[SCU (School Collage University)]

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Final Approval

This is to certify that we have read the report submitted by ***Muhammad Fasih (22938), Hanzala Tariq (20942), Hanzala Iftikhar (24908)*** for the partial fulfillment of the requirements for the degree of the Bachelors of Science in Software Engineering (BSSE). It is our judgment that this report is of sufficient standard to warrant its acceptance by Riphah International University, Islamabad for the degree of Bachelors of Science in Software Engineering (BSSE).

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Declaration

We hereby declare that this document "**[SCU]**" neither as a whole nor as a part has been copied out from any source. It is further declared that we have done this project with the accompanied report entirely on the basis of our personal efforts, under the proficient guidance of our teachers especially our supervisor **Muhammad Usman Karim.** If any part of the system is proved to be copied out from any source or found to be reproduction of any project from anywhere else, we shall stand by the consequences.

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Dedication

We dedicate this project to Allah Almighty the creator of all humankind, our family who has constantly put faith on us, and our teachers who had providing us all necessary support that we needed and we also dedicate this project especially to our supervisor ***Mr. Muhammad Usman Karim***, who has put allot of effort for the success of this project.

Acknowledgement

First of all we are obliged to Allah Almighty the Merciful, the Beneficent and the source of all Knowledge, for granting us the courage and knowledge to complete this Project.

We are extremely thankful of our project supervisor, Mr. Muhammad Usman Karin, for all of his help and support throughout our project. Their knowledge and persistent support have been a constant source of motivation. Their helpful guidance, supportive feedback, and mentoring have all been essential in helping to make our project a success. In addition, a special thanks to the rest of the faculty members for their unconditional support.

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Abstract

Our SCU project is a student transportation app with special features designed for the education industry. Unlike conventional transport services, this digital platform concentrates on offering students convenient, safe, and on-time transport options. Due to different class schedules, there is an increasing need for efficient university transportation. Our platform uses technology to meet specific needs, such as providing university students with a flexible carpooling service and school students with fixed bus routes.

Our project aims to provide students with an economical and efficient means of travelling to their educational institutions and in response to the growing demand for innovative transportation solutions within the education sector. We believe that by encouraging shared mobility, our platform will continue to grow steadily as it meets the particular needs of students and their diverse class schedules.

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Chapter 1:

Introduction

Chapter 1:

Introduction

SCU is an Application based transportation system specifically designed to meet the needs of students, parents/guardians & drivers. The system aims to provide efficient, safe, and reliable transportation services for students to and from educational institutions.

For school kids, we have fixed pick-up and drop-off rides, and for college students, we offer ride sharing to save money and the environment. However, that is not all! SCU has some cool features like making sure we pick the right routes, planning schedules, making payments easy, and having a special place for you to ask questions and share your thoughts. We also take care of the rules and safety stuff and even have an emergency button just in case. SCU is all about making your travel to school or college simple and safe.

1.1 Opportunity and Stakeholder

- The SCU (School College University) Transportation initiative represents a transformative opportunity by introducing a holistic approach to transportation services. Its key stakeholders, including students, parents/guardians, and drivers, stand to benefit significantly. Students gain improved access to education, extracurricular activities, and social interactions, encouraging holistic development. Parents and guardians benefit from safe and reliable transportation. Drivers are integral in providing efficient transportation, contributing to the system's success.
- This initiative offers several opportunities, such as empowering students and reshaping communities. It empowers young women, providing safe transportation for pursuing education and opportunities. Most importantly, it enhances education accessibility by removing barriers, ensuring that education is accessible to all. This support inclusivity and diversity in learning environments, ultimately contributing to a brighter and more equitable future.

1.1.1 Stakeholders

- Students
- Parents/Guardians
- Drivers

1.2 Solution Overview

We are aim to design a transportation system that benefits drivers, parents, and Students. Our strategy will ensure that students get an education quickly, safely, and reliably. It will also benefit women by offering them driving employment. We want to change the old approach of transportation. Our goal is to make education and transportation in Pakistan better for everyone in our community, so they have a better future.

1.2.1 Scope of the Project

1.2.1.1 University

Firstly, users register their selves & both can switch mode according to their need (driver / passenger). Students & Teachers will get reliable transportation services.

- **Ride-Sharing**

In this module, Students & Teachers are able to share their ride through ride sharing to overcome their financial burden.

- **Door-step**

In this module, Students will get door-to-door transportation services.

- **Tracking**

In this module Parents/Guardians & Students track their rides to ensure their safety.

1.2.1.2 School & College

In this module, Students will get door-to-door transportation services.

- **Tracking**

In this module Parents/Guardians & Students track their rides to ensure their safety.

1.2.1.3 Route Management

- In this module driver, register their selves. Driver will define their routes to give Pick & Drop services.
- We will provide route optimization that will enhance the efficiency of your transportation services but also ensures that students and drivers experience smoother and more reliable journeys.

1.2.1.4 Admin

- Admin will track the record of all registered users and there is a queries section in which admin can receive all queries of the user. Admin can block the passengers and drivers if he gets any complaint.

1.2.1.5 Booking

- Students and Parents/Guardians allow scheduling transportation services conveniently. Users can select pick-up and drop-off locations, specify their preferred time slots, and make bookings with ease.

1.3 Report Outline

1.3.1 Chapter 1

In this chapter, we introduce our system, explaining its purpose, the problems it addresses, and the key information about who benefits from it. We also discuss the proposed solution and the goals that guided its development.

1.3.2 Chapter 2

This chapter focuses on the current state of the market, along with the unique features of our system and the ways through which we meets user needs.

1.3.3 Chapter 3

The focus of this chapter is to analyses the real needs and problems that our system addresses and it lists the main users of the system as well as the individuals and groups affected by its operations.

