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An Undergraduate Internship/Project on Communication System App for Minhaz Continental Agencies Limited

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Independent University, Bangladesh

An Undergraduate Internship/Project on Communication System App for Minhaz Continental Agencies Limited

By

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Autumn, 2022

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January 24, 2023

Dissertation submitted in partial fulfillment for the degree of Bachelor of Science in Computer Science

Department of Computer Science & Engineering

Independent University, Bangladesh

Attestation

This is to certify that the report is completed by me, Md Tuhin Mia (ID:1721379), submitted in partial fulfillment of the requirement for the Degree of Computer Science and Engineering from Independent University, Bangladesh (IUB). It has been completed under the guidance of Ms. Sabrina Alam. I also certify that all my work is genuine which I have learned during my Internship. All the sources of information used in this project and report has been duly acknowledged in it.

Signature Date January 24, 2023

Md.Tuhin Mia

Name

Acknowledgement

First and foremost, I would like to express my gratitude to Almighty Allah for giving me the stamina and capacity to work hard, for enabling me to write this report, and for providing the opportunity to complete my internship at Minhaz Continental Agencies Limited, one of the largest groups of companies in Bangladesh. I also want to thank my parents for their unwavering love and support, which has helped me overcome obstacles and grow. I appreciate the guidance, time, patience, constructive criticism, and thoughtful

advice provided by my honorable professor and supervisor, Ms. Sabrina Alam, Lecturer, Department of Computer Science Engineering, Independent University, Bangladesh, regarding various aspects of my internship and the writing of this report. Then I would like to express my gratitude to MR. Mahmudul Alam Chowdhuy, Direcrtor of this company, for giving me the opportunity to complete my internship at Minhaz Continental Agencies Limite and my Development team member Md.Shahadat Hossain for his guidance and support in this three months internship program. The learning and experiences I have gathered here have helped me a lot as a web developer, system analyst and resource planning and this will surely help me in the next phase of life. I would also like to express my gratitude to all my colleagues for helping me throughout and making the Internship process so much enjoyable. Without them, this journey would have not been easy.

Letter of Transmittal

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January 19, 2022
Ms. Sabrina Alam
Lecturer
Department of Computer Science and Engineering Independent University, Bangladesh.

Subject: Internship Report submission Autumn, 2022.

With due honor and respect, I, Md Tuhin Mia, from Autumn 2022, Section 4, would like to submit my Internship report. This report is written to kindly inform you that I have completed my internship program and its report. My internship was conducted from 15th September 2022 to 15th December 2022. I completed my internship at Minhaz Continental Agencies Limited.

This report is based on my experience and the work I did at Minhaz Continental Agencies Limited during my internship. The primary goal for my internship was to gain experience in different technology related fields of the company, starting with research and development, documentation, content writing, web development and to get acquainted with best practices.

Over the period of my internship at Minhaz Continental Agencies Limited, I found out that I learned and applied a lot of new skills and technologies. The company comprises of a small team for Development, who learn, collaborate, and innovate together.

I would like to thank you immensely for all your guidance and support. I hope and pray that this report fulfills all the requirements and is up to your expectations.

Sincerely,
Md Tuhin Mia, 1721379
Department of Computer Science Engineering
Independent University, Bangladesh

Evaluation Committee

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Signature

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Name Md Abu Sayed

Internal Examiner-1 / Panel Member-1

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Signature

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Name Rubayad Mehedi

External Examiner-2 / Panel Member-2

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Signature

Sabrina Alam

Name

Sabrina Alam

Supervisor of the intern

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Head, Department of Computer Science & Engineering

Abstract

In today's world there is a tough economic competition in the corporate sector. A company needs to have a precise and efficient system to provide communication app to its employees. The more the efficient a company can become the more profit it can make out of it. So they are implementing Minhaz private communication system for providing communication support to their employees more efficiently.

The task of my team for the project was to gather requirement, design the data, develop, test and implement. As technology has advanced enormously, I will get to learn more every day. In this report I will discuss how to implement a web application that serves the purpose of MPCS services also its design, development, testing phase and benefits it provides.

As it was a new implementation for Minhaz Continental Agencies Limited, the company assigned me in the research, design phase, development and testing phase of a SDLC. The web application is based on Laravel framework with the back-end being php and front-end is designed using HTML, CSS and Bootstrap where the database is designed in SQLite.

Working in Minhaz Continental Agencies Limited as an intern, added huge experience to my career and gave me a lot of professional knowledge. This report will take us through all the details of web development and experience gathered during this internship period.

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Chapter 1

Introduction

1.1 Overview/Background of the Work

Instead of using a third-party desktop or mobile application, the corporate communication system is a web application that offers an effective solution for enabling stakeholders of a company to communicate with one another. Multiple files must be transferred internally within an organization through a channel, and this must be done in the most secure manner possible. Otherwise, the business couldn't continue with its work.

It is also noted the company also need to follow a standard to communicate with each other, using devices because of this reason corporate communication web application comes into the picture. This system provides a lot of positive impacts to the company, first of all the details that are being shared throughout the company is highly secured second of all the working structure and process becomes more smooth and faster, and thirdly, there is no need to roam around the Internet to follow a third-party application. For a large company with a variety of business unit it hard to provide technological support to their employees daily. Previously the company I am working for “Minhaz Continental Agencies Limited used manual method for providing technical support to their employees and didn’t have any kind of system for storing information related to those support.

Considering this scenario, I have been assigned the work to develop a website that will collect hardware or software related problems from its employees and IT support team will provide solution to their problems and on respect to the problems for future use.

Given, that the website will be created using HTML, CSS, Bootstrap at the front-end and at the back-end laravel and for database SQLite will be used. This provides efficient

responsive UI which will be both mobile and desktop compatible. The proposed work focuses on latest website building tools and practices which provide effective workflow process.

1.2 Objectives

The main objective of the project is to ensure communication between employees and transfer data. After the world was hit by the global pandemic most of the companies has faced a huge blow, as it is not possible to provide support physically one by one in the office anymore. This website will allow users to get all the relevant information without the hassle if same problems occur again. They will be able to carry their operations in a secured manner through encrypted SSL/TLS channel. The most beneficial factor of the website is that, because it is an online-based system, employees can use it on their computers and phones, at any time anywhere.

1.3 Scopes

- Employee Account Creation: Employee can be assigned for different business unit Roles for the system. Like Admin, Normal user etc.
- Login: After logging in, Employees will be displayed on a user's homepage and menu will be shown in the Navbar according by their roles.
- Message: Employees can start new chat with registered users. After starting an new chat the system automatically assign an ID.

Chapter 2

Literature Review

2.1 Relationship with Undergraduate Studies

In my under-graduation studies, I acquired a lot of theories about programming and developing an application from start to finish. Most of the courses include both theoretical and lab work. I learned how to operate in a group in lab sessions, which will benefit me in real-world scenarios where I will have to collaborate with my colleagues to complete and deliver a project. It's very similar to working on projects in a group in lab class and working on projects in the office with colleagues.

These are the courses related to my work:

- Data Structures (CSE 203): This is the most basic course that helped us with the ideas of several data structures and their applications such as Stack, Queue, Linked List, Array, Pointer and so on.

- Object-Oriented Programming (CSE 213): In the developing industry most of the data is represented as an object. It also taught how to write modular programs which made codes less repetitive and more reusable.

- Database Management (CSE 303): This was the course that taught me how to design and plan a project. It covered popular planning and strategy practices such as Six Element Analysis, Problem Analysis, System Development Life Cycle, Rich Picture, Requirement Analysis, Entity Relationship Diagram, Business Process Model, Normalization and many more.

- System Analysis and Design (CSE 307): This course gives an overview of Used Case Diagram, Use Case Scenario, SDLC's and how to adopt each one of them to the project.

- Web Application and Internet (CSE 309): This is the course where the development of web applications was taught. It covered very important technologies that are highly in demand in the industry, such as HTML, CSS, Bootstrap, JavaScript, jQuery, View Engines, MS-SQL.

- Data Communication and Networking (CSE 316): This course gives fundamental understanding of Networks, traffic routing and management which helped in understanding certain factors in the cloud deployment phase.

2.2 Related works

- City Bank
- Lenovo Support BD

All these organizations use this CCW to provide better service to their employees which allows them to access information through the internet, making it convenient for them to have a great user experience. All the data are encrypted and secured ensuring reliability. CCW also provides change management, performance management, availability management, and many others to these organizations.

