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Project Documentation

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This Report Presented in Partial Fulfillment of the Requirements for the Degree of
Bachelor of Science in Computing and Information System

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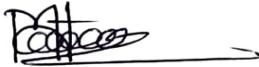
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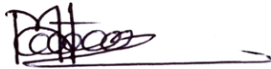
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Declaration

I hereby declare that; this project has been done by me under supervision of **Md. Mehedi Hasan, Lecturer**, department of Computing and Information System (CIS) of Daffodil International University. I am also declaring that this project or any part of there has never been submitted anywhere else for the award of any educational degree like, B.Sc., M.Sc., Diploma or other qualifications.

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Dedication

I would love to dedicate my project and research paper on online booking system to my beloved parents. Without their affection, care and continuous love, it would be impossible for me to reach where I'm now. I'm grateful for their support and the way they have been inspiring me to achieve my goal.

Abstract

Laravel allows the developer and designer to use its MVC (Model-View Controller) system that gives them more control over the entire system. Using it, many national and international brands are building websites for clients with 2-way gateway as profitable business model. As a keen student of computer science and my interest in ongoing social media and web platforms, I found that salon business in Dhaka city is a great sector to explore. It can be brought under a single umbrella using a website build on Laravel platform such as an online booking system.

Plus, hair styling and beautification business is approximately 100 crores in Dhaka. Plus, it is giving employment to 30000 men and 100000 women inside Dhaka and its suburbs. Yet, there's no centralized website or app to bring this huge industry in a single platform. Thus, both the salons and its users find it hard to communicate with each other.

Hence, this online booking system will become profitable for the salon owners and users alike. Also, it would open newer horizons for different institutes with excellent possibility to embrace the new platforms for a convenient business plant.

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Chapter 1

1.1 Introduction

With the advancement in technology, and people's interest in online business, transaction and works, web development has become a profitable business sector. Following it, different platforms have emerged to help web developers, including Laravel.

Laravel allows the developer and designer to use its MVC (Model-View Controller) system that gives them more control over the entire system. Using it, many national and international brands are building websites for clients with 2-way gateway as profitable business model.

Regarding this, Bangladeshi developers and businesses are also planning, designing and developing websites similar to Foodpanda, Uber. As a keen student of computer science and my interest in ongoing social media and web platforms, I found that salon business in Dhaka city is a great sector to explore. It can be brought under a single umbrella using a website namely "Online Salon Booking System."

I found that the website with gateways for both the salon owners and users will help both to get in touch with each-other closely. Thus, it will flourish the business of the salons and help the users to look for their preferred salons and hair stylers with ease. Plus, as a manager and owner of the controlling website, I can pull up a good profit as a start up in the market.

1.2 Laravel For Web Development:

Laravel is one of the most popular website developing platforms. It is an open-source frameworks. It's a powerful framework that meets specific needs of the clients. We can use it to construct unique and practically useful CMS or Web application.

Laravel features MVC (model-view-controller) patterns. So, clients enjoy better control over the website and its application with quick tuning facility. Laravel website development is easy to use with simplified application. It will simplify and ease out the majority of project tasks. So, it helps you in saving time and efforts.

As it an opensource platform, it is free of cost for use. Plus, the web developing platform is easy to use with basic knowledges. Hence, you can use it for quick and cost-free application. Also, Laravel will be a great framework for startups with tight business.

1.3 Business of Salons in Dhaka

The Daily Star reports that the salon, hair styling and beautification business is approximately 100 crores in Dhaka. Plus, it is giving employment to 30000 men and 100000 women inside Dhaka and its suburbs.

Yet, there's no centralized website or app to bring this huge industry in a single platform. Thus, both the salons and its users find it hard to communicate with each other. Plus, the lack of such platform restricts the users to book their favorite salon for cutting their hairs, beards and facial works. Similarly, salon owners can connect with their customers directly.

Henceforth, this project on building a website for salons will connect the salon institutes and the users better. It will save valuable time of the users and help the beauty institutes develop their business faster.

1.4 Document Contents

This document wraps the following sections to file the work of the project.

Chapter 1: Introduction

Introduction to the proposed system and project.

Chapter 2: Initial Phase

This chapter includes the preliminary study details about the booking system. It discusses the main aims and objectives, problem area, alternative solutions, and background.

Chapter 3: Literature Review

This chapter discusses about the problem domain comprehensively. Also, the discussion proposes solutions, evaluation of existing solutions, and possible recommendations.

Chapter 4: Methodology

This chapter discusses the necessity of using the methodology, and distinct methodologies to be used. It further includes discussion on the proposed methodology and its execution.

Chapter 5: Planning

This chapter will cover various project plans like, test plans, risk and change management etc.

Chapter 6: Feasibility

This chapter contains a thorough feasibility study report and cost-benefit analysis.

Chapter 7: Foundation

This chapter will focus on the problem area identification, and overall requirement list. It also shows the suggested technologies, and justifications.

Chapter 8: Exploration

I've discussed and showcased a few of the old systems and new systems' basic UML Diagram and requirements catalogs with their prototype.

Chapter 9: Engineering

This chapter contains the logical and behavioral modeling of the recommended booking system.

Chapter 10: Deployment

This chapter discusses the coding samples and development problem breakdown with the main priority.

Chapter 11: Testing

Various test plans and results regarding the subject are enclosed in this chapter.

Chapter 12: Implementation

The implementation approach, training model and related things are examined here.

Chapter 13: Critical Appraisal and Evaluation

This chapter includes the evaluation of the initial objectives that were met and not met with details.

Chapter 14: Lessons Learned

Mainly pre-project-closing review contains the learnings and difficulties faced during the project.

Chapter 15: Conclusion

This chapter will document the summary of the project along with the goal, success, and experience.

Chapter 2

Initial Study

The success of any business, project and thesis depends on the initial study to find the actual problem, what people want and ways to solve them. Following it I initiated a fieldwork-based study in Mirpur area of the Dhaka city. It helped me find out problems of the salon owners in finding their right clients. Similarly, I interviewed people and what they think about finding their right hair styling and beauty organizations.

2.1 Background Study:

I would like to develop a Laravel-based web platform for salons and hair styling organizations in Dhaka city. I believe that the beauty and styling sector in Dhaka city is largely unexplored, although it has great business opportunities.

I believe that with a single platform, I can play a crucial role in bringing the salons, hair styling and beauty centers closer to the real users. It will boost the business of the organizations. Plus, it will help the people to find their favorite spots and book their schedule their with ease.

Multiple institutions are working in our country to connect versatile businesses like salons and grooming services. Likewise, some online institutions want to make a solid relationship among businesses like; <https://scissor-hand.com/> allows men to choose specific services like facial care and haircut; <https://hairboxpremiumsalon.com/> offers men to search and get everything of a salon, including hair care, facial, body massage; and <https://www.sulekha.com/> enables men to choose specific service among multiple items from their home. Consequently, there is no centralized salon business management system in our country.

So, there is no way to justify whether a salon serves exemplary service with quality assurance and minimal cost. Also, there is no way to automatically notify the nearby salon services when a man needs an emergency grooming session. For different official programs, non-official parties, get-togethers, or self-interest, the right salon's delayed findings may reduce the service taker's image at a specific moment. Hence, a centralized system can make the process easier, more reliable, and more effective. It will ensure every business will be happy to get their desired client or customer. So, this type of system has high demand in the current market.

2.2 Feasibility Study:

In this chapter we will go through the possibility of building an online booking system for the salons in Dhaka. Also, we will discuss the operational, technical and financial feasibility of the project. It will help you know if it is possible and financially profitable or not.

2.2.1 Operational Feasibility

It concerns the anticipated system's usability, ease-of-use and essential functionalities. So, the proposed online booking system has proper validation and verification for user inputs, a straightforward and smooth navigation system, a location-based searching option, easy request option, which will make the system much easier and effortless to use. From young to aged men, they can quickly access their portal with valid credentials and perform their tasks very efficiently.

2.2.2 Technical Feasibility

The technical feasibility test reveals that the users of the online booking system can easily book their schedule for the salons. Also, salons can connect to their clients easily. We will initially use the Laravel 6 web framework, and MySQL database server. Then, we will use Microsoft Office for development and documentation purposes. Hence, we design and develop the system using the latest and standard web platforms to ensure that the system is compatible to run in any web browser with a low-level Internet connection. The system has an access control hierarchy to maintain secure access to the system data. Web-based application is platform independent. Also, its selected development platform and resources are affordable and cost-effective. So, it will be technically feasible.

2.2.3 Economic Feasibility

There are various alternatives to develop the proposed system, including web-based and desktop applications.

Web-based Application

The entire application and data are hosted on a remote server. It can be accessed via the Internet anytime from anywhere. Users do not need any installation.

Equipment	Cost per unit	Cost
Extranet network with VPN	2500TK monthly	₹ 2500
Desktop pc (core i9, 3.6 GHz processor, 32 GB DDR4 RAM, 1 TB HDD, 256GB SSD)	90000	₹ 90000
Web, email and server cost	8500TK monthly	₹ 8500
Total= ₹101000		

Table 1: Initial cost to develop the system

Desktop Application

The app must be installed on every desktop computer as it is not portable and needs a remote server to store data, which is much more costly than a web-based solution.

Equipment	Cost per unit	Cost
Extranet network with VPN	2500TK monthly	₹ 2500
Desktop pc (core i9, 3.6 GHz processor, 32 GB DDR4 RAM, 1 TB HDD, 256GB SSD)	90000	₹ 90000
Web, email and server cost	8500TK monthly	₹ 8500
Total= ₹101000		

Table 2: Cost for the desktop version of the booking system

A domain name and hosting service are required to make the system live. Since to serve the location-based salon search system, I will develop a mobile app to track customers' locations and send them any essential notifications like offers and discounts. The rest of the system will be developed as a web application.

Foundations

Aims, Objectives & Scope

Aims of the “**Online Salon Booking**” systems are

- Centralized salon booking and confirmation service.
- Location-based salon search facility.
- Maintain customer and salon service history.

Objectives of the proposed project

- Managing the service preferences information.
- Searching for nearby salons and sending notifications to customers.
- Managing salons in different areas with detailed information.

Main Goals

- Ensure the central monitoring of the complete online salon booking services.
- Facility to search for location-based salon services.
- Ensure quick salon searching facility by maintaining the customer's history.
- Report generation: billing history, service history for the individual customer, and eligibility report of the service.

Top requirements for achieving the goals and objectives of the project:

- Registration and login for the salon experts and customers.
- Business information entry approval process for the admin.
- Private customer management system for salons.
- Service request management for the salons.
- Customer manipulation for the salon experts.
- Service reports manipulation for different salons.
- Experience history record for an individual and team-based salon.
- Location tracking and mobile phone login for the customers.
- Notification of the salon service for the customers.
- Various reports showing for the customers (grooming report, charge history etc.)
- Salon service submits for the customer.
- Private request to the salons for the seeker.

Key activities for achieving the goals

Activity	Description
Project Initiation	I have chosen this project to illustrate the growing complexity of salon services and to keep track of and control the entire process centrally.
Feasibility Study	We will measure the technical, operational, and economic feasibility of the project.
System Analysis	We selected priority requirements and functions for the system.
System Architecture	In this part, various technical architectures like DBMS, Web Server, interaction with other applications is measured.
System Design	This part includes both the structural and behavioral models of the proposed system design.
Implementation	This part discusses the development methodology and chooses tools and programming languages and the development architecture to cutover for implantation.
Testing	The system will be assessed during its development.
Other Project Matters	Risk management, configuration management etc.
Documentation	This part will file the documentation of the project.

Table 3: Top activities for the project

Prioritized Features according to MoSCoW

MoSCoW is a prioritization technique used in the requirement analysis stage. It helps to understand the weight of the requirements.

According to MoSCoW technique, prioritized requirements are:

SL	Requirement	Priority
01	Registration & login for all users	Must have
02	Admin manipulation	Should Have
03	Manage customers	Must Have
04	Manage Salon personnel	Must Have
05	Manage salon service request	Must Have
06	Manage service reports	Must Have
07	Manage customer history	Must Have
08	Manage specific salon service requests	Must Have
09	Manage private request to salons	Could Have
10	Private salon database management	Could have
11	Location tracking of the customers and services	Must Have
12	Sending message, and notification to the customer	Must Have
13	Reports	Must Have

Table 4: Priority features of the booking system

2.2.1 Timeframe:

Phases	Work Description	Start and Ending Date
Phase 1	Identifying the problem and its solution	July 11 to August 11
Phase 2	Building the website platform	August 21 to October 10
Phase 3	Testing and submission	October 11 to October 17

Table 5: Timeframe of the project

2.2.2 Possible Stakeholders:

Stakeholder Name	Descriptions
Client	The clients will be both the owners of hair styling, salon and parlors. Plus, the people will be the user and main target to reach.
Sponsor	I, as a project developer, will fund for the initial project and its costs.
Project Manager	My respectable and beloved research supervisor is the project manager of this aspiring project.

Table 6: Stakeholders of the project

2.2. 3 Initial Budget:

The initial budget required for the project depended on two things. Pulling up the website design using Larval framework and finding a host to upload the website on online platform. It was approximately 5000TK that included the website name, 100GB hosting and other expenses.

2.3 Future of the project:

The Bangladesh government has declared beauty services as an industrial sector through a circular issued on 8 June, 2020. Following it, the beauty and salon industry is growing faster. In a report published in the Daily Star we have seen that the salon and beauty business in Dhaka metropolitan city and its suburbs is approximately 100 crore or more.

The industry is currently giving employment to more than 100000 men and women. Plus, there're over 15000+ salons and parlors in the city. It shows us the great opportunity to develop apps and websites to bring all these organizations in a single platform.

With users and salons in the same platform, they can connect directly. We see its necessity as all the salons and parlors are advertising with paid ads through Facebook. Yet, they aren't generating their targeted profits by reaching their clients due to the complex algorithm of the Facebook.

Henceforth, this website for salons and parlors will be a great chance for them. It follows a simple processing like Foodpanda or Uber. So, users may find their targeted organization in their locals with ease. Plus, salons and parlors may reach their customers far easier.

2.4 Problem Area

Salons, parlors and hair styling institutes in Dhaka are scattered. They only depend on their local customers. Similarly, people will depend heavily on the local hair dressers to cut, trim and shape their hair and beards and facials.

During the assessment period, I found the following problems:

- All the salons and parlors, except a few giant ones such as Persona, Farzana Shakil's and Super Cut Salon, others depend on their local customers only.
- Many institutes run paid Facebook ads but fail to reach targeted customers due to the complex algorithm and ads policies.
- People often visit their local hair stylers and found that they are engaged in their works. So, people have to wait for hours for their serials as they can prebook their schedule and come accordingly.
- Some parlors and salons offer prebooking schedule over phone but it is not available 24 hours. So, clients often fail to get proper schedule and reschedule facility.

2.5 Possible solution

When I started developing the web platform for salons, I thought to minimize the present gaps between the people who go to the salons and their respective salons and hair styling systems. It will help to solve the following problems in the sectors:

- Salons and parlors may quickly enlist themselves in the website to reach to their targeted customers and beyond quickly.

- People can book or reserve their schedule through the platform faster and better. It will save their time and effort.
- With quick scheduling facility, people won't have to wait for hours in the clinics or saloons. Plus, they can reschedule their time and even know the opening and closing time of their favorite organization.

Chapter 3

Literature Review

The traditional methodology of web developing is not enough for the market's demands nowadays. Therefore, there are frameworks that make high quality large-scale project development convenient and faster. Regarding this, Laravel emerged as a premier web developing tool for the newbies and even experts.

In this literature review chapter, I will discuss the problems regarding salons and clinics in booking schedule, how Laravel-based websites can solve the problem and research articles on it. It will help to understand the problem with better depth.

3.1 Problems Salons and Their Customers Faces for Booking Schedule:

Militea Jhonson in his research found that small businesses fail at high rates; 51% fail to succeed in business beyond the first 3 years, specially salons and parlors. The failure happens because salon and parlor business owners constantly face implementing new changes to remain updated with the ongoing changes. This is seen in today's scenario of the beauty industry in Dhaka too.

It is an important issue because Beauty is now a USD 10 billion plus industry in Bangladesh, providing employment for an estimated 100,000 people (Akter 2009). Thousands of beauty-care service providers have sprung up all over the country in the last decade (Akter 2008, Akter 2009). They have great facilities within their premises.

