An Undergraduate Internship Report on Card Tag Solution

By

Samira Fairuz Ahmed

Student ID: **1721380**

Spring, 2021

Supervisor:
Md. Asif Bin Khaled

Lecturer

Department of Computer Science & Engineering

Independent University, Bangladesh

June 14, 2021

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

Department of Computer Science & Engineering

Independent University, Bangladesh

Attestation

I hereby attest that I, Samira Fairuz Ahmed (ID: 1721380), have completed the report by myself. I confirm that my involvement is exact and there is nothing in the report that interrupts the company privacy and principles. This report consists of all the necessary requirements for the partial fulfillment of the course CSC 499 in order to complete the Undergraduate Degree of Computer Science from Independent University, Bangladesh (IUB). With the assistance of my supervisor Md. Asif Bin Khaled, I was able to complete the entirety of the project report. I also attest that all the sources of information used in this report have been rightfully acknowledged and clearly addressed in it

Samira   June 14, 2021

_____   _____
Signature   Date

Samira Fairuz Ahmed

_____
Name

Acknowledgement

Letter of Transmittal

June 14, 2021

Md. Asif Bin Khaled

Lecturer

Department of Computer Science and Engineering

Independent University, Bangladesh.

Subject: Letter of Transmittal for Internship Report Spring, 2021.

With due respect and utmost honor, I, Samira Fairuz Ahmed, from Spring 2021, Section 10, submit herewith my Internship report in support of project entitled "Card Tag Solution". This is to kindly notify you that I have successfully completed my internship program at Panacea Live LTD. and prepared the Final Report to meet the requirement. My internship was conducted from 1 February 2021 to 30 April 2021.

This informative report is concentrated on work in the internship period. The primary goal for my internship was to get involved in different technology related fields of the company, including related research, documentation, software development, and to get acquainted with software development processes and practices. During the internship, I found out that I acquired and applied many new skills related to the technologies. The company has a small skilled development team who learn, collaborate, and innovate together.

Thank you very much for all your guidance, support and consideration. I hope and pray that this report fulfills all the requirements and is up to your expectations. Lastly, I would be thankful once again if you give your judicious advice on my effort.

Sincerely,

Samira Fairuz Ahmed

ID: 1721380

Evaluation Committee

....
Signature

....
Name

....
Supervisor

....
Signature

....
Name

....
Internal Examiner

....
Signature

....
Name

....
External Examiner

....
Signature

....
Name

....
Convener

Abstract

The report comprises of details of my Internship Project at Panacea Live LTD. It provides authentication services with dynamic QR codes and unique identification to act against mass counterfeiting of products. These unique codes are verified over a web app associated with the product and built separately for each client. Specifically for Essilor Bangladesh, the admin panel is required to tag each product and optician against a code. This project is aimed to developing a complete optician management system and updated category selection system with associated page number or batch number of unique tags. The entire project was designed and built using distributed client-server computing technology. My project that is entitled, "Card Tag Solution" is an admin panel for one of the clients, Essilor Bangladesh. It is a web based software developed using Laravel (PHP Framework), MySQL for backend and Bootstrap 4.0 for frontend. The project incorporates all the advanced features of PHP. The project is structured in such a way that it incorporates the administrative functionalities in order to achieve the project's goal. Among them are the tasks performed by the different offices of Essilor Bangladesh.

Keywords— web app, Laravel, frontend, backend, PHP, Essilor, admin panel, unique code, tags, computing technology

Contents

List of Figures

List of Tables

Chapter 1

Introduction

An internship allows a student to get hands-on experience working in a real-world environment. It also enables students to put their university-learned skills and analytical knowledge to use. They will obtain an infinite amount of education throughout their lives, but this experience does not always translate to the workplace community. After returning from the internship, students acquire the skills and confidence that they eventually develop during the internship which helps to achieve work experience and, prepare them for their future career ahead as an outcome. I was granted the opportunity to work Panacea Live Ltd. to fulfill my requirements for the internship. Successful integration of my pre-achieved knowledge was put in to use during the internship period. The environment of the office promotes socialization, intensive communication, work-driven culture, and passion to achieve a better outcome in the assigned tasks. I have mentioned my personal views about the company in detail in the report. Panacea Live Ltd. has very hard Restrictions and ethical standards to maintain at the office. I got to mix in with their work environment while performing extensive work with my team, and eventually, the corporate culture in general.

1.1 Overview of the Work

My role involved working with the development team at the Product Development and Business Development departments of Panacea Live Ltd. In the modern time, every office, business, and e-commerce, every workstation is fully dependent on software-based solution. So, it is very important to develop more efficient and user-friendly software for greater client satisfaction. When each unique code is tagged with a customer/optician, the previous method would require the user to enter extensive category information for each product. This was exhaustive and inefficient. Per tagging would require the user to choose options from five different categories of lens types and details. To make this entry process easier I came up with a proposal of a smart Card Tag Solution which minimize the hassle. Additionally, the optician information input field provided alphabetic suggestions and allowed only addition of new opticians. Due to the running software configuration and implemented algorithm, the selection process would often show "double selection" errors. To overcome this bug, I came up

with a smart optician management plan. It provides simplicity of use with the added features of create, read, update, and delete.

1.2 Objectives

The objectives of the internship were as follows:

- To apply theoretical knowledge in the practical field.

- To observe how the engineers and start-up managers, monitor, maintain and develop their software system and services for their clients.

- To learn how the engineers approach real-life problem solving.

- Collecting Knowledge regarding the IT Company and gaining practical knowledge in the development field.

- To realize the organizational management system of Panacea Live Ltd.

- To work with a development team and solve problems to meet client satisfaction.

- To gain some knowledge on basic operation of a SaaS Company.

- To find out the success and failure of Panacea Live Ltd.

1.3 Scopes

It is important to set specific goals for the project from the initial planning phase. For my project I have set a few goals/milestones, anti-goals and future goals. **Login Page**- Login must be only specific to pre-registered/whitelisted admins in the database. **Product Registration Tab**- This is where the admin can give input for the registration process. **Mini Optician Management**- This is where user can add or select an optician. **Category Selection**- Easy Category is specific to the types available that is provided by the company. **Card Tagging**- Unique code(s) can be selected in terms of batch number or individual purchase.