Chapter 3

Project Management & Financing

3.1 Work Breakdown Structure

WBS is a hierarchical structure which demonstrates a project's breakdown into smaller segments. For my project, I have produced a WBS so that my work is coordinated. WBS covers a visual of all the scopes, risks, points of communication, responsibilities, costs and guarantees that it does not skip essential deliverable. For brainstorming and collaboration, it is the ideal tool for the team. In my WBS, I have used the top-down approach.

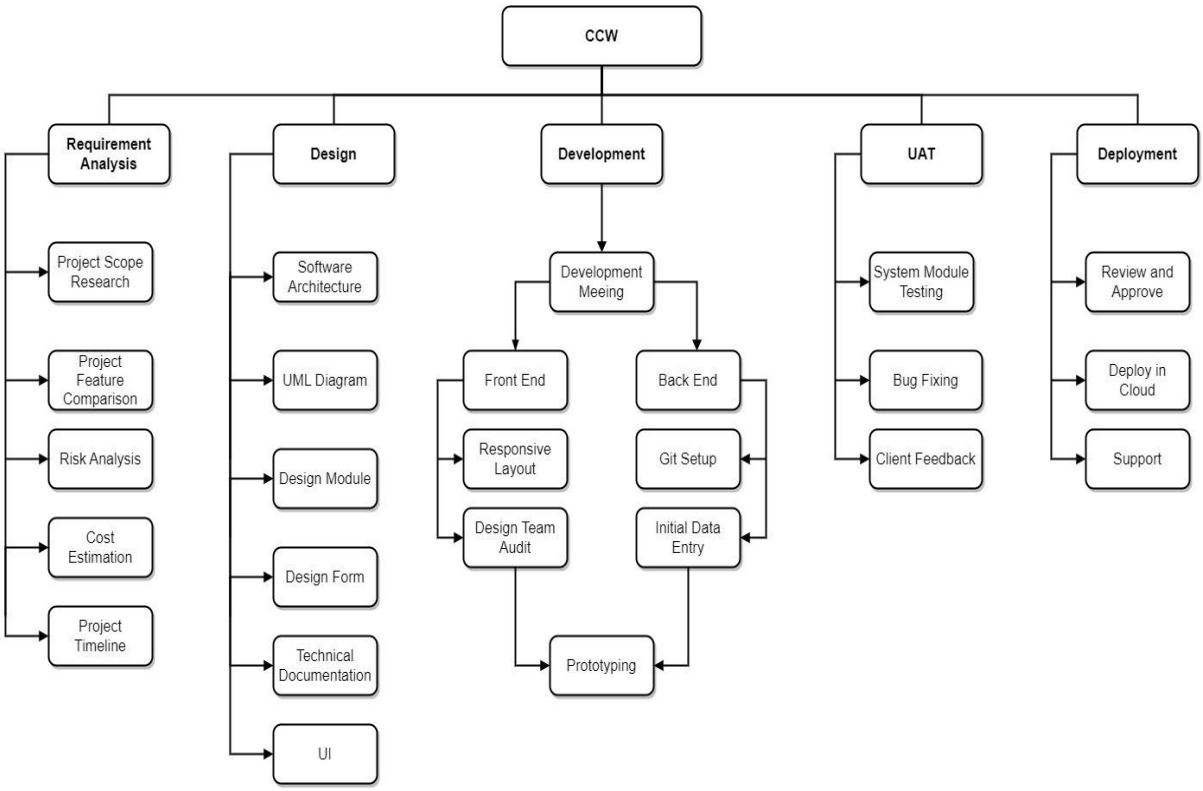

Figure 3.1: WBS of CCW

These basic stages are divided into considerably more in-depth portions using the Work Breakdown Structure (WBS). The top-down method was applied. This is a fantastic tool for brainstorming and outlining the specifics of the assignment. The SDLC life cycle is broken into five phases, as shown in the diagram. As you can see, the project's planning and research phases are used to establish the project's scope, analysis, and necessary variables. The design phase is the next step, where we create a physical representation of what we had planned and lay the groundwork for creating a web application. After that, we go on to the development phase, where we design the user interface, and my supervisor supervises my front-end and back-end work. Following that, web application testing is established, and a prototype is created to identify and fix last-minute flaws and defects. After all that is implemented and done, we move on to the deployment phase where we architect the Corporate Communication of the website and deploy the web application.

3.2 Process/Activity wise Time Distribution

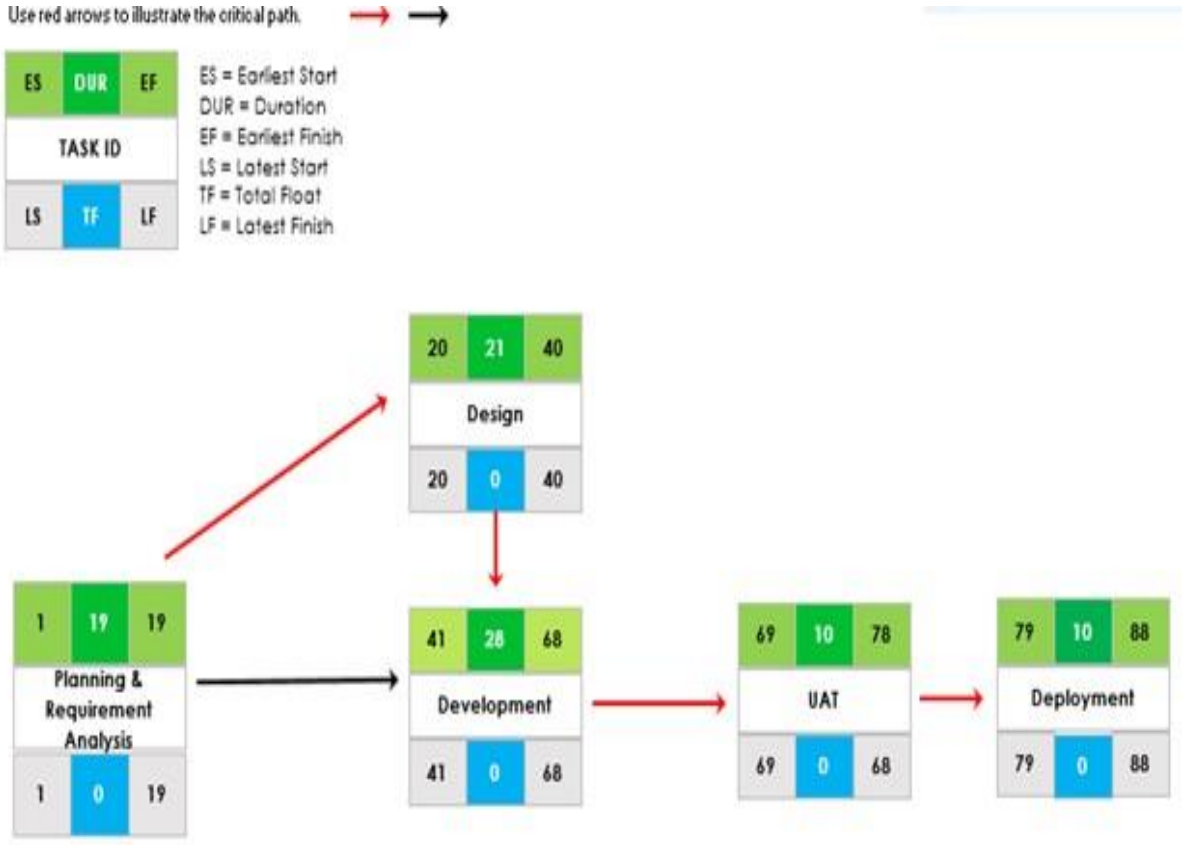

Figure 3.2: Time allocation of CCW

For Each Section we have described in the WBS Diagram for CCW System we made a time allocation. The Table below shows them in details.

Task	Days	Work Percentage
Requirement Analysis	13	15
Design	15	20
Development	30	35
User Acceptance Testing (UAT)	10	10
Deployment	10	20
Total	78	100

Table 3.1: Task wise time allocation

It is very important to accurately estimate the overall time required to accomplish the project depending on the activities to be completed. It is also important to create priorities and set goals to complete a successful project. The development phase is by far

the most important because it takes the longest to complete. Because we are working in order, if one task is delayed, the rest of the tasks will be delayed as well. As a result, it is important to complete tasks according to the estimated schedule.

