16 17:00		Shahroz Jamil
29	▦ ✔	Making of Document V5	1 day?	09/11/16 08:00	09/11/16 17:00	22;24;25;26...	Shahroz Jamil;MS Word
30	▦ ✔	⊟Database Requirements	2 days?	10/11/16 08:00	11/11/16 17:00		
31	✔	Identify Database Requirements	1 day?	10/11/16 08:00	10/11/16 17:00		Shahroz Jamil
32	✔	Making of Document V6	1 day?	11/11/16 08:00	11/11/16 17:00	29;31	Shahroz Jamil;MS Word
33	▦ ✔	⊟Making of Final SRS Document	6 days?	14/11/16 08:00	21/11/16 17:00		
34	✔	Refining SRS Document	6 days?	14/11/16 08:00	21/11/16 17:00	32	Shahroz Jamil;Project Supervisor
35	▦ ✔	⊟Design Phase	29 days?	29/11/16 08:00	06/01/17 17:00		
36	✔	⊟Develop Design	13 days?	29/11/16 08:00	15/12/16 17:00		
37	✔	Develop Architectural Design	2 days?	29/11/16 08:00	30/11/16 17:00		Shahroz Jamil
38	▦ ✔	Review Architectural Design	2 days?	01/12/16 08:00	02/12/16 17:00	37	Shahroz Jamil;Project Supervisor
39	▦ ✔	Develop Interface Design	2 days?	05/12/16 08:00	06/12/16 17:00		Shahroz Jamil
40	▦ ✔	Review Interface Design	2 days?	07/12/16 08:00	08/12/16 17:00	39	Shahroz Jamil;Project Supervisor
41	▦ ✔	Create Sequence Diagram	2 days?	09/12/16 08:00	12/12/16 17:00		
42	▦ ✔	Create Design Class Diagram	3 days?	13/12/16 08:00	15/12/16 17:00		
43	✔	⊟Develop Algorithms	11 days?	16/12/16 08:00	30/12/16 17:00		
44	▦ ✔	Draw Flow Chart	2 days?	16/12/16 08:00	19/12/16 17:00		
45	▦ ✔	Write Pseudo Code	3 days?	20/12/16 08:00	22/12/16 17:00	44	
46	▦ ✔	Review Pseudo Code	2 days?	23/12/16 08:00	26/12/16 17:00	45	
47	▦ ✔	Draw Decision Table	2 days?	27/12/16 08:00	28/12/16 17:00		
48	▦ ✔	Review Decision Table	2 days?	29/12/16 08:00	30/12/16 17:00	47	
49	✔	⊟Evaluate Design	5 days?	02/01/17 08:00	06/01/17 17:00		
50	▦ ✔	Validate Design	2 days?	02/01/17 08:00	03/01/17 17:00		
51	▦ ✔	Verify Design	2 days?	04/01/17 08:00	05/01/17 17:00		
52	▦ ✔	Review & Refine Design	1 day?	06/01/17 08:00	06/01/17 17:00		
53	▦ ✔	Finalize Documentation	1 day?	09/01/17 08:00	09/01/17 17:00		

Figure 1-1: Project Management Plan

1.7 Report Structure

In this chapter, we discussed about the introduction of the system, also we discussed about the problem definition and its solution. This chapter also provides knowledge about the scope and the objectives of the system. The chapter 2 is about the software requires specification. In that chapter it is being discussed about the requirements to develop the system. 3rd chapter is about system design so in that chapter it is being discussed about Entity Relation Diagram (ERD), sequence diagram and class diagram. Chapter 4 is providing information about the implementation of this system. In this chapter it is being discussed that which language is used for implementing system, database and system interfaces. Chapter 5 is about the testing of the system. This chapter contains testing approaches, techniques and test cases used to test the system. Last chapter , chapter 6 is about conclusion and future enhancements which can be mad in system.

In this chapter the overall introduction of system about QAU community guild is provided. In this chapter it is discussed about the problems occurring in QAU community guild manual system and after that a proposed system is introduced. It is also discussed about the scope, objective, project organization and project management plan in this chapter.

The 2nd chapter discusses about the functions of the product and the requirements of the system such as: Specific Requirements which includes external interface, user interface, hardware interface, software interface and communication protocols. It is also discussing about the use cases and system sequence diagram.

The 3rd chapter discusses about the design overview, also discusses about the chosen architecture design of the system and alternative architecture designs. Sequence diagrams are also presented in this chapter which show how objects operate with one another and in what order. At the end class diagram is given which describes the structure of a system.

The 4th chapter discusses about the implementation of the system in which it is described about the language and framework used for the development of system. Also it is discussed why chosen language is used? what are its benefits to select this language. Screen shots and their description are also provided in this chapter.

The 5th chapter discusses about the testing techniques used for the testing. Also it is discussed about the testing tools, testing approaches and testing plan. Test cases are also given in this chapter which are testing all the functions/ test cases of the system.

The 6th chapter discusses about the conclusion of the system and the probable future enhancements in the system which will make this system more vast so users will have more facilities on same platform.

2 Chapter# 2

Software Requirements Specifications

Introduction

This section of the document specifying the general factors that affects the product and its requirements, providing a background for the requirements of the software. It also describes the summary of the functions that the software will perform. It also describes the user capabilities and their interest.

2.1 Product Overview

This product allows the Administrator to register users on system, post ads, view ads, and interact with others also users can search new jobs. This also allows users to find feasible accommodation. This provides utility to users to book university transport, view the activities of university's clubs and provide student and staff support facility in which students can request to teachers for counselling and faculty members can apply in day care centre for their kids.

2.1.1 Stakeholders

Administrator, clubs of QAU, a community of QAU such as Teachers, Staff and Students, members such as registered hostels, and companies are stakeholders.

2.1.2 Major Functions

Major functions of this system are: It registers the users. After registering the users a user id and password is provided to that person through email. It also stores data in a database that helps the administrator to manage it. It provides facility to users and members to post advertisements about vehicle sharing, accommodation listening, jobs offered by different companies and the activities of varsity club. The user can apply for jobs, vehicle sharing, accommodation and club membership online. Admin can delete the ad(s). It also provides online facility to book the QAU transport online. Students can apply for counselling online. Faculty members can enrol their kids in day care centre by filling the online form.

2.1.3   **Major Inputs and outputs**

Major inputs and outputs tell about the possible input entered by the user and in answer of those inputs what will be the out of the system.

2.1.3.1   Major Inputs

Major inputs of the user can be: entering the user id and password to login, posting advertisements and search advertisements about vehicle sharing, accommodation listening, jobs and activities of different clubs of QAU. User can enter information to fill forms online.

2.1.3.2   Major Outputs

Major output will be shown by system against those inputs which are entered by the user. If a user posts the advertisement, then system will show output about the successful posting or can show any error in case of any mistake. If the user fills the online form, then system will show the successful submission of form or can show error message in case of any mistake.

2.1.4 **Definitions, Acronyms and Abbreviations**

Table 2-1: Table of Definition, Acronyms and Abbreviations

Acronyms	Definitions
QAU	Quaid-I-Azam University
UC	Use Case
Users	Teacher, Staff, Student
Member	Hostels, Companies
Admin	Administrator
Ad(s)	Advertisement(s)

2.2 Specific Requirements

2.2.1 **External Interface Requirements**

External interface requirements are

2.2.1.1   User Interfaces

The user interfaces are made with user-friendly colour combination. Interfaces are made responsive, so that they can be opened easily on any type of screen width. For this purpose, Bootstrap is used that makes the website responsive.

2.2.1.2 Software Interfaces

The Website can be run on any operating system with any web browser. It is due to its responsiveness and compatibility features. Software requirements for server side and client side are:

Requirements	Server Side	Client Side
Web Browser	--	Any web browser

Table 2-2: Software Interface

2.2.1.3 Hardware Interface

There is no hard and tough hardware required to run our application. Even it can be run using processor with Windows XP. The website can be open in any browser using any device. But it is recommended to use a better machine to run website perfectly. Hardware requirements for server side and client side are:

Requirements	Server Side	Client Side
Monitor	Yes	Yes
Keyboard	Yes	Yes
Mouse	Yes	Yes

Table 3-3: Hardware Interface

2.2.1.4 Communication Protocols

The website shall use the HTTP protocol for communication over the internet.

2.3 Software Product Features

The user can avail following features:

- Apply for registration
- Login to the website
- Browse in different facilities being provided
- Submit an ad
- View ads
- Book the transport
- View activities of clubs
- View member's details
- Apply for club membership
- Apply for accommodation

- Apply for vehicle sharing
- Search jobs
- Make a resume
- Modify resume
- Apply for job
- Student can request to teacher for counselling.
- Faculty members can apply in day care centre for their kids.

The member can avail following features:

- Apply for Registration
- Login
- Post Advertisement
- View Advertisement

The administrator can avail following features:

- Login
- Check website status
- Register users
- Add new admin
- Update the provided facilities on the web app
- View the requests for registration
- Review ads
- Post ads
- Delete ads
- Send e-mail to any user
- View all the assets
- Change the content of web app such as privacy policy or terms and conditions
- Disable account of any user
- Reset password
- Backup database
- Logout

2.4 Software System Attributes

2.4.1 Reliability

The system is reliable if it provides accurate results of queries made by any user. There would be no ambiguous or wrong result of queries.

2.4.2 Availability

The system is available on the internet and can be accessed from devices like desktop, laptop, tablet and mobile phone. It responses the queries instantly and system will not be available in case of any crash happened in this system.

2.4.3 Security

Only registered users use this platform and the system's back-end servers can only be accessible to authenticated administrators. Unauthenticated users can't use this system. This system is secured from SQL injection attacks. In future if this project is deployed at high level, then the conversation can be secured by encryption and decryption.

2.4.4 Maintainability

The content of the website shall be handled by administrator and the records shall be instantly corrected in case of any wrong information. In case either data loss or system got crashed, administrator maintains it using fast backup procedure.

2.4.5 Portability

This system is portable as it is platform independent. It provides same features either it is running on Windows or Linux.

2.4.6 Performance

This system is fast enough to provide the results of queries in no time. Multiple users can use this system at the same time.

2.5 Database Requirements

An Entity Relationship Diagram (ERD) is a snapshot of data structures. An Entity Relationship Diagram shows entities (tables) in a database and relationships between tables within that database. For a good database design it is essential to have an Entity Relationship Diagram.

There are three basic elements in ER-Diagrams:

- Entities are the "things" for which we want to store information. An entity is a person, place, thing or event.
- Attributes are the data we want to collect for an entity.
- Relationships describe the relations between the entities.

Figure 2-1:Database Requirements (ERD)

2.6 List of system use cases

1. Login
2. Apply for Registration
3. Submit Advertisement(s)
4. View Advertisement(s)
5. Apply for Accommodation
6. Apply for Vehicle Sharing
7. Apply for Club Activities
8. Apply for Club Membership
9. View Club Members Detail
10. View Club Activities Detail
11. Apply for Job
12. Manage Transport Booking
13. Apply for Transport Booking
14. Request for Counselling
15. Manage Day Care Centre
16. Apply for Day Care Centre
17. Logout

2.6.1 Sub-system Use Cases

1. Login
2. Apply for Registration
3. Submit Advertisement(s)
4. View Advertisement(s)
5. Apply for Accommodation
6. Manage Transport Booking
7. Apply for Transport Booking
8. Request for Counselling
9. Manage Day Care Centre
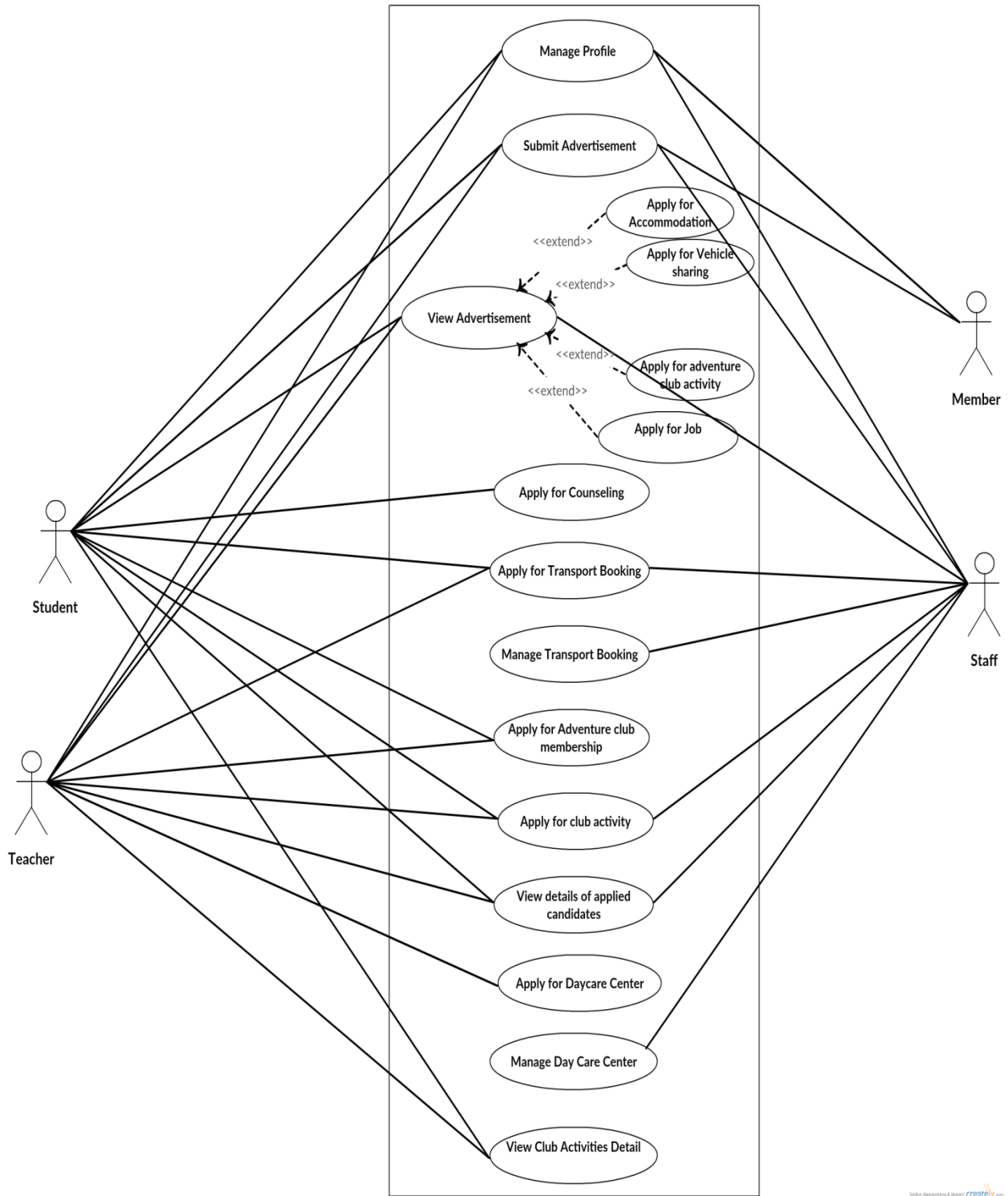10. Apply for Day Care Centre
11. Logout

2.7 Use Case Diagram

Figure 2-2: Use Case Details

2.7.1 Apply for Registration

User or member provides personal information to the administrator by filling the online registration form.

Name	UC2: Apply for Registration
Primary Actor	User, Member
Pre-Conditions	User or member wants to apply for account registration.
Post-Conditions	User or member has applied for account registration.
Main Scenario	1. Administrator opens the registration panel. 2. System Shows relevant panel. 3. User or member opens application form. 4. The system asks to enter user information. 5. User or member enters required information and submits it. 6. The system prompts message of successful submission.

