



2024

# SULOCHANA SALOON WEBSITE

Prepared by:

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Prepared for:

**Sulochana Saloon**





## Project Proposal

HD in Computing & Software Engineering

CSE5015 Computing Project Proposal Approval Sheet

Student Use only;

Group Name	H.T. Upetha Laksiluni	Attempt No	
Title of the project	Sulochana Saloon App		
System platform	<div><div></div><div></div><div>.....</div></div> <div>Web Application Application      Mobile Application .....</div> <div><div></div> Desktop</div>		
Technology	Android App Development		
Programming methodology	<div><div></div><div></div><div></div></div> <div>Structured System Analysis and Design Methodology Object Oriented Analysis and Design Methodology</div>		
SDLC	Agile Methodology		



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Student No	CL/HDCSE/CMU/114/70	Full Name	H.T. Upetha Laksiluni
<p>Roles &amp; Responsibilities;</p> <ol style="list-style-type: none"><li>1. Project Manager<ol style="list-style-type: none"><li>a. Project planning and timeline management</li><li>b. Resource allocation</li><li>c. Client communication</li><li>d. Sprint planning and backlog management</li><li>e. Risk management</li><li>f. Stakeholder reporting</li></ol></li><li>2. Frontend Developer<ol style="list-style-type: none"><li>a. Implement responsive UI designs</li><li>b. Create interactive client-side features</li><li>c. Build admin and client dashboards</li><li>d. Ensure cross-browser compatibility</li><li>e. Implement form validations</li><li>f. Create dynamic data visualizations</li><li>g. Optimize website performance</li></ol></li><li>3. Backend Developer<ol style="list-style-type: none"><li>a. Design and implement database architecture</li><li>b. Create RESTful APIs for data handling</li><li>c. Implement authentication and authorization</li><li>d. Handle file uploads and processing</li><li>e. Create appointment scheduling system</li><li>f. Implement notification system</li><li>g. Database optimization and security</li></ol></li><li>4. UI/UX Designer<ol style="list-style-type: none"><li>a. Create wireframes and mockups</li><li>b. Design user interface components</li></ol></li></ol>			



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- c. Ensure consistent design language
- d. Create responsive layouts
- e. Design user flows and interactions
- f. Ensure accessibility standards
- 5. QA Engineer
  - a. Create test cases and test plans
  - b. Perform functional testing
  - c. Cross-browser compatibility testing
  - d. Security testing
  - e. Performance testing
  - f. User acceptance testing coordination
- 6. Database Administrator
  - a. Database design and optimization
  - b. Data backup and recovery
  - c. Security implementation
  - d. Performance monitoring
  - e. Query optimization
  - f. Database maintenance
- 7. System Administrator
  - a. Server setup and configuration
  - b. SSL certificate management
  - c. Server maintenance and updates
  - d. Backup management
  - e. Security implementation
  - f. Performance monitoring



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### System Functionality:

User Role	Feature	Function	Description
Client	Authentication & Profile	User Login	Allows users to log into their accounts.
		User Registration	Enables new users to sign up.
		Password Reset	Users can reset their passwords if forgotten.
		Email Verification	Ensures users verify their email addresses.
		View Profile Details	Displays user's profile information.
		Edit Profile Information	Allows users to update their profile.
		Change Password	Enables users to modify their password.
Client	Appointments	Book New Appointment	Users can schedule a new appointment.
		Select Services	Choose from available services.
		Choose Date & Time	Select a convenient date and time.
		Select Stylist	Pick a preferred stylist.
		Add Special Instructions	Provide specific requests for the appointment.
		View All Appointments	Users can see a list of all their bookings.
		View Appointment Details	Check details of a specific booking.



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		Cancel Appointment	Users can cancel an appointment.
		Mark Appointment as Complete	Users can mark their appointment as completed.
		Track Appointment Status	Check appointment progress.
		Appointment Confirmation	Confirms an appointment after booking.
		Get Booking Details	Displays booked appointment details.
Client	Notifications	View All Notifications	Users can see all notifications.
		Read/Unread Status	Mark notifications as read/unread.
		Real-time Updates	Receive instant notification updates.
		Click to Navigate	Open the relevant page upon clicking the notification.
		Filter Notifications	Sort and filter notifications as needed.
Client	Feedback	Submit Feedback	Users can submit their feedback.
		Rate Services	Rate services after an appointment.
		Validate Feedback	Ensure feedback meets requirements before submission.
Admin	Dashboard & Analytics	Overview Statistics	View key statistics about business operations.
		Recent Activities	Display latest updates and user activities.



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	Appointments Management	Appointment Analytics	Generate insights based on appointments.
		View All Appointments	View all scheduled and past appointments.
		Filter by Date/Status	Search and filter appointments.
		Approve/Reject Appointments	Admin can accept or decline bookings.
		Add Notes	Admin can attach notes to appointments.
		Update Status	Change the status of an appointment.
		View Appointment Details	See complete booking details.
Admin	Service Management	View All Services	Display available services.
		Add New Services	Create and offer new services.
		Edit Service Details	Update service details and pricing.
		Enable/Disable Services	Toggle the availability of services.
Admin	Staff Management	Add New Stylists	Add new stylists to the system.
		Edit Stylist Details	Update information about stylists.
		Manage Availability	Set the availability of each stylist.
		View Stylist Performance	Monitor stylist performance.
		Block/Unblock Stylists	Temporarily disable stylists if needed.
Admin	User Management	View All Users	Access a list of all registered users.
		User Details	View detailed user information.



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		Booking History	View all appointments made by a user.
		Block/Unblock Users	Restrict access to users if necessary.
		View User Feedback	Admin can review submitted user feedback.
Admin	Notifications	View All Notifications	See all system notifications.
		Read/Unread Status	Mark notifications as read/unread.
		Real-time Updates	Get instant updates on activities.
		Click to Navigate	Notifications link directly to relevant pages.
		Filter Notifications	Organize and search notifications.
Shared	Database Operations	Database Connection	Manage connection to the database.
		Query Execution	Execute SQL queries.
		Transaction Management	Handle multiple related operations.
		Error Handling	Log and manage database errors.
Shared	Authentication	validateLogin()	Validate user login credentials.
		checkSession()	Check if the user is logged in.
		handleLogout()	Log users out of their account.
		resetPassword()	Allow users to reset their password.
Shared		createNotification()	Generate new notifications.





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	Notification System	getUnreadCount()	Get the count of unread notifications.
		markAsRead()	Mark a notification as read.
		getUserNotifications()	Fetch user-specific notifications.
Shared	File Handling	uploadImage()	Upload files and images.
		resizeImage()	Resize images for optimal storage.
		deleteFile()	Delete uploaded files when needed.
		validateFileType()	Check file types before upload.
Shared	Appointments (JS)	validateBookingForm()	Validate appointment details before submission.
		updateTotalPrice()	Dynamically update the total price based on selected services.
		checkAvailability()	Ensure a stylist is available for the appointment.
Shared	Client Notifications (JS)	checkAvailability()	Check for new notifications.
		updateNotificationCount()	Display the number of unread notifications.
		clickNotification()	Open related page on notification click.
Shared	Admin Appointments (JS)	handleStatusUpdate()	Admin updates appointment status.
		filterAppointments()	Allows admins to filter appointments by date, stylist, etc.
		generateReports()	Generate reports based on appointment data.



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<p>Status:Approval Status: Approved / RejectedApproved / Rejected</p> <p>Date of the status:Date of the Status:</p> <p>.....</p> <p>.....</p> <p>Approved by:</p> <p>.....</p> <p>.....</p>		.....		.....
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Cardiff  
Metropolitan  
University

Prifysgol  
Metropolitan  
Caerdydd

### Assignment Cover Sheet

Qualification		Module Number and Title
HD in Computing and Software Engineering		CSE5013 Computing Project
Student Name & No.		Assessor
CL/HDCSE/CMU/114/70- H.T. Upetha Laksiluni		Mr. Chathura
Hand out date		Submission Date
2024/09/20		2025/03/15
Assessment type Coursework	Duration/Length of Assessment Type Practical project/report	Weighting of Assessment 100%

### Learner declaration

I certify that the work submitted for this assignment is my own and research sources are fully acknowledged.

Marks Awarded			
First assessor			
IV marks			
Agreed grade			
Signature of the assessor		Date	



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PRIMARY SOURCES

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## Project Proposal

### SULOCHANA SALOON WEBSITE

#### 01. Title Page

-  Proposed System: Sulochana Saloon Appointment and Management website
-  Prepared by: Upetha Laksiluni
-  Saloon Name: Sulochana Saloon, Makola
-  Saloon Owner: Sulochana

## 02. Introduction



*Figure 1*

The Salon Management System is a modern, user-friendly web application designed to streamline salon operations and enhance the overall customer experience. This system provides an intuitive interface for clients to book appointments, manage profiles, receive notifications, and submit feedback. Simultaneously, it equips salon administrators with powerful tools to manage appointments, services, staff, customer interactions, and business analytics.

With a seamless integration of frontend and backend technologies, the system ensures real-time updates, secure authentication, and an efficient workflow. Clients can easily browse services, select their preferred stylist, and receive appointment reminders, while the admin panel enables salon owners to optimize operations, track revenue, and engage with customers.



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### Key Features

1. Client Portal: User registration, profile management, appointment scheduling, and feedback submission.
2. Admin Dashboard: Real-time analytics, appointment approvals, service and staff management, and revenue tracking.
3. Notification System: Instant alerts for bookings, feedback, and appointment status updates.
4. Secure Authentication: Login, password reset, and session management.
5. User-Friendly Interface: Aesthetic and responsive design for an engaging experience.

### 03. Problem Statement & Proposed Solution

1. Problem: Inefficient Appointment Booking Process

❖ Description:

Many salons still rely on manual appointment scheduling, leading to overbooking, missed appointments, and miscommunication between clients and staff. Clients often face difficulty in selecting their preferred services and stylists due to lack of availability updates.

❖ Proposed

Solution:

The Salon Management System offers an automated appointment booking feature, where clients can:

- Choose services from an interactive menu.
- View available time slots and book appointments in real time.
- Select their preferred stylist and provide special instructions.
- Receive instant booking confirmation and reminders.
- This ensures a seamless, efficient, and error-free booking experience, reducing staff workload and improving client satisfaction.

2. Problem: Lack of Centralized Customer Data Management



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### ❖ Description:

Traditional record-keeping methods make it difficult to maintain a database of customer preferences, booking history, and feedback. This results in poor personalization and ineffective customer engagement.

### ❖ Proposed

### Solution:

The system provides a centralized client profile management module, allowing customers to:

- View and update their personal details.
- Track their appointment history.
- Change passwords and manage authentication securely.
- Receive targeted offers and recommendations based on past services.
- This enhances the salon's ability to deliver a personalized customer experience, improving retention and engagement.

### 3. Problem: Manual Notifications & Communication Delays

### ❖ Description:

Salon staff often struggle with manually informing customers about appointment confirmations, cancellations, or changes. This can cause delays, miscommunication, and customer dissatisfaction.

### ❖ Proposed

### Solution:

A real-time notification system is integrated to:

- Send instant alerts for appointment confirmations, rejections, or cancellations.
- Notify clients about upcoming appointments via email and dashboard alerts.
- Allow admin to send promotional messages and offers to clients.
- This automated system improves communication, ensuring clients stay informed without the need for manual intervention.

### 4. Problem: Difficulty in Managing Services & Pricing

### ❖ Description:

Manually updating service lists and pricing can be time-consuming and prone to errors, leading to inconsistencies in service availability and billing.



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### ❖ Proposed

Solution:

The system includes an Admin Service Management module, allowing salon managers to:

- Easily add, edit, or remove services.
- Categorize services for better organization.
- Update pricing dynamically and reflect changes in real time.
- Set up promotional discounts or seasonal offers.
- This streamlines service management, reducing errors and ensuring accurate pricing and availability.

### 5. Problem: Inefficient Staff & Stylist Management

### ❖ Description:

Salon managers often face challenges in tracking stylist availability, performance, and workload distribution, leading to scheduling conflicts and customer dissatisfaction.

### ❖ Proposed

Solution:

The Staff Management module helps administrators to:

- Add and manage stylist profiles.
- Set and update availability schedules.
- Assign stylists to appointments based on workload.
- Track stylist performance and customer feedback.
- This enhances workforce efficiency and ensures customers receive services from their preferred stylists without scheduling conflicts.

### 6. Problem: Lack of Data-Driven Insights & Business Analytics

### ❖ Description:

Salons often lack the ability to track revenue, analyze appointment trends, and measure customer retention, making strategic planning difficult.

### ❖ Proposed

Solution:

The Admin Dashboard provides:

- Analytics on revenue, bookings, and customer trends.
- Real-time reports on salon performance.
- Customer statistics, including frequent visitors and popular services.



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- Insights into peak hours and demand forecasting.
- This empowers salon owners with data-driven decision-making, optimizing business operations and maximizing profitability.

### 7. Problem: Inadequate Feedback & Review System

#### ❖ Description:

Many salons struggle to collect and analyze customer feedback, leading to missed opportunities for service improvement.

#### ❖ Proposed

Solution:

The Feedback System allows:

- Clients to rate services and leave comments.
- Admin to view and filter feedback based on ratings and keywords.
- Performance-based decision-making for service and staff improvements.
- By integrating this structured feedback system, salons can continuously improve their services and customer satisfaction.

### 8. Problem: Security & Data Privacy Concerns

#### ❖ Description:

Without a robust authentication system, customer data and payment details may be vulnerable to security breaches.

#### ❖ Proposed

Solution:

The system incorporates secure authentication and data protection mechanisms such as:

- Role-based access control (RBAC) for clients, staff, and admins.
- Secure password hashing to protect credentials.
- SSL encryption for safe data transmission.
- Regular database backups to prevent data loss.
- This ensures a high level of security for both clients and administrators, protecting sensitive data.

## 04. Background Study

The salon industry has increasingly embraced digital transformation to enhance customer experience and streamline operations. Traditional salon management relies heavily on manual



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booking systems, phone-based reservations, and in-person consultations, which can lead to inefficiencies and scheduling conflicts. The rise of online booking systems has revolutionized salon businesses by providing customers with the convenience of scheduling appointments at any time, selecting preferred services, and choosing their favorite stylists.

Furthermore, salons require an effective customer relationship management (CRM) system to maintain records of frequent clients, their service preferences, and feedback. The integration of digital solutions has proven to increase customer retention, reduce administrative workload, and boost operational efficiency. Many modern salons have also started leveraging automated notification systems for appointment reminders and promotional campaigns to enhance customer engagement.

Given the rapid growth of the beauty and wellness industry, developing a robust and interactive salon management system is essential to stay competitive. The proposed website will serve as a comprehensive solution that caters to both customers and salon administrators, ensuring seamless appointment management, service tracking, and client interaction.

### 05.Literature Review

- ❖ The evolution of salon management systems has been driven by the increasing need for efficiency, automation, and customer engagement in the beauty and wellness industry. Traditional salon management relied on manual booking, paper-based records, and in-person appointment scheduling, which often resulted in errors, double bookings, and inefficient customer service. Salons faced challenges in keeping track of customer preferences, service histories, and appointment schedules. These inefficiencies led to customer dissatisfaction, missed appointments, and increased administrative workload for salon owners and staff.
- ❖ With advancements in web-based technologies, cloud computing, and mobile applications, modern salon management systems now offer automated scheduling, customer relationship management (CRM), real-time notifications, and business analytics. These systems improve salon operations, reduce human errors, and provide a more convenient experience for customers. Additionally, integrating online payment gateways, AI-driven customer engagement, and mobile-friendly interfaces has revolutionized the way salons interact with





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their clients. The following sections explore existing research, technology trends, and comparisons between manual and digital salon management systems.

### 1. Existing Research on Digital Salon Management Systems

Several studies and reports have explored the benefits of integrating technology into salon management. Research indicates that modern digital systems significantly enhance efficiency, customer satisfaction, and revenue generation. Below are some key areas where digital transformation has improved salon operations:

#### 1.1 Appointment Scheduling Systems

Traditional appointment booking methods relied on phone calls, walk-ins, and manual registers, leading to overbooking, scheduling conflicts, and long wait times. Research suggests that automated booking systems reduce waiting times, optimize stylist availability, and prevent last-minute cancellations. Modern online scheduling platforms allow customers to view available time slots in real-time, select their preferred stylist, and receive instant booking confirmations.

#### 1.2 Customer Data Management & CRM

Customer Relationship Management (CRM) systems play a crucial role in improving customer retention and personalization. Studies show that salons that use CRM solutions can track customer appointment histories, preferences, and feedback, enabling them to offer personalized recommendations. Digital systems store and analyze customer data, helping salons send personalized promotions, loyalty rewards, and targeted service recommendations.

#### 1.3 Online Payments & Digital Transactions

The integration of secure payment gateways like PayPal, Stripe, Visa, and MasterCard has transformed the salon industry by offering cashless, hassle-free transactions. Research shows that customers prefer online payment methods, as they are faster, safer, and more convenient than handling cash or manual invoicing. Many modern salon management systems now include prepaid booking options, automatic invoicing, and promotional discount codes, encouraging higher customer retention rates.

#### 1.4 Business Analytics & Performance Tracking

One of the biggest advantages of digital salon management is data-driven decision-making. Research highlights that salon owners benefit from analytics tools that track revenue, customer trends, appointment cancellations, and stylist performance. Built-in analytics dashboards allow



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owners to make strategic decisions, optimize pricing, and identify peak booking times. By leveraging big data and business intelligence tools, salons can increase profitability and improve operational efficiency.

### 2. Comparison of Manual vs. Digital Salon Management Systems

Many salons still operate using traditional methods, but transitioning to digital systems offers numerous advantages. The table below highlights the differences between manual and digital management approaches:

Feature	Manual Salon Management	Digital Salon Management
Appointment Booking	Phone calls, walk-ins, and handwritten logs.	Online booking with real-time availability.
Customer Management	Paper records with limited customer history.	Centralized database storing customer details, preferences, and past appointments.
Notifications	Staff manually contacts clients.	Automated SMS, email, and in-app notifications for bookings and promotions.
Payment Processing	Cash transactions and manual invoices.	Online payments with instant invoices and payment tracking.
Business Insights	Difficult to track revenue and customer trends.	Built-in analytics for revenue, customer behavior, and staff performance.

*Table 1*

From the comparison, it is evident that digital salon management not only reduces operational workload but also enhances customer experience, minimizes human errors, and optimizes revenue generation.

### 3. Key Technologies in Modern Salon Management

Technological advancements have redefined salon operations by providing efficient, cloud-based, AI-driven, and mobile-friendly solutions. The following technologies are commonly used in modern salon management systems:

#### 3.1 Cloud Computing



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Cloud-based salon management systems enable remote data access, allowing salon owners and staff to manage bookings, payments, and customer interactions from anywhere. Cloud storage reduces dependency on physical records, minimizes data loss, and improves operational flexibility.

### 3.2 Artificial Intelligence (AI) & Chatbots

AI is revolutionizing salon management by offering personalized recommendations and automated chatbot services. AI-powered chatbots can:

- Handle appointment bookings via live chat.
- Answer customer inquiries instantly.
- Provide personalized service suggestions based on customer history.

### 3.3 Mobile Applications & Online Accessibility

With 65%+ of salon bookings now made through mobile devices, having a mobile-friendly salon management system is crucial. Many modern platforms now provide dedicated mobile applications that allow users to book services, receive real-time notifications, and make cashless payments conveniently.

### 3.4 Security Measures & Data Protection

Security is a critical concern in digital systems. Advanced role-based access control (RBAC), SSL encryption, and secure authentication methods protect customer data, payment details, and business information. Regular security audits and compliance with data protection regulations (e.g., GDPR) ensure customer trust and data integrity.

## 4. The Role of Agile Development in Salon Systems

Agile methodology is widely used in modern salon management software development due to its flexibility and incremental feature delivery approach. Key benefits of Agile for salon management systems include:

- **Faster Response to Changing Requirements** – New features like promotional campaigns, loyalty programs, or service updates can be implemented quickly and efficiently.
- **Continuous Testing & Improvement** – Agile ensures that each feature is tested thoroughly before deployment, reducing bugs and improving performance.
- **Seamless Feature Integration** – New functionalities such as gift cards, referral programs, and stylist reviews can be added progressively without disrupting existing operations.



### 5. Proposed Solution & Contributions

The Sulochana Salon Management System is designed to address common industry challenges by incorporating the following key features:

- Automated Booking & Real-Time Scheduling – Customers can view available slots, book services instantly, and receive confirmation notifications.
- User-Friendly Client & Admin Dashboards – The system provides a clean, intuitive interface for both customers and salon staff to manage appointments efficiently.
- Secure Authentication & Customer Data Protection – Implements role-based access control (RBAC), password encryption, and SSL security protocols to ensure data privacy and security.
- Business Analytics & Revenue Tracking – Owners can monitor revenue, track customer trends, and analyze staff performance using built-in dashboards and reports.
- AI-Powered Chatbot & Personalized Recommendations – Enhances customer engagement by automating inquiries and suggesting services based on customer history.

### 06. Background Study

The salon industry has evolved significantly with technological advancements, yet many salons still rely on outdated methods for managing appointments, customer records, and business operations. Traditional paper-based or manual booking systems lead to inefficiencies such as scheduling conflicts, overbookings, missed appointments, and lack of proper customer data management. To address these challenges, digital salon management systems have emerged as a crucial solution.

#### 1. Existing Challenges in Salon Management:

##### 1. Manual Appointment Booking:

- a. Many salons still rely on phone calls or walk-ins, leading to appointment clashes and scheduling difficulties.
- b. Customers have limited visibility into stylist availability.

##### 2. Lack of Centralized Customer Data:



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- a. Traditional methods make it hard to track customer preferences, appointment history, and feedback.
  - b. Salons struggle to offer personalized services without proper data management.
3. Inefficient Communication & Notifications:
- a. Without an automated notification system, customers may forget appointments.
  - b. Salon staff must manually call or message clients, leading to inefficiencies.
4. Limited Business Insights & Analytics:
- a. Many salons lack real-time analytics to track appointment trends, revenue, and stylist performance.
  - b. Without data-driven decision-making, service improvements and marketing strategies are less effective.

## 2. Technological Advancements in Salon Management

Modern digital solutions leverage web-based platforms to provide a seamless and automated experience for both clients and salon administrators. With features like online booking, automated notifications, real-time analytics, and secure data management, these systems improve efficiency, reduce manual work, and enhance customer satisfaction.

### 3. Importance of an Automated Salon Management System

A digital Salon Management System aims to eliminate inefficiencies by offering:

- ❖ Online Booking System for easy appointment scheduling.
- ❖ Real-time Notifications to keep customers and staff informed.
- ❖ Centralized Customer Profiles to store preferences, history, and feedback.
- ❖ Business Analytics Dashboard for revenue tracking and performance evaluation.

## 07. Justification of the Solution

The Salon Management System is designed to address the inefficiencies and challenges faced by traditional salon operations. Below is a detailed justification for why this solution is necessary and beneficial for both clients and salon administrators.



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### 1. Automation of Appointment Booking

#### ✚ Justification:

- a. Traditional phone-based or walk-in bookings result in scheduling conflicts, long wait times, and double bookings.
- b. Clients need real-time access to available slots and stylists without manual intervention.

#### ✚ Why This Solution Works:

- a. Online booking system eliminates scheduling conflicts.
- b. 24/7 accessibility, allowing clients to book appointments anytime.
- c. Automatic confirmations and reminders reduce no-shows.

### 2. Centralized Customer Data Management

#### ✚ Justification:

- a. Manual record-keeping lacks organization, making it hard to track customer preferences, appointment history, and special requests.
- b. A centralized database ensures quick access to client history, improving service personalization.

#### ✚ Why This Solution Works:

- a. Stores customer profiles, appointment history, and preferences securely.
- b. Enables targeted promotions based on past visits.
- c. Improves customer retention through personalized recommendations.

### 3. Real-Time Notifications and Reminders

#### ✚ Justification:

- a. Customers often forget appointments due to lack of reminders, leading to wasted time slots and lost revenue.
- b. Salons need instant communication channels to update clients about bookings and promotions.

#### ✚ Why This Solution Works:

- a. Automated SMS and email alerts ensure timely reminders.
- b. Reduces last-minute cancellations and no-shows.
- c. Enhances customer engagement with promotional notifications.



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### 4. Efficient Service & Pricing Management

#### ✚ Justification:

- a. Manually updating services and pricing is prone to errors and inconsistencies.
- b. Clients need clear, updated service lists with pricing transparency.

#### ✚ Why This Solution Works:

- a. Admins can easily add, edit, or remove services in real-time.
- b. Dynamic pricing updates reflect instantly across the system.
- c. Categorized service lists improve customer navigation.

### 5. Enhanced Staff & Stylist Management

#### ✚ Justification:

- a. Salons face challenges in managing stylist availability and workload.
- b. Customers prefer selecting their preferred stylist, which requires an organized scheduling system.

#### ✚ Why This Solution Works:

- a. Staff availability tracking prevents overbooking.
- b. Performance analytics help in evaluating stylist efficiency.
- c. Clients can choose preferred stylists, enhancing satisfaction.

### 6. Business Analytics & Reporting for Decision-Making

#### ✚ Justification:

- a. Salons need real-time business insights to track revenue, popular services, and customer trends.
- b. Data-driven decision-making is essential for growth and profitability.

#### ✚ Why This Solution Works:

- a. Graphical reports and dashboards provide actionable insights.
- b. Identifies peak booking hours and high-demand services.
- c. Helps in strategic business planning and marketing.

### 7. Secure Authentication & Role-Based Access Control

#### ✚ Justification:



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- a. Customer and business data security is crucial to prevent unauthorized access and data breaches.
- b. Traditional systems lack robust authentication and access control measures.

### Why This Solution Works:

- a. Role-based access control (RBAC) ensures secure data handling.
- b. Encrypted password storage protects user credentials.
- c. Regular backups and security protocols safeguard business data.

## 08.Scope Coverage

### 1. Project Scope

The Salon Management System is designed to automate and streamline salon operations, including appointment booking, service management, staff scheduling, customer management, and business analytics. The system provides a user-friendly interface for clients, while administrators can manage services, bookings, and business insights.

#### a. Scope Coverage Breakdown

Scope Area	Description
User Management	Customers can register, log in, manage profiles, and book services. Admins can manage users, assign roles, and track client interactions.
Appointment Booking	Clients can schedule, reschedule, or cancel appointments with real-time availability tracking.
Service Management	Admins can add, update, categorize, and manage salon services with dynamic pricing.
Stylist & Staff Management	Admins can manage stylist schedules, track performance, and assign bookings.
Notification System	Automated notifications for appointment confirmations, cancellations, reminders, and promotions.
Feedback & Reviews	Clients can submit feedback and rate services, while admins can track and analyze reviews.





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Business Analytics	Dashboard analytics for revenue tracking, customer trends, and stylist performance.
Security & Authentication	Role-based access control (RBAC), encrypted login, and secure payment integration.

Table 2

### 2. Functional Requirements

The system is divided into features and their corresponding functional requirements that ensure smooth operation.

Feature & Functional Requirements Table

Feature	Functional Requirement	Description
User Authentication	User Registration	Clients can register with email and password authentication.
	User Login	Secure login with encrypted credentials.
	Password Recovery	Users can reset their password via email verification.
	Role-Based Access	Different access levels for clients, stylists, and admins.
Appointment Booking	Online Booking	Clients can schedule appointments by selecting services, stylists, and available time slots.
	Modify Appointment	Clients can reschedule or cancel appointments as per salon policy.
	Availability Check	Real-time checking of stylist and service availability.
	Confirmation & Reminders	Automatic notifications for confirmations and upcoming appointments.
Service Management	Add/Edit Services	Admins can add, edit, or remove salon services.



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	Categorization	Services are grouped into categories (e.g., Haircuts, Facials, Manicure).
	Dynamic Pricing	Admins can update service prices dynamically.
Stylist & Staff Management	Add/Edit Staff	Admins can manage stylist profiles and availability.
	Assign Appointments	Automatically or manually assign appointments to stylists.
	Performance Monitoring	Admins can track stylist ratings and customer feedback.
Notification System	Appointment Alerts	Clients receive confirmation, reminders, and cancellation alerts.
	Promotional Notifications	Admins can send offers, discounts, and updates to clients.
Feedback & Review System	Submit Reviews	Clients can provide service ratings and feedback.
	View Feedback	Admins can filter and analyze client reviews.
Business Analytics	Revenue Reports	Admins can track salon revenue and monthly earnings.
	Customer Insights	Track customer retention, visit frequency, and popular services.
	Staff Performance	Monitor stylist efficiency and customer satisfaction.
Security & Payment Integration	Secure Login	Encrypted authentication to prevent unauthorized access.
	Role-Based Access	Limits access based on user roles (client, admin, stylist).
	Payment Processing	Integration with online payment gateways for prepaid bookings.

Table 3



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### 3. Non-Functional Requirements

These requirements define the system performance, security, and usability aspects.

Requirement	Description
Performance	The system should handle multiple concurrent bookings without lag.
Usability	The UI/UX design should be intuitive and easy to navigate for all user types.
Scalability	The system should be able to handle an increasing number of users and bookings without performance issues.
Security	Implements SSL encryption, hashed passwords, and role-based access control (RBAC) for secure data handling.
Availability	The system should have 99.9% uptime, ensuring constant accessibility for clients and admins.
Maintainability	Code should be modular and well-documented to allow easy updates and feature additions.
Compatibility	The web application should be responsive and work on desktops, tablets, and mobile devices.
Backup & Recovery	The system should include automated database backups to prevent data loss.
Integration	Should support third-party APIs for SMS notifications, payment gateways, and email alerts.

Table 4



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### 4. Justification for the Selected Scope

The selected scope is justified based on the current industry challenges and technological advancements.

Scope Area	Justification
Online Booking	Automates appointment scheduling, reducing manual errors and improving efficiency.
Real-Time Notifications	Keeps clients informed, reducing no-shows and enhancing customer engagement.
Customer Profiles	Enables personalized services based on client history and preferences.
Service & Pricing Management	Ensures service offerings are updated dynamically and accurately.
Business Analytics	Data-driven insights help in strategic decision-making and improving salon performance.
Role-Based Security	Prevents unauthorized access, ensuring customer data privacy and secure transactions.
Multi-Platform Support	Ensures the system works seamlessly on different devices (PC, tablet, mobile).

Table 5

## 09.Methodology & Technology

### 1. Methodology

- Why Choose Agile for Sulochana Salon Website?



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### a. Dynamic Requirements

One of the main reasons to choose Agile methodology for the Sulochana Salon website is the inherent flexibility it offers in handling dynamic and evolving requirements. In the beauty and salon industry, customer preferences and business operations can change quickly. For example, a salon might need to update the list of services offered, change booking schedules, or introduce new promotional offers. Agile allows the development team to respond swiftly to these changes by adjusting features and functionalities based on real-time feedback from clients and salon staff. Unlike other methodologies, Agile enables the team to prioritize features according to immediate business needs, allowing the most critical aspects like the appointment booking system—to be implemented and delivered early in the project.

### b. Quick Time-to-Market

Agile's iterative development process leads to quicker releases and faster delivery of key features. With the salon website, basic features such as user registration and appointment booking can be released early, followed by more advanced features like staff management and analytics. This approach ensures that the most essential services are available to customers quickly, which is crucial for maintaining business continuity and meeting client demands. Agile's sprint-based methodology, where development happens in two-week cycles, allows for a continuous release of updates, keeping the site evolving according to the latest business needs and customer feedback.

### c. Flexibility

Agile's flexible planning makes it an ideal choice for a project like the Sulochana Salon website. As the development progresses, the team can adapt to changing requirements based on feedback from users, business stakeholders, or external factors like industry trends. This adaptability ensures that the website remains relevant and functional throughout its lifecycle. Additionally, Agile's emphasis on scalability makes it easy to incorporate new services or enhance existing ones in the future. Agile also provides a quick resolution for bugs or issues as they arise, ensuring minimal downtime and a smoother user experience.

## o Problems with Other Methodologies

### a. Waterfall Methodology Issues

In contrast to Agile, the Waterfall methodology presents several challenges for dynamic projects like a salon website. Waterfall follows a linear, sequential development process, which means that



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once the requirements are set at the beginning of the project, it becomes difficult and costly to modify them later. If a client requests changes to the booking system after significant development has been completed, it could lead to project delays and additional costs. Furthermore, Waterfall typically doesn't allow for continuous feedback from the end users until the very end of the project, which risks delivering a final product that may not fully meet user expectations or business goals. This delayed feedback loop could result in functionality that customers don't find helpful or relevant, leading to dissatisfaction.

### b. Hybrid Methodology Challenges

While Hybrid methodologies attempt to combine the strengths of both Waterfall and Agile, they also introduce complexities that may not be ideal for this type of project. The complexity of managing two different approaches can increase project overhead, as the team needs to balance the rigid structure of Waterfall with the flexibility of Agile. Additionally, the documentation requirements in Hybrid models can become overwhelming, causing unnecessary delays. Resource management in a Hybrid approach can also become difficult, as it is not always clear when to apply Waterfall's structured stages versus Agile's adaptive cycles. This confusion can slow down the development process and hinder team collaboration.

## 2. Agile Implementation Plan

### a. Sprint 1: Core Features

In the first two-week sprint, the development team will focus on building essential features like user authentication (registration, login), basic appointment booking, and a service catalog. These foundational features ensure that customers can easily navigate the site and schedule appointments. By prioritizing core functionalities first, Agile allows the team to get the basic site up and running, with room for refinement in future sprints.

### b. Sprint 2: Admin Features

The second sprint will focus on building out administrative features, including an admin dashboard for managing appointments, staff, and services. These features are essential for salon staff to efficiently track customer appointments and manage their schedules. The admin section is critical for salon operations, and delivering these



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features early will allow staff to familiarize themselves with the system and provide feedback on improvements.

### c. Sprint 3: Advanced Features

In later sprints, more advanced features such as notification systems, ratings and feedback mechanisms, and report generation will be added. These features enhance customer engagement and improve the operational efficiency of the salon. Through iterative releases, Agile ensures that features are added and refined progressively, keeping the development process responsive to real-world use and feedback.

## 3. Project Timeline

The Sulochana Salon website will be developed in three main phases, with each phase aligned with Agile sprints. The first month will be dedicated to gathering requirements, establishing the basic architecture, and developing core features. The second month will focus on implementing advanced features and testing, while the third month will include final testing, user training, and deployment. This timeline allows for continuous improvement and feature release, ensuring that the website meets the salon's needs at every stage of development.

## 4. Benefits of Agile for Salon Website

### a. Business Benefits

Agile offers significant business benefits, including a faster launch of essential features, allowing the salon to start receiving bookings quickly. Regular updates and improvements based on customer and staff feedback ensure that the site remains aligned with evolving business goals. These updates also contribute to higher user satisfaction, as features are continuously refined and optimized.

### b. Technical Benefits

From a technical perspective, Agile's continuous testing and iterative approach lead to better-quality code and fewer bugs in the final product. The ability to adapt to new requirements during development reduces the chances of delivering a product that doesn't meet the salon's needs. Additionally, Agile's continuous integration practices ensure that the website can be updated frequently without disrupting operations.

### c. Operational Benefits



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Operationally, Agile ensures that salon staff can efficiently use the new system as it is rolled out incrementally. Agile's focus on user feedback also helps improve customer interactions, providing a smoother booking experience. Regular updates and improvements mean that the salon's operations can evolve without major disruptions, leading to enhanced staff productivity and customer satisfaction.

### d. Success Metrics

To gauge the success of the project, various metrics will be tracked, such as user adoption rates (number of online bookings), business performance (reduced no-shows, increased bookings), and technical performance (system uptime, response times). These metrics will help the team ensure that the website is meeting its objectives and contributing to the salon's growth.

In conclusion, Agile methodology is ideal for the Sulochana Salon website due to its flexibility, rapid delivery, and ability to continuously improve based on user feedback. By choosing Agile, the development team can ensure that the project remains aligned with business goals while delivering a high-quality, user-friendly website.

## 10. Feasibility Study

### a. Technical Feasibility

The technical feasibility of building the Sulochana Salon website using Agile is very high. The website can be hosted on common web server platforms such as Apache or Nginx, and the database can be managed using MySQL, a reliable and widely used relational database system. Development tools like Visual Studio Code for coding and Git for version control will facilitate smooth collaboration among team members. With these readily available tools and platforms, there is no significant technical barrier to using Agile for this project. Moreover, Agile's ability to deliver incremental progress aligns well with the technical capabilities of these systems, ensuring that features can be tested and deployed quickly without major infrastructure changes.

### b. Economic Feasibility

The economic feasibility of the Sulochana Salon website project under Agile is also favorable. The team will consist of professionals whose combined salaries, development tools, and software licenses will constitute the primary costs. However, Agile's iterative nature reduces the risk of overspending because the project is divided into smaller, manageable phases. By regularly





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assessing the value of features through feedback and prioritizing based on business needs, Agile ensures that the investment is aligned with immediate business objectives, leading to higher ROI. The long-term benefits, such as reduced manual effort for appointment management and improved customer satisfaction, contribute to cost savings and increased revenue opportunities.

### c. Operational Feasibility

Operationally, the Agile approach to developing the salon website allows for seamless integration into the salon's daily operations. Staff training, system maintenance, and ongoing user support are all streamlined under Agile, as features are incrementally introduced and tested. As the system is refined, salon staff can gradually adopt new features without overwhelming them with a complete system overhaul. This method reduces the chances of resistance to new technology, as staff and customers will be familiar with each new feature as it becomes available. Agile's iterative updates also ensure that the website remains aligned with operational goals, helping the salon stay competitive and efficient.

## 11. Risk Assessment

### a. Technical Risks

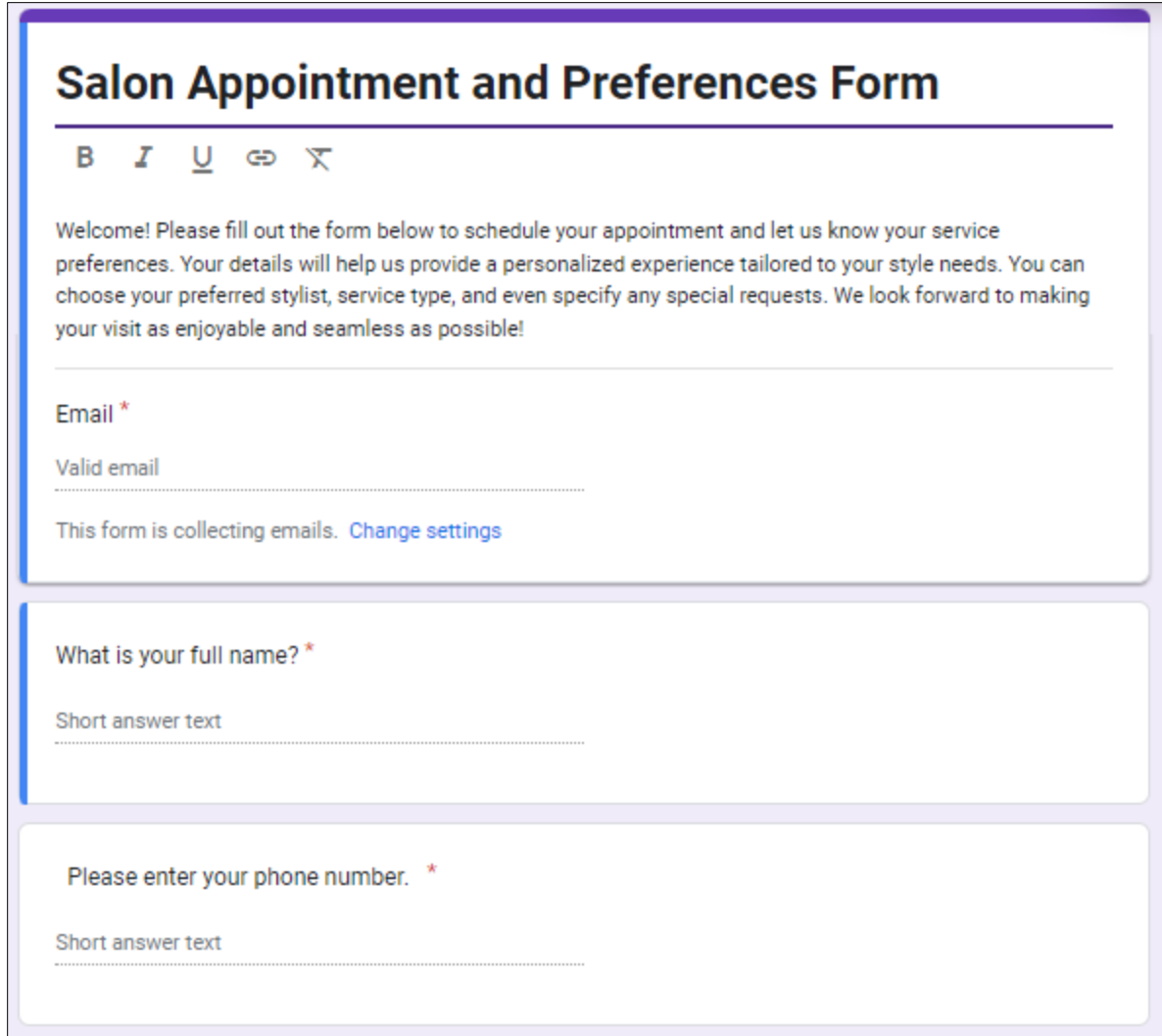
Several technical risks could arise during the project, including integration challenges between various components, third-party services, and potential performance issues with the database. However, Agile's emphasis on continuous testing and iteration will help mitigate these risks by addressing problems early in the development process.

### b. Business Risks

On the business side, risks include user adoption challenges, particularly with salon staff who may be resistant to new technology. However, Agile's incremental delivery ensures that staff members are gradually introduced to new features, reducing the risk of resistance. Additionally, the flexibility of Agile allows the development team to address issues that arise from real-world usage quickly, ensuring smooth business operations.



### 12.Requirement Gathering

#### a. Questionnaires asked from Users



The image shows a digital form titled "Salon Appointment and Preferences Form". At the top, there is a rich text editor with icons for bold (B), italic (I), underline (U), link (chain icon), and unlink (scissors icon). Below the editor is a welcome message: "Welcome! Please fill out the form below to schedule your appointment and let us know your service preferences. Your details will help us provide a personalized experience tailored to your style needs. You can choose your preferred stylist, service type, and even specify any special requests. We look forward to making your visit as enjoyable and seamless as possible!". The form contains three input fields: 1. "Email \*" with a "Valid email" placeholder and a note "This form is collecting emails. [Change settings](#)". 2. "What is your full name? \*" with a "Short answer text" placeholder. 3. "Please enter your phone number. \*" with a "Short answer text" placeholder.

### Salon Appointment and Preferences Form

**B I U**  

Welcome! Please fill out the form below to schedule your appointment and let us know your service preferences. Your details will help us provide a personalized experience tailored to your style needs. You can choose your preferred stylist, service type, and even specify any special requests. We look forward to making your visit as enjoyable and seamless as possible!

Email \*

Valid email

This form is collecting emails. [Change settings](#)

What is your full name? \*

Short answer text

Please enter your phone number. \*

Short answer text

Figure 2 - Requirement Gathering

How would you like us to contact you? \*

☐ Email

☐ Phone

☐ SMS

☐ Other...

How do you currently book your salon appointments? \*

☐ Phone call

☐ Email

☐ Walk-in

☐ social media

☐ SMS

☐ Other...

Figure 3 - Requirement Gathering

Would you like to prefer to book salon services through an online system? \*

☐ Yes

☐ No

Which service would you like to book? \*

☐ Hair services

☐ Nail services

☐ Skin services

☐ Makeup services

☐ Massage services

☐ Pre-bridal services

☐ Bridal services

☐ Blow drying

☐ Other...

Figure 4 - Requirement Gathering

How often do you visit a salon for services? \*

☐ Once a week

☐ Once a month

☐ Every few months

☐ only for special occasions

---

Which features would make an online booking system more convenient for you? \*

☐ Service selection

☐ Stylist selection

☐ Date and time selection

☐ Booking confirmation

☐ Payment options (online or offline)

☐ Appointment reminders (email/SMS)

☐ Other...

*Figure 5 - Requirement Gathering*

How important is it for you to view pricing before booking a service? \*

1 2 3 4 5 6

Not Important ☐ ☐ ☐ ☐ ☐ ☐ Very important

How important is it for you to view pricing before booking a service? \*

1 2 3 4 5 6

Not Important ☐ ☐ ☐ ☐ ☐ ☐ Very important

Do you think a loyalty or rewards program would influence your decision to use the online booking system? \*

☐ Yes

☐ No

☐ Maybe

Figure 6 - Requirement Gathering



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The screenshot shows a survey form with three sections. The first section asks 'Would you be interested in bundled service packages (e.g., haircut + manicure)? (required)' with radio button options for 'No', 'Yes', and 'Maybe'. The second section asks 'When would you like to schedule your appointment?' followed by a 'Short answer text' input field. The third section asks 'Do you have any specific requests or requirements?' followed by a 'Long answer text' input field. All questions are marked as required with a red asterisk.

Would you be interested in bundled service packages (e.g., haircut + manicure)? (required) \*

☐ No

☐ Yes

☐ Maybe

When would you like to schedule your appointment? \*

Short answer text

Do you have any specific requests or requirements? \*

Long answer text

Figure 7 - Requirement Gathering

Please specify your hair type \*

☐ curly

☐ straight

☐ wavy

☐ Coily

☐ Other...