3.3 Gantt Chart

We have made Gantt charts by using excel to schedule all our planning and tasks accordingly, to achieve a successful deployment of CCW application before the estimated deadline. Gantt chart is a representation of the activities and days it takes to complete them. As you can see, we have a compiled overview of the total days each event needs to be completed in sequential manner. [2]

Figure 3.3: Project Planning Gantt Chart

Task	Start	Days to Complete
Planning	16-Sep - 22	6

Requirement Analysis	30-Sep - 22	9
Design	01-Oct-22	15
Development	17-Oct-22	30
Testing	20-Nov-22	5
Client Acceptance	06-Dec-22	5
Deployment	16-Dec-22	10

Table 3.2: Gantt Chart Timeline

3.4. PROCESS/ACTIVITCYHWAPISTEERRE3S. OPURROCJEECATLLMOACNAATGIOENMENT & FINANCING

3.4 Process/Activity wise Resource Allocation

The process of allocating and planning available resources in the most efficient and effective way possible is called resource allocation. Projects will always require resources, even though they can be scarce at times. Therefore, the project manager is responsible for the proper timing and allocation of these resources during the project schedule. Therefore, resource allocation is about managing the project and delegating resources to ensure that it runs as smoothly and efficiently as possible. The chart and table below shows how resources are allocated.

Task	Start	End	Resources	Employee
Planning	16-Sep-22	22-Sep-22	Google, Similar projects, Articles	1
Requirement Analysis	23-Sep-22	30-Sep-22	Google, Client requirement	1
Design	01-Oct-22	16-Oct-22	Lucid,Excel,HTML,CSS,Bootstrap	1
Development	17-Oct-22	17-Nov-22	PHP, SQLite, Html, JavaScript	1
UAT	20-Nov-22	29-Nov-22	Testing tools,Test Server,Bug fixing	1
Deployment	06-Dec-22	16-Dec-22	Filezilla, Microsoft Azure	1

Table 3.3: Process wise resource allocation

Here, we allocate resources and manpower that the software needs to complete each event smoothly and the maximum budget set for them. The company has a team who work and innovate together, given that including me, we had a team of 3 who contributed to the project phase activities.

3.5 Estimated Costing

The cost was calculated based on modules the market demanded for the Corporate Communication Website. The key factors were the requirements, features, functionalities and design of the Website. The Website has technical documentation included making it flexible for future modifications by the institute themselves. Many tools were used in the process, following that the expense of team and resources used were also considered. Therefore, the approximate cost was estimated around Tk. 2, 10,000/=.

3.5. ESTIMATED COSTCINHGAPTER 3. PROJECT MANAGEMENT & FINANCING

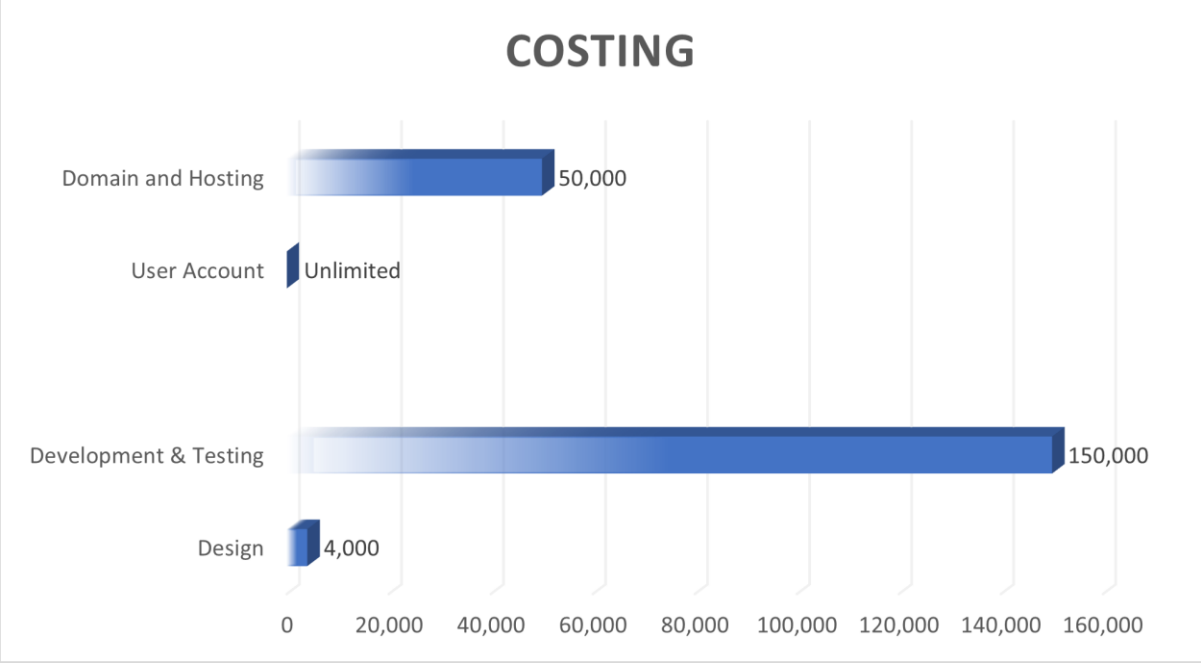

Figure 3.4: Project Cost

Work Distribution	Costing (Tk)
Designing	4000
Development,Testing	150000

User Account	Unlimited
Domain and Hosting	50,000 / year

Table 3.4: Estimated Costing

Chapter 4

Methodology

An organization must recognize the value of studying the website deployment process because there is a high risk of failure during the process, which could later prove to be highly costly for the business. Usually, a company must adhere to a particular framework and technique when deploying a web application. As a result, we employ and adhere to a particular methodology to establish a framework and procedure for implementing web development. My supervisor and I are in charge of the crucial part of the project, where we created various UI designs, templates, structures, entity relationship schema, and flowcharts using various tools that are part of the approach. It is considered as the roadmap for a successful implementation of the project, and we must say it is where the workings for the implementation begins. The most used methodology is Agile, which follows Planning requirement analysis, design, development, testing, deployment, review and then process is repeated like an ongoing circle. In order to complete this project, we had to plan ahead and analyze the system's requirements. After these discussions, we completed our design and moved on to the development phase, where we created this module in accordance with it. Following the implementations, we met and conducted ongoing feedback sessions to ensure improved comprehension. After that, we'll proceed with testing, using user-accessible test sites to evaluate the module before using real-world data. After all the testing will be done, the designed document will be signed out and this will certify the user acceptance certificate and the system will be declared to go live for the organization. From this point we deploy the website on server infrastructure and implement it.

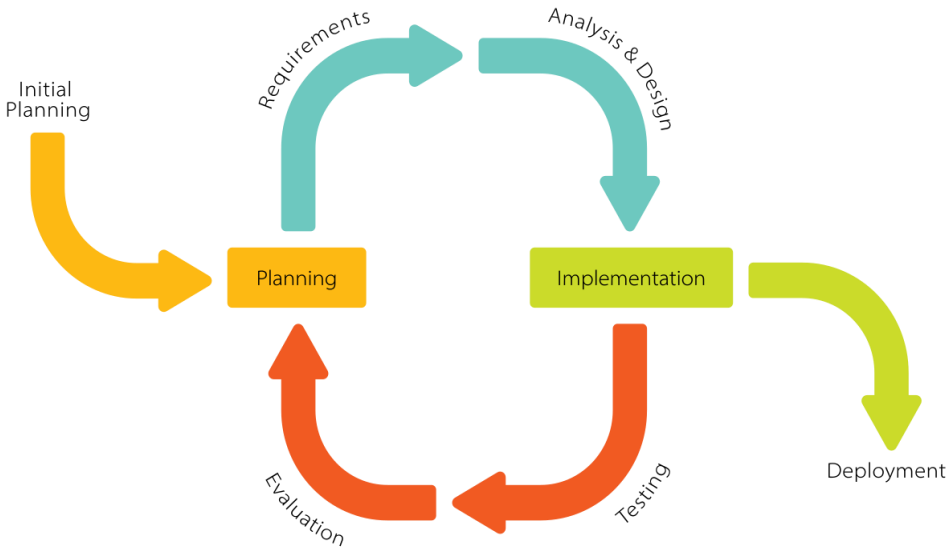

Figure 4.1: Iterative and Incremental Development Methodology

- **Planning Phase:** My organizational supervisor and I discussed the project and gathered all of the requirements for the various capabilities that will be included in the web application. I'll start designing the app after I've written down and defined all of my requirements and concerns.
- **Analysis and Design Phase:** From beginning to end, I will have to develop the entire program in design software. When I finish creating, I need to show it to my organizational supervisor. I proceeded directly into development after the design was approved.
- **Development Phase:** The entire application will be built using PHP framework, which will make all of the static pages dynamic and completely functioning. As we all know, architecture. With a customized admin site that interacts with an SQLite database, these views will be dynamic. This could be the most time-consuming phase. Furthermore, in order to preserve the application's security, we must provide sufficient authentication and authorization for all users.
- **Testing Phase:** The testing phase is an interesting one since strange bugs keep popping up. During this point, I discovered that the software would struggle to cope with large databases. So I had to rework some of my code and keep the algorithms' time and space complexity low in order to increase the application's speed.
- **Evaluation Phase:**This phase will assist us in identifying the system's shortcomings and issues from the client's perspective. The web application can be upgraded and made more sustainable after receiving feedback.