1.3.4 Chapter 4

This chapter provides an overview of the design aspects of our system. It discusses architectural design considerations and includes various diagrams that illustrate how the system works.

1.3.5 Chapter 5

In this chapter, we examine the environment in which the system was deployed and evaluate its effectiveness, usability and other related aspects.

Chapter 2:

Literature/Market Survey

Chapter 2:
Literature/Market Survey

2.1 Introduction

In this chapter, we discuss about the literature review and market survey of our project ("SCU"). To collect the project's functional requirements, we utilized a combination of techniques like surveying, Brainstorming and reviewing existing systems. Additionally, we constructed a comparative table to assess how the features of our system stack up against those of competing solutions in the market.

2.2 Literature Review/Technologies Overview

2.2.1 The Survey:

For this project, we used the survey technique for requirements elicitation. Surveys serve as a direct channel to engage with prospective users, understanding their needs, preferences and expectations. Through targeted survey questions, we can collect valuable insights on the desired features and gets a complete understanding of the project on which we are working on.

The following portion of this section describes the Survey process, here are some survey questions designed to gather insights from both potential users and drivers.

2.2.1.1 Potential Users:

- How do you usually commute to your educational institution?
- Are you aware of any existing transportation services provided by your educational institution?
- How satisfied are you with your current transportation options?

- What challenges or issues do you face with your current transportation options?
- We are considering the development of a dedicated School, College, and University Transportation System designed to serve the educational community. How likely are you to use such a service?
- What features or services would you expect from an ideal SCU?
- How would you prefer to pay for services?
- How often do you experience transportation-related stress or challenges while commuting to youreducational institution?
- Have you ever missed important academic or social events due to transportation issues?
- Would you be interested in a loyalty program that offers rewards or discounts for frequent users?

2.2.1.2 Potential Drivers:

- How long have you been working as a driver?
- Do you know about any exiting system?
- Do you have a valid driver's license for the type of vehicle you will be operating in this transportation system?
- Have you undergone any specific training related to student transportation or safety?
- Have you previously worked as a driver for a student transportation service?
- How do you ensure the safety and maintenance of your vehicle?
- Are you familiar with the safety protocols and guidelines for transporting students?
- What days and hours are you available to work as a driver for this transportation system?
- Are you willing to work during morning and afternoon school hours?
- How comfortable are you with using a mobile application to communicate with the transportation system administrators and to report any issues or incidents?
- What communication tools or features would be most helpful for you in your role as a driver?

- How do you plan to interact with students to ensure a safe and respectful environment within your vehicle?
- What suggestions do you have for improving the transportation service for both drivers and students?
- What kind of features do you want to have in the application?
- Are there any specific safety concerns or challenges you foresee in transporting students, and do you have any recommendations to address them?
- Is there anything else you would like to share about your role as a driver or your expectations for this transportation system?

2.2.1.3 Report Generation:

Highlight key takeaways, significant trends, and areas that may require attention or improvement.

2.2.1.4 Decision Making:

Consider feedback from potential users and drivers when refining features, services, or protocols.

2.3 Brainstorming

2.4 Existing Systems

Systems	Features		
	Pick and Drop Bus	**Ride Sharing**	**Carpooling Service**

	Service		
BusCaro	Yes	No	No
Indrive	No	Yes	No
Uber	No	Yes	No

Systems	Features		
	Live Tracking	**Educational specific Transport**	**Emergency Button**
BusCaro	No	Yes	Yes
Indrive	Yes	No	Yes
Uber	Yes	No	Yes

2.5 Summary

From the above discussion, we can conclude that their is no such existing system of transportation for students, which is specifically for Student transportation, some transportation systems like Uber and In drive are available but they are not specific for Students and they don't provide all the features. They do not meet all the requirements of the Students. That is why we came with the idea of "SCU" an Application based transportation system specifically designed to meet the needs of students, parents/guardians & drivers. The system aims to provide efficient, safe, and reliable transportation services for students to and from educational institutions.

For school kids, we have fixed pick-up and drop-off rides, and for college students, we offer ride sharing to save money and the environment. However, that is not all! SCU has some cool features like making sure we pick the right routes, planning schedules, making payments easy, and having a special place for you to ask questions and share your thoughts. We also take care of the rules and safety stuff and even have an emergency button just in case. SCU is all about making your travel to school or college simple and safe.

Chapter 3:

Requirement Analysis

Chapter 3:

Requirement Analysis

3.1 Introduction

In this chapter, we are going to talk about the Functional & Non-Functional requirements of our project "SCU". However, before that, we will go over all the issues we have discovered while studying this project idea. We got the Functional requirements from the client through things like interviews and surveys. Moreover, we figured out the Non-Functional requirements by looking closely at what the Functional parts need to achieve.

3.2 Problem Scenarios

Problem statement -1	
The Problem Of	Inadequate Route Optimization and Scheduling
Affects	Students, Drivers, Guardians
The Result of Which	Existing transportation systems lack efficient route optimization algorithms and scheduling mechanisms, leading to suboptimal routes, delays, and inefficiencies in service, which reduces overall satisfaction with the transportation service.
Benefits of	We Integrate advanced route optimization algorithms within the SCU platform to analyze traffic patterns, minimize travel time, and optimize routes based on real-time data. Implement a dynamic scheduling system that adapts to changing demands, ensuring timely and efficient transportation for students.

Table 3.2.1 | Problem Statement 1

Problem statement -2	
The Problem Of	Limited Payment Options and Accessibility
Affects	Students, Drivers, Guardians
The Result of Which	This limitation in payment options affects user satisfaction, driver income, and may stop some potential users from using the transportation service.
Benefits of	Expand payment options within the SCU platform to include various methods such as mobile wallets, prepaid cards, and online payment gateways. Implement a simple and secure payment interface accessible to diverse user demographics.