What is your current hair length? \*

☐ Short

☐ Medium

☐ Long

☐ Other...

Figure 8 - Requirement Gathering





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Are there any specific products you prefer? \*

Long answer text

Have you previously received services at our salon? \*

☐ Yes

☐ No

☐ Maybe

Would you like to receive updates about new offers and services? \*

☐ Yes

☐ No

☐ Other...

Figure 9 - Requirement Gathering

Would you like reminders for your appointments? \*

☐ Yes

☐ No

☐ Maybe

After your appointment, would you be open to providing feedback? \*

☐ Yes

☐ No

How helpful would it be to see customer reviews and ratings for services or stylists? \*

☐ yes

☐ No

☐ may be

Figure 10 - Requirement Gathering

Would you be interested in subscribing to a newsletter with beauty tips and salon updates? \*

1 2 3 4 5 6

Not Important ☐ ☐ ☐ ☐ ☐ ☐ Very Important

Any additional features or suggestions you would like to see in an online salon management system?

Long answer text

Figure 11 - Requirement Gathering

## b. Answers for the Questionnaires asked from Users

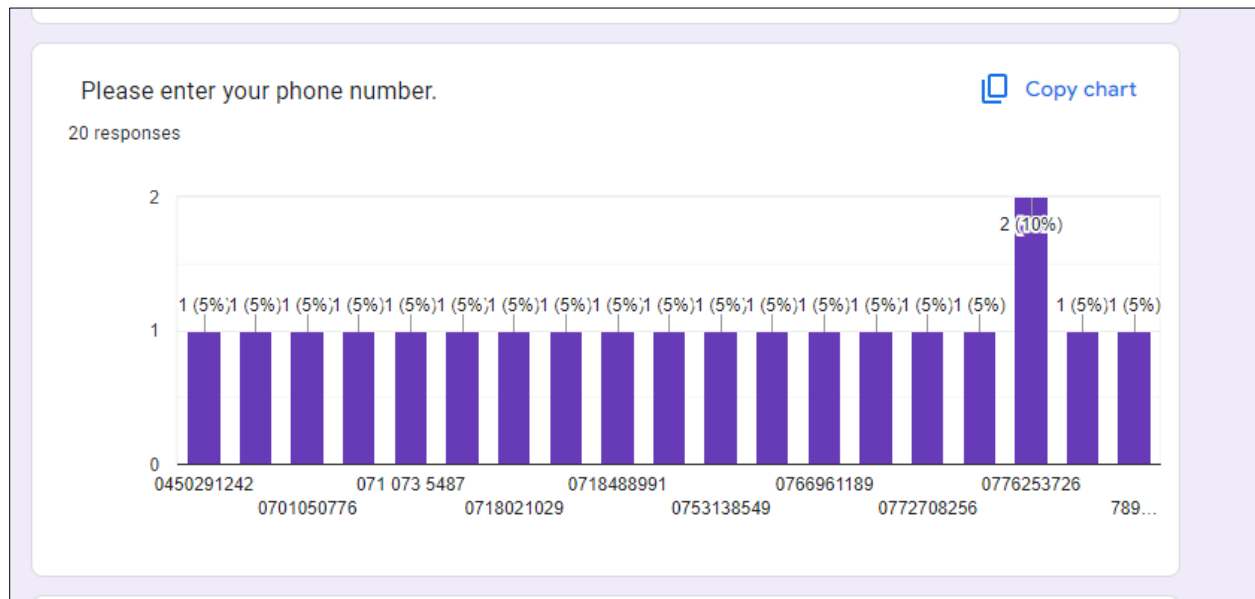


Figure 12 - Requirement Gathering

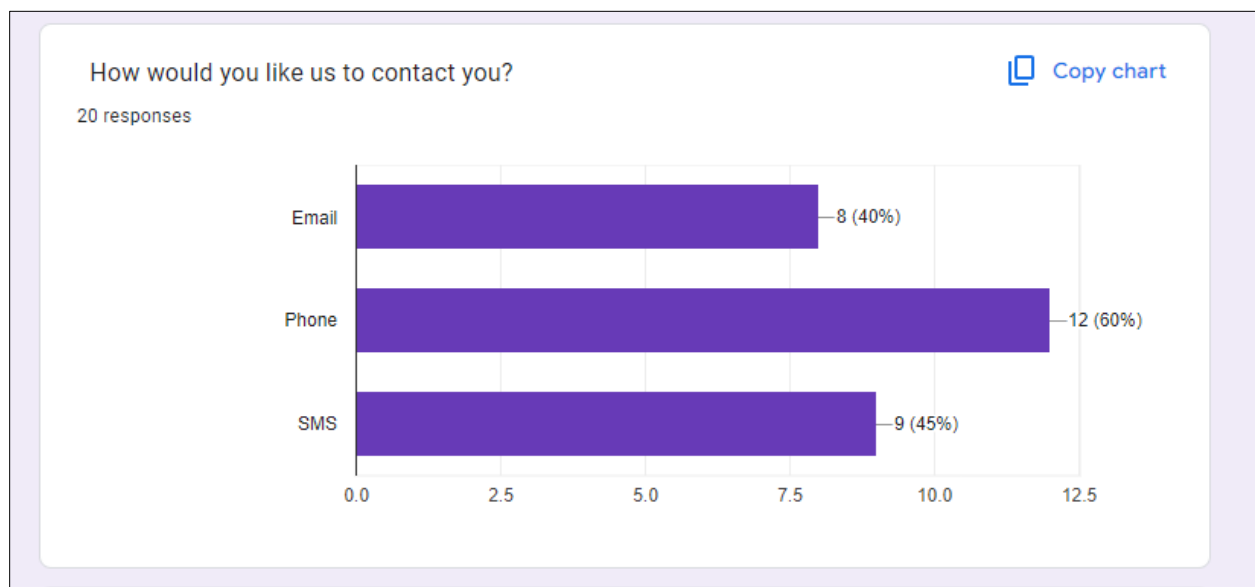


Figure 13 - Requirement Gathering

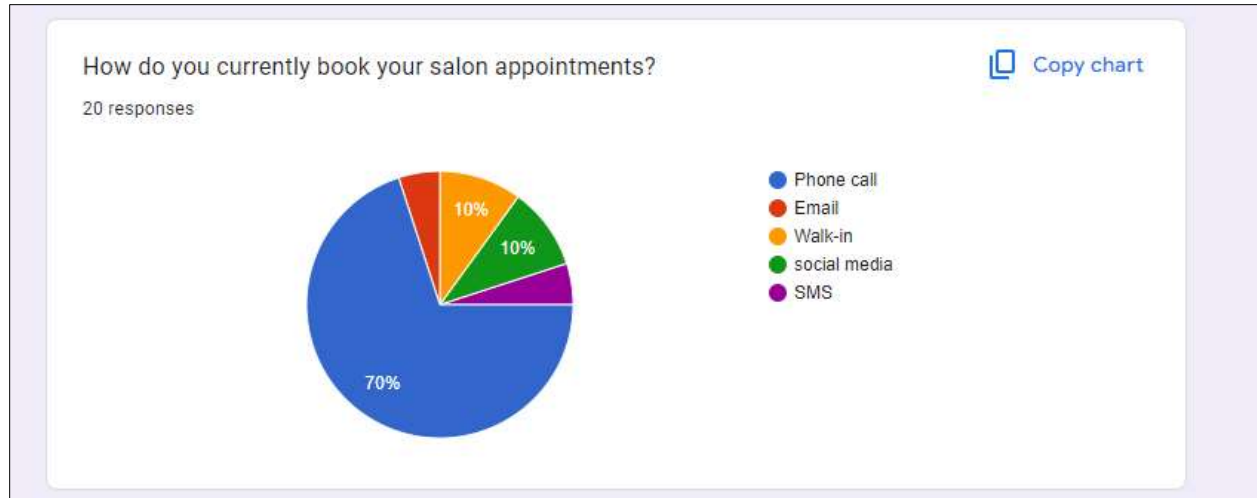


Figure 14 - Requirement Gathering

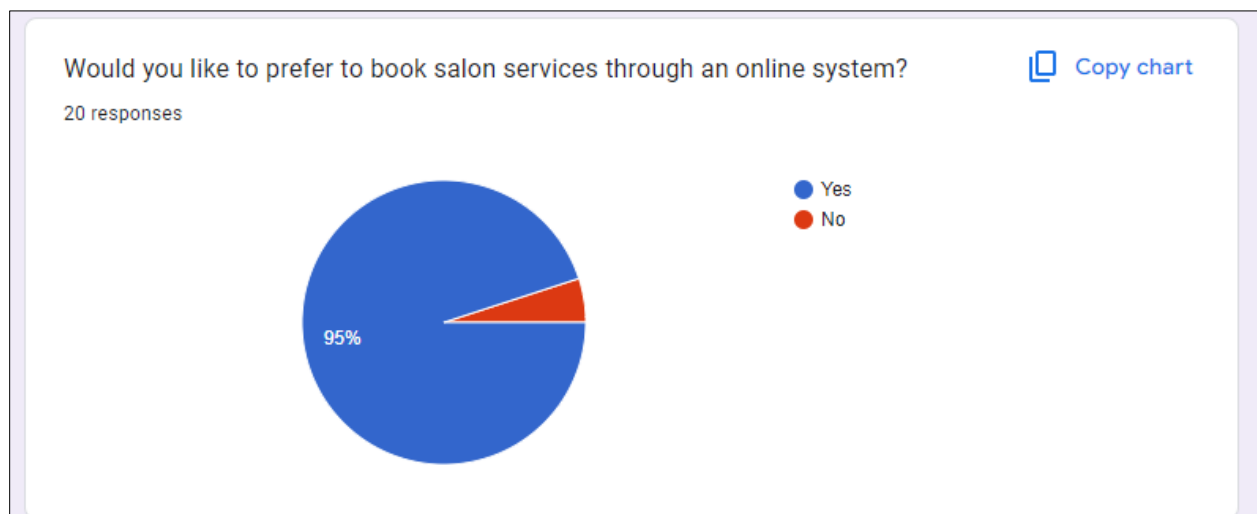


Figure 15 - Requirement Gathering

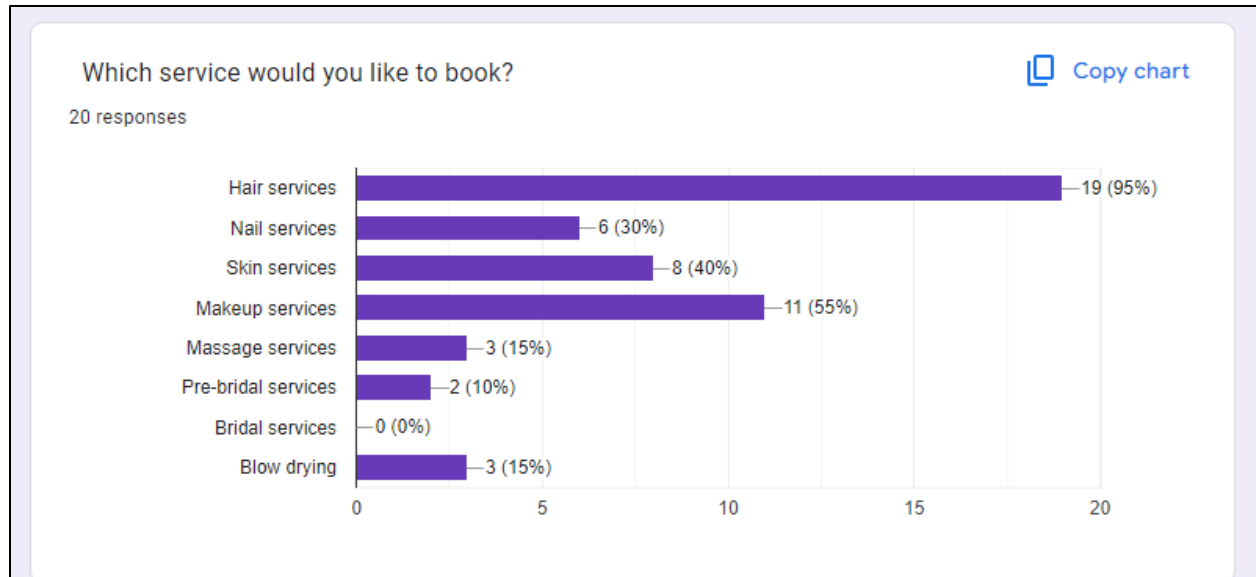


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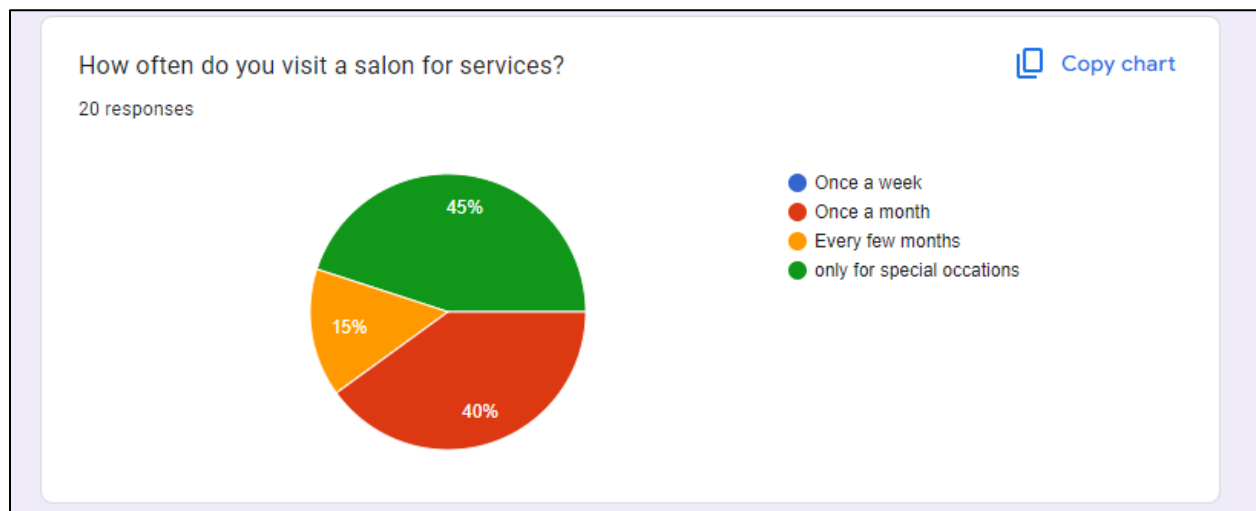


Figure 17 - Requirement Gathering

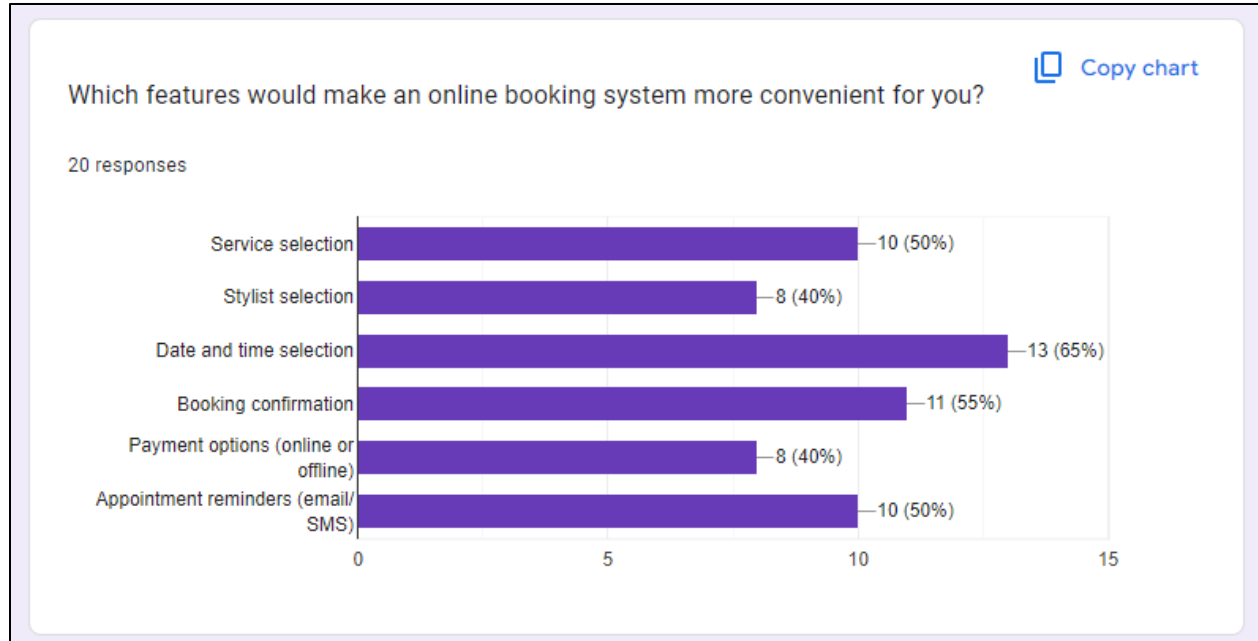


Figure 18 - Requirement Gathering

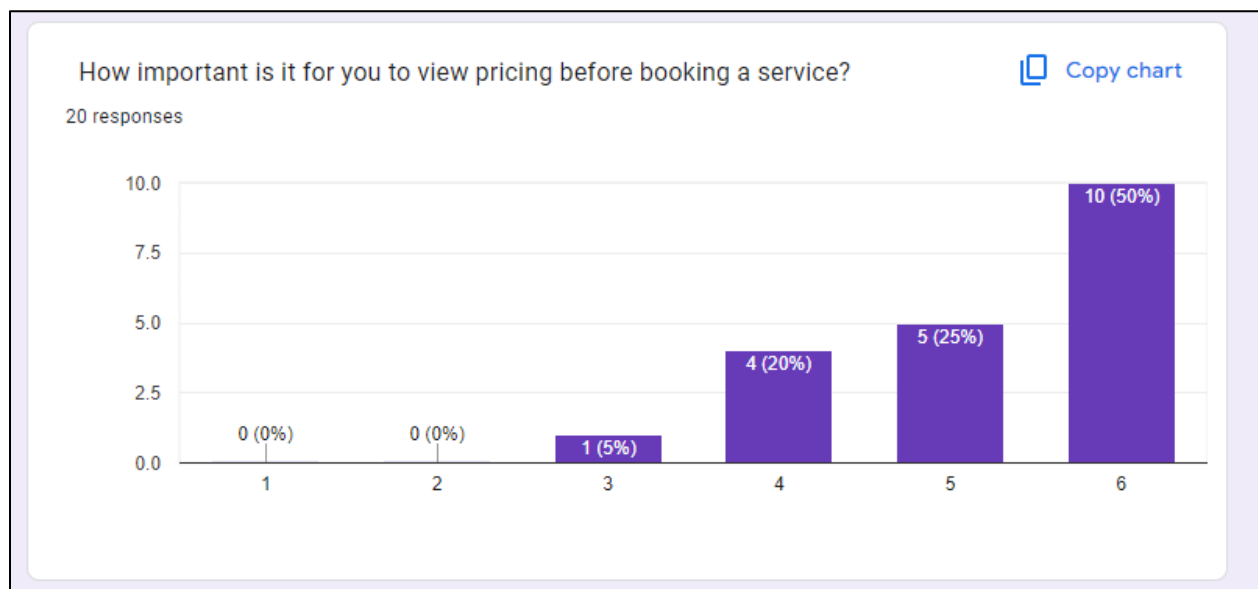


Figure 19 - Requirement Gathering

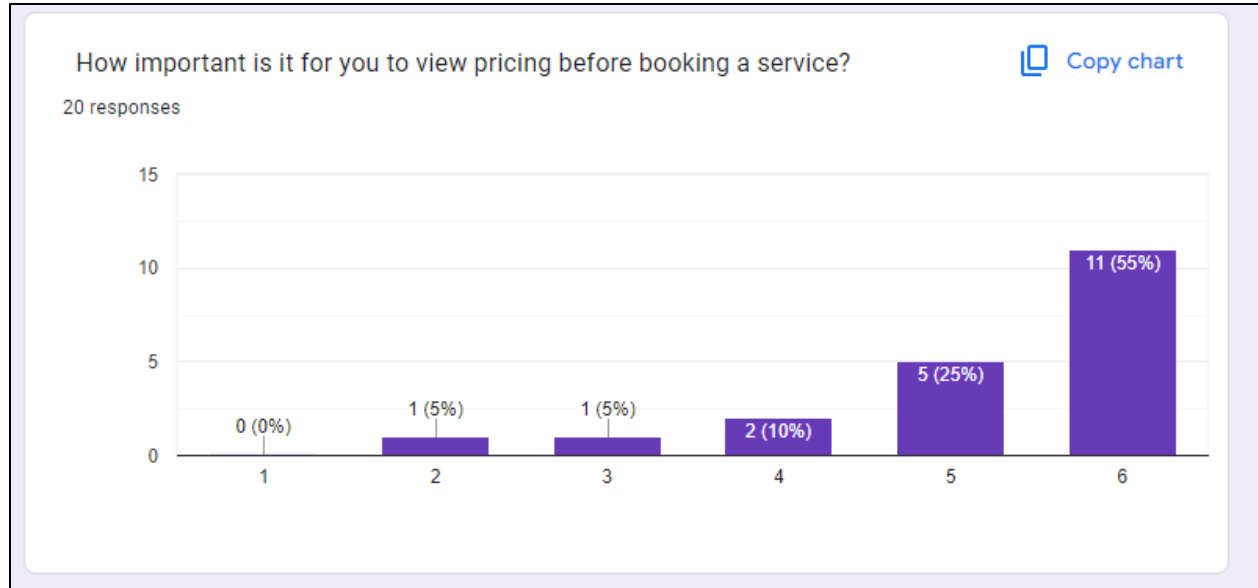


Figure 20 - Requirement Gathering

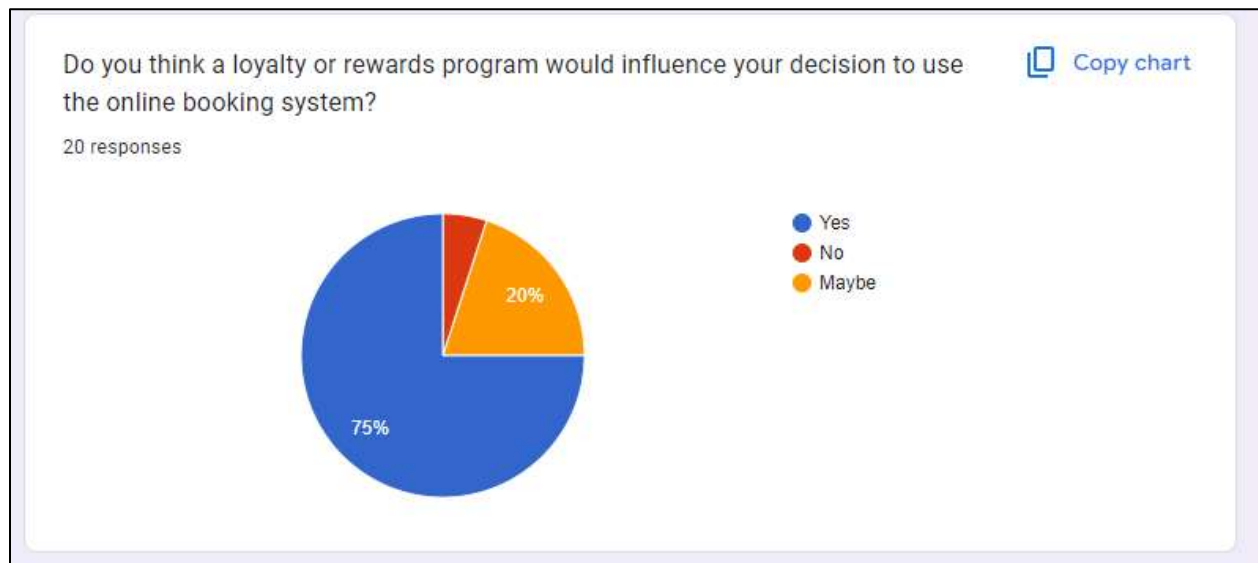


Figure 21 - Requirement Gathering

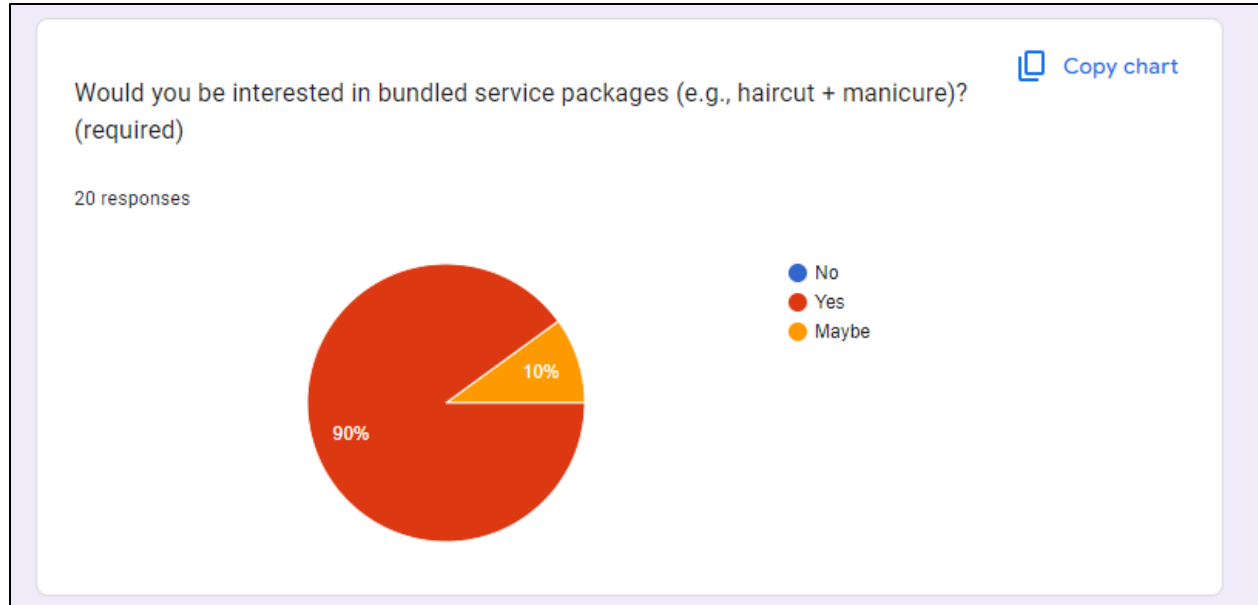


Figure 22 - Requirement Gathering

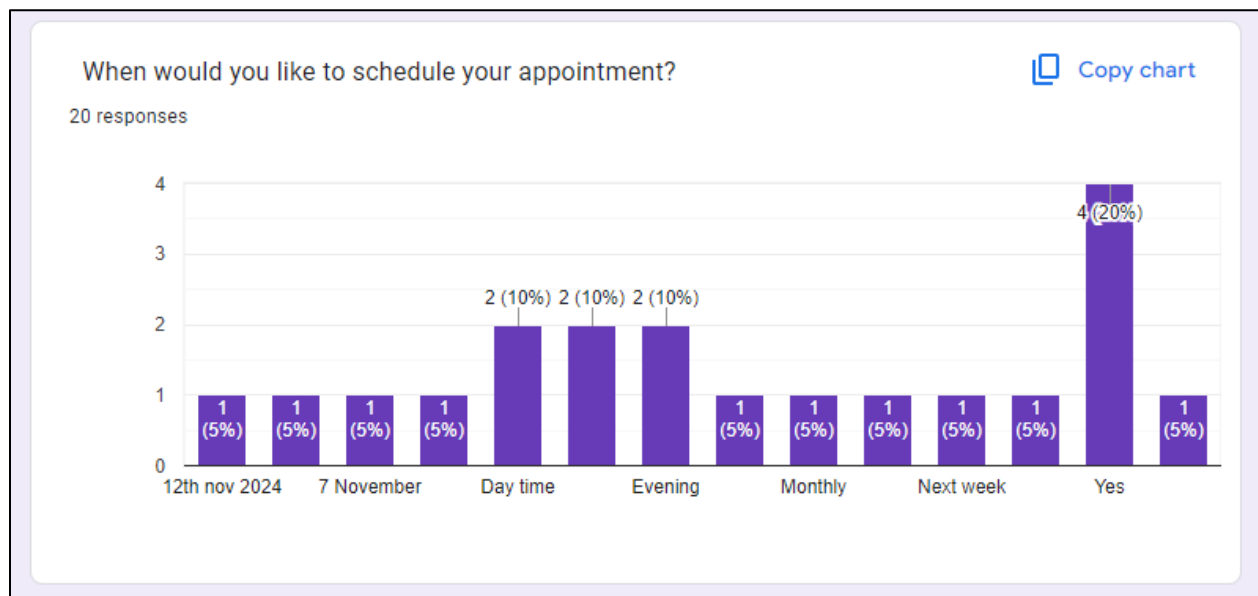


Figure 23 - Requirement Gathering





Figure 24 - Requirement Gathering

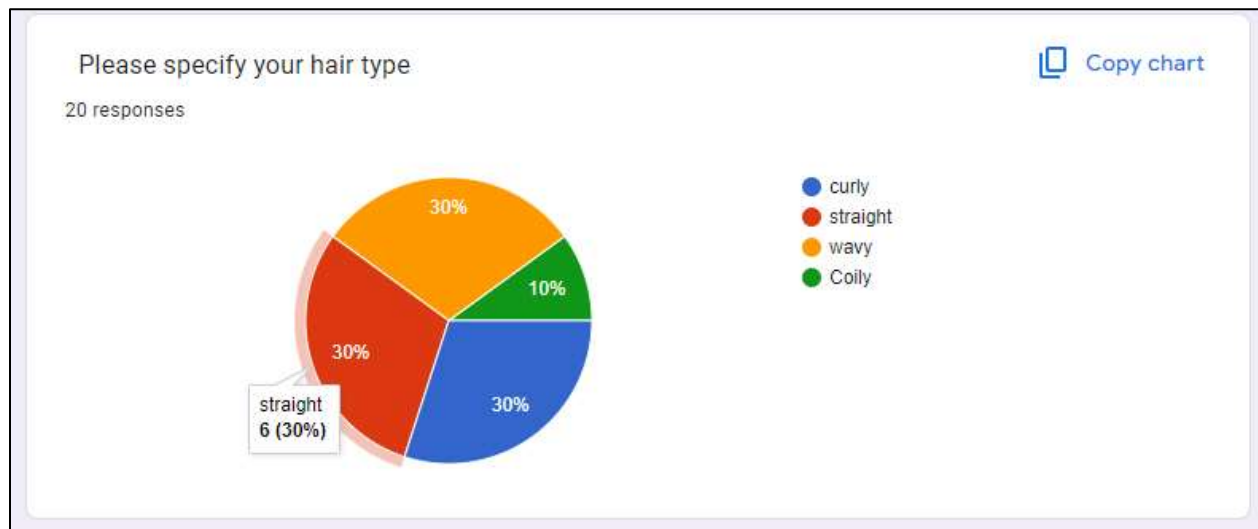


Figure 25 - Requirement Gathering

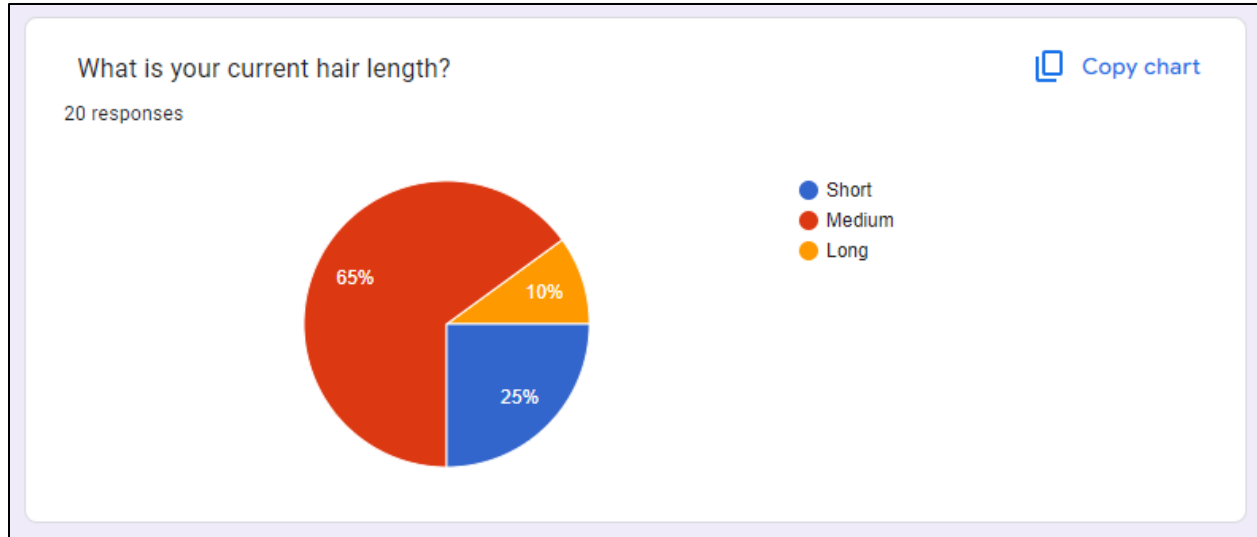


Figure 26 - Requirement Gathering

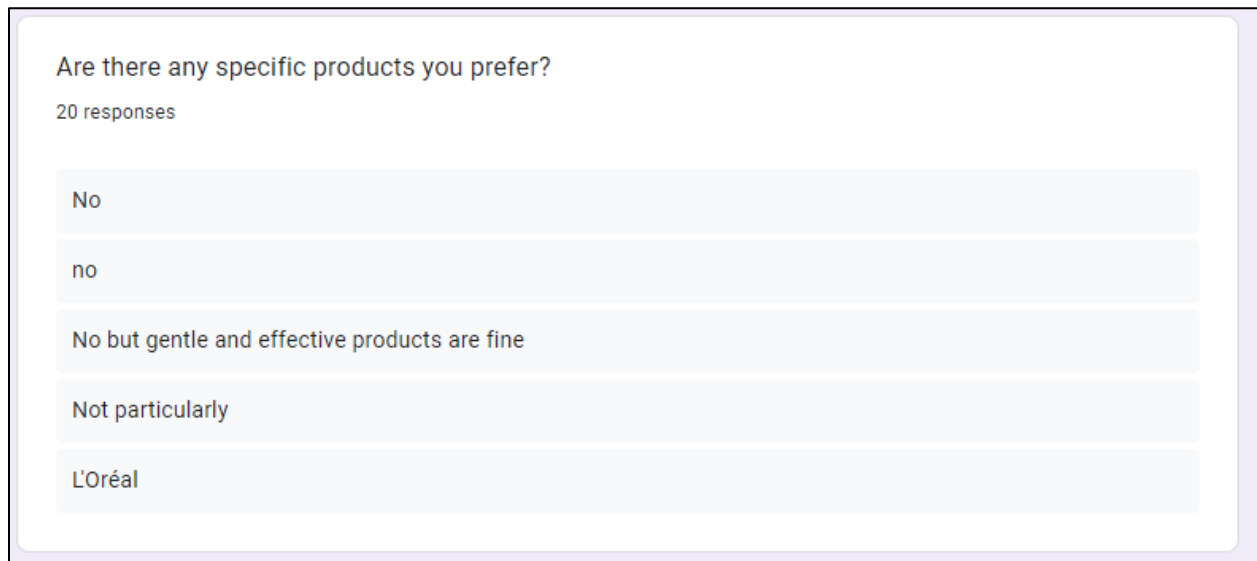


Figure 27 - Requirement Gathering

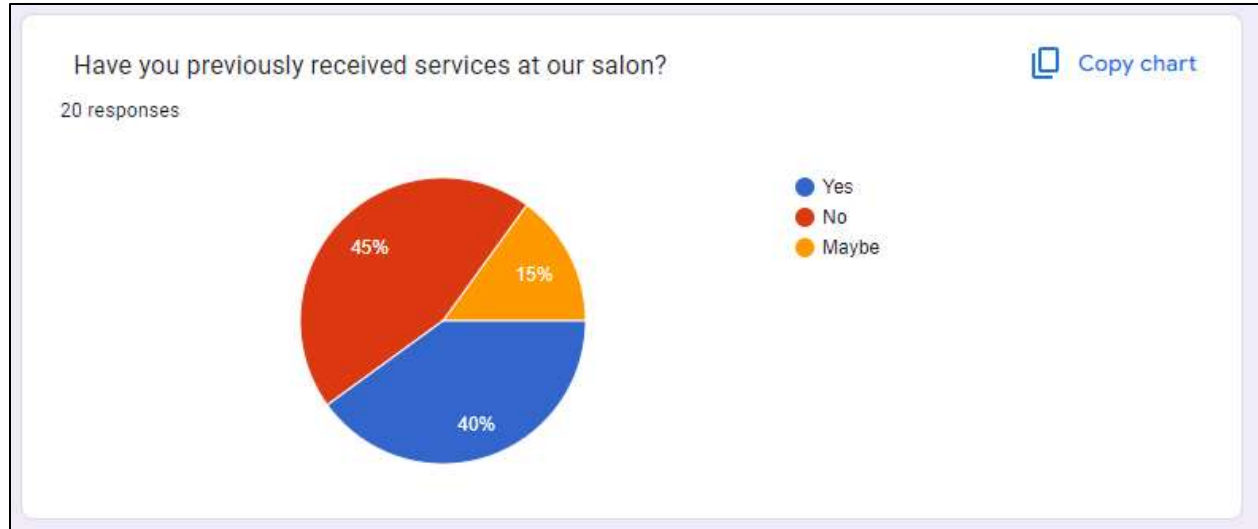


Figure 28 - Requirement Gathering

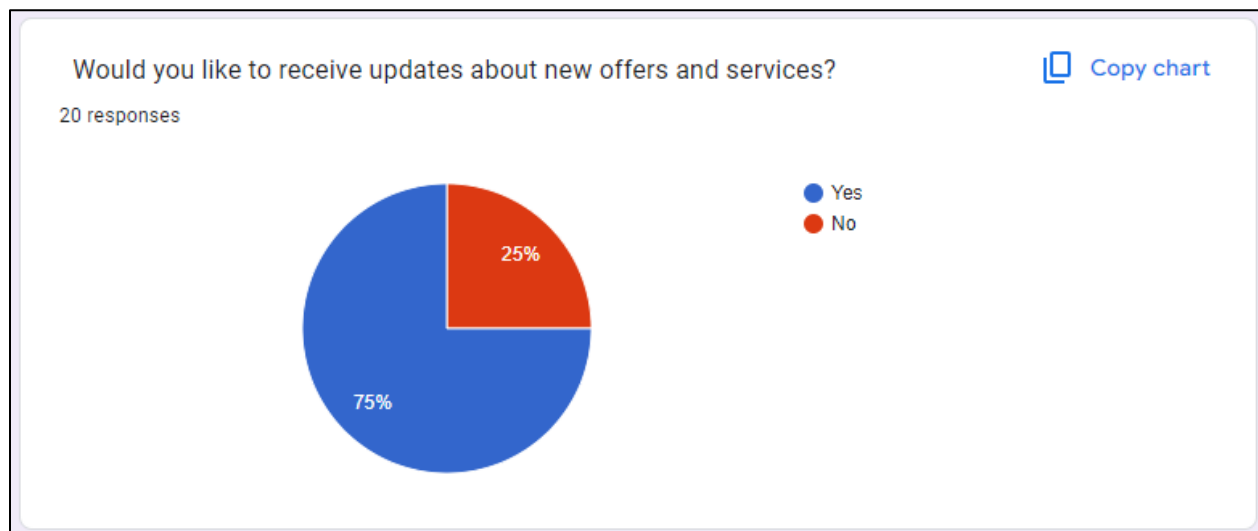


Figure 29 - Requirement Gathering

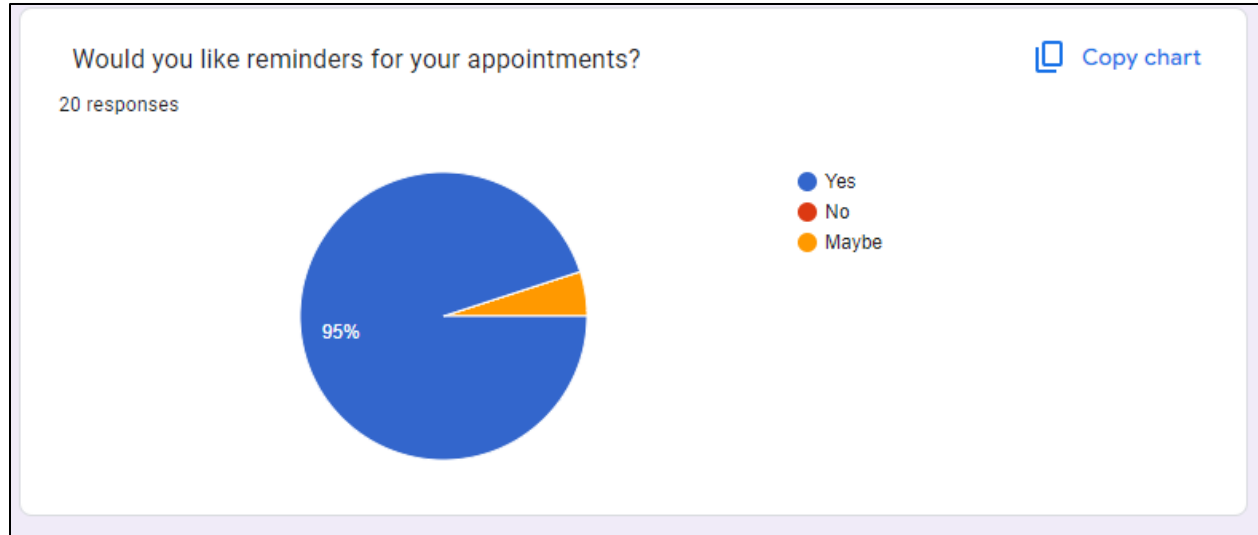


Figure 30 - Requirement Gathering

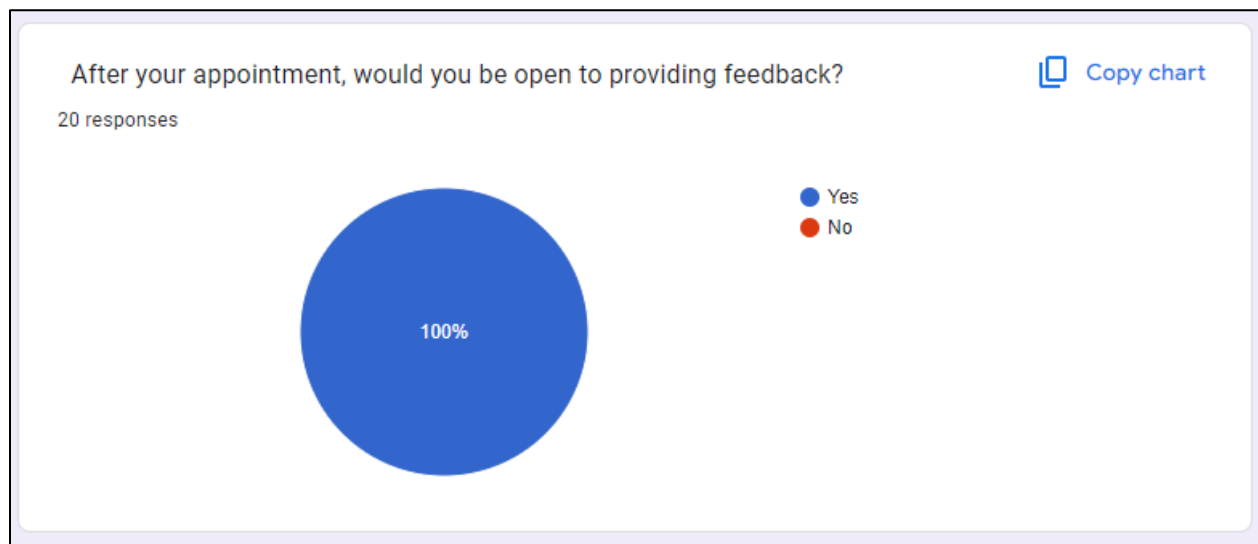


Figure 31 - Requirement Gathering



Figure 32 - Requirement Gathering



Figure 33 - Requirement Gathering

Any additional features or suggestions you would like to see in an online salon management system?

7 responses

- No
- Add about Barber's experience
- product sales
- Yes
- Product sale
- Safety and Sanitation Compliance

Figure 34 - Requirement Gathering

### c. Questionnaire asked from my client

#### 1. Real-Time Appointment Booking

Question: How do you envision the appointment booking process?

Example Answer: Customers should see available slots in real-time and be able to book directly through the app.

Question: Are there any specific time slot configurations (e.g., duration of services) we should implement?

Example Answer: Each appointment should be 30 minutes, with a 15-minute buffer between bookings.

#### 2. Service Selection

Question: What services do you want to offer in the app?

Example Answer: Haircuts, facials, manicures, and massages.

Question: Should services have different pricing or require additional details (e.g., length, type)?



## Project Proposal

Example Answer: Yes, each service should have a price and a brief description.