Chapter 2

Literature Review

A literature review could be a learned paper that presents the present information together with substantive findings moreover as theoretical and method contributions to a specific topic. It discusses previously published material in a specific subject area, including substantive findings as well as theoretical and methodological contributions to a particular topic. There is a need for verification systems that is used to provide authentication confirmation and allows further investigation of the counterfeits in the market. A literature search was performed to identify modified solution of the associated admin panel complication, determine the state-of-the-art in this arena, and provide guidance for the future maximization of operational assets. In some cases, products such as lenses, automobile engine oils, medicines, cosmetics such as moisturizer or face-cream, food items such as ketchup, honey and even cornflakes often fall victims of adulterating. In this process they are often repackaged or imported via grey channels. So, it is highly essential to demotivate and actively prevent such actions with the items that are facing growth in the global competition. To maintain brand reputation, company needs to come up with more productive and efficient way of handling client. This User Management System literature search was undertaken to evaluate current technology efforts and ascertain possible future trends and areas of augmentation.

2.1 Relationship with Undergraduate Studies

The undergraduate courses that I took at IUB are fundamentals of my project works. All the courses shaped my knowledge on Computer Science overall. Most of the 300 and 400 level senior courses at Independent University, Bangladesh like CSC401 Database management, CSC405 System analysis, and design, CSC452 Software Marketing. These courses helped me for documentation of my tasks at the internship program and courses like CSC455 Web Applications and Internet, CSC306 Algorithms helped me to implement my task in the internship program.

2.2 Related works

Such management and card tagging system may not be mandatory for any small-scale organization at the moment but for large scale production that faces a lot of counterfeiting problem in the market, would eventually need such a software to tag the unique codes with products that will allow the customers to verify the authenticity of the product. Organizations such as Renata, Oil Co., Meril and Berger Paints Limited are already using unique code management systems to associate their products with the dynamic QR codes.

Although Card Tagging Solution is comparatively an unique ideation, similar systems such as the automated Inventory Management Systems are being used by many organizations today. An inventory management system (also known as an inventory system) is a method of tracking products along the entire supply chain, from purchase to production to final sales. Example of such systems is Partspal by Partly group. The product mapper on PartsPal makes it simple to add product information like price, brand, and photos. Manually matching items to catalog parts is also an option and an advanced feature. Another example is Megavetory. It offers features such as Multiple Locations/Warehouses/Stores, Stock Alerts, Returns of Goods, Supplier Availability and Lead Times, Inventory Changes over Time, Serial Numbers, Batch Numbers/Expiry Dates, Transfer between Locations, Landed Cost Calculations. Some of the features such as serial numbers and batch numbers association replicates the features from the project software.

[utf8]inputenc graphicx

Chapter 3

Project Management & Financing

3.1 Work Breakdown Structure

I broke down my work into smaller components to structure it into manageable sections. A work breakdown structure is absolutely mandatory for effective project Initiation, Planning, Execution, Testing and Deployment. These are the smaller divisions that let me remain focused on the project objectives with pre-set deliverable.
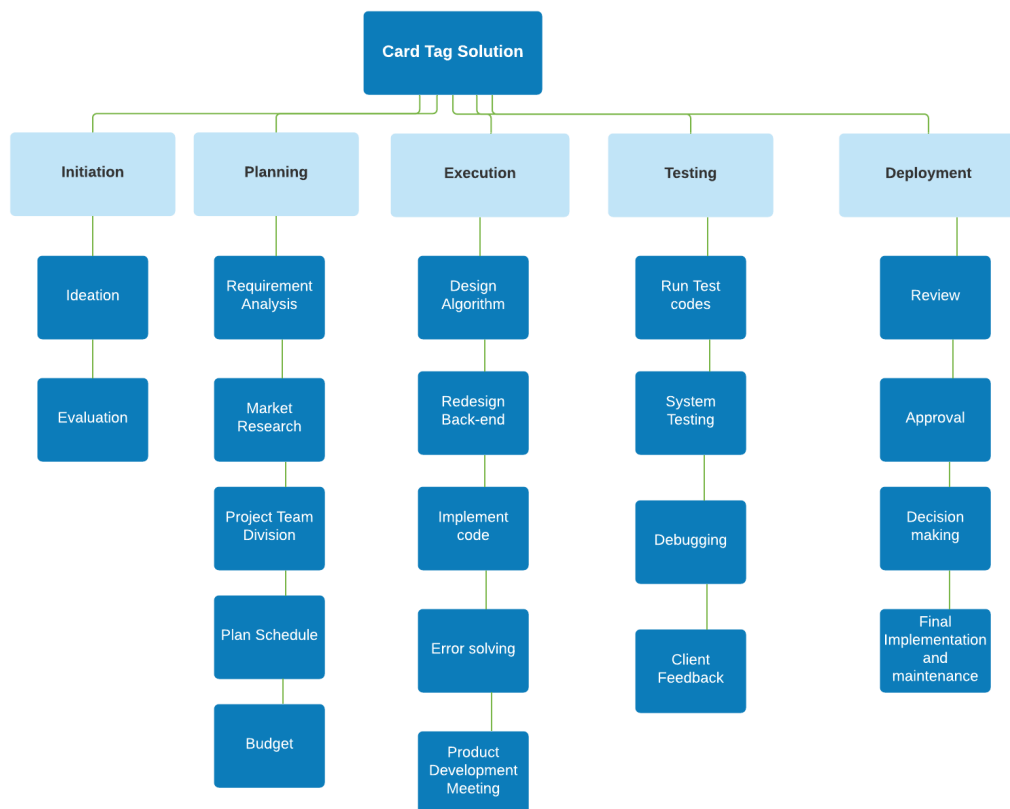

Figure 3.1: Work Breakdown Structure

3.2 Activity wise Time Distribution

The critical path method is a network diagram that allowed me to schedule my tasks or deliverables. It helps to visualize the entire project sequence along with scheduling of each task. It played an important role in analyzation of the project.[1].