Table 3.2.2 | Problem Statement 2

Problem statement -3	
The Problem Of	Inadequate Safety Measures and Emergency Response
Affects	Students, Guardians
The Result of Which	Lack of safety measures affects the confidence and trust of users in the transportation system, potentially leading to decreased utilization and heightened safety risks.
Benefits of	Introduce comprehensive safety protocols including an emergency button feature, real-time tracking, and driver verification systems. Implement safety training for drivers and ensure compliance with

	safety regulations to enhance overall safety during transit.

Table 3.2.3 | Problem Statement 3

Problem statement -4	
The Problem Of	Inadequate Feedback Mechanisms and User Support
Affects	Students, Guardians
The Result of Which	This affects user experience, potentially fostering a negative perception of the transportation service, and inhibiting the system's ability to adapt to user needs.
Benefits of	Establish a robust feedback and help center within the SCU platform, providing users with easy-to-access channels for feedback, complaints, and assistance. Implement a responsive customer support system to address user queries and concerns promptly.

Table 3.2.3 | Problem Statement 4

3.3 Functional Requirements

Pick and Drop

NO#	Functional Requirements	Sub Functionally		Description
1	Pick and Drop	1.1	Location Accuracy and Precision	Precisely identify pick-up and drop-off points using GPS or accurate address mapping.
		1.2	Parent/Guardian Notifications	Provide notifications to parents or guardians upon student pick-up and drop-off.

		1.3	Real-time Tracking	Enable real-time tracking between drivers, students, and Guardians.
		1.4	Safety Protocols and Supervision	Implement safety measure like Emergency button and supervision for younger students during pick-up and drop-off through driver's proper training.

Table 3.3.1| FR 1

Edit Profile

NO#	Functional Requirements	Breakdown		Description
2	Edit Profile	2.1	Edit Account Details	User will be able to edit his profile details which include Full Name, Email

Table 3.3.2| FR 2

Carpooling Service

NO#	Functional Requirements	Sub Functionally		Description
3	Carpooling Service	3.1	User Matching and Group Formation	Matching system that groups university students based on common routes, schedules, and preferences for efficient carpooling.
		3.2	Route Flexibility and Customization	Allow users to customize their carpool routes based on preferences or variations in schedules.
		3.3	Real-time Tracking	Enable real-time tracking between drivers, students, and Guardians.

		3.4	Fairness and Contribution	Management Mechanism to ensure fair contribution and cost sharing among carpool participants.
		3.5	Communication and Coordination Tools	In-app communication tools or Available numbers to facilitate coordination among carpool participants.

Table 3.3.3| FR 3

Payment System

NO#	Functional Requirements	Breakdown		Description
4	Payment System	4.1	Multiple Payment Methods	Integration of diverse payment options such as credit/debit cards, mobile wallets, prepaid cards, and online payment gateways.
		4.2	Transparent Pricing Structure	Clear presentation of pricing details, including fare breakdowns, additional charges, or discounts.
		4.3	Automated Payment Processing	Automated processing of payments upon completion of the ride or service.
		4.4	Payment Confirmation and Receipt Generation	Instant confirmation of successful payments and generation of receipts for users.

Table 3.3.4| FR 4

Feedback and Help Center

NO#	Functional	Breakdown	Description

	Requirements			
5	Feedback and Help Center	5.1	Feedback	A dedicated platform for users to submit feedback, complaints, and queries regarding the transportation service.

Table 3.3.5| FR 5

Emergency Button/Alert System

NO#	Functional Requirements	Breakdown		Description
6	Emergency Button/Alert System	6.1	Accessible Emergency Button	Place a prominently visible and easily accessible emergency button within the app or interface.
		6.2	Two-way Communication Capability	Enable two-way communication between the user and responders after activating the emergency button
		6.3	Emergency Contact Information	Allow users to pre-register emergency contact information for immediate notification in crises.

Table 3.3.6| FR 6

Admin Panel

NO#	Functional Requirements	Breakdown	Description

7	Admin Panel	7.1	Admin Login	Admin will be able to login using a unique username and password to access the admin panel.
		7.2	View Registered Users	Admin will be able to view a list of all registered users.
		7.3	View User Queries	Admin will be able to view all the queries submitted by the users.
		7.4	Export Data	Admin will be able to export details of registered users, user queries and emails submitted for updates in excel or pdf format.
		7.5	View Email for Updates	Admin will be able to view emails submitted for updated by the user.

Table 3.3.7| FR 7

View Profile

NO#	Functional Requirements	Breakdown		Description
8	View Profile	8.1	User Profile Viewing	Allow users to view their profiles, including personal information
		8.2	Driver Profile Details	Enable users to view detailed profiles of registered drivers, reviews, ratings, and vehicle information.

		8.3	Help and Support Access from Profile	Provide access to help and support resources or FAQs directly from the user or driver profile.

Table 3.3.8| FR 8

Registration

NO#	Functional Requirements	Breakdown		Description
9	View Profile	9.1	User Registration Form	Provide a user-friendly registration form with fields for essential details like name, email, contact number, and password.
		9.2	Driver Registration and Documentation	Create a separate registration process for drivers, including fields for driver's license, vehicle information, and verification documents.
		9.3	Verification and Authentication	Implement an email or mobile verification step to confirm user authenticity during registration.
		9.4	Terms of Service and Privacy Policy Agreement	Require users and drivers to agree to terms of service and privacy policies before completing registration.

Table 3.3.9| FR 9

3.4 Non-Functional Requirements

NO#	Non-Functional	Description

	Requirements	
1	Usability	Intuitive user interface for easy navigation and accessibility for both students and drivers.
2	Reliability	Dependable and consistent service delivery ensuring punctuality and safety for all passengers.
3	Security	Robust security measures to protect user data, financial transactions, and ensure passenger safety during transit.
4	Scalability	Ability to accommodate a growing number of users and drivers while maintaining service quality.