### 3. Stylist Selection

Question: How do you want customers to select their stylist?

Example Answer: Customers should see stylists based on their availability and portfolio.

Question: What information should be displayed in the stylist profiles?

Example Answer: Photos, previous work, customer reviews, and available appointment slots.

### 4. Booking Confirmation & Reminders

Question: How should customers receive booking confirmations?

Example Answer: Via email and in-app notifications.

Question: How far in advance should reminders be sent?

Example Answer: 24 hours before the appointment.

### 5. User Profile Management

Question: What user information do you want to collect during profile creation?

Example Answer: Name, email, phone number, and preferred communication method.

Question: Should users be able to update their profiles?

Example Answer: Yes, users should have the option to edit their profiles anytime.

### 6. Loyalty Program

Question: How will customers earn loyalty points?

Example Answer: Customers earn points for every booking, and bonus points for referrals.

Question: What kind of discounts will be available through the loyalty program?

Example Answer: 10% off for every 100 points earned.

### 7. Online Payments



## Project Proposal

Question: Which payment gateways do you prefer for processing payments?

Example Answer: PayPal, Stripe, and credit card processing.

Question: Should there be options for partial payments or deposits?

Example Answer: Yes, customers should have the option to pay a deposit when booking.

### 8. Push Notifications

Question: What types of notifications do you want to send to customers?

Example Answer: Appointment reminders, promotional offers, and updates on new services.

Question: How often do you want to send promotional notifications?

Example Answer: Monthly or during special events.

### 9. In-App Chat

Question: What capabilities do you want for the in-app chat feature?

Example Answer: Customers should be able to chat with stylists for inquiries and appointment details.

Question: Should chat history be saved for reference?

Example Answer: Yes, users should have access to their previous chats.

### 10. Stylist Portfolio

Question: What information should be included in a stylist's portfolio?

Example Answer: Photos of past work, customer testimonials, and stylist qualifications.

Question: How should portfolios be categorized (e.g., by service type)?

Example Answer: Portfolios should be categorized by service type and stylist specialties.

### 11. Reviews & Feedback

Question: How do you want to collect feedback from customers?

Example Answer: After each appointment, customers should be prompted to rate their experience.





## Project Proposal

Question: Should reviews be public or private?

Example Answer: Reviews should be public, but customers should have the option to hide their identity.

### 12. Admin Dashboard

Question: What key metrics do you want to see in the admin dashboard?

Example Answer: Total bookings, revenue generated, and customer retention rates.

Question: Should the dashboard allow for export of reports?

Example Answer: Yes, it should allow exporting reports in CSV and PDF formats.

### 13. Technology Used for Sulochana Salon Website

#### a. Frontend

- **HTML:** The core structure of the website, ensuring semantic elements like `<header>`, `<footer>`, `<main>`, and others for improved accessibility.



## Project Proposal

- CSS: For styling and layout control, ensuring a visually appealing and responsive design.
- JavaScript: Adds interactivity and dynamic behavior to the webpage, like form validation, appointment scheduling, and user notifications.
- Bootstrap 5: A responsive design framework used to ensure that the website adapts smoothly across devices (desktop, tablet, mobile).
- jQuery: A fast and lightweight JavaScript library used for DOM manipulation, simplifying tasks like animations, event handling, and AJAX requests.
- Font Awesome: For adding vector-based icons (e.g., for buttons, forms, and other elements).
- Chart.js: Used for visualizing data in the admin dashboard, providing interactive and informative charts for better decision-making.

### b. Backend

- PHP 7.4+: Server-side scripting language used to handle logic, database interactions, and user authentication.
- PDO (PHP Data Objects): Ensures secure database operations by preventing SQL injection attacks.
- MySQL: Relational database system used for storing and managing user data, appointment records, and other dynamic website content.
- Apache (XAMPP): The web server running on the local development environment, serving the PHP code to users' browsers.

### c. Development Tools

- Visual Studio Code: A lightweight, powerful code editor used by developers for writing and managing code.
- XAMPP: A local server environment that includes Apache, MySQL, and PHP for testing and development before deployment.
- Git: Version control tool for code management and collaboration.

---

## 14. Justification for the Methodology (Agile)

Agile methodology is ideal for the Sulochana Salon Website because:

- Flexibility: Agile accommodates frequent changes, which is essential in the fast-evolving salon industry where client preferences and trends can change rapidly.



## Project Proposal

- **User Feedback:** The iterative nature of Agile allows for frequent feedback loops from both salon staff and clients, ensuring that the system meets their needs.
- **Quick Delivery:** Agile allows for early delivery of basic features (e.g., user registration, appointment booking), providing immediate value to users, and then builds upon it over time.
- **Risk Mitigation:** Agile's continuous testing and frequent iterations help identify and address risks early in the development process.

## 15. Risks and Uncertainties

### a. Technical Risks:

- **Integration Issues:** Difficulty in integrating third-party services (e.g., payment gateways, email services) and potential system crashes.
- **Database Performance:** Managing large amounts of user data, appointment records, and logs may affect the performance of the database.
- **Security Concerns:** User data, including sensitive information (e.g., payment details), must be handled securely. Ensuring robust encryption and compliance with regulations (e.g., GDPR) is critical.

### b. Business Risks:

- **User Adoption:** If salon staff and clients resist adopting the new system, it could lead to low engagement.
- **Customer Learning Curve:** Users may face a learning curve with new features or interfaces.
- **Staff Training:** Ongoing training may be required to ensure that the salon staff efficiently use the new system.

### c. Operational Risks:

- **System Downtime:** Any downtime in the system could disrupt the salon's operations, particularly in managing bookings.
- **Backup Management:** Failure to manage regular backups could lead to data loss in case of system failures.

### d. Module Details

#### i. User Management Module:

- **User Registration:** Allows new clients and salon staff to register accounts with necessary details (name, email, phone number).



## Project Proposal

- Login/Logout Functionality: Secures access for users based on roles (client, admin).
- Role Management: Admin can assign roles to staff, ensuring proper access control.
- ii. Appointment Management:
  - Booking System: Clients can book, cancel, or reschedule appointments.
  - Admin Management: Admins can view, modify, and manage all appointments.
  - Service Catalog: A listing of services available at the salon, categorized for easy selection.
- iii. Service Management:
  - Service Listings: Admins can add, edit, and remove salon services and their pricing.
  - Stylist Assignment: Assign specific services to stylists based on availability.
- iv. Notification System:
  - Email Alerts: Clients receive email notifications for appointment confirmations and reminders.
  - SMS Notifications: Reminders are sent via SMS for upcoming appointments.

## 16. Testing Methodology and Justification

- a. Testing Types:
  1. Unit Testing: Testing individual functions and components for correctness.
  2. Integration Testing: Ensuring that different parts of the system (e.g., booking system, user management) work well together.
  3. Functional Testing: Verifying that the system's functionality meets the business requirements, e.g., clients can book appointments and receive confirmations.
  4. Security Testing: Checking for vulnerabilities, such as SQL injection or cross-site scripting (XSS).
  5. Performance Testing: Ensuring the system can handle a high volume of users or appointments without slowing down.
- Justification for Testing: The success of the salon website hinges on reliability and user satisfaction. Frequent testing ensures that potential bugs and issues are caught early, reducing the risk of system downtime or user frustration.



## Project Proposal

### 17. Comprehensive Test Plan for Sulochana Salon System

#### 1. Test Plan Summary

System Component	Features Count	Test Cases Count	Priority
Client Side	10	30	High
Admin Side	10	30	High
Total	20	60	High

Table 6

#### 2. Client Side Test Cases

##### ▪ Client Side Features Summary

ID	Feature Category	Feature Name	Test Cases	Status	Priority
C1	Authentication	User Registration	TC-C101-C103	Complete	High
C2	Authentication	User Login	TC-C104-C108	Complete	High
C3	User Management	Profile Management	TC-C109-C112	Complete	Medium
C4	Appointment	Booking System	TC-C113-C117	Complete	High
C5	Appointment	Appointment Tracking	TC-C118-C120	Complete	Medium
C6	Services	Service Selection	TC-C121-C123	Complete	High
C7	Feedback	Rating System	TC-C124-C126	Complete	Low
C8	Notifications	Email Notifications	TC-C127-C128	Complete	Medium
C9	Notifications	Status Updates	TC-C129-C130	Complete	Medium
C10	User Interface	Responsive Design	TC-C131-C132	Complete	Medium

Table 7

##### ➤ Client Side Detailed Test Cases

##### ○ C1. User Registration (TC-C101-C103)

Test ID	Test Case	Test Steps	Expected Result	Actual Result	Status
TC-C101	Valid Registration	1. Fill all required fields 2. Submit form	Account created successfully	As expected	Pass



## Project Proposal

TC-C102	Registration with Missing Fields	1. Fill incomplete form 2. Submit form	Validation errors shown	As expected	Pass
TC-C103	Duplicate Email Registration	1. Register with existing email 2. Submit form	Error message about duplicate email	As expected	Pass

Table 8

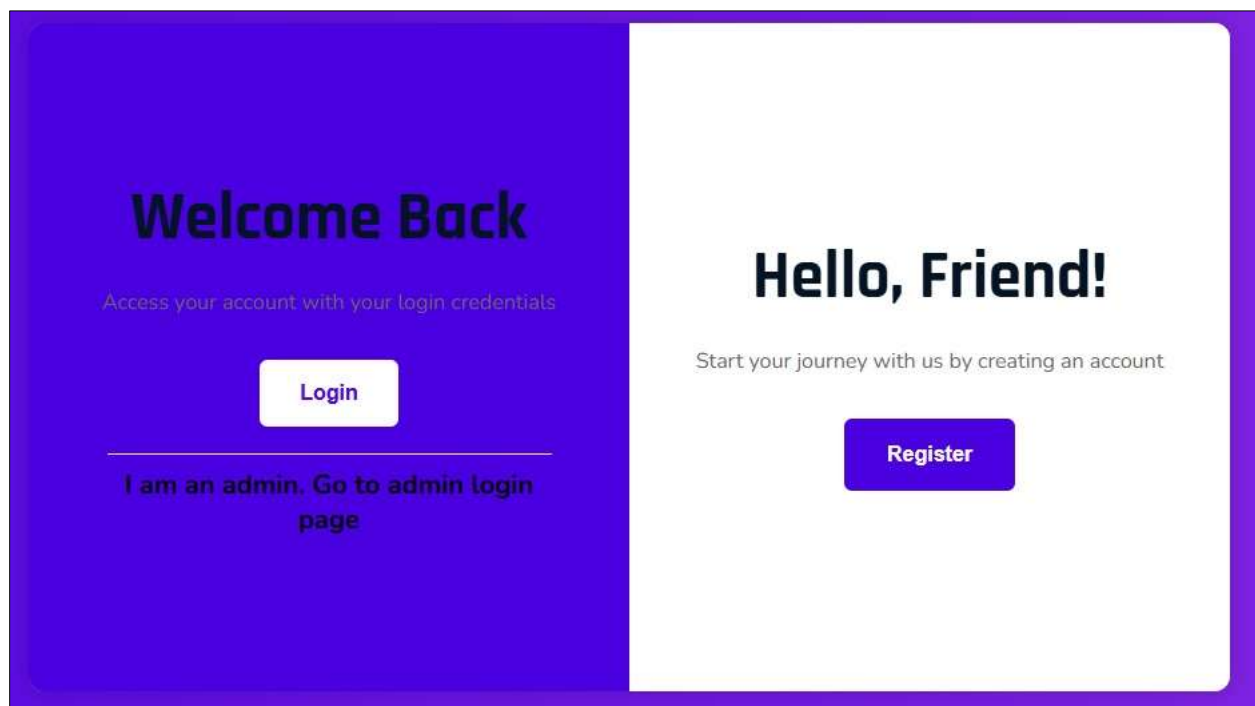


Figure 35



## Project Proposal

### Welcome Back!

Already have an account? Click below to log in.

Login

### Register

Female

▼

11/11/2000

📅

Choose File

ss.png

### Account Information

Figure 36



## Project Proposal

### Welcome Back!

Already have an account? Click below to log in.

Login

#### Account Information

Client2

.....

#### Service Preferences

wwwww

wwwww

Evening

#### Health & Safety Information

ss

ss

Figure 37





## Project Proposal

### Welcome Back!

Already have an account? Click below to log in.

Login

### Service Preferences

wwwwww

wwwwww

Evening

### Health & Safety Information

ss

ss

Register

I am an admin. Go to admin login page

Figure 38

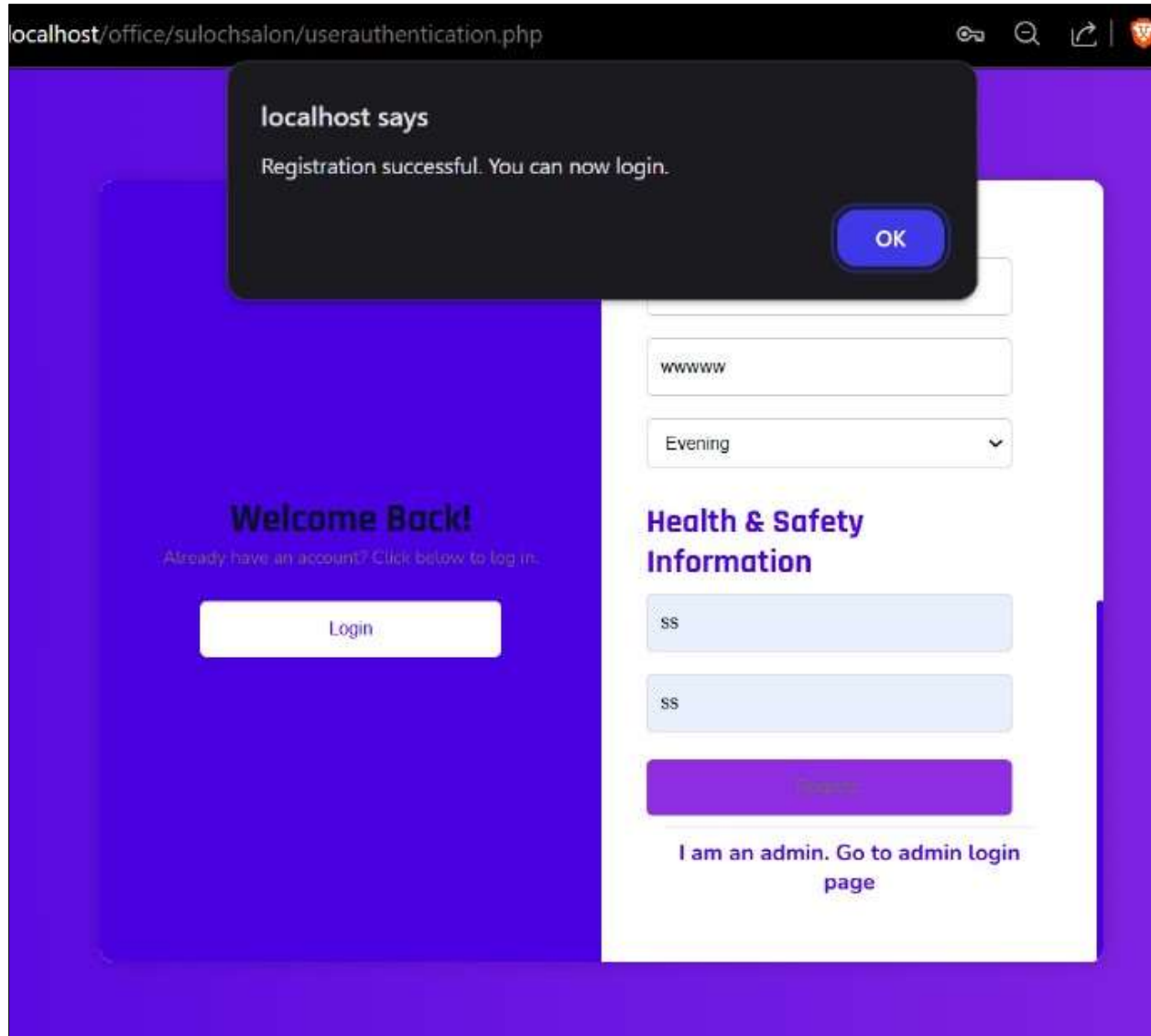


Figure 39

## ○ C2. User Login (TC-C104-C108)

Test ID	Test Case	Test Steps	Expected Result	Actual Result	Status
TC-C104	Valid Login	1. Enter valid credentials 2. Click login	Successful login	As expected	Pass
TC-C105	Invalid Password	1. Enter wrong password	Error message	As expected	Pass



## Project Proposal

TC-C106	Empty Fields	1. Submit empty form	Validation message	As expected	Pass
TC-C107	Password Reset	1. Click forgot password 2. Enter email	Reset email sent	As expected	Pass
TC-C108	Session Check	1. Login 2. Close browser 3. Reopen	Session maintained	As expected	Pass

Table 9

**Login**

Client2

.....

[Forgot Password?](#)

**Login**

[I am an admin. Go to admin login page](#)

**Hello, Welcome!**

[Don't have an account? Click below to register.](#)

**Register**

Figure 40

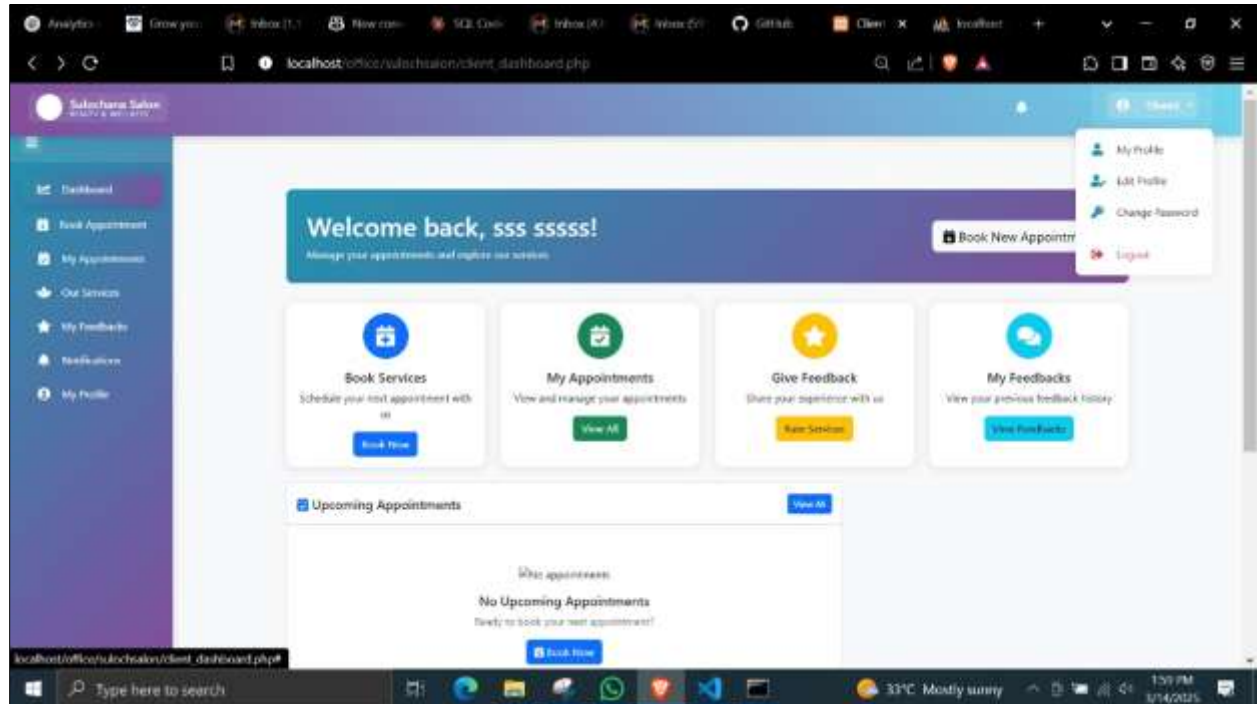


Figure 41

## ○ C3. Profile Management (TC-C109-C112)

Test ID	Test Case	Test Steps	Expected Result	Actual Result	Status
TC-C109	Update Profile	1. Edit profile details 2. Save changes	Profile updated	As expected	Pass
TC-C110	Change Password	1. Enter current & new password 2. Submit	Password changed	As expected	Pass
TC-C111	Upload Profile Photo	1. Select image 2. Upload	Photo updated	As expected	Pass
TC-C112	Delete Account	1. Select delete account 2. Confirm deletion	Account deleted	As expected	Pass

Table 10

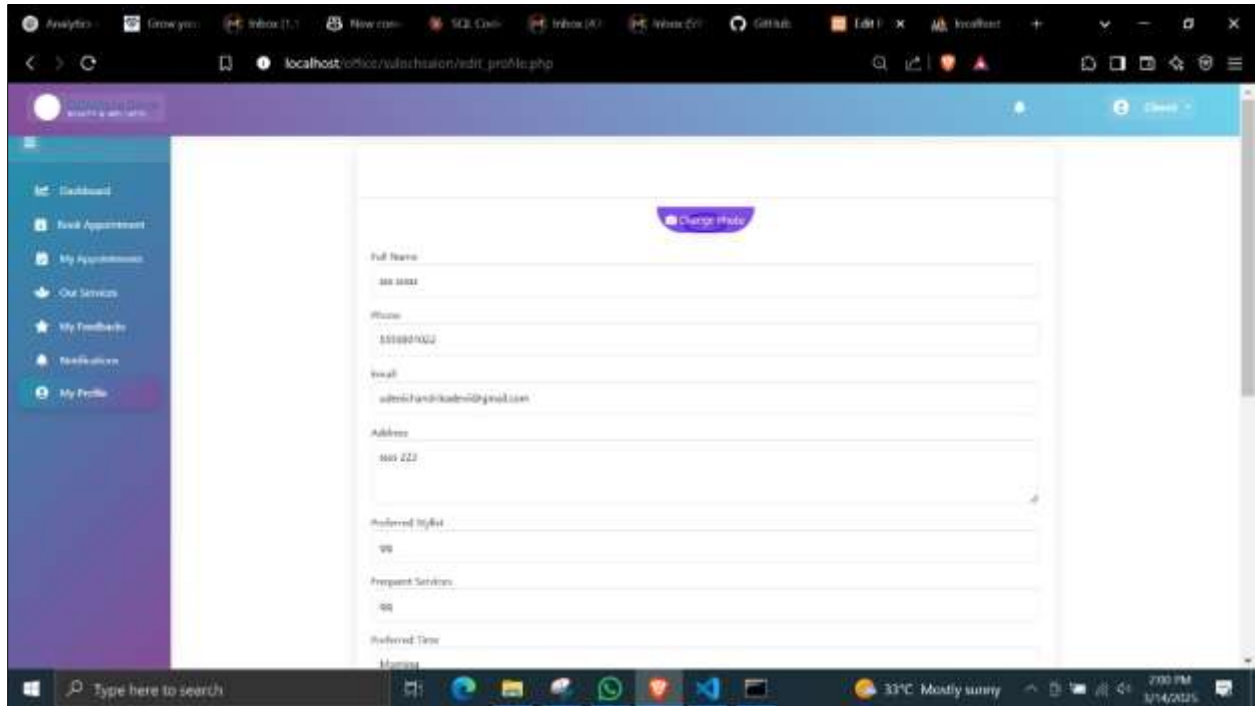


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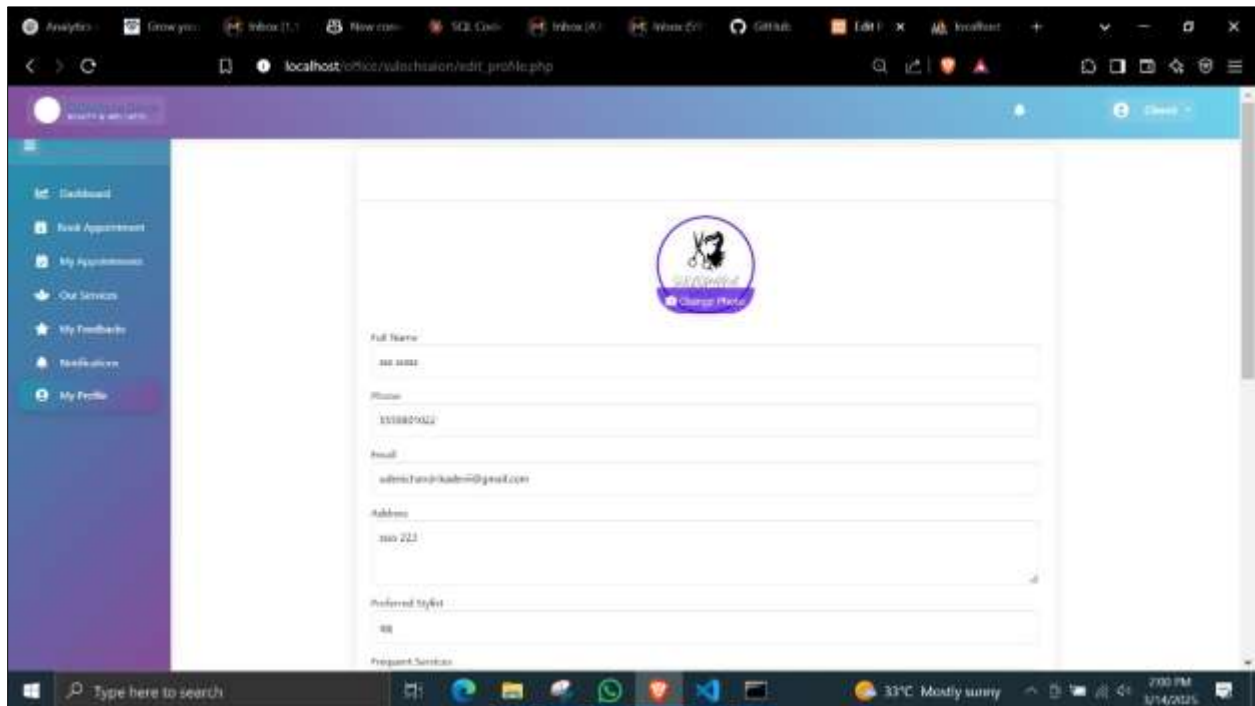


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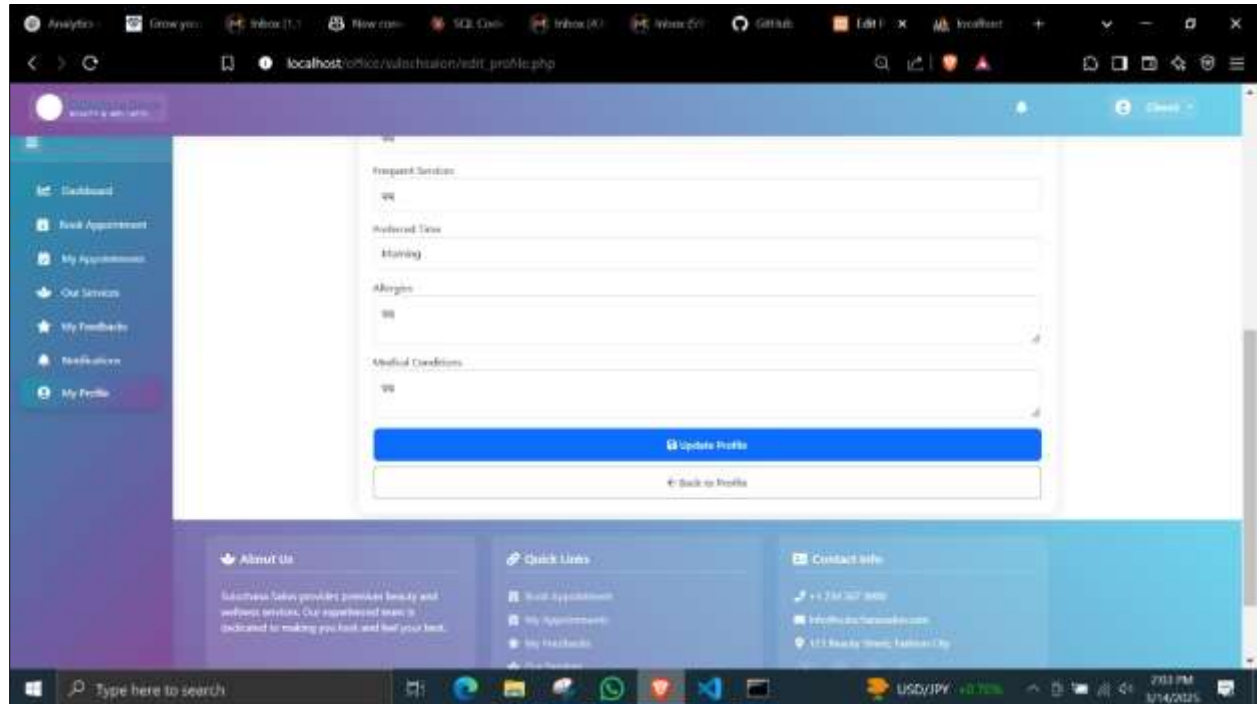


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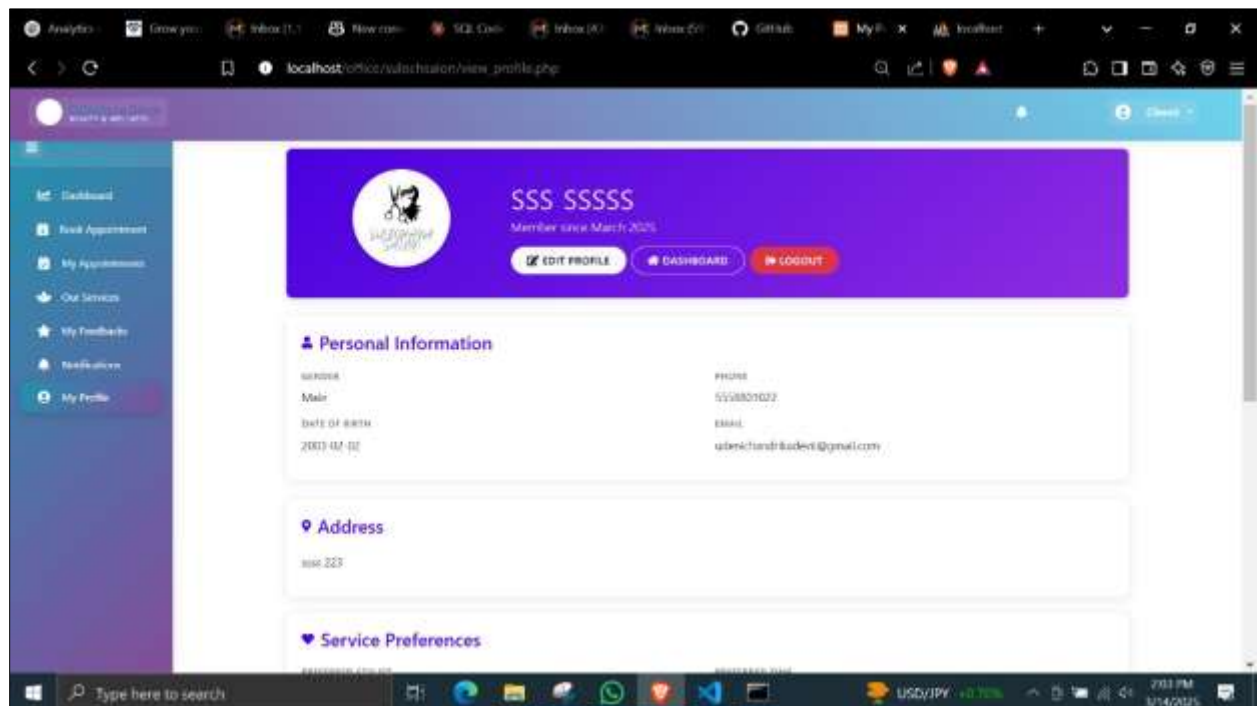


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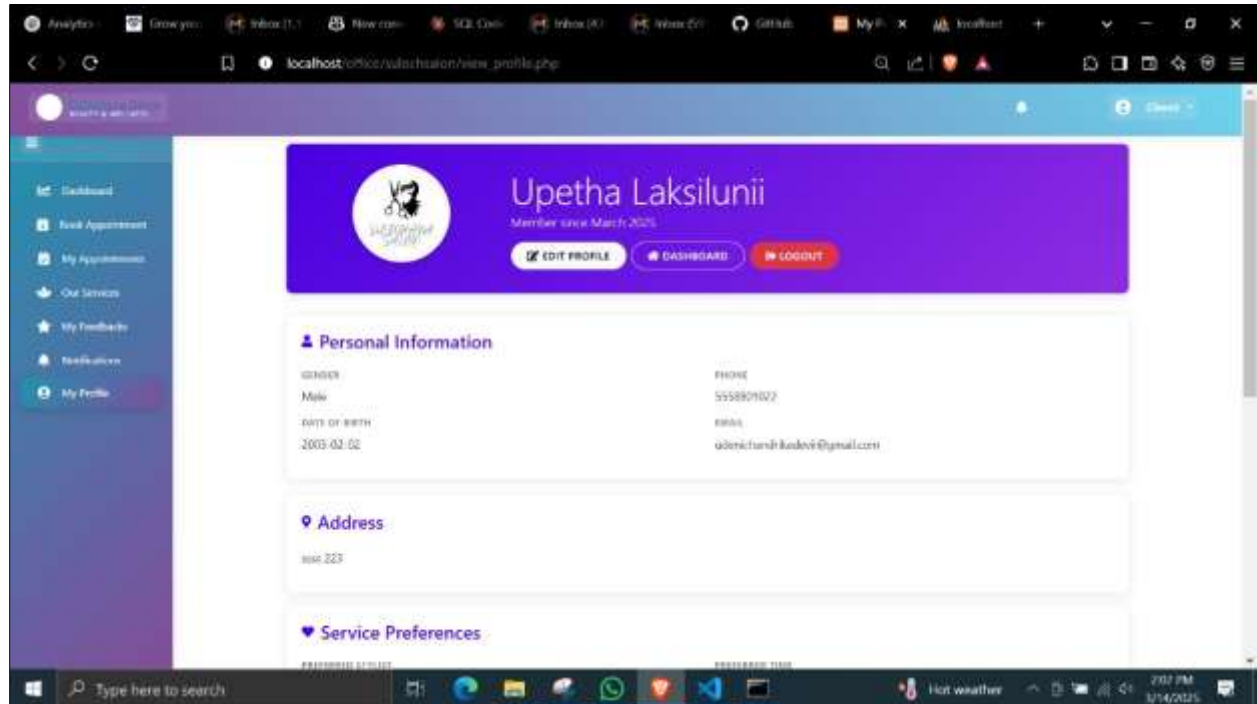


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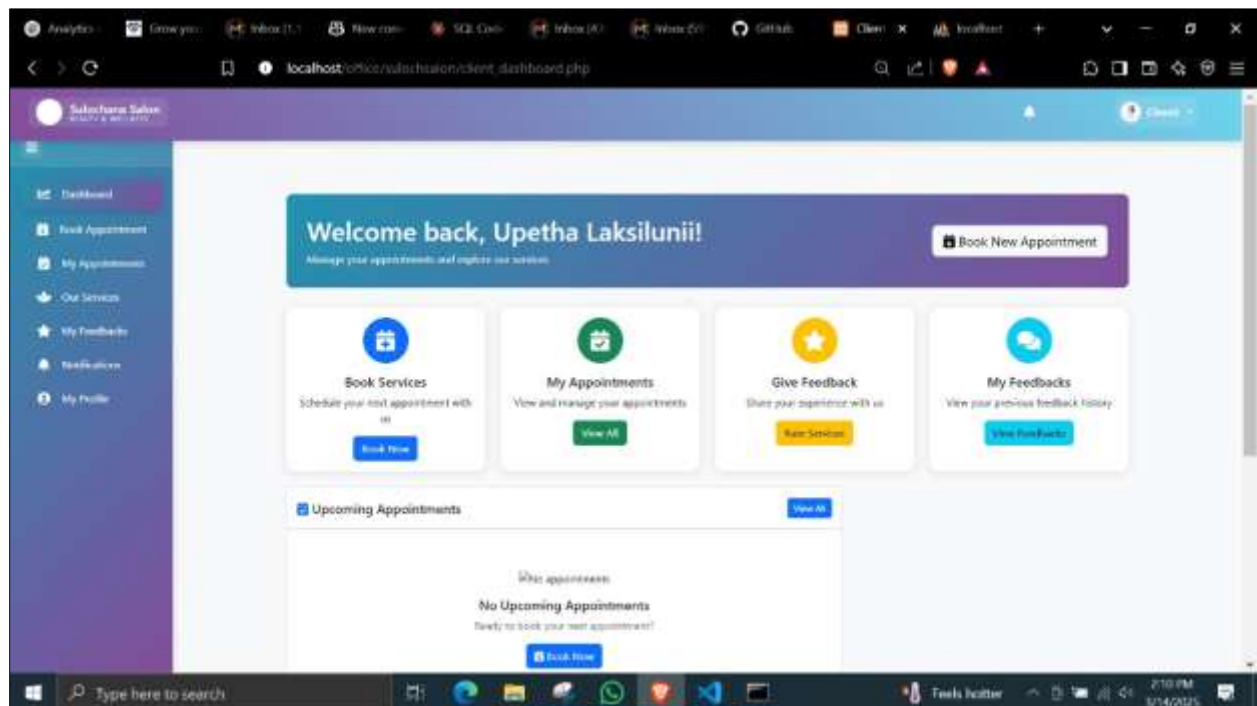


Figure 47



## Project Proposal

### ○ C4. Booking System (TC-C113-C117)

Test ID	Test Case	Test Steps	Expected Result	Actual Result	Status
TC-C113	Book Appointment	1. Select service 2. Choose date/time 3. Confirm	Booking confirmed	As expected	Pass
TC-C114	Cancel Booking	1. View appointments 2. Cancel booking	Booking cancelled	As expected	Pass
TC-C115	Reschedule	1. Select appointment 2. Change datetime	Updated successfully	As expected	Pass
TC-C116	Multiple Service Booking	1. Select multiple services 2. Complete booking	All services booked	As expected	Pass
TC-C117	Stylist Selection	1. Choose service 2. Select specific stylist 3. Book	Stylist assigned	As expected	Pass

Table 11



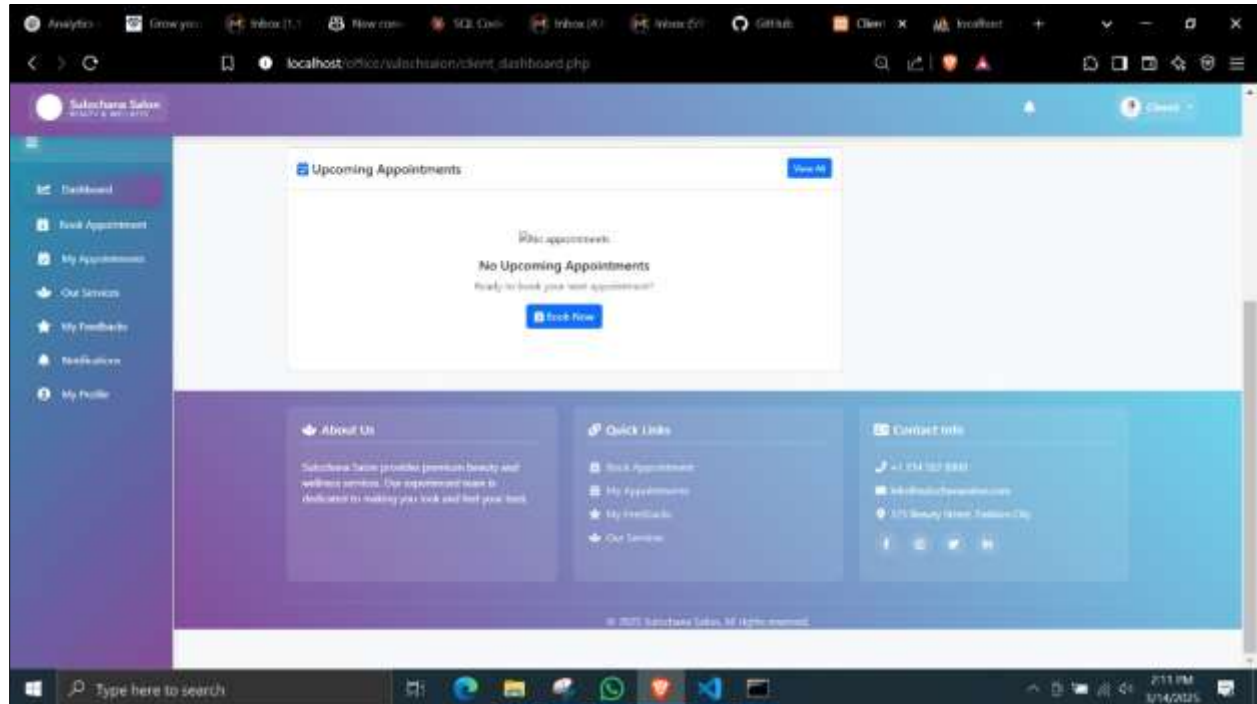


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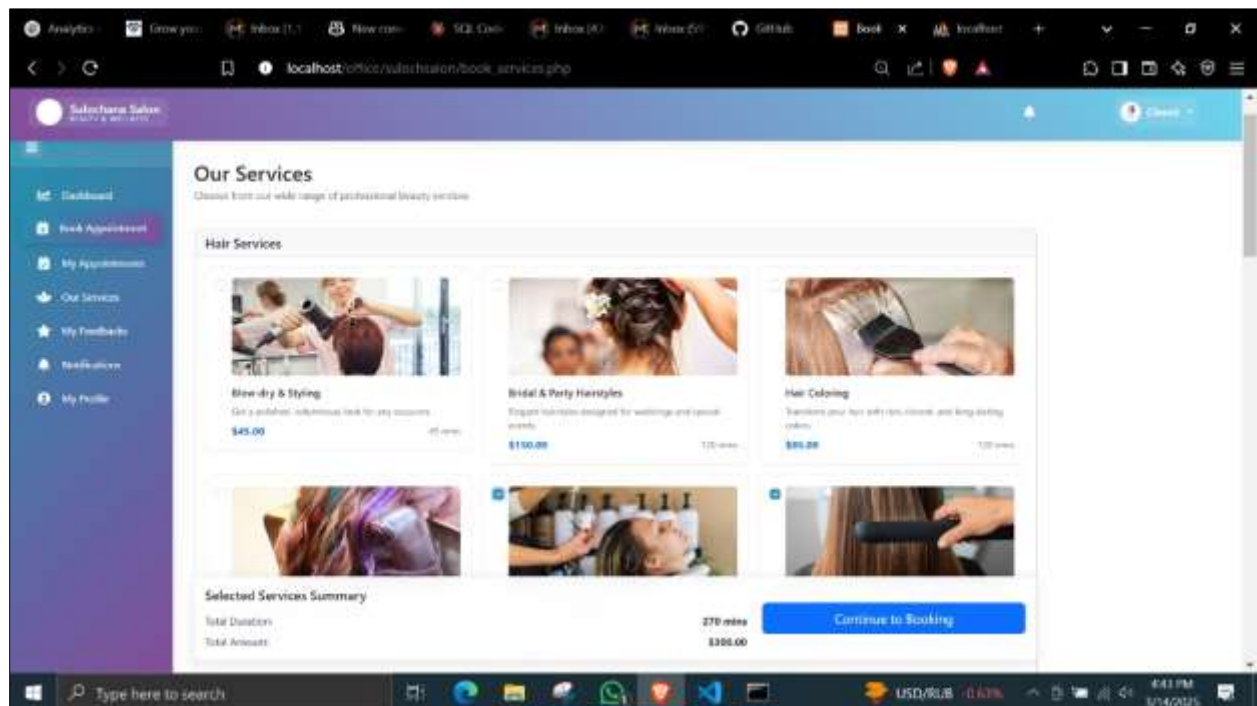