Alternative Scenario	1) The system fails at any time.
	    a) The system rolls back all the changes made by the administrator.
	5) User or member doesn't fill all the required fields.
	    a) The system prompts message 'fill the form correctly'.

2.7.2 Login

The user selects the login option and then system shows the login panel after providing Username and Password and press login button. System checks either provided information is right or wrong, if that information is right system prompts the success message or if there is any problem system gives the error message.

Name	UC1:Login
Primary Actor	User and member
Pre-Conditions	User and member have a valid User Name and Password
Post-Conditions	Administrator and User will be logged in
Main Scenario	1. User Selects login option. 2. The system asks to enter an ID and password. 3. The user enters id and password. 4. The system checks id and password. 5. User logs in.

Alternative Scenario	1) The system fails at any time.
	a) The system rolls back all the changes made by the administrator.
	4) ID or password is incorrect.
	b) The system prompts user to enter correct information.

2.7.3   Submit Advertisement (s)

User or member will be the registered one who wants to submit the ad. User or member opens submit an ad panel and fills the form and submit that ad. The system will prompt message for successful submission of advertisement.

Name	**UC3:Submit Advertisement(s)**
Primary Actor	User, member
Pre-Conditions	User or member is registered.
Post-Conditions	User submitted Advertisement (s) successfully.
Main Scenario	1. User open submits an advertisement panel.
	2. The system will display the relevant panel to the user.
	3. User will fill the form and submit it.
	4. The system will prompt a message of successful advertisement submission.
Alternative Scenario	1. The system fails at any time.
	a) The system rolls back all the changes made by the administrator.
	3. The user has not filled the full form.
	a) The system prompts message to fill all the fields.

2.7.4   View Advertisement (s)

Registered user opens view advertisement panel and selects the view advertisements, button then the system shows all the advertisements to the user.

Name	UC4:View Advertisement (s)
Primary Actor	User
Pre-Conditions	The user is registered
Post-Conditions	User Viewed advertisement (s) successfully.
Main Scenario	1. The user opens view an advertisement panel. 2. The system displays the relevant panel to the user. 3. The user selects the View advertisement button. 4. The system provides all the advertisements.

Alternative Scenario	1. The system fails at any time.
	   a) The system rolls back all the changes made by the administrator.
	4. No advertisement (s) is present.
	   a) System will prompt message 'no advertisement found!'

2.7.5   Apply for Accommodation

The user is registered one and opens view an Ad panel after that user selects the ad about accommodation and clicks on apply button. The system shows the application form for accommodation to the user. After filling that form user clicks on the submit form button, then the system shows a message 'applied for accommodation successfully'.

Name	UC7:Apply for Accommodation
Primary Actor	User
Pre-Conditions	The user is registered.
Post-Conditions	User applied for accommodation successfully.
Main Scenario	1. The user opens view an ad panel. 2. The system displays the relevant panel to the user. 3. The user selects the advertisement and clicks on apply button. 4. The system shows application form. 5. The user fills the form and submits it.

	6. The system prompts the message 'applied for accommodation successfully'.

Alternative Scenario	1. The system fails at any time.
	   a) The system rolls back all the changes made by the administrator.
	5. The user has not filled the full form.
	   a) The system prompts message to fill all the fields.

2.7.6 **Manage Transport Booking**

This is basically for admin who will be registered to the system and will have rights to manage transport booking. Transport admin will login to system and go to transport panel there he/she will select Manage Transport option where he/she will be able to update number to vehicles present for booking and also can accept and reject the applications for booking submitted by users.

Name	UC9: Manage Transport Booking
Primary Actor	Transport Admin
Pre-Conditions	User is registered.
Post-Conditions	Admin managed transport booking successfully.
Main Scenario	1. Admin opens the Transport booking panel. 2. The system displays the relevant panel to the admin. 3. Admin opens manage transport panel, updates available vehicles for booking and responds to the submitted applications.

Alternative Scenario	1. The system fails at any time.
	   a) The system rolls back all the changes made by the administrator.
	3. Admin has not filled the full form.
	   a) The system prompts message to fill all the fields.

2.7.7 Apply` for Transport Booking

The user is registered one and opens a transport booking panel. The system shows the relevant panel to the user then user fills the form and submits it after that system prompts message 'request for booking transport submitted successfully'.

Name	UC9: Apply for Transport Booking
Primary Actor	User
Pre-Conditions	User is registered.
Post-Conditions	User booked transport successfully.
Main Scenario	4. The user opens the Transport booking panel. 5. The system displays the relevant panel to the user. 6. The user opens application form, fills it and clicks on the submit button. 7. The system prompts the message 'Request for booking is submitted successfully'.

Alternative Scenario	2. The system fails at any time.
	   b) The system rolls back all the changes made by the administrator.
	4. The user has not filled the full form.
	   b) The system prompts message to fill all the fields.

2.7.8 **Apply for Counselling**

The student opens the student and teacher support panel and clicks on 'counselling' button, a form appears and student fills that form and submits it. After submitting the form system shows message for successful submission of form if there is any problem, the system shows error message.

Name	UC9: Apply for Counselling
Primary Actor	Student
Pre-Conditions	Student is registered.
Post-Conditions	Student requested for counselling successfully.
Main Scenario	1. The student opens Student and teacher support panel. 2. The system displays the relevant panel to the user. 3. The student clicks on 'counselling' button. 4. The system shows the form to the student. 5. The student fills in the form and submits it. 6. System show message 'request for counselling submitted successfully'.

Alternative Scenario	1. The system fails at any time.
	    a) The system rolls back all the changes made by the administrator.
	 3. Form doesn't open.
	    a) The system prompts message 'Sorry! Something went wrong'.
	 5. The student left any field blank
	    b) System prompt's message 'fill the entire field'.

2.7.9 **Manage Day Care Centre**

Day care Admin opens the student staff support panel and clicks on 'View applied candidates' button. System shows the applications submitted by the teachers, after reading all the details day care admin decides to accept or reject the application.

Name	UC9: Manage Day Care Centre
Primary Actor	Day care Admin
Pre-Conditions	Day care Admin is registered.
Post-Conditions	Day care Admin managed Day Care centre successfully.

Main Scenario	1. Day care Admin opens Student and teacher support panel. 2. The system displays the relevant panel to the admin. 3. Admin opens applications of 'Day Care' submitted by teachers. 4. The system shows the applications. 5. Admin accepts or rejects the applications.

Alternative Scenario	2. The system fails at any time.
	   b) The system rolls back all the changes made by the administrator.
	4. Applications don't open.
	   c) The system prompts message 'Sorry! Something went wrong'.

2.7.10 Apply for Day Care Centre

Faculty member opens the student and teacher support panel and clicks on 'Day Care' button, a form appears and faculty member fills that form and submits that. After submitting the form system shows message for successful submission of form, if there is any problem system shows error message.

Name	UC9: Apply for Day Care Centre
Primary Actor	Faculty members
Pre-Conditions	Faculty member is registered.
Post-Conditions	Faculty member applied to Day Care centre successfully.
Main Scenario	6. Faculty member opens Student and teacher support panel. 7. The system displays the relevant panel to the user. 8. The student clicks the 'Day Care' button. 9. The system shows the form. 10. Faculty member fills the form and submits it. 11. System show message 'request submitted successfully'.

Alternative Scenario	3. The system fails at any time.
	   c) The system rolls back all the changes made by the administrator.
	5. Form doesn't open.
	   d) The system prompts message 'Sorry! Something went wrong'.
	6. Faculty member left any field blank
	   e) System prompt's message 'fill the entire field'.

2.7.11 **Logout**

User clicks on Logout button and system logouts the user or member from the system.

Name	UC9: Logout
Primary Actor	User and member
Pre-Conditions	User would logout.
Post-Conditions	User logged out successfully.
Main Scenario	1. User clicks logout button. 2. System logouts user or member from system.
Alternative Scenario	1. System fails at any time. a) System rolls back all the changes made by administrator.

2.8 System Sequence Diagram

In software engineering, a **system sequence diagram** (SSD) is a sequence diagram that shows, for a particular scenario of a use case, the events that external actors generate their order, and possible inter-system events [6].

2.8.1 **Registration**

In this figure, the registration process is being shown. Whenever a new user has to be added, administrator opens the registration panel and selects the specific user such as: student, faculty member or a staff member and system opens the form and requests to enter the details. User enters the details and submits the form. System shows the success message.

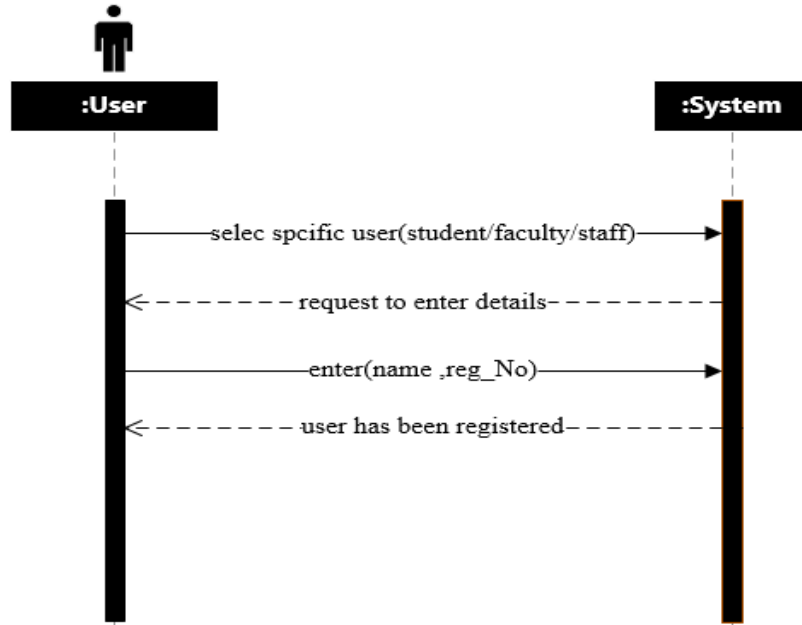**Figure 2-3: SSD (Registration)**

2.8.2 **Login**

In this figure, it is being explained that how the user login to the system. User selects the login option, system requests to enter the user name and password. User enters user name and password after that system checks either they are correct or not. If they are correct system retrieves the users to main page.
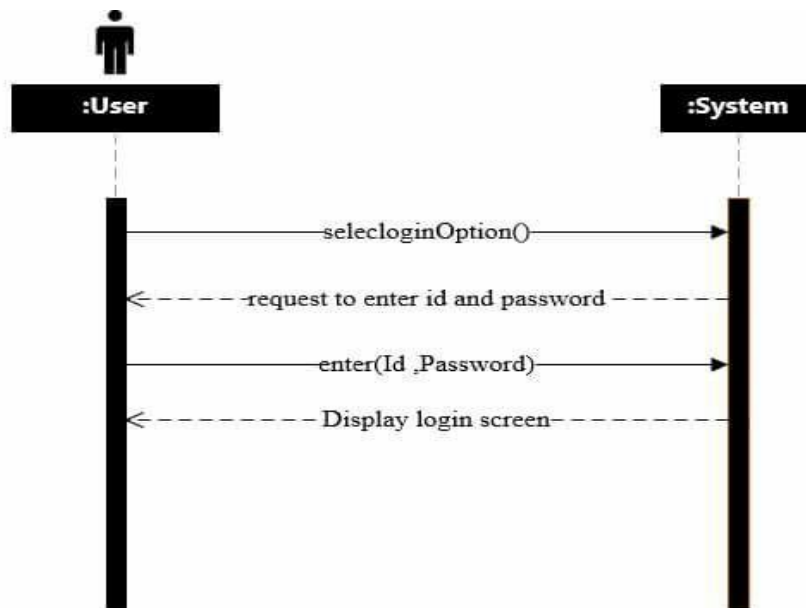
Figure 2-4: (SSD) Login

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2.8.1   Post Advertisement

In this diagram it is being explained that how the user submits an advertisement. First of all, user logs in to the system after that selects the submit advertisement option. System requests to selects the advertisement category. User selects the category and then system open the form and asks to fill that form. User fills the form and submits it. System saves the details and shows the success message.

Figure 2-5:SSD (Post Advertisement)