Table 3.4.1| N-FR 1-6

3.5 Summary

In this chapter, we gathered all the functional requirements and the non- functional requirements by engaging in interviews, surveys and brainstorming sessions and by looking at functional requirements, we specified the essential non-functional requirements that we thought were required for its best performance.

Chapter 4:
System Design

Chapter 4:
System Design

4.1 Introduction

In this chapter, we aim to present a comprehensive collection of design diagrams, including architectural, use case and activity designs for our project "SCU." Through these diagrams, our goal is to represent visually, both the system's workflow and its technical design.

4.2 Architectural Design

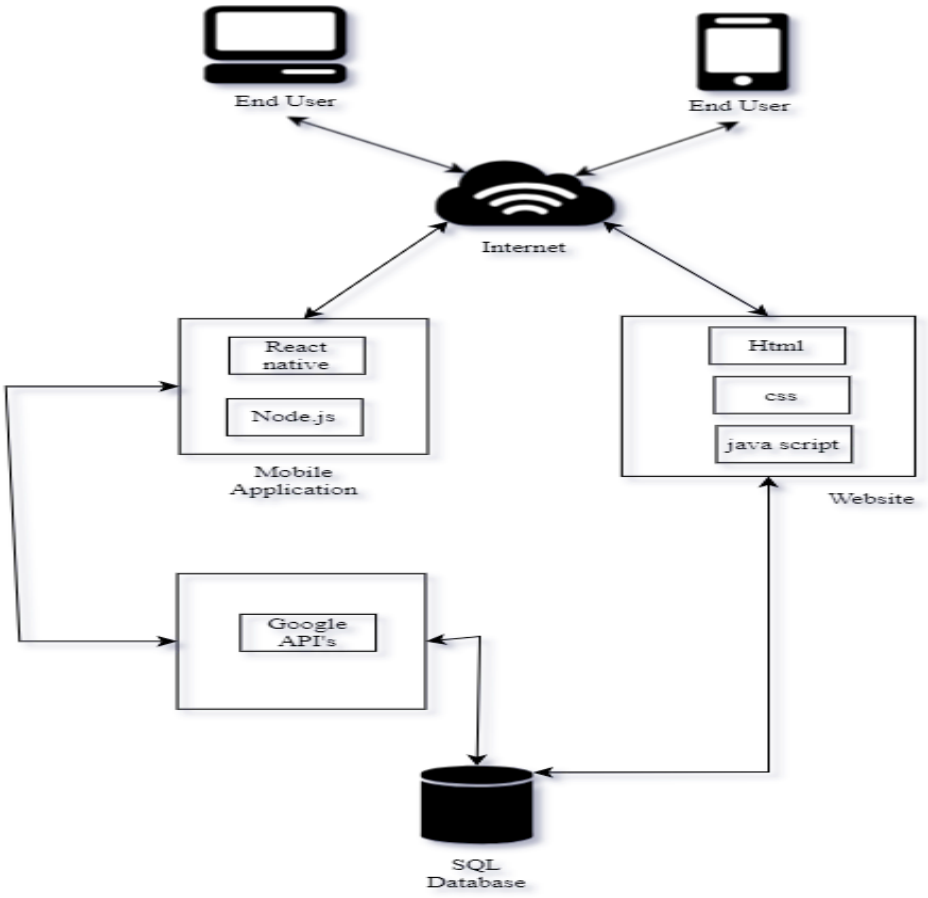


Fig 4.2.1 | Architectural Design

4.3 Detailed Design

4.3.1 Use Case Diagrams

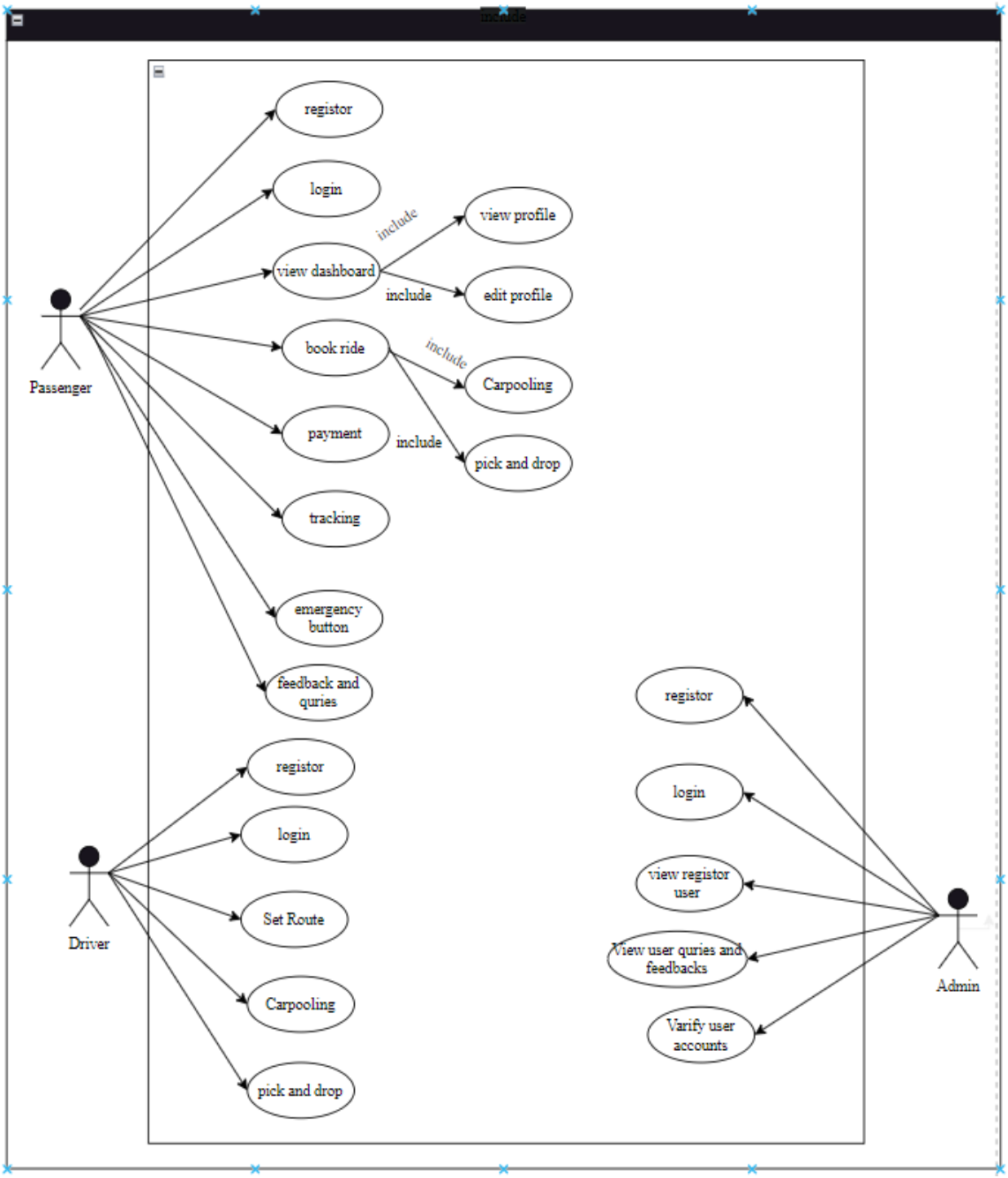


Fig 4.3.1.1 | Use Case Diagram

4.3.2 Use Case Fully Dressed Format

4.3.2.1 Registration

Use case ID:	UC-001

Use case:	Registration	
Actor:	User	
Preconditions:	• The SCU app is installed and accessible on the passenger's device. • The passenger has an active internet connection.	
Basic Flow:	**Actor Actions:**	**System Response:**
	1. The user will open the app on his devices.	2. The system will display the splash screen and after two seconds automatically redirect to registration page, which has "Register" and "Sign Up" options.
	3. The user will click on Register button to create new account.	4. The system will display the form with necessary details: name, email, contact number, and password.
	5. The user will fill the form with necessary details and select submit button.	6. The System will display a message “User Registered Successfully” and display login page to the user.
Alternative Flow:	5a. System will displays an error message if the user enters invalid data or leave an empty field.	
Post conditions:	The System will display a message “User Registered Successfully” and display login page to the user.	

Table 4.3.2.1 | UC1–Registration

4.3.2.2 Login

Use case ID:	UC-002
Use case:	Login
Actor:	User
Precondition:	The User has already registered an account on the system.

Basic Flow:	**Actor Actions:**	**System Response:**
	1. The user will open the app on their devices. 3. The user will click to login button 5. The user will fill the form and select submit button.	2. The system will display the splash screen and after 2 seconds redirect to registration page, which has "Register" and "Login" options. 4. The system will display the login form with username and password to fill. 6. The System will display a message “User Login Successfully” and display Home page to the user.