Figure 49

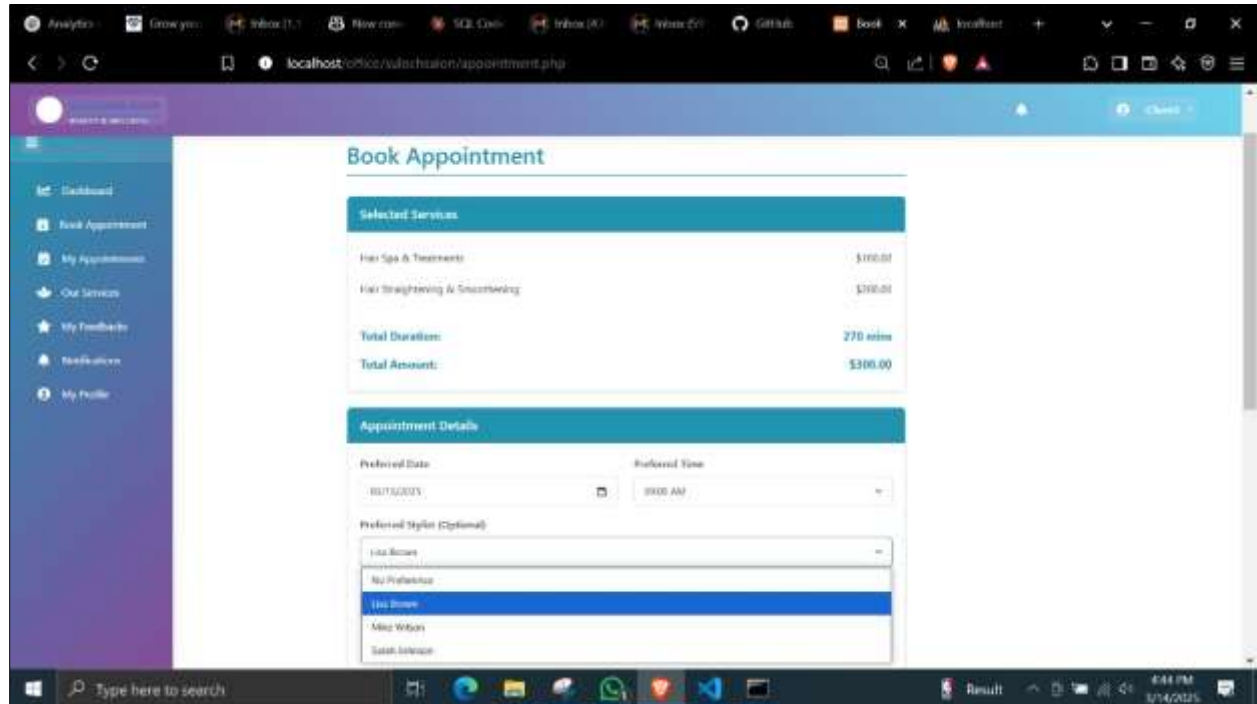


Figure 50



## Project Proposal

### Book Appointment

**Selected Services**

Hair Spa & Treatments	\$100.00
Hair Straightening & Smoothing	\$200.00
<b>Total Duration:</b>	<b>270 mins</b>
<b>Total Amount:</b>	<b>\$300.00</b>

**Appointment Details**

Preferred Date

03/15/2025

Preferred Time

09:00 AM

Preferred Stylist (Optional)

Lisa Brown

Special Instructions (Optional)

nothing

Book Appointment

Back to Services

Figure 51

#### ○ C5. Appointment Tracking (TC-C118-C120)

Test ID	Test Case	Test Steps	Expected Result	Actual Result	Status
---------	-----------	------------	-----------------	---------------	--------

## Project Proposal

TC-C118	View History	1. Access appointment history	List displayed	As expected	Pass
TC-C119	View Active Appointments	1. Check upcoming appointments	Active bookings shown	As expected	Pass
TC-C120	Check Status	1. View appointment details	Status displayed	As expected	Pass

Table 12

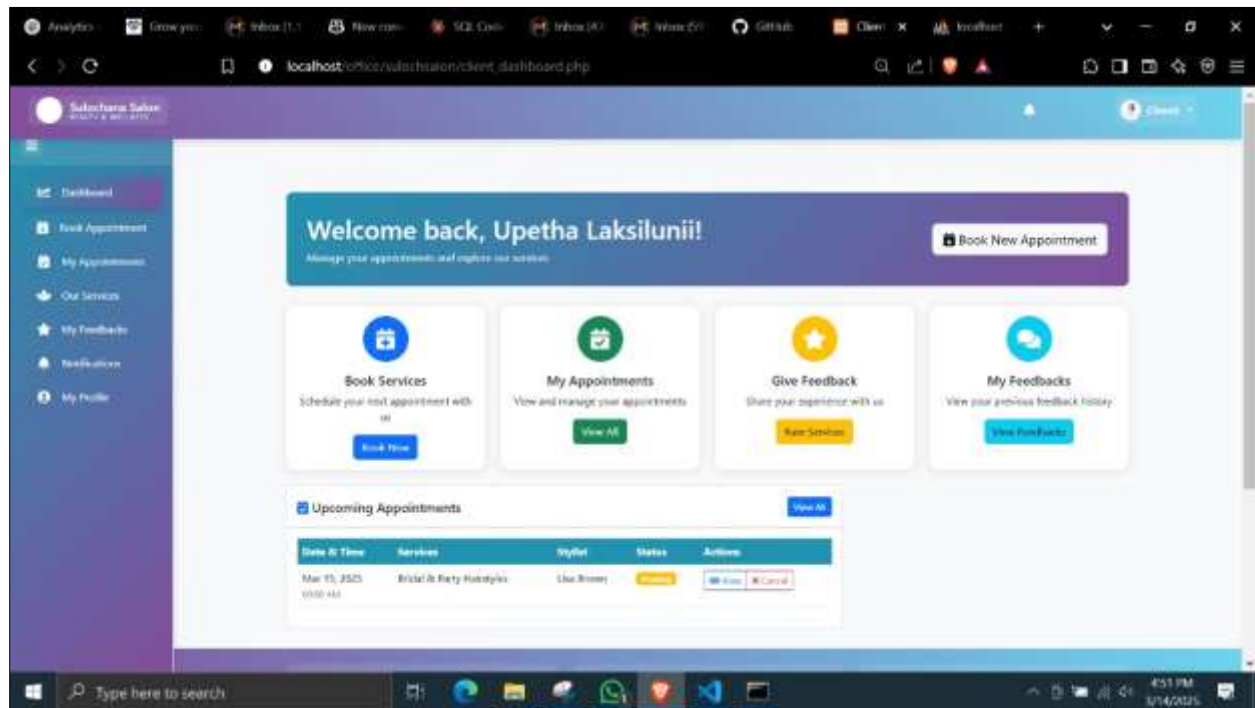


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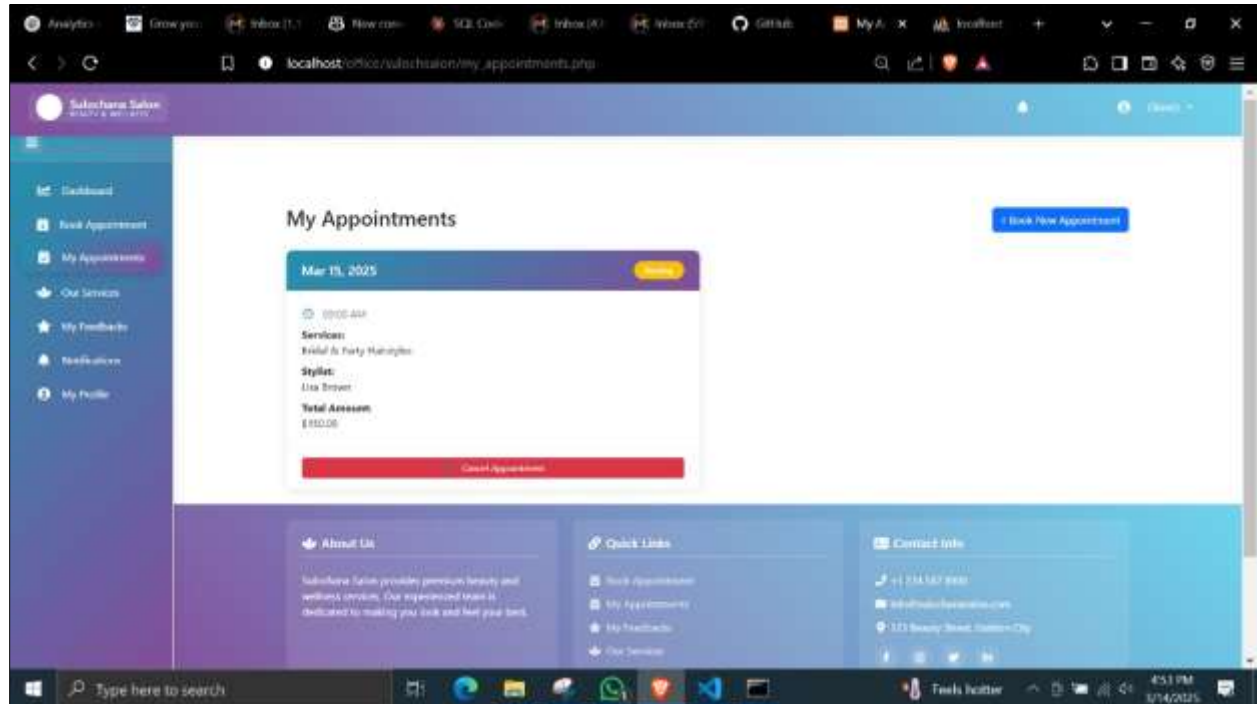


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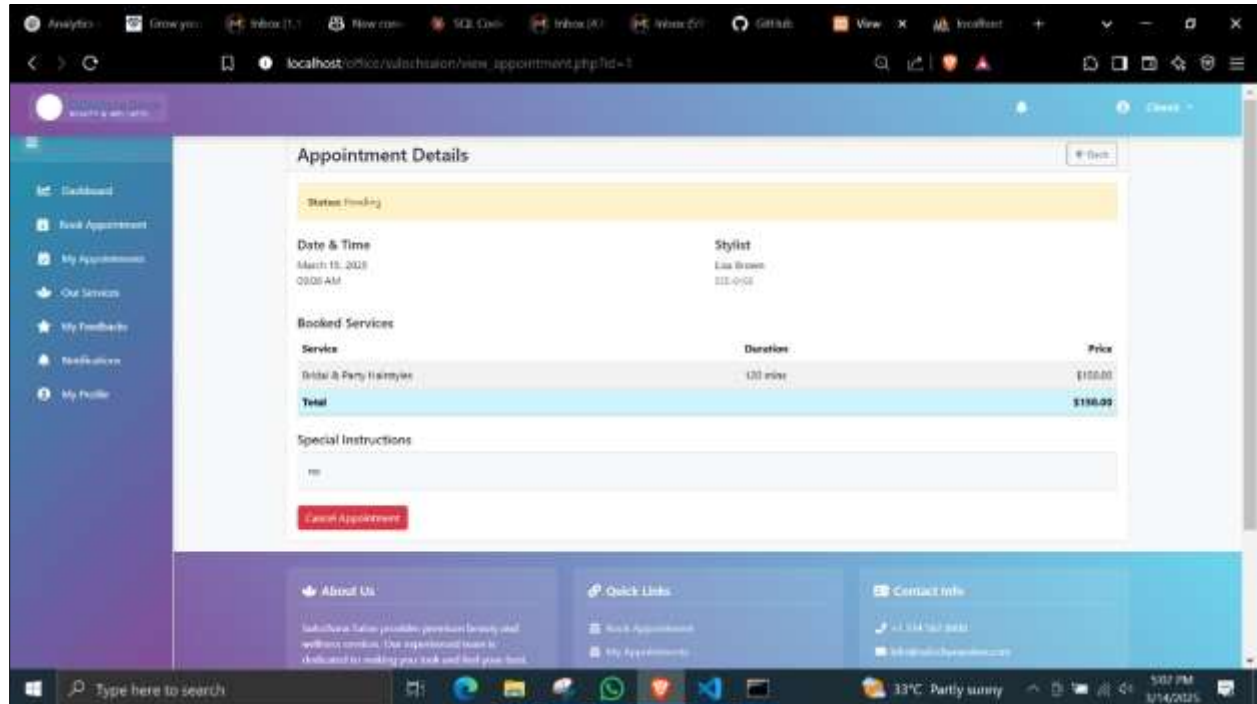


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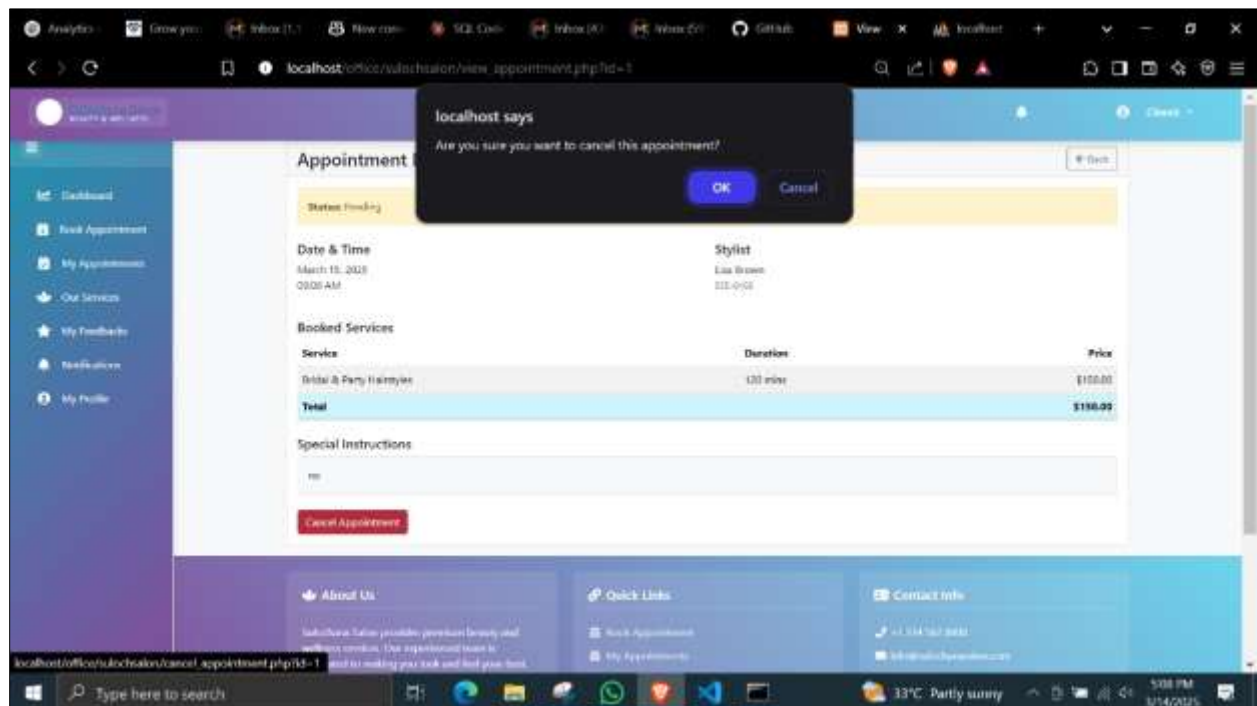


Figure 55

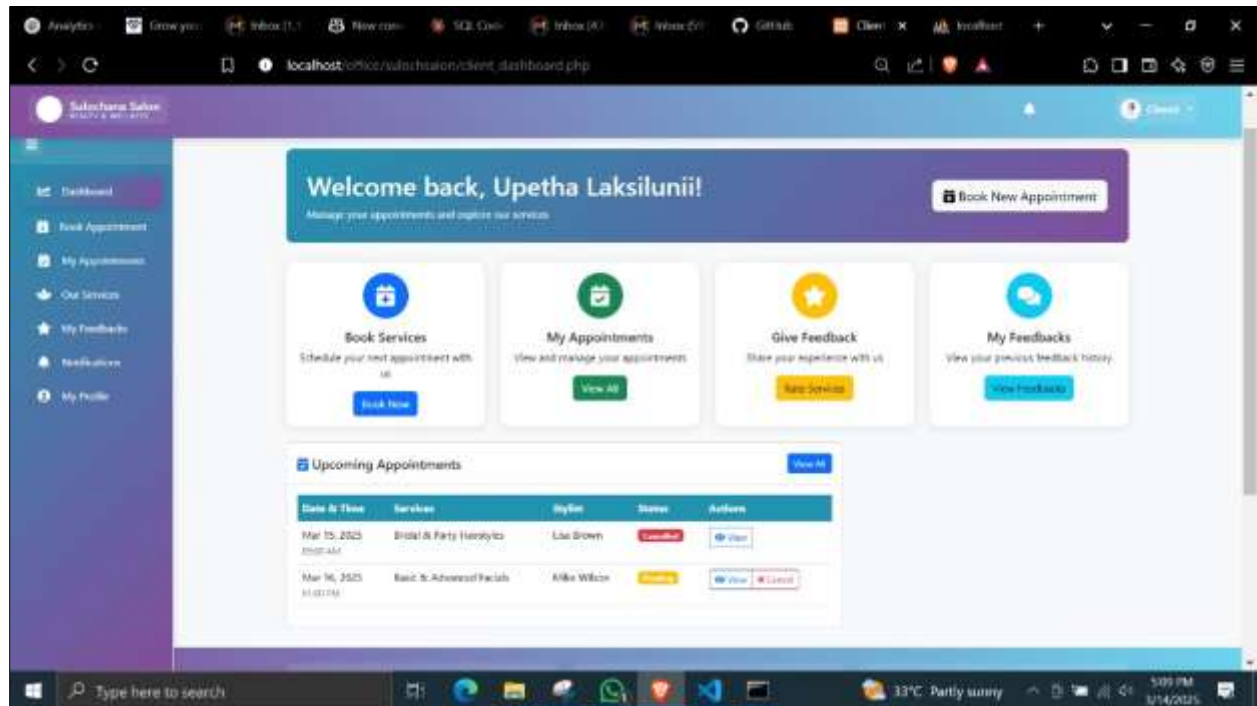


Figure 56

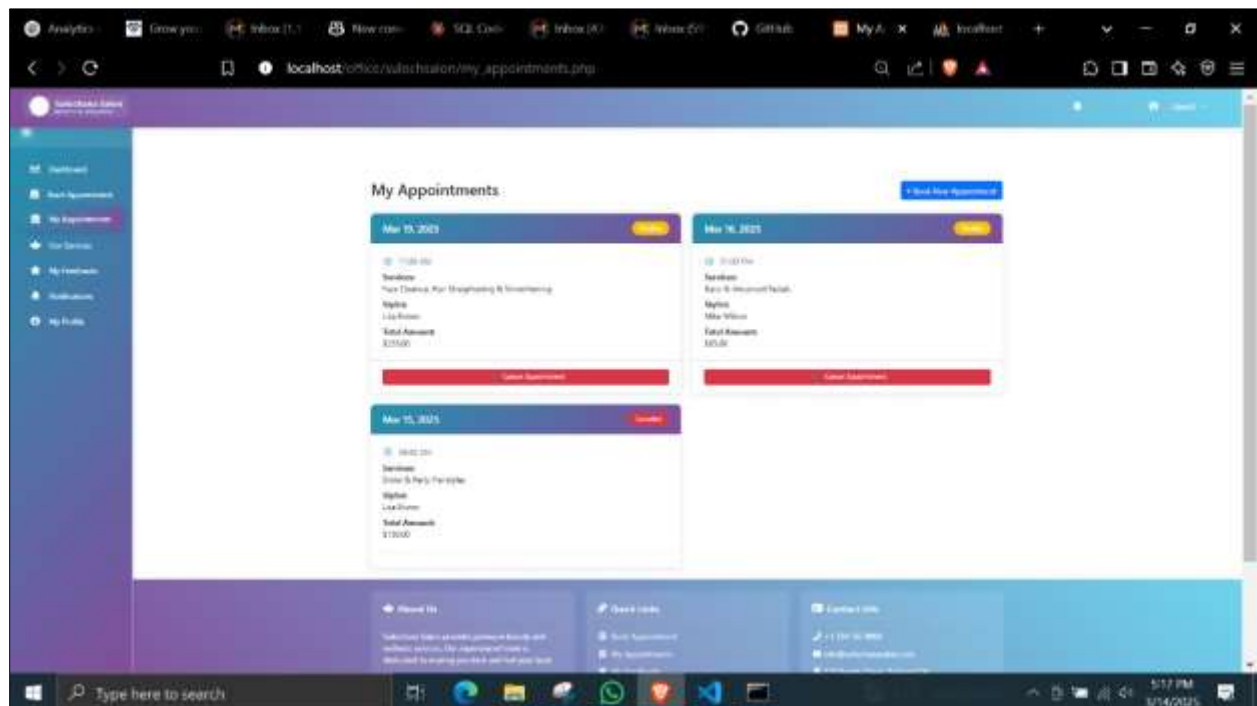


Figure 57



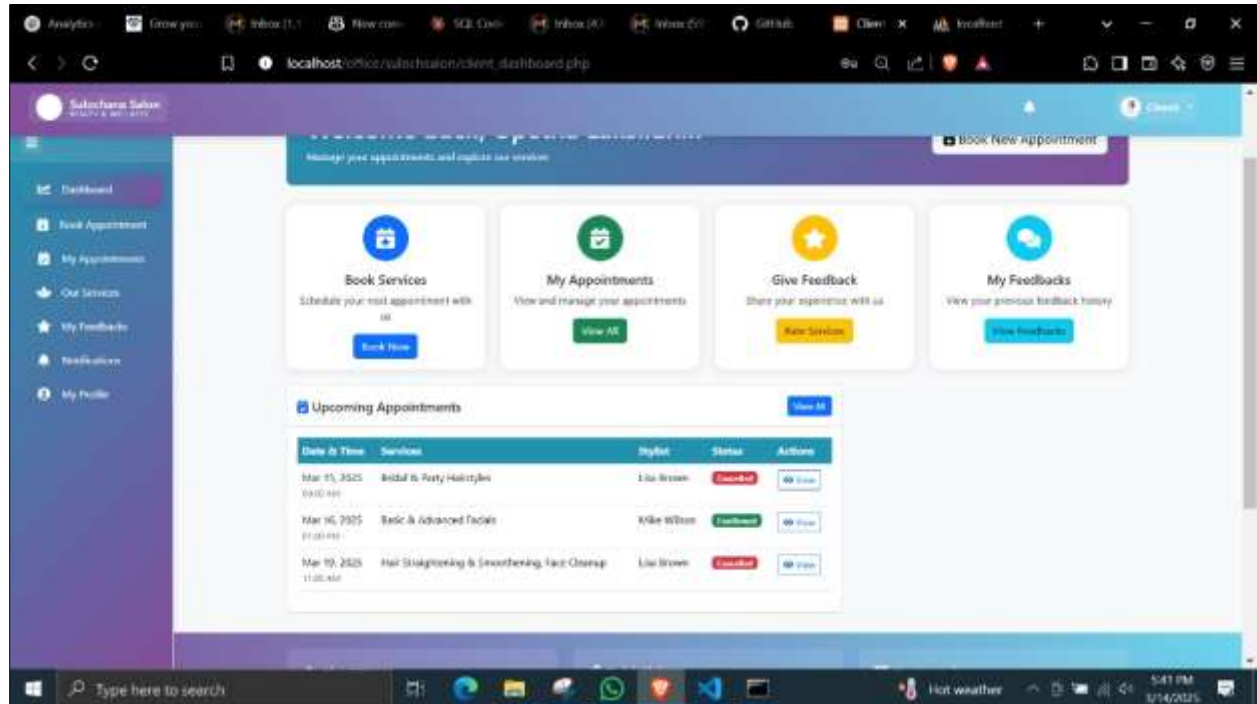


Figure 58

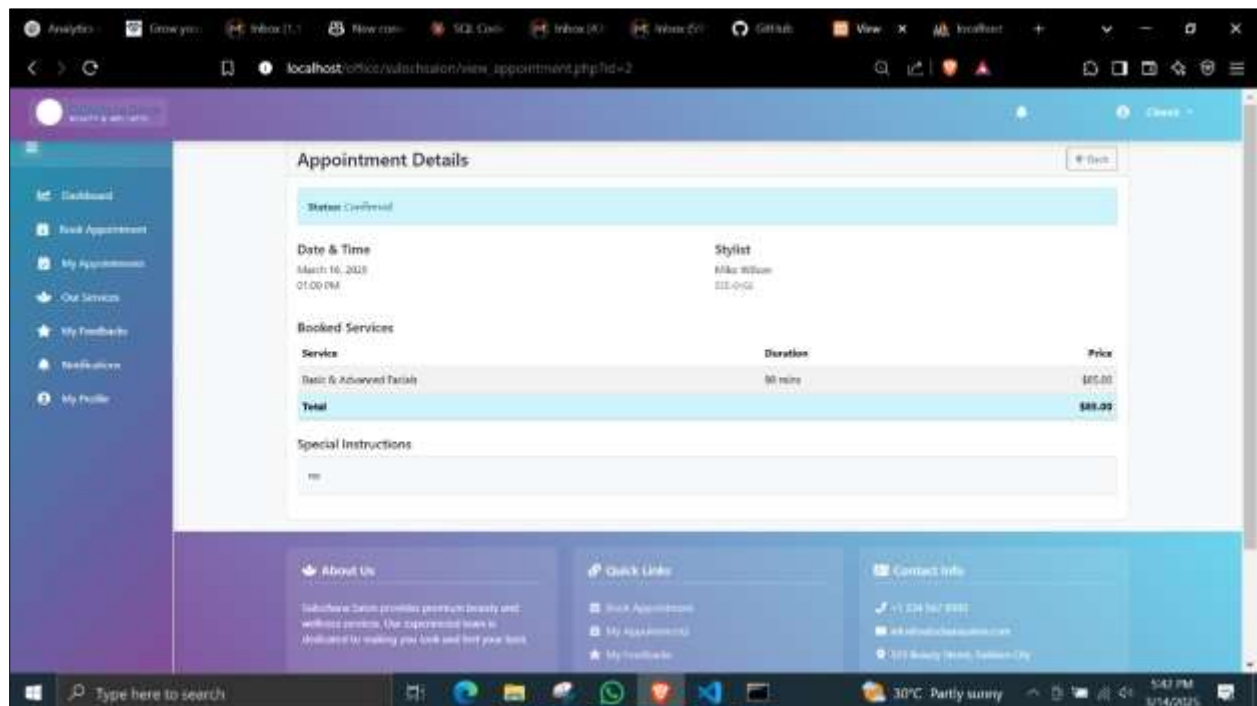


Figure 59



## ○ C6. Service Selection (TC-C121-C123)

Test ID	Test Case	Test Steps	Expected Result	Actual Result	Status
TC-C121	View Service Categories	1. Navigate to services	Categories displayed	As expected	Pass
TC-C122	View Service Details	1. Select specific service	Details and pricing shown	As expected	Pass
TC-C123	Filter Services	1. Apply service filters	Filtered list shown	As expected	Pass

Table 13

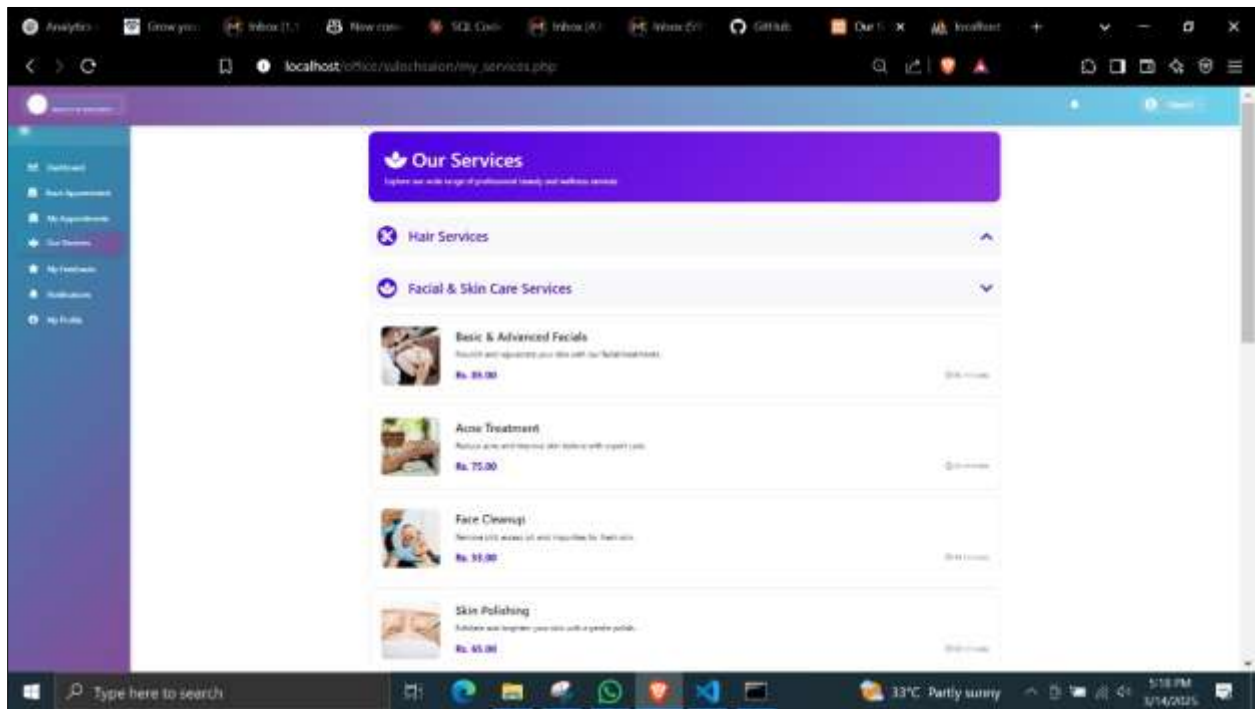


Figure 60

## ○ C7. Rating System (TC-C124-C126)

Test ID	Test Case	Test Steps	Expected Result	Actual Result	Status
---------	-----------	------------	-----------------	---------------	--------

## Project Proposal

TC-C124	Submit Rating	1. Rate completed service 2. Submit feedback	Rating recorded	As expected	Pass
TC-C125	Edit Rating	1. Change previous rating 2. Submit	Rating updated	As expected	Pass
TC-C126	View Ratings	1. Check service ratings	Average rating displayed	As expected	Pass

Table 14

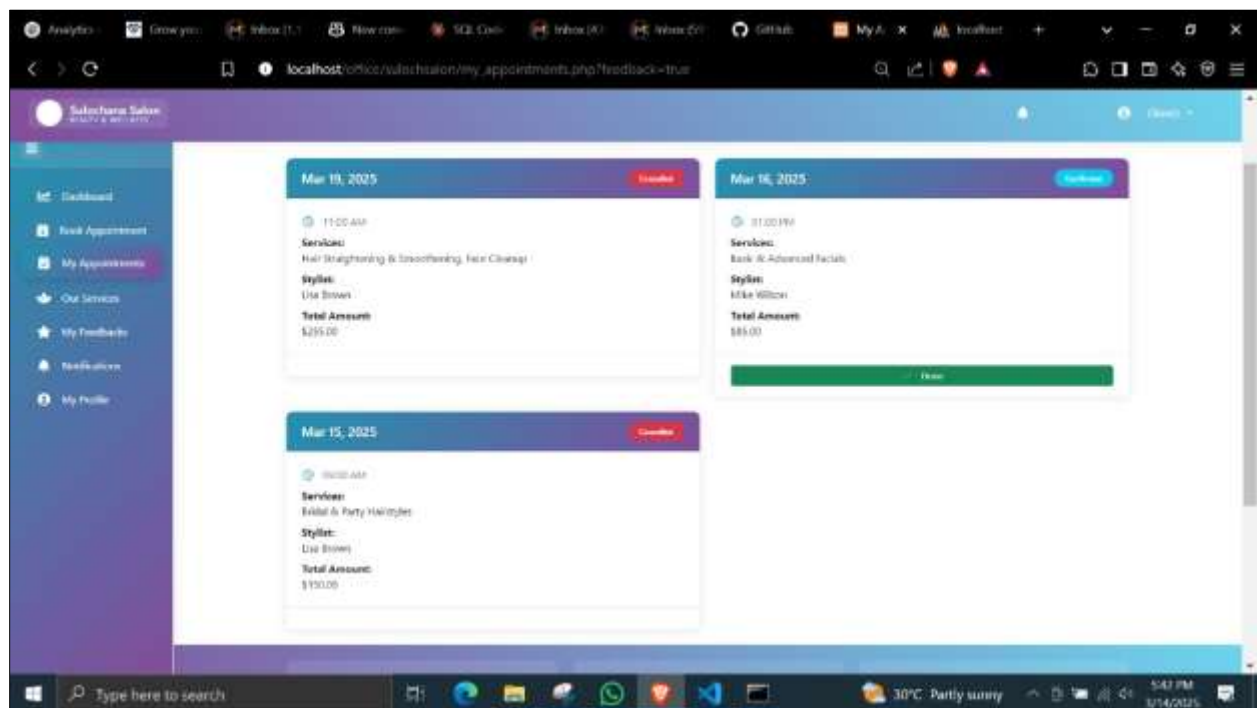


Figure 61

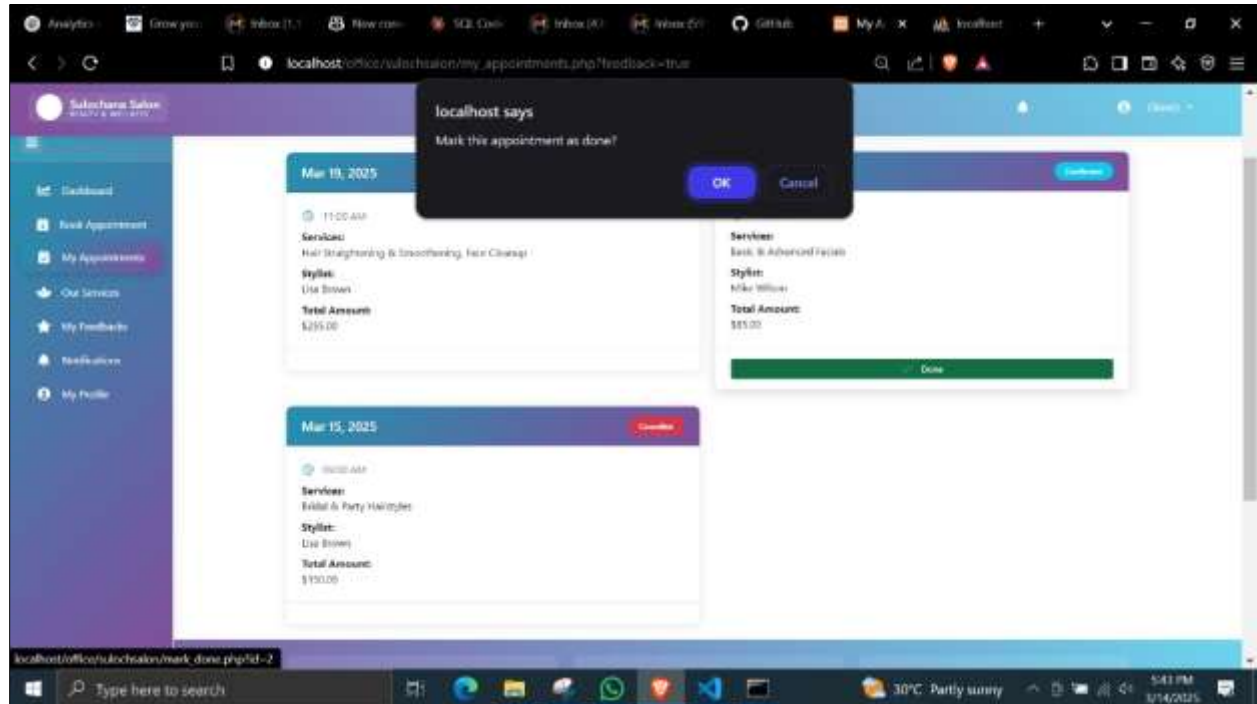


Figure 62

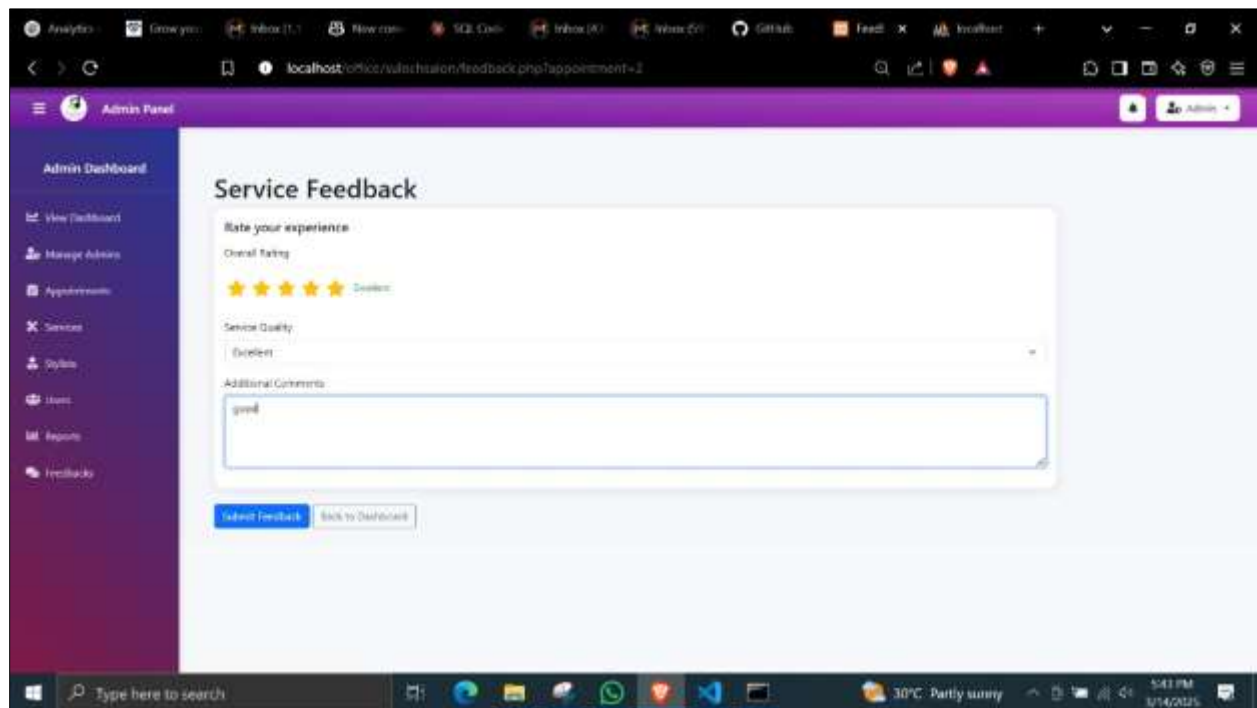


Figure 63

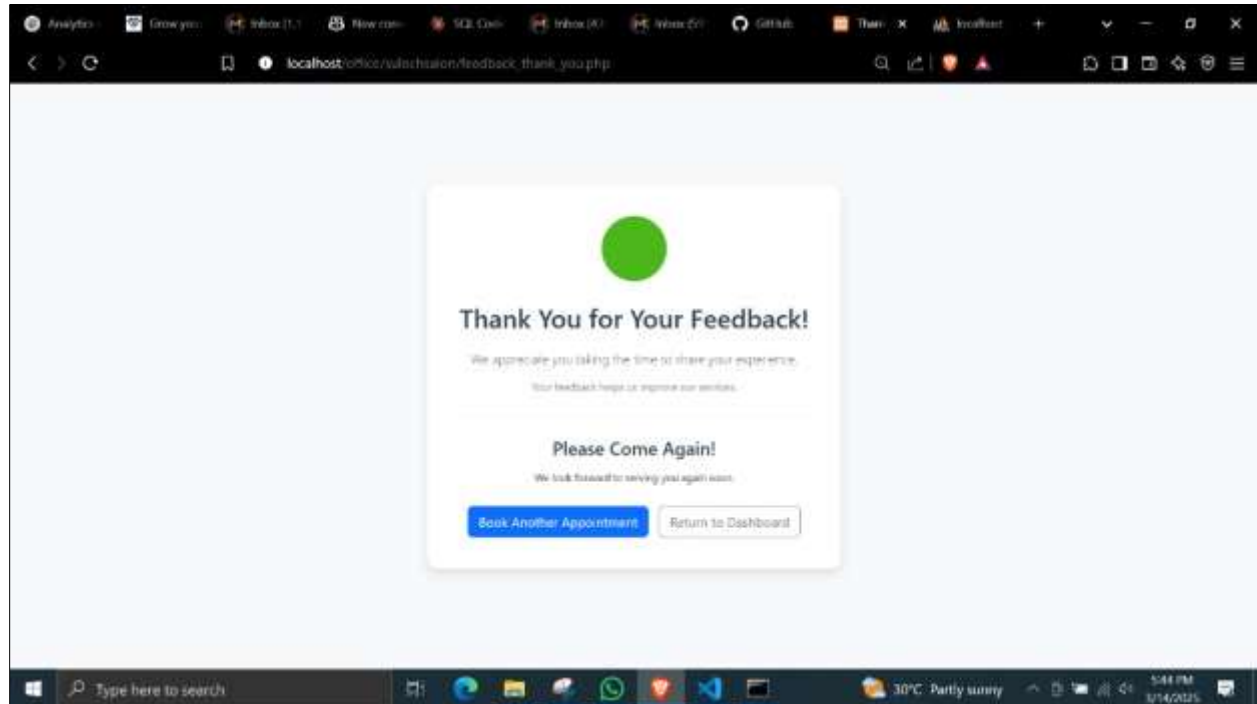


Figure 64

## ○ C8-C9. Notifications (TC-C127-C130)

Test ID	Test Case	Test Steps	Expected Result	Actual Result	Status
TC-C127	Booking Confirmation Email	1. Book appointment 2. Check email	Confirmation received	Not as expected	Pass
TC-C128	Appointment Reminder	1. Approach appointment time 2. Check notifications	Reminder received	Not as expected	Pass
TC-C129	Status Change Notification	1. Admin changes status 2. Check notifications	Update received	Not as expected	Pass

## Project Proposal

TC-C130	Cancellation Notification	1. Cancel appointment 2. Check notifications	Cancellation notice received	Not as expected	Pass
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Table 15