From the above discussion of how to use each step of the methodology, we can see that these approaches reduce overall risk and help the project respond quickly to changes, can quickly and easily adapt to any given change, can achieve transparency and total alignment in the development and testing phases, delivers overall higher quality products, and creates customer satisfaction. For these reasons, I've decided to finish my project using the Iterative and Incremental method.

Chapter 5

Body of the Project

5.1 Work Description

A web application called Minhaz Private Communication System is being created by Minhaz Continental Agencies Limited to aid employees in communication. This will improve staff support and service and deliver a positive customer experience.

Additionally, the effort is mostly focused on the phases of research, design, and deployment. I was initially tasked with performing requirements analysis, which involved researching related web applications and their functionalities. Next, I produced technical documentation of the system analysis and design process for the system, which contained use cases and other information that allowed me to move on to development under the guidance of my external supervisor to implement the design. We are currently working on constructing the web application.

Monitoring manual operations and asking my external supervisor about their requirements were the tools I utilized for requirement analysis. For designing, I used Excel, lucid charts, and the visual paradigm. Additionally, for web development, we utilized HTML, CSS, and Bootstrap for the front end and SQLite, PHP, and the Laravel framework for the back end. The web application will then be installed on a local server using IIS.

5.2 Requirement Analysis

5.2.1 Rich Picture

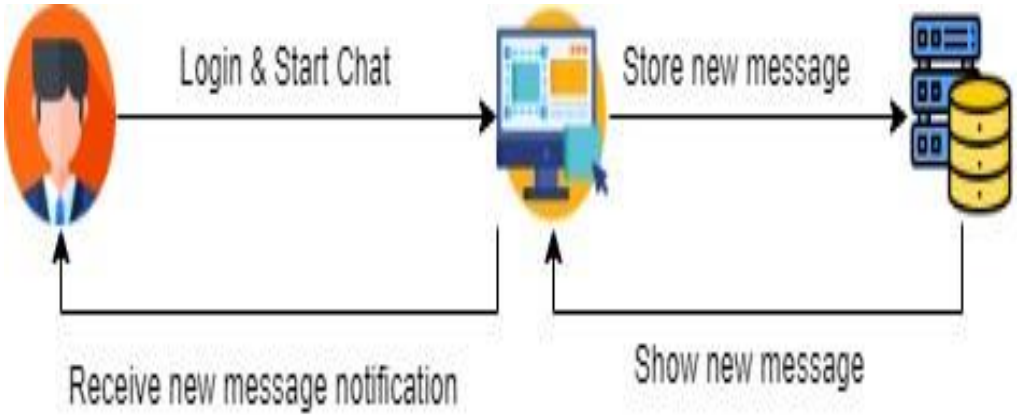

Figure 5.1: Rich Picture

5.2.2 Functional and Non-Functional Requirements

Functional requirements are product features that developers must implement to enable users to accomplish their tasks. A non-functional requirement is a requirement that specifies criteria that can be used to judge the operation of a system, rather than specific behaviors. They are contrasted with functional requirements that define specific behavior or functions. The functional and non-functional requirements of this system are stated below.

Functional Requirements:

1. The authentication system validates the entered user's name, email and unique password upon receiving the information and logs the user into the app by creating an account.

2. The system will generate unique ID for employees.

3. The database will store the data related to the employee. After sometime the user would be able to login.

4. The system will review if the inputted ID and password exists in the system or not.

5. The system will show a message if password is incorrect.

6. The system will show a message if ID is not found in the system's database.

7. The system will show a notification to the user when any updates are made.
8. All role user can create Problem and also able to view the details.
9. Admins will be able to add, edit, view or remove any information in the system.
10. The application will have customized sections to rearrange the dashboard form the default dashboard for each user to make it unique and more user friendly.

Non-functional requirements

1. Usability: The system is going to be user-friendly and aesthetically pleasing for the users.
2. Maintenance: This system/app is going to be maintained 2 times in a year, it runs smoothly and does not get slow or lag. Any bugs or problems can be fixed easily.
3. Valid data: All the information being updated in the system must be accurate and consistent for the users to take.
4. Scalability: The system can be accessed from any devices like: Computers, Smartphone's. Apps for smart phones and an aesthetically similar web App for computers are developed.
5. Performance: Performance should always be smooth and easy to understand, such as searching and browsing for officers, submitting information and many more. These should leave a positive experience for users.
6. Service: Employees can use the system from all around the world.
7. Reliability: The system will be backed-up for safety reasons and will not hamper and data during this process.
8. Control: As the system is initialized by the government, privacy will be maintained strictly. It will be completely secured and will be checked by the developer's time to time for any sort of irregularity.

5.3. SYSTEM ANALYSIS

9. Security: The system will be secured and personal information like the user's phone numbers, the email address will be safe.

5.3 System Analysis

5.3.1 Six Element Analysis

Process	System roles					
	Human	NonComputer Hardware	Computing Hardware	Software	Database	Communication and Network
Login	All User	N/A	Computer	Browser	SQLite	WAN/LAN
Add New User	System Admin	N/A	Computer	Browser	SQLite	WAN/LAN
Information Management	Admin	N/A	Computer	Browser	SQLite	WAN/LAN

Table 5.1: Six Element Analysis of Project

5.3.2 Feasibility Analysis

A feasibility study assesses the project's likelihood of success. It assists in determining if the project is worthwhile in terms of both time and money. Therefore, we must do a feasibility study after gathering all the required data and before starting the development phase, which would take the longest. i.e., a method of measuring how useful a software product will be for the company's product development. Feasibility studies are conducted for a number of purposes, including determining if a software product is appropriate in terms of development, implementation, and project value to the firm. The elements we must take into account for a feasibility study are:

• **Needs Assessment:** As the word is self-explanatory, at first, we analyze and extract the faults that the previous manual system had and understand the goals the of the migration. Later, we research on solutions our web application provides to the problems and will it allow future flexible changes, and hence as requirements are met and web application is capable to support all needs, we conclude that there is a need of the web application and move ahead to next step of the procedure. Then, we need to analyze the

bank customers need and check if satisfies the customer needs and if all goes well, we execute them in live environment.

• **Technical Assessment:** This is one of the most significant areas where the technical assistance and tools needed for a company to migrate to the new system are assessed. We must first determine whether a physical server or the cloud will host the web application. We also examine the requirements for the infrastructure used to host the application. Therefore, given that we have specialists working on the project's development phase, they must make sure that the web application can do all of the necessary capabilities to address issues and improve customer support. Additionally, because the group has all the necessary tools and software to create this system, it is technically viable**.**

All these assessments allow us to evaluate that the web application is feasible and a good investment considering current scenario and future advancements.

5.3.3 Problem Solution Analysis

While developing the system using established tools and techniques helps us to improve our approach to solving the problems that our team are facing. There are four basic steps in solving a problem:

1. Defining the Problem.
2. Generating alternatives.
3. Evaluating and Selecting alternatives.
4. Implementing Solutions.

There were a number of problems that were encountered while completing the project and they were solved accordingly with those four steps. Some of the problems were:-

- Create New User Account
- Start new chat
- Show new messages

5.3.4 Effect and Constraints Analysis

The Minhaz private communication system web application helps company employees to have better experience and overcome many drawbacks that previously was not accessible. It allows automation of process and access of information to many problems

through its database. Employees could not previously examine such enormous data archives and see whether hardware or software was creating problems. As an illustration, several employees frequently encounter the same difficulties and must wait a long time for a solution. There was a problem here that needed to be solved. We saw the importance of knowing these details since Covid-19 required a lot of physical labor. With only a few clicks, our system will deliver improved user satisfaction solutions.

As we all know, this online application's dependability, comfort, and flexibility allow a number of unpleasant variables to be eliminated, including the inconvenience for workers of both new and traditional support methods for their IT-related issues, as well as superior service for problem-solving. Using the cloud's auto-load balancing feature, we can set policies like scaling up the package and opening another server temporarily if the server requests exceed the server request handling limit, which reduces the likelihood of the server failing due to an overload of requests and gives customers a smooth experience. Additionally, as it is in the cloud, when many employees access the server at once, it results in huge server misses rather than hits.

But also, the system still has limitations which need modifications for further development. There are many modules that are needed but not considered hence, we are still thriving to bring out more changes and add more features/modules to our web application that would bring solutions to many issues and, encourage more and more people to use this web app. This will not only make employee’s lives easier but will also be a big advantage during the ongoing pandemic.