Alternative Flow:	5a. System will displays an error message if the user enters invalid data or leave an empty field.	
Post condition:	The System will display a message “User Login Successfully” and display Home page to the user.	

Table 4.3.2.2 | UC2–login

4.3.2.3 View dashboard

Use case ID:	UC-003	
Use case:	View dashboard	
Actor:	User	
Preconditions:	The User has successfully logged into the system.	
Basic Flow:	**Actor Actions:**	**System Response:**
	1. User will select “Dashboard” Option on the home screen.	2. System will display the Dashboard to the user.
Alternative Flow:	2a. System will display error message in case of any issue while displaying Dashboard.	
Post conditions:	The User will be on the Dashboard.	

Table 4.3.2.3 | UC3– View dashboard

4.3.2.4 Request ride

Use case ID:	UC-004	
Use case:	Book ride	
Actor:	Passenger	
Preconditions:	The User has successfully logged into the system.	
Basic Flow:	**Actor Actions:**	**System Response:**
	1. User will enter his/her pick up and drop off point. **3. User will press the (Request) button.** **5. User will wait for the notification.**	**2. System will display the fairs according to distance (per km).** **4. System will generate their request and send to the drivers.** **6. System will sent the notification if the user request has been accepted or declined.**
Alternative Flow:	**1a. user's request cannot be proceeded due to incomplete information**	
Post conditions:		

Table 4.3.2.4 | UC4– Reque ride

4.3.2.4 Accept ride

Use case ID:	UC-004	
Use case:	Book ride	
Actor:	Passenger	
Preconditions:	The User has successfully logged into the system.	
Basic Flow:	**Actor Actions:**	**System Response:**
	1. User will enter his/her pick up and drop off point. **3. User will press the**	**2. System will display the fairs according to distance (per km).** **4. System will generate their request**

	(Request) button.	**and send to the drivers.**
Alternative Flow:		
Post conditions:		

Table 4.3.2.4 | UC4– Accept ride

4.3.2.5 Payment

Use case ID:	UC-005	
Use case:	Payment	
Actor:	Passenger	
Preconditions:		
Basic Flow:	**Actor Actions:**	**System Response:**
Alternative Flow:		
Post conditions:		

Table 4.3.2.5 | UC5–Payment

4.3.2.6 Tracking

Use case ID:	UC-006
Use case:	Tracking
Actor:	Passenger
Preconditions:	
Basic Flow:	
Actor Actions:	**System Response:**
Alternative Flow:	
Post conditions:	