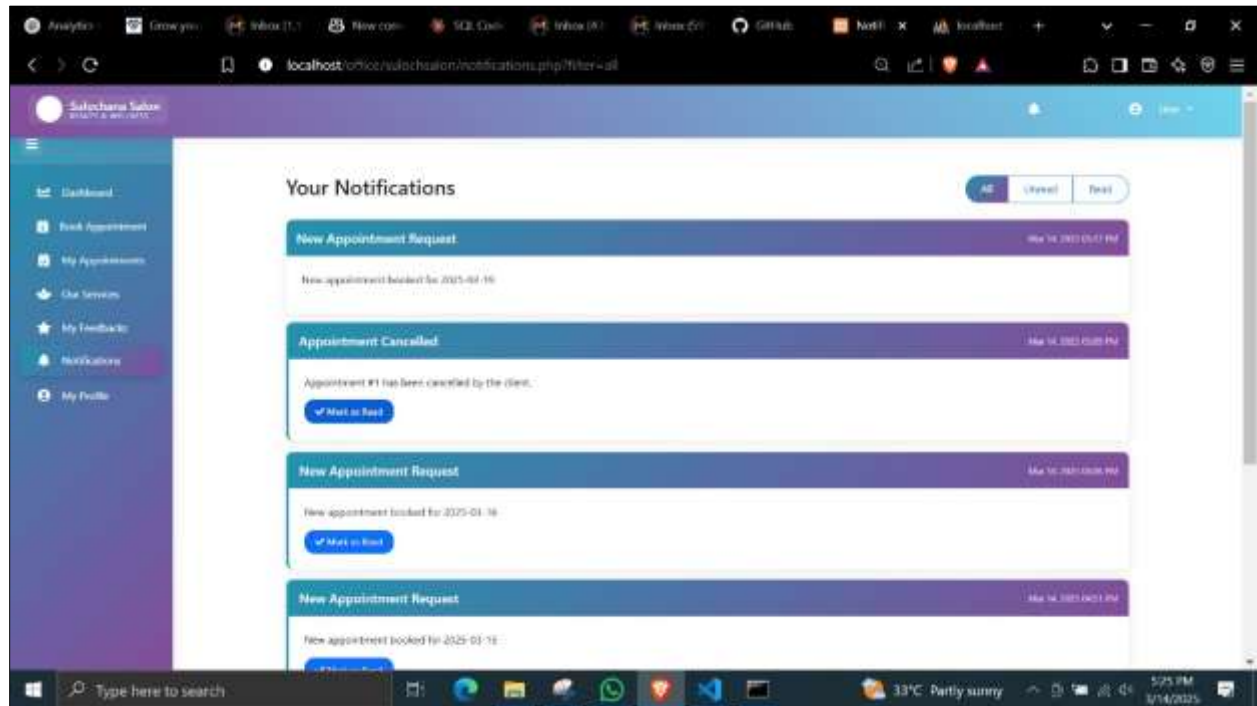


Figure 65

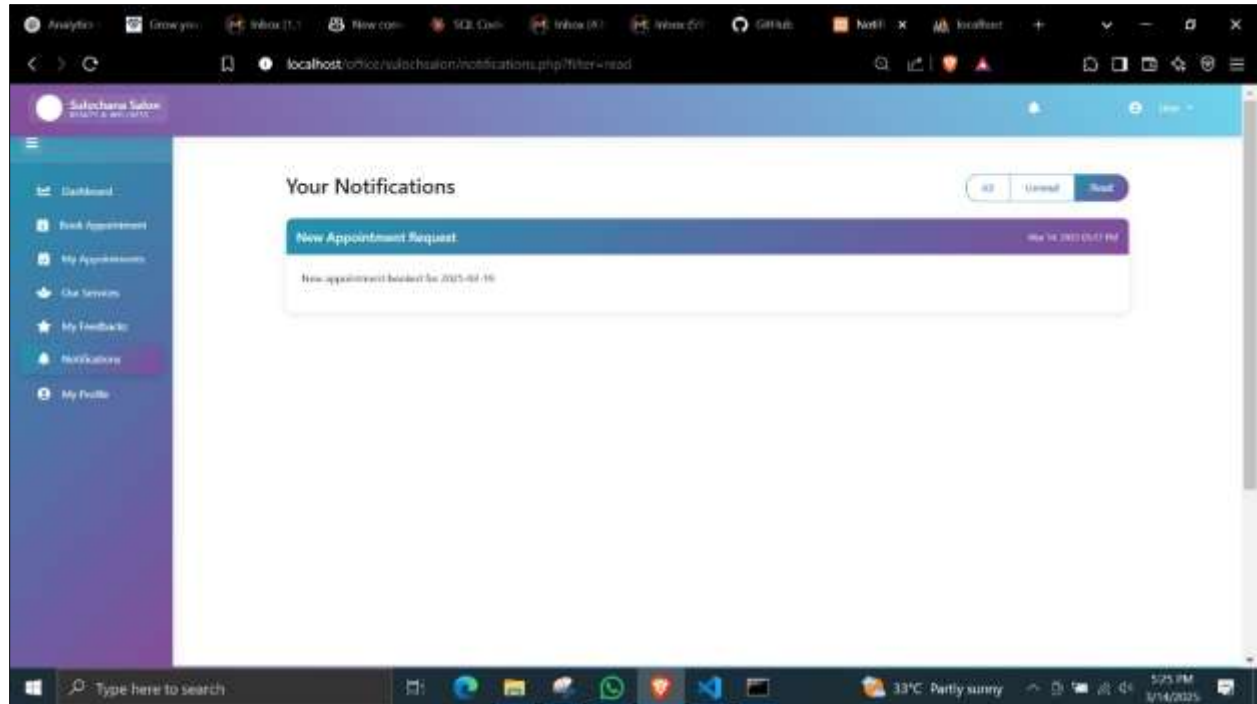


Figure 66

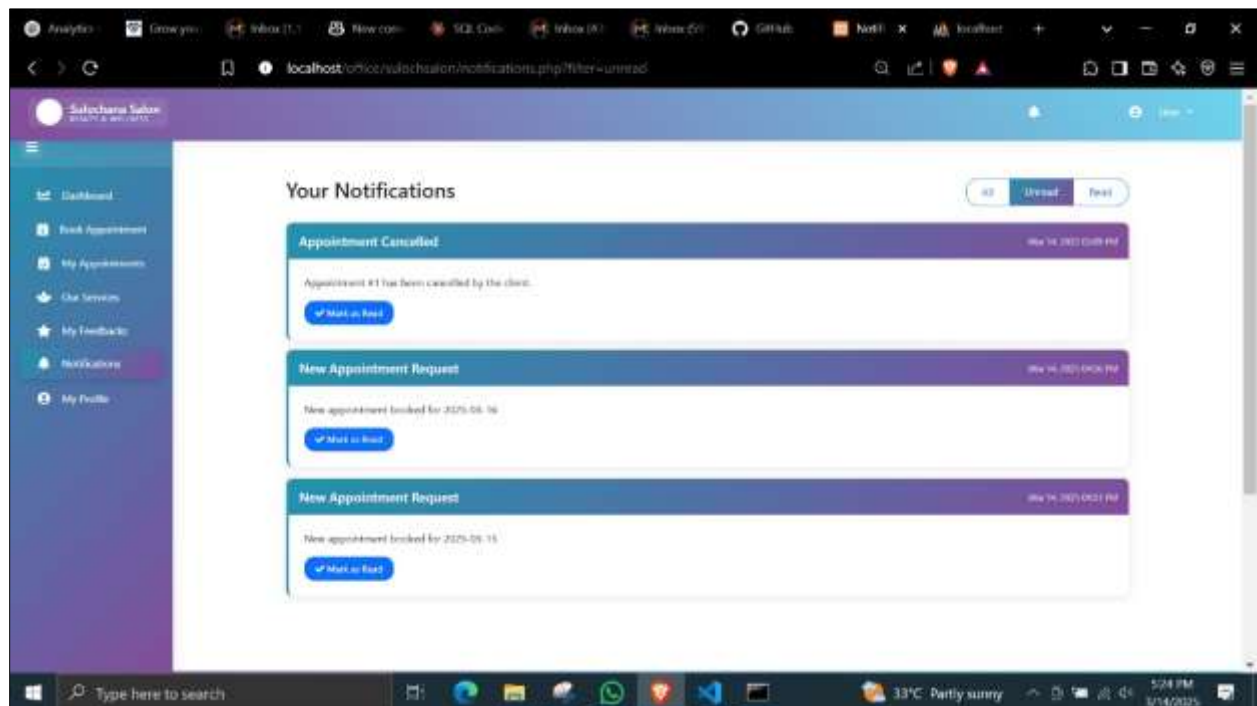


Figure 67



## Project Proposal

### ○ C10. Email Verification (C- C131- C133)

Test ID	Test Case	Test Steps	Expected Result	Actual Result	Status
TC-C131	Valid Email Verification	1. Click "Forgot Password" 2. Enter registered email 3. Click "Verify Email"	Verification code sent to email	As expected	Pass
TC-C132	Unregistered Email	1. Enter unregistered email 2. Click "Verify Email"	Error message displayed	As expected	Pass
TC-C133	Empty Email Field	1. Leave email field empty 2. Click "Verify Email"	Validation error shown	As expected	Pass

Table 16

### ○ C11. Password Reset (C- C134- C137)

Test ID	Test Case	Test Steps	Expected Result	Actual Result	Status
TC-C134	Valid Password Reset	1. Enter new password meeting requirements 2. Confirm password 3. Click "Reset Password"	Password successfully reset	As expected	Pass
TC-C135	Password Mismatch	1. Enter different passwords in new and confirm fields	Error message shown	As expected	Pass



## Project Proposal

		2. Click "Reset Password"			
TC-C136	Password Requirements Check	1. Enter password missing requirements 2. Click "Reset Password"	Validation error shown	As expected	Pass
TC-C137	Cancel Password Reset	1. Click "Back to Login" button	Returns to login screen	As expected	Pass

Table 17

### o C12. Reset Confirmation (C- C138- C139)

Test ID	Test Case	Test Steps	Expected Result	Actual Result	Status
TC-C138	Success Confirmation	1. After successful reset 2. View success message	Success message displayed	As expected	Pass
TC-C139	Return to Login	1. From success screen 2. Click "Go to Login"	Returns to login screen	As expected	Pass

Table 18

### o C13. Current Password Verification (C-CP140-CP142)

Test ID	Test Case	Test Steps	Expected Result	Actual Result	Status
TC-C140	Valid Current Password	1. Enter correct current password 2. Enter valid new password 3. Submit form	Password changed successfully	As expected	Pass





## Project Proposal

TC-C141	Invalid Current Password	1. Enter incorrect current password 2. Enter new password 3. Submit form	Error message displayed	As expected	Pass
TC-C142	Empty Current Password	1. Leave current password empty 2. Submit form	Validation error shown	As expected	Pass

Table 19

### C11. New Password Validation (C-CP143-CP146)

Test ID	Test Case	Test Steps	Expected Result	Actual Result	Status
TC-C143	Password Requirements Check	1. Enter new password not meeting requirements 2. Submit form	Validation error shown	As expected	Pass
TC-C144	Password Confirmation Match	1. Enter new password 2. Enter different confirm password 3. Submit form	Error message shown	As expected	Pass
TC-C145	Same as Current Password	1. Enter new password same as current 2. Submit form	Warning message shown	As expected	Pass
TC-C146	Valid New Password	1. Enter valid new password meeting all requirements 2. Matching confirm password 3. Submit form	Password changed successfully	As expected	Pass

Table 20

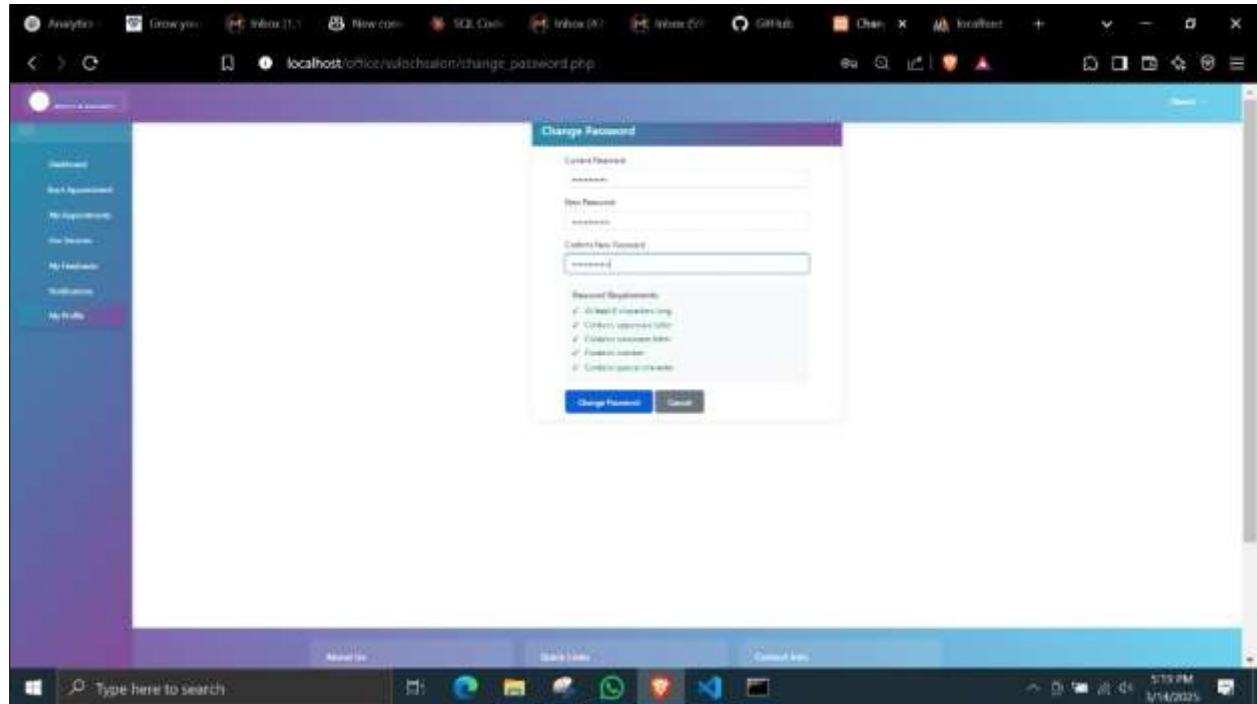


Figure 68

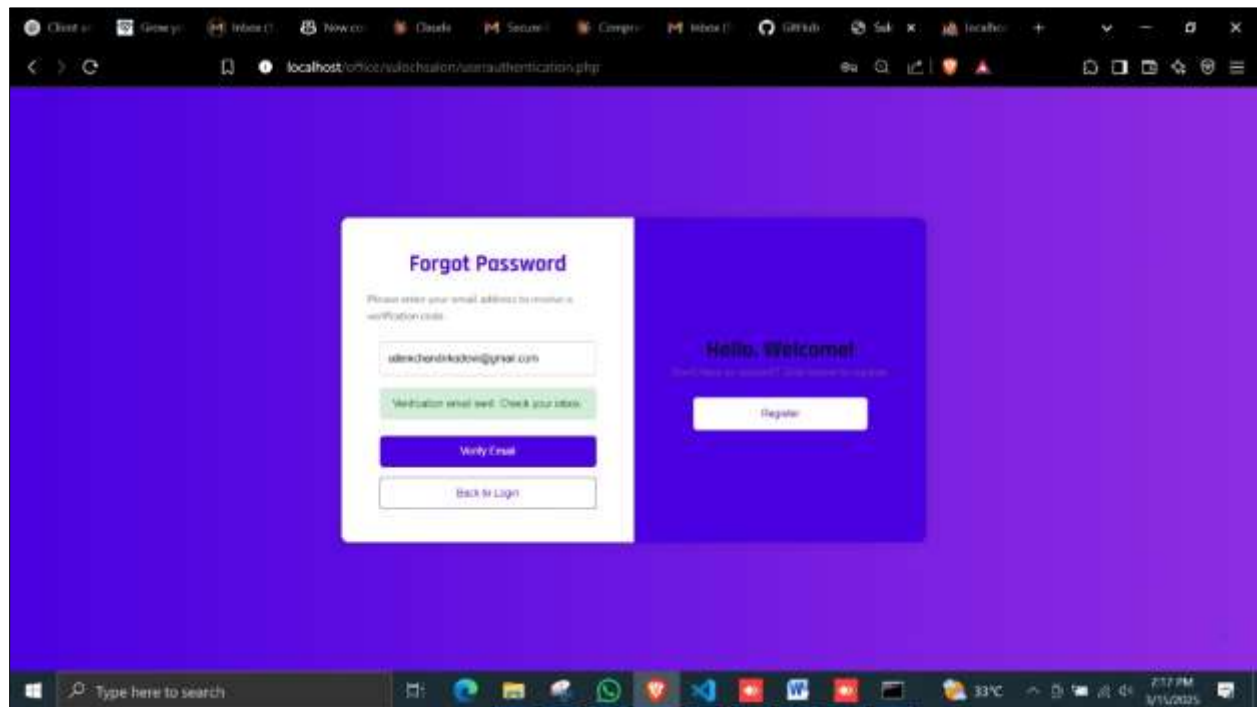


Figure 69

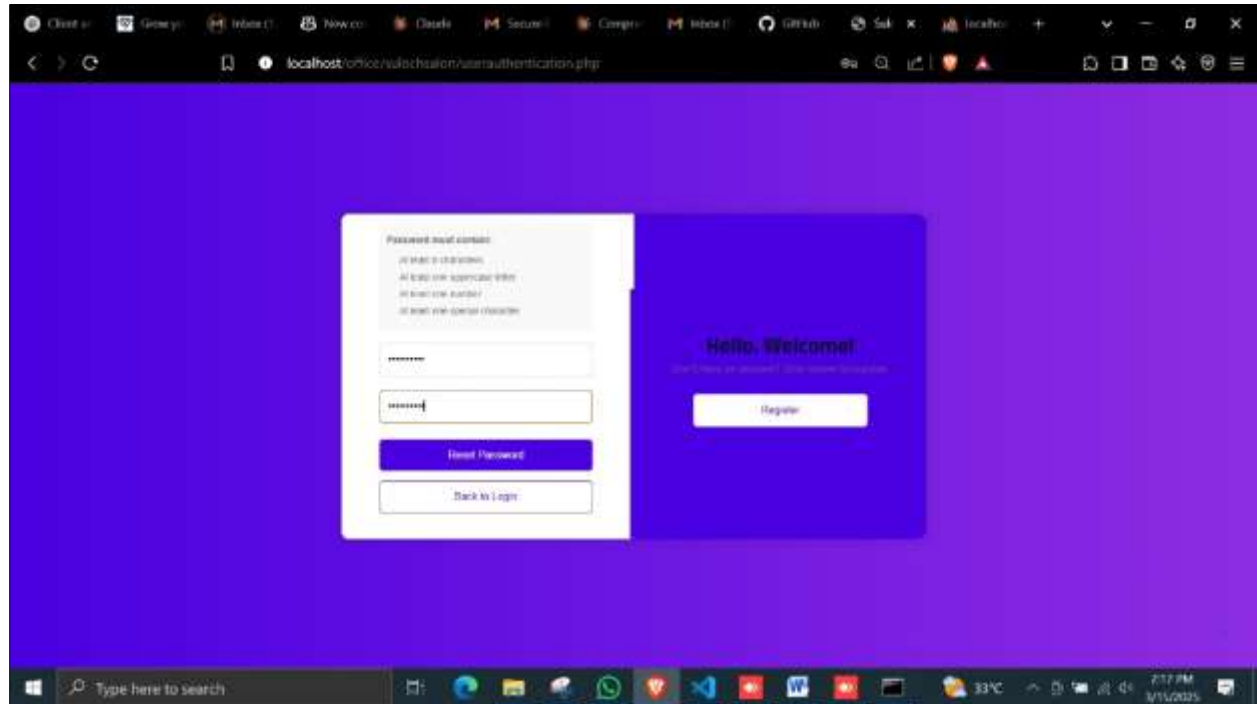


Figure 70

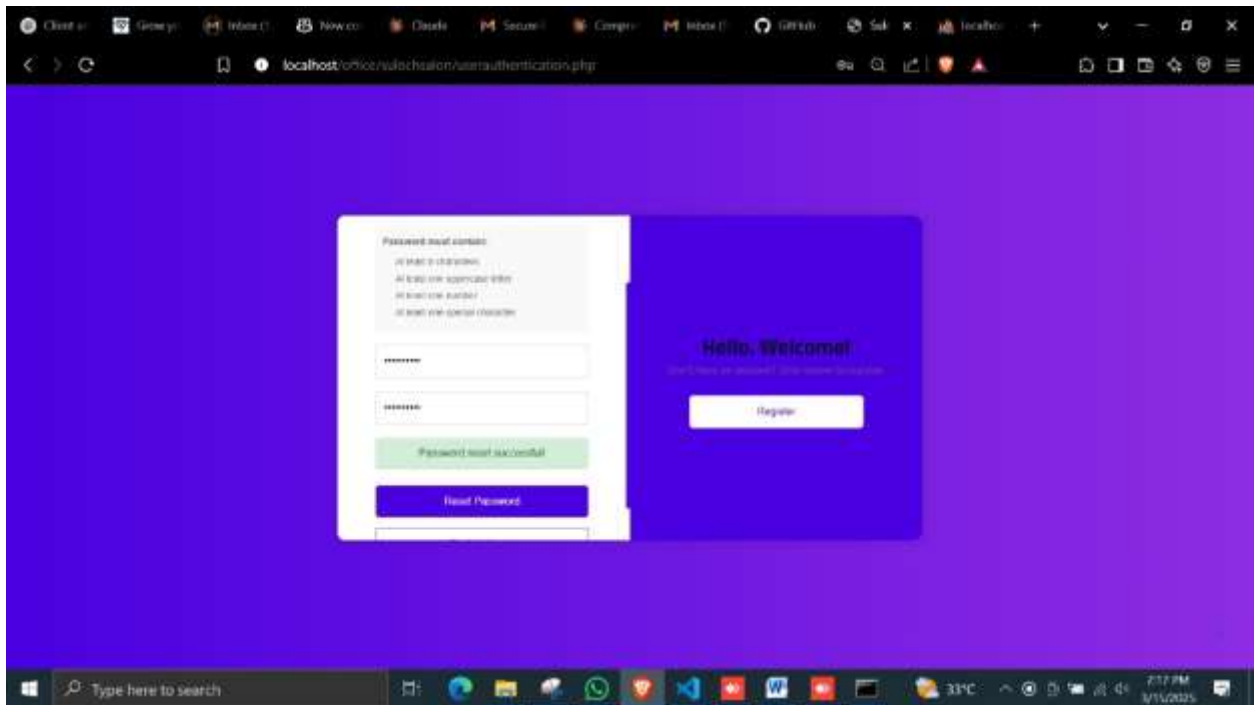


Figure 71

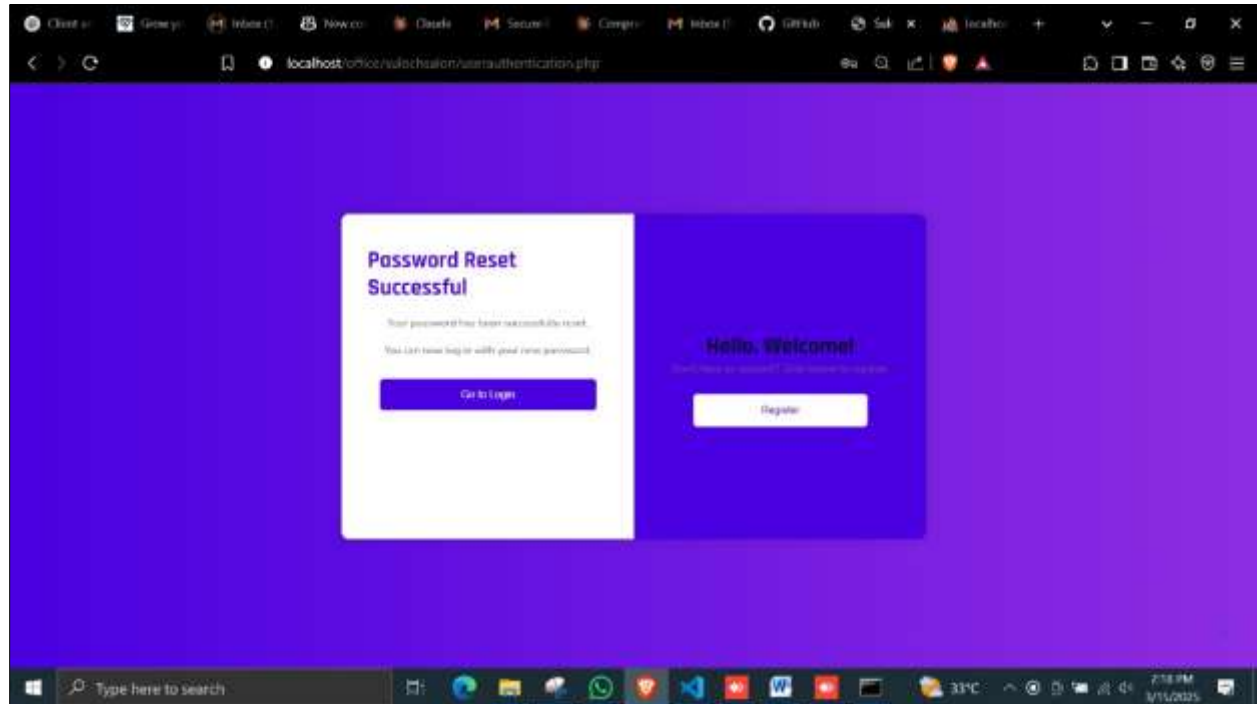


Figure 72

## 3. Admin Side Test Cases

### Admin Side Detailed Test Cases

#### A1. Admin Login (TC-A101-A105)

Test ID	Test Case	Test Steps	Expected Result	Actual Result	Status
TC-A101	Valid Admin Login	1. Enter valid admin credentials 2. Click login	Successful admin login	As expected	Pass
TC-A102	Invalid Admin Password	1. Enter wrong password	Error message	As expected	Pass
TC-A103	Admin Empty Fields	1. Submit empty form	Validation message	As expected	Pass
TC-A104	Admin Password Reset	1. Click forgot password 2. Enter admin email	Reset email sent	As expected	Pass



## Project Proposal

TC-A105	Admin Session Check	1. Login 2. Close browser 3. Reopen	Session maintained	As expected	Pass
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Table 21

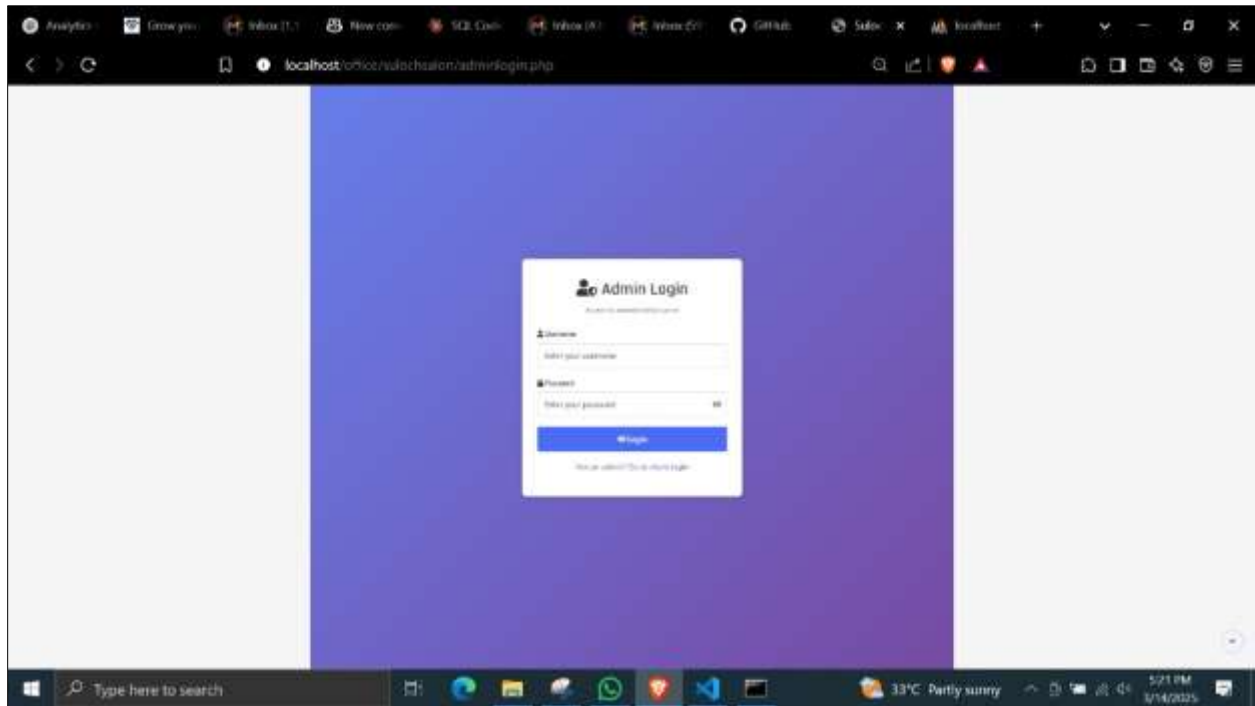


Figure 73

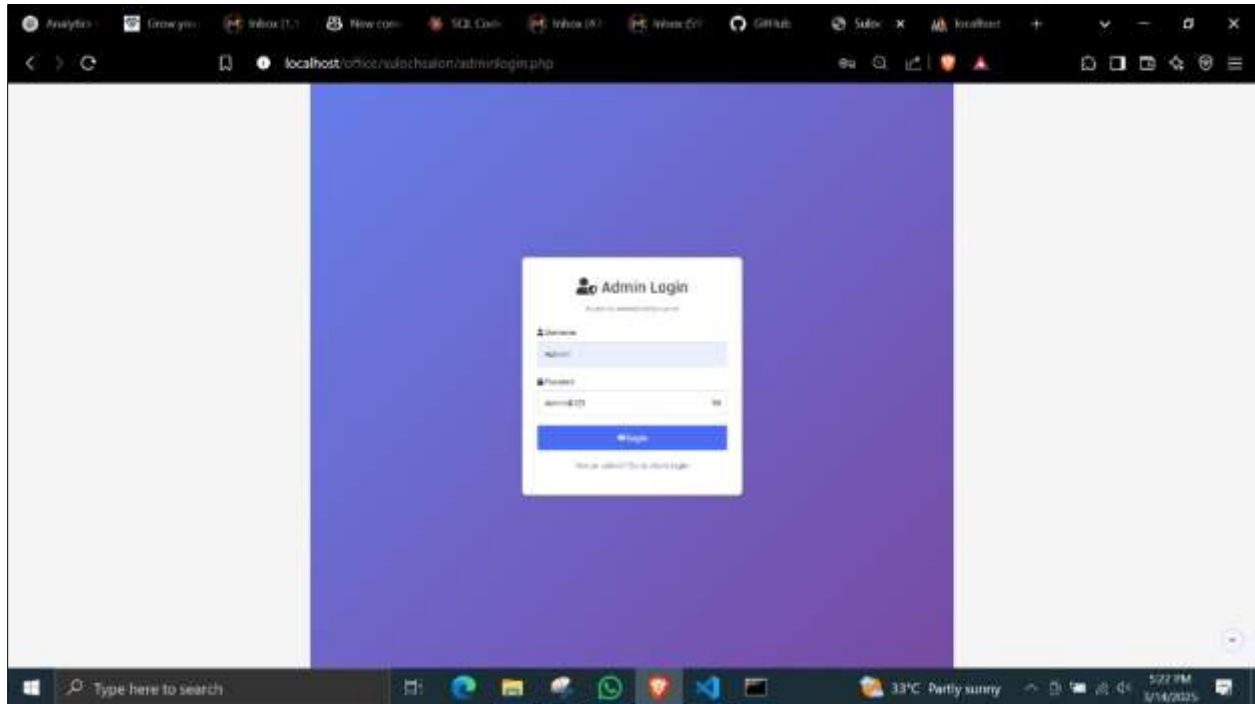


Figure 74

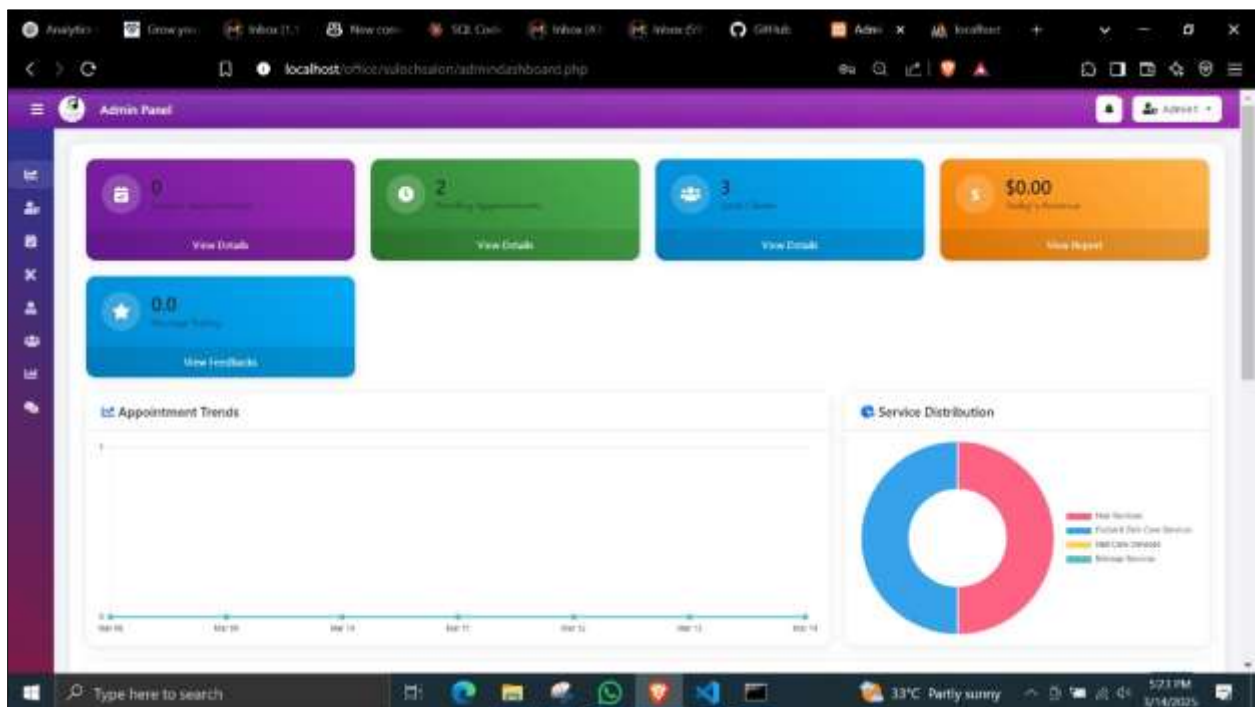


Figure 75

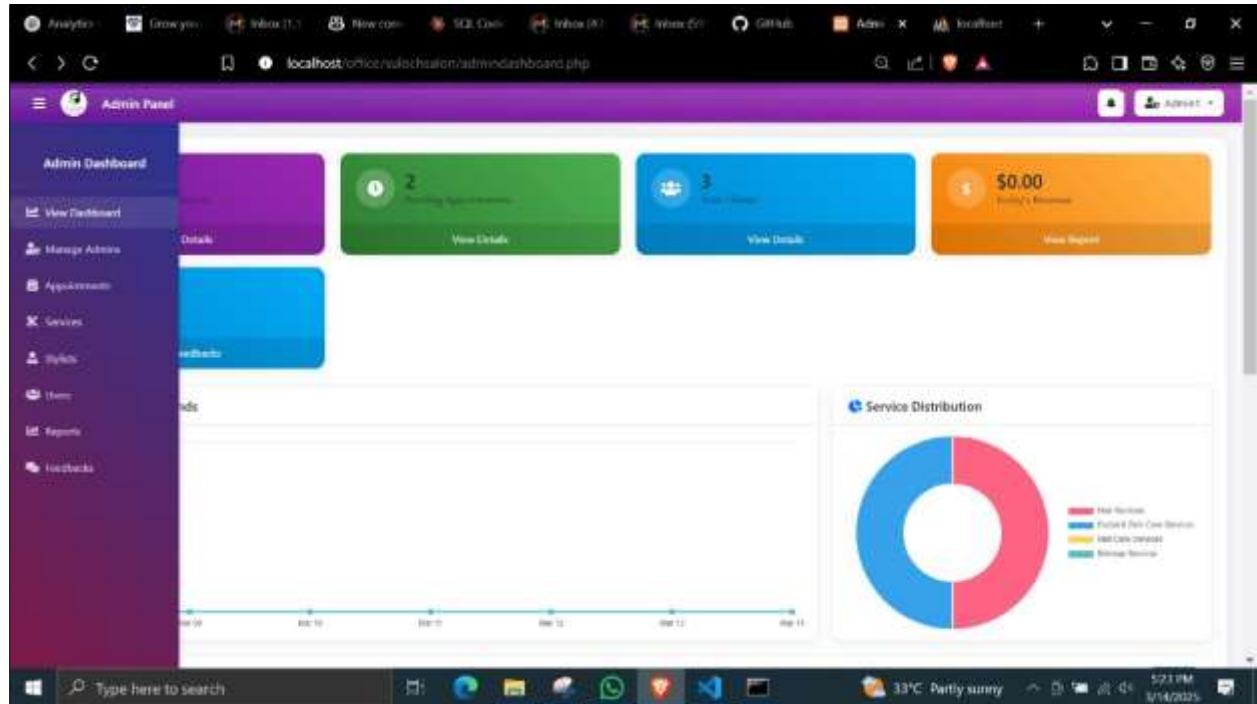


Figure 76

## ○ A2. Analytics & Reporting (TC-A106-A110)

Test ID	Test Case	Test Steps	Expected Result	Actual Result	Status
TC-A106	View Dashboard	1. Login as admin 2. Access dashboard	Stats displayed	As expected	Pass
TC-A107	View Daily Stats	1. Check daily stats section	Daily metrics shown	As expected	Pass
TC-A108	View Monthly Reports	1. Access monthly reports	Monthly data displayed	As expected	Pass
TC-A109	Export Reports	1. Generate reports 2. Export data	Report generated	As expected	Pass

Table 22

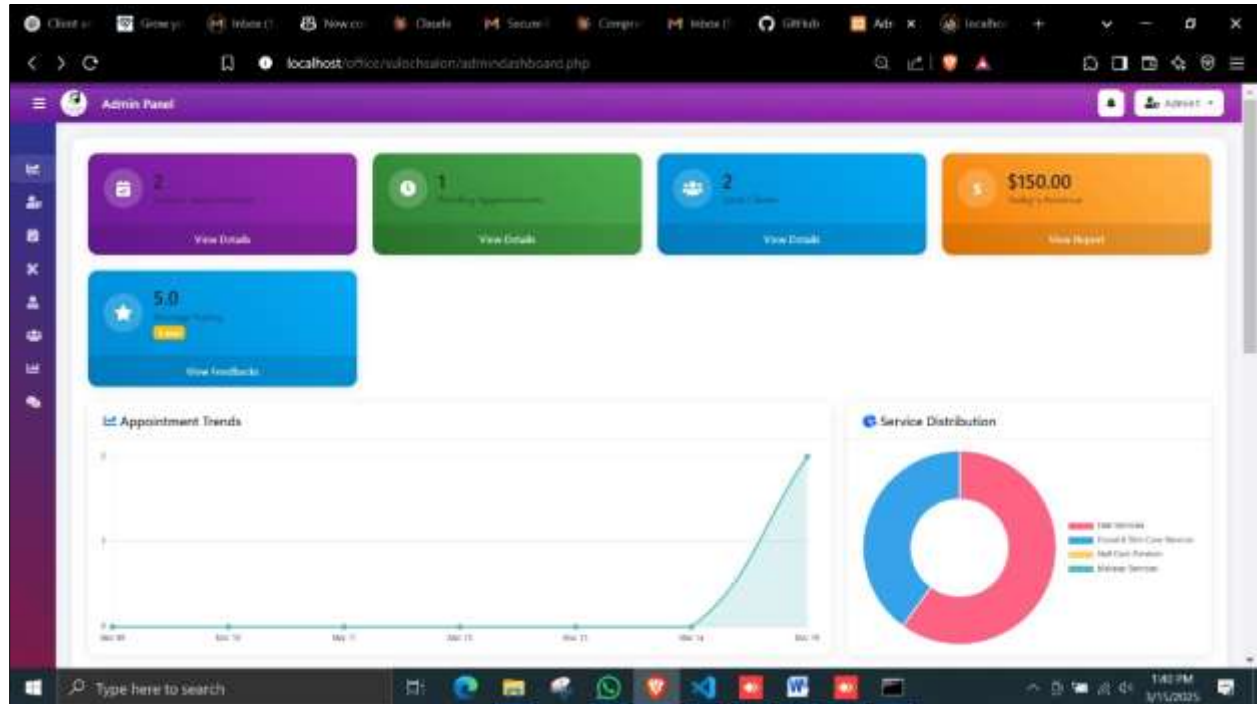


Figure 77

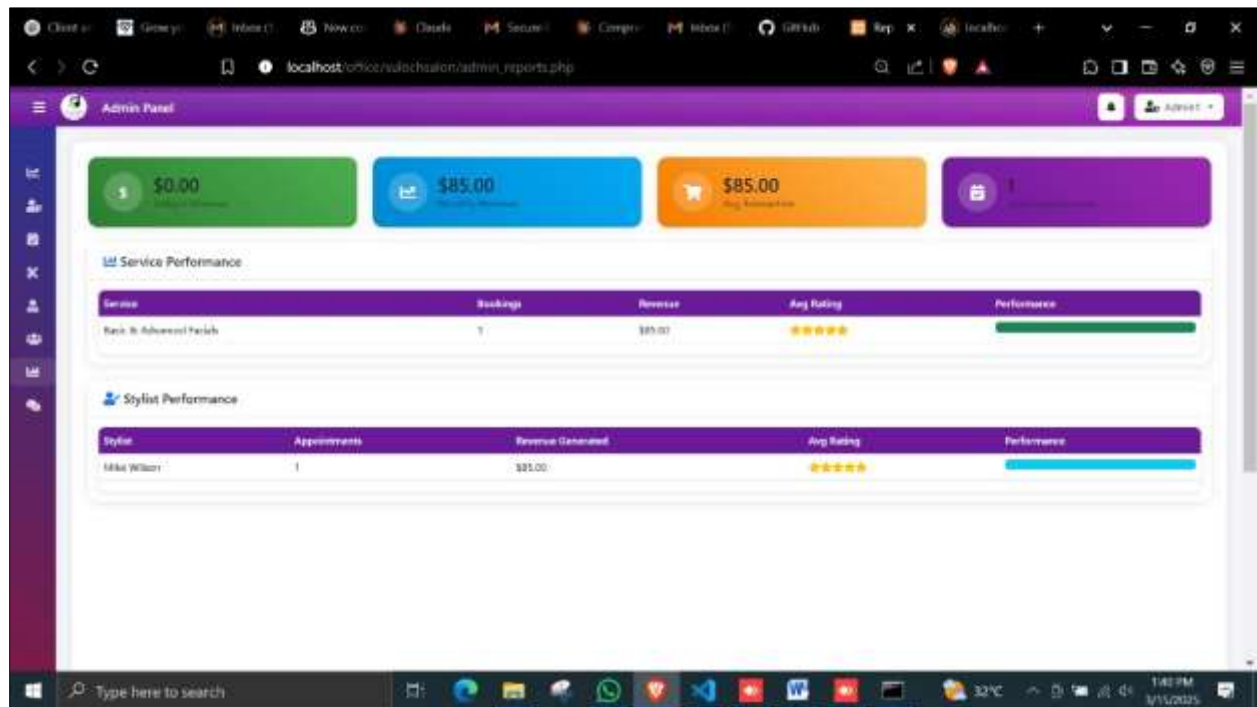


Figure 78



## ○ A3. Customer Management (TC-A111-A114)

Test ID	Test Case	Test Steps	Expected Result	Actual Result	Status
TC-A111	View User List	1. Access user management	User list displayed	As expected	Pass
TC-A112	Edit User	1. Select user 2. Edit details 3. Save	Changes saved	As expected	Pass
TC-A113	Delete User	1. Select user 2. Delete 3. Confirm	User deleted	As expected	Pass
TC-A114	Search Users	1. Enter search query 2. Submit	Search results shown	As expected	Pass