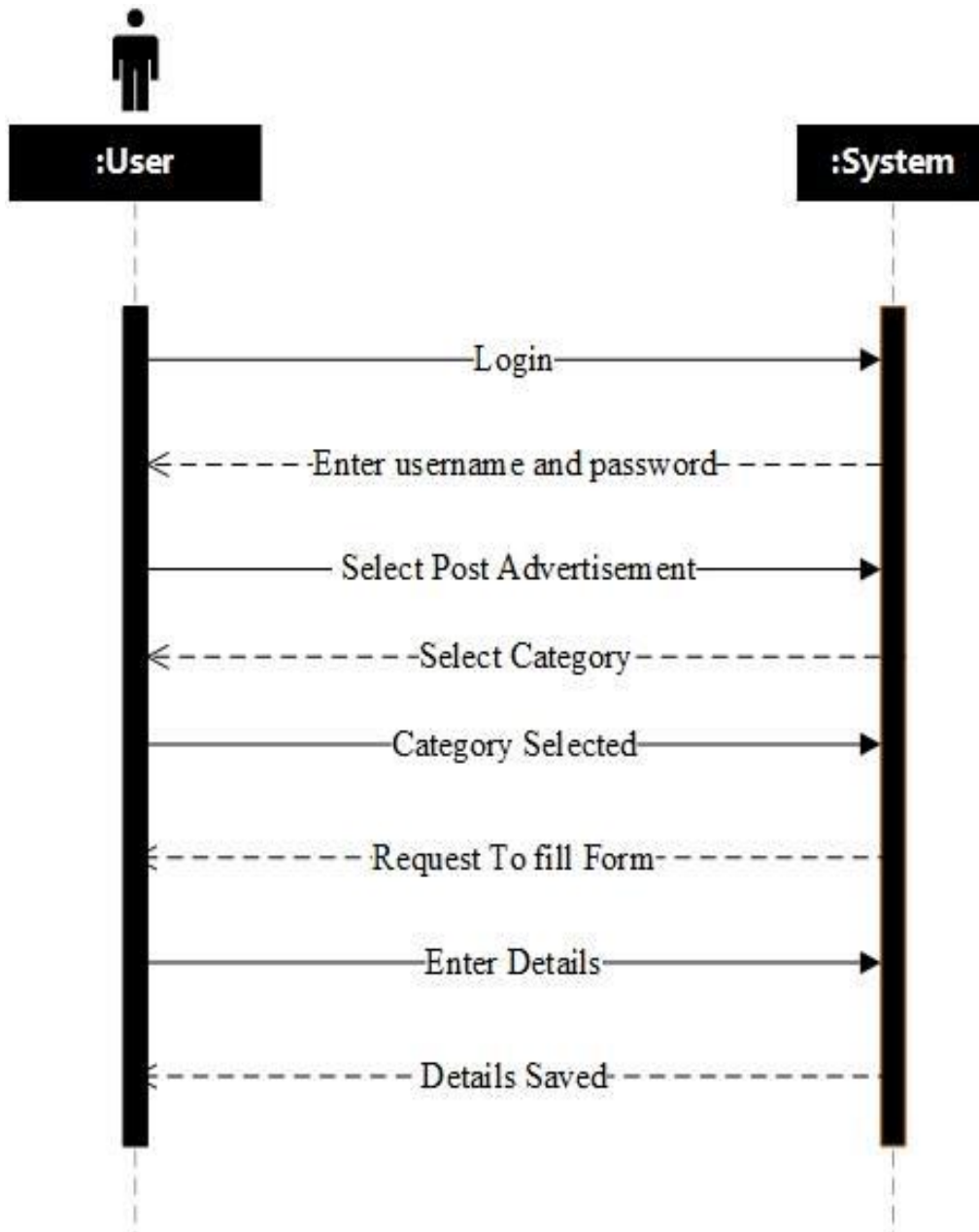### 2.8.1   View Advertisement

This diagram is explaining that how the user can view the advertisement. First of all, user logs in to the system and selects view advertisement option. System asks to selects the category. User selects the category and system shows the advertisements against that category.
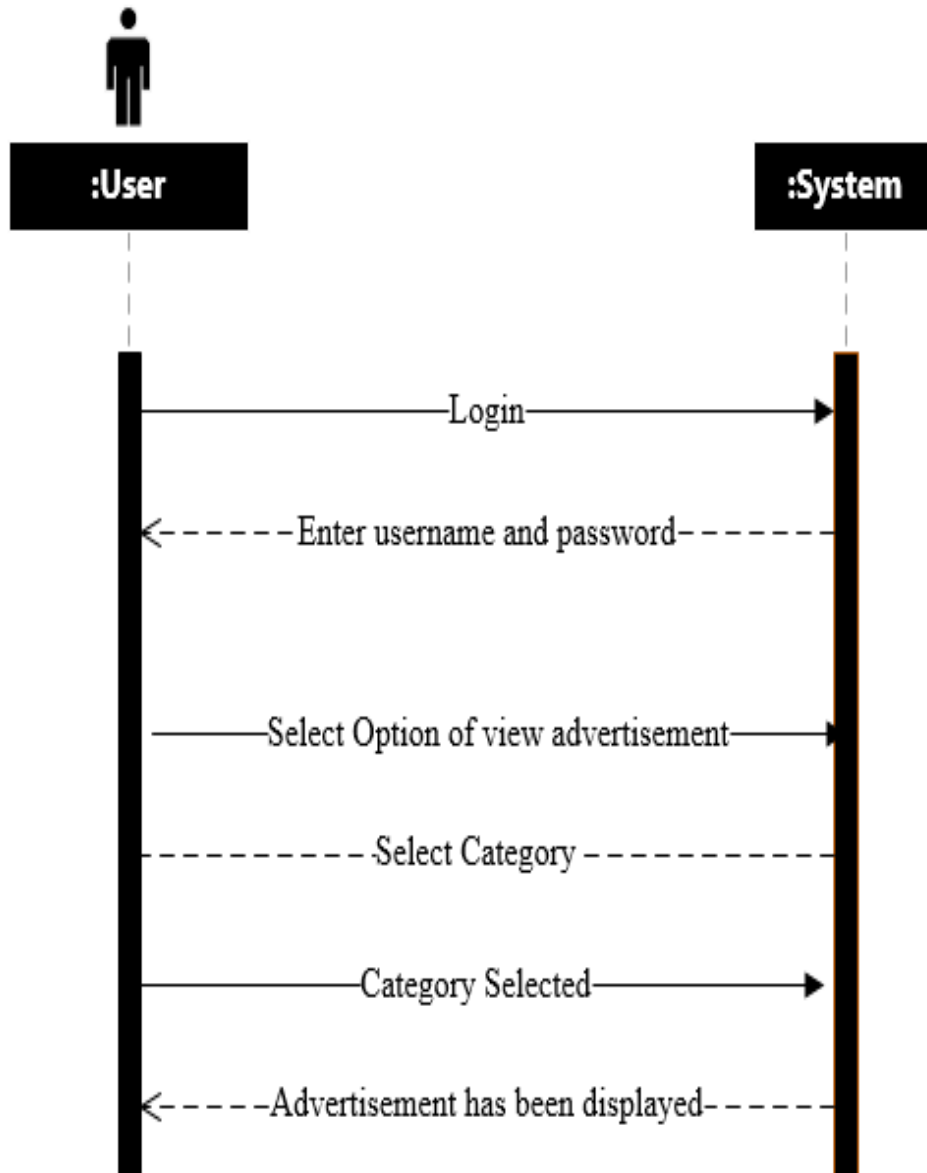

Figure 2-6: SSD (View Advertisement)

2.8.1 Transport Booking

This diagram is explaining that how the user can book the transport. First of all, user logs in to the system and selects book transport option. System opens the form and asks to fill it. User fills and submits the form. System saves the details and show success message of request submission.
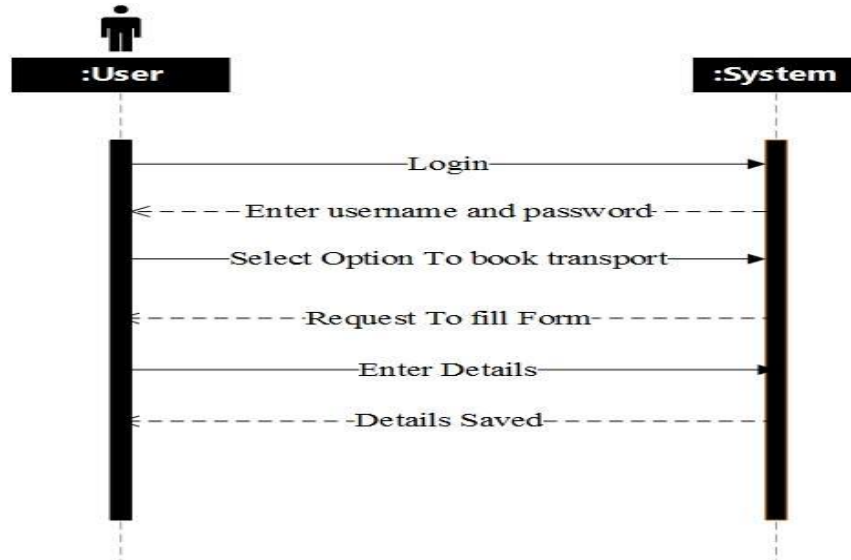
Figure 2-7: SSD (Transport Booking)

2.8.1 Request for counselling

This diagram is explaining that how the student can submit request for counselling. First of all, student logs in to the system and selects request for counselling option. After that system requests to fill the form. Student fills the form and submits it. System saves the details and shows the message of successful submission.

Figure 2-8: SSD (Request For Counselling)

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2.8.1   **Apply for Day-care Centre**

This diagram is explaining that how the faculty member can submit request for day care centre. First of all, faculty member logs in to the system and selects day care option. After that system requests the user to fill the form. Faculty member fills the form and submits it. System saves the details and shows the message of successful submission.

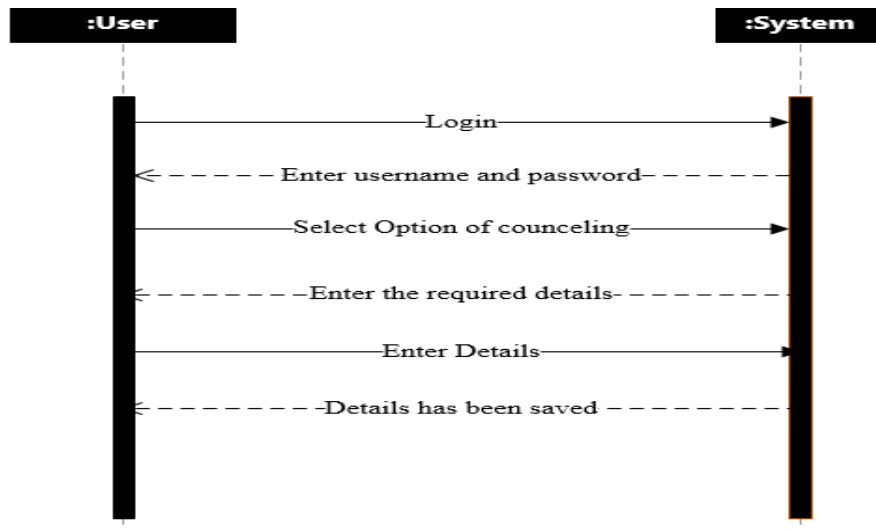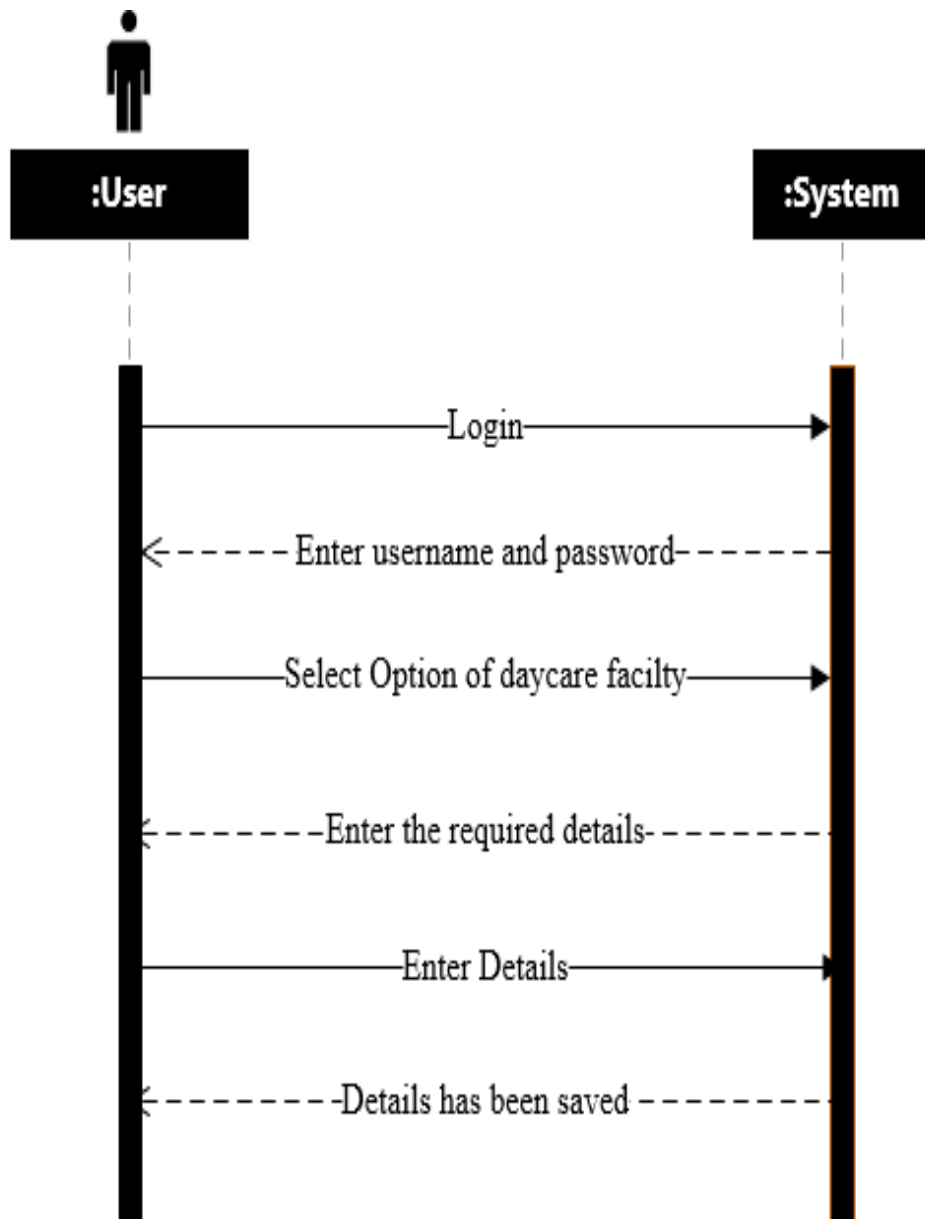**Figure 2-9: SSD (Apply for Day Care Centre)**

2.8.1 Logout

This diagram is explaining that how the users logout from the system. User requests to logout. System finishes the session and logouts that user.
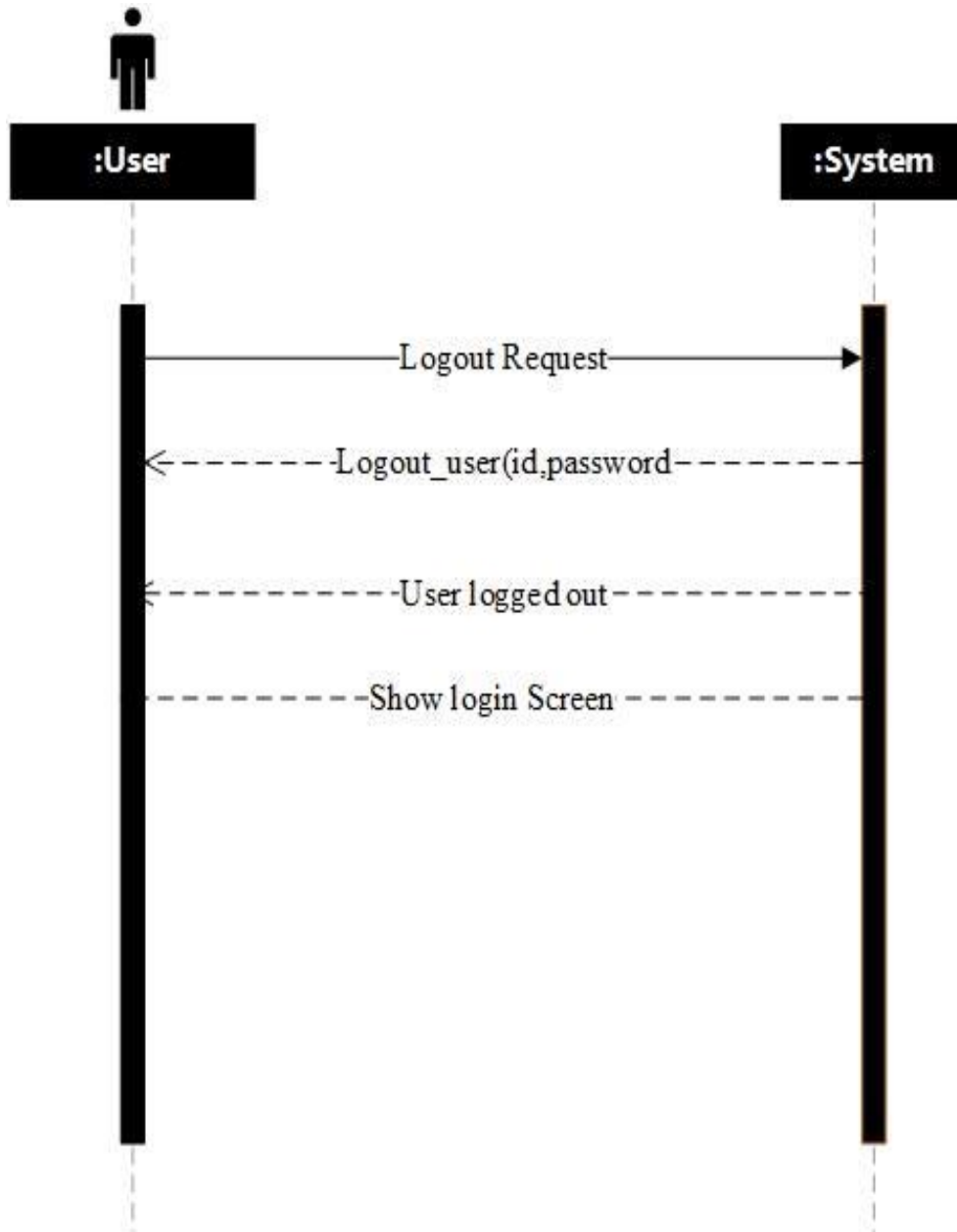
Figure 2-10: SSD (Logout)

Summary

In this chapter, we discussed about the product overview, specific requirements, product features, software system attributes and database requirements. We also discussed about the use cases, use case diagram and to describe the interaction of user and system, system sequence diagrams (SSDs) are also provided.