5.4 System Design

5.4.1 UML Diagrams

The activity diagram is an important UML diagram that shows the row of one activity to another. The activity diagram of the user and admin help to visualize the row of their activity in graphical form.

Use-case Diagram:

The use case diagram represents the functional requirements of the system. It shows the actors, cases, communication links, system and relationship.

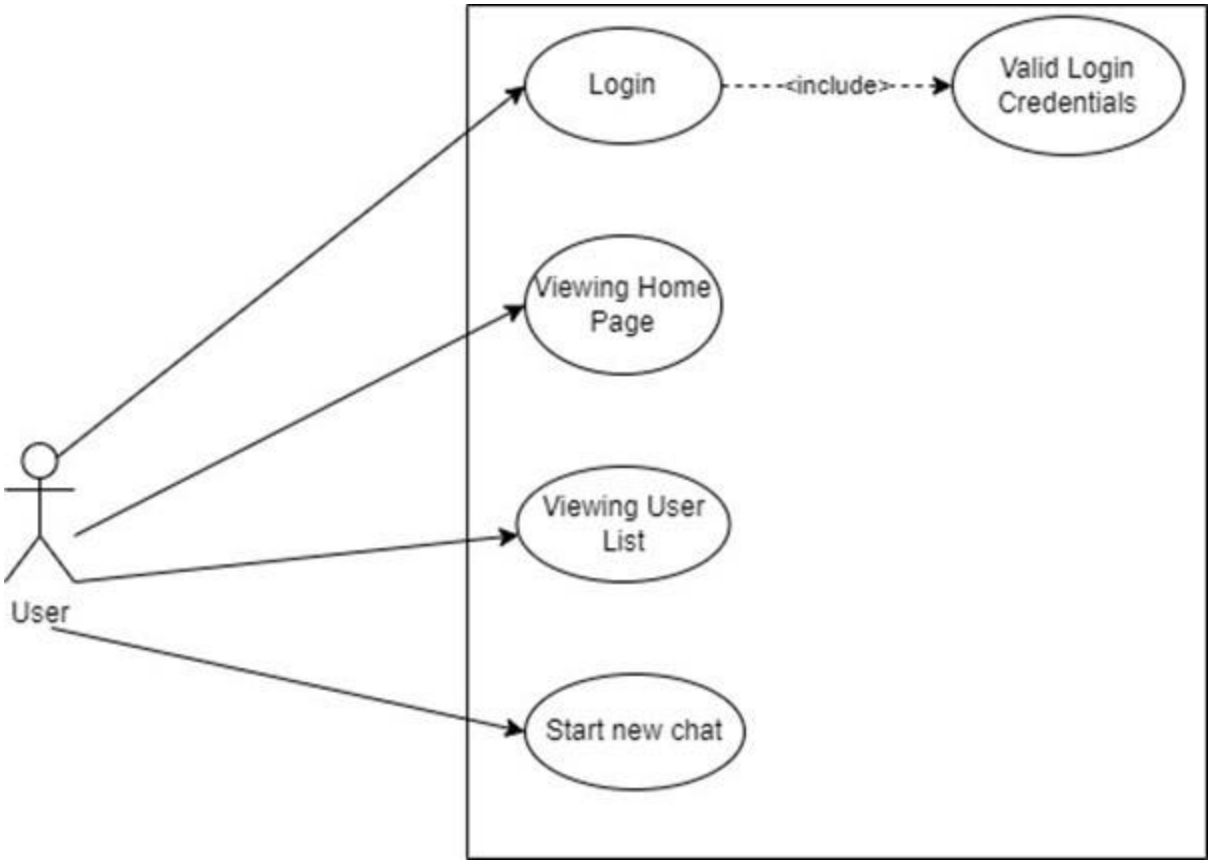

Figure 5.2: Used case Diagram for start new chat For All User

Activity Diagram:

Activity diagrams are graphical representations of workflows of step-wise activities and actions with support for choice, iteration and concurrency. In UML, activity diagrams are intended to model both computational and organizational processes (i.e., workflows), as well as the data flows intersecting with the related activities. Although activity diagrams primarily show the overall flow of control, they can also include elements showing the flow of data between activities through one or more data stores.

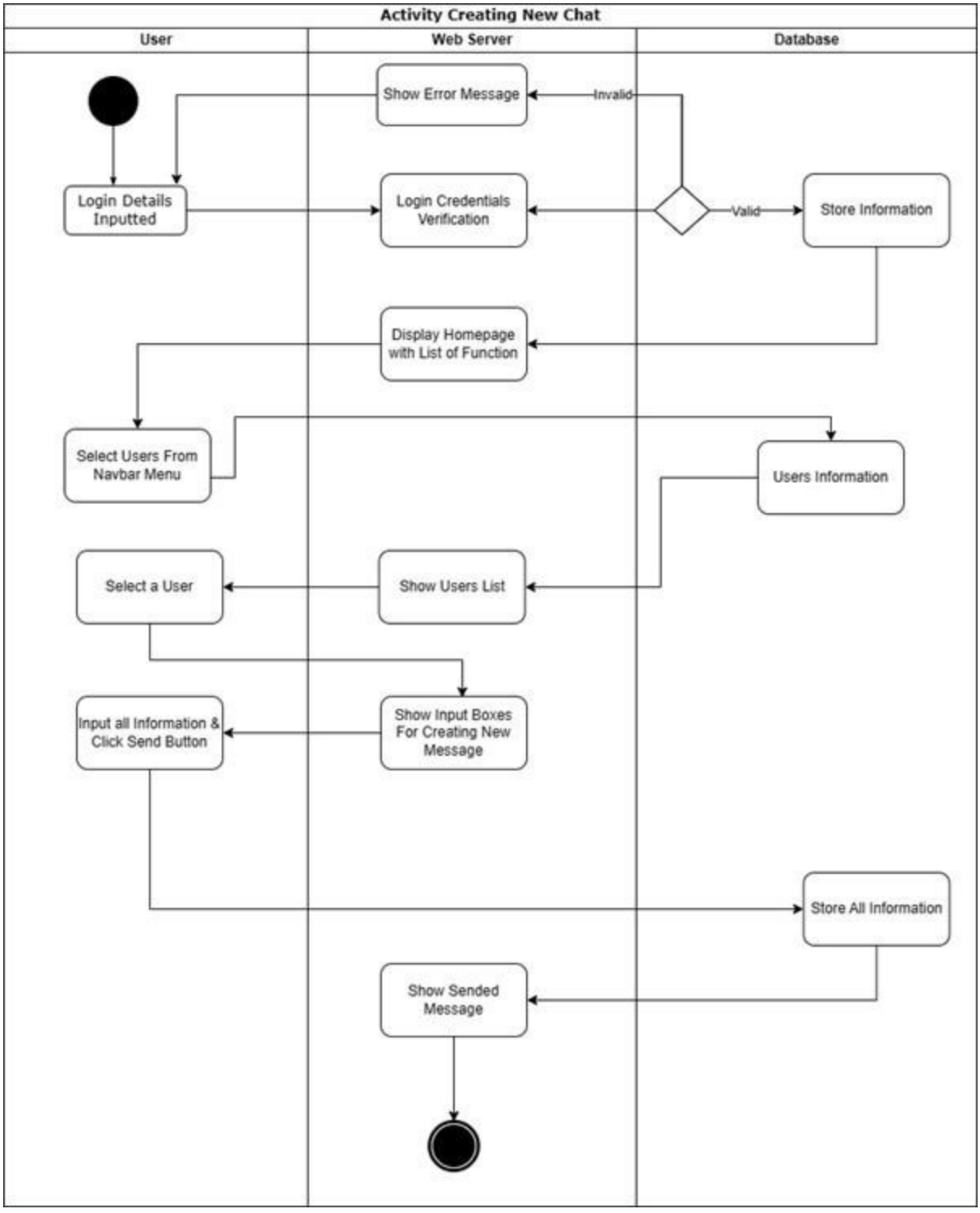

Figure 5.3: Activity Diagram Creating New Chat

5.4.2 Architecture

There are different types of architecture used in various systems. In our ITSM system we used this architecture.