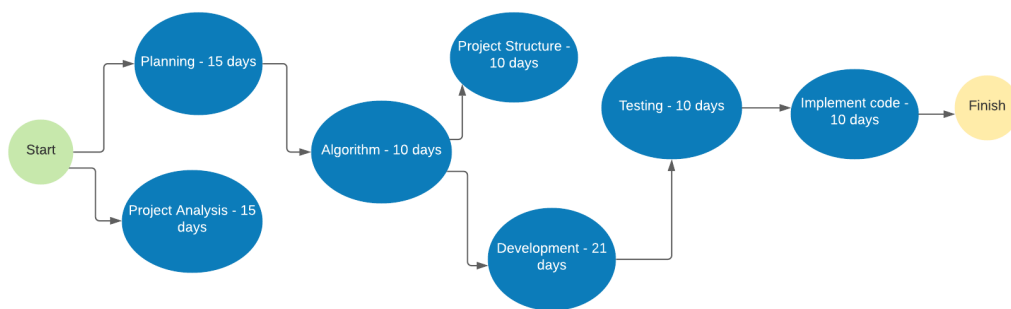| Activity	Preceded by	Duration (Days)	Distributed Time Percentage
Planning	Starting	15	16.5%
Project Analysis	Starting	15	16.5%
Algorithm development	Planning	10	11%
Project Structure	Algorithm	10	11%
Development	Algorithm	21	23%
Testing	Development	10	11%
Implementation (Terminal)	Testing	10	11%

Table 3.1: Critical Path Method

Figure 3.2: Network Diagram

3.3 Gantt Chart

Gantt chart is mainly production control tools that helps in the project management process. It sets due dates and deadlines for assigned task completion. It is much needed for software development and my Project Gantt Chart is as follows:
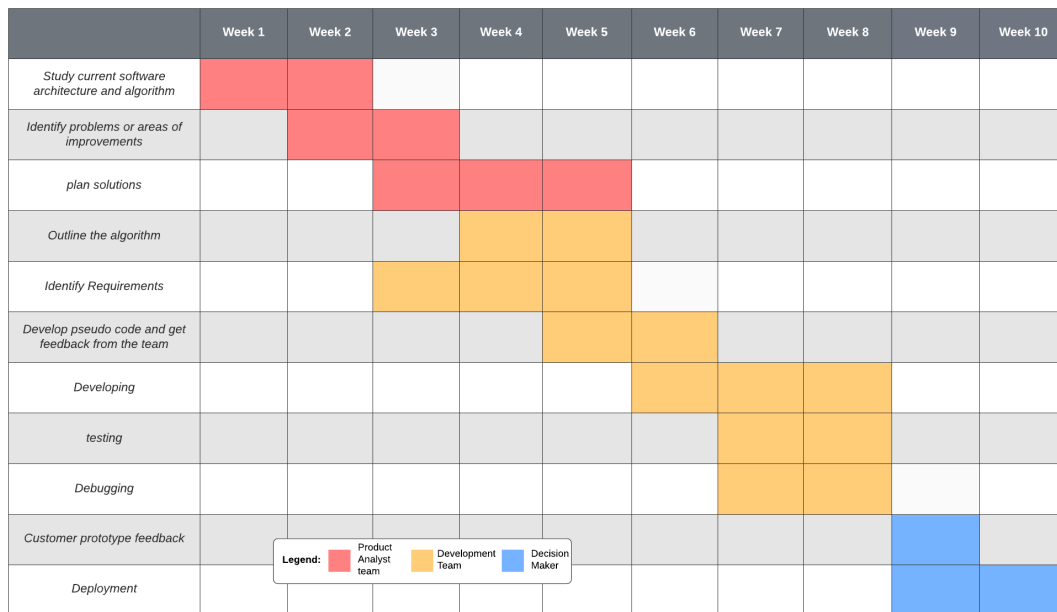
Figure 3.3: 10 Weeks Gantt Chart

3.4 Activity wise Resource Allocation

I have mainly divided the resources required for my project into two parts, time and working hours of the involved personnel.

Activity	Involved Personnel No.	Working hours
Planning	2	160
Project Analysis	3	360
Algorithm Development	2	140
Project structure	2	182
Project Development	2	500
Error fixing	2	100
Testing	2	100
Project Finalisation	2	50
Deployment	1	50

Table 3.2: Cost Estimation Table

3.5 Estimated Costing

There are some common development costing that needs to be considered as well. They are development tool cost such as Content creator and designer cost, SSL certificate, domain and hosting cost. Project Management software Clickup is used that costs $5/month. But the most significant costing of the project was the salary cost that affects the overall cost to the Customer

of the product. The estimated costing of the project considering the above-mentioned factors would be around BDT. 3,00,000 which is subject to change in the future.

Activity	Involved Personnel No.	Salary Cost (BDT)
Planning	2	24960
Project Analysis	3	59880
Algorithm Development	2	26554
Project structure	2	34034
Project Development	2	93500
Error fixing	2	18700
Testing	2	18700
Project Finalisation	2	7800
Deployment	1	14050

Table 3.3: Cost Estimation Table

Chapter 4

Methodology

For the development of the Project, I have used SDLC (Software Development Life Cycle) strategy. It contains the whole designing, development, and testing of high-quality software of any industry level. This process sets the goal of meeting or exceeding customer expectations and handling big client such Essilor Bangladesh was quiet challenging leading me to be more selective. With proper cost estimates and time management, the process allowed me to successfully complete and deliver my project. Typically, SDLC process consists of six stages that are Planning, Defining, Designing, Building, Testing, Deployment. However, I will only go into the details of Designing, Building and Testing parts for my report. [2].
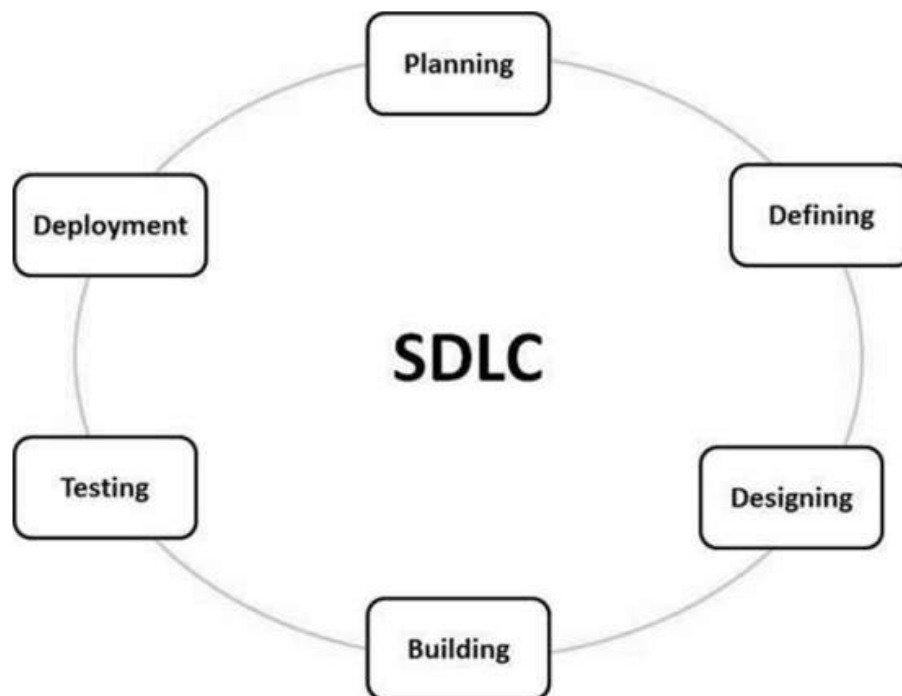