However, the beauty industry is yet to adapt with the modern-day facilities to reach their clients. While restaurants have partnered with FoodPanda, Sohoz and other apps for expanding their business area, it hasn't happened with the beauty shops in Dhaka. It is to be noted that

Foodpanda had got over 60000 registered users in its 1st year of launch. It also received 75000+ hits in its smartphone app system.

This information shows that Dhaka people are ready to embrace new online-based services for saving their time and energy. Sadly, the beauty and hair styling shops in Dhaka are not ready to take benefit of this scope. Most of them run an ordinary Facebook page with less than 1000 followers and that's all.

Henceforth they fail miserably to get attention from new customers. It also affects their service quality and customer satisfaction. We must understand that service quality and customer satisfaction are very important concepts that companies must understand if they want to remain competitive and grow. The quality of services provided and customer satisfaction are critical success factors in any business. (Biljana Angelova and Jusuf Zekiri 2011).

Regarding this people's concept on Foodpanda and Pathao in Dhaka city can be used as a measuring scale for the business growth. Their combined orders are over 30000 per day as reported in the thesis paper titled, "E-Business in Organization."

With it all can realize that the beauty industry in Dhaka is in a dire need for a similar platform. But, there's no initiative for it. Thus, it leaves a vacancy and greater opportunity to develop a startup that connects both the salons and its users with a single web-interface.

3.2 Opportunities for Developing a Web Platform with Laravel for Booking System:

The Daily Star reports that smartphone app such as Pathao and Food Panda is used by 20000+ restaurants in Dhaka. It has increased the sales of the restaurants by 35% on average after they were registered in the platform. This shows us the importance of establishing such a system for the beauty shops in Dhaka to connect the general people and the salons closely.

Regarding this, we may take help of Laravel framework. Laravel, a PHP (Hypertext preprocessor) framework, implements the MVC (Model View Controller) design pattern to separate the application logic from the presentation layer. According to the MVC concept, Laravel separates the application logic into three separate components (Saunier 2014, 13). The responsibilities of these three components in the Laravel framework are as follows:

3.2.1 Responsibilities of the Model in the Laravel framework

The Model is a class which represents a database table and the relationship between other models in the application. It is possible to define SQL (Structured query language) relationships like “one to many”, “one to one”, “many to many” inside a model class (Saunier 2014, 14).

3.2.2 Responsibilities of the View in the Laravel framework

The View visualizes the data received from the model through controller or route. For a simple application, application logic to provide data to view component is used inside routes instead of controllers (Saunier 2014, 14).

3.2.3 Responsibilities of the Controller in the Laravel framework

There are two types of controllers, “standard” and “resource” to handle incoming HTTP requests and send the appropriate response. The standard controller handles incoming request from the view component. On the other hand, the resource controller handles API (Application programming Interface) centric HTTP requests (Saunier 2014, 14).

3.2.4 Laravel router for URL mapping

Laravel has a built-in URL rewrite engine which can make a URL short or search engine friendly. The simplest Laravel route accepts a URI (Uniform resource identifier) and closure as shown in Figure 1 (Stauffer 2016, 25).

```
Route::get('foo', function () {  
    return 'Hello World';  
});
```

Figure 1. Simplest form of a Laravel route (Stauffer 2016, 25).

The Router allows the developer to create a route which responds to an HTTP verb. The Laravel router can process six different kinds of HTTP verbs named get, post, put, patch, delete, options (HTTP Routing 2019). The implementation of these HTTP verbs in the simplest form is shown in Figure 2.

```
Route::get($uri, $callback);  
Route::post($uri, $callback);  
Route::put($uri, $callback);  
Route::patch($uri, $callback);  
Route::delete($uri, $callback);  
Route::options($uri, $callback);
```

Figure 2. Available routing methods for six HTTP verbs (HTTP Routing, 2019).

Routes are assignable with middleware (discussed in Section 2.3) which has features such as CSRF protection. HTML (Hypertext markup language) forms which point to post, put or delete routes should have a CSRF protection field. (Gilmore 2015, 147:176)

The Laravel specific feature named middleware filters the HTTP request and response of an application. The HTTP requests are filtered before they reach application logic through middleware. As an example, middleware can restrict unauthenticated HTTP requests for accessing media files of Laravel application. On the other hand, the HTTP response is also

filtered by middleware. As an example, a view counter of a media file can be programmed based on the middleware response (Rees 2014, 176).

3.2.5: Opportunities of Building Aa Salon Booking System With Laravel:

As you see, we will find great scopes to build a booking system for salons and parlors along with their users. It will help them boost their business. Plus, it will be useful for the users to find their favorite hair style within their close locations with ease. Thus, it will make their life easy and hassle-free.

3.3 Comparison of leading solutions:

In Bangladesh this will be the first website where people can book for their favorite salons and parlors. Plus, it will also be the first platform where owners can enlist their salons, parlors and beauty shops along with their services and fees.

3.3.1: DINGG (<https://dingg.app/>)

DINGG is a USA based online booking system and management facility. It allows their customers to book schedule for hair styling and other services. Plus, they work closely with the salon and parlors to help them gain new customers.

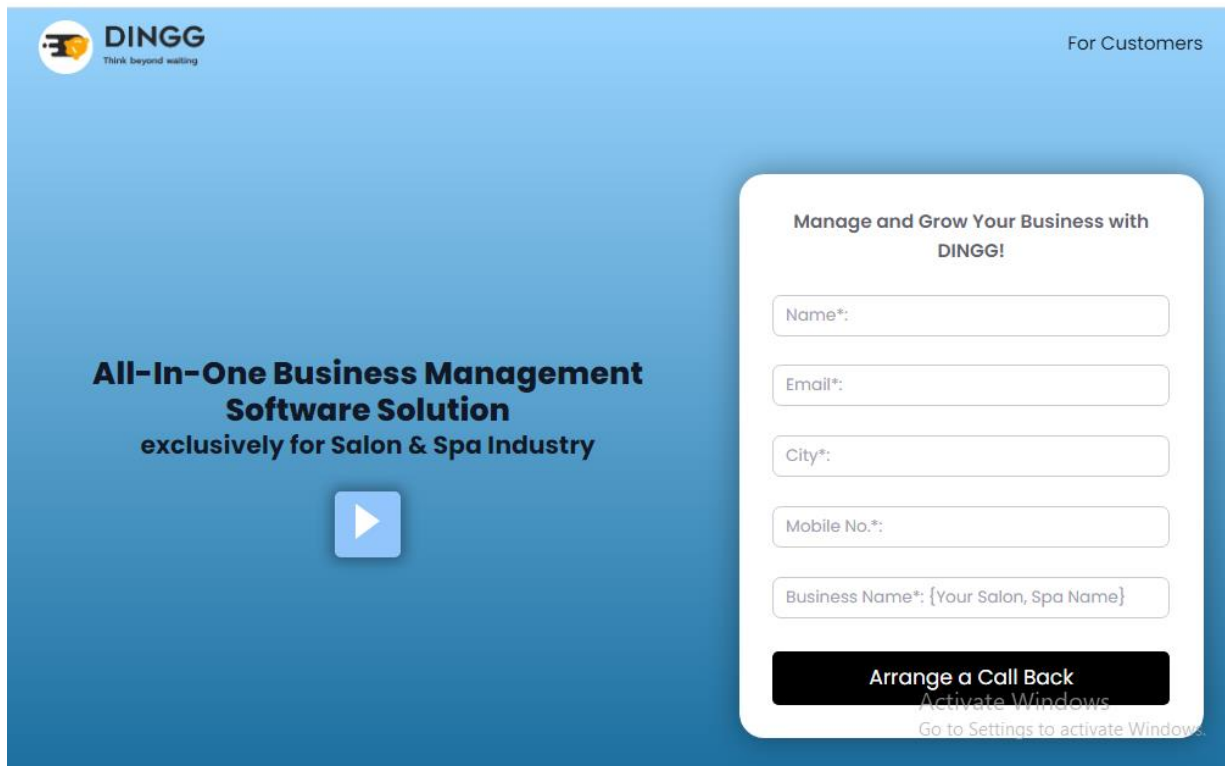


Figure 3: DINGG App

3.3.2 Best Features:

- Location-based searching options for people
- Enlistment of services with fees
- Quick booking and rescheduling facilities
- Easy interface for non-tech-savvy persons

3.3.3 Limitations:

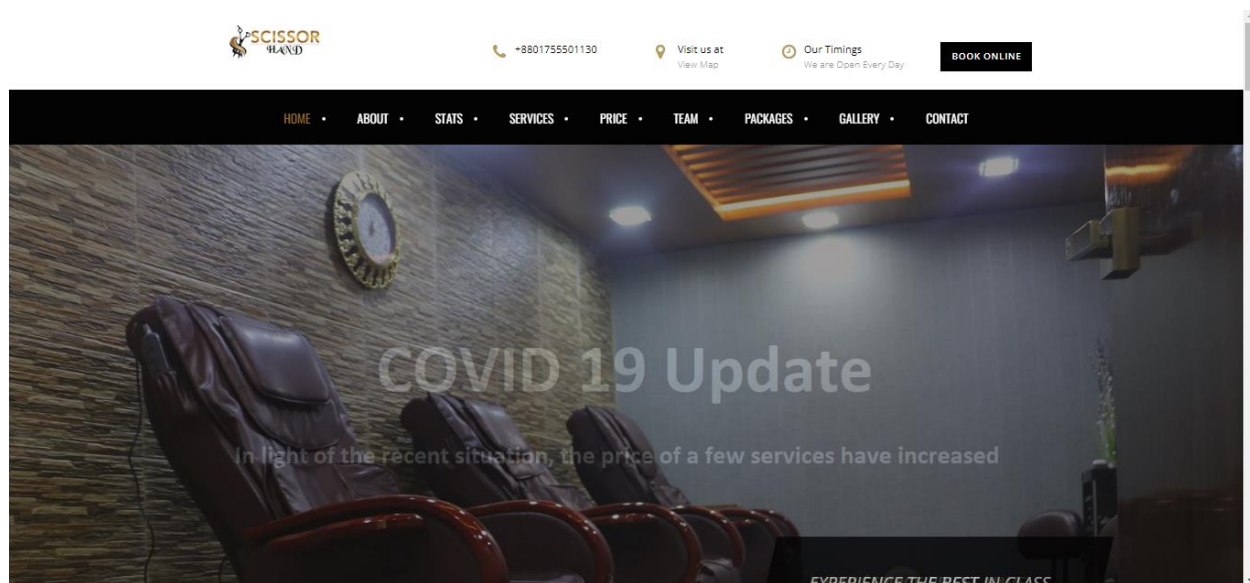
- Confidentiality of the user information
- Small scale project

3.3.4 Recommended approach:

The recommended approach for this project is based on cloud computing and Laravel. The cloud storage will host all the information and Laravel framework will help build the service website for all people. With in-depth research and market analysis, the salon booking system takes a go-slow approach to reach the favorable customers.

3.3.5: Scissor-hand (<https://scissor-hand.com/>)

Get the barber to the client's door as soon as possible, at the time and day they want. Customers may conveniently receive haircuts, shaves and trims, hair coloring, manicures, pedicures, and other salon amenities. Even when clients are really busy at the office and have meetings to attend, work still doesn't get done there.



Best Features:

- Location-based searching options for people
- Enlistment of services with fees
- Quick booking and rescheduling facilities
- Easy interface for non-tech-savvy persons

Limitations:

- Confidentiality of the user information
- Small scale project
- Local saloon can't access

3.3.6: Scissor-hand (<https://www.persona.com.bd/>)

Everyone strives to appear their best, especially when it's party time. The purpose of organizing or attending a party is to socialize with familiar faces and establish new acquaintances. At the same time, you strive to make an impression on other people by your appearance, including how you dress and hold yourself. Knowing that you look stunning with the appropriate cosmetics and a stunning clothing inspires confidence. However, you should be aware that party makeup also has some restrictions and guidelines as you get ready for a night out. Gloss, glitter, and shimmer are the current cosmetics fads. Visit us right away to try Persona's unique makeup.

THE SALON



Best Features:

- Options for individuals to search based on their location
- Recruiting of services for a price
- Quick scheduling and booking options
- Easy interface for people who aren't tech savvy

Limitations:

- Small scale project
- Local saloon can't access
- Only for private service.

Chapter 4

Methodology

This chapter discusses the use of tools for this project, the reason of using it and the justification for it. It helps to explain the project better with further scopes of evaluation, correction and practical improvement in the future.

4.1 What to Use:

For this project of developing a booking system for salons and clinics we will use Laravel framework. Over 1.1 million websites worldwide are built using Laravel (Builtwith, 2019) and this number is continuously growing every day.

It is an opensource platform and is free of cost for users. Thus, it is helpful for startups to initiate their business website through it. Following it, this booking system will also work similarly and use a cloud-based storage for the storing user data.

Dynamic System Development Method (DSDM)

Dynamic system development method is a system to develop rapid application. As Tatya Soft says, it includes simultaneous user involvement through the whole iterative and incremental approach. For building a quality project with always customer feedback, DSDM always follow a proper approach.

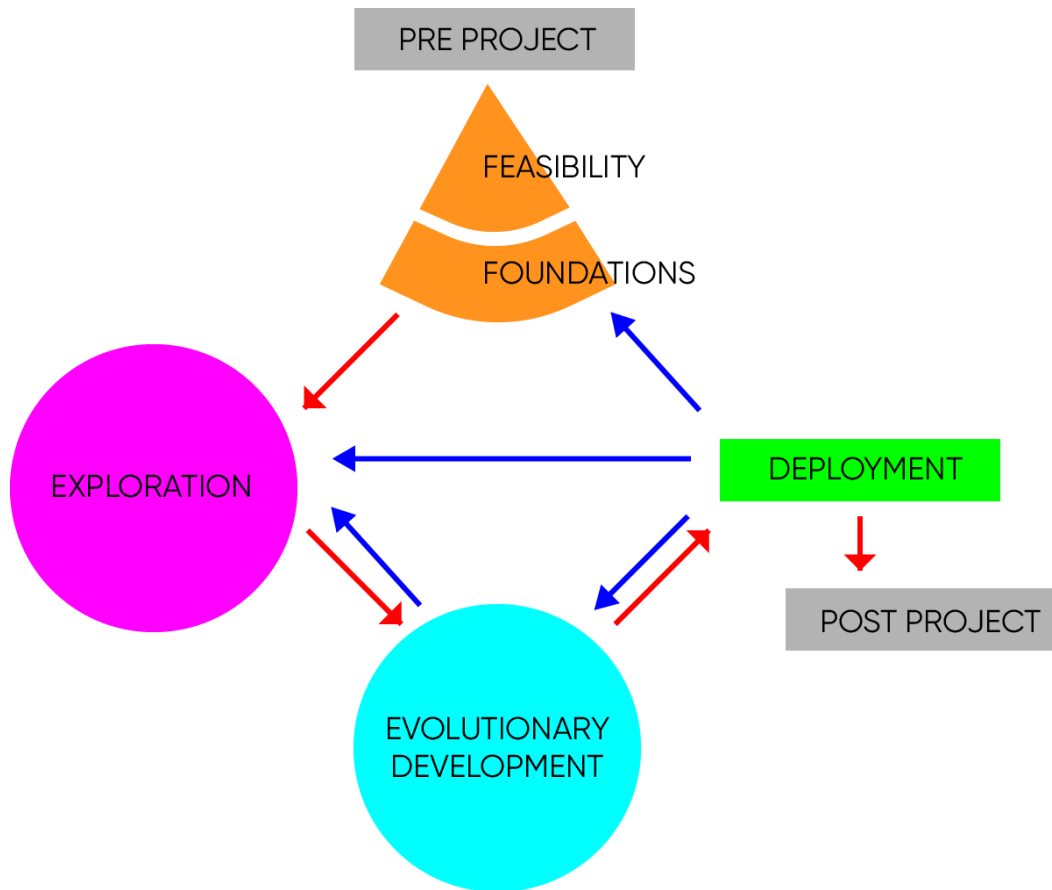


Figure 4: DSDM Methodology

Benefits of DSDM

- Users can understand the development process with their development.
- . Then, it develops the other functions in regular and intermediating period.
- Allow changes and response quickly.