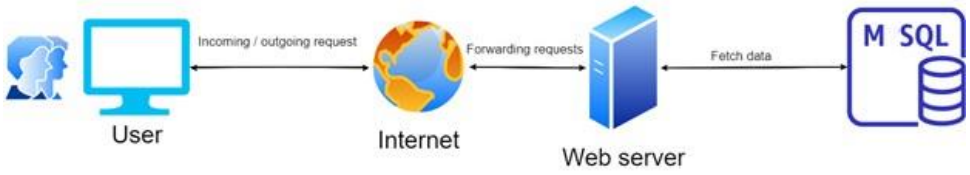

Figure 5.4: System Architecture

As we can see, the diagram displays the overview of the website architecture. It can be evaluated from here that the whole process in web application can be understood. As you can see the user access the web browser and views the website and these packets are sent to the server via internet and then these requests are forwarded to database server for fetching or storing data as per credentials. The database we are utilizing is MS-SQL which receives request of users from web server, validates and responds to it accordingly. The SQL back-end is connected to an efficient front-end UI that is HTML, CSS, Bootstrap based for good customer experience.

5.5 Implementation

Here I have included all the features a user will receive from this project.

Home Page

Figure 5.5: Home Page **Login**

Page

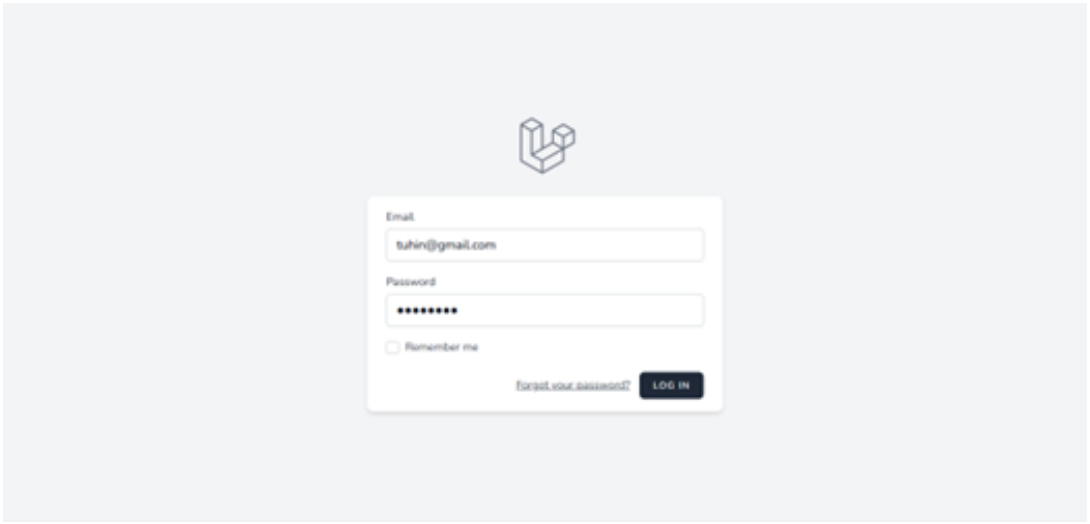

Figure 5.6: Login Page

Users List Page

Figure 5.7: Users List Page

User Account Create Page

Figure 5.8: User Account Create Page

User Chat list Page

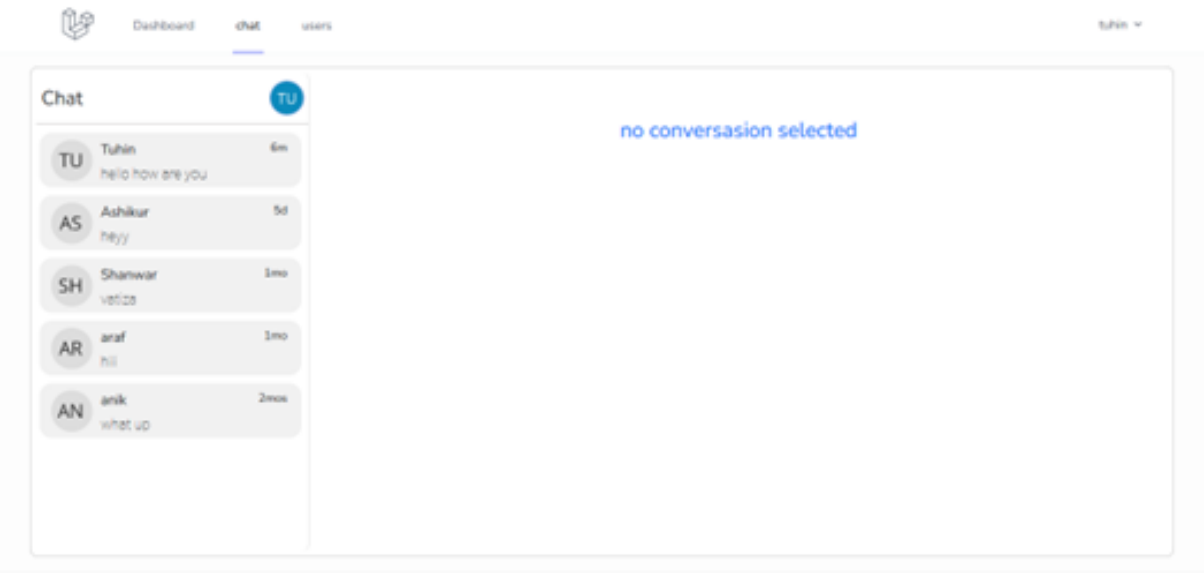

Figure 5.9: User chat list page

User inbox Page

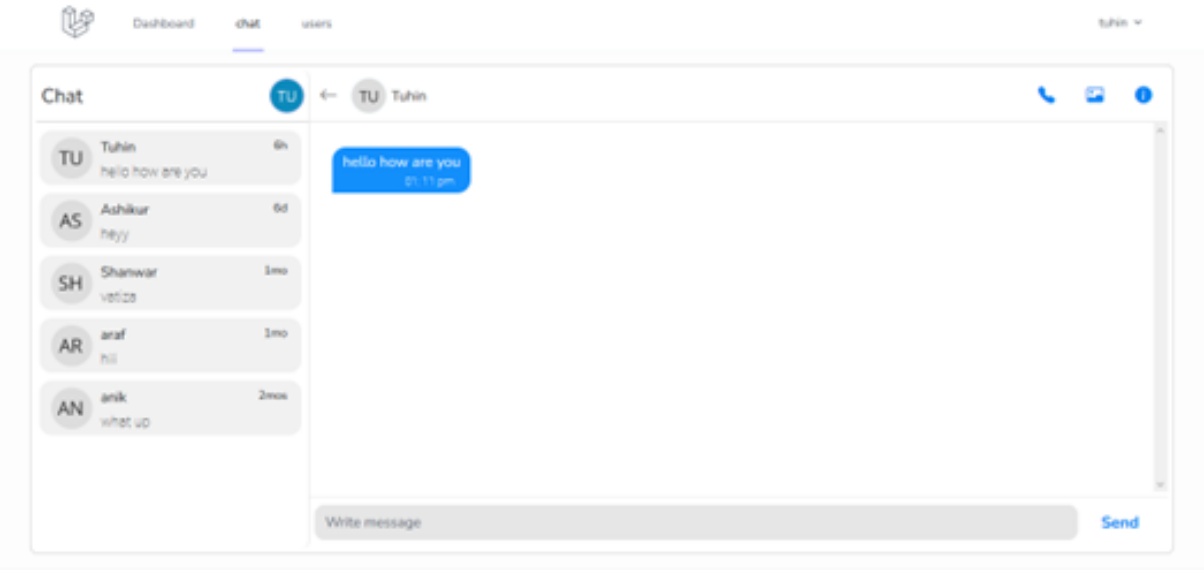

Figure 5.10: User inbox Page

5.6 Testing

Sl	Test Case Id	Test Case Title	Pre-condition/Test data	Test Steps	Excepted Result	Actual result	Test Case Status	Data used/input data	Comments
1	2301	Login	1. The user should be registered to system. 2. The user should be verified.	1.Go to website. 2. Click on the "Login" Button. 3. Enter the registered and verified email and password and click on "Login" button . 4.Upon clicking the 'Login ' button it should allow the user to log in to system with given permission .	Log in with given permission.	Not allowing to log in , showing a message " Password Incorrect "	Fail	1. basicuser@gmail.com 2. 123Pa$$word	N/A
2	2302	New User Create	1. New User all inforamtion.	1.Go to website. 2. Enter the registered and verified email and password and click on "Login" button . 3. Click User List from Navbar Menu. 4. Click Create New Account Button. 5. Enter All information related to the user.	New User Account Created.	Create New User chat, showing a new chat window.	Pass	All Information that are needed.	N/A
3	2303	New Chat	1. The user should be registered to system. 2. The user should be verified. 3. Registered Other User.	1.Go to website. 2. Enter the registered and verified email and password and click on "Login" button . 3. Click users from Navbar Menu. 4. Clcik a user from list. 5. Start sending message.	New Problem Created.	Create New Problem, showing a message "Successfully Created "	Pass	All Information that are needed.	N/A

Figure 5.11: Test Case Results

Chapter 6

Results & Analysis

The Minhaz Continental Agencies Limited Previously used manual system for providing IT support to their employees, which was very difficult to work on and keep record of the workings. There is no data storing process once someone get any Support, it does not keeps the record of it. As they wanted to shift Corporate communication system to support their employees and it became very handy and keeps every record that the problems that employees will be facing. Also, cloud will allow admin to operate much more efficiently and will come in handy in terms of utilization and cost saving.