Table 23

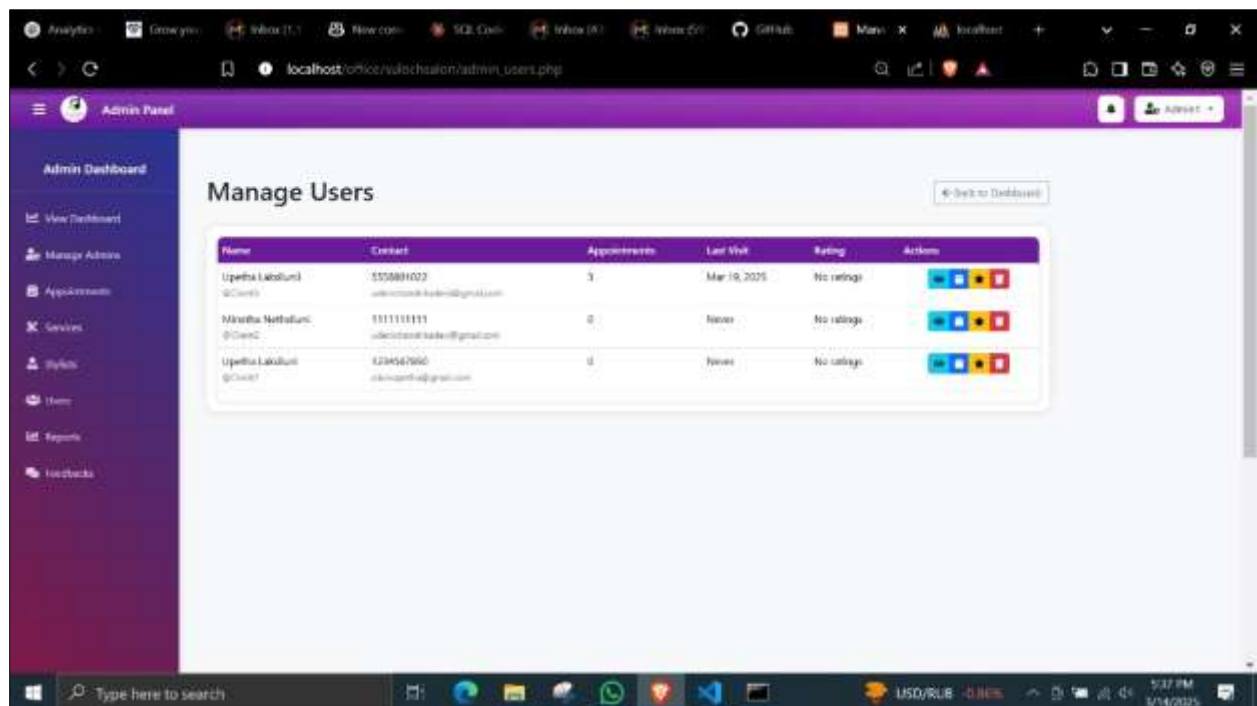


Figure 79

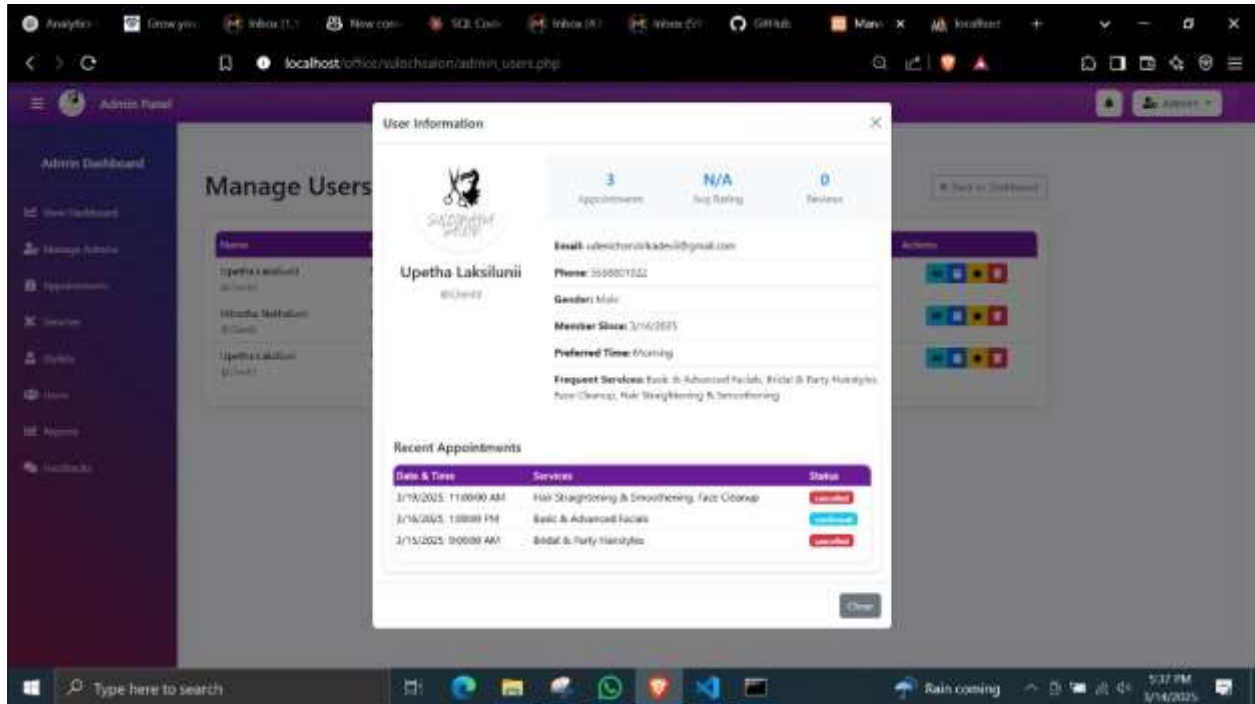


Figure 80

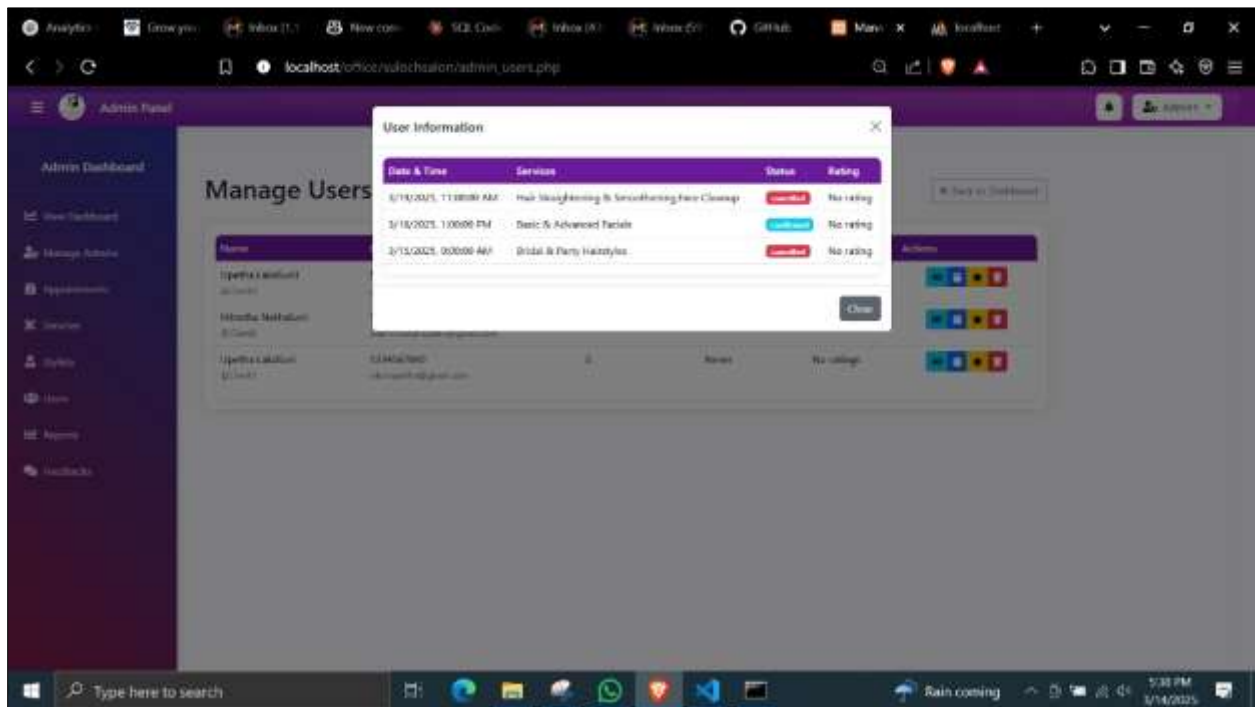


Figure 81

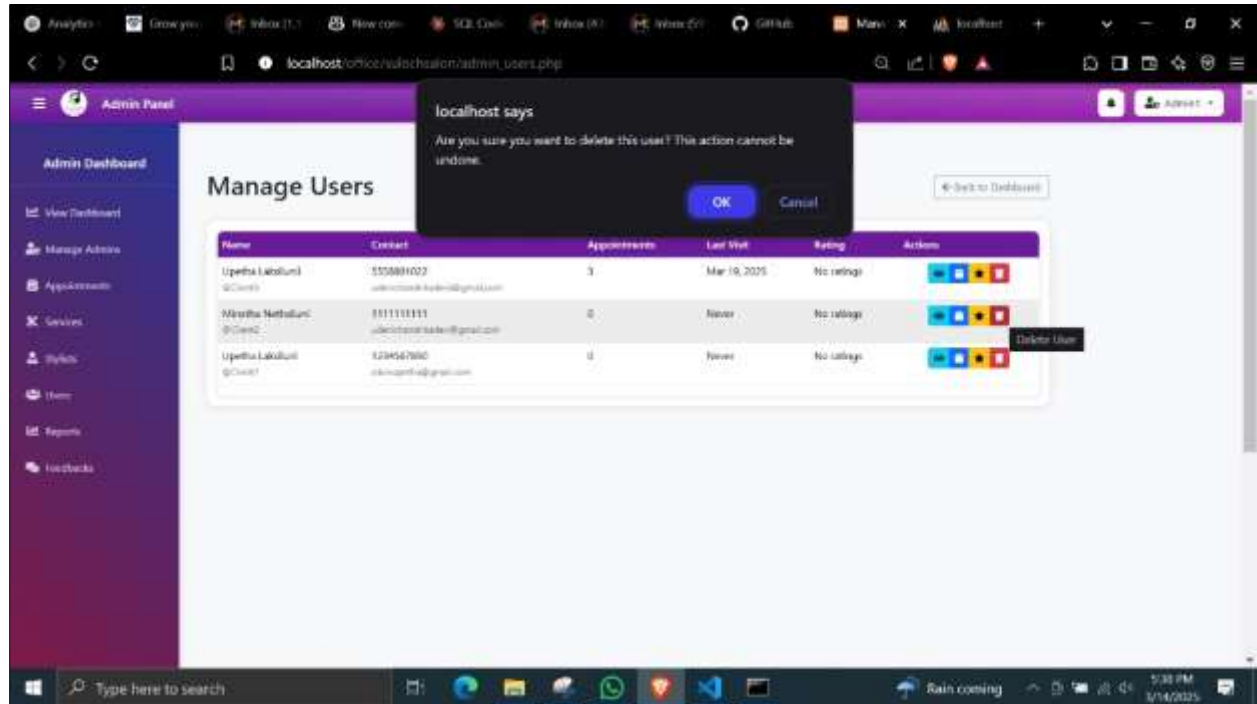


Figure 82

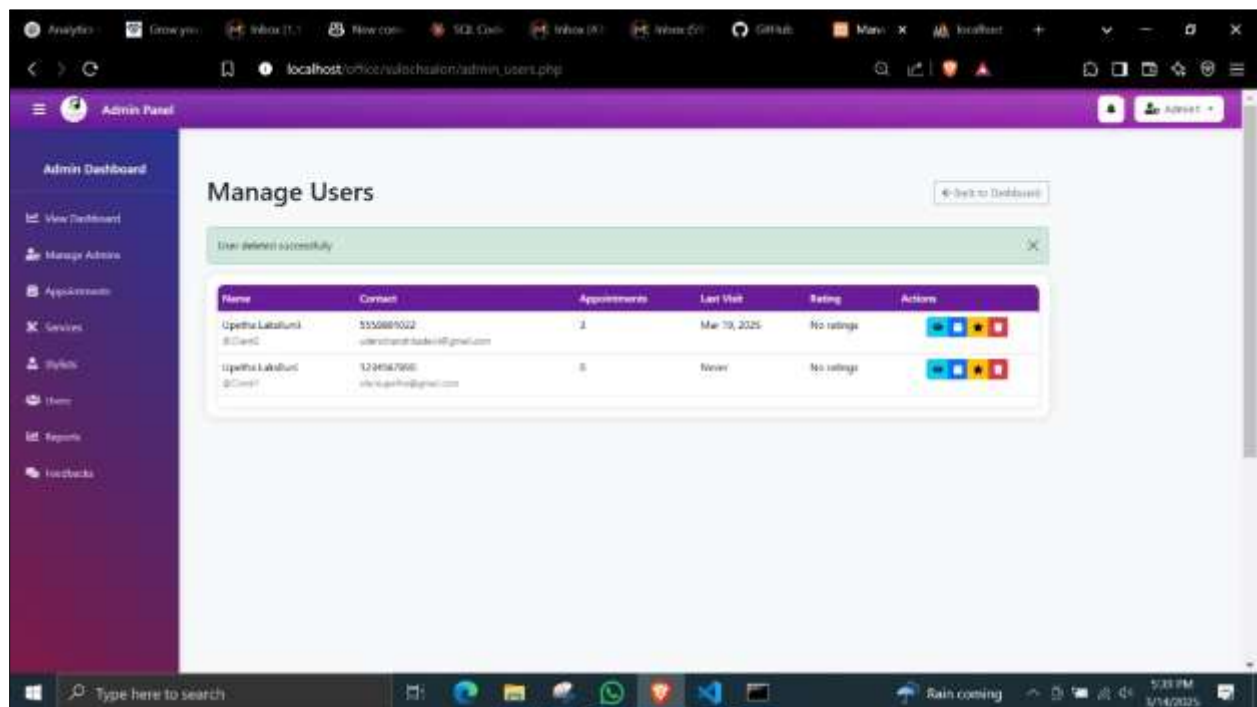


Figure 83



## Project Proposal

### ○ A4. Appointment Tracking (TC-A115-A118)

Test ID	Test Case	Test Steps	Expected Result	Actual Result	Status
TC-A115	View All Appointments	1. Access appointment list	All appointments shown	As expected	Pass
TC-A116	Update Appointment Status	1. Select appointment 2. Change status 3. Save	Status updated	As expected	Pass
TC-A117	Filter Appointments	1. Apply filters 2. View results	Filtered appointments shown	As expected	Pass
TC-A118	Assign Stylist	1. Select appointment 2. Assign stylist 3. Save	Stylist assigned	As expected	Pass

Table 24

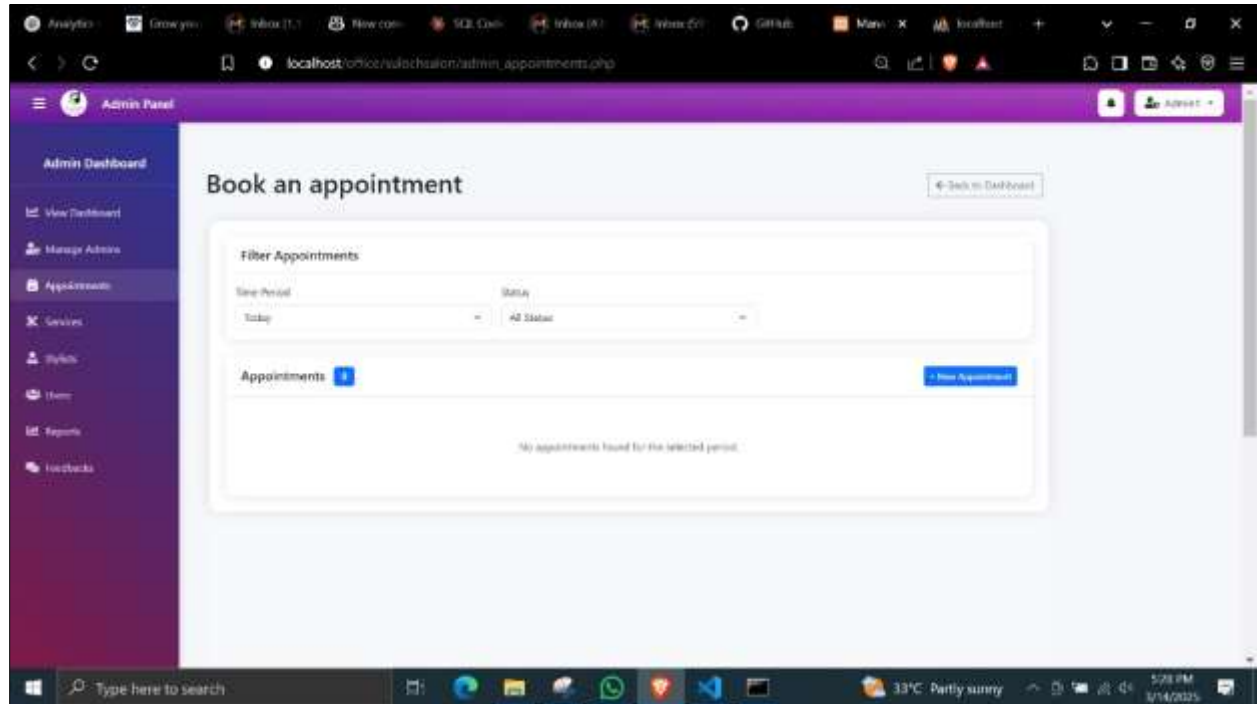


Figure 84

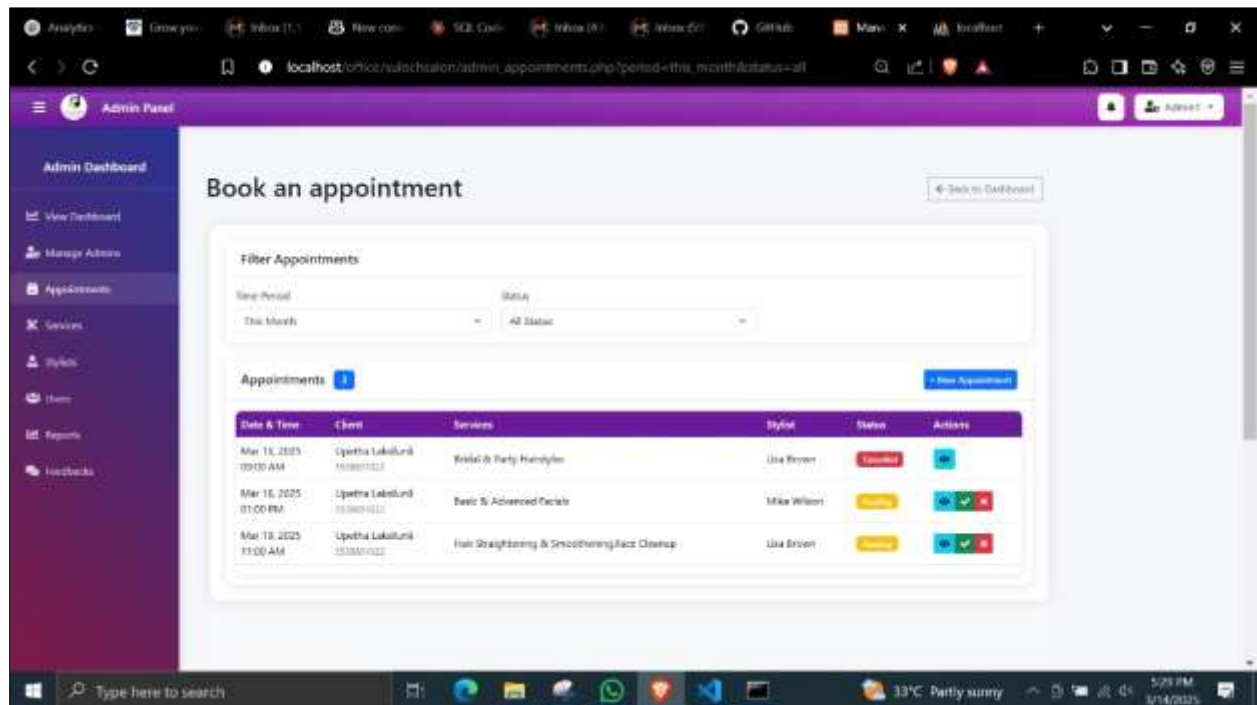


Figure 85

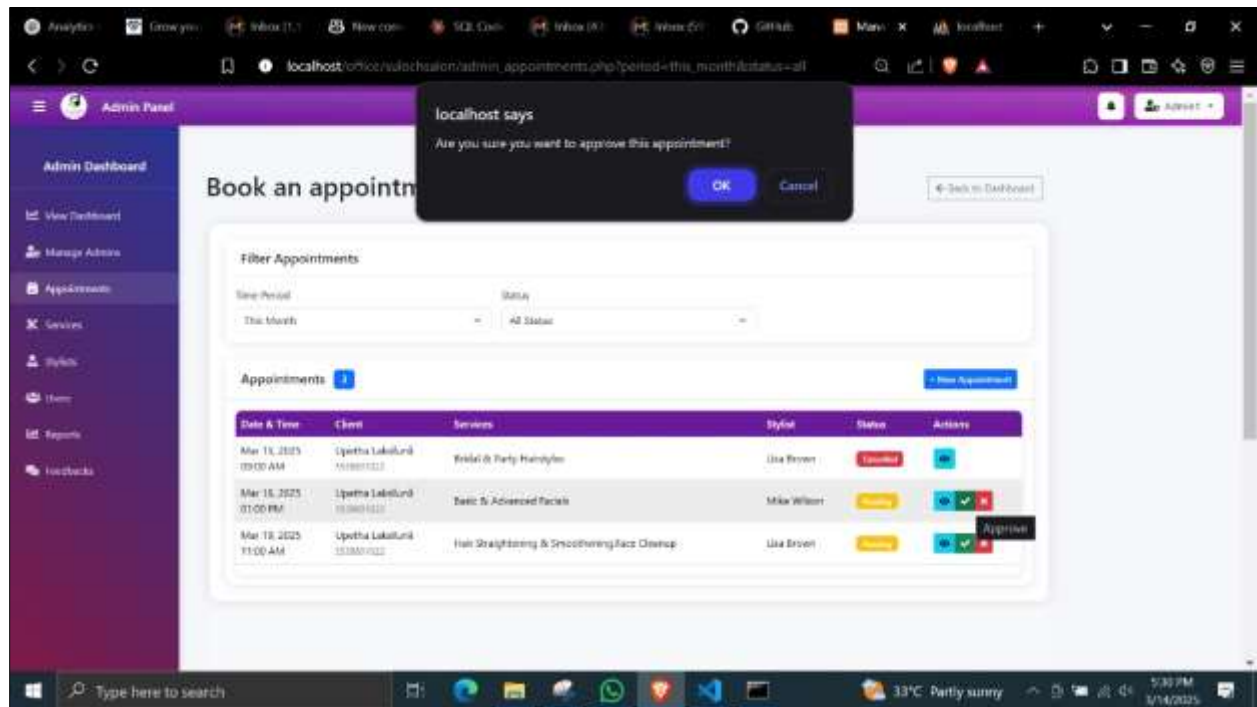


Figure 86

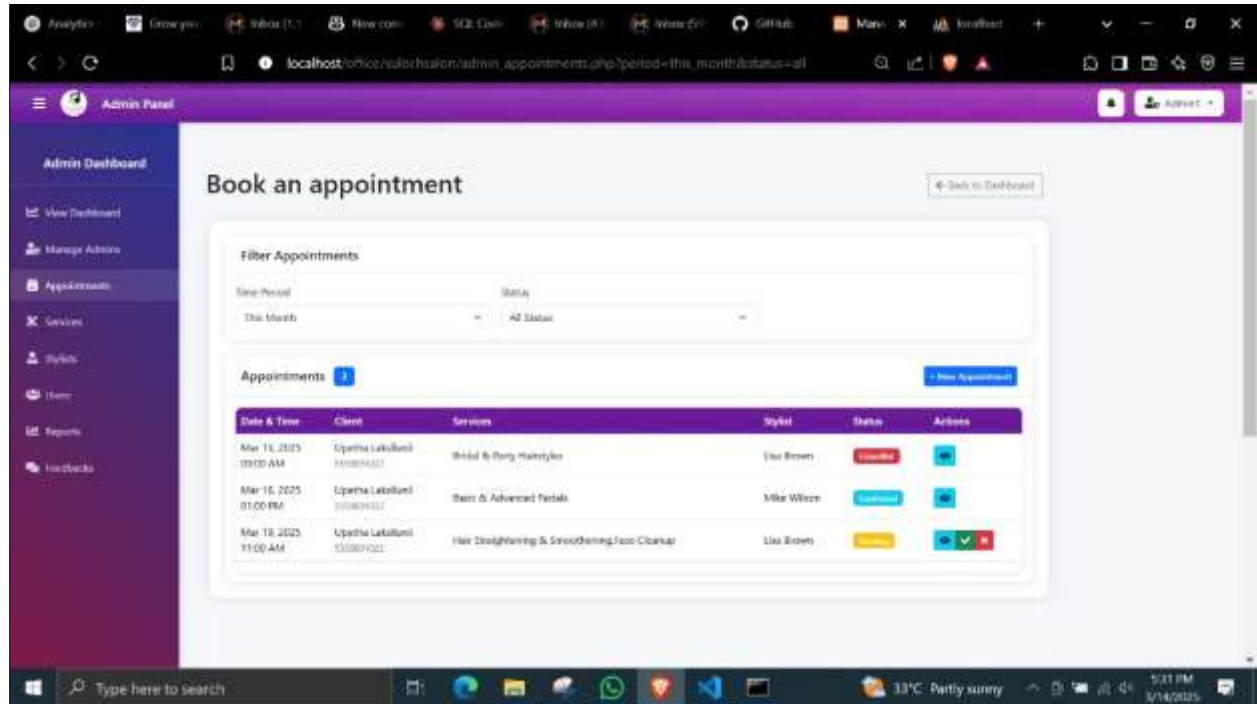


Figure 87

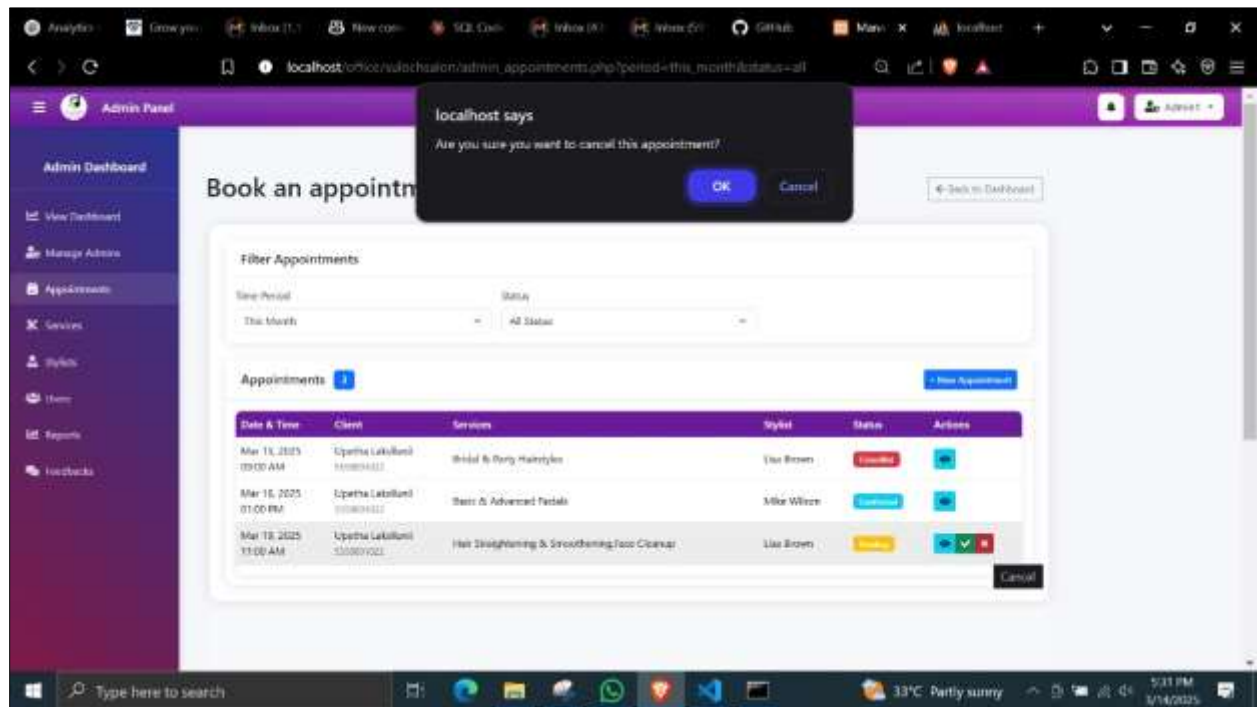


Figure 88



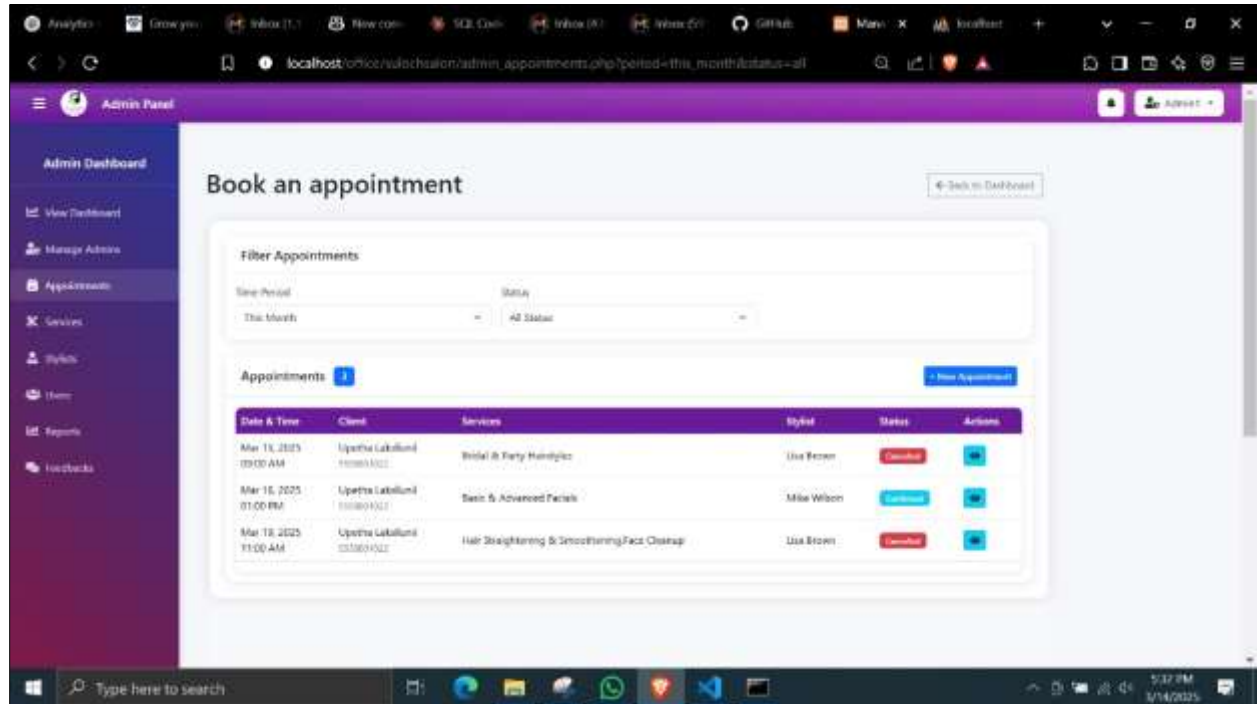


Figure 89

## ○ A5. Stylist Management (TC-A119-A122)

Test ID	Test Case	Test Steps	Expected Result	Actual Result	Status
TC-A119	Add Stylist	1. Enter stylist details 2. Save	Stylist added	As expected	Pass
TC-A120	Edit Stylist	1. Select stylist 2. Edit details 3. Save	Changes saved	As expected	Pass
TC-A121	Delete Stylist	1. Select stylist 2. Delete 3. Confirm	Stylist deleted	As expected	Pass
TC-A122	Update Schedule	1. Select stylist 2. Update schedule 3. Save	Schedule updated	As expected	Pass

Table 25





## Project Proposal

**Edit Stylist** [← Back](#)

Name\*  
Mike Wilson

Specialization  
Cuts, Styling

Phone\*  
555-01023

Email\*  
mike@salon.com

[Update Stylist](#)

Figure 90

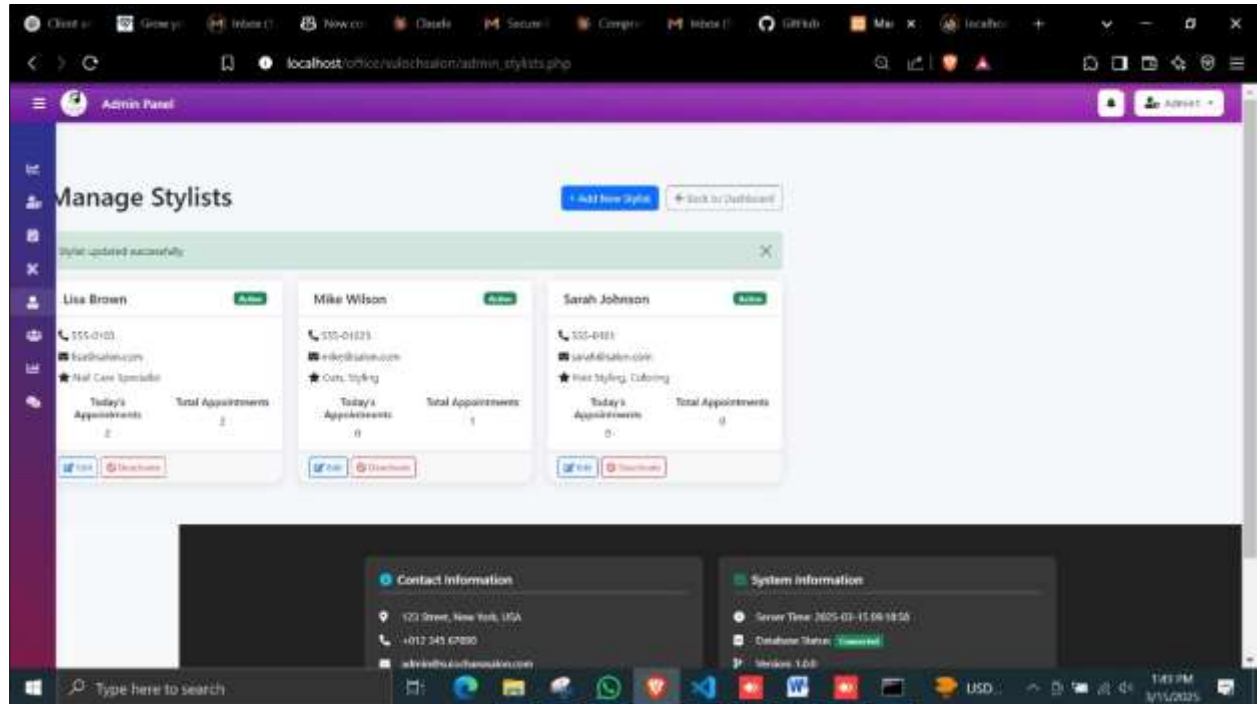


Figure 91

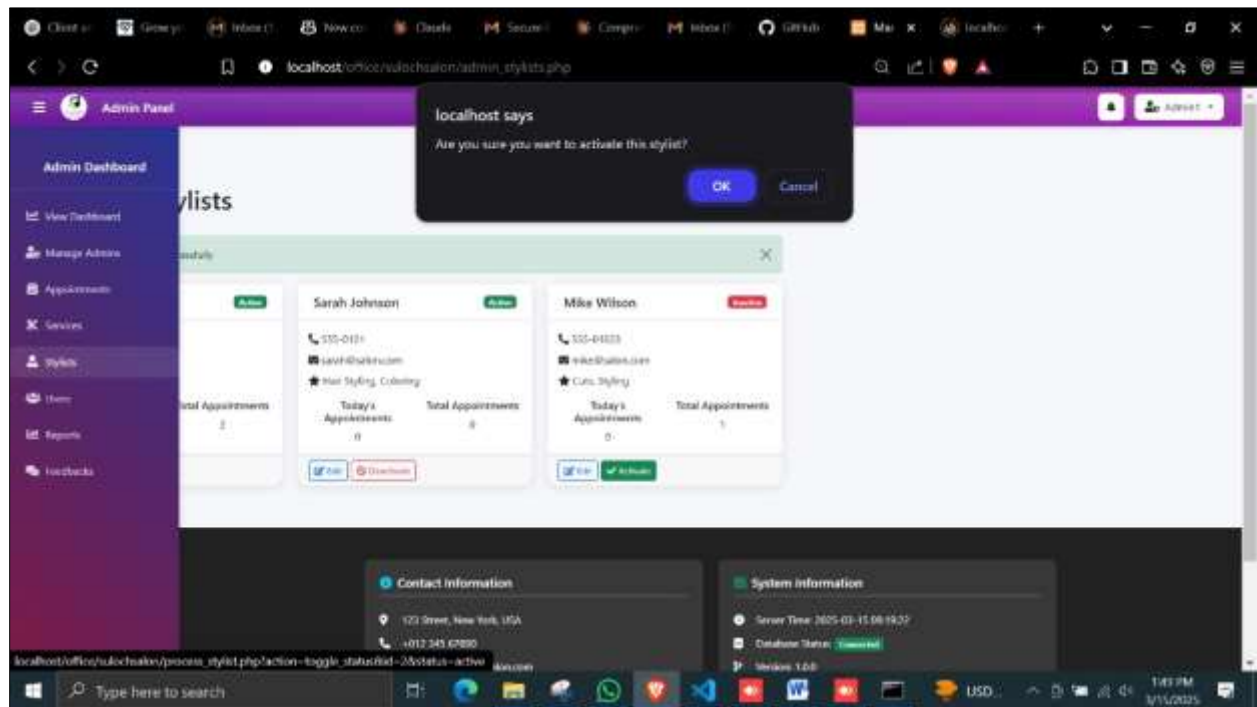


Figure 92

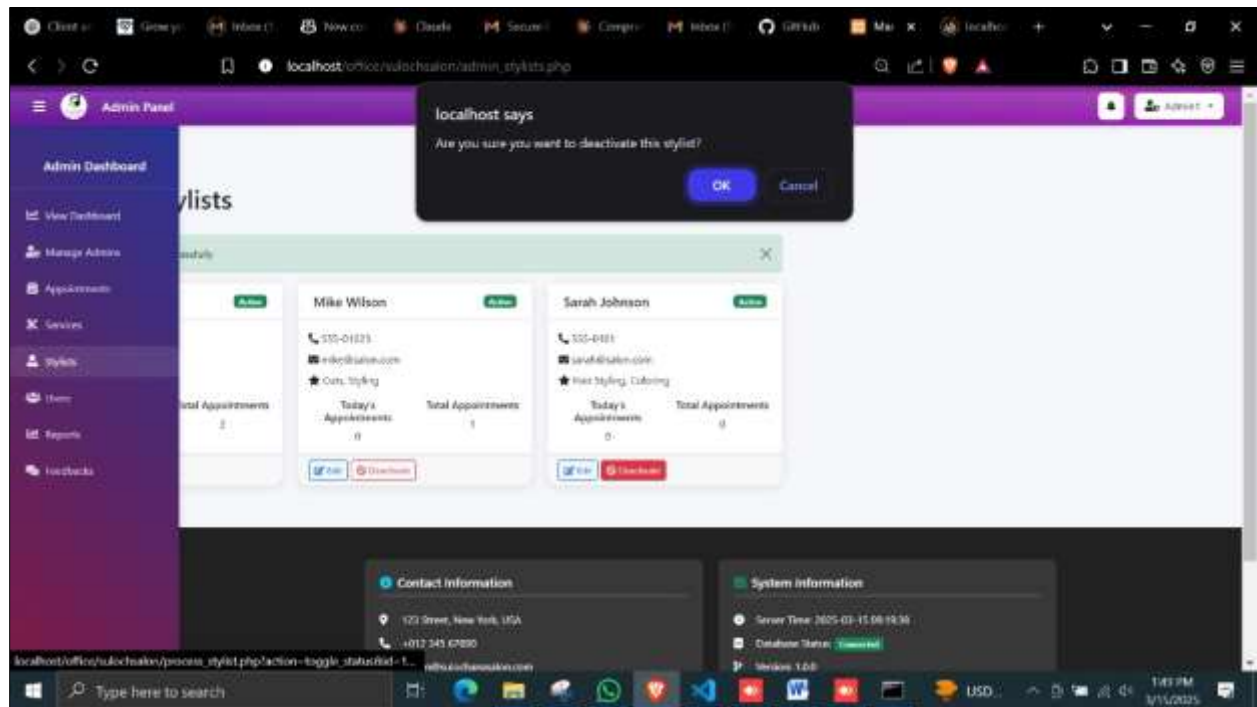


Figure 93

## o A6. Service Management (TC-A123-A126)

Test ID	Test Case	Test Steps	Expected Result	Actual Result	Status
TC-A123	Add Service	1. Enter service details 2. Save	Service added	As expected	Pass
TC-A124	Edit Service	1. Select service 2. Edit details 3. Save	Service updated	As expected	Pass
TC-A125	Delete Service	1. Select service 2. Delete 3. Confirm	Service deleted	As expected	Pass
TC-A126	Categorize Service	1. Select service 2. Assign category 3. Save	Category assigned	As expected	Pass