Table 4.3.2.6 | UC6–Tracking

4.3.2.7 Emergency button

Use case ID:	UC-007
Use case:	Emergency button
Actor:	Passenger
Preconditions:	
Basic Flow:	
Actor Actions:	**System Response:**
Alternative Flow:	
Post conditions:	

Table 4.3.2.7 | UC7–Emergency button

4.3.2.8 Give Feedback & Queries

Use case ID:	UC-008
Use case:	Feedback and Queries
Actor:	Passenger
Preconditions:	
Basic Flow:	
Actor Actions:	**System Response:**
Alternative Flow:	
Post conditions:	

Table 4.3.2.8 | UC8–Feedback & Queries

4.3.2.9 View Profile

Use case ID:	UC-009
Use case:	View Profile

Actor:	Passenger
Preconditions:	
Basic Flow:	
Actor Actions:	**System Response:**
Alternative Flow:	
Post conditions:	

Table 4.3.2.9 | UC9–View Profile

4.3.2.10 Edit Profile

Use case ID:	UC-0010
Use case:	Edit Profile
Actor:	Passenger
Preconditions:	
Basic Flow:	
Actor Actions:	**System Response:**
Alternative Flow:	
Post conditions:	

Table 4.3.2.10 | UC10–Edit Profile

4.3.2.11 Registration

Use case ID:	UC-0011
Use case:	Registration
Actor:	Driver
Preconditions:	
Basic Flow:	
Actor Actions:	**System Response:**
Alternative Flow:	

Post conditions:	

Table 4.3.2.11 | UC11–Registration

4.3.2.12 Login

Use case ID:	UC-0012
Use case:	Login
Actor:	Driver
Preconditions:	
Basic Flow:	
Actor Actions:	**System Response:**
Alternative Flow:	
Post conditions:	

Table 4.3.2.12 | UC12–login

4.3.2.13 Set Route

Use case ID:	UC-0013
Use case:	Set Route
Actor:	Driver
Preconditions:	
Basic Flow:	
Actor Actions:	**System Response:**
Alternative Flow:	
Post conditions:	

Table 4.3.2.13 | UC13–Set Route

4.3.2.14 Carpooling

Use case ID:	UC-0014
Use case:	Carpooling
Actor:	Driver
Preconditions:	
Basic Flow:	
Actor Actions:	**System Response:**
Alternative Flow:	
Post conditions:	

Table 4.3.2.14 | UC14–Carpooling

4.3.2.15 Pick and Drop

Use case ID:	UC-0015
Use case:	Pick and Drop
Actor:	Driver
Preconditions:	
Basic Flow:	
Actor Actions:	**System Response:**
Alternative Flow:	
Post conditions:	

Table 4.3.2.15 | UC15–Pick and Drop

4.3.2.16 Registration

Use case ID:	UC-0016
Use case:	Registration
Actor:	Admin
Preconditions:	
Basic Flow:	

Actor Actions:	**System Response:**
Alternative Flow:	
Post conditions:	

Table 4.3.2.16 | UC16–Registration

4.3.2.17 Login

Use case ID:	UC-0017
Use case:	Login
Actor:	Admin
Preconditions:	
Basic Flow:	
Actor Actions:	**System Response:**
Alternative Flow:	
Post conditions:	

Table 4.3.2.17 | UC17–login

4.3.2.18 View Registered User

Use case ID:	UC-0018
Use case:	View Registered User
Actor:	Admin
Preconditions:	
Basic Flow:	
Actor Actions:	**System Response:**
Alternative Flow:	
Post conditions:	

Table 4.3.2.18 | UC18–View Registered User

4.3.2.19 View User Queries

Use case ID:	UC-0019
Use case:	View User Queries
Actor:	Admin
Preconditions:	
Basic Flow:	
Actor Actions:	**System Response:**
Alternative Flow:	
Post conditions:	

Table 4.3.2.19 | UC19– View User Queries

4.3.2.20 Verify User Account

Use case ID:	UC-0020
Use case:	Verify User Account
Actor:	Admin
Preconditions:	
Basic Flow:	
Actor Actions:	**System Response:**
Alternative Flow:	
Post conditions:	