In the next chapter it is being discussed about sequence diagram, entity relationship diagram (ERD), class diagram.

3 Chapter# 3

Software Design Description

3.1 Introduction

In this chapter, we are discussing about the design of the system. It is being discussed that what is the system architecture design, how it will work and what are the alternative architecture designs. It is also being discussed about the system interface description. In this chapter system sequence diagrams (SSD) are also present which are providing information about interaction between system and user. Screen images of user interfaces are also provided in this chapter which is clearing that how user will interact with the system.

3.1.1 Design Overview

Systems design is the process of defining the architecture, components, modules, interfaces, and data for a system to satisfy specified requirements. Systems design could be seen as the application of systems theory to product development [2].

3.1.2 Requirements Traceability Matrix

The Requirements Traceability Matrix (RTM) is a document that links requirements throughout the validation process. The purpose of the Requirements Traceability Matrix is to ensure that all requirements defined for a system are tested in the test protocols [3].

Requirement Id	Requirement Name	SD	SSD	Test Cases	Interface
UC-1	Apply For Registration	Fig. 3.19	Fig. 3.10	4.3.1	Fig. 3.2
UC-2	Login	Fig. 3.18	Fig. 3.11	4.3.2	Fig. 3.3
UC-3	Submit Advertisement	Fig. 3.20	Fig. 3.12	4.3.3	Fig. 3.4
UC-4	View advertisements	Fig. 3.21	Fig. 3.13		Fig. 3.5
UC-5	Apply for Transport Booking	Fig. 3.23	Fig. 3.14	4.3.5	Fig. 3.6
UC-6	Apply for Accommodation		Fig. 3.10	4.3.4	Fig. 3.7

UC-7	Request for counselling	Fig. 3.22	Fig. 3.15	4.3.6	Fig. 3.8
UC-8	Apply for day care centre	Fig. 3.22	Fig. 3.16	4.3.7	Fig. 3.9
UC-9	Logout		Fig. 3.17		

Table 3-4: Requirement Traceability Matrix

3.2 System Architecture Design

The architectural design of a system emphasizes the design of the systems architecture that describes the structure, behaviour and more views of that system and analysis.

3.2.1 Chosen System Architecture

Model View Controller or MVC as it is popularly called, is a software design pattern for developing web applications. A Model View Controller pattern is made up of the following three parts: Model - The lowest level of the pattern which is responsible for maintaining the data. View - This is responsible for displaying all or a portion of the data to the user. Controller - Software Code that controls the interactions between the Model and View [4].

3.2.2 Discussion of Alternative Designs

Model View Presenter (**MVP**) is a derivation of the model view controller (MVC) architectural pattern, and is used mostly for building user interfaces. In MVP the presenter assumes the functionality of the "middle-man". In MVP, all presentation logic is pushed to the presenter.

Model View Viewmodel (**MVVM**) is a software architectural pattern. MVVM abstracts a view's state and behaviour in the same way, but a Presentation Model abstract a view (creates a view model) in a manner not dependent on a specific user-interface platform.
MVVM and Presentation Model both derive from the model View Controller pattern (MVC).[5]

3.2.3   **Architectural Diagram**
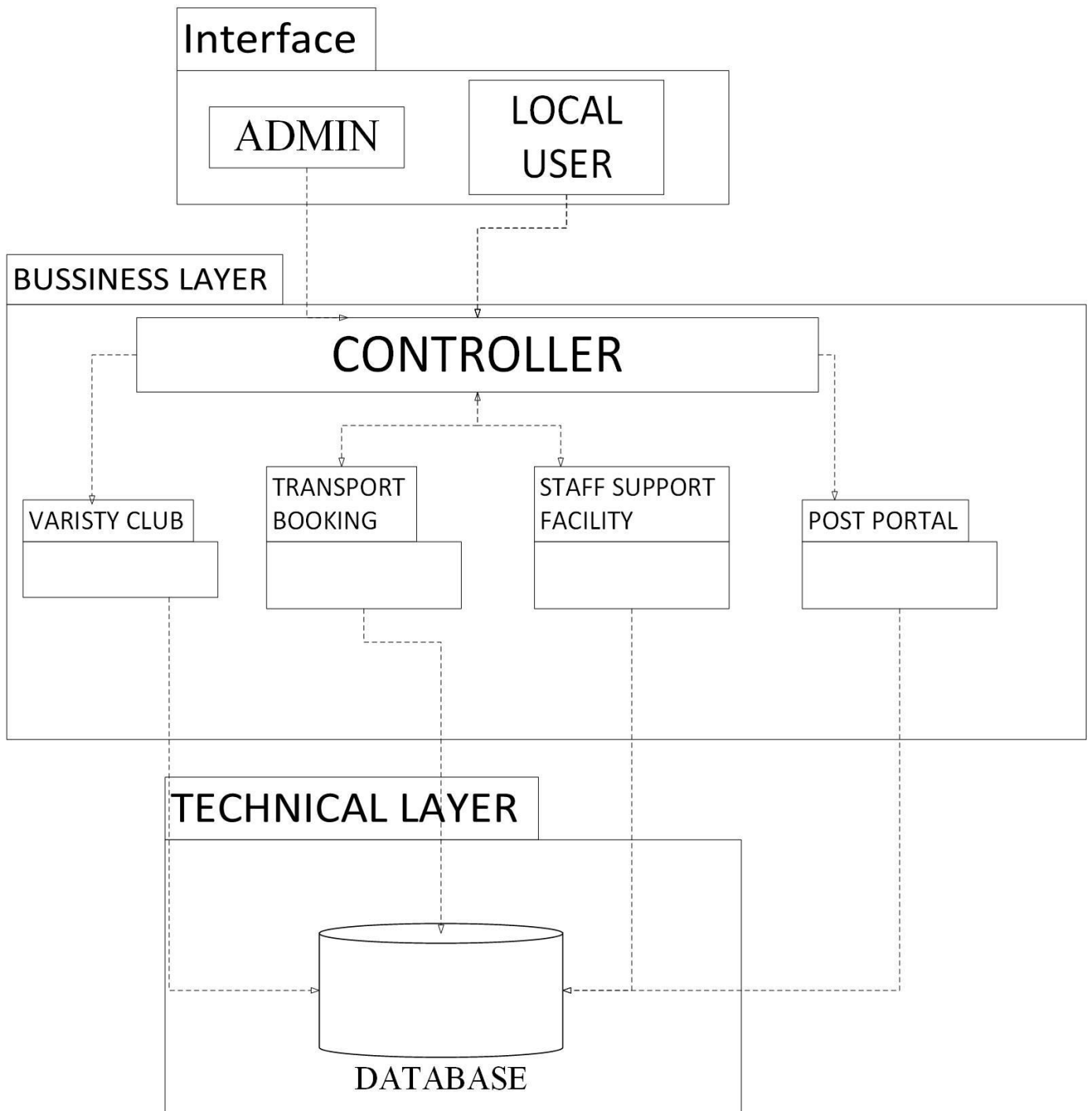
Figure 03-1:Architectural Diagram

3.3 Domain Model

A domain model is a system of abstractions that describes selected aspects of a sphere of knowledge, influence or activity (a domain). The model can then be used to solve problems related to that domain. The domain model is a representation of meaningful real-world concepts pertinent to the domain that need to be modelled in software. A domain model generally uses the vocabulary of the domain so that a representation of the model can be used to communicate with non-technical stakeholders.

Figure 3-2: Domain Model

3.4 Detailed Description of components

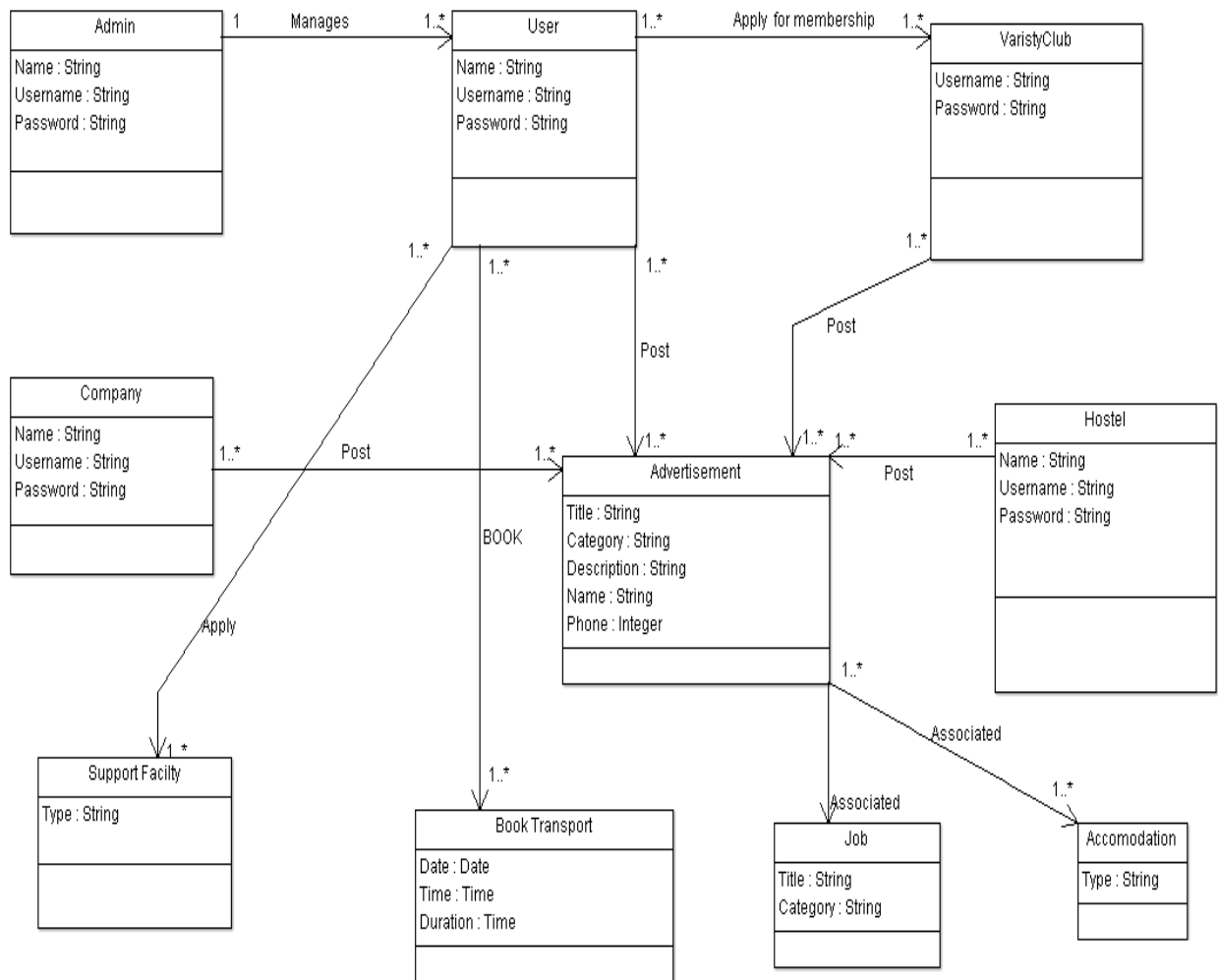The component is uniquely identifiable input, part, piece, assembly or subassembly, system or subsystem that is required to complete or finish an activity, item, or job and performs distinctive and necessary functions in the operation of a system.

3.5 Sequence Diagrams

A Sequence diagram is an interaction diagram that shows how objects operate with one another and in what order. It is a construct of a message sequence chart. A sequence diagram shows object interactions arranged in time sequence [7].

3.5.1 Login

In this sequence diagram user goes to login panel and controller class asks to enter username and password. User enters username and password, this is sent to the controller class and controller class sends it to the database class for authentication. Database class sends a success message to controller and it shows login successful message to user.
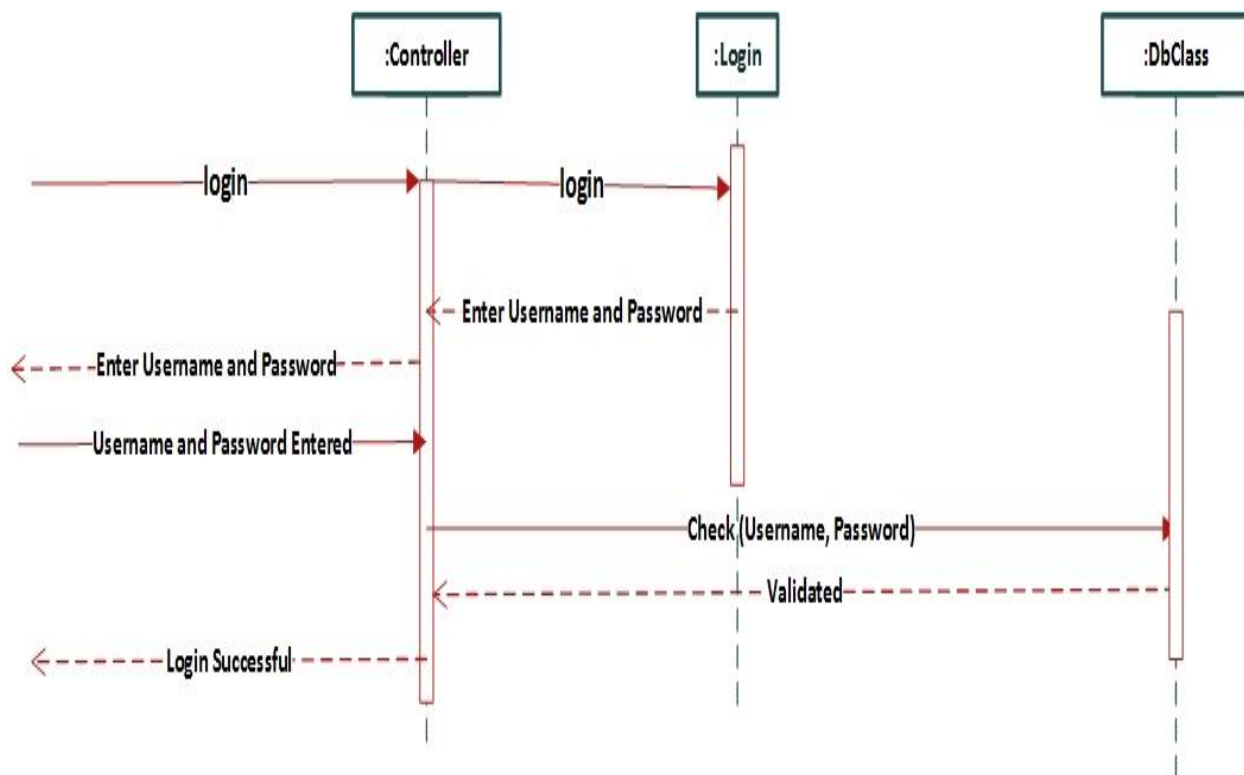
Figure 3-3: SD (Login)

3.5.2   **Register User**

In this sequence diagram it is being represented that how user registers in system. User selects the register option, it is sent to register class through controller. Register asks to fill the form. Controller shows that form to the user. User fills and submits the form. Controller sends this to the register class and it forwards all the details to the database. Database stores them and returns the message of successful submission of user request.