Figure 4.1: Stages of SDLC

4.0.1 SPRINT Methodology

For the methodology of my Project I strictly followed SPRINT methodology. It is the core and center of Scrum and Agile methodologies of software development. Sprint helped to make the project more manageable and with increased productivity. Sprint's basic requirement is the software company's backlog study for the project. This Backlogging of progress and documentation enables quick task completion and task delivery. Overall, it motivates high-quality deliverable at a faster pace. Sprint methodology makes any project more flexible to changes in the sub-tasks or phases of it.
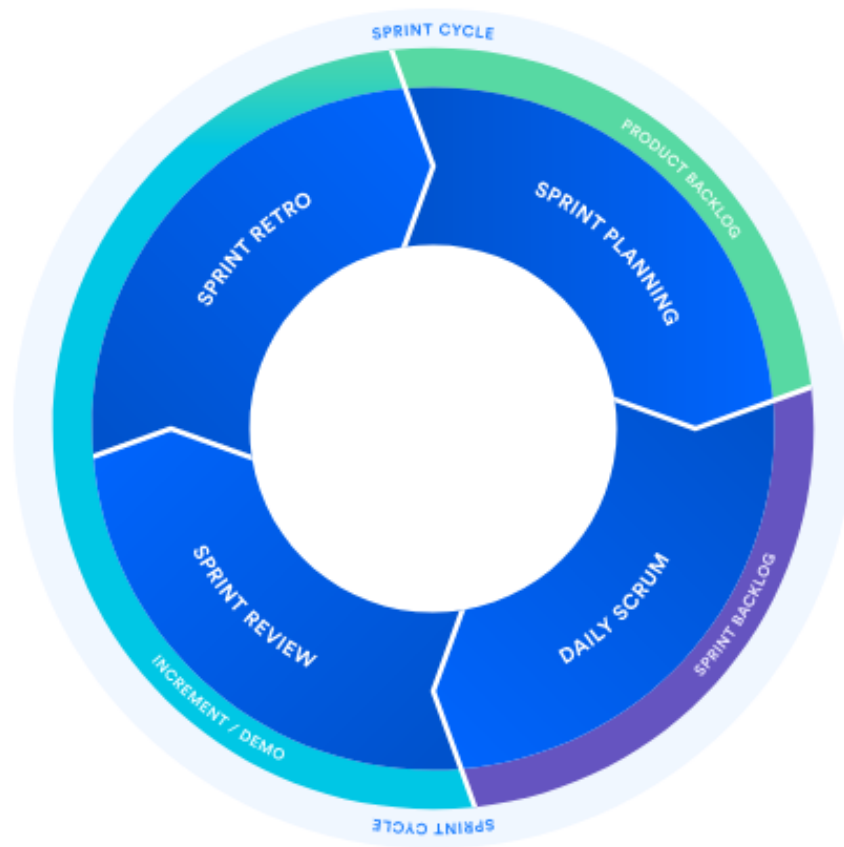

Figure 4.2: Sprint execution stages

Chapter 5

Body of the Project

5.1 Work Description

Essilor Bangladesh Admin panel consists of a Product Registration process which was done manually until recently. Panacea Live LTD. serves to generate unique codes for products of the company and these codes associated with product purchase and the buyer can be used to verify the product to check its authenticity. Previously, the product details were given in the form of a list and they were given a code from the company. This process was much less flexible, so I approached the problem by bringing in automation into the code association process. I designed an optician management and card tagging solution which allows the customer to enter the product information and the card number. The codes can then be verified only after the product registration. This system requires the company to buy codes in bulk. So, they can easily estimate the production level in a month and order accordingly.

The Product Registration system consists of two main parts. First, the optician management, where a new optician can be added, or an existing optician can be selected from the alphabetic suggestion listing. Second, the categories allow the admin to select the lens characteristics from the dropdown menu. Finally, the unique code is given singly or in bunch (for multiple entries) and the process is completed after the register button is clicked. The codes can be used by the customers during purchase to check authenticity of the lens and adds value to both Essilor and the optician selling the product. This way of allowing the customer to interact with the product helps them to buy more higher end products, with certainty of quality.

5.2 System Analysis

5.2.1 Development

Software Development tools were used to develop the software. These tools makes the process of software development much easier and composes a smoother journey. For an IDE (Integrated Development Environment) I used Visual Studio Code and git terminal to execute the source code. For the development I used Apache server as it is open and free, as well as

supports cross-platform. It has a large number of features, the majority of which are implemented as compiled modules, already. The capabilities of the key features and functionalities are expanded by this module. The project is also based on Relational Database Management System or RDMS. With MySql database industry level projects are often a success which led to my choice of the particular database server. With user friendly developing environment it also offers security assurance, scalability and high performance.

5.2.2 Six Element Analysis

Process	Human	Non-Computing Hardware	Computing Hardware	Software	Database	Connectivity
Optician Addition	Admin	Monitor, Keyboard, Mouse	PC/Laptop/Mobile	Laravel, HTML, CSS, Bootstrap	MySQL, RDMS	Internet
Optician Selection	Admin	Monitor, Keyboard, Mouse	PC/Laptop/Mobile	Laravel, HTML, CSS, Bootstrap	MySQL, RDMS	Internet
Category Selection	Admin	Monitor, Keyboard, Mouse	PC/Laptop/Mobile	Laravel, HTML, CSS, Bootstrap	MySQL, RDMS	Internet
Add Unique code(s)	Admin	Monitor, Keyboard, Mouse	PC/Laptop/Mobile	Laravel, HTML, CSS, Bootstrap	MySQL, RDMS	Internet
Register	Admin	Monitor, Keyboard, Mouse	PC/Laptop/Mobile	Laravel, HTML, CSS, Bootstrap	MySQL, RDMS	Internet

Table 5.1: Six Element Analysis

5.2.3 Feasibility Analysis

The current scenario of Bangladesh is that mass counterfeiting is all over the nation and fake products are common finds. This can lead to massive health hazards and other dangers. Prevention of such a problem is already a nationwide concern and this is where the potential of the project lies. Every consumer good import and exports in the country is facing this problem and there are not enough software companies considering to solve it. Since this project remains unique and solves a nationwide problem, although at a smaller scale now, has a lot of potential in the Bangladeshi market. Companies such as Shaheen Foods limited. and Dabur Honey have approached us to face the online market in the pandemic. Automated Card Tag Solution not only makes the Admin's task easier but also makes it interactive and keeps the employee engaged and informed about the product. [3].