Drawbacks of DSDM

- Time limitation and cost is high.
- Only the senior programmer and developer plays role during the decision-making process.
- Hesitance of the clients and unclarity of the outcome can ruin the entire project soon

4.2 Why Use Laravel:

Being the number one PHP framework, means that Laravel is already a framework with which most web developers are familiar with it. This familiarity helps me to pull up the project in quick time with better understanding of its application. Plus, Laravel offers flexibility in its uses that further helps in developing websites with better UI and UX to attract the audiences more.

Security is the number one concern for most businesses and website visitors. With Laravel, advanced security features are easy to configure on most websites to enhance security and protect sites from hackers and cyber criminals. Comparing it to other PHP frameworks, Laravel has high-quality user authentication. It also allows to create features to restrict. This keeps customer's data safe and secure.

4.3 Methodology Sections:

During this methodology we followed a concrete methodology that typically a web developer follows for their project. It includes:

- Identifying the problem: During this phase I observed and interviewed the salon owners and their clients about the necessity of a web-based platform for their application.
- Project research and planning: At this point I compared between multiple website developing platforms to choose Laravel finally. It is an opensource framework and so, is handy for the students use.
- Prototype creation: I've created a prototype of the website and upload it on a cloud-based system for further testing. Since it was an initial prototype, it had bugs and issues that needed to be sorted later.

- UI design: I also had to put focus on the UI and UX of the platform to make it user-friendly. The UI is simple and user-friendly even for non-tech-savvy persons.
- Front and back-end development: I've to improve the visuals and ensure that it works on all browsers. Presently, the website runs on all browsers, including Google Chrome, Mozilla, etc.
- Testing and Submission: I ran a few tests for securities, compatibility and UI before submitting the project.

4.4 Reasons of Using Laravel for the Salon Booking System:

Laravel is an opensource framework. It enables the construction of large & complex websites with ease and with no cost. All you need to get started is a text editor and PHP.

- Laravel Offers Fast Loads
- Laravel Framework Has High-Security Standards
- Develop a Laravel Website without any cost
- Quick and easy website developing system
- Easy controllers and migrations for all users
- It provides the clients with perfect documentation
- The user support of Laravel is fast, responsive and helpful
- The testing system of Laravel is easy and straightforward

Chapter 5:

Project Planning

In this chapter I'll discuss the project planning and implementation steps in details. It would help people and project manager to understand the procedure thoroughly. Plus, it will be useful to realize how the website development along with problem identification started and went about until the last phase, including testing and acceptance.

5.1 Plan:

Here, I've discussed all the planning and execution chapters using different charts and structures. It helped me break down the project planning and meet the deadlines.

5.1.1 Work Breakdown Structure:

This system allows us to breakdown the entire project into smaller works and complete them within a definite time period. Here you will find the steps I followed to complete the website development project for salons booking system.

Task Mode ▾	Task Name ▾	Duration ▾	Start ▾	Finish ▾
★	Introduction	9 days	Wed 6/1/22	Sun 6/12/22
★	Initial Study	7 days	Mon 6/13/22	Tue 6/21/22
★	Literature review	11 days	Tue 6/21/22	Tue 7/5/22
★	Methodology	5 days	Wed 7/6/22	Tue 7/12/22
★	Planning	9 days	Wed 7/13/22	Mon 7/25/22
★	Feasibility study	9 days	Tue 7/26/22	Fri 8/5/22
★	Foundation	6 days	Sat 8/6/22	Fri 8/12/22
★	Exploration & Engineering	25 days	Sat 8/13/22	Thu 9/15/22
★	Deployment	15 days	Wed 8/24/22	Tue 9/13/22
★	Testing	9 days	Thu 9/1/22	Tue 9/13/22
★	Implementation	7 days	Wed 9/14/22	Thu 9/22/22
★	Critical Appraisal & Evaluation	6 days	Fri 9/23/22	Fri 9/30/22
★	Lessons Learned	10 days	Sat 10/1/22	Thu 10/13/22
★	Conclusion	5 days	Sun 11/13/22	Thu 11/17/22
★?	Totals	122 days		

Figure 5: WBS for the online booking system

5.1.2. Resource Allocation:

The website development project was divided into finding multiple resources for implementation. The main resource, aka, money was provided by me as a project owner. The following diagram will help you understand my resource allocation with details.

SL	Task	Duration	Resource
1	Introduction	7	Analyst, User
2	Initial Study	7	Analyst
3	Literature Review	4	Analyst
4	Methodology	7	Analyst, User
5	Planning	7	Analyst, Team Leader
6	Feasibility	5	Analyst, User
7	Foundation	3	Analyst, Designer, Developer
8	Exploration & Engineering	17	Analyst, Designer, Developer
9	Deployment	13	Designer, Developer
10	Testing	4	Developer, Tester, User
11	Implementation	3	Analyst, Developer, User
12	Critical Appraisal & Evaluation	1	Analyst
13	Lessons Learned	1	Analyst, Designer, Developer, Tester
14	Conclusion	1	Analyst

Figure 6: Resource allocation for the booking system project

Moreover, the following table will help you understand the details of the resources allocated to develop the online booking system.

5.1.3. Time Boxing:

Here, I've breakdown the time and schedule of the project management. As you see the box showcases the allocated time for each task along with the completion deadline. The time boxing is helpful to finish off the project timely following the deadlines.

Time box	Task	Resource
TB1	Introduction	Analyst, User
	Initial Study	Analyst
	Literature Review	Analyst
TB2	Methodology	Analyst, User
	Planning	Analyst, Team Leader
	Feasibility	Analyst, User
TB3	Foundation	Analyst, Designer, Developer
TB4	Exploration & Engineering	Analyst, Designer, Developer
TB5	Deployment	Designer, Developer
	Testing	Developer, Tester, User
TB6	Implementation	Analyst, Developer, User
TB7	Critical Appraisal & Evaluation	Analyst
	Lessons Learned	Analyst, Designer, Developer, Tester
TB8	Conclusion	Analyst

Figure 7: Time chart for the project deadlines

5.1.4. Gantt Chart:

Gantt chart is an excellent way of managing project and meeting the deadlines for timely submission. In this Gantt chart you will see the breakdown of the different phases of the project. It assisted me in fulfilling the timeline against the time boxes and complete the project timely.

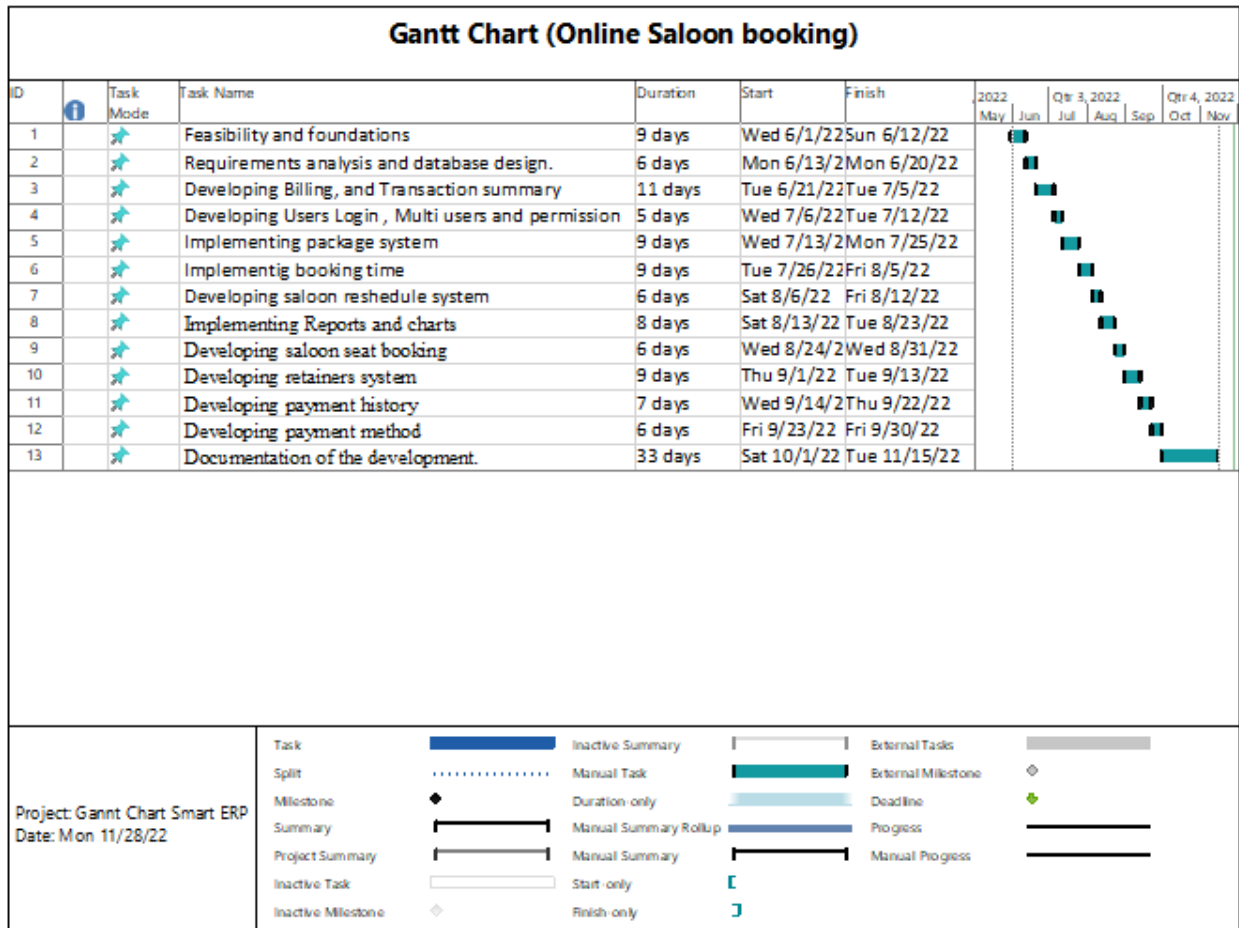


Figure 8: Gantt chart for time allocation in different segment

5.2 Test Plans

Laravel is built with testing in mind. In fact, support for testing with PHP-Unit is included out of the box and a phpunit.xml file is already set up for your application. The framework also ships with convenient helper methods that allow you to expressively test your applications.

In this chapter, I'll suggest you my testing results against different features of this website. It helped me understand how the website and platform worked together to establish better user-experience for convenience and success.

5.2.1 Testing against time boxes:

Laravel provides helpful methods for mocking events, jobs, and other facades out of the box. These helpers primarily provide a convenience layer over Mockery so I do not have to manually make complicated Mockery method calls.

Following the time boxes in our previous section, I ran a few tests for the payment method and maps within the application system using Laravel's mockery test.

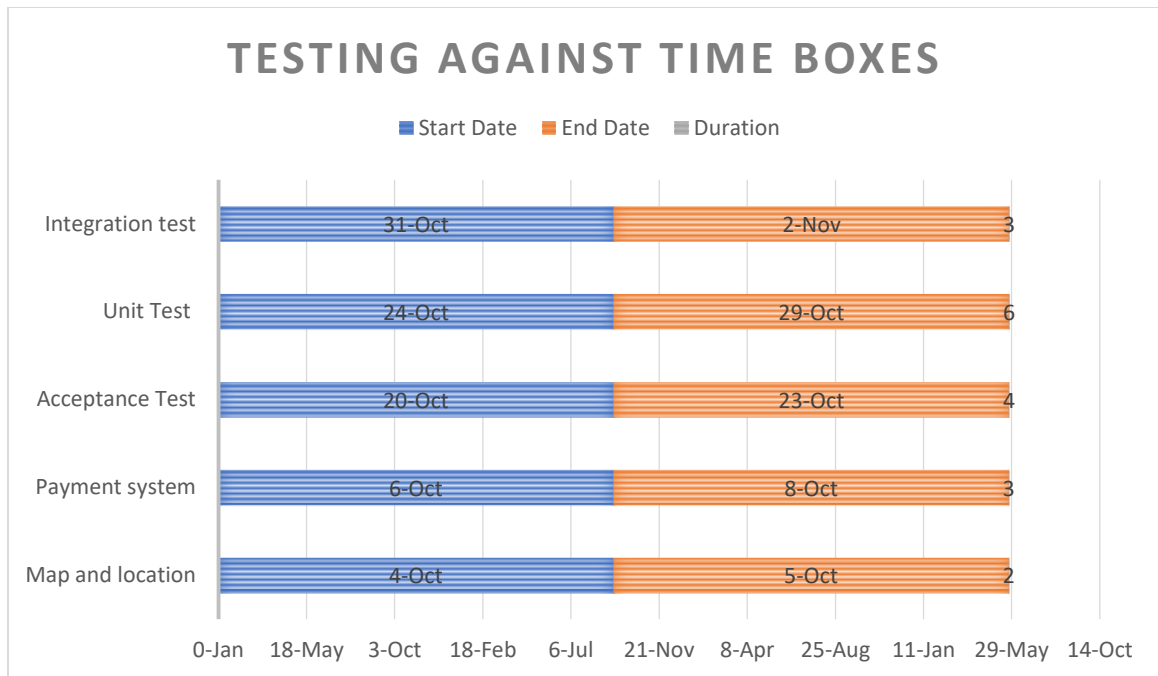


Figure 9: Different testing plans against time boxes

5.2.2 Required tests:

The two required tests for the salon booking system were map and payment system. The map allows the user to search for salons within a specific radius of his current location. It is a beneficial feature for him to find his preferred salon within his location. On the other hand, the payment gateway and system allow the user to pay in different methods for his services. It includes cash or digital payment which I will develop further as the website flourishes.

- **Unit Testing:** It tests the smaller sections of the developed system. We separate units and check them individually. The developer observes single unit input and output to see the expected and actual results.

Test case name	Unit test		
Test class			
Test description			
Data source	Test steps	expected result	Actual result

- Integration Testing: The developer will combine multiple smaller units and test them against the input for the possible output and results.

Test case name	Integration test		
Test class			
Test description			
Data source	Test steps	expected result	Actual result

- System Testing: In this test, the developed system is checked for workability in different systems. It includes Windows, Linux, mobile apps, etc.
- Acceptance Testing: Developers will allow the real users to test the system and take their suggestions to bring any possible changes.

Non-Functional Testing:

- Security Testing: Testing team seeks help from external security checker to test the system and its vulnerability. It checks for all the unauthorized user or access. Also, it ensures protection from external and internal attack including malware, and SQL injections.
- Usability Testing: It ensures that the developed website is user friendly.
- Reliability Testing: It ensures the reliability of the system's operation. It checks and ensures diverse types of failures of a system

5.2.3 Test Case:

There were two test cases taken to check the website functionality. During the test, I ran several map and location tests.

```
locate();

function locate(){
  if ("geolocation" in navigator){
    navigator.geolocation.getCurrentPosition(function(position){
      var currentLatitude = position.coords.latitude;
      var currentLongitude = position.coords.longitude;
      //alert("Current Latitude: " + currentLatitude);

      var infoWindowHTML = "Latitude: " + currentLatitude + "<br>Longitude: " + currentLongitude;
      var html = '<h5 class="text-center">Latitude: ' + currentLatitude + ' ; Longitude: ' + currentLongitude + '</h5>';
      $('#saloon-data').html(html);

      $.ajax({
        type: 'GET',
        url: '/get-saloons/'+currentLatitude+'/'+currentLongitude,
        dataType: "JSON",
        success: function (response) {
          if(response.length > 0){
            var html = '';
            $.each(response, function (key, val) {
              var imagePath = '';
              if(val.image){
                imagePath = '/images/saloons/' + val.image;
              }else{
                imagePath = 'https://dummyimage.com/450x300/dee2e6/6c757d.jpg';
              }

              var phone = '';
              if(val.phone){
                phone = val.phone;
              }else{
                phone = '';
              }
            }
          }
        }
      });
    });
  }
}
```

Figure 10: Location navigation coding for website

As you see from the figure, the navigation option is preferable. On top of it, it is usable from smartphone using their default map and location services.

Another test I ran was for payment system and booking confirmation. It helped me identify the payment method and its problem within the website.

```
<div>
  <form action="{{ route('bookings.confirmationStore', $booking->id) }}"
        class="form-horizontal" method="post">
    @csrf
    <div class="row">
      <div class="col-md-12">
        <input type="text" class="form-control" name="transaction_no" placeholder="Enter payment transaction ID"
              required>
      </div>
    </div>
    <div class="col-md-3 offset-md-9 mt-2">
      <input type="submit" class="btn btn-primary btn-sm">
    </div>
  </form>
</div>
```

Figure 11: Coding for payment gateway

Here in this figure, you can see the coding I used for booking confirmation message. It was a successful run test during my checking time.