Figure 3-4: SD (Register User)

3.5.3 **Submit Advertisement**

In this sequence diagram user goes to login panel and controller class asks to enter username and password. User enters username and password, this is sent to the controller class and controller class sends it to the database class for authentication. Database class sends a success message to controller and it sh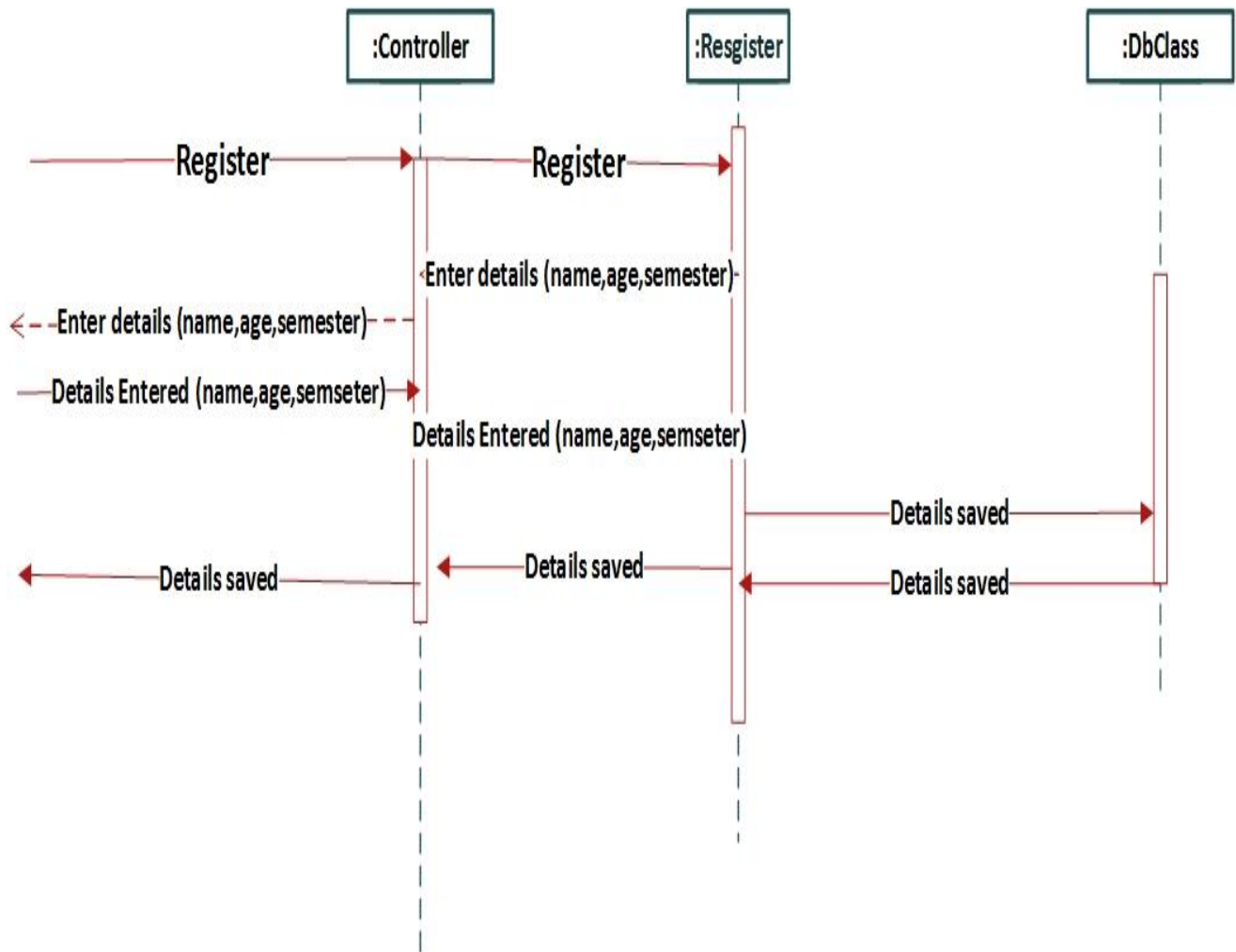ows login successful message to user. After this controller asks to select the option, user selects the post Accommodation Listing Ad option. Controller send this request to Accommodation Listing, Accommodation Listing asks to fill the form and controller send this to user. User fills the form and submits it. Controller send all the details to the post portal and it further sends them to database to store them. Database stores those details and returns back a message of successful submission to pot portal and it further send this message to user through controller.
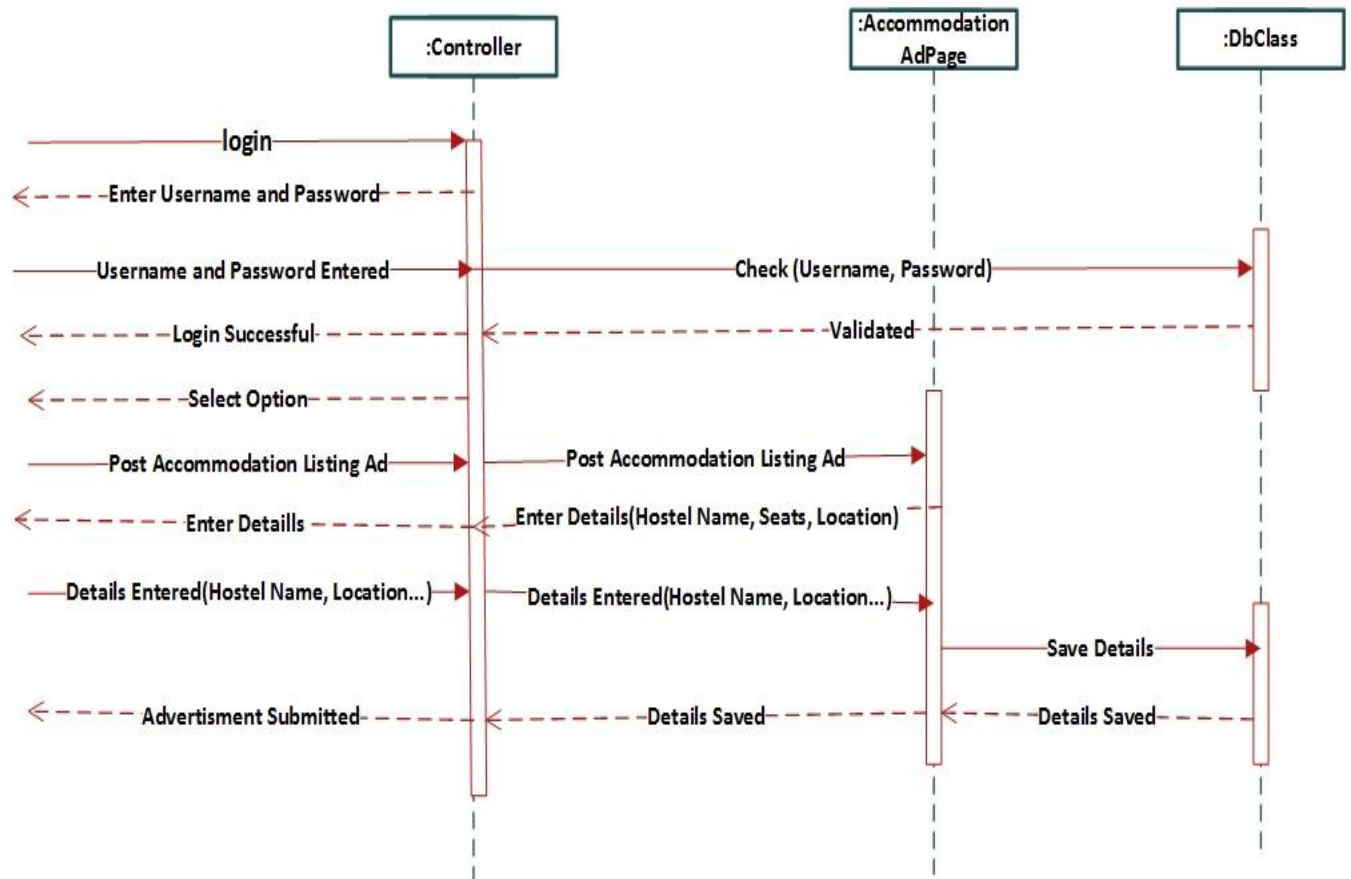

Figure 3-5: SD (Submit Advertisement)

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3.5.4   **View Advertisement**

In this sequence diagram user goes to login panel and controller class asks to enter username and password. User enters username and password, this is sent to the controller class and controller class sends it to the database class for authentication. Database class sends a success message to controller and it shows login successful message to user. After this controller asks to select the option, user selects the Accommodation Listing option. Controller sends this request to Accommodation Listing, Accommodation Listing opens it and controller sends this to user. User selects the Open Accommodation Listing Ad Page and it is sent to Accommodation Listing through controller. Accommodation Listing sends this to database class and database retrieves all the advertisements and sends to the controller, controller class shows them to the user.
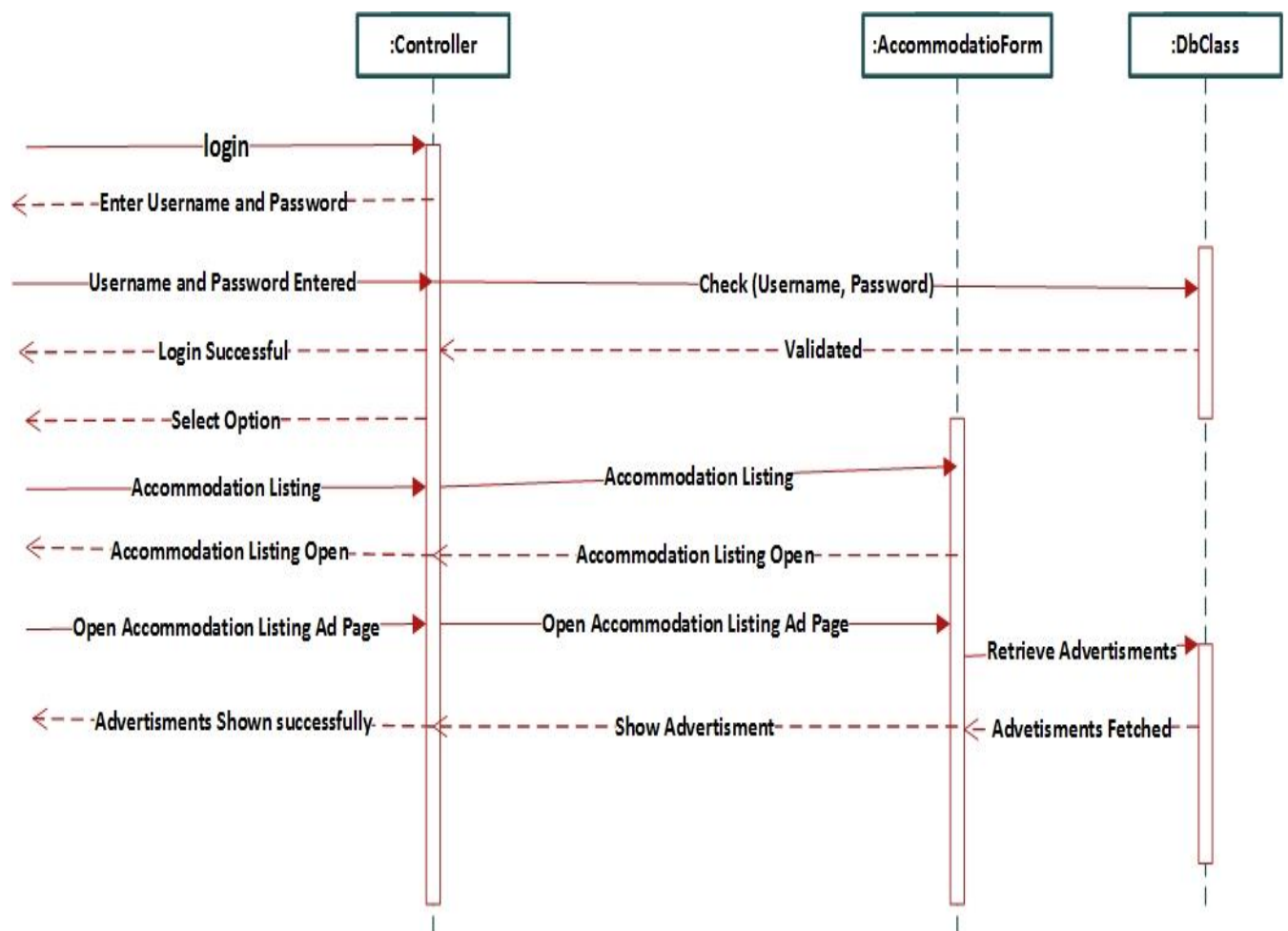

Figure 3-6: SD (Show Advertisement)

3.5.5   Student Staff Support Facility

In this sequence diagram user goes to login panel and controller class asks to enter username and password. User enters username and password, this is sent to the controller class and controller class sends it to the database class for authentication. Database class sends a success message to controller and it shows login successful message to user. After this controller asks to select the option, user selects the staff support facility and controller sends it to the student staff support facility. It returns back a message to controller to select option and controller sends it to the user. User selects the day care centre and controller sends it to staff support facility that returns back a form and asks to enter details. User enters the details and submits it. Controller sends those details to staff support facility class which forwards them to database. Database stores them and returns message of successful submission.
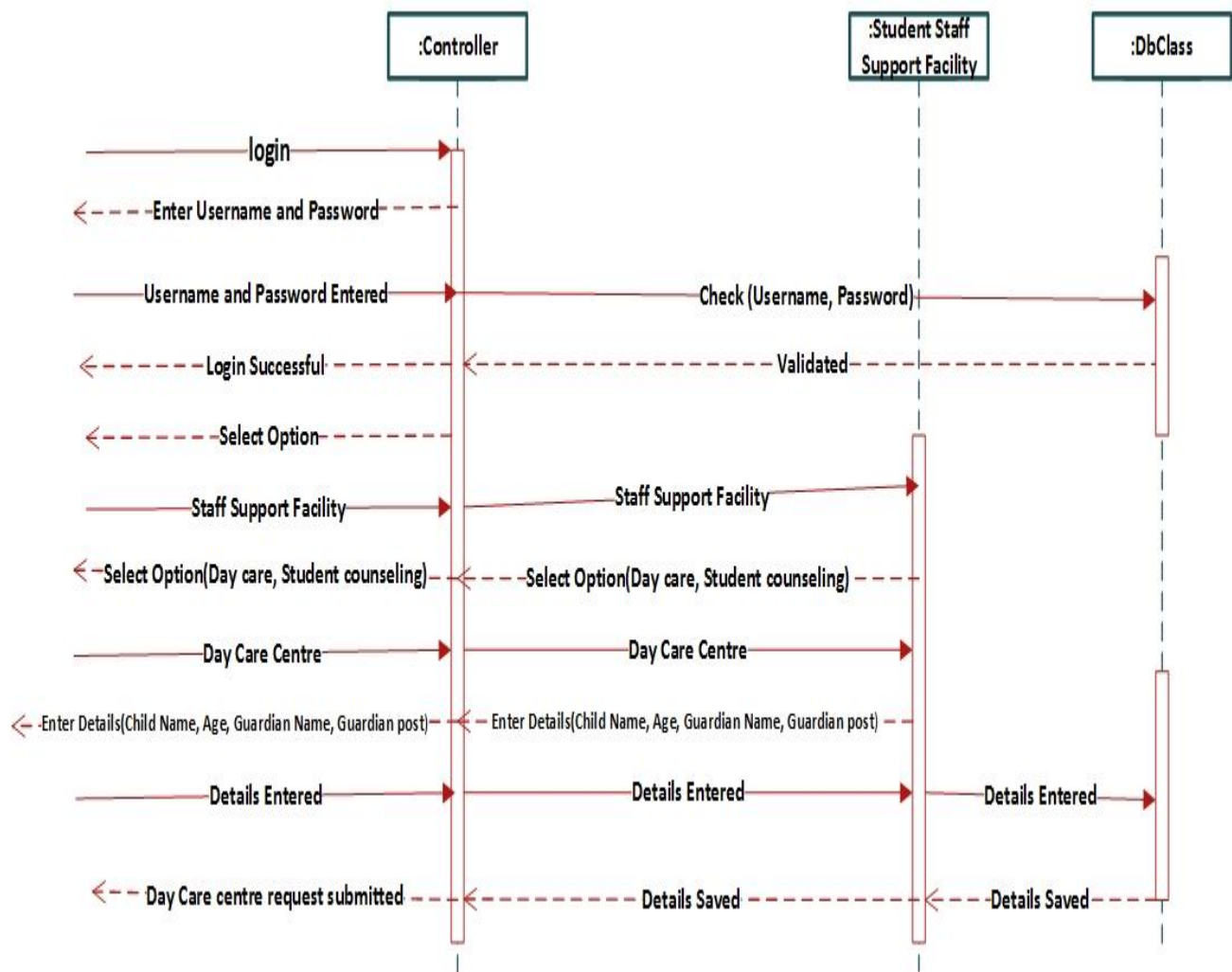
Figure 3-7: SD (Student Staff Support Facility)