5.2.4 Problem Solution Analysis

There were some major development problems that occurred during the phases of the development period. First one was the selection and addition of the optician name in the same input field. Selection of optician name needs to be held in the session with re-selection from the suggestion list solved this problem.

5.2.5 Effect and Constraints Analysis

The automation of the card tagging process can have only positive effect for Essilor Bangladesh. Since, now the problem of ordering direct associated codes is eliminated, it has omitted the problem of redundant code generation. However, there are still some constraints yet to be considered. Time constraints- Development and debugging require huge time to perfect and meet client expectation. In such a short time there were still few developments remaining as future works

and left unfinished while at production.

Communication constraints- Due to the global pandemic we had to work from home for two weeks which cause interruption in the work flow and the overall pace of the project development. More communication gap makes problem solving much harder and often lead to self frustration.

5.3 System Design

To begin, the user is presented with the software's interface after landing any application. This gives the user their first impression of the system, so it's essential for the software's success.A well designed interface with higher-resolution images, graphics, typography, stylesheets, and scripting, among other things, can frequently leave a positive impression on the user.

For the designing of the project I used CSS and Bootstrap. Cascading style sheets are created after the markup is finished. Stylesheet can be written in one of three forms inline CSS, external CSS and internal CSS. For my project, I have used inline and internal CSS along with Bootstrap CSS framework. This open-source project is primarily focused on CSS and Javascript. Bootstrap provides media query and allows to feature responsive layout for different devices and browsers.

5.3.1 Rich Picture

It is important to set the road map of a project before developing a system and a Rich Picture offers just that. The following rich picture illustrates the whole user journey of the software for the Card Tag Solution. [4].
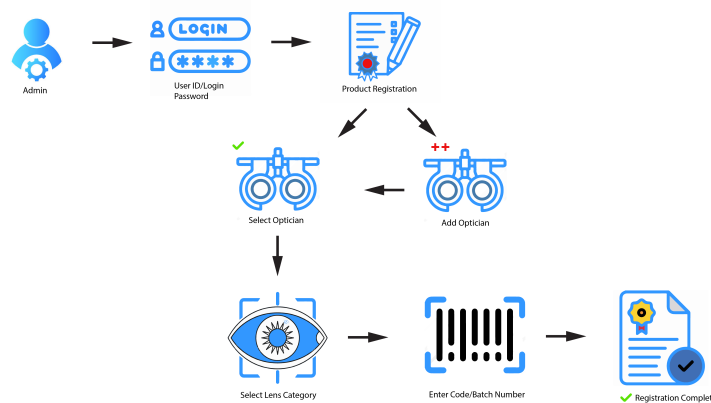

Figure 5.1: Rich Picture

5.3.2 UML Diagrams

There are three actors in my Use Case Diagram, Super Admin, Admin and Customer. Super Admin and Admin play some important roles indicated in this diagram. The specific purpose

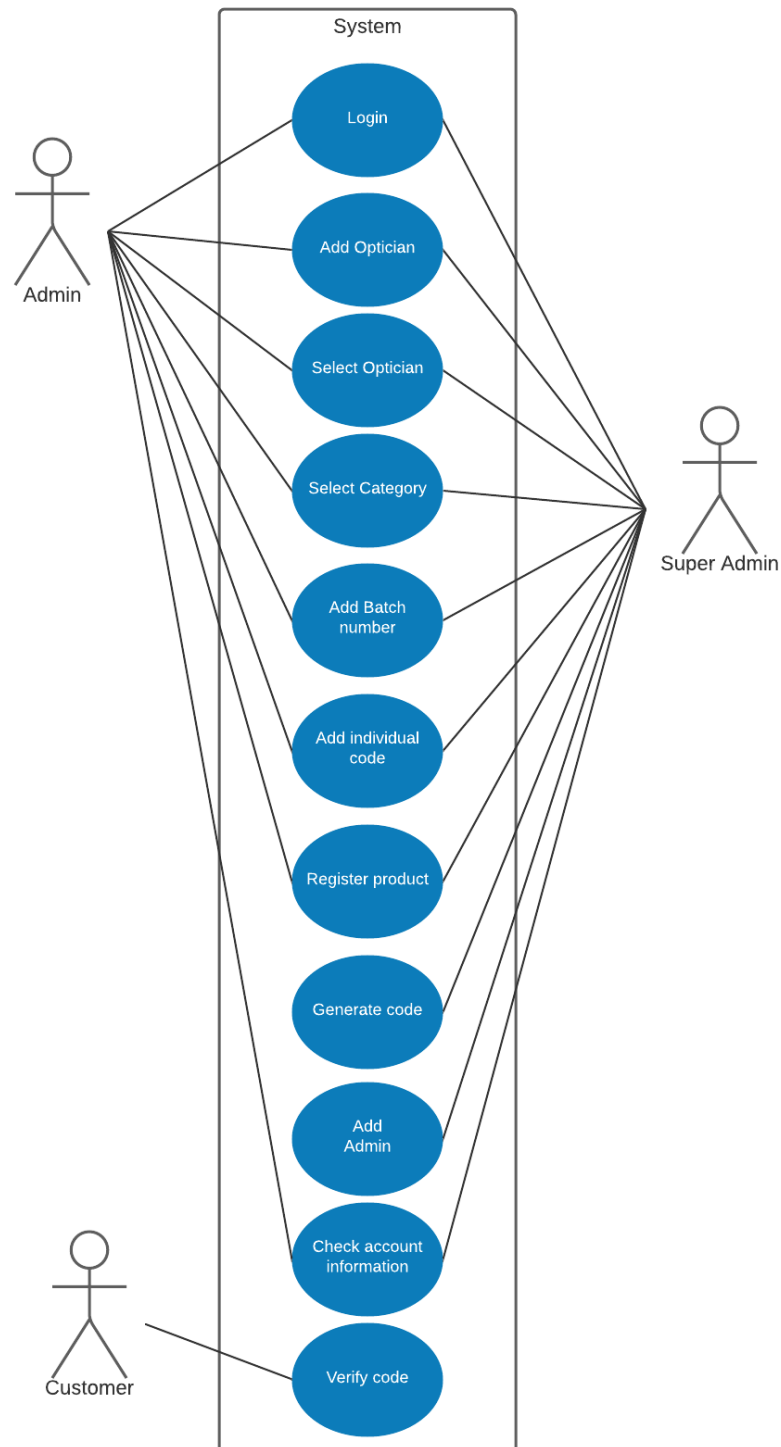of this diagram is to clarify the system in brief. [5],[6],[7].