5.2.4 User acceptance test plan:

Upon the approval of the website and project, I plan to run a user-acceptance test. I'm optimistic that I would be able to attract the user's acceptance and approval for this booking system of clinics and salons on a larger basis.

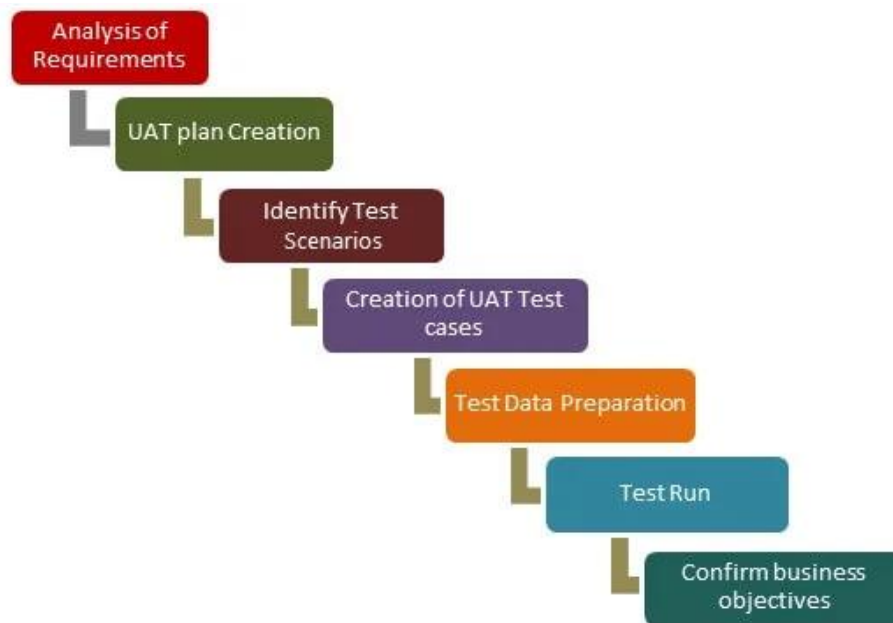


Figure 12: User Acceptance Test Plan

5.3 Risk Management:

Developing a website for salons and clinics booking is dependent on many risk management. It includes competitors, necessity, capacity to develop the website, its acceptance, etc. During this risk management and analysis, I had to identify and assess the possible risk to make the project a successful one.

5.3.1: Risk identification:

During the project I identified a few key risks associated with the online booking system for salons and clinics. As I observed and identified the problems, it helped me prepare a better plan with in-depth market analysis.

- ✓ Identifying people's mindset about online presence and security.
- ✓ People aren't particularly interested in online booking for salons.
- ✓ Trusting issues and payment system concerns
- ✓ People may look for discounts and awards like food delivery apps

5.3.2 Risk assessment:

The website may face a number of challenges where they can take development initiatives for managing their risk well and making the business more profitable and competitive in future.

False verification system:

The website may show the salons active while they are already closed, particularly at night; and takes the order and after making the customer waiting for a while. It can be a problem for the website. they

Lose of transaction:

Sometime the website may lose the record of transaction. When it happens, we need to take quick action. Or else, you will find it rather useless.

Types of risks	Likelihood	Impact	Restore time
False verification system:	6	2	6
Database Error and Destroy	5	5	5
Unauthorized Access	6	6	6
Project Backup	5	6	4
Network Failure	4	4	8

Table 7: Risk assessment

5.3.3 Risk precaution:

During the acceptance test, I took precaution for the possible risks. To minimize the effect of false verification and notification, users will receive a token of appreciation. It will be helpful to cheer up their mood during waiting time. Similarly, for lost transaction we plan to develop a lost and track system and provide our clients with quick refund.

5.3.4 Steps taken for possible risks

Risks are always associated with the website. Hence, it is crucial to minimize the risk and find solution for them. If the right steps can be taken for the risk management, success of the project will increase. To minimize the effect of the possible risk, the following steps were taken:

- Providing token of appreciation for waiting clients
- Ensuring better transaction system and refund policy
- Securing the client data through high-end security programs

5.4: Change Management:

Changes in the management and system of the website are always welcomed. It helps to develop the user-interference and experience thoroughly. Also, with each passing day we have to bring new changes to cope up with the system.

5.4 1: Factors that might cause change:

A few key factors of the salon booking system on Laravel framework includes its navigation system, payment, booking system and gender selections. Also, security is a big concern which sometimes may cause minor and major changes.

5.4.2: DSDM Atern welcomes change:

The DSDM Agile Project Framework is the leading, proven, Agile approach providing the governance and rigor along with the agility and flexibility organizations demand today. The DSDM Agile Project Framework can be used either stand-alone or combined with other recognized methods.

5.4.3: Considering business value:

Every digital marketing effort around our business points directly to your website. No matter where prospects discover your business – in a post on social media or an online article, by recommendation from a colleague or just through browsing the internet – they will come to your website to have a look and validate. Considering that visitors will judge within 0.5 seconds whether they like your website’s look and feel (and want to do business with you) or hit the back button, a great website presence can have a significant impact on your pipeline – and business revenue.

Hence, there's scope to bring changes in the UI, UX and other features of the website, considering the future business prospect.

5.4.4: Change workshop:

For bringing changes in the website, as an organization there's scope to arrange workshop. It will help the people to understand the reasons of the changes required. Plus, it will be helpful for them to know the deadline for the changes and their contribution.

5.4.5: Changes that are allowed:

The approved changes are many. It depends on the project requirement for the salon booking system. It includes:

- Navigational changes
- Payment system
- Booking system
- Overall UI and UX

5.4.5: Key Decision takers of change:

The key decision takes of the possible changes for the booking system will be highly responsible for their works and contribution. These include the project manager and my respected supervisor of the project.

5.5 Quality Management:

The primary goal of the QM plan is to ensure that the project deliverables are of adequate quality and fit-for-purpose. Quality assurance and Quality control is an integral part of the Project Quality Management Plan.

5.5.1: Rules applied to maintain quality:

The relevant methodologies, guidelines should be maintained for following items:

- Standards of Risk Management must be maintained
- Records management, web publishing, information security, privacy, etc.
- Relevant business domain driven standards

Any changes to these standards need be recorded as an issue in the project manager.

5.5.2: DSDM Atern standard quality measures:

The eight principles of DSDM support DSDM's philosophy that "best business value emerges when projects are aligned to clear business goals, deliver frequently and involve the collaboration of motivated and empowered people". Hence, looking at it we maintained standard values to ensure quality and security for the services within this website.

5.5.3 Quality Plan and measuring meter:

In order to fulfil this principle, the teams need to:

- Involve the right stakeholders, at the right time, throughout the project
- Encourage pro-active involvement from the business representatives
- Ensure that all members of the team are empowered to take decisions on behalf of those they represent
- Build a one-team culture

Chapter 6:

Feasibility:

The feasibility test for the website is an important sector to ensure its commercial success. Thus, I run multiple feasibility survey to find whether or not the booking system will be successful or not. It includes interviewing people, finding its necessity and through DSDM PAQ system with details questions.

6.1 Possible feasibility tests:

During the tests and decision-making processes, I had to visit the field several times. I had to consider the market value of the salons, their applications, user's view on the booking system, etc. It helped me in finding the right project and product that would cater the needs of the users who look for parlors, salons and beauty shops.

6.2 Cost Benefit Analysis:

The Daily Star reports that beauty and salon are now a Tk100 crore plus industry, providing employment for an estimated 100,000 women. Some work in top of the range parlors such as Persona, but many more work at smaller establishments set up not just in Dhaka's more exclusive areas, but in poorer areas, small towns and villages throughout Bangladesh.

Following it, website development to assist this sector with quick booking system can help them greatly. Similarly, for each booking system this website will charge TK.25 on average and it could be Tk.2000 daily with 80 bookings per day initially. As the website becomes popular, the booking is estimated to rise to 5000 per day resulting to Tk. 12500. It will be a great startup project as such.

SL no.	Equipment	Year 1	Year 2	Year 3	Total
1	Web based application cost	₹1,12,000	-	-	₹1,12,000
2	Mobile Application cost	₹1,05,000	-	-	₹1,05,000
3	Desktop Application cost	₹1,05,000	-	-	₹1,05,000
4	Domain and hosting Cost	₹20,000	₹20,000	₹20,000	₹1,00,000
5	Employee Expenses	₹40,000	₹40,000	₹40,000	₹2,00,000
6	Other Cost	₹20,000	₹20,000	₹20,000	₹1,00,000
	Total Cost	₹4,02,000	₹80,000	₹80,000	₹7,22,000

Table 8: Possible cost estimation

6.3 DSDM – good or not for this project -PAQ

Project Approach Questionnaire					
Project Name: Online Salon Booking System					
Position: Manager:					
Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
All members of the project understand and accept the DSDM approach (Philosophy, Principles and Practices)		Yes			
The business vision driving the project is clearly stated and understood by all members of the project team	Yes				
All project participants understand and accept that on-time delivery of an acceptable solution is the primary measure of success for the project	Yes				
The requirements can be prioritised and there is confidence that cost and time commitments can be met by flexing the scope of what's delivered.		Yes			
It is possible for the business and solution development members of the Solution		Yes			

Development Team to work collaboratively throughout the project.					
All necessary review and testing activity is fully integrated within the Iterative Development practice.		Yes			
Project progress is measured primarily through the incremental, demonstrable delivery of business value.	Yes				

Table 9: DSDM PAQ survey for the project

As the survey shows, this project is profitable following the DSDM guidelines. Hence, I assure quality and management services through this project of building online booking system.

Chapter 7

Foundation

The foundation chapter will analyze the different stages and process followed to complete the project as a whole. It includes questions for project problem identification, solutions and what people want.

So, let's check this out to understand how I tested different stages and accomplished the project.

- Problem Area Identification:

Salons in Dhaka city operate through traditional methods. People come over here, provide their serial numbers and wait for their turns to come. Also, most salons don't have the charts for different services that put the clients in more concerning problem. Thus, I interviewed people and observed in my location to find its usefulness.

- Interview: I interviewed both salon owners, and people who visits salon for their hair styling jobs. During the interview people suggested that online booking system will be useful for them as it would save their time. Salon owners also suggested that it would save their place from becoming over-crowded.
- Observation: According to my observation, I found that people often get into a chaotic situation within the salons for serials and their service charges. So, a website with booking system and prices for all the services, would help both clients and service providers with better business and comfort.

- Questionnaires: I'd prepared a set of 5 questions. It included whether or not people want the online booking system, will they use it and how they rate the system. Almost 75% people agreed that it would make their hair styling jobs easier. I've attached the questionnaire at the appendix section.
- Rich Picture:

During the project planning and execution, I found that maintaining the stability of the system was a major concern. Plus, I'd to ensure that people find the website user-friendly without any major concerns. On top of it, during my survey I found that people are interested in such booking system.

However, diverting their interest to the website and make people use it is a difficult task. Thus, with over 10000+ salons in Dhaka City, the success of the business model depended on the successful run and marketing of the website. It is estimated that people are keen to use it.

- Specific problem area identification and description:

During the survey and project execution it was found that the salons and its clients face multiple problems. It includes too many people in a tight space as clients came to get their serials. Plus, people often quarrel over a serial number and listing to get their job done.

- Possible Solution:

The possible solution was to provide the clients with a system form where they can book their schedule. As they can fixed the booking on specific time, they can visit the salon timely and get their hair styling done without any waiting. Plus, it would be helpful for the salons to work without any crowd inside their tight spaces.

On top of it, enabling navigation and location-based booking system would help clients quickly find their preferred salons in their locality.

- Overall Requirement List:

The requirement list includes log-in process, booking system enablement, navigator for search within a specific radius and payment gateway. With all these possible requirements fulfilled, it is estimated that we can assure a better booking service for the clients.

- What Technology to be implemented:

To meet the demand of the Dhaka city people for their hair styling a website-based platform is chosen. It is built on Laravel framework and will be helpful to maintain your hassle-free booking facility. Laravel is easy to use with opensource facility. Thus, it is customizable and highly suitable for beginners and startup companies.

- Recommendations and Justifications:

Laravel is based on PHP technology and uses smart syntax that adheres to PSR-4 rules to speed up development. It's ideal for developers because it provides an elegant toolset for a web application with numerous components for managing audience conditions.

Laravel's Model View Controller (MVC) architecture is its foundation, and it can display many database entity instances. It is an open-source framework that allows most developers to use it without restriction. The Laravel framework simplifies several time-consuming and redundant components required for a more quick and secure web application, such as authentication, caching, routing, and so on.

Chapter 8:

Exploration

The exploration chapter will showcase the requirement list and entities of the stakeholders within it. Thus, it will help people understand what you truly need for the successful business model within the selective criteria.

- Old System Use Case:

Use case diagrams are a great tool that can help businesses and developers alike to design processes and systems. During the research, I found that clients and salon service providers are linked through a symbiotic relation. However, with our website developed, it will work as an interlink between the clients and their necessity.

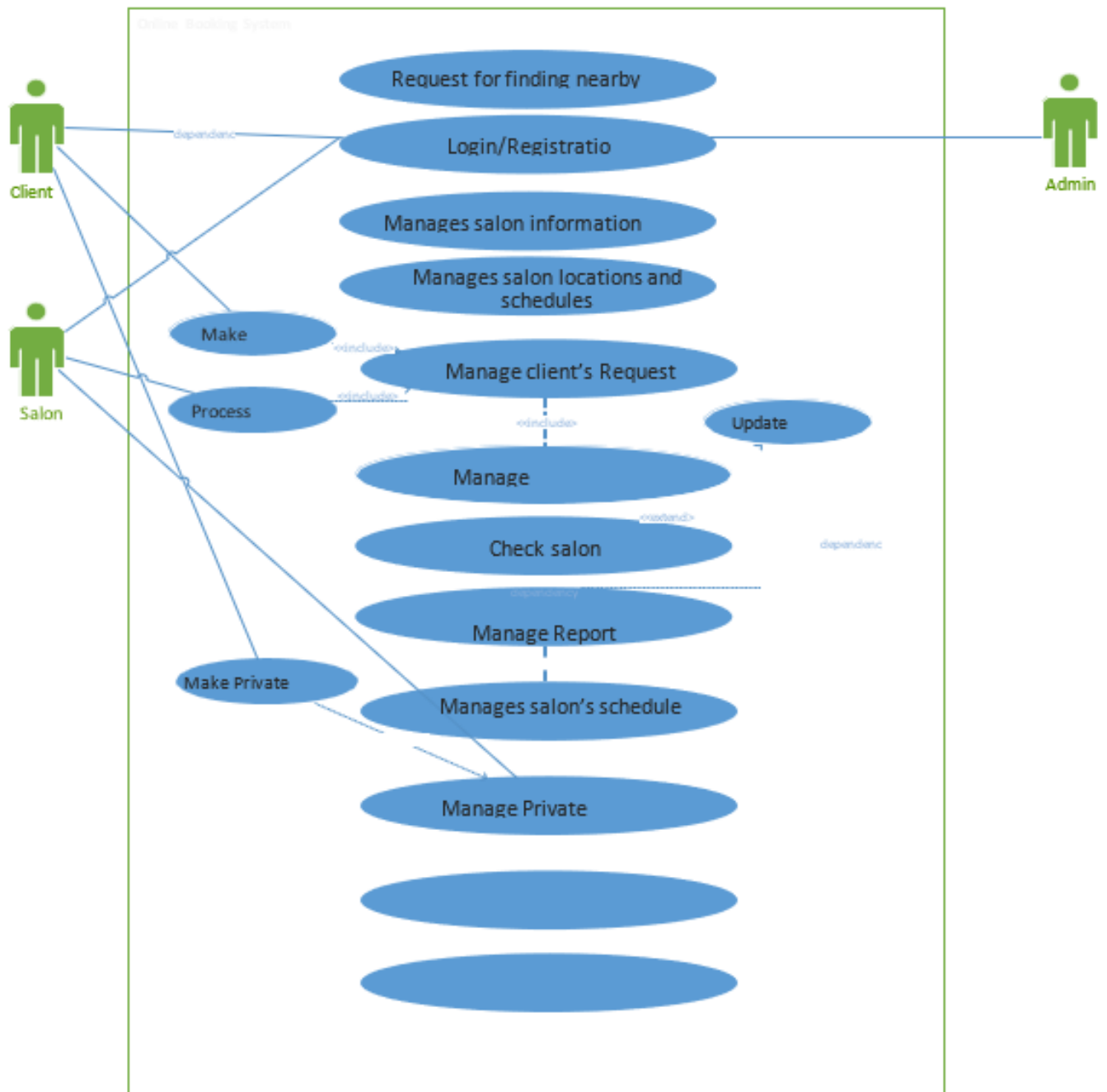


Figure 13: Old System Use Case

- Activity Diagram:

The following diagrams will show you how the system will work through the website. The diagram is based on old system use case.