Below are the UI of the web application with analysis and you will get to see the detailed look of results and the steps followed by basic role user for creating a new problem:

This is the basic initial stage home page for our company Minhaz communication system that provides a considerable amount of solution to the employees. Employees working under different departments can log and communicate throughout the system.

Figure 6.1: Home Page

This is the login page implemented with built in laravel jet stream. Multiple number of stakeholders can log into the system using respective authorised individual username and password.

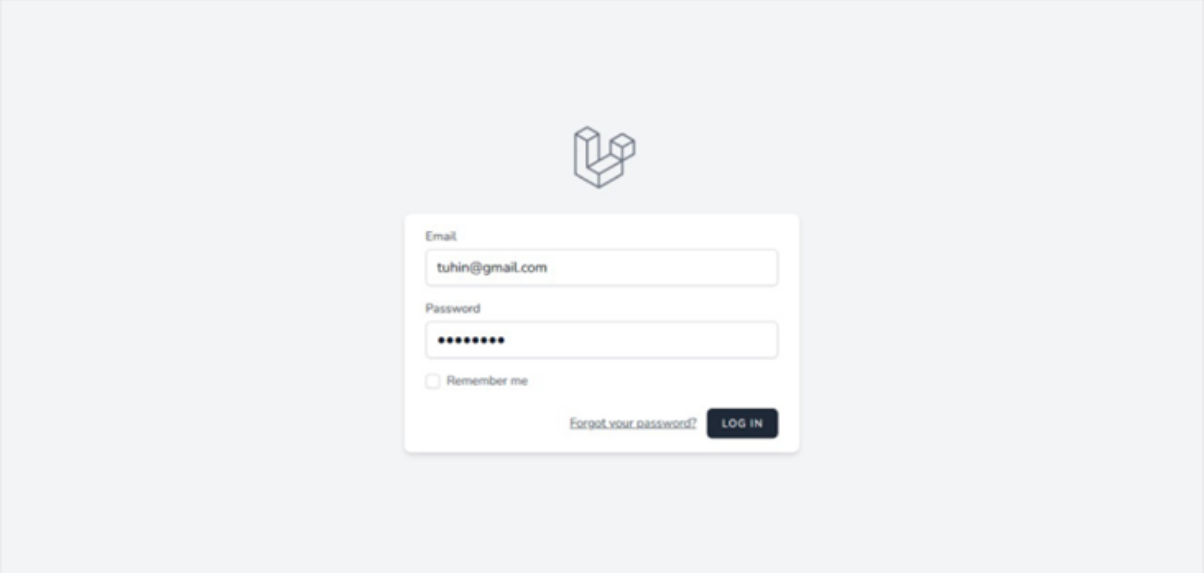

Figure 6.2: Login Page

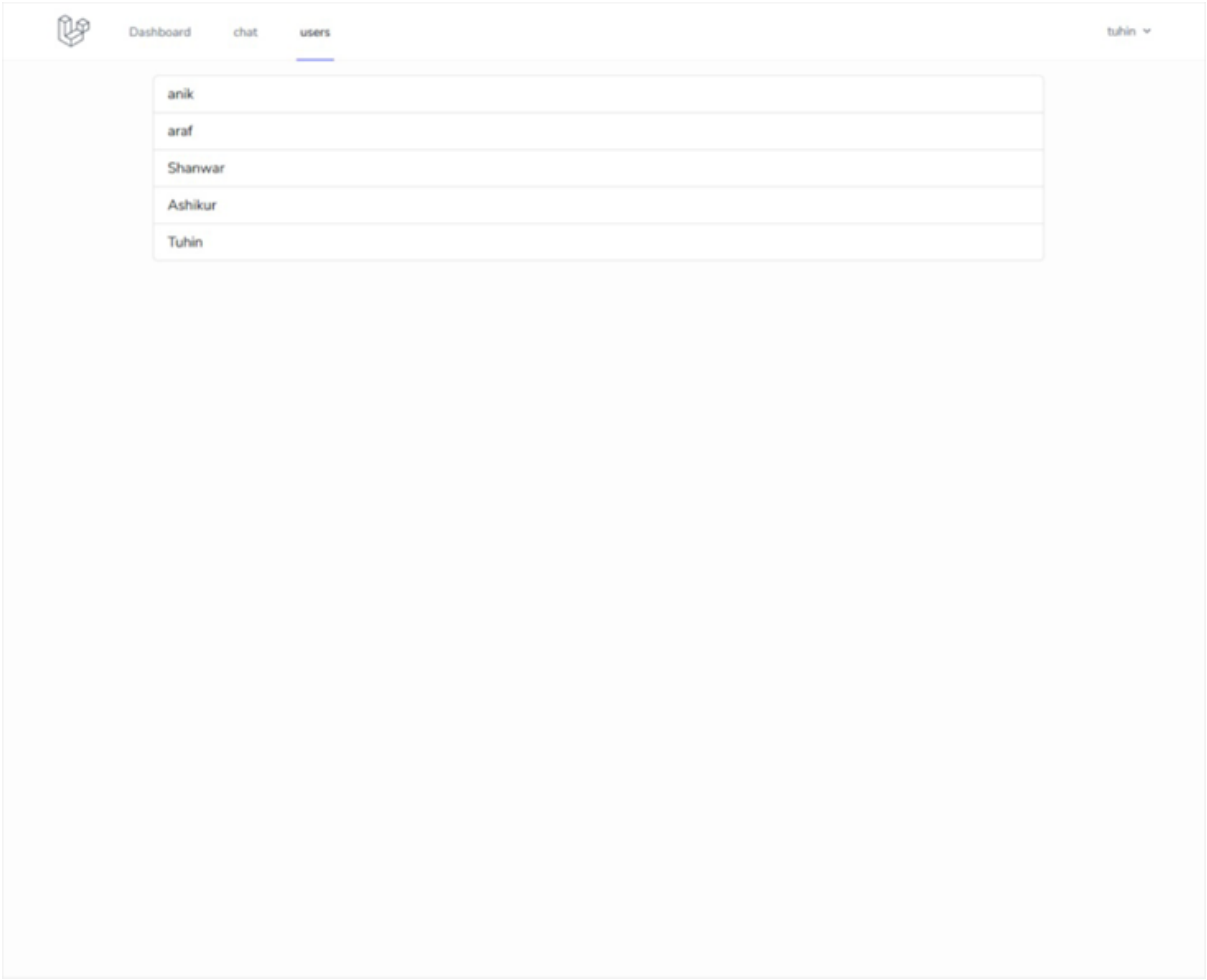

Figure 6.3: Users List

The above portal represents the dashboard portal of the system that provides end to end employee communication. List of users active within the system can be viewed in this page.

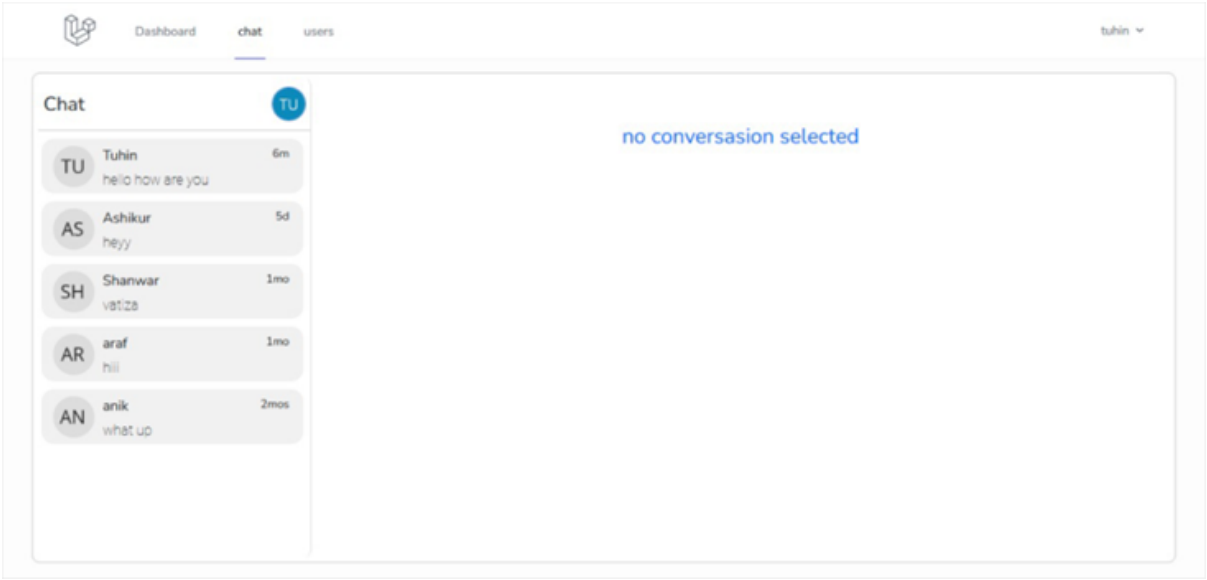

Figure 6.4: Chat List

This picture follows the functionality of total number of recent conversations with separate individuals whom are part of the system.