Figure 5.2: Use Case Diagram

Specifically, sequence diagrams assist us in comprehending how data will be processed in

any program. The following are are some sequence flow diagrams of my application.
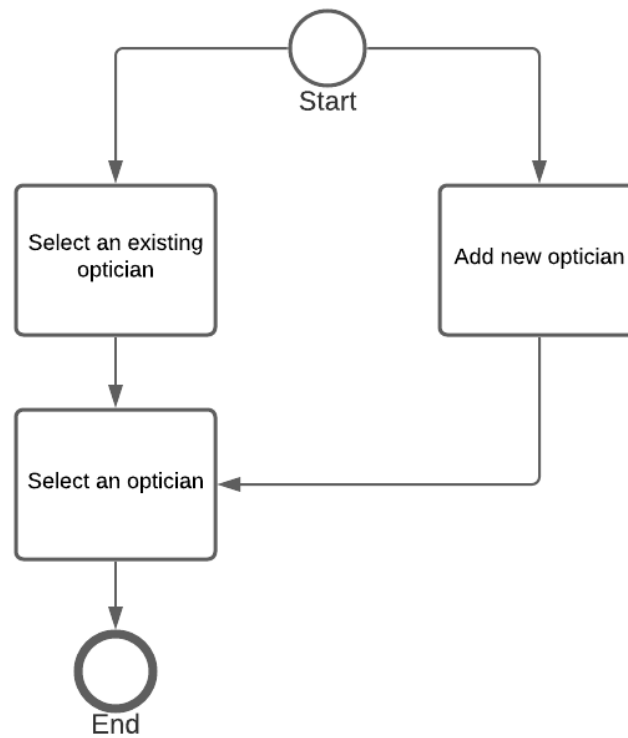

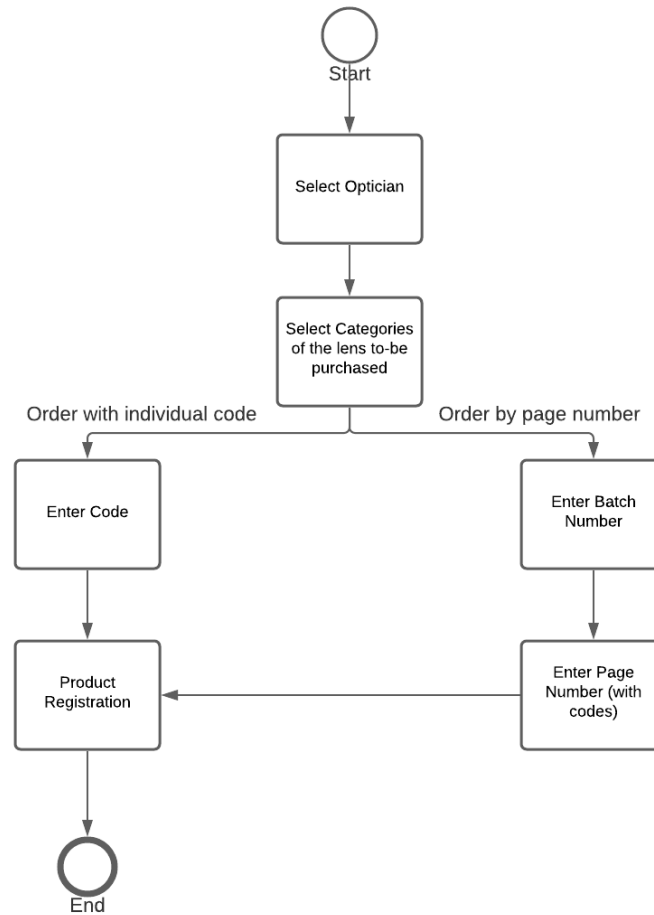Figure 5.3: Activity Diagram 1 - Optician Management Process

Figure 5.4: Activity Diagram 2 - Card Tagging Process

5.3.3 Functional and Non-Functional Requirements

The term "functional requirements" refers to the functions that the system provides and are necessary. The software system's functional requirements must be able to work and perform the necessary functions. Some functional specifications must be met by any system. Following are the functional requirements associated with my project.

Requirement 1	Add new optician
Description	When new lens is selling if it is not an existing optician who is purchasing, new optician is added
Stakeholders	Admin

Table 5.2: Requirement 1

Requirement 2	Select existing optician
Description	When new lens is selling if it is existing optician who is purchasing, it can be selected from the alphabetic suggestion box
Stakeholders	Admin

Table 5.3: Requirement 2

Requirement 3	Add Lens Category
Description	All possible lens properties combination is separated into 5 categories which can be selected from the drop down menu
Stakeholders	Admin

Table 5.4: Requirement 3

Requirement 4	Set codes to a batch of products
Description	When same category of lens is bought in bulk, batch number and code page number can be added to select the associated codes
Stakeholders	Admin

Table 5.5: Requirement 4

Requirement 5	Set product to an individual code
Description	Single code can be tagged on to a single product
Stakeholders	Admin

Table 5.6: Requirement 5

Requirement 6	Complete Product Registration
Description	After checking for the mandatory field values, registration will be completed with the "Register" button.
Stakeholders	Admin

Table 5.7: Requirement 6

Requirement 7	Generate Codes
Description	After adding of CSV formatted file name and the number of codes is specified, Codes can be generated and added to the database. This is ready to provide to customers once activated.
Stakeholders	Super Admin

Table 5.8: Requirement 7

Non-functional Requirements are the requirements that are not mandatory by the software but should fulfill the basic standard. Some Non-Functional Requirements of my Project are:

1. Data Requirements: When it comes to determining data specifications for my application, almost all of the data will be loaded from remote users, so there are a few things to be considered. Such as: Route data locations, Types of entity, Data capacity and resources, Quantity and Availability of data.

2. Performance Requirements: The performance quality of any software system must be maintained at all times. To enhance the performance of the project some issues such as speed and latency requirements, Precision and accuracy requirements, capacity requirements need to be considered.

3. Reliability Requirements: The word "reliability" is defined in terms of four dimensions. They are:

   - Availability
   - Reliability
   - Safety
   - Security

   To make the system dependable, it must fulfill the four dimensions. Additionally, It's also important to minimize the impact of any potential malfunction and system failure.

4. Fault-Tolerance Requirements: Also known as robustness of the software. It is important to ensure zero chances of system crash in order to provide end users with robustness and fault-tolerance capabilities.It is critical to keep in mind that a large number of users can access the application system at the same time. All of their demands must be met in a timely and user-friendly manner.

5. Security Requirements: Making software secure is also an important requirement. Software security enforces some limitation to the software functionalities. These need to be directly tested or observed.