3.5.6   **Transport Booking**

In this sequence diagram, user goes to login panel and controller class asks to enter username and password. User enters username and password, this is sent to the controller class and controller class sends it to the database class for authentication. Database class sends a success message to controller and it shows login successful message to user. After this controller asks to select the option, user selects the book transport option and controller sends it to the BookTransport class, which returns the form and ask to fill it. User fills the form and sends it to the controller. Controller forwards all the details to the BookTransport class which sends them to database. Database stores all the details and returns message of successful submission of booking form.
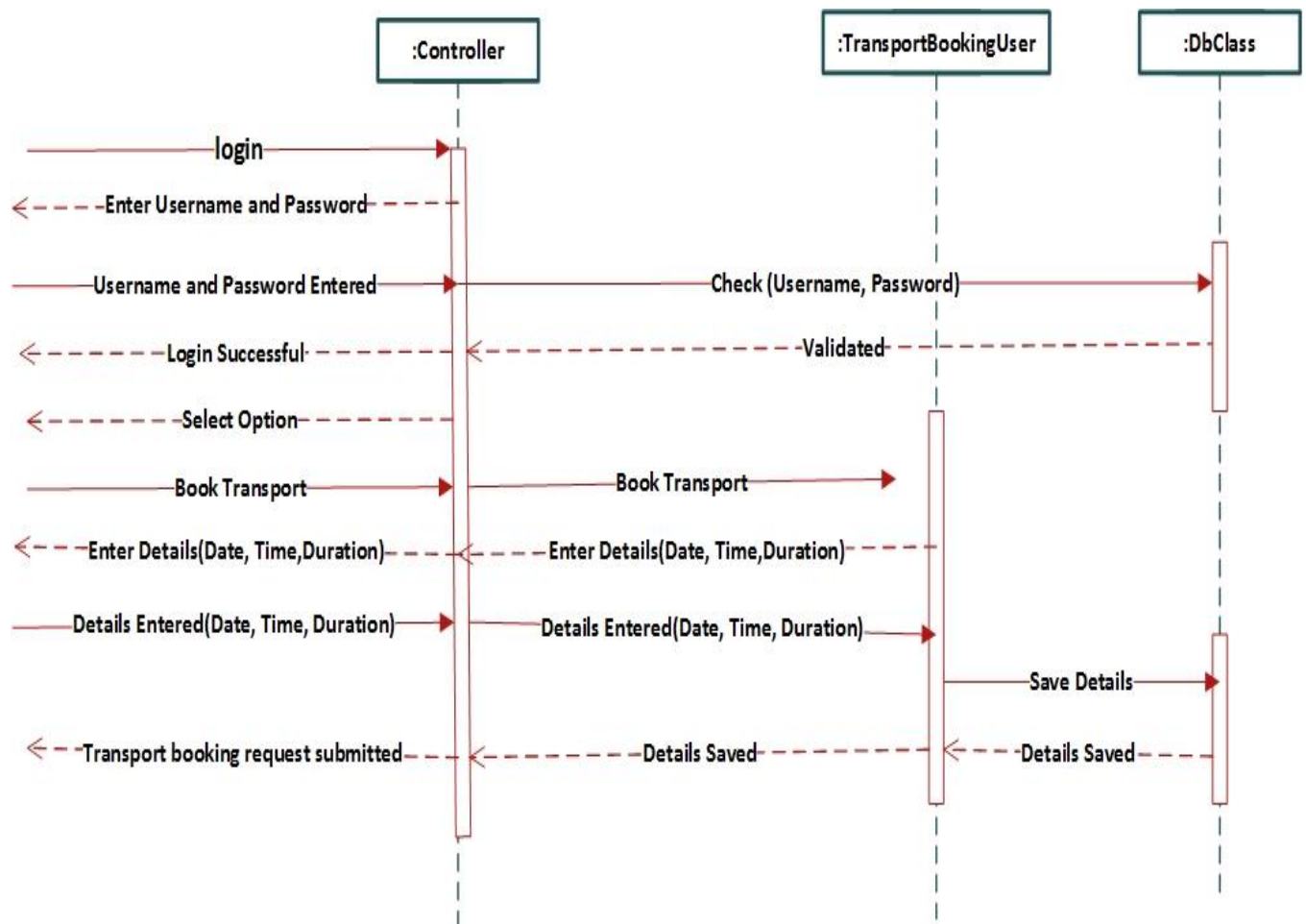

Figure 3-8: SD (Transport Booking)

3.6 Class Diagram

In software engineering, a class diagram in the Unified Modelling Language (UML) is a type of static structure diagram that describes the structure of a system by showing the system's classes, their attributes, operations (or methods), and the relationships among objects [8].
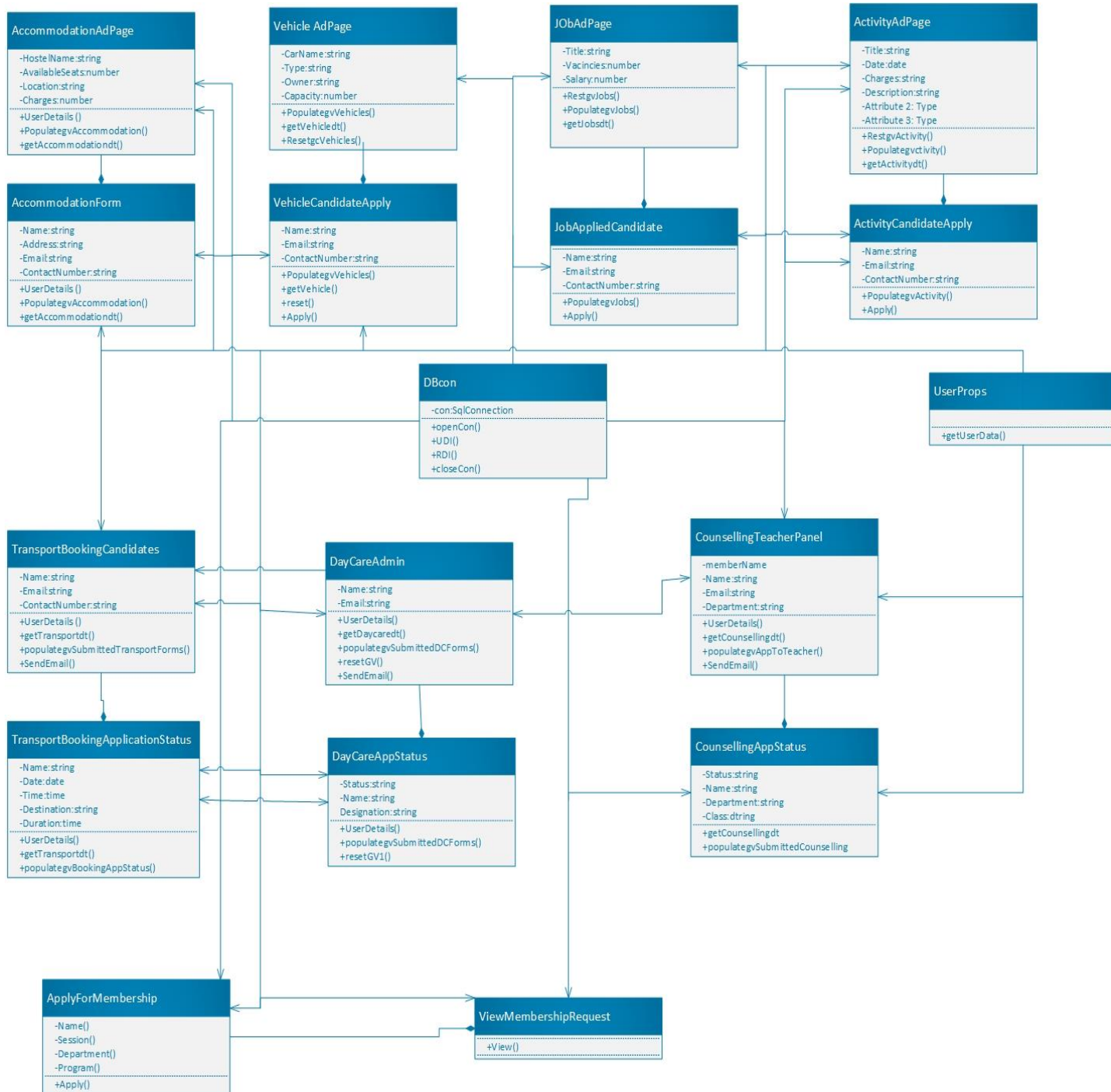
AccommodationAdPage
- -HostelName:string
- -AvailableSeats:number
- -Location:string
- -Charges:number
- +UserDetails ()
- +PopulategvAccommodation()
- +getAccommodationdt()

Vehicle AdPage
- -CarName:string
- -Type:string
- -Owner:string
- -Capacity:number
- +PopulategvVehicles()
- +getVehicledt()
- +ResetgcVehicles()

JObAdPage
- -Title:string
- -Vacincies:number
- -Salary:number
- +RestgvJobs()
- +PopulategvJobs()
- +getJobsdt()

ActivityAdPage
- -Title:string
- -Date:date
- -Charges:string
- -Description:string
- -Attribute 2: Type
- -Attribute 3: Type
- +RestgvActivity()
- +Populategvctivity()
- +getActivitydt()

AccommodationForm
- -Name:string
- -Address:string
- -Email:string
- -ContactNumber:string
- +UserDetails ()
- +PopulategvAccommodation()
- +getAccommodationdt()

VehicleCandidateApply
- -Name:string
- -Email:string
- -ContactNumber:string
- +PopulategvVehicles()
- +getVehicle()
- +reset()
- +Apply()

JobAppliedCandidate
- -Name:string
- -Email:string
- -ContactNumber:string
- +PopulategvJobs()
- +Apply()

ActivityCandidateApply
- -Name:string
- -Email:string
- -ContactNumber:string
- +PopulategvActivity()
- +Apply()

DBcon
- -con:SqlConnection
- +openCon()
- +UDI()
- +RDI()
- +closeCon()

UserProps
- +getUserData()

TransportBookingCandidates
- -Name:string
- -Email:string
- -ContactNumber:string
- +UserDetails ()
- +getTransportdt()
- +populategvSubmittedTransportForms()
- +SendEmail()

DayCareAdmin
- -Name:string
- -Email:string
- +UserDetails ()
- +getDaycaredt()
- +populategvSubmittedDCForms()
- +resetGV()
- +SendEmail()

CounsellingTeacherPanel
- -memberName
- -Name:string
- -Email:string
- -Department:string
- +UserDetails()
- +getCounsellingdt()
- +populategvAppToTeacher()
- +SendEmail()

TransportBookingApplicationStatus
- -Name:string
- -Date:date
- -Time:time
- -Destination:string
- -Duration:time
- +UserDetails()
- +getTransportdt()
- +populategvBookingAppStatus()

DayCareAppStatus
- -Status:string
- -Name:string
- Designation:string
- +UserDetails()
- +populategvSubmittedDCForms()
- +resetGV1()

CounsellingAppStatus
- -Status:string
- -Name:string
- -Department:string
- -Class:dtring
- +getCounsellingdt
- +populategvSubmittedCounselling

ApplyForMembership
- -Name()
- -Session()
- -Department()
- -Program()
- +Apply()

ViewMembershipRequest
- +View()

Figure 3-9: Class Diagram

Summary

In this chapter we discussed about the design overview, also we discussed about the chosen architecture design of the system and alternative architecture designs. Sequence diagrams are also presented in this chapter which show how objects operate with one another and in what order. At the end class diagram is given which describes the structure of a system by showing the system's classes, their attributes, operations (or methods), and the relationships among objects

4 Chapter 4

Implementation

After the design phase, the implementation phase comes. This chapter is related to system implementation. The chapter mentions the tools, framework, platforms and database used to develop the application. In this phase we decide how to implement our design and which techniques to use. At last some interfaces are provided to visualize the application.

4.1 System Definition

System will mainly be composed of two parts

- Database Server
- An Web Application

4.1.1. Database Server

System requires of a Database Server which is used to store all data about teachers, students, staff, companies, hostel and other required data in the university.

4.1.2. Web Application

System consists of a web Application which will be used as UI (User Interface). User will be able to access data from server using this web application, and users will post advertisement user will apply for advertisement user will apply for counselling. User will book transport.

4.2 Development Tools

4.2.1. Framework

The system is developed using visual Studio Integrated Development Environment (IDE)

Visual Studio

Visual Studio is the official Integrated Development Environment (IDE) for web platform developing.

4.2.2. Language Selection

Building a web app comes down to two major languages: C# and Asp.net. C# is the language used in web, learning Asp.net for the design of the app.

4.2.1.1   C Sharp

C# was designed to have the look and feel of the C++ language, but it is simpler to use than C++ and enforces an object-oriented programming model. C# can be used to create complete applications that may run on a single computer or be distributed among servers and clients in a network. It can also be used to build a small application module. The C# programming language requires the presence of a software platform in order for compiled programs to be executed.

Why C#?

Following are the main features

4.2.2.2 Platform Independent

C# Language is Platform Independent means program of C# is Easily transferable because after Compilation of C# program bytes code will be created then we have to just transfer the Code of Byte Code to another Computer This is not necessary for computers having same Operating System in which the code of the C# is Created and Executed After Compilation of the C# Program We easily Convert the Program of the C# the another Computer for Execution.

4.2.2.3 Object-Oriented

We Know that is purely OOP language that is all the code of the C# language is written into the classes and objects so for This feature java is most popular language because it also supports code reusability, maintainability etc.

4.2.2.4 Robust and Secure

The Code of C# is Robust and first checks the reliability of the code before execution when we trying to convert the higher data type into the lower. Then it checks the demotion of the code, It will warns a user to not to do this, so it is called as Robust.

4.2.2.5 Distributed

C# is Distributed Language Means because the program of C# is compiled onto one machine can be easily transferred to machine and Executes them on another machine because facility of Bytes Codes So C# is Specially designed For Internet Users which uses the Remote Computers For Executing their Programs on local machine after transferring the Programs from Remote Computers or either from the internet.