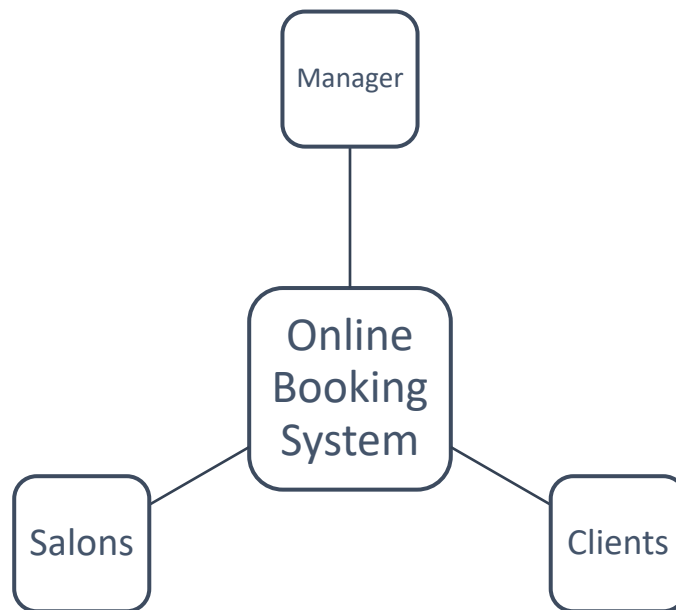


Figure 14: Activity diagram about the website application system

As you see from the list, both salons and clients will be linked through the online booking system. The manager will handle both clients and salons through the website application to meet their demands.

- Full System Use Case:

The full system use case refers a full description of the system. Within this system, it is analyzed how the booking system will work. Once the client files his booking in the website, it will be redirected to the salon with a quick notification. If the salon has empty schedule that

matches the client's one, it will confirm the time. Now, client can visit the salon on his scheduled time for his hair styling job. During payment, a percentage will go to the booking system as a service provider of the system.

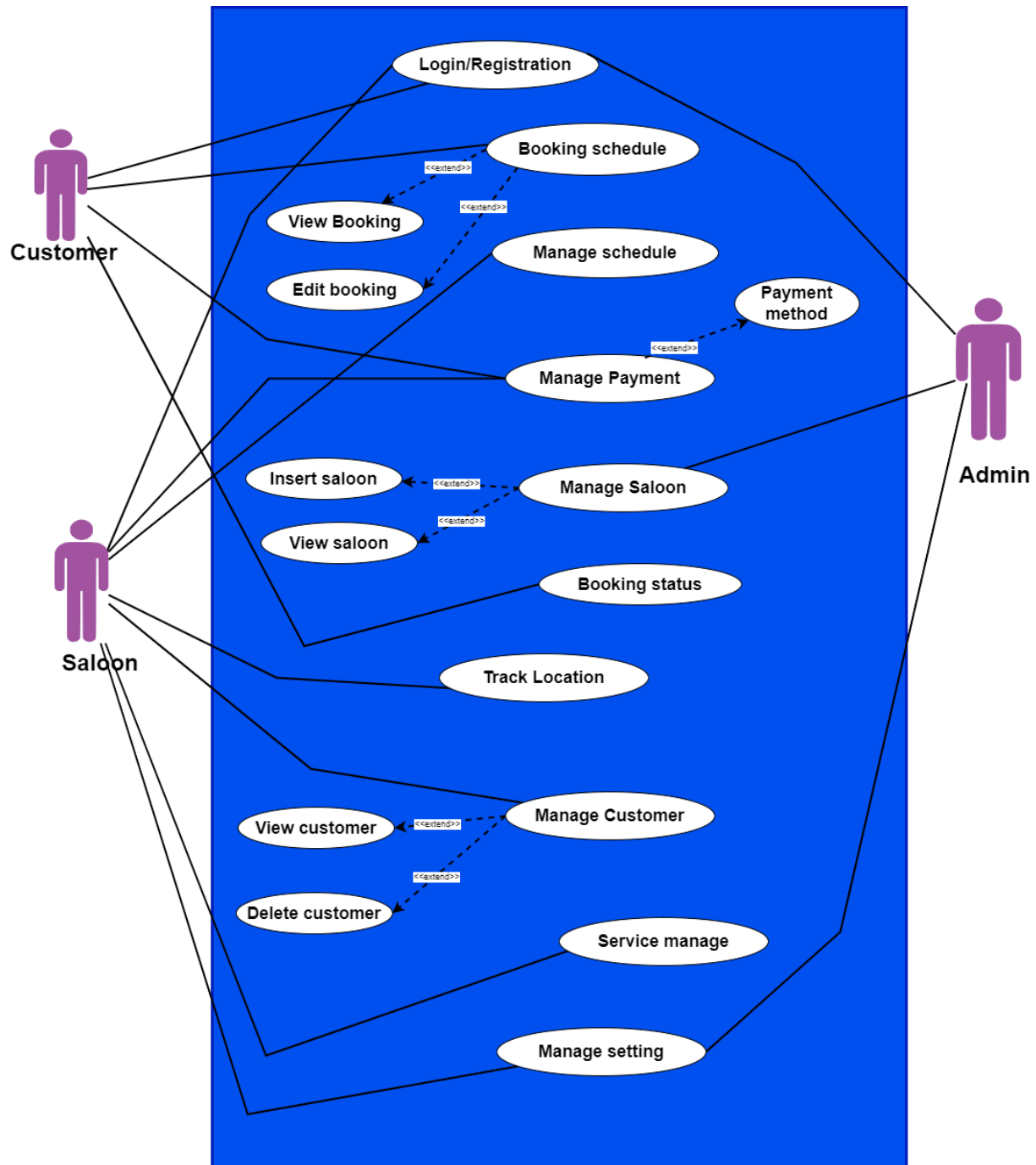


Figure 15: Full System Use Case

- Full System Activity Diagram:

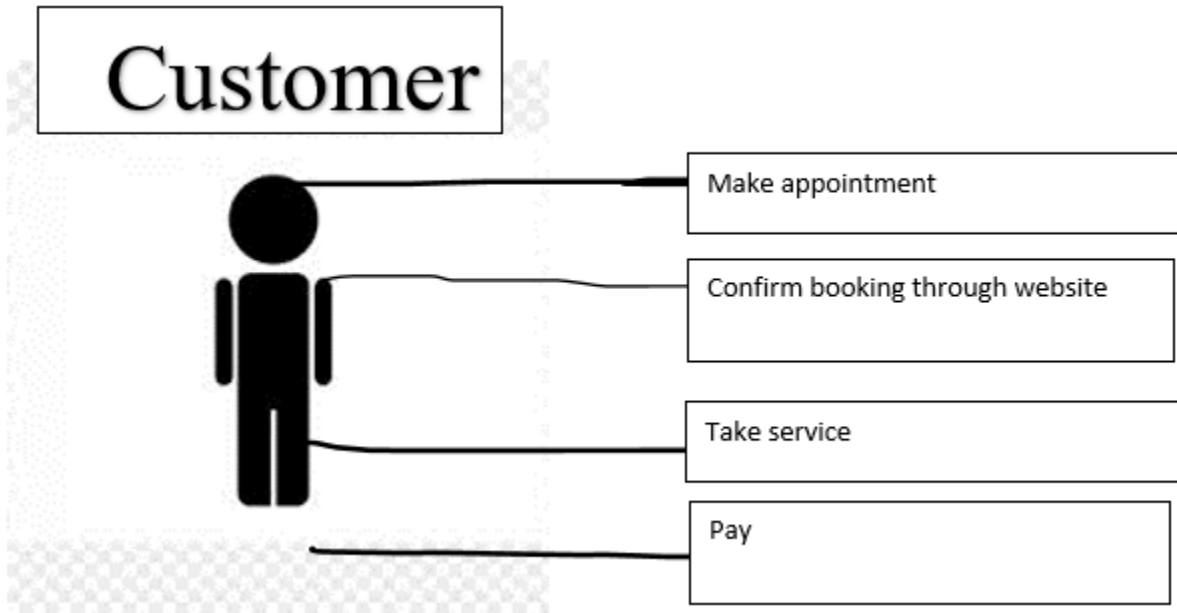


Figure 16: Full system diagram for booking system

Figure 16: Full system diagram for booking system

- Requirement Catalogue:

The requirement list enables us to monitor services and what the project needs. For this online salon and clinic booking system, we have prepared the following catalogue.

Requirement List					
Project Manager	Requirement Description	Requested by	Category	Priority	Acceptance Criteria
Akib Chowdhury	To develop an online booking system for salon, a survey, estimated value and website development essentials.	N/A	Functional and technical	Location navigator, secure payment, quick booking and rescheduling facility	Secure booking system with UI and UX made for non-tech-savvy person.

Table 10: Requirement catalogue for the booking system

- Prioritized Requirement List (PRL):

This list showcases the most important to the least important features of the website. It helps client to know what feature to include and exclude while keeping the cost in mind.

Field Name	Description	Priority List
Project Manager: Akib Chowdhury	He holds the responsibility to complete the website project	
Location map	Clients will use the location and map to find their preferred salon in a specific radius	High
Booking credentials	Users have to provide the required information for registration and booking	High
Booking schedule	Clients will book a specific time for the salons to visit	High
Payment	Payment system needs to add digital options	Medium
Security	Securing information of the clients form third-party	High

Table 11: PRL list to design the online booking system

Prototype of the new system:

Here, I've included a few prototype pages for the system. It will help you know their usability and outcomes better.

Admin Dashboard Prototype:

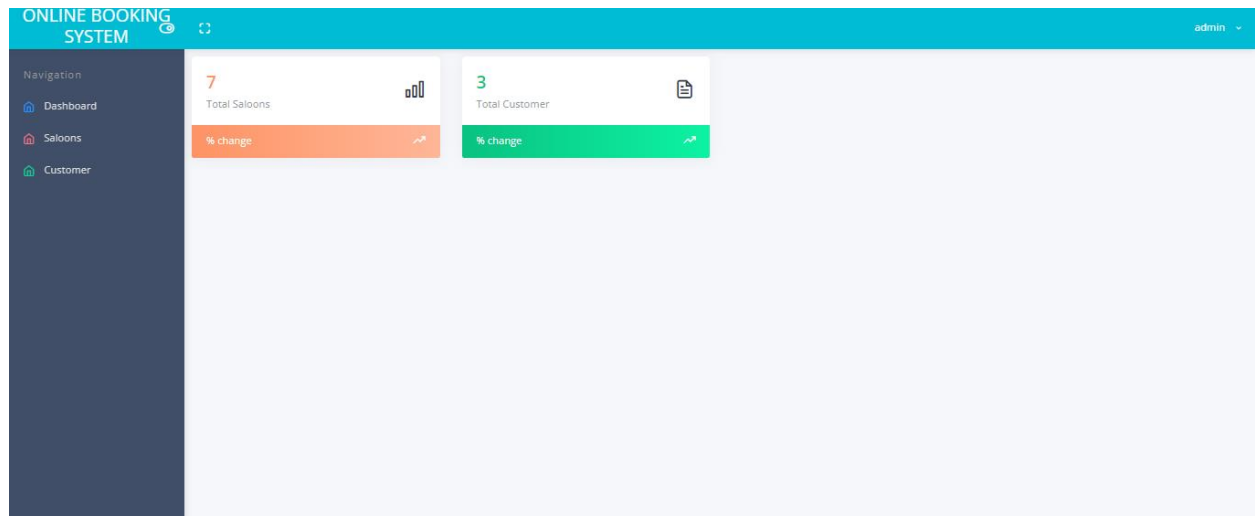


Figure 17: Admin Dashboard

Customer Manage Prototype:

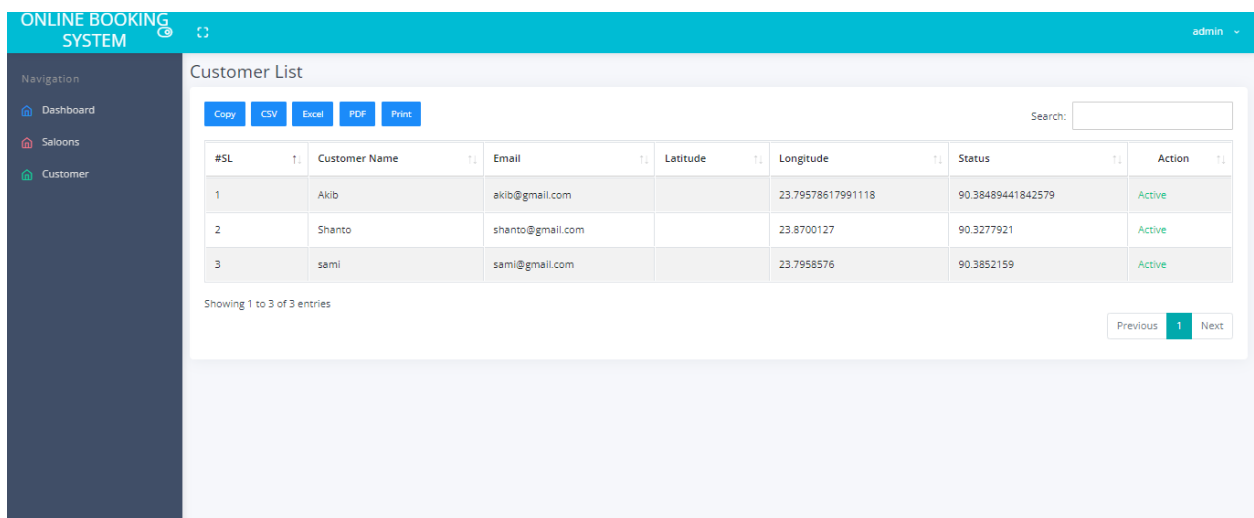
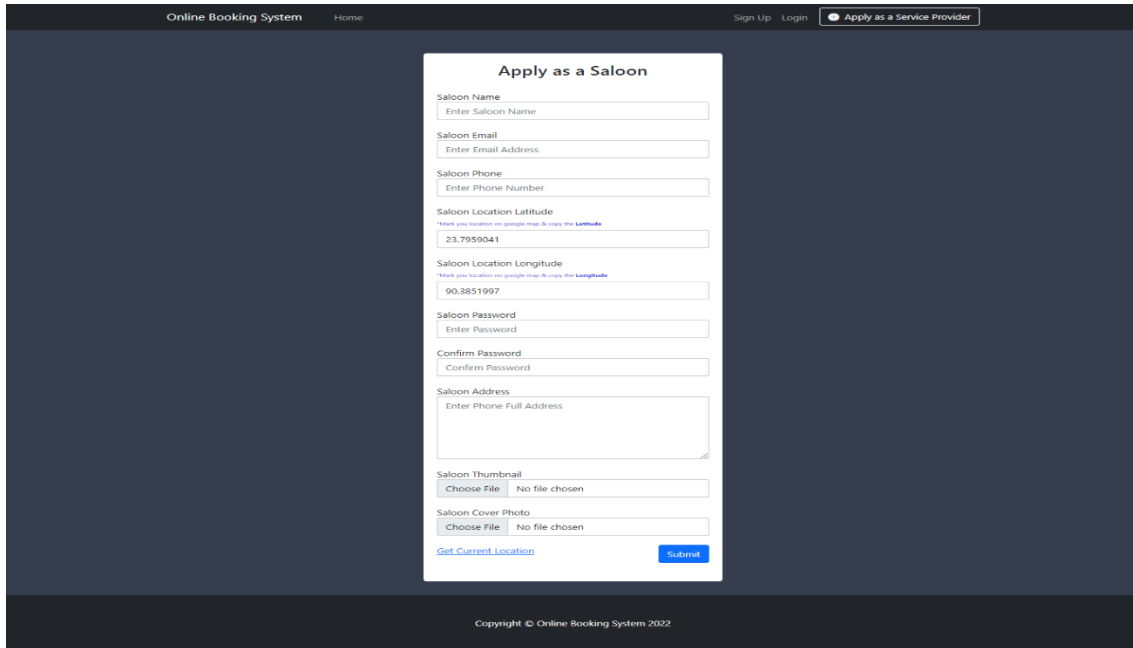