Table 4.3.2.20 | UC20– Verify User Account

4.3.3 Activity Diagrams

4.3.3.1 Registration

Fig 4.3.3.1: Registration

4.3.3.2 Login

Fig 4.3.3.2: login

4.3.3.3 View dashboard

Fig 4.3.3.3: View dashboard

4.3.3.4 Book ride

Fig 4.3.3.4: Book ride

4.3.3.5 Payment

Fig 4.3.3.5: Payment

4.3.3.6 Tracking

Fig 4.3.3.6: Tracking

4.3.3.7 Emergency button

Fig 4.3.3.7: Emergency button

4.3.3.8 Give Feedback & Queries

Fig 4.3.3.8: Feedback & Queries

4.3.3.9 View Profile

Fig 4.3.3.9: View Profile

4.3.3.10 Edit Profile

Fig 4.3.3.10: Edit Profile

4.3.3.11 Registration

Fig 4.3.3.11: Registration

4.3.3.12 Login

Fig 4.3.3.12: login

4.3.3.13 Set Route

Fig 4.3.3.13: Set Route

4.3.3.14 Carpooling

Fig 4.3.3.14: Carpooling

4.3.3.15 Pick and Drop

Fig 4.3.3.15: Pick and Drop

4.3.3.16 Registration

Fig 4.3.3.16: Registration

4.3.3.17 Login

Fig 4.3.3.17: login

4.3.3.18 View Registered User

Fig 4.3.3.18: View Registered User

4.3.3.19 View User Queries

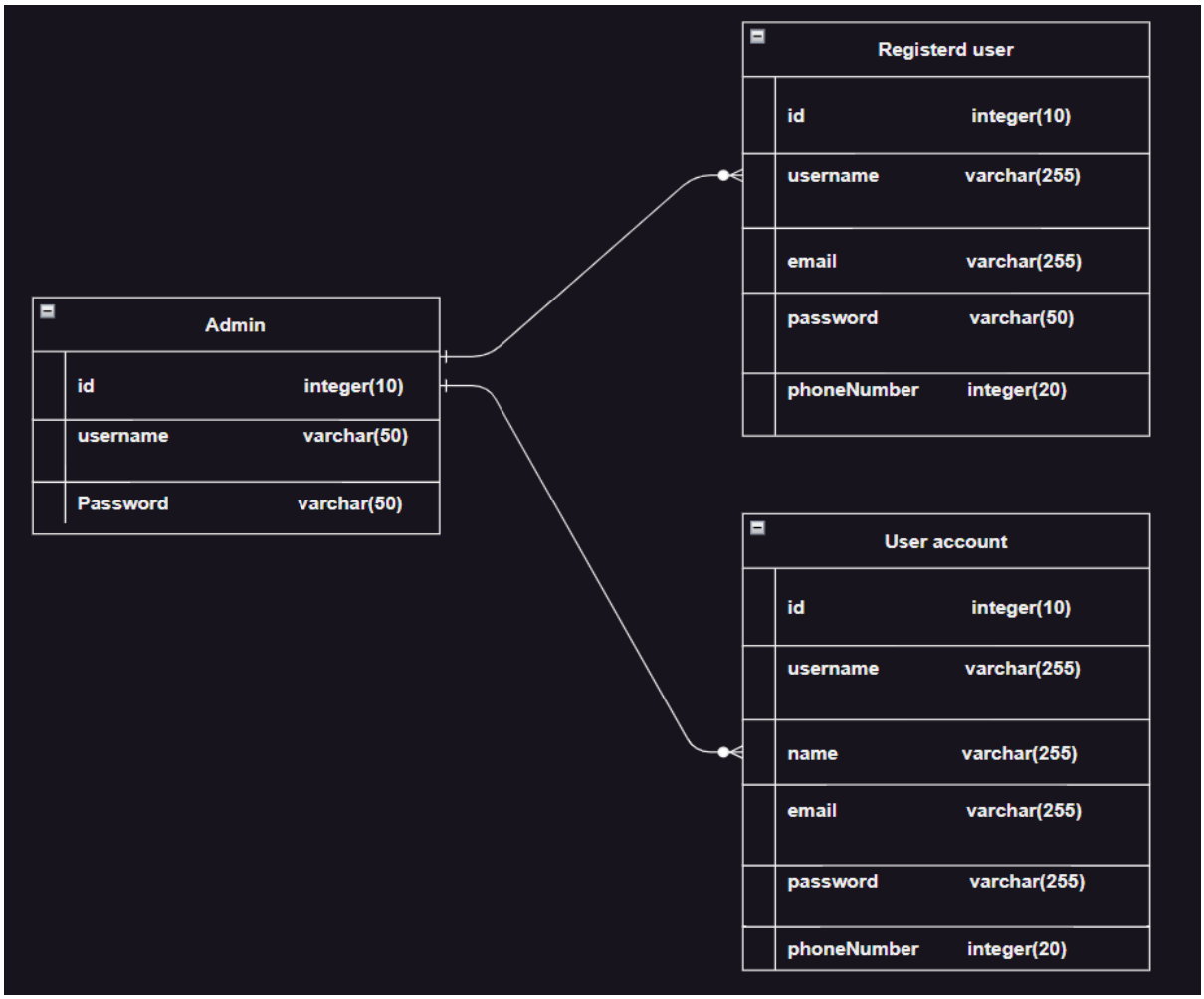
Fig 4.3.3.19: View User Queries

4.3.3.20 Verify User Account

Fig 4.3.3.20: Verify User Account

4.4 Database Design

4.4.1: Entity Relationship Diagram (ERD)



4.5 Summary

This chapter contains the design diagrams for our project, "SCU" including the architecture, use case, activity, and sequence diagrams. We tried to represent the technical architecture and workflow of our system in each diagram. It allowed us to fully understand all the complicated details and inner workings of our project, much like creating a map to explore every corner and cranny.

Chapter 5:
Implementation

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Implementation

5.1 Endeavour

5.1.1 Team

- Muhammad Fassi
- Hanzalah Tariq
- Hanzala Iftikhar

5.1.2 Work Breakdown Structure

1. Project Management

1.1. Work Breakdown Structure (WBS)

1.2. Roles & Responsibility Matrix

1.3. Change Control System

2. Reports / Documentation

2.1. Team Members and Project Proposal

2.2. Project Proposal Document

2.2.1. Opportunities and Stakeholders

2.2.2. Existing Systems

2.2.3. Problem Statement

2.2.4. Proposed Solution

2.2.5. Project Scope

2.2.5.1. University

2.2.5.2. School & College

2.2.5.3. Booking

3. System

3.1. Development Environment

3.1.1. IDE (VS Code)

3.1.2. Version Control

3.1.3. Server

3.1.4. Database

3.2. Mobile Application

3.2.1. Front-end

3.2.2. Back-end

3.3. Website (admin)

3.3.1. Front-end

3.3.2. Back-end

5.1.3 Roles & Responsibility Matrix

WBS #	WBS Deliverable	Activity #	Activity to Complete the Deliverable	Duration (# of Days)	Responsible Team Member(s) & Role(s)
2	Documentation	2.1	Team Members and Project Proposal	1	Hanzala Tariq Muhammad Fasih Hanzala Iftikhar
2	Documentation	2.2	Project Proposal Document	4	Hanzala Tariq Muhammad Fasih Hanzala Iftikhar
2.2	Project Proposal Document	2.2.1	Opportunity & Stakeholders	1	Hanzala Tariq Muhammad Fasih Hanzala Iftikhar