4.3 Code Snapshot

```csharp
0 references
protected void btnSubmit_Click(object sender, EventArgs e)
{
    con.openCon();

    if (btnSubmit.Text == "Submit")
    {
        string filePath = "assets/TeacherImages/" + UploadImage.FileName;
        string qry = "insert into TeacherTable values ('" + filePath + "','" + txtFullName.Text + "','" +
         ddlDepartment.SelectedValue + "','" + txtField.Text + "','" + txtAvailability.Text + "','" +
        txtPhoneNumber.Text + "','" + txtEmail.Text + "')";
        con.UDI(qry);

        con.closeCon();


        mvCounsellingTeacherPanel.ActiveViewIndex = 1;
        Response.Redirect("FormSubmittedResponse.aspx");
    }

}
```

Figure 4.1-1:Code Snap

```
0 references
public void SendEmail()
{
    MailMessage message = new MailMessage();
    SmtpClient client = new SmtpClient();
    client.Host = "smtp.gmail.com";
    client.Port = 587;

    message.From = new MailAddress(User.UserEmail);
    message.To.Add(ddlTeacher.SelectedValue);

    message.Subject = "Student Counselling";
    message.Body = "<b>Dear Sir/Ma'am, </b><br /><br />I am " + User.FullName + " Student of " + User.DeptName + "

        " <br/><br/>Regards,<br /> " + User.FullName;
    message.IsBodyHtml = true;
    client.EnableSsl = true;
    client.UseDefaultCredentials = true;
    client.Credentials = new System.Net.NetworkCredential("sharzly0@gmail.com", "youtube1");
    client.Send(message);
}
```
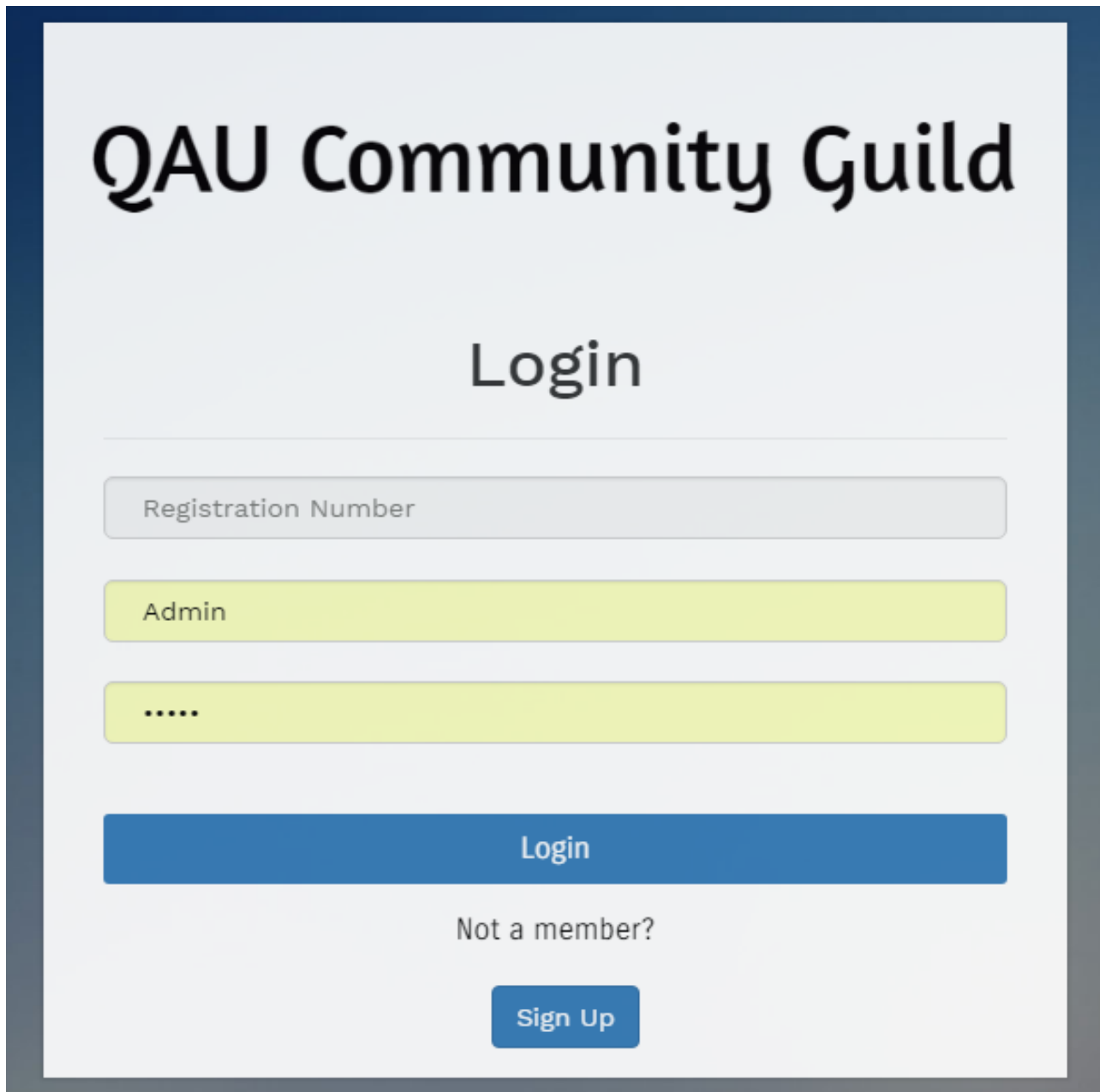
Figure 4.1-2: Code Snip Email

4.4 Interface Screen Shots

4.4.1   Login

This screen appears when user wants to login to the system. User provides it's username and password, if they match with the original data present in database system take the user to the dashboard.

Figure 4-1: Login

4.4.2   **Sign Up**

If the user is not registered to the system then he/she goes to the admin. Admin opens this screen to register that user. Admin fill the form and give password and id to that user, password can be changed later by user itself.

Figure 4-2: Registration

    4.4.3   **Post Hostel Ad**

This is the screen where registered hostels fill the form to post their ad(s). after filling this form data is saved to the database and this advertisement is posted for the users, who can see and apply against that advertisement.

Fill The Advertisement Form

Hostel Name

Quaidian Boys Hostel

Available Rooms

Services
Wifi
◯ Yes ◯ No

Electricity
◯ Yes ◯ No

Water
◯ Yes ◯ No

Heater
◯ Yes ◯ No

Laundry
◯ Yes ◯ No

Mess
◯ Yes ◯ No

Charges From

Charges To

Contact Numer

Hostel Email

Hostel Website

Hostel Location

Month
January

Submit   Cancel
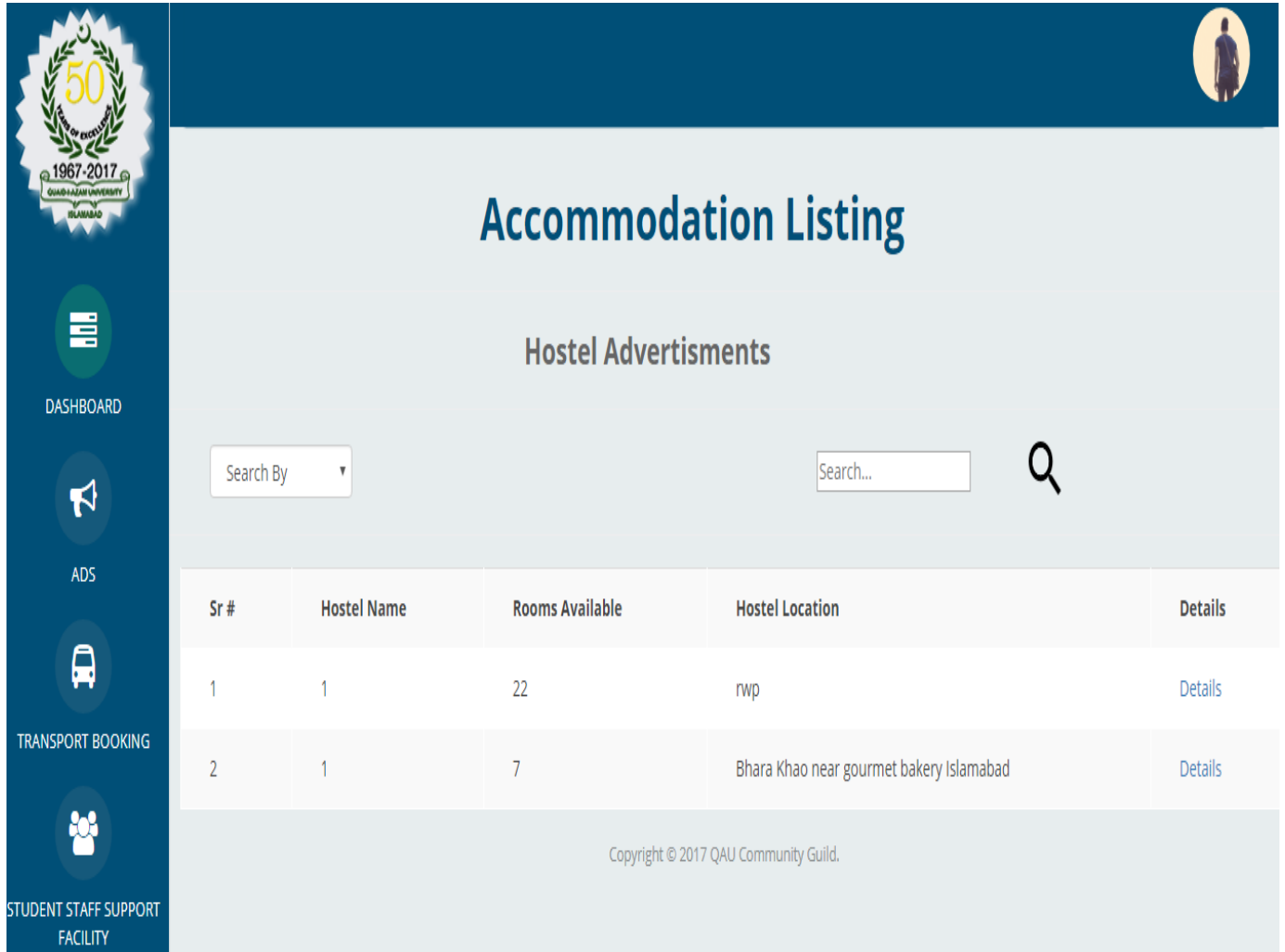
Figure 4-3: Post Hostel Ad

4.4.4   **View Hostel Ad**

This is the screen where posted advertisements of hostel appear. Here users can see these ad(s) and to get further information they can click on 'Details' hyperlink. User can also search the advertisements.
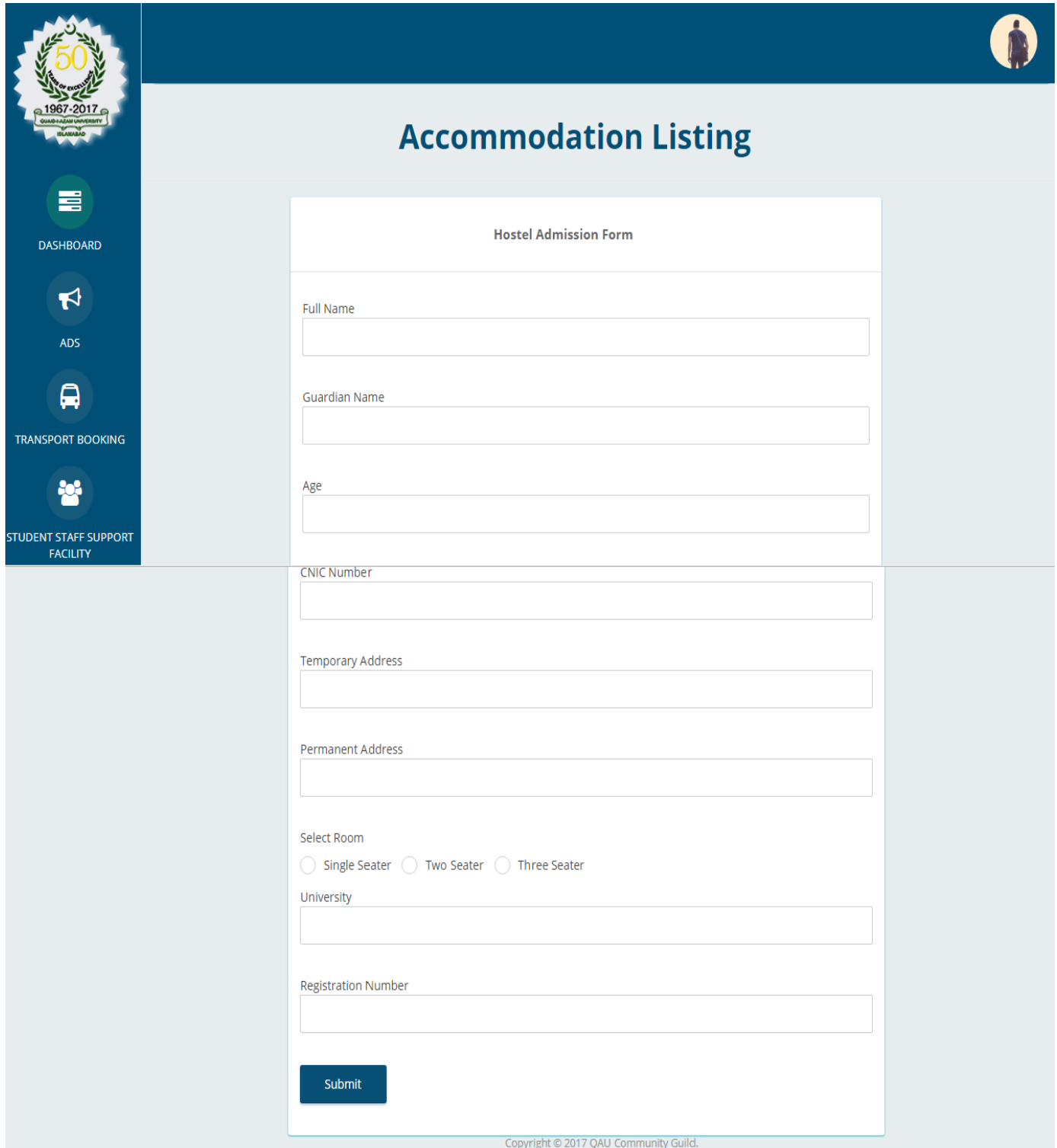

Figure 4-4: View Hostel Ad

4.4.5 **Apply For Accommodation**

This is the screen which appears when user apply for accommodation, user fills the data and submits the form which is stored in database and hostel admin can view that submitted form also.

Figure 4-5: Apply For Accommodation

4.4.6 Day Care Centre

When teacher visits student staff support facility and clicks on day care centre then this screen appears which is the main screen of the day care, containing location and different information.