Figure 18: Customer manage prototype

Salon Registration Prototype:



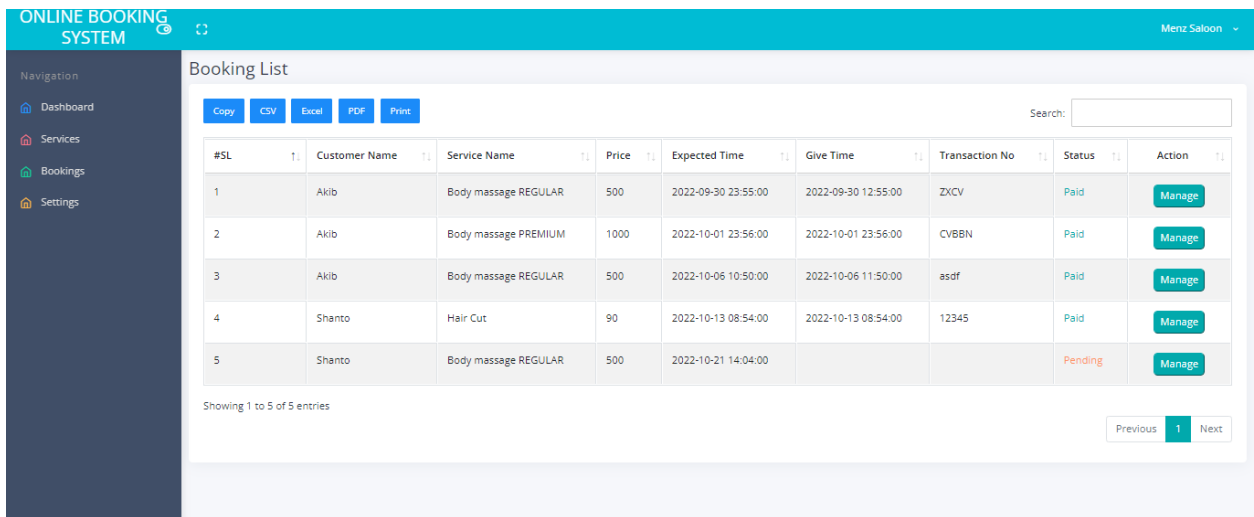
The image shows a web form titled "Apply as a Saloon" on a dark-themed website. The form includes the following fields:

- Saloon Name: Enter Saloon Name
- Saloon Email: Enter Email Address
- Saloon Phone: Enter Phone Number
- Saloon Location Latitude: 23.7959041 (with a link to "Mark your location on google map to copy the Latitude")
- Saloon Location Longitude: 90.3851997 (with a link to "Mark your location on google map to copy the Longitude")
- Saloon Password: Enter Password
- Confirm Password: Confirm Password
- Saloon Address: Enter Phone Full Address
- Saloon Thumbnail: Choose File (No file chosen)
- Saloon Cover Photo: Choose File (No file chosen)

Additional features include a "Get Current Location" link and a "Submit" button. The footer of the page reads "Copyright © Online Booking System 2022".

Figure 19: Salon Registration Prototype

Salon Booking System Prototype:



The image shows a dashboard for the "ONLINE BOOKING SYSTEM" with a sidebar navigation menu and a "Booking List" table. The sidebar includes links for Dashboard, Services, Bookings, and Settings. The "Booking List" table has the following data:

#SL	Customer Name	Service Name	Price	Expected Time	Give Time	Transaction No	Status	Action
1	Akib	Body massage REGULAR	500	2022-09-30 23:55:00	2022-09-30 12:55:00	ZXCV	Paid	Manage
2	Akib	Body massage PREMIUM	1000	2022-10-01 23:56:00	2022-10-01 23:56:00	CVBBN	Paid	Manage
3	Akib	Body massage REGULAR	500	2022-10-06 10:50:00	2022-10-06 11:50:00	asdf	Paid	Manage
4	Shanto	Hair Cut	90	2022-10-13 08:54:00	2022-10-13 08:54:00	12345	Paid	Manage
5	Shanto	Body massage REGULAR	500	2022-10-21 14:04:00			Pending	Manage

Below the table, it says "Showing 1 to 5 of 5 entries" and includes "Previous", "1", and "Next" navigation buttons. The top right of the dashboard shows "Menz Saloon" and a search bar.

Figure 20: Salon Booking System Prototype

User Homepage Prototype:

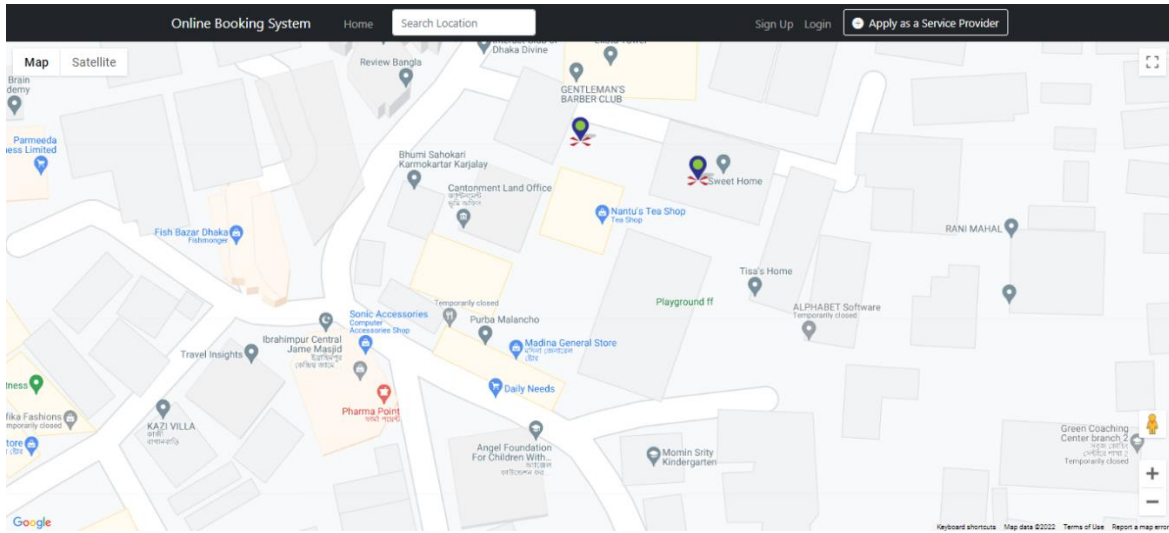


Figure 21: User Homepage Prototype

Chapter 9

Engineering

In this chapter we will talk about the processing and engineering plans for the project. It will showcase the way the stakeholders, their interest, and all the products and inventories were managed during the project.

9.1 New System Modules:

The new system module will cater the need of specific needs of different parts. For this project of online booking system, we used an inventory-based module and mechanism to keep record of all our salons and their facilities that the users can book.

As the project aims to build an online booking system for saloons and clinics, it takes care of different inventories to serve the needs of the clients and shareholders.

To manage the inventory and required data, we took assistance of Shopventory. is a cloud-based SaaS solution that streamlines data within one centralized location. Its multi-channel capabilities serve small- to medium-sized ventures. With it we could track all the booking orders and their progress soon.

- Login module:

SL	User Action	SL	System Action
1	Admin click on the login link	1	User will be shown a login form.
2	Admin will provide login Credentials	2	The system validates the given data.
3	Admin click on login button	3	The system authenticates the admin. And if authenticated then redirected to admin dashboard otherwise send back to login page with error message.

Table 12: Login Modules

- Salon-module:

SL	User Action	SL	System Action
1	Admin click on the requests link	1	Current available slot page will be shown.
2	Salon chose a schedule request and click on the accept button.	2	The system check if salon is eligible to accept the slot and confirm request acceptance.

Table 13: Salon-module

9.2: Use Case

The use diagram showcases how customers contact the admins of the system through their database and books their slot. The booking system then transfers it to the linked salon and they confirm the slot. Finally, the user visits the salon for his stylish tasks and pays the shop for it.

The shop owner then pays a certain percentage to the booking system as a vendor to his customer. This process works in a circle.

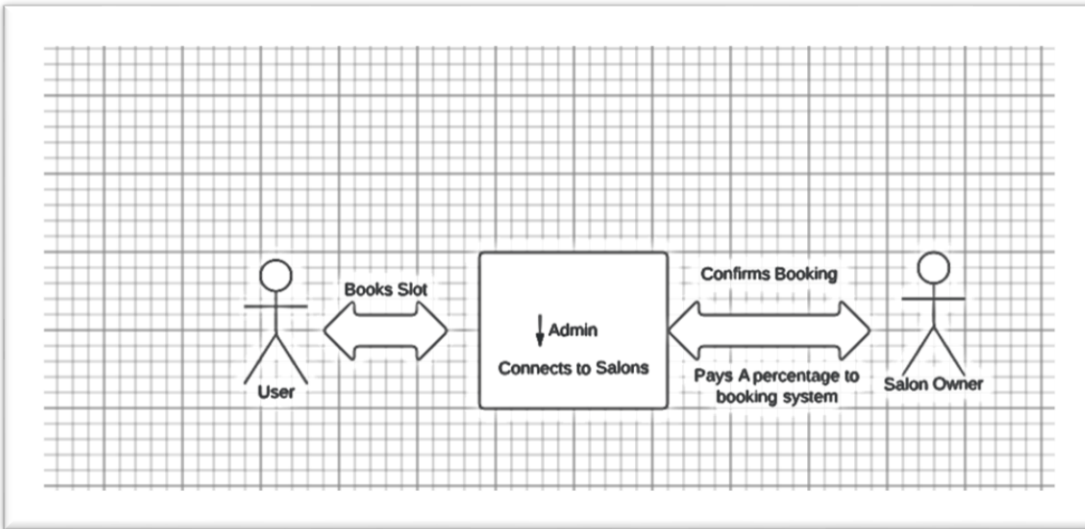


Figure 22: User Case Diagram

9.3 Class Diagram:

A class diagram is a static structure diagram used to show class relationships in object-oriented programming. It is also a good way to show the class structure of a system.

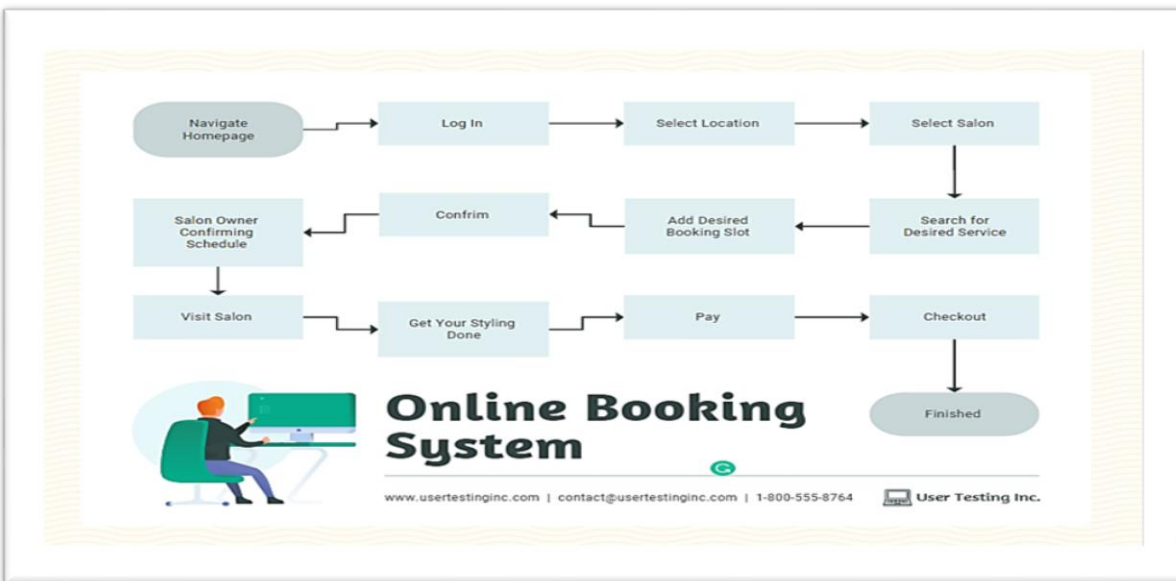


Figure 23: Class Diagram for Online Booking System

9.4: Peter Chen EERD Diagram:

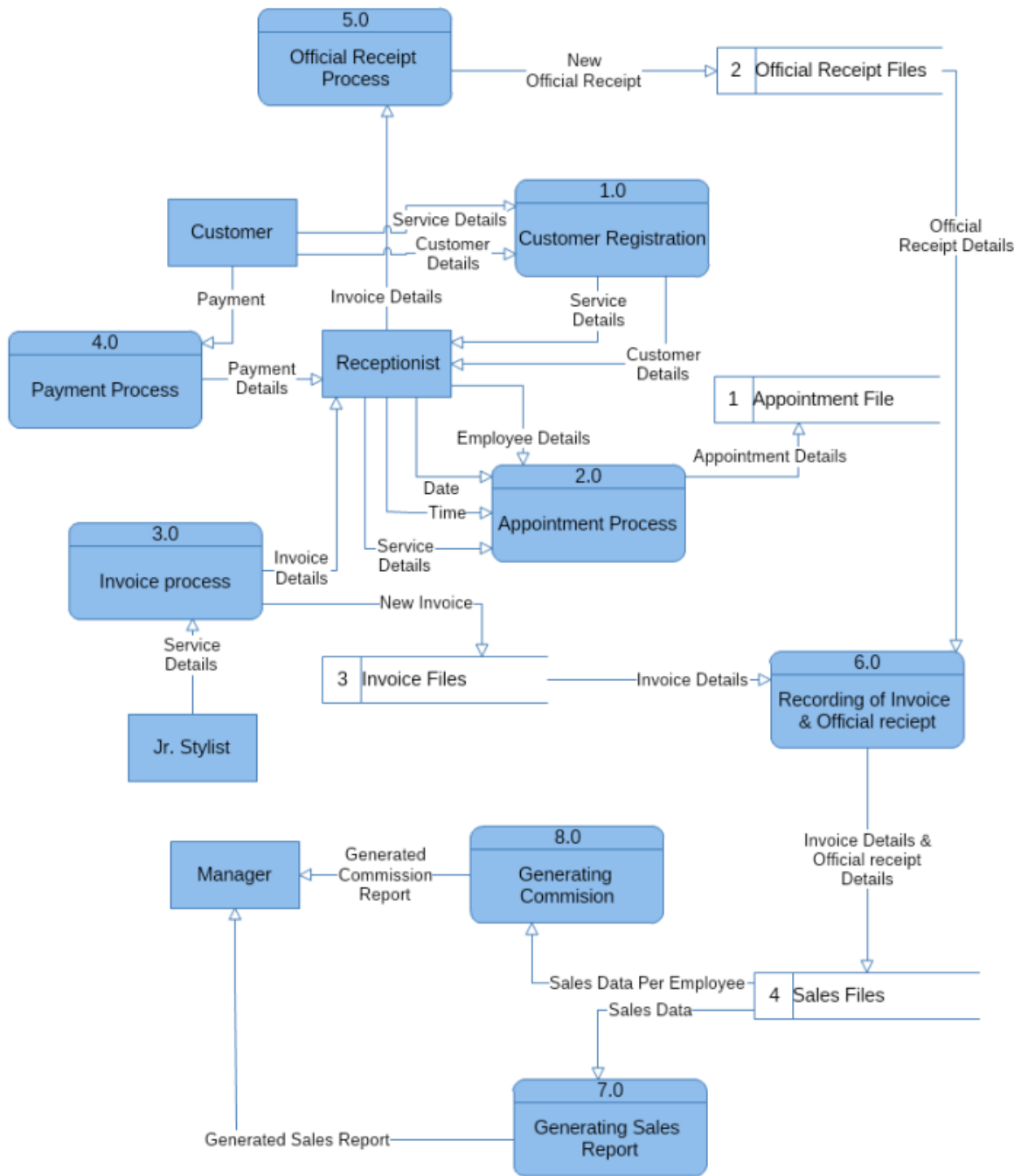


Figure 24: Peter Chen EERD Diagram for Online Booking System

9.5 Sequence Diagram:

The sequence diagram will show the entire process of how this online booking system works to connect the user's and salons through different steps. The messages carried out to complete the full booking function and its associated steps showcase the complexity of the system.