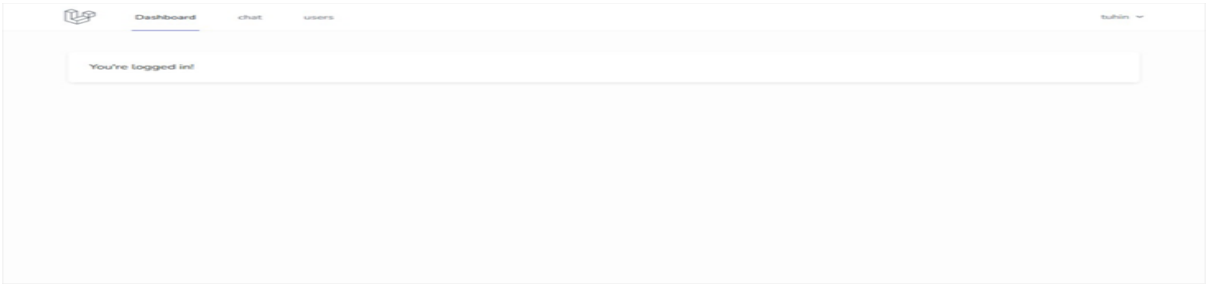

Figure 6.5: Login Confirmation

This is the page where user gets redirected and validated after logging in by putting individual credentials. It also portrays logged in status to the users .

After testing the entire project using manual test cases and automated test cases the final outcome provides a complete solution for the employers to communicate with each other inside the organization. Private communication channel for our company was also created based on end to end encryption method. Moreover, it is also noted after multiple number analysis made by our team it is figured out that the primary functions of the project works smoothly and effectively.

Chapter 7

Project as Engineering Problem Analysis

7.1 Sustainability of the Project/Work

First and foremost, we must define sustainability in the context of the project. In general, sustainability involves a number of considerations, including economic, social, environmental, and administrative perspectives, all of which highlight the project's cost, value to society, reduced waste, and increased efficiency and resource usage goals. When constructing a project's sustainability, these factors are taken into consideration.

So, why is sustainability such a crucial component of the project? because it helps us to have faith and confidence that the project will provide a beneficial result for a set length of time and will prove to be a worthwhile investment that will generate enough profit and benefits to cover the expenditures of the project. Sustainability also includes maintaining and upgrading the system as needed.

As we can see, the project is viable since it offers employees a crucial and significant service, allowing them to submit an IT-related issue and swiftly receive a response from the IT support team. Since there will be a ton of data, society will be able huge react to new developments and use web applications to store data in a much more efficient and automated method than when everything was done manually, which wasted paper. This online application will benefit the users, including the employee. The online application is user-friendly and simple to use, and as the administrator has access privileges to all information handled in the database, there are no known problems.

The advantage of this web application is it is unique web application which offers easier and convenient process flow which saves time. Also, the maintenance as it is un-

der observation if there are bugs found it will be fixed immediately allowing the system sustainability to increase. Moreover, the web application will be updated twice in a year according to the requirements of the employees needs. All the bugs and problems will regularly be updated. All these aspects offer a sustainable CCW Based User Support web application.

7.2 Social and Environmental Effects and Analysis

Social Effects

The main goal of the website was to bring up employees of all the business unit of the company under one website so that the employee could get support for their communication problem with each other. The web application provides all functionalities that a employee might want when facing a new problem. Also, employees can easily communicate their team and solve the problem by discussed their team member. All these functionalities and features are available for user.

Environmental Effects

It's a high time when the system can plays its best role in the global pandemic of COVID-19. The employees can stay at home and continue to get support for their technical problems from IT support users with ease and comfort. They will find all the information for their problems if same problem occurs within the comfort of their homes rather than going out in this pandemic. As the web application has no carbon footprint as it is digitized, and it somewhat decrease wastage of paper and cause no damage to environment while keep records of all the information.

7.3 Addressing Ethics and Ethical Issues

In the world of smartphones with so much data collection, hacking, cyber-crime, etc. There are some unspoken rules and ethics guidelines that need to be followed when

working on creating and releasing website. To address this worry, I follow certain ethics and analyze ethical issues ahead of time to avoid unethical activities. I made certain that there were no violations of behavior, such as secretly obtaining personal information by

eavesdropping, and that other factors were properly considered. Here are some of the things I thought about:

- **Data Collection:** To prevent any data modification in the middle, the data flow between the system and the user will be encrypted using an SSL certificate. To prevent privacy violations, only relevant data are gathered and communicated through an encrypted secure connection. This protects security and privacy. Additionally, as is common knowledge, web servers keep track of website visits by creating log files. These automatically created log files provide details like the sites a person saw, the kind of browser they used, and how long they were online for. Therefore, it is our obligation as web developers to tell visitors to our sites about the type of information we are gathering and how it will be used in order to foster confidence.

- **Data Storage:** The database that houses all of the data has a cloud backup. Only the database and back-end server are accessible to the administrator. Only the admin using private key credentials may access the DB server because it is housed in the cloud. As a result, there is a lower probability of data tampering, a breach of data integrity, and data loss as a result of system failure or catastrophe since the database is backed up. Thus, authorisation, safety, and fault management are all ensured.

- **Data Security:** Data are secured and encrypted allowing data integrity. A super admin account is provided with access rights to manage other user accounts and given access to the server which is only used and accessible by the admin through certain verification methods. Also, we have to consider that knowingly, we do not spread malicious program such as virus which is hosted on our website that can damage users accessing web page.

- **Discrimination:** Employees are not classified based on their religious views, skin color, or language, all are treated equally and with respect.

Chapter 8

Lesson Learned

After completing the entire project and deploying, the project in the live server, from my point of view, I have learned a lot of skills and knowledge. From the designing stage to the deploying stage, I have learnt how to take requirement from client and write code effectively. I have also learnt how to test projects using manual test cases and automated test cases for example, using Bugzilla, Zira. I would also like to add that throughout the entire project, multiple numbers of meetings and presentations were held in my company, and I was responsible for demonstrating those presentations so I've also learnt how to demonstrate presentations inside a corporate organization.

Chapter 9

Future Work & Conclusion

9.1 Future Works

As the project is still under development , the company plans on adding a lot more features and modules to the website to make it even more helpful for the employee to quickly get solution for their technical problems and to make it look more appealing. Moreover in every year there will be two updates of the software according to the company needs and requirements.

9.2 Conclusion

Working as an intern with the Development team at Minhaz Continental Agencies Limited was an amazing experience. I have learnt a lot and put what I have learned to use throughout the internship. I was made aware of a new corporate environment policy and encouraged to do even better. I felt under pressure to find rational solutions and quickly react to developments. I analyzed the data using all of my expertise. I worked together with my mentors and seniors throughout my assignment to overcome obstacles. Despite their busy schedules, my managers were always available to answer questions and make me feel comfortable. I learned how to work under pressure and finish the CCW before the deadline because to this internship opportunity. I would like to appreciate once again everyone who has made my life as an intern such a great experience. In addition, I gained

a deeper understanding of my technical skills, which benefited me personally. Also, I had learnt to work in pressure and fulfill under the deadline.

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An Undergraduate Internship/Project on Communication System App for Minhaz Continental Agencies Limited

By

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Student ID: **1721379**

Autumn, 2022

Consent from Supervisor

The student modified the internship final report as per the recommendations made by his/her academic supervisor and/or panel members during and/or before final viva, and the department can use this version for archiving as well as the OBE course material for CSE499.

Sabrina Alam

(Signature of the Supervisor)

Ms. Sabrina Alam

Department of Computer Science & Engineering

Independent University, Bangladesh