6. Access Requirements: There are some authentication and authorization strategies for accessing the application system that force only knowledgeable Admins to have access.

7. Integrity and Privacy Requirements: Integrity of the software ensure data secure of any malicious modification or accidental destruction while privacy requirement ensures user's privacy. All data, or a portion of it, will be released only in accordance with the system's privacy policy.

5.4 Product Features

The product consists of the whole Product Registration process which depicts Card Tag solution to the manual problem. To get into the details of the product features lets look at the inputs and outputs of the system.

5.4.1 Input

The following are the inputs of my project:

Optician Input Field- Takes alphanumeric characters as input. Add new to the suggestion list if not already present in it. This Field is mandatory and cannot be left blank for any registration.

Category 1 Dropdown- A dropdown menu appears on clicking action. Null value is acceptable. No new addition can be made. Only options from the dropdown can be selected.

Category 2 Dropdown- A dropdown menu appears on clicking action. Null value is acceptable. No new addition can be made. Only options from the dropdown can be selected.

Category 3 Dropdown- A dropdown menu appears on clicking action. Null value is acceptable. No new addition can be made. Only options from the dropdown can be selected.

Category 4 Dropdown- A dropdown menu appears on clicking action. Null value is acceptable. No new addition can be made. Only options from the dropdown can be selected.

Category 5 Dropdown- A dropdown menu appears on clicking action. Null value is acceptable. No new addition can be made. Only options from the dropdown can be selected.

Batch number input field- Takes alphanumeric characters as input.This Field is mandatory when order by page is selected and cannot be left blank for any registration.

Page numbers input field- Takes limited characters(numbers bod commas) as input.This Field is mandatory when order by page is selected and cannot be left blank for any registration.

Individual unique code input field- Takes alphanumeric characters as input.This Field is mandatory when order by individual code is selected and cannot be left blank for any registration.

Generatre Code- Takes CSV file name, Quantity of codes and a Prefix.

5.4.2 Output

Each input values are checked and combinations are stored in the database on successful registration of product. There are some possibilities of unsuccessful registration. They are:

1. Optician name field is empty.

2. When Order by Batch number is selected and Batch number field is empty.

3. When Order by Batch number is selected and Batch number is wrong or does not exist in the database

4. When Order by Batch number is selected and Page number field is empty.

5. When Order by Individual code number is selected and Unique code field is empty.

5.4.3 Architecture

Laravel php Framework structurally follows the Model View Controller (MVC) model. The model contains of all the functions written for the project. The view is for all the information displayed to the user-end; in Laravel .blade file is used to user HTML and CSS for the view. The controller controls all the HTTP requests of the application. MVC is a very well-know architectural model that is used by many organizational giants today.
With mySql database connection, the migration file forming the database schema contains all the queries for the table and attribute creation. This Laravel migration file allows easy sharing of the database schema with project teammates.

Database Architecture

Relational Database Management System (RDMS) is used for the backend of the system. A relational database management system, or RDBMS, is a database management system built specifically for relational databases. It employs a framework that enables us to locate and view data in the context of other data in the database. The project's backend consists of the following entities and fields:
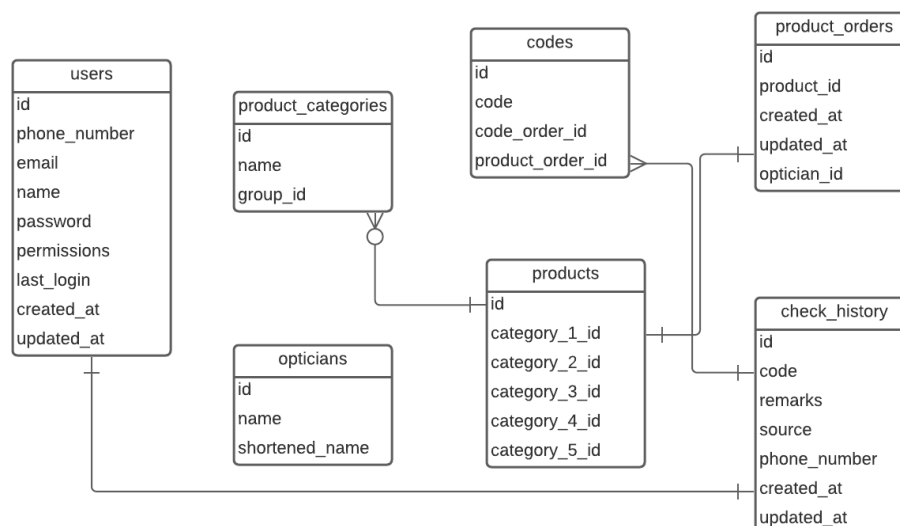
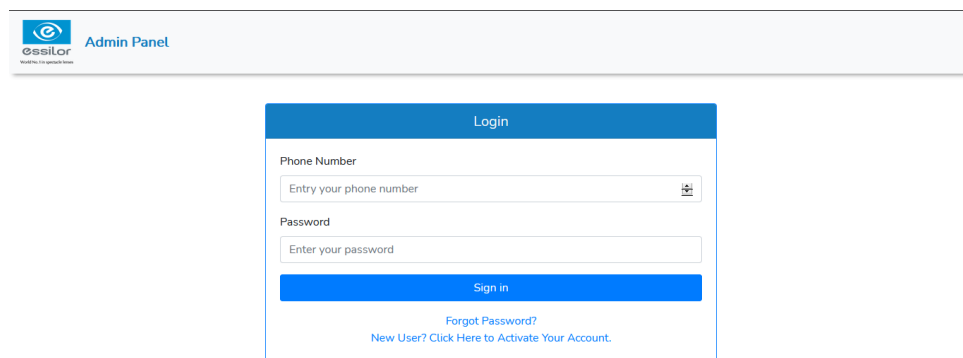Figure 5.5: Database architecture

5.4.4 Software Testing

Testing of a software project is mandatory in order to ensure the functionality and correctness of it. There are two main test approaches to software testing - Automation testing: It is a testing procedure in which testing engineers write scripts in accordance with test plans and then test the program with suitable tools. It is a common testing approach taken by many software companies such Panacea Live LTD., today. Manual Testing: It is the name of a testing technique which requires searching for the bugs or vulnerability in an application. Manual testing is done by test engineers by executing test cases without any automation tools.