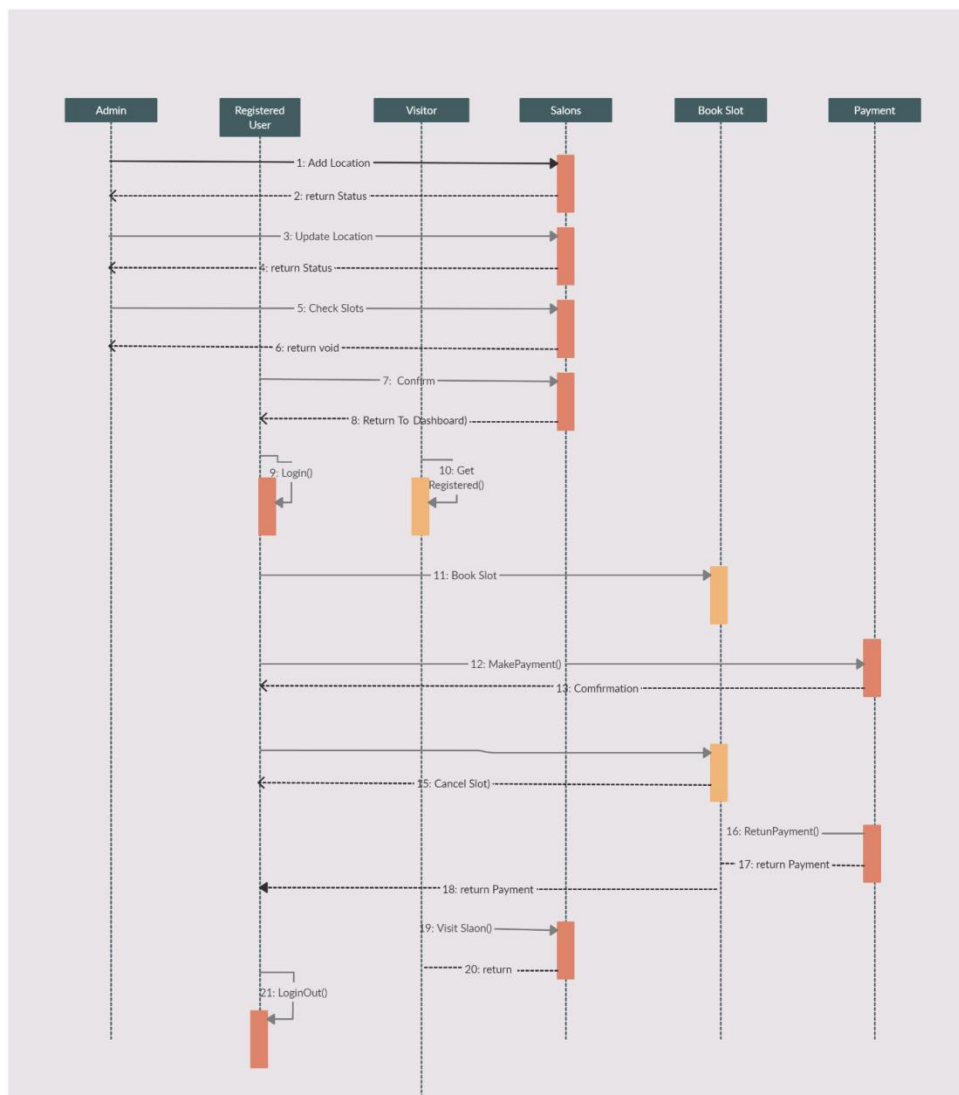


Figure 25: Sequence Diagram for Online Booking System

9.6 Component Diagram:

The component diagram further showcases the process and payment method for every slot users' book in the salons. As you see in the process, the user provides its information and selects location and salon details. Then, he can book schedule and visit the salon to get his hair styling done.

After his order is completed, the user will pay to the server and salon owners will receive his share from it periodically.

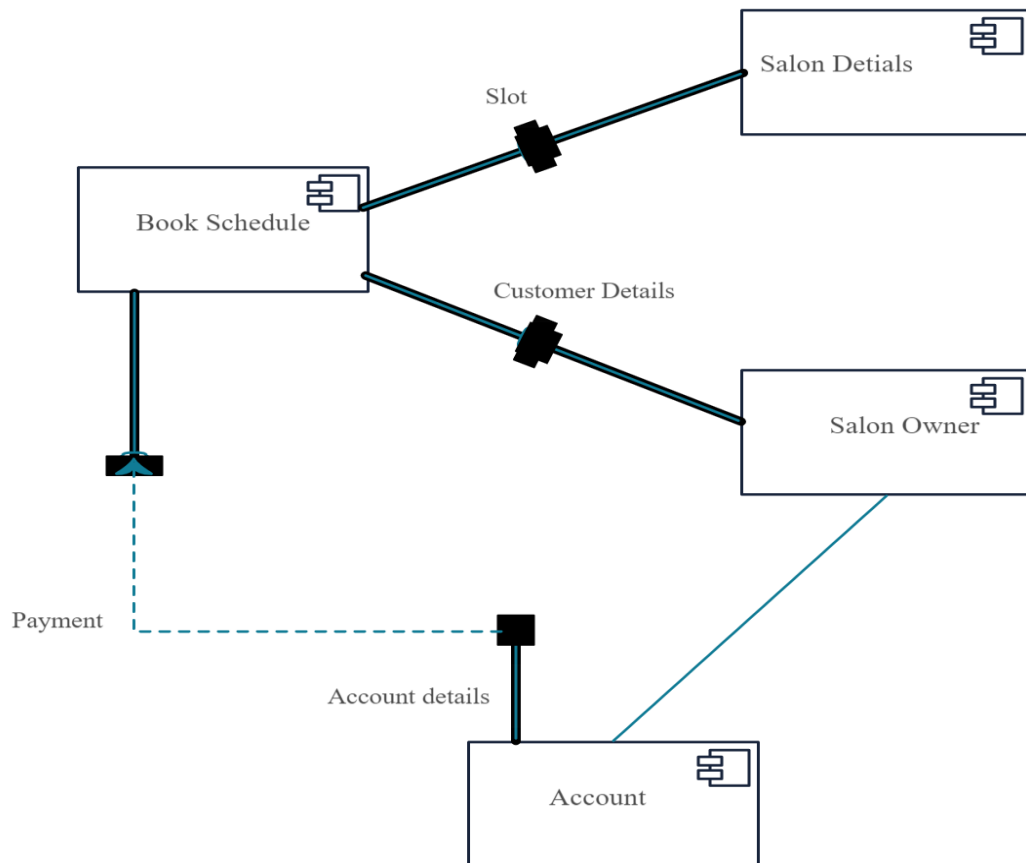


Figure 26: Component Diagram for Online Booking System

9.7: Deployment Diagram:

Deployment diagram showcases the direct relation between the clients with the web-server of the booking system and its application servers. The database server will confirm the slot and print it, if the clients require.

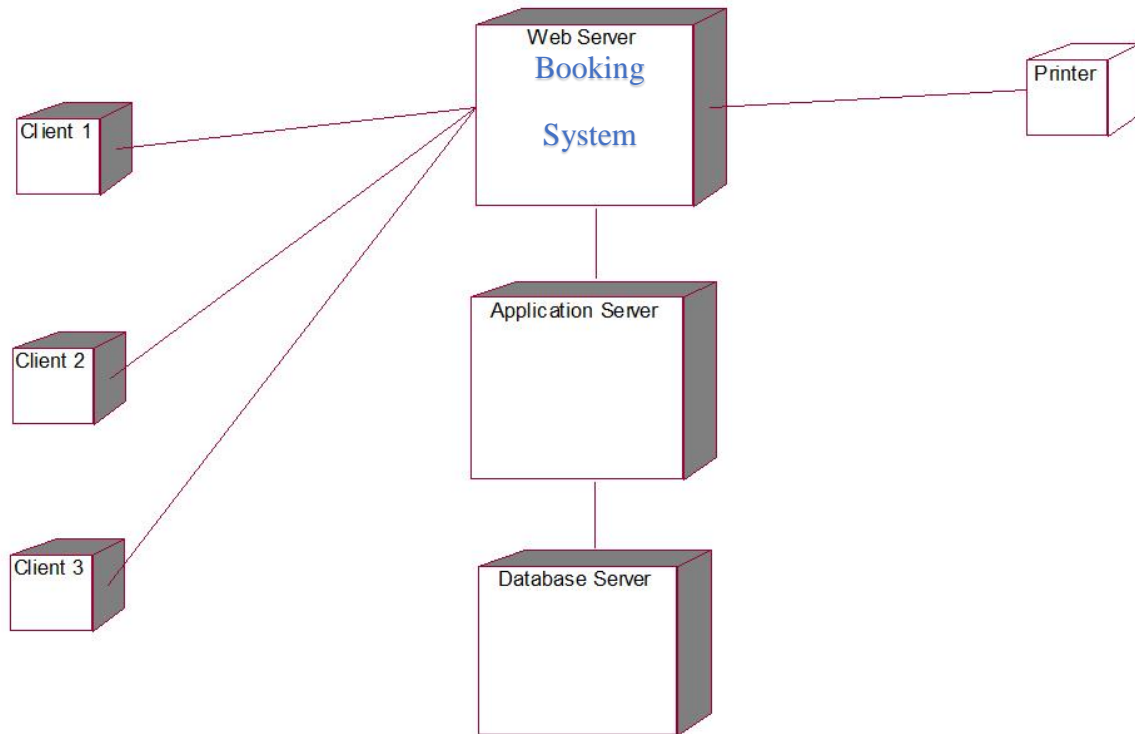


Figure 27: Deployment Diagram for Online Booking System

9.8: System Interface Design:

User interface (UI) design is the process designers use to build interfaces in software or computerized devices, focusing on looks or style. This online booking system has a simple user-interface that everyone can use without any prior knowledge on the booking system.

As you see from the image, the dashboard shows location and salon selection options for the clients. Similarly, salon owners can log in and select their services and edit them with pricing. This way, both the user and salon owners can custom-made their presence in the booking platform.

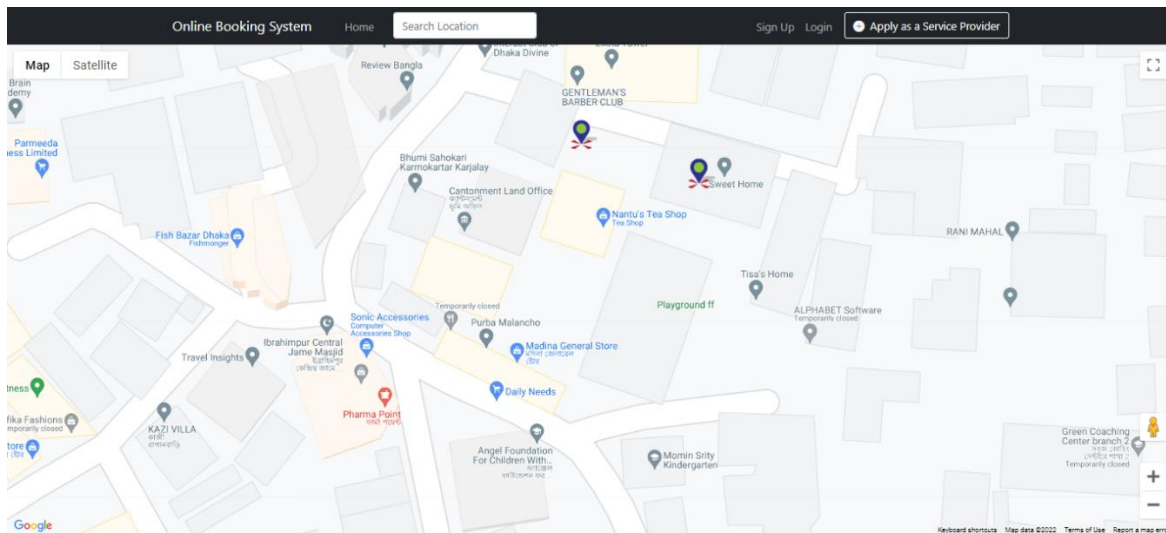


Figure 28: System design for the location tracker of the booking system

Chapter 10

Deployment

Deployment is one of the most important aspects of the software and website development process. It allows the platform to adapt to the changes to meet the clients and users requirement. With proper deployment ideas and mechanism, a website can work faster and better.

For the online booking system, during the project, we examined the possible problems, and gave priority to three to four main aspects. It included, creating an easy UI for the users, improving location finder for the salons and quick loading without delaying the process.

10. 1: Core Module Coding Samples:

Here, you will see a few examples of the core codes we used to create the web-based platform for the online booking system. It showcases you the coding used on Laravel to create this unique salon and clinic booking system for convenient user experience.

```
Crafting application...
Loading composer repositories with package information
Installing dependencies (including require-dev) from lock file
Package operations: 74 installs, 0 updates, 0 removals
- Installing doctrine/inflector (v1.3.0): Loading from cache
- Installing doctrine/lexer (v1.0.1): Loading from cache
- Installing dragonmantank/cron-expression (v2.2.0): Loading from cache
- Installing erusev/parsedown (1.7.1): Loading from cache
- Installing symfony/polyfill-ctype (v1.10.0): Loading from cache
- Installing phpoption/phpooption (1.5.0): Loading from cache
- Installing vlucas/phpdotenv (v3.3.2): Loading from cache
- Installing symfony/css-selector (v4.2.3): Loading from cache
- Installing tijsverkoyen/css-to-inline-styles (2.2.1): Loading from cache
- Installing symfony/polyfill-php72 (v1.10.0): Loading from cache
- Installing symfony/polyfill-mbstring (v1.10.0): Loading from cache
- Installing symfony/var-dumper (v4.2.3): Loading from cache
- Installing symfony/routing (v4.2.3): Loading from cache
- Installing symfony/process (v4.2.3): Loading from cache
- Installing symfony/http-foundation (v4.2.3): Loading from cache
```

Figure 29: Coding example for user log-in

As you see, this coding sample shows the codes used in Laravel to create the log-in menu for the users. With the following codes, we created the log-in interface for the users so they can register to the online booking system and use it.

```
c0ghat@Jesses-MacBook-Pro ~  
└─$ composer global require laravel/installer  
Changed current directory to /Users/c0ghat/.composer  
Using version ^2.0 for laravel/installer  
./composer.json has been updated  
Loading composer repositories with package information  
Updating dependencies (including require-dev)  
Package operations: 0 installs, 1 update, 0 removals  
 - Updating laravel/installer (v1.5.0 => v2.0.1): Downloading (100%)  
Writing lock file  
Generating autoload files
```

Figure 30: Coding used for the salon services

This core module coding samples show the codes used to create the dashboard for the salon owners. It allows them to use the system to enlist their services along with the possible pricing. With it, they can edit, change, delete and add their different services with variable pricing. It also helps the users to know the possible pricing and confirm their booking.

10.2 Possible problem break down:

During the development stage of the Laravel-based online booking platform we encountered a few problems. Hence, we configured out the possible problems so that we can break down in smaller parts and solve them in near future.

- Error in location coding: Initially, the project didn't include locator facility. As we progressed, the project demanded the inclusion of the locator for the users to find the salons near their residence. However, during its coding, we have undergone massive problems due to inefficiency and experience.

- Faulty map and inventory: As we developed the website with locator facility, we encountered with faulty map of the salons. Yes, many salons were seen in the map that weren't in existence in real locations. So, it could create problems for the users to locate and select their favorite clinic or salon near-by.

10.3 Prioritization while developing:

As an online booking service provider, we wanted to make this platform as convenient as possible. Also, we thought about the convenience of the salon owners so they can use the dashboard with ease. It, thus, made us ensuring a simple UI with not so many technicalities.

- ✓ During the development stage of this online booking system, we ensured to make the UI as simple as possible. We understood that most of the salon owners and the people using it aren't so tech0savvy. So, er prioritized to make the UI simple for them.
- ✓ Another focus was to make the system fast and convenient. We understand that a slow-loading website creates impatience among the users. So, we deliberately made the website platform the booking system faster and easier.
- ✓ Our final aim was to make the system secure so users don't worry about their information. It was important so that our stakeholders can use the platform without worries.