2.2	Project Proposal Document	2.2.2	Existing Systems	2	Hanzala Tariq Muhammad Fasih Hanzala Iftikhar
2.2	Project Proposal Document	2.2.3	Problem Statement	1	Hanzala Tariq Muhammad Fasih Hanzala Iftikhar
2.2	Project Proposal Document	2.2.4	Proposed Solution	1	Hanzala Tariq Muhammad Fasih Hanzala Iftikhar
2.2	Project Proposal Document	2.2.5	Project Scope	4	Hanzala Tariq Muhammad Fasih Hanzala Iftikhar
2.3	Proposal Plan	2.3.1	Proposed changes	2	Hanzala Tariq Muhammad Fasih Hanzala Iftikhar
2.3	Proposal Plan	2.3.2	Work Breakdown Structure	3	Hanzala Tariq Muhammad Fasih
2.4	Planning Document	2.4.1	Problem the Software will solve	1	Hanzala Tariq Muhammad Fasih Hanzala Iftikhar
2.4	Planning Document	2.4.2	The development approach the team will use	1	Muhammad Fasih Hanzala Iftikhar
2.4	Planning Document	2.4.3	The Primary Function the Software	1	Hanzala Iftikhar

2.4	Planning Document	2.4.4	The Order of Development	1	Hanzala Tariq Muhammad Fasih Hanzala Iftikhar
2.4	Planning Document	2.4.5	Leadership Roles of the Project	1	Hanzala Tariq
2.4	Planning Document	2.4.6	Each Team Member's Responsibilities	1	Hanzala Tariq
2	Documentation	2.5	Final Documentation Introduction	1	Hanzala Iftikhar
2	Documentation	2.6	Market Survey	6	Hanzala Tariq Muhammad Fasih
2.6	Market Survey	2.6.1	Survey	1	Hanzala Tariq Muhammad Fasih
2.6	Market Survey	2.6.2	Interviews	1	Hanzala Tariq Muhammad Fasih Hanzala Iftikhar
2.6	Market Survey	2.6.3	Brainstorming	2	Hanzala Tariq Muhammad Fasih Hanzala Iftikhar
2	Documentation	2.7	Requirement Analysis	5	Hanzala Tariq Muhammad Fasih Hanzala Iftikhar
2.7	Requirement	2.7.1	Elicited	1	Hanzala Tariq

	Analysis		Requirements		Muhammad Fasih Hanzala Iftikhar
2.7	Requirement Analysis	2.7.2	Functional Requirements	4	Hanzala Tariq Hanzala Iftikhar
2.7	Requirement Analysis	2.7.3	Non-Functional Requirements	3	Muhammad Fasih
2.7	Requirement Analysis	2.7.4	Stakeholder Requirements	1	Muhammad Fasih
2	Documentation	2.8	System Design	8	Hanzala Tariq
2.8	System Design	2.8.1	Interface Design	8	Hanzala Tariq Hanzala Iftikhar
2.8	System Design	2.8.2	Architectural Design	3	Hanzala Tariq
2.8	System Design	2.8.3	Use Cases	3	Hanzala Tariq
2.8	System Design	2.8.4	Activity Diagrams	5	Hanzala Iftikhar
2.9	Implementation	2.9	Development	30	Hanzala Tariq Muhammad Fasih Hanzala Iftikhar
2.10	Testing & Performance Evaluation	2.10	Testing & Performance Evaluation	8	Muhammad Fasih Hanzala Iftikhar
3	System	3.1	Development Environment	10	Hanzala Tariq Muhammad Fasih Hanzala Iftikhar
3	System	3.2	Mobile Application	40	Hanzala Tariq Muhammad Fasih Hanzala Iftikhar
3.2	Mobile Application	3.2.1	Front End	20	Hanzala Tariq Muhammad

					Fasih
3.2	Mobile Application	3.2.2	Back-End	20	Hanzala Tariq Muhammad Fasih
3	System	3.3	Website	14	Hanzala Iftikhar
3.3	Website	3.3.1	Front-End	7	Hanzala Iftikhar
3.3	Website	3.3.2	Back- End	7	Muhammad Fasih Hanzala Iftikhar

5.2 Components, Libraries, Web Services, and stubs

• ReactJS

• Bootstrap

• JavaScript

• HTML/CSS

• Android Studio

• Font Awesome

• Axios

• Jquery

• PHP

Database

• SQL

Tool for Online Team Collaborations

• Google Meets

• Zoom

5.3 IDE, Tools, and Technologies

• Visual Studio Code

• Visual Paradigm

• Remix

• MS Word

• Adobe Illustrator

• cPanel

5.4 Best Practices/ Coding Standards

5.4.1 Software Engineering Methodologies

In our project we have we have used Scrum Agile Methodology because it has a greater adaptability to frequently changing–scope. Here's how we managed our project:

• A daily meeting was conducted for at least 15 minutes

• A meeting with the supervisor was conducted at least 1 to 2 times a week to discuss progress.

• In the meeting, sprints were planned, and a backlog of tasks was created.

• These tasks were then performed by the group members

• Progress was discussed daily

5.4.2 React JS coding standard

• Easy, short, and readable variable and function names.

• Camel case naming conventions followed.

• Comments as much as needed but not more.

• Use shortcut notation when it makes sense.

• Modularize

5.5 Deployment Diagram

5.6 Summary

In this chapter we have provided list of components and libraries that we have used in our project for better user experience. We have mentioned Work break down structure WBS and Control flow diagram. We have also mentioned tools and IDEs and best practices and coding standards of software engineering.