Figure 4-6: Day Care Centre

4.4.7 **Apply For Day Care**

This is the screen which appears when teacher applies for the day care centre. Teacher fills the form and submits it which is sent to the day care admin and admin can accept or reject that application on different bases

Figure 4-7: Apply For Day Care

4.4.8   **Transport Booking**

This is the main screen of transport booking panel, which is containing map and a calendar. User can see the availability of transport by searching them through calendar for desired date. If transport is available then it is appeared in last section which tells the no. of available vehicles and capacity
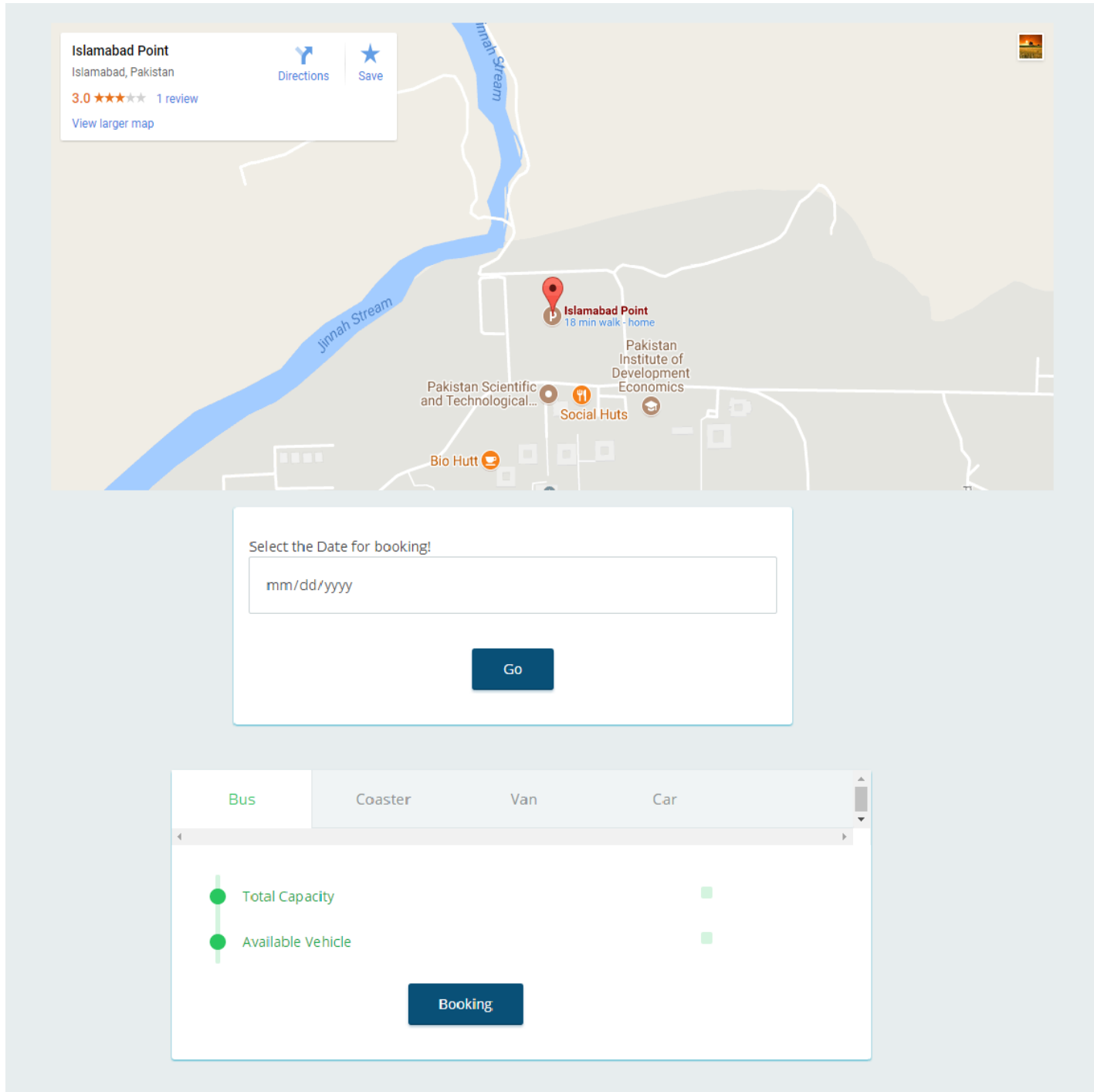
Figure 4-8: Transport Booking

4.4.9   **Apply For Transport Booking**

This is the form screen for transport booking, it has three portions users fill this form and submits it. All the data is stored n database and send to the admin. After taking care of different rules Admin accepts or reject the application.

(2/3) Vehicle Requisition Form

Nature of Duty

○ Official   ○ Private

Purpose of Duty

Destination

○ Within Islamabad/Rawalpindi   ○ Outstation

Traveling: From Campus to

Driver to report at (address)

Next

(3/3) Vehicle Requisition Form

Requisitioner Name:

Requisitioner Designation:

Requisitioner Deptt/Sec:

Requisitioner Phone Number:

Submit

Figure 4-9: Apply For Transport Booking

Summary

In this chapter we discussed about the implementation of the system in which it is described about the language used for the development of system. Also it is discussed why chosen language is used what are its benefits to select this language. Screen shots and their description are also provided in this chapter.

In next chapter it is discussed about the testing of the system, it mentioned that which technique is used for the testing and also test cases are provided in that chapter

5 Chapter# 5

Software Test Documentation

5.1 Introduction

Software testing is a process of executing a program or application with the intent of finding the software bugs. It can also be stated as the process of validating and verifying that a software program or application or product: Meets the business and technical requirements that guided it's design and development, Works as expected and Can be implemented with the same characteristic.

5.1.1 Test Approach

A test approach is the test strategy implementation of a project, defines how testing would be carried out. Test approach has two techniques:

Proactive – An approach in which the test design process is initiated as early as possible in order to find and fix the defects before the build is created.

Reactive - An approach in which the testing is not started until after design and coding are completed [9].

5.2 TEST PLAN

Test planning, the most important activity to ensure that there is initially a list of tasks and milestones in a baseline plan to track the progress of the project.

5.2.1   Testing Tools and Environment

Black-box testing is a method of software testing that examines the functionality of an application without peering into its internal structures or workings. This method of test can be applied virtually to every level of software testing. It typically comprises most if not all higher level testing, but can also dominate unit testing as well. Specific knowledge of the application's code/internal structure and programming knowledge in general is not required. The tester is aware of what the software is supposed to do but is not aware of how it does it. For instance, the tester is aware that a particular input returns a certain, invariable output but is not aware of how the software produces the output in the first place [10].

5.3 Test Cases

Test cases are built around specifications and requirements, i.e., what the application is supposed to do. Test cases are generally derived from external descriptions of the software, including specifications, requirements and design parameters. Although the tests used are primarily functional in nature, non-functional tests may also be used. The test designer selects both valid and invalid inputs and determines the correct output, often with the help of an oracle or a previous result that is known to be good, without any knowledge of the test object's internal structure [11].

5.3.1   Register User

ID	T001
Description	Administrator will register user on the system.
Tester	Admin
Setup	Login as an administrator.
Instructions:	1. Select "Register faculty" option. 2. Enter Email address dr.onaiza@qau.edu.pk 3. Enter password "123". 4. Renter password "123". 5. Press register button.
Expected Results	Faculty member with ID dr.onaiza@qau.edu.pk is registered on system.
Oracle	Pass

5.3.1   Register User (Alternative Scenario)

ID	T001
Description	Administrator will register user on the system.
Tester	Admin
Setup	Login as an administrator.
Instructions:	1. Select "Register faculty" option. 2. Enter Email address dr.onaiza@qau.edu.pk 3. Enter password "123". 4. Renter password "123". 5. Press register button.
Expected Results	Faculty member with ID dr.onaiza@qau.edu.pk is registered on system.
Oracle	Pass

5.3.2   **Login**

ID	T002
Description	User can login to the system.
Tester	User
Setup	Register user with ID Shahroz11@gmail.com and password 1234567.
Instructions:	1. Enter ID Shahroz11@gmail.com 2. Enter password "1234567". 3. Press login Button.
Expected Results	User with ID Shahroz11@gmail.com should be logged in to the system.
Oracle	Pass

5.3.2   Login (Alternative)

ID	T002
Description	User can login to the system.
Tester	User
Setup	Register user with ID Shahroz11@gmail.com and password 1234567.
Instructions:	1. Enter ID Shahroz11@gmail.com 2. Enter password "1234567". 3. Press login Button.
Expected Results	User with ID Shahroz11@gmail.com should be logged in to the system.
Oracle	Pass

5.3.3   Submit Advertisement

ID	T003
Description	Advertisement will be uploaded on the system.
Tester	Members
Setup	1. Login as Member. 2. Upload status of Member having ID "01071411023"to passed.
Instructions:	1. Login as Member with ID "01071411023". 2. Open the Accommodation Ad page. 3. Select submit advertisement option. 4. Open and fill the form. 5. Press upload button.
Expected Results	Advertisement will be submitted.
Oracle	Pass

5.3.3   **Submit Advertisement (Alternative Scenario)**

ID	T003
Description	Advertisement will be uploaded on the system.
Tester	Members
Setup	1. Login as Member. 2. Upload status of Member having ID "01071411023"to passed.
Instructions:	1. Login as Member with ID "01071411023". 2. Open the Accommodation Ad page. 3. Select submit advertisement option. 4. Open and fill the form. 5. Press upload button.
Expected Results	Advertisement will be submitted.
Oracle	Pass

5.3.4   **Apply for Accommodation**

ID	T004
Description	Apply for accommodation
Tester	Student, Teacher, Faculty
Setup	1. Login as a Student member. 2. Upload status of Student having ID "01056773450" to pass.
Instructions:	1. Login as a Student with ID "01056773450". 2. Search the advertisement of "hostel accommodation". 3. Select and open the advertisement. 4. Fill the form. 5. Press upload button.
Expected Results	Application will be sent.
Oracle	Pass

5.3.4   Apply for Accommodation (Alternative Scenario)

ID	T004
Description	Apply for accommodation
Tester	Student
Setup	1. Login as a Student. 2. Upload status of Student having ID "01056773450" to pass.
Instructions:	1. Login as a Student with ID "01056773450". 2. Search the advertisement of "hostel accommodation". 3. Select and open the advertisement. 4. Fill the form. 5. Press upload button.
Expected Results	Application will be sent.
Oracle	Pass

5.3.5   Apply for Transport Booking

ID	T005
Description	Apply for Transport Booking
Tester	Student, Teacher, Faculty
Setup	1. Login as a faculty member. 2. Upload status of faculty member having ID "01056773450" to pass.
Instructions:	1. Login as a faculty member with ID "01056773450". 2. Open the Transport Booking Panel. 4. Open and fill the form. 5. Press upload button.
Expected Results	Application will be sent.
Oracle	Pass

5.3.5   Apply for Transport Booking (Alternative Scenario)

ID	T005
Description	Apply for Transport Booking
Tester	Student, Teacher, Faculty
Setup	1. Login as a faculty member. 2. Upload status of faculty member having ID "01056773450" to pass.
Instructions:	1. Login as a faculty member with ID "01056773450". 2. Open the Transport Booking Panel. 4. Open and fill the form. 5. Press upload button.
Expected Results	Application will be sent.
Oracle	Pass

5.3.6   Request for counselling

ID	T006
Description	Request for counselling
Tester	Student
Setup	1. Login as a student. 2. Upload status of student having ID "04071313016" to pass.
Instructions:	1. Login as a student with ID "04071313016". 2. Open Student And Faculty Support System Panel. 4. Select Counselling option. 4. Open and fill the form. 5. Press upload button.
Expected Results	Application will be sent.
Oracle	Pass

5.3.6   Request for counselling (Alternative Scenario)

ID	T006
Description	Request for counselling
Tester	Student
Setup	1. Login as a student. 2. Upload status of student having ID "04071313016" to pass.
Instructions:	1. Login as a student with ID "04071313016". 2. Open Student And Faculty Support System Panel. 4. Select Counselling option. 4. Open and fill the form. 5. Press upload button.
Expected Results	Application will be sent.
Oracle	Pass

5.3.7   **Apply for day care centre**

ID	T007
Description	Apply for day care centre
Tester	Student
Setup	1. Login as a faculty member. 2. Upload status of faculty member having ID "01056773450" to pass.
Instructions:	1. Login as a student with ID "01056773450". 2. Open Student And Faculty Support System Panel. 4. Select Day Care Centre option. 4. Open and fill the form. 5. Press upload button.
Expected Results	Application will be sent.
Oracle	Pass

5.3.7   **Apply for day care centre (Alternative Scenario)**

ID	T007
Description	Apply for day care centre
Tester	Student
Setup	1. Login as a faculty member. 2. Upload status of faculty member having ID "01056773450" to pass.
Instructions:	1. Login as a student with ID "01056773450". 2. Open Student And Faculty Support System Panel. 4. Select Day Care Centre option. 4. Open and fill the form. 5. Press upload button.
Expected Results	Application will be sent.
Oracle	Pass

5.3.8   **Manage day care centre**

ID	T008
Description	Manage day care centre
Tester	Day care Admin
Setup	1. Login as a staff member. 2. Upload status of staff member having ID "01056773450" to pass.
Instructions:	1. Login as a staff member with ID "01056773450". 2. Open Student And Faculty Support System Panel. 4. Select Day Care Centre option. 4. Open submitted application page. 5. Accept or Reject the applications.
Expected Results	Application will be accepted or rejected.
Oracle	Pass

5.3.8   **Manage day care centre (Alternative Scenario)**

ID	T008
Description	Manage day care centre
Tester	Day care Admin
Setup	1. Login as a staff member. 2. Upload status of staff member having ID "01056773450" to pass.
Instructions:	1. Login as a staff member with ID "01056773450". 2. Open Student And Faculty Support System Panel. 4. Select Day Care Centre option. 4. Open submitted application page. 5. Accept or Reject the applications.
Expected Results	Application will be accepted or rejected.
Oracle	Pass

Summary

In this chapter we discussed about the testing techniques used for the testing. Also it is discussed about the testing tools, testing approaches and testing plan. Test cases are also given in this chapter which are testing all the functions/ test cases of the system.

In next chapter it is discussed about the conclusion of all the system, what we built, what were the problem and what system we proposed for that problem. It is also discussed about the possible enhancement of system which can be made future.

₆ Chapter# 6

Conclusion And Future Enhancement

After the completion of design and implementation the chapter of Conclusion And Future Enhancement comes. This chapter is providing the conclusion of product (developed system) and it is also in this chapter it is discussed about the future enhancement can be made in product.

6.1 Conclusion

The name of developed product is QAU Community Guild which is a web based application. This web application is containing different modules such as: Accommodation Listing, Transport Booking, Student Staff Support Facility, Vehicle Sharing, Job Portal and Varsity Clubs.

The problem definition of this proposed system is that the Faculty members and students of the university who want to share their vehicle with other people, but sometimes they don't have any source to advertise properly and the other people who need this facility can't know the persons who want to share it. Also, those students who don't get allotment in the university's hostels they move towards private hostel and don't know where to go for suitable hostels. The new jobs announced in the university, but rarely people know about it. There is no online source to book the university's transport. The students and staff members who have to book the transport for trips or other purposes, they have to go to transport office and ask for the availability of buses and that is time consuming, and there are no proper advertisement activates carried out by the different clubs (e.g. Adventure Club) of the university.

The proposed solution regarding to this problem definition is that this is a web based system that allows users to avail different facilities on a single platform. The main components of this system are: Users such as Faculty, staff and students can properly advertise their advertisements about vehicle sharing. Members such as registered companies and hostels can advertise about jobs and accommodation respectively. Students can find best suitable private hostels. Users are able to search the jobs easily. Users are able to book the transport for trips and other purposes easily without going from one person to another person. Users are able to see the different activities carried out by varsity club. Besides all these students can apply for counselling and there is a facility of day care centre for the kids of faculty members, they can apply for their kids in day care centre online.

Also this system has defined scope which is, This web-based application provides a platform for the community of Quaid-I-Azam University such as: faculty members, staff and students also members such as registered companies and hostels can use this system. Users can share their vehicles, find suitable accommodations, search new jobs, book University's transport, watch the activities of varsity club and student can apply for counselling. Faculty members can apply in day care centre for their kids.

This system is developed in asp.net framework using c# programming language, Sql server is used for database and Visual studio 2015 is used as an IDE in development of this system. This system is purely web based and can be accessed from anywhere using web browser. Interfaces are user friendly and are responsive so user from different devices (laptop, mobile, tablets) can use this easily.

6.2 Future Enhancement

There are different enhancements for this system which can be made in future.

6.2.1   Live Conversation

In present state contact between users is being provided through Email and in future the feature of live conversation between users can be provided. So users can contact each other anytime using this platform. It will be more easy and fine way for users to contact companies, hostels, clubs, transport unit and day care centre using this feature.

6.2.2   Connection With CMS (Course Management System)

CMS is a course management system, using that system students register their courses studying in current semester and teachers also register those courses which they are teaching in current semester. It will be great enhancement in our system that if it is connected with CMS so students and teachers will be able to see their course and academic details on our system without going to CMS.

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