Chapter 11:

Testing

Online booking platform development using Laravel was a tedious job. However, it needed quite a few tests so that we know how the system works. Without the testing, it wasn't possible to finalize the system.

Plus, the testing and its results helped us know what to fix. Also, it showed us way to improve the booking system for all. Finally, the different tests assisted us to figure out different faults and bugs and troubleshoot them conveniently.

11.1 Test Plan Acceptance

The Acceptance Test Plan verifies that the final product meets the customer's business requirements. This document outlines the steps required to prepare an Acceptance Test Plan. It also ensures that all components of the system are tested. User Acceptance Testing (UAT) is one of the most important tests companies need to perform before launching a website or product.

During this test plan we focused on a few key elements. It included testing to find the salon location, user's selecting their favorite schedule, and salon owners changing their service list.

11.2 Test Case:

When we planned for the test case, we were concerned about the system passing and failing in different categories. Our focus was to check the log-in success and booking system success for the users.

A Customer Can Log-in and Book His Preferred Schedule in Salons	
✓	Customer log-in facility (Pass)
✓	Customer locator finder (Pass)
✓	Customer locator finder for salons (Failed)
✓	Salon's service enlistment (Pass)

Table 14: Test case for different scenarios of the system

We ran another test on how the log-in platform worked and performed in different scenarios. It includes information log-in success and failures for the users.

Customer Log-in (1)	TC1	Verifying customer with valid username and password can log-in to the system successfully
Customer Log-in (2)	TC2	Verifying customer with invalid username and password fail to log-in to the system and gets error message
Customer Log-in (3)	TC3	Verifying customer want to change password gets notification

Customer Log-in (4)	TC4	Verifying customer's getting error message if forgets to input username or password
Customer Log-in (5)	TC5	Verifying customers can select their location facility

Table 15: Test rest cases and their result with preparation

11.3 Unit Testing:

The Unit Testing is a test that tests each single module of the software to check for errors. This is mainly done to discover errors in the code of the online booking system. The following are the test cases for the Airline Reservation System:

✓ 11.3.1 Test Case 1 – User Login:

During this test we checked the website's performance when user tries to login. We checked how it works with different scenarios.

Incorrect Input	Incorrect username, which is the email-id in the case of the booking system.
Pass Criteria	An appropriate message to indicate that an invalid username has been typed.
Correct Input:	The correct input would be a valid e-mail id of the user and a correct password.

Table 16: Test case for user log-in data

The following three segments for the user-login part was tested. We collected the data and fixed what was required.

11.3.2 TEST CASE 2 – Search And Book Salons

In this segment, we tested the availability of the system when the users search for their preferred salons and tries to book its schedule.

Incorrect Input	incorrect search criteria entered or incorrect format of data entered into the data entry fields of the salon search and booking page.
Pass criteria	A message to the user indicating the wrong entry that he has made in the fields
Correct Input	A correct input into the data entry fields in a correct format.

Table 17: Test case for booking salons

11.4 Module Testing:

Module testing allows us to look for the different modules of the Laravel-based booking platform to see their functions. It has pass and fail criteria. After the unit testing, we ran a few integrated tests. The results were:

- ✓ Verify that users can search for salon by name, and locations.
- ✓ Verify that search results have salon details, and schedule availability.
- ✓ Verify that clicking the salon open its complete details and service lists.
- ✓ Verify that the user should see real time of availability of schedules.
- ✓ Verify user is able to see available service and pricing.

11.5 Integration Testing:

In Integration Testing, the individual software modules are combined and tested as a whole unit. The integration testing generally follows unit testing where each module is tested as a separate unit.

Test Case	Test Scenario	Test Step	Input	Expected Result	Actual Result	Result
TC1	Check URL	Visit the website	Website address	Displaying homepage	Homepage appeared	Pass
TC2	Check sign in	Clicking on sign-in option	N/A	Displaying log-in page	Displayed the log-in page	Pass

Table 18: Result of integration testing for the booking system

11.6 Acceptance Testing:

User acceptance testing (UAT) is a type of testing, which is done by the customer before accepting the final product. Generally, UAT is done by the customer (domain expert) for their satisfaction. For this Laravel-based online booking system, we ran a few acceptance tests.

We were fully convinced with its performance through the module and integrated testing. It achieved the goal we were determined to reach with the website. It has a clean UI and easy browsing options that users could run with ease.

11.7 Security Testing:

A secure booking system protects your data against eavesdropping, corruption, masquerading, and denial of service attacks by using a combination of Public Key Cryptography, Private Key Cryptography, and Hash Function. During the testing, we found the following results:

- ✓ Admin couldn't edit the data input of the salon owners for their services and pricing.
- ✓ User couldn't see the dashboard for the salon owners as it wasn't their concern
- ✓ Salon owners couldn't see the data of the users until they visit their salons for their services.

With all these tests in different criteria, we were confident that the online booking system for salons and clinics will work perfectly.

Chapter 12:

Implementation

The implementation stage for the website-based booking system is important to ensure proper requirements. It includes the training and scaling plans for the online booking system. It is vital for the future of the project and helpful to determine the actual output of the system.

12.1 Training:

Since the online booking system passed all the criteria for launching, it was important to train the employees to be able to run it successfully. Also, it was important to train the Laravel-based platform to perform in different cases. Following it, we tested and trained the platform under extreme conditions before launching so that it can deliver the right output for what it was made originally.

During the training procedure, special focus was given to the security and user-convenience so all of your stakeholders could use the platform with ease. In future, we plan to arrange the training of the system in large scale so that it learns the automation process better. We would arrange different sessions to automate the system with AI for better implementation of its genuine capacity.

SL	User	Training Scope	Time Period	Comment
1	Users or donators	Registering as a donator, updating donation history, ensuring proper donation of blood to the patient	2 Hours	The users are grasping the procedures accordingly.
2	Admin	Add a database for the people need of blood, acquiring donators for specific locations, confirming their actions properly.	1 Hour	Admin easily understands the operations.

Table 19: User-training

12.2 Big Bang:

The Big Bang Model comprises of focusing all the possible resources in the software development and coding, with very little or no planning. As part of this, we implemented our efforts to build this platform for online booking. There's no parallel idea because entire focus was given to this project to make it a big success.

12.3 Scaling:

Currently, the online booking system is designed to work in a limited space. It was tested against a few salons in Mirpur area. In the future, the project manager aims to make it a bigger one and launch it for the entire Dhaka city. With more than 100000 salons in the Dhaka city and its adjacent Savar and Tongi area, scaling up this project is profitable. If the online booking system can reach 80% of these salons and each salon receives 5 orders through the system, soon it will be a million-dollar project.

12.4 Load Balancing:

Load balancing is how administrators route network traffic to different servers. Load balancers evaluate client requests by examining application-level characteristics. For this online booking system we used the Nginx load-balancing software.

The project followed the round-robin method to balance the loads. Since it is in small stage, we could use the simplest method to ensure its load-balancing capacity. So, Nginx with its free trial period was enough to secure the load balancing facility of the online booking system.

Chapter 13

Critical Appraisal and Evaluation

This chapter will discuss the outcome, shortcoming and scopes to improve the online booking system. Also, it includes discussion on the overall performance of the project and its comparison with the actual results.

13.1 Objective that could be met:

In this part, we will discuss the different objectives of the system and how successful it was on those categories. We will also show you the objectives that it missed and could have done better.

- Success rate against each objective:

The main objective of this project was to develop an online booking system to offer both salon owners and customers a common platform like the food delivery services. It was met with 100% success with a few minor issues. Also, the goal to build a simple UI with great convenience was also met.

- How much better could have been done:

There was scope to implement the online booking system on larger area. Also, there're scope to include a significant sampling and develop the system with more conviction. Plus, the location finder for the salons could be improved with higher-degree of accuracy.

- Why it could not be done:

Due to time shortage and not being able to use paid-versions of different online tools, we couldn't meet all the goals. Also, the map accuracy wasn't achieved because we ran it on a pilot-basis without any integrated locator service for the website and booking system.

- Which objectives have been missed:

Initially, we aimed to include the online and mobile-based payment system for the salons. But, this objective wasn't made and we had to include only cash payment directly to the salons. There's no option of online wallet within the booking system and its dashboard, which was another object. So, the system missed it too.

- Why these objectives have missed:

The main reason of failing to include the online and mobile payment systems is the lack of ability to sign agreement with the online money transfer providers. We couldn't reach Bkash, Nagad, etc., companies to be able to include their system within the payment option.

- What could have been done to complete those objectives

It was possible to communicate with the online and mobile banking service providers to convince them to integrate their system within our payment system for the online salon booking platform. Also, we should have tried to include Visa and Master card payment but it wasn't touched either.

- How better are the features of the solution:

The location finding feature of the online booking solution is truly appreciable. It allows the users to use their map and find the closest salons and clinics to book them fast. Also, the confirmation process of the available slot is another useful feature of the system for owners.

- Which features could not be touched:

Initially, the booking system targeted to highlight the available slots for the salons with in a radius of the 5KM for the users. However, none of these features were successfully implemented for some basic and unavoidable reasons.

- Why these features could not be touched:

Due to ignorance in advance coding on Laravel and other platforms, the 5KM radius feature wasn't included. Also, the listing of the available slot wasn't achieved because the salon owners didn't provide with specific slots for the users. They would only agree to confirm the schedule when they were free without any fixed timing.

- What could be done to touch those features

We might have communicated better with the owners to convince them providing multiple fixed slots. However, due to lack of proper communication this feature wasn't included. Also, for the 5KM radius facility for searching from the user-end could have been achieved by implementing advanced location and maps.

13.2 Objectives totally not met:

Like every project, this online booking system failed to meet a few of its primary objectives. For instance, online payment system and wallet facilities were never touched during this project implementation.

- Why it could not be touched:

The main reason of not touching the goals was time limitation and massive workload. Since it is a solo project, I couldn't manage enough time to add the online wallet and payment system through the coding. Also, it needed confirmation from the online money transfer service providers with lawful agreement which wasn't possible within this short period.

- What could have been done:

Maybe working with a team would have made it possible to include the missing features of this online booking system. Plus, a better time management and knowledge on coding would have helped to make the system more secured and functional.

- Including software and documentation:

The main purpose of this software is to simplify the tedious task of finding salons by providing this service online in a user-friendly environment. It also aims at increasing the efficiency and reducing the drawbacks of the existing reservation process, thus making it more convenient for the customers to book the salons when they require. This project is supported by a well-designed DBMS in which the information is integrated together. A friendly UI is also provided so that the searches made by the user give correct results by accessing the information stored in the database.

Chapter 14

Lessons Learned

The project of making an online booking system for clinics and salons using Laravel platform was an amazing learning curve for me. It helped me identify my inner ability and go through the fantastic coding with exceptional brainstorming.

- Pre project – review – closing

It was a long project and I'm happy to finally close it with a sweet note. The project goals were successfully met with excellent help of my project coordinator.

Project Name	Online Booking System Development
Department	Computer Science & Engineering
Project Manager	Akib Hossain Chowdhury
Project Supervisor	Mehedi Hasan
Date	November 10, 2022

Table 20: Project Details

1. Project Description

The project goal is to build an online booking system for the people and connecting them directly with the salon owners. The purpose was to develop a system similar to food-delivery services and make the life of people easy. Also, it would be beneficial for everyone with time and money-saved from going one salon to another to find a free time.

2. Scope Statement:

The scope of the project was massive. With over 100000 salons in the Dhaka city, it gives the online booking system connect the salons with the customers directly. Plus, it can later include the clinics to make the life of the users convenient further.

3. Project Accomplishments:

The accomplishment of the project was a gigantic task. With the location finder and a simple UI, this online booking system could implement its targeted goals quite brilliantly. Also, the testing results were awesome and was close to our expected ones.

4. Project Milestones:

Milestone	Target Date	Completed Date
Problem identification and observation	August 17	August 16
Website development and testing	October 20	October 22
Final testing and submission	November 10	November 10

Table 21: Project Milestones

- What have I learned:

I was a student at a Daffodil University in the CIS department. After 3 and a half years of learning computer science academically, I now had a chance to test my knowledge in the real world through an internship.

I learned that scaling the project makes a huge difference. First, I targeted for how many people I'm going to develop the system. Once I fixed it, I could allot the resources for it with ease. Knowing that the code you write will be read, understood, and improved/changed by someone else (or even yourself) in the future makes you write code that's maintainable.

During my internship, I was assigned to work on a new feature that was to be added to the main project. I wrote the code and tested if it was working the way it was supposed to. It worked perfectly, or so I thought. I deployed the feature to the production confidently, and moved on to work on something else.

- What problem I have faced:

During the project I mainly faced problems with maintaining the huge database and coding with improved security. Previously, I worked with small database and samples that I could store in my computer and find them with ease. However, it wasn't possible with the huge coding and database for the project which was a problem for me.

- What solutions occurred:

I had to maintain strict schedule and develop a management system to find the right information from the massive database. I also had to learn new coding and their implementation process during the project completion.

Chapter 15

Conclusion

The project to develop an online booking system using Laravel was an intriguing one. It fascinated me and also, took my bones out with exceptional commitment. The overall experience with this project and my supervisor was amazing too.

15.1 Summary of the project:

Laravel is an excellent platform to develop any website from scratches. It allows you with different coding languages to make a practically beneficial website for all. Following it, this project of developing an online booking system for salons and clinics is a fantastic one.

Clinics and salons are integral part of our life. However, in Dhaka city these institutions aren't connected with their clients closely. They still have the traditional telephone lines for schedule. With this project, the clients can directly book their preferable schedule from the available slots. Thus, it would save time and money for the people and owners of the salons simultaneously.

15.2 Goal of the project:

The goal of the project was to develop an online booking system that both the user and salon owners can use. The aim was to develop a single platform where the salon owners can list their products and services and general people can select it and book the schedule. It will make the business more profitable without investing money on advertisement for the local salons. Also, people don't need to roam around from one salon to another to find their favorite barber.

15.3 Success of the project:

I'm elated that the project completion is successful and it has achieved the goals. I could develop a useful and practical online booking system. It was also possible to add locator to help the people find their favorite salons using the booking platform.

Henceforth, this project on building a website for salons will connect the salon institutes and the users better. It will save valuable time of the users and help the beauty institutes develop their business faster.

- What I have done in the documentation:

The success of any business, project and thesis depends on the initial study to find the actual problem, what people want and ways to solve them. Following it I initiated a fieldwork-based study in Mirpur area of the Dhaka city. It helped me find out problems of the salon owners in finding their right clients. Similarly, I interviewed people and what they think about finding their right hair styling and beauty organizations.

Moreover, I used simple coding to design a clean UI for the users through the Laravel. I had to learn new coding and their implementation with better practicality and functionality.

- Value of the project:

The Daily Star reports that the salon, hair styling and beautification business is approximately 100 crores in Dhaka. Plus, it is giving employment to 30000 men and 100000 women inside Dhaka and its suburbs.

Hence, with this online booking system the business can become advanced and use modern technology. Also, its expansion with the hospitals and clinics would help people

conveniently book their schedule for the doctors. Apart from the financial aspect, it can potentially save the life of hundreds.

15.4 My experience:

Completing my final year project wasn't as tough as I initially anticipated. After presenting several research project topics, and still no approval, I had to consult my favorite lecturer who finally helped me rework the project topics that was initially rejected. Finally, I got my research project topic approved.

Also, with his close supervision this project on developing an online booking system using Laravel was a brilliant journey for me in the past few months. I learned ways to manage massive database, consulted with my supervisor and a few respectable teachers. I was overwhelmed with their support. Finally, this project completion helped me become a better coder with improved knowledge on coding. I'm thankful for all the support and outcome of this project and wish to continue my journey on becoming a better software developer to bring changes in the life of general people.

Appendix:

Questionnaire For People:

Question 1: Do you think that visiting a salon without booking kills your time?

A. Yes B. No

Question 2: Can an online booking system for salons be developed?

A. Strongly agree B. Agree C. Neutral D. Not agree E. Strongly disagree

Question 3: Will you use online booking system for schedule reservation?

A. Yes B. Not sure C. No

Question 4: Will a centralized booking system for clinics and salons be useful?

A. Strongly agree B. Agree C. Neutral D. Not agree E. Strongly disagree

Question 5: Will online booking save your time and work better than traditional system?

A. Strongly agree B. Agree C. Neutral D. Not agree E. Strongly disagree

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