I used Manual Testing process with a number of preset test cases. For testing the details of the features, I considered white-box testing where testing can be done from the initial stage. It is divided into categories including Integration Testing, Unit Testing, and System Testing.
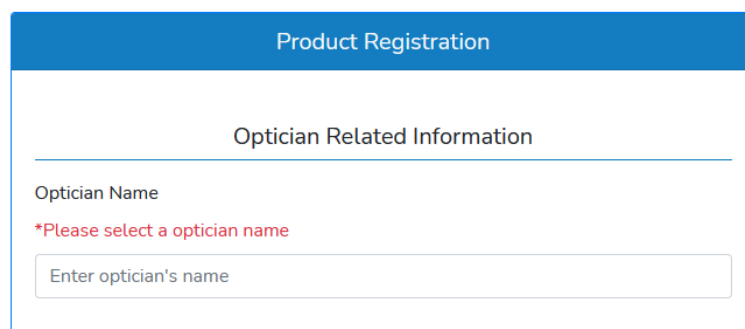
Chapter 6

Results & Analysis

The project successfully met the client's satisfaction so let's look at the views of the system.

Figure 6.1: Admin Login Page

Figure 6.2: Null value for optician name

Figure 6.3: Existing Optician Suggestions

Figure 6.4: Lens dropdown Categories

Figure 6.5: Order by Page

Figure 6.6: Order Individual

Figure 6.7: Generate Codes

Chapter 7

Project as Engineering Problem Analysis

7.1 Sustainability of the Project/Work

To continue the impacts of the project, constant maintenance and significant updates are absolutely necessary. This project's impact can continue with more updates on the system. Making it more user friendly and visually pleasing.

Moreover, the company provides the service on subscription nature and even after discontinuing the service there is an extra three months charge to keep providing the service for the already deployed products. This ensures complete use of all the generated codes and associated optician management.

Additionally, to sustain the project the B2B business model is used for the complete production of the project and its maintenance.

7.2 Social and Environmental Effects and Analysis

The whole purpose of the project was to add value to the customers buying the products and the first-hand buyers are the opticians. With this optician management system, the unique codes are incorporated with each optician and this allows verification of the Essilor product. In many ways this has a greater social effect as this works against mass counterfeiting and provides a pathway for the opticians to check the authenticity of the product, creating more awareness against fake ones.

In the ongoing pandemic, online selling has popularized and this system easily provides an opportunity to Essilor to go for online sales with the added value to the optician, distributors of the lens, giving them a selling point.

7.3 Addressing Ethics and Ethical Issues

Nowadays, software directly impacts our daily life and the big data and data analytic has made its way into the picture. Hence, addressing ethical side of it has become an issue. This system faced weak cyber security issues and also stimulated personally identifiable information protection problem. To deal with such problems security remained a concern during the initial planning phase of the project. So the system meets secure development standards. Along with all the other features security still remains a prominence in the maintenance of the system.

In addition to that, ethical standards were maintained as all the features were given equal priority and Essilor was ensures a fully functional sytem throughout the software cycle.

Chapter 8

Lesson Learned

8.1 Problems Faced During this Period

The most challenging part of the project development was the error fixing and structuring of the database model. Due to the pandemic, communication within the development team became time consuming and sometimes even led to miscommunication. Working in self-isolation and in home environment was distracting. Moreover, the weekly product development meetings became insufficient due to technological difficulties and progress meetings with clients were often delayed as there were minimum face-to-face communications.

During the middle of the internship period, I became reliable and responsible for handling more clients by producing prototype designs and project analysis for them. This quickly became work overload for me as I had to constantly work on the project as well as cleverly and professionally handle other extra handed-over tasks. Due to employee deficiency, I had to complete more tasks than what I was designated. However, all these were a part of my experience for working in the industry level and every day was an opportunity for me to learn by first-hand problem-solving.

8.2 Solution of those Problems

After facing challenges of miscommunication and debugging, the developer's team decided to start note-keeping. All changes and updates were noted for safe keeping. This helped to better understand and collaboratively work together. To solve the issues of the client meetings, I decided on communicating with the client directly from the developers team. This allowed me to explain the technical limitations and better understand their requirements to give a satisfactory output.

Chapter 9

Future Work & Conclusion

9.1 Future Works

In the current scenario, there is a lot more to achieve via the project to remain in the competitive business. For its future works many new features are thought of and worked through.

One major update that the company would like to work on is to reduce the number of categories having to entered by the admin. But to implement this, whole database restructure and product redesign needs to be thought of. For an updated version of the software, admin profile view and other customized features can me added that can add value to the system allowing to increment the business margin.

9.2 Conclusion

To conclude, the chapters attempt to point out in this report that the project was produced in collaboration to gain knowledge from different departments of Panacea Live LTD. Internship at this quickly expanding software company has been a rewarding and excellent experience. Undoubtedly, the technical aspects of my work here could be ameliorated over time. Nevertheless, no software is flawless and requires continuous work and upgrades. Before beginning the project, I had no idea about the shortcomings in the software development life cycle, but after working on it, I have learned that gathering client specifications is an important part of meeting demands. While researching and discovering Laravel for this project, I have extensively learned about the development steps including system design, database design, architectural study and many other aspects in the field. Immensely thankful to Almighty, Panacea Live LTD., my respected supervisor and lastly, IUB for giving me this opportunity to know how to face and overcome obstacles, challenges to make my pathway to achievements.

Bibliography

[1] J. Nandhakumar, "Managing time in a software factory: temporal and spatial organization of is development activities," *The Information Society*, vol. 18, no. 4, pp. 251–262, 2002.

[2] V. Öztürk, "Selection of appropriate software development life cycle using fuzzy logic," *Journal of Intelligent & Fuzzy Systems*, vol. 25, no. 3, pp. 797–810, 2013.

[3] Y. Aprilianto, M. Asrol, and F. E. Gunawan, "Economic feasibility analysis in developing 5g infrastructure and locations in indonesia," 2021.

[4] R. Gunik, "Facilitating software development using uml models," *Contemporary PNG Studies*, vol. 27, pp. 28–41, 2017.

[5] P. Sahoo and J. Mohanty, "Test effort estimation in early stages using use case and class models for web applications," *International Journal of Knowledge-based and Intelligent Engineering Systems*, vol. 22, no. 3, pp. 215–229, 2018.

[6] E. Planas and J. Cabot, "How are uml class diagrams built in practice? a usability study of two uml tools: Magicdraw and papyrus," *Computer Standards & Interfaces*, vol. 67, p. 103363, 2020.

[7] A. De Lucia, F. Fasano, G. Scanniello, and G. Tortora, "Enhancing collaborative synchronous uml modelling with fine-grained versioning of software artefacts," *Journal of Visual Languages & Computing*, vol. 18, no. 5, pp. 492–503, 2007.