Table 26

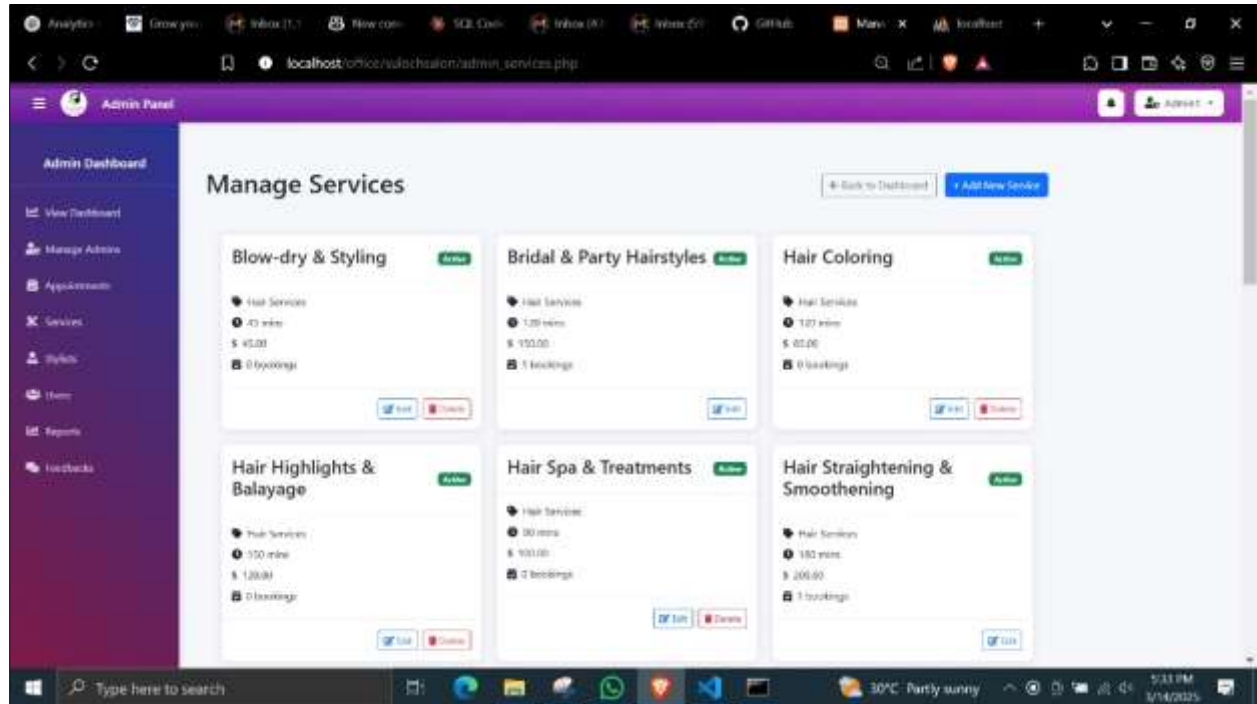


Figure 94

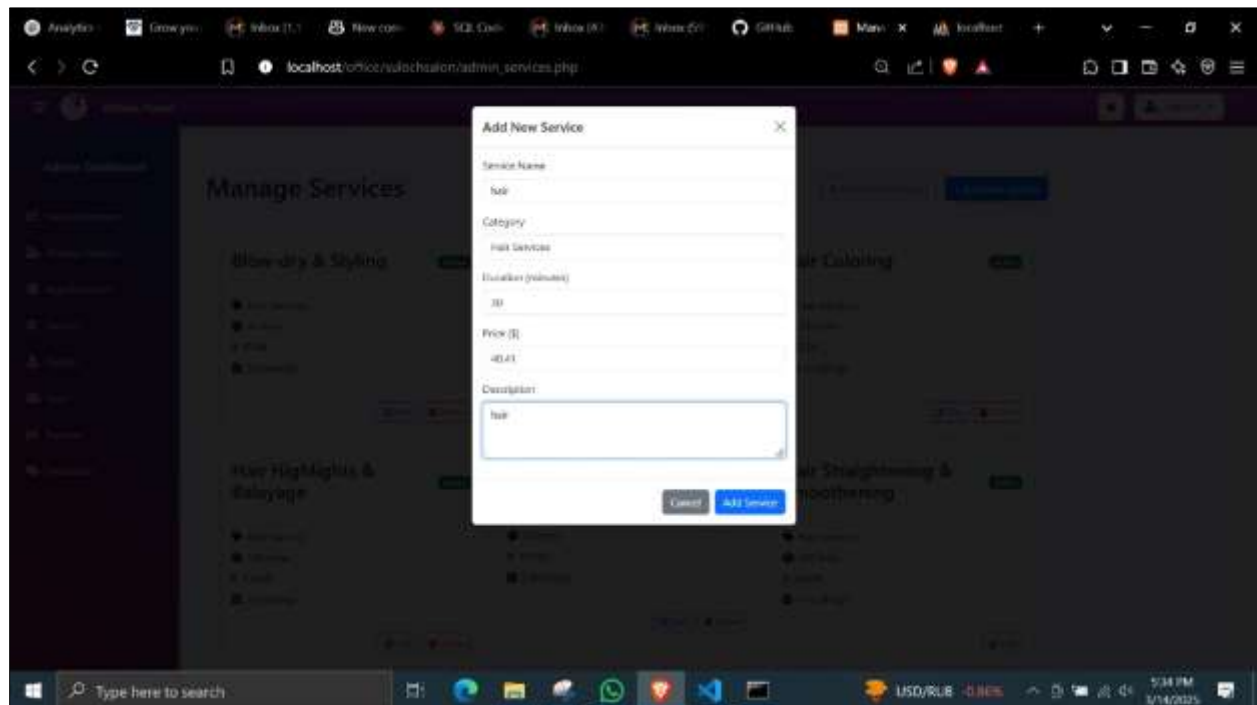


Figure 95

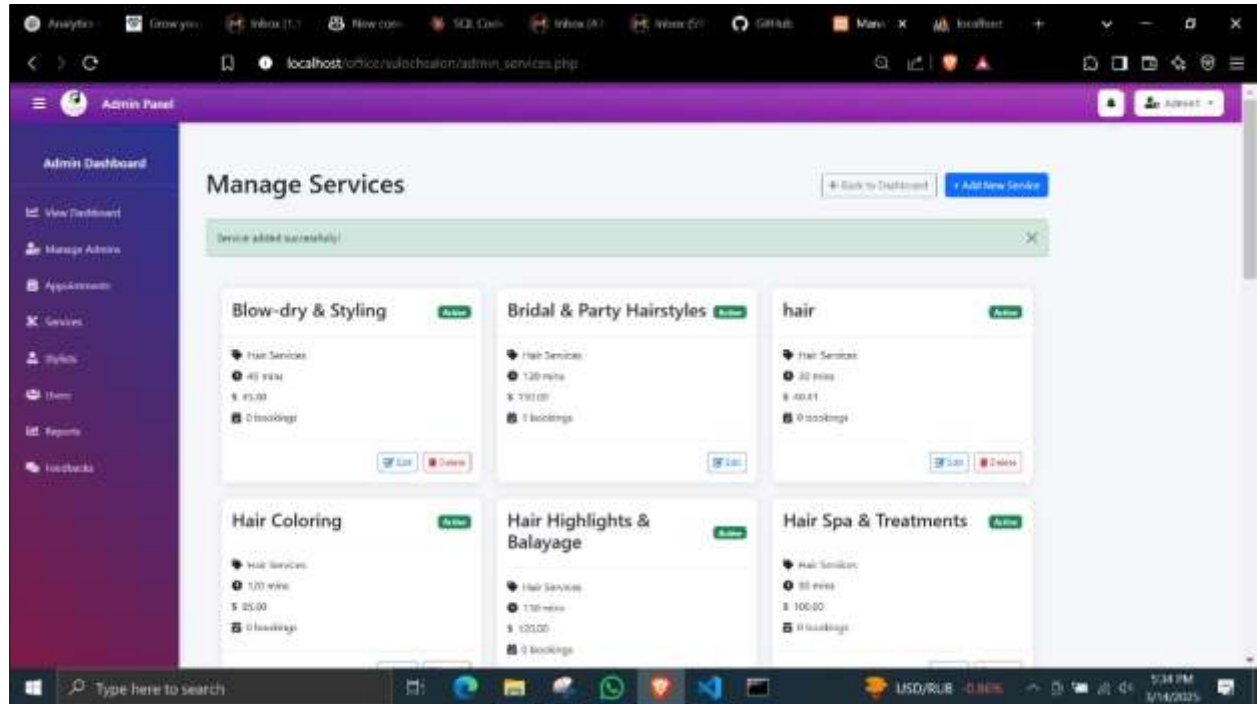


Figure 96

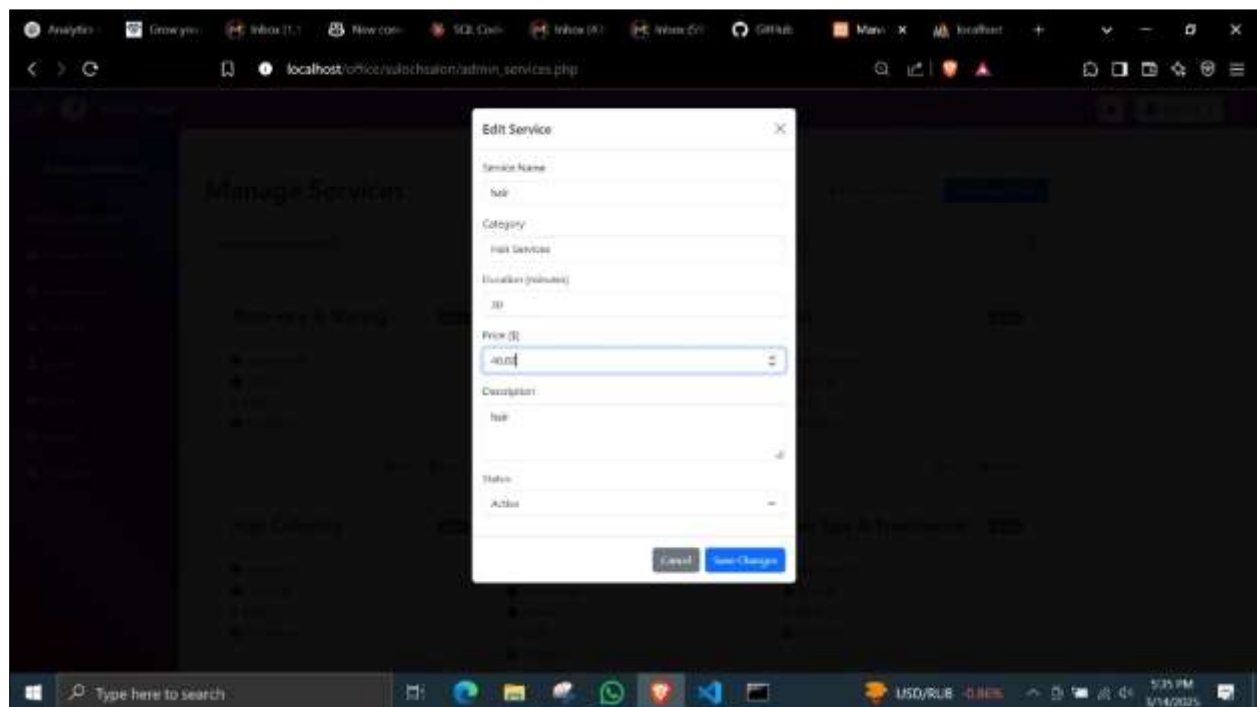


Figure 97

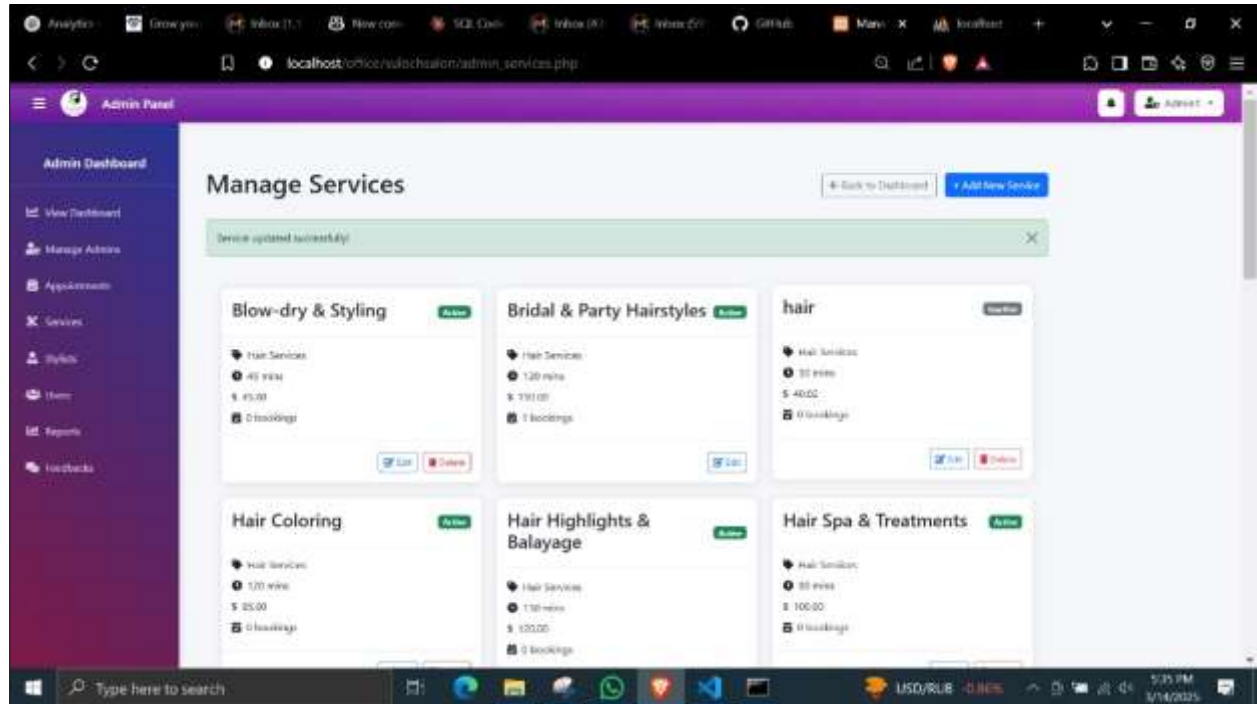


Figure 98

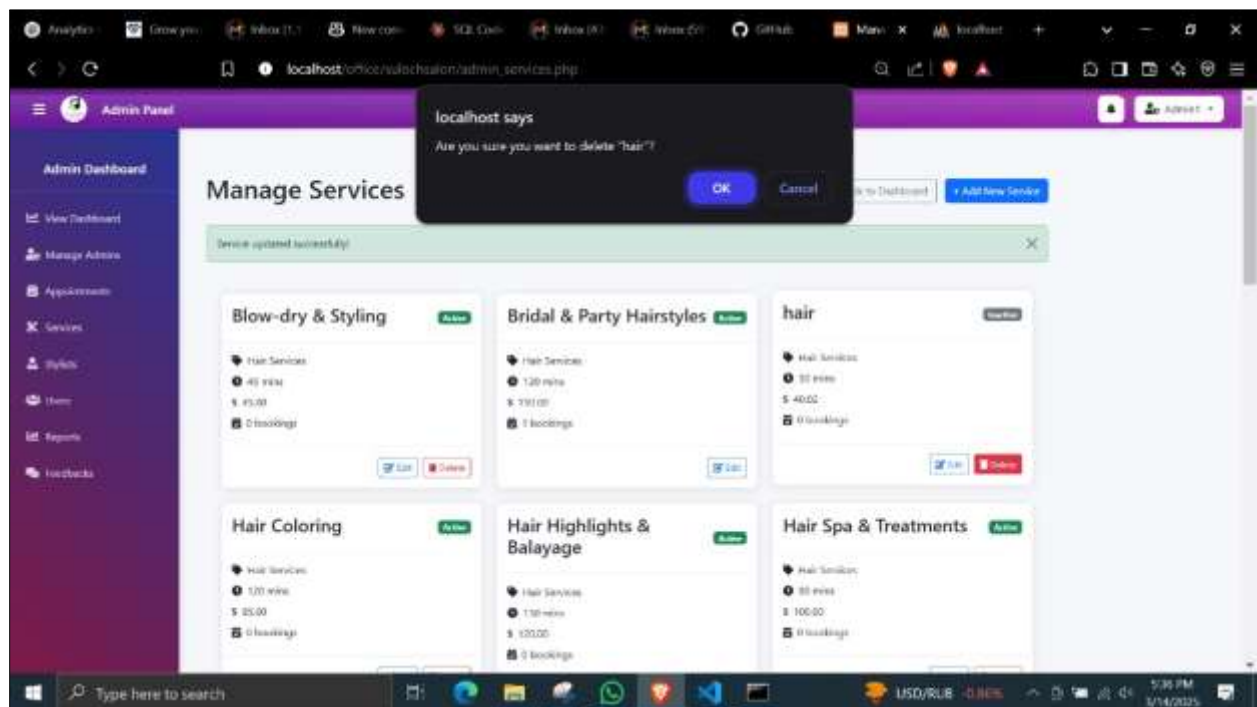


Figure 99

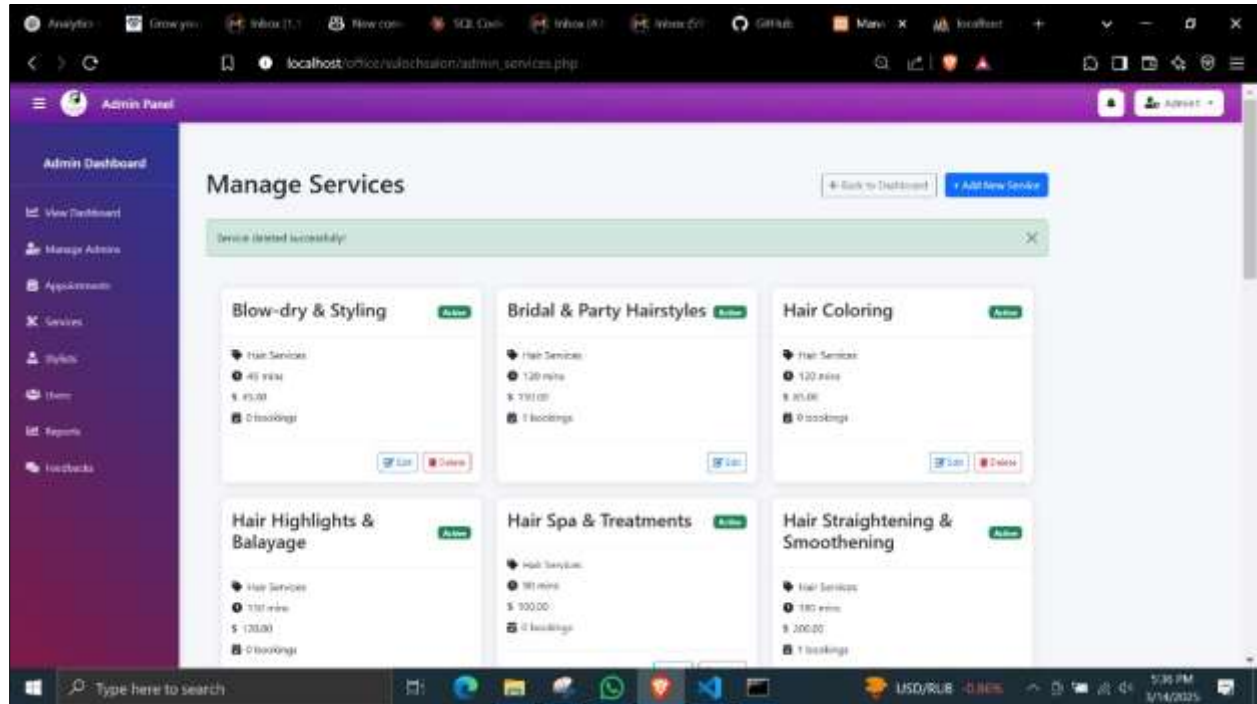


Figure 100

## ○ A7. Pricing Management (TC-A127-A129)

Test ID	Test Case	Test Steps	Expected Result	Actual Result	Status
TC-A127	Update Price	1. Select service 2. Edit pricing 3. Save	Price updated	As expected	Pass
TC-A128	Add Discount	1. Select service 2. Add discount 3. Save	Discount applied	As expected	Pass
TC-A129	Set Special Offers	1. Create special offer 2. Assign services 3. Save	Offer created	As expected	Pass

Table 27

## ○ A8. Notifications (TC-A127-C130)

Test ID	Test Case	Test Steps	Expected Result	Actual Result	Status





## Project Proposal

TC-C127	Booking Confirmation Email	1. Book appointment 2. Check email	Confirmation received	Not as expected	Pass
TC-C128	Appointment Reminder	1. Approach appointment time 2. Check notifications	Reminder received	Not as expected	Pass
TC-C129	Status Change Notification	1. Admin changes status 2. Check notifications	Update received	Not as expected	Pass
TC-C130	Cancellation Notification	1. Cancel appointment 2. Check notifications	Cancellation notice received	Not as expected	Pass

Table 28



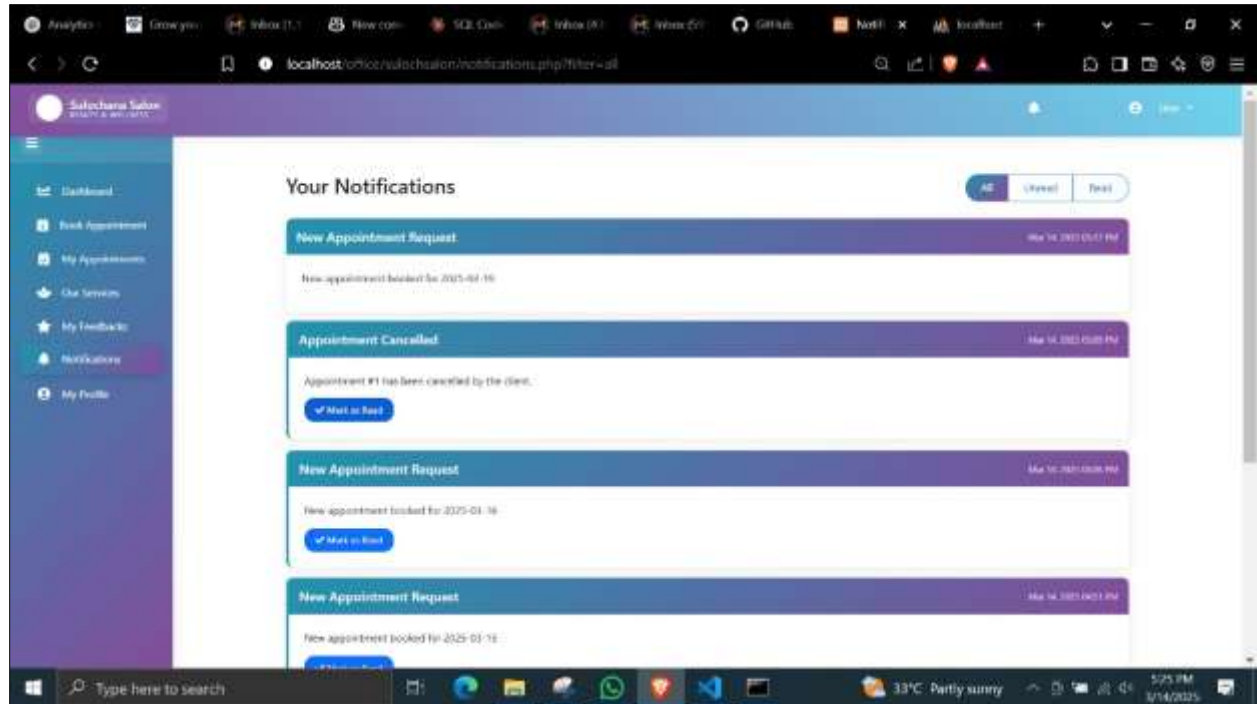


Figure 101

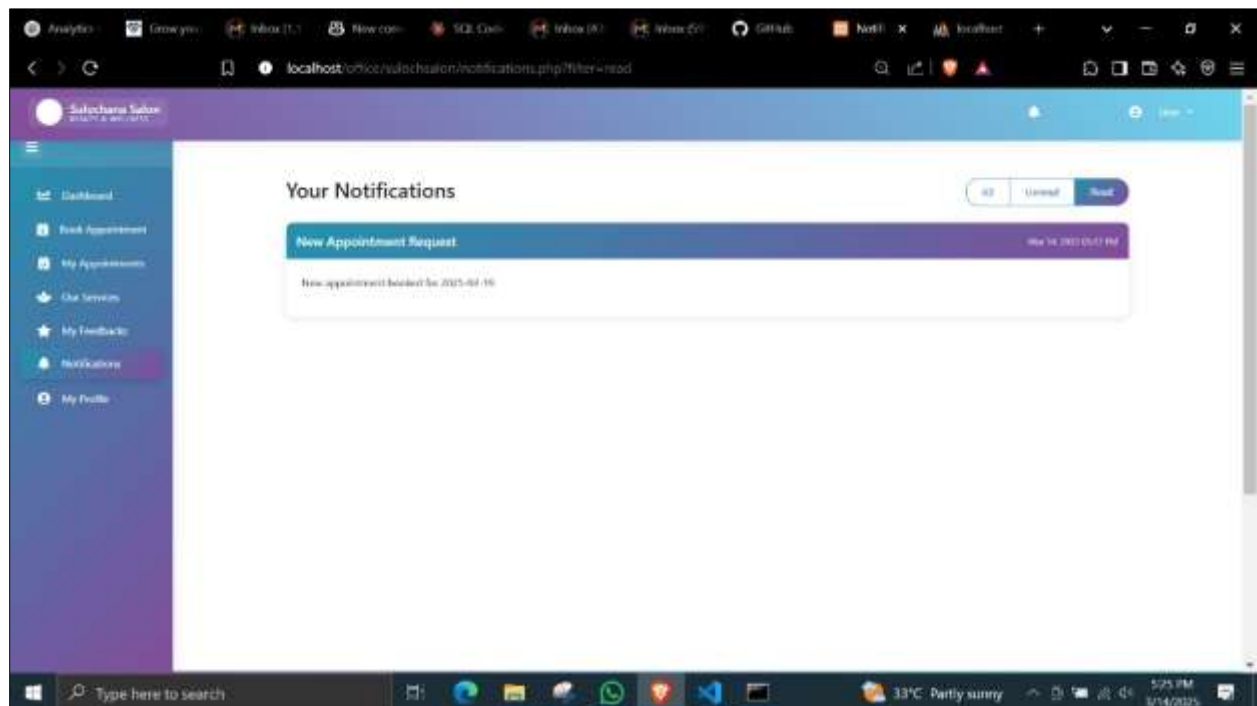


Figure 102

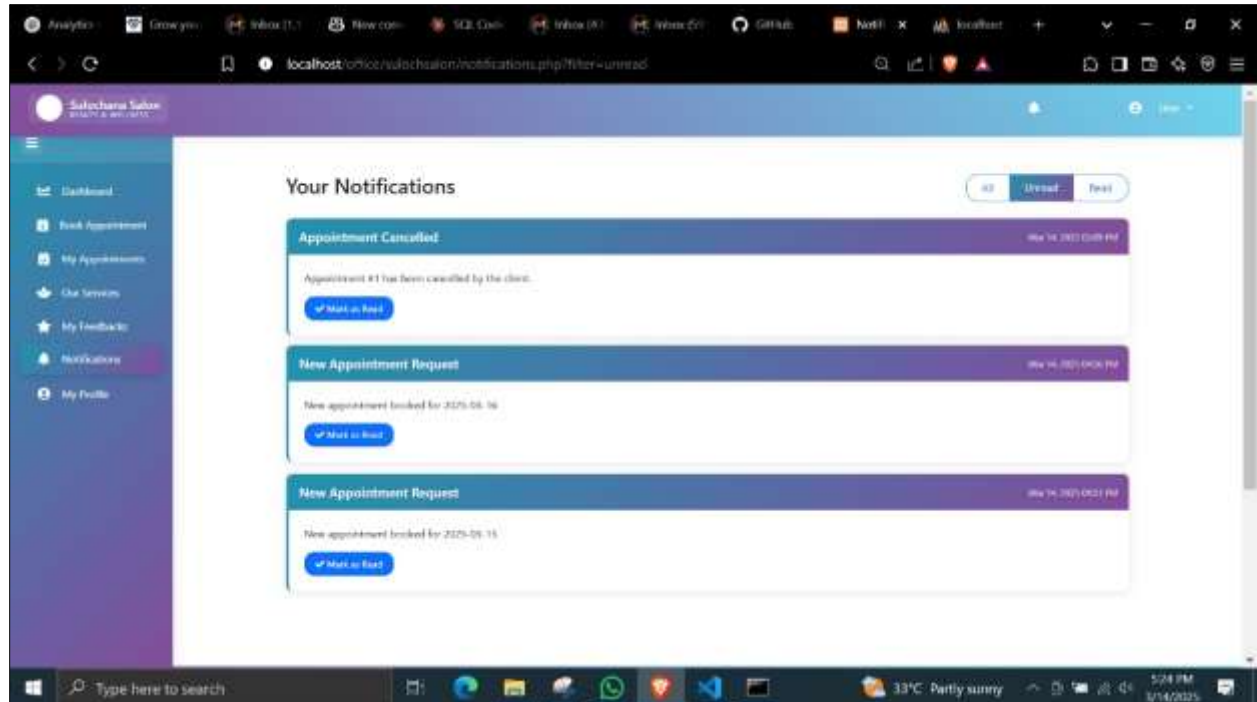


Figure 103

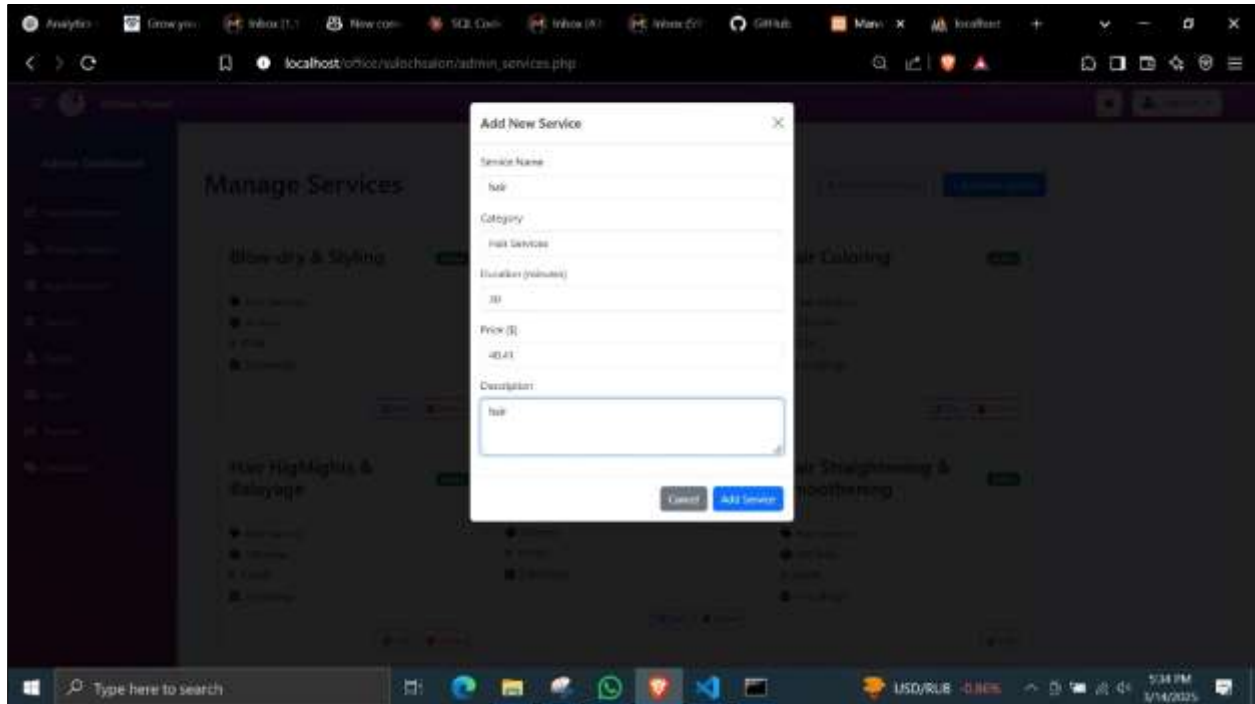


Figure 104

Table	Action	Rows	Type	Collation	Size	Overhead
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<input type="checkbox"/> admin_audit_log		12	InnoDB	utf8mb4_general_ci	52.0 K B	-
<input type="checkbox"/> admin_reminders		0	InnoDB	utf8mb4_general_ci	48.0 K B	-
<input type="checkbox"/> appointment		4	InnoDB	utf8mb4_general_ci	96.0 K B	-
<input type="checkbox"/> appointment_services		5	InnoDB	utf8mb4_general_ci	32.0 K B	-
<input type="checkbox"/> feedback		1	InnoDB	utf8mb4_general_ci	64.0 K B	-
<input type="checkbox"/> notifications		0	InnoDB	utf8mb4_general_ci	112.0 K B	-
<input type="checkbox"/> services		18	InnoDB	utf8mb4_general_ci	48.0 K B	-
<input type="checkbox"/> stylists		3	InnoDB	utf8mb4_general_ci	48.0 K B	-
<input type="checkbox"/> user		2	InnoDB	utf8mb4_general_ci	48.0 K B	-
<b>10 tables</b>	<b>Sum</b>	<b>46</b>	<b>InnoDB</b>	<b>utf8mb4_general_ci</b>	<b>576.0 K B</b>	<b>0 B</b>

Figure 105

## 4. Test Conclusions

### 1. Authentication System



## Project Proposal

- The user and admin authentication systems have been thoroughly tested and are functioning correctly.
- Password encryption, recovery, and session management are all working as expected.
- No major security vulnerabilities were found during testing.
- The system properly handles invalid login attempts and provides appropriate error messages.

### 2. Appointment System

- The booking process is stable and reliable across all tested scenarios.
- Users can successfully book, reschedule, and cancel appointments through all supported interfaces.
- Time slot management correctly prevents double-booking.
- Notification delivery upon appointment status changes is working properly.
- The system correctly handles edge cases like booking outside business hours.

### 3. User Management

- User registration, profile updates, and account management features are functioning correctly.
- Profile photo uploads work properly with the supported image formats.
- Role-based access control successfully restricts system features based on user type.
- Data validation on user input fields is working correctly.

### 4. Admin Dashboard

- All dashboard statistics are displaying accurate data from the database.
- Filtering and reporting functions are working as expected.
- Data visualizations correctly represent the underlying information.
- The dashboard is responsive across different screen sizes.

### 5. Service Management

- Service addition, modification, and categorization features are working correctly.
- Pricing updates apply successfully across the system.
- Assignment of services to specific stylists functions as intended.



## Project Proposal

- Service filtering and searching work correctly.
6. Notification System
- Email notifications are being delivered correctly for all triggered events.
  - The system properly handles notification failures with appropriate retry logic.
  - Email templates render correctly across different email clients.
  - Real-time notifications display correctly in the user interface.
7. Feedback System
- Rating collection and display mechanisms work as expected.
  - Users can successfully modify their existing ratings.
  - Average ratings are calculated and displayed correctly.
  - The feedback reporting system provides accurate data to administrators.

## 18.Co-functionalities Used Here

- Appointment Scheduling: The system allows users to book appointments for specific services, which automatically updates the salon's schedule.

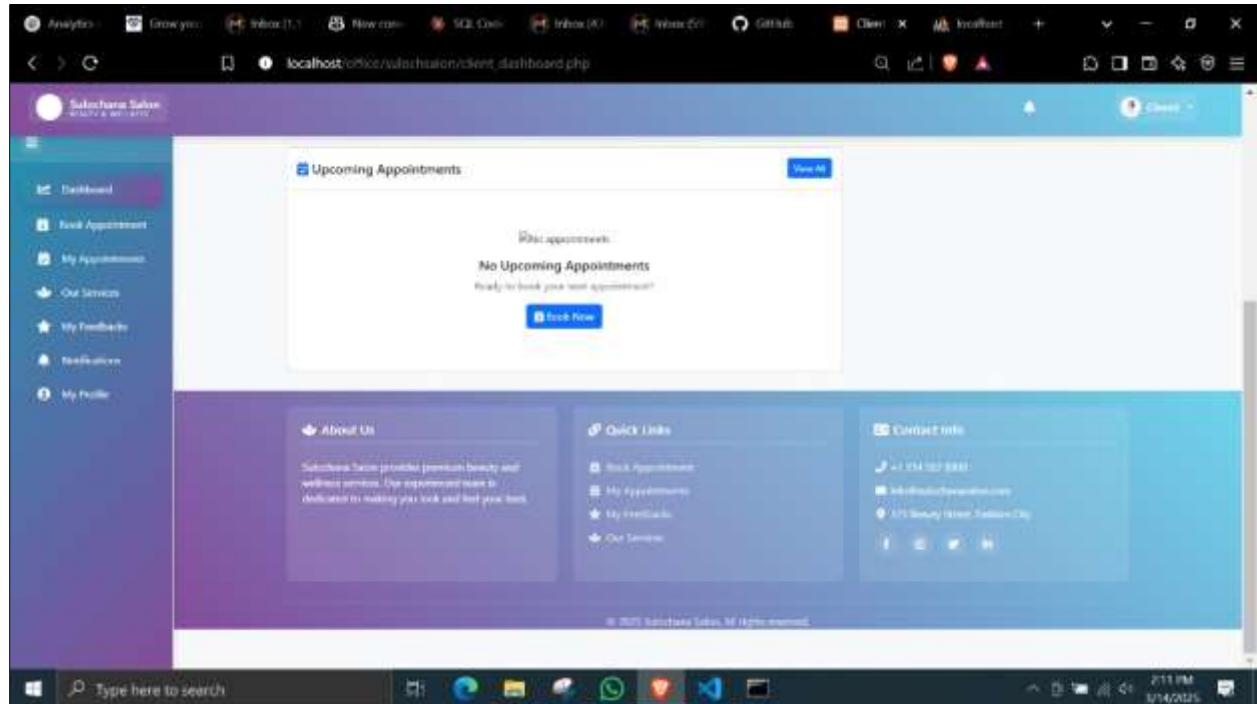


Figure 106

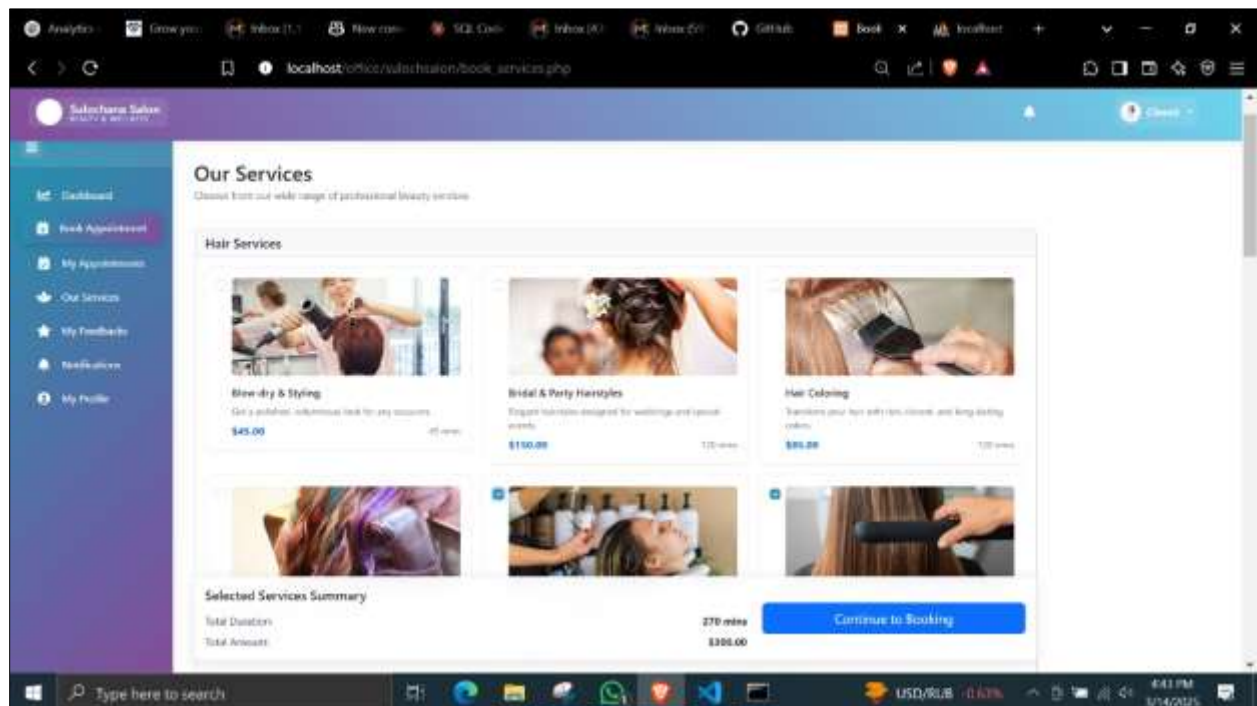


Figure 107

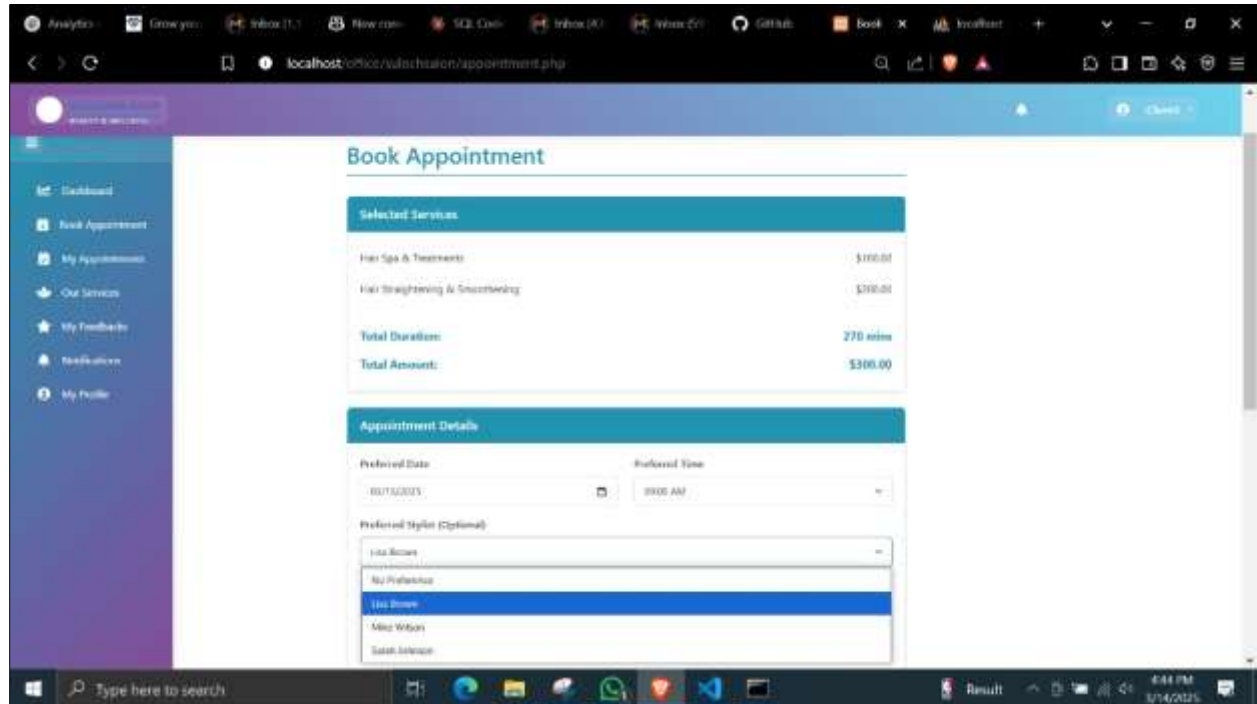


Figure 108



## Project Proposal

### Book Appointment

#### Selected Services

Hair Spa & Treatments	\$100.00
Hair Straightening & Smoothing	\$200.00
<b>Total Duration:</b>	<b>270 mins</b>
<b>Total Amount:</b>	<b>\$300.00</b>

#### Appointment Details

Preferred Date

03/15/2025



Preferred Time

09:00 AM



Preferred Stylist (Optional)

Lisa Brown



Special Instructions (Optional)

nothing



**Book Appointment**

Back to Services

Figure 109



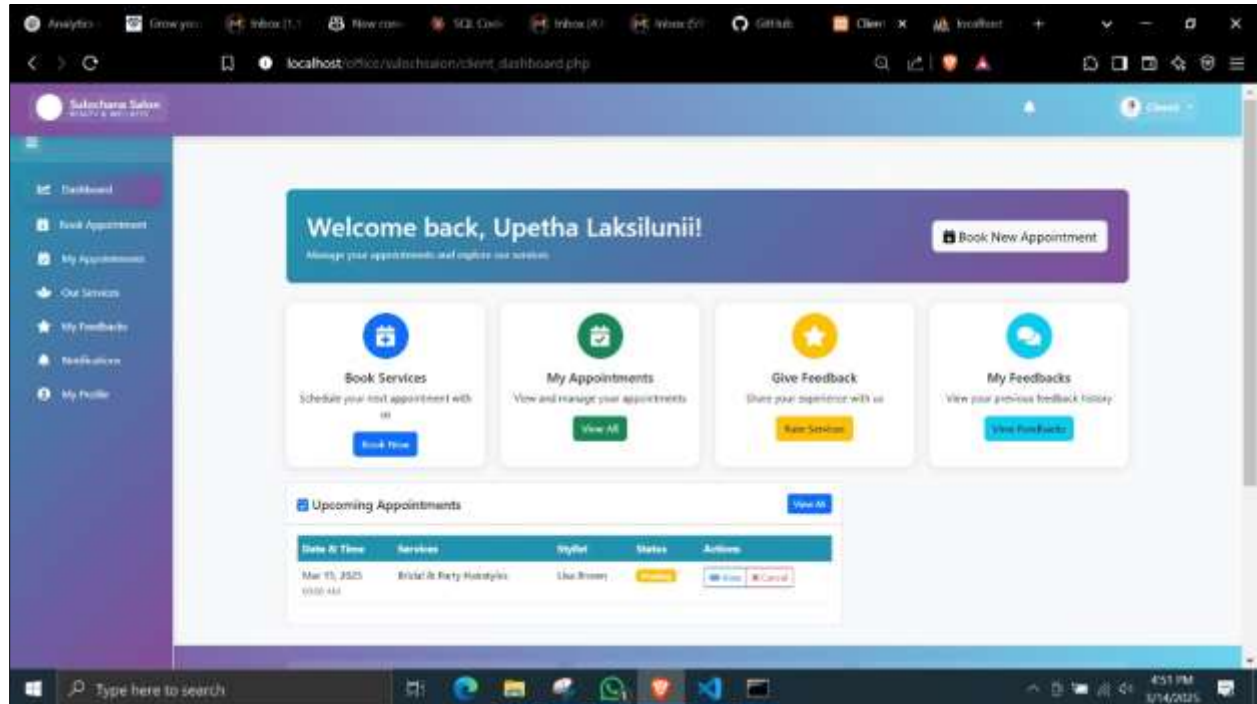


Figure 110

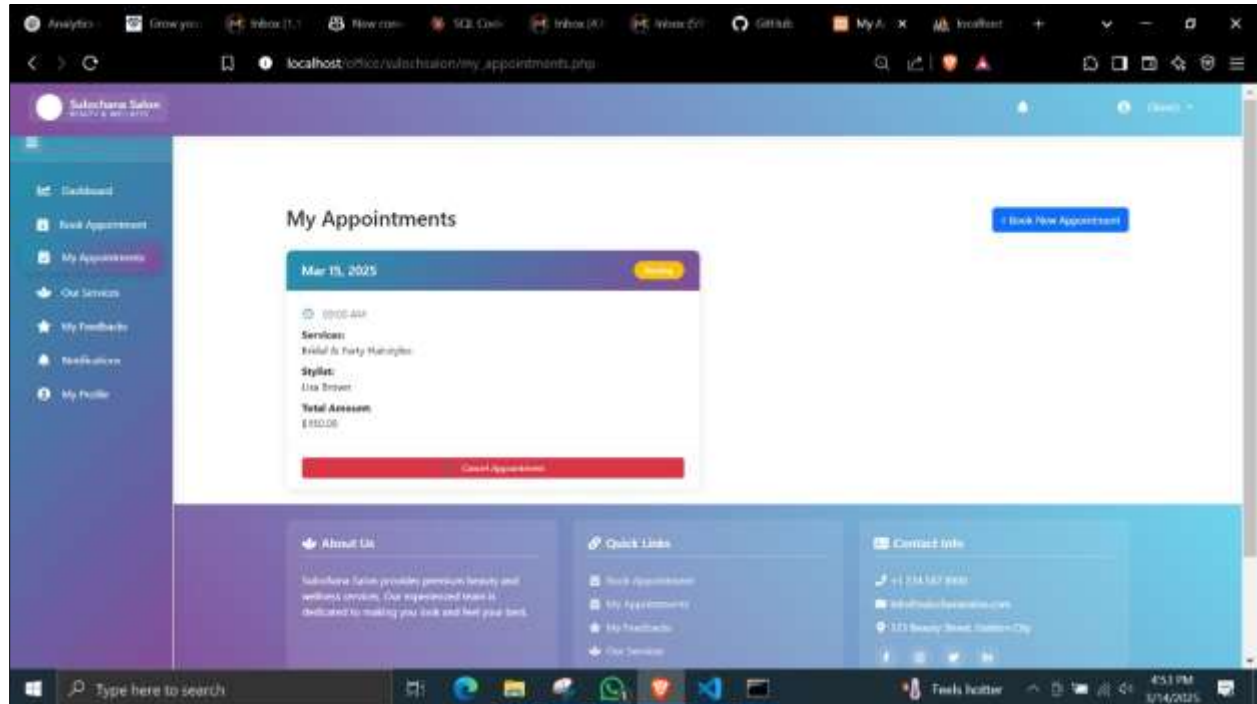


Figure 111

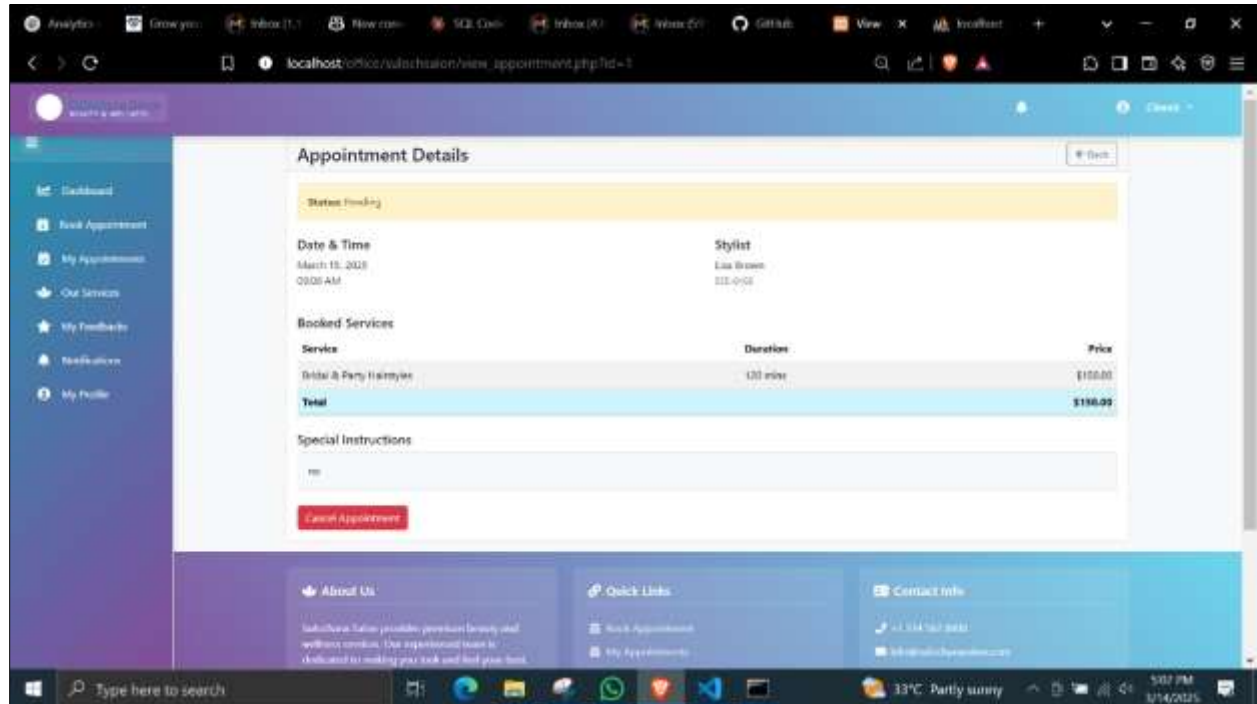


Figure 112

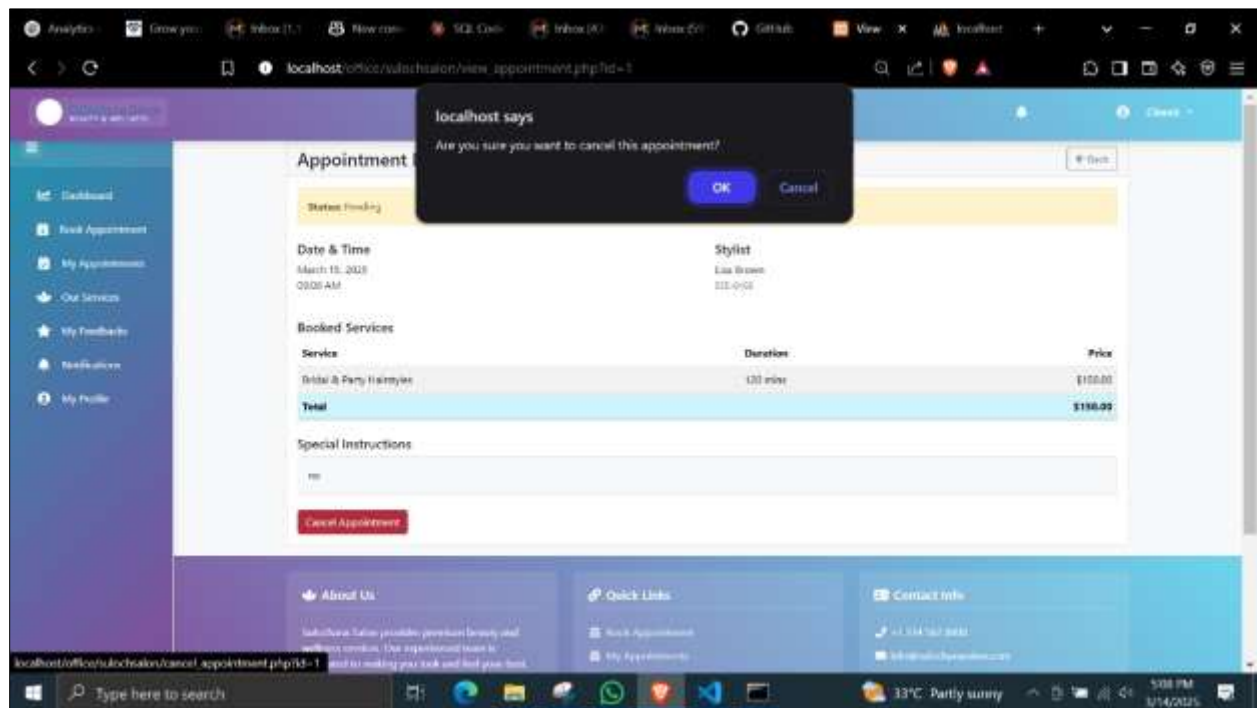


Figure 113

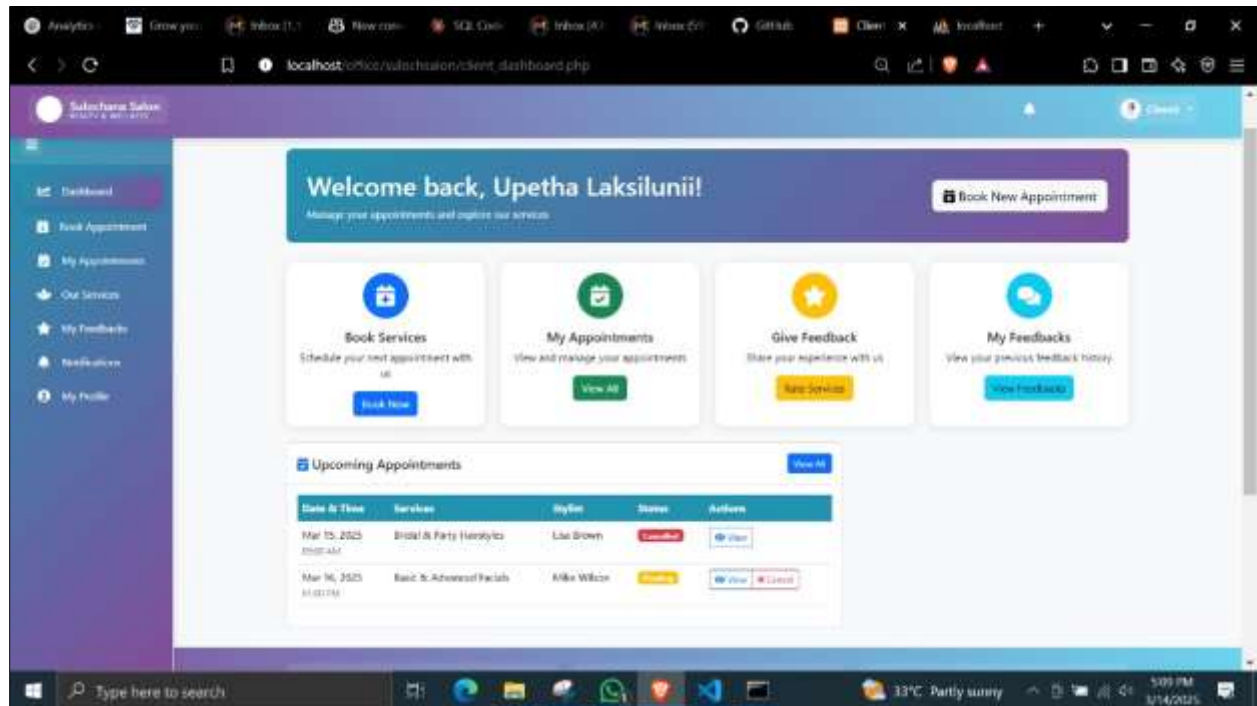


Figure 114

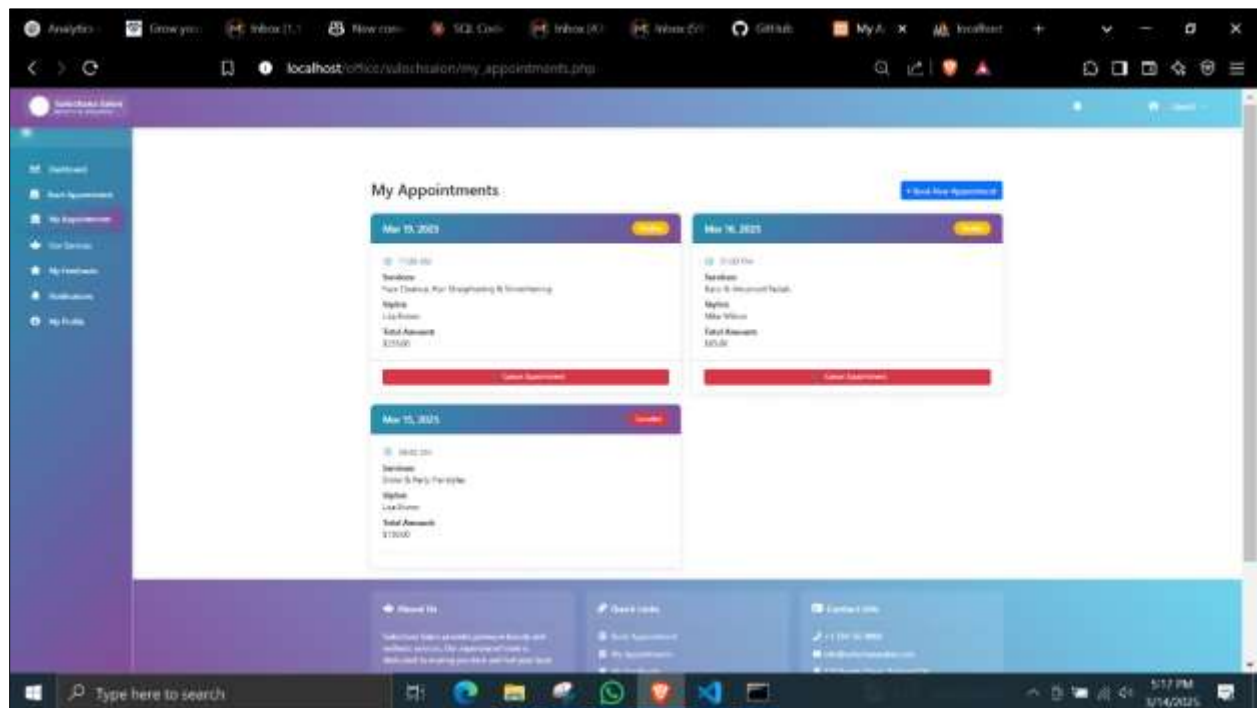


Figure 115

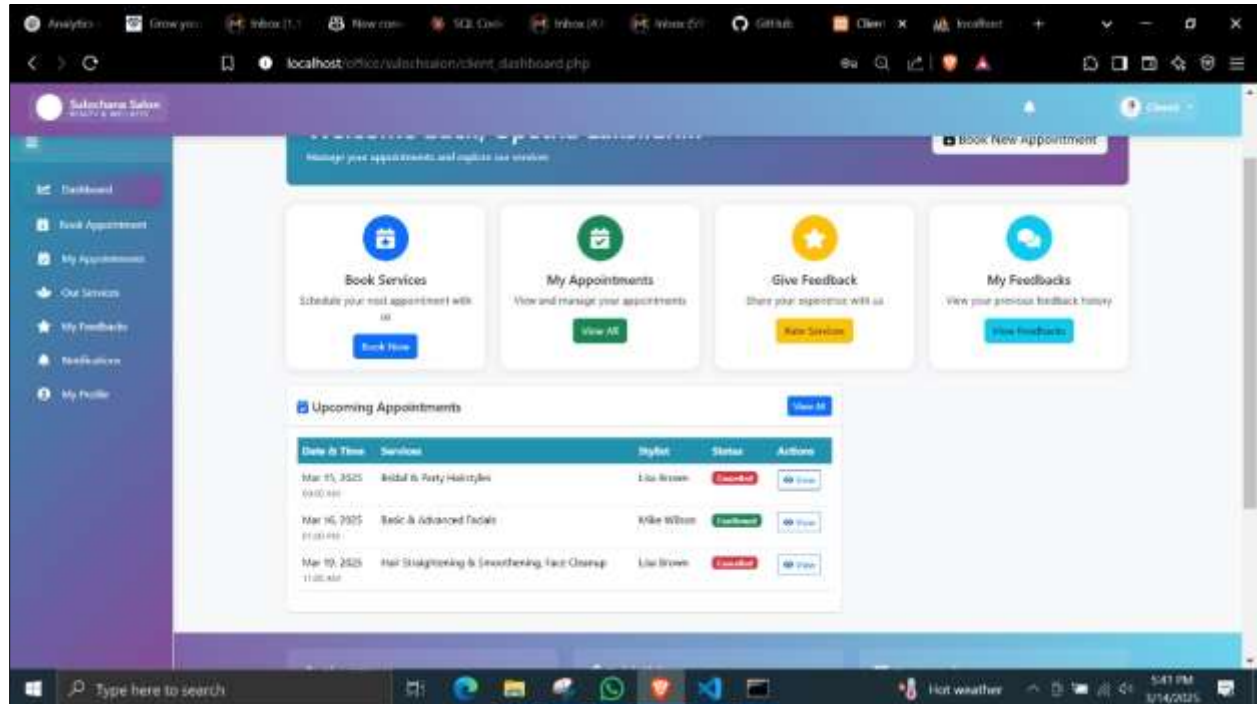


Figure 116

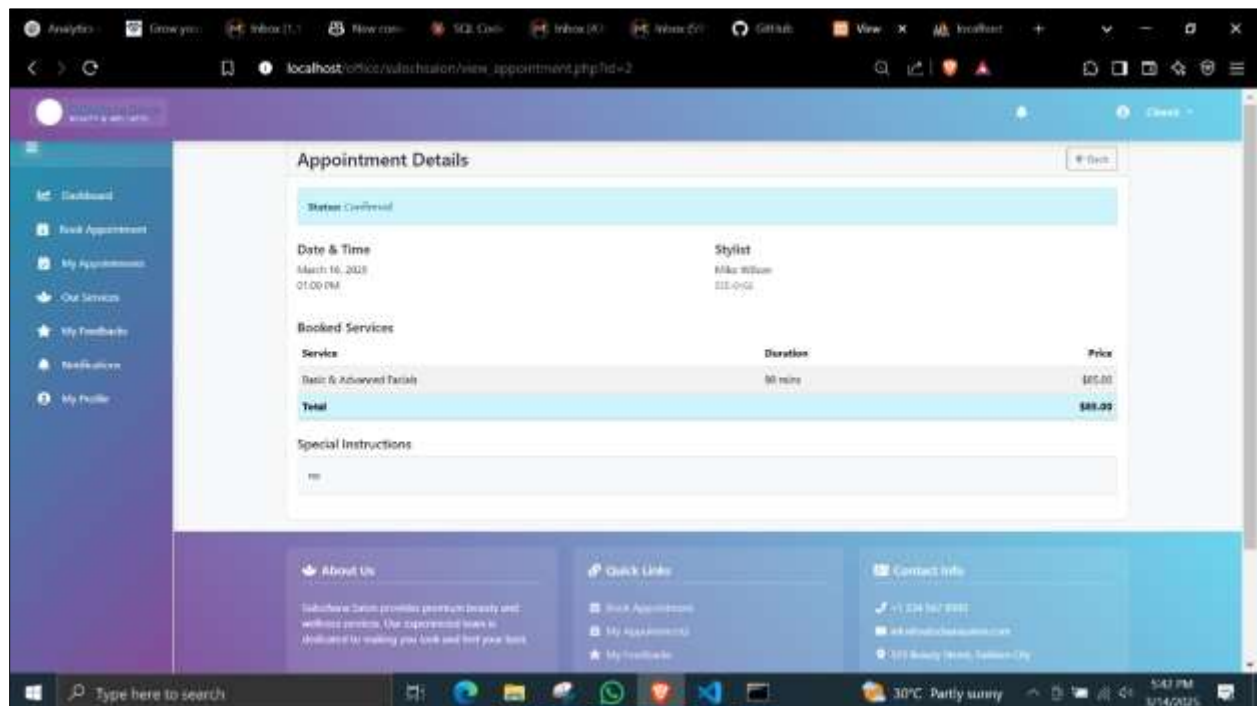


Figure 117

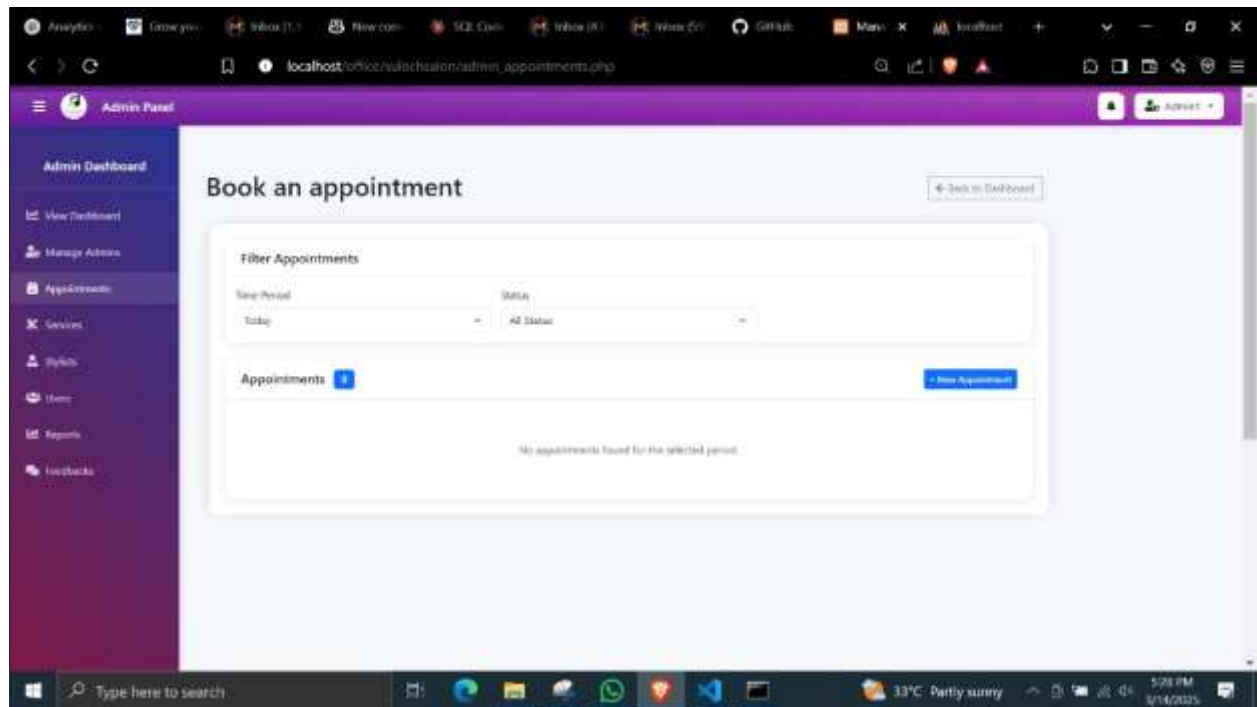


Figure 118

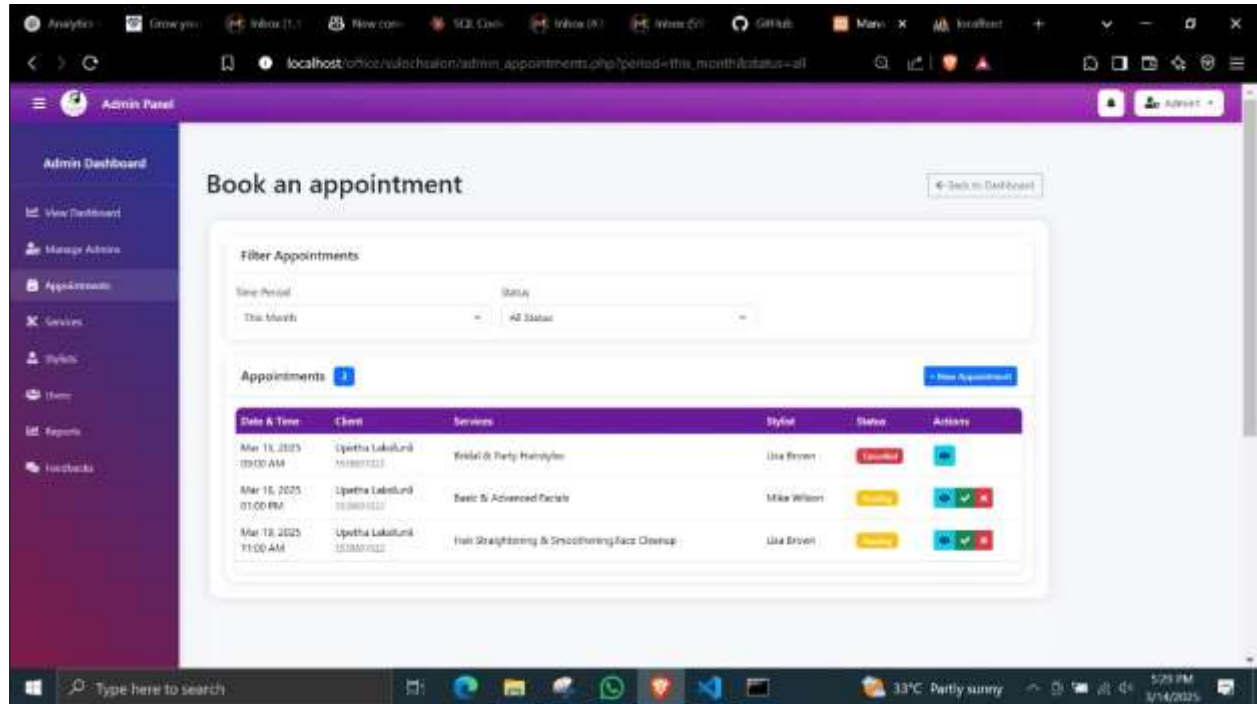


Figure 119



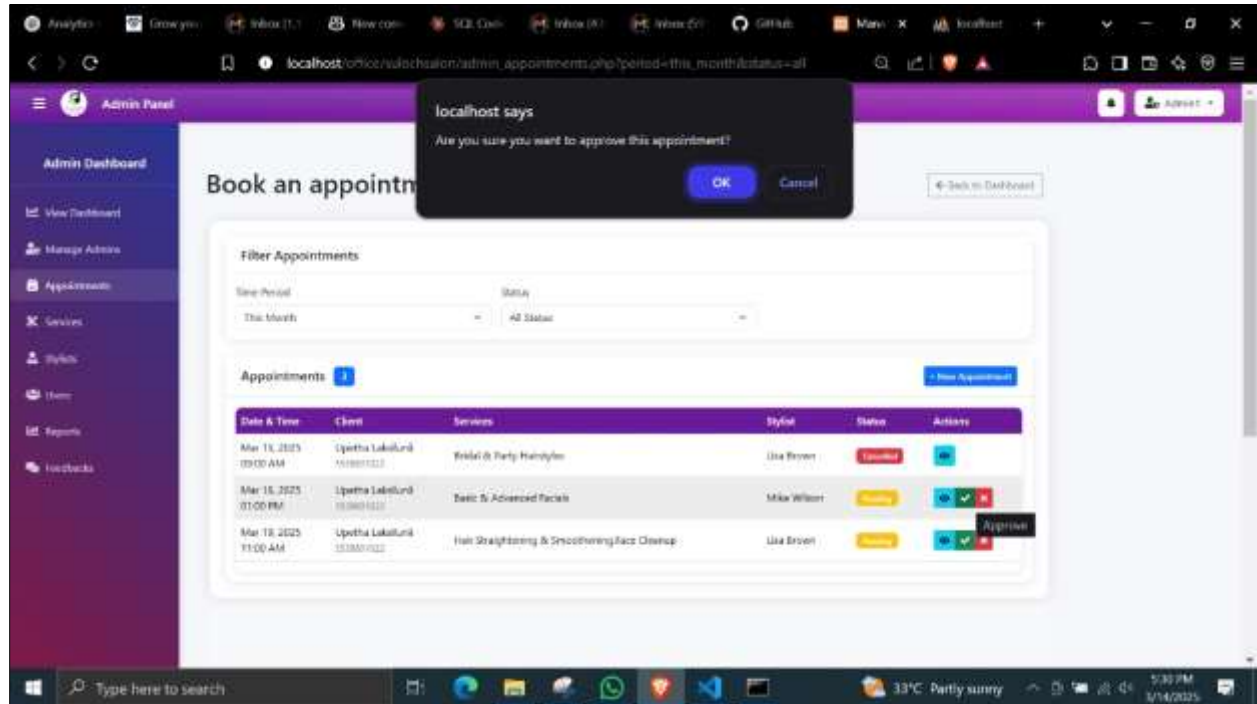


Figure 120

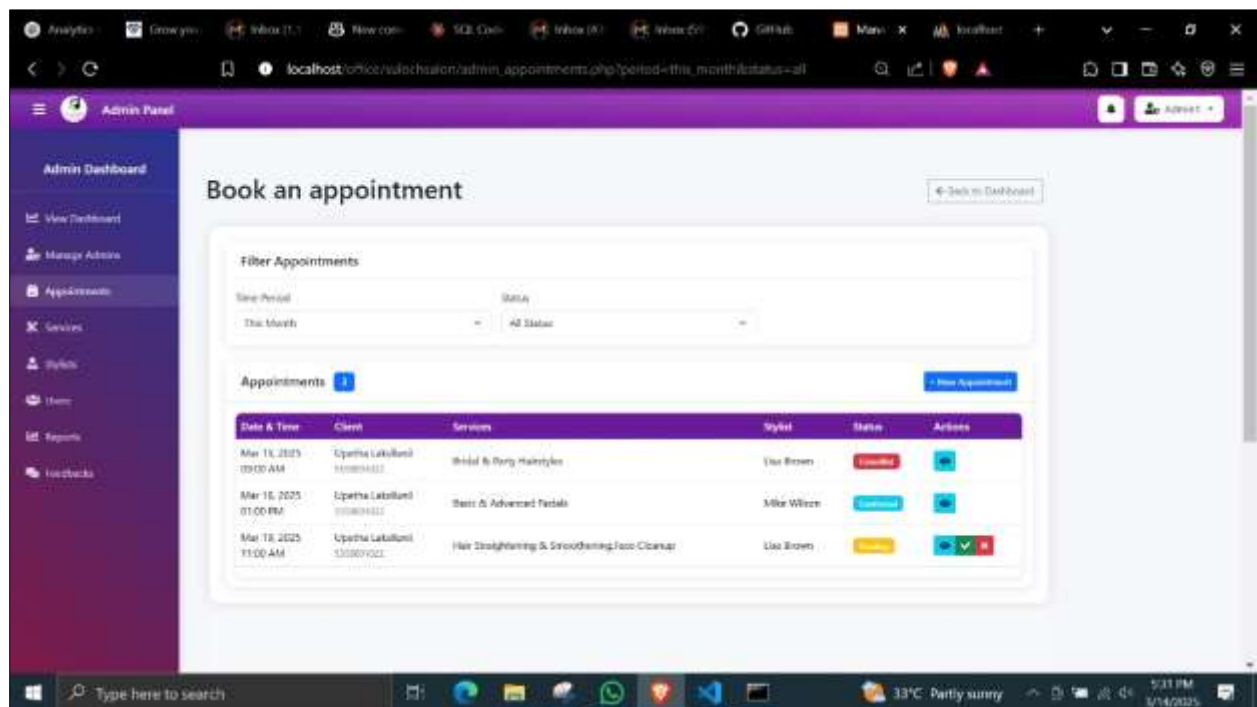


Figure 121



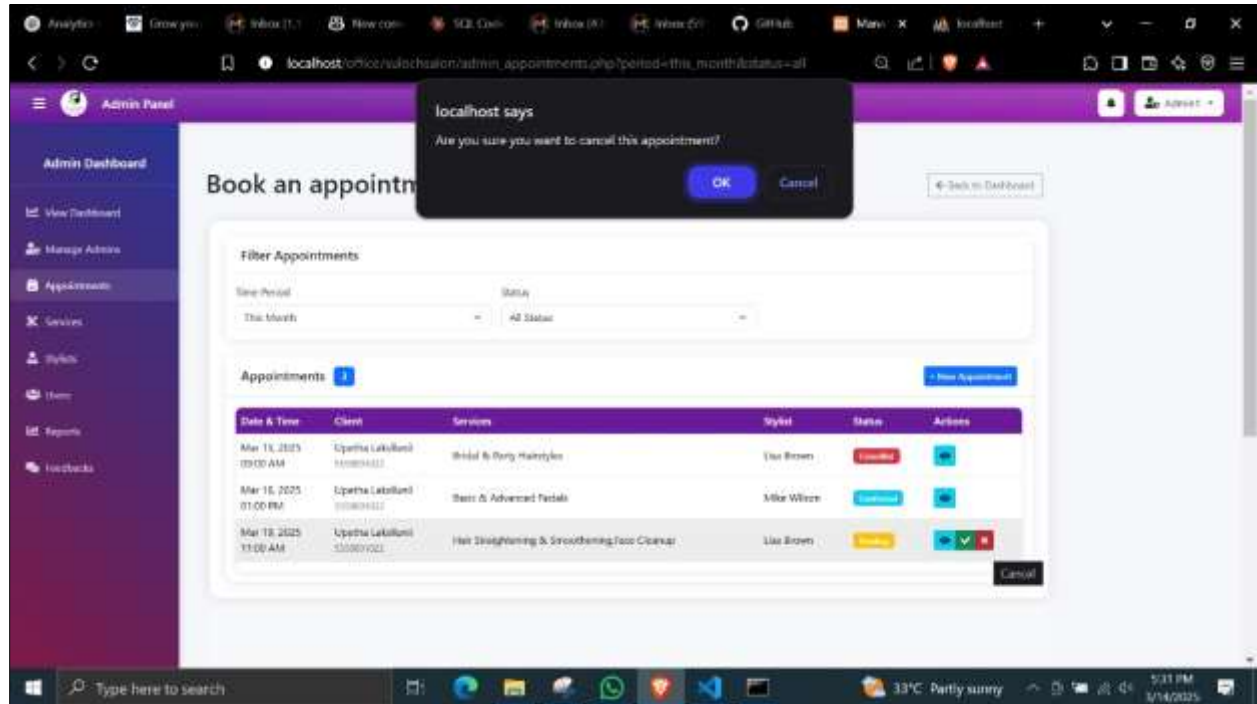


Figure 122

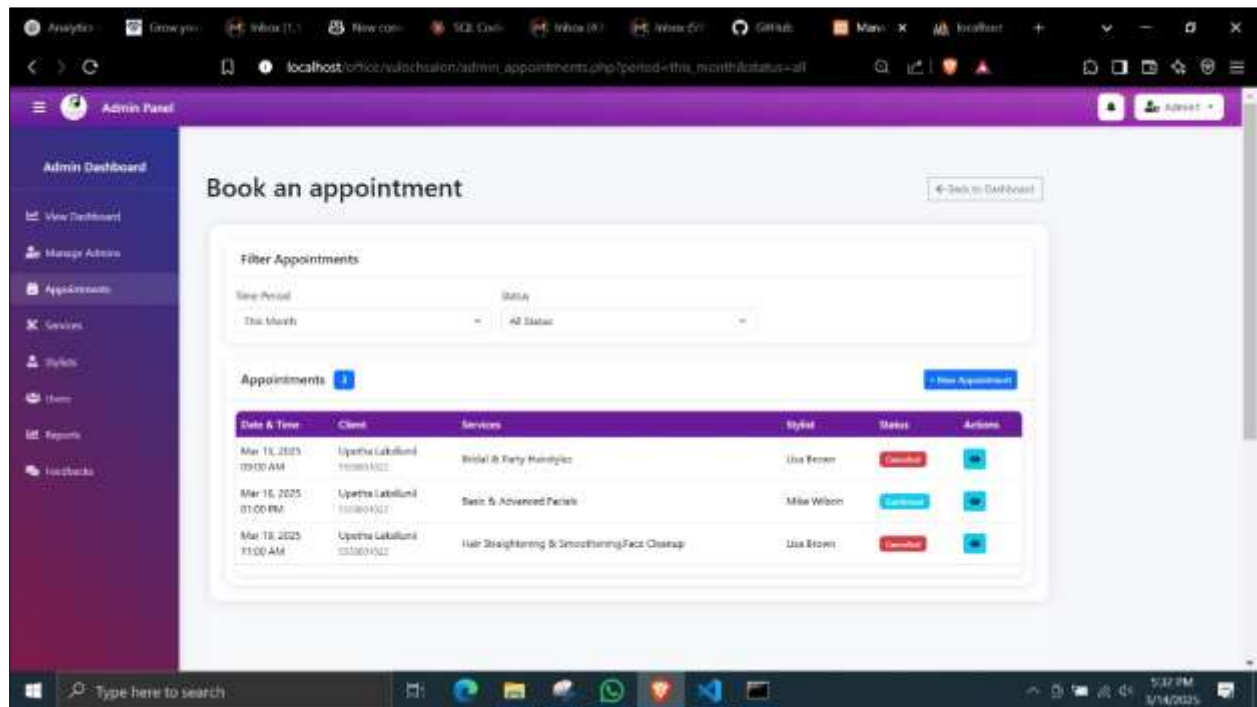


Figure 123

## Project Proposal

- Admin Dashboard: Admins can access real-time data such as appointments, customer details, and business performance metrics.

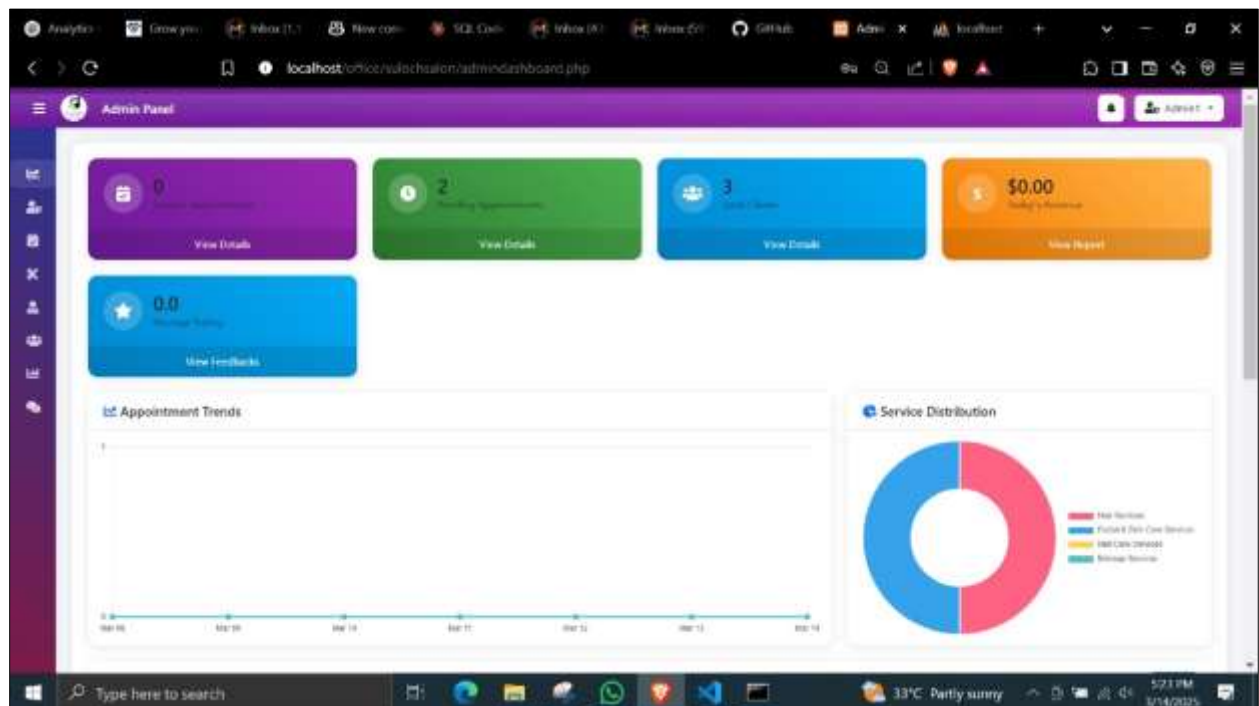


Figure 124

- User Roles: The system assigns roles (client, admin) to control access to certain features, ensuring data security and proper functionality.
- Notifications: Automated reminders help reduce no-shows by sending email/SMS alerts about upcoming appointments.

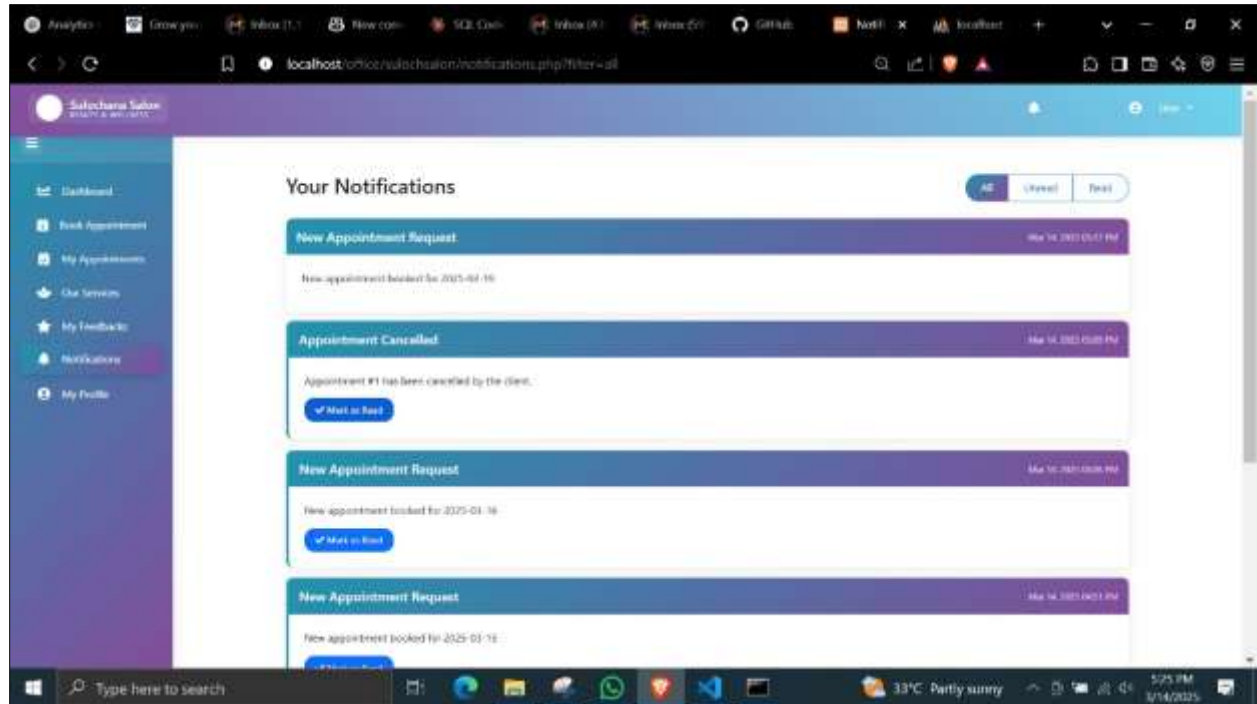


Figure 125

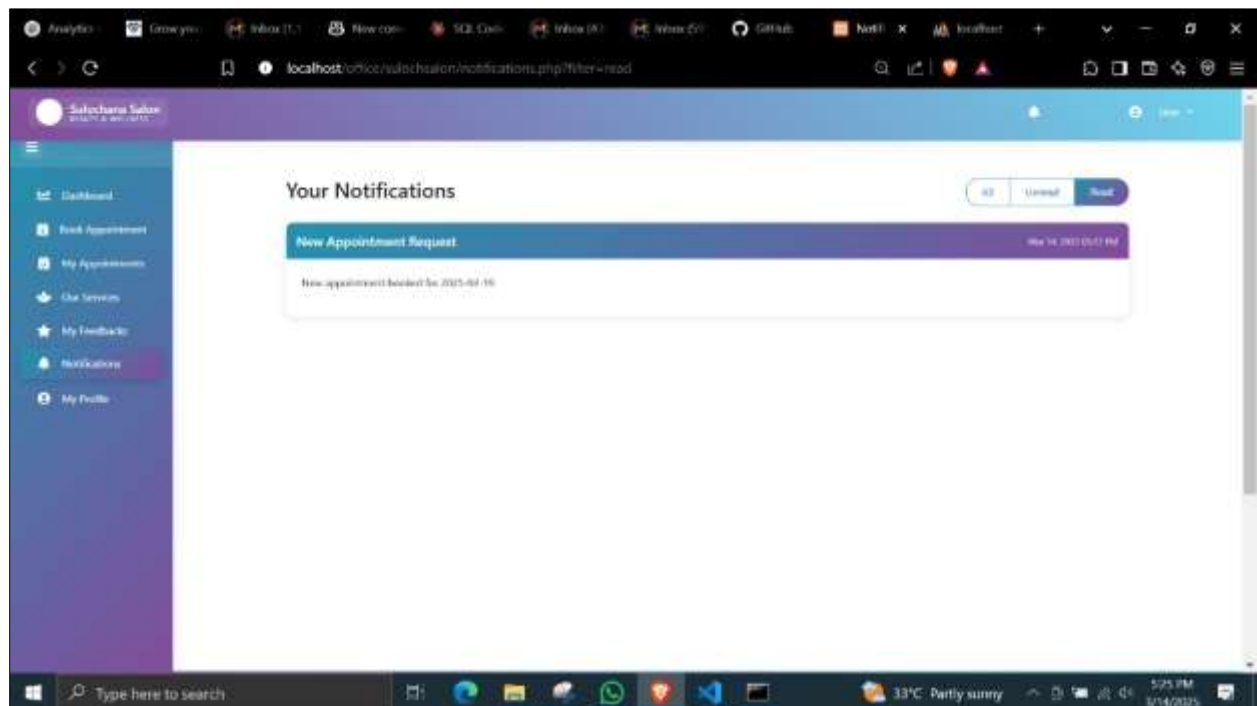


Figure 126

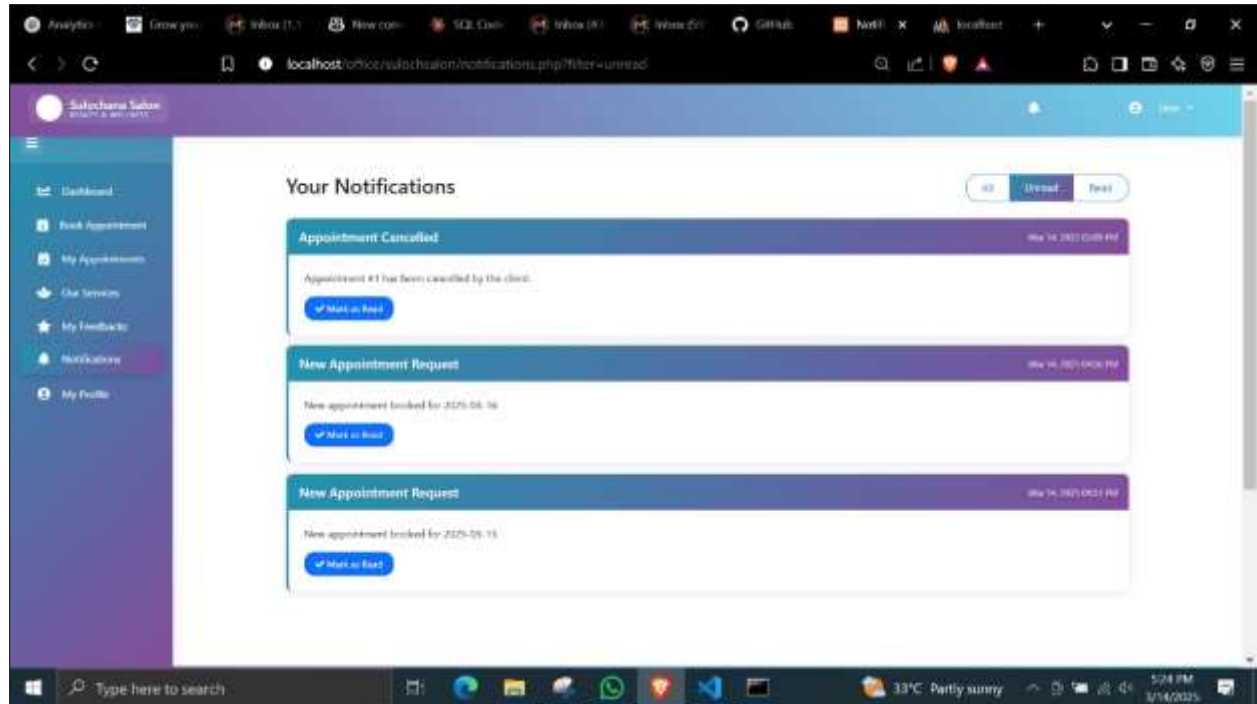


Figure 127

## 19. Hardware & Software Requirements

### 1. Hardware Requirements:

- Web Server: Apache or Nginx for hosting the website.
- Database Server: MySQL for managing user and appointment data.
- Development Machines: Standard PCs or laptops for developers, capable of running local development environments like XAMPP.
- User Devices: Clients can access the website from any device (desktop, tablet, or smartphone) with an internet connection.

### 2. Software Requirements:

- Web Browser: Google Chrome, Mozilla Firefox, or Safari.
- PHP 7.4+: Server-side scripting for backend logic.
- MySQL 5.7+: Database management.
- Development Tools: Visual Studio Code, XAMPP for local server setup.
- Version Control: Git for code management and collaboration.



## 20.Observations and Review of Existing Systems for Salon Management

### a. Strengths of Existing Systems:

- **Efficient Booking:** Most systems allow online appointment booking, which improves customer satisfaction.
- **Service Management:** Many systems offer an easy-to-use interface for managing services and prices.
- **Customer Management:** Existing systems often have features for managing customer data and appointment history.

## 21.Limitations of the Project

While the Sulochana Salon Website provides an efficient and automated salon management system, there are certain limitations that need to be addressed to ensure improved functionality, user adaptability, and scalability. These limitations are both technical and operational, impacting system usability, accessibility, and expansion potential.

### 1. Limitations of Existing Systems

#### 1.1 Complex User Interface

Many existing salon management systems have a complicated and cluttered user interface, making them difficult for salon staff and customers to navigate. Some systems overload the dashboard with unnecessary features, leading to confusion, errors, and inefficiencies in daily operations. Additionally, employees who are not tech-savvy may struggle with manual appointment entry, service updates, or accessing customer records.

#### ❖ Solution:

- The Sulochana Salon Website aims to overcome this issue by providing a simple, clean, and user-friendly interface. The dashboard is intuitive and easy to navigate, ensuring that both staff and customers can manage appointments efficiently. Future improvements may include customizable UI options to allow users to modify the interface based on their preferences.

#### 1.2 Limited Customization



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Many salon management software solutions lack flexibility in modifying service offerings, pricing, and scheduling rules. Some systems require salon owners to contact technical support for even basic changes, such as adding a new service, updating pricing, or modifying booking slots. This limitation restricts salon owners from adapting to customer needs and implementing dynamic pricing or seasonal promotions.

❖ Solution:

- The Sulochana Salon Website allows admins to add, remove, or modify services and pricing in real time without requiring external assistance. However, future updates can introduce drag-and-drop customization features, making the system even more adaptable to different salon needs.

### 1.3 Scalability Issues

Many existing salon management systems struggle with handling a large volume of data, multiple salon locations, and simultaneous user access. As the number of customers and staff grows, these systems may experience performance slowdowns, appointment conflicts, and database overloads. Furthermore, most systems are designed for single-location use, making multi-branch salon management challenging.

❖ Solution:

- The Sulochana Salon Website currently supports a single salon location. However, future enhancements will include multi-branch functionality, allowing salon owners to manage different locations under a centralized dashboard. Database optimization techniques, such as cloud-based storage and indexing, will also improve system performance.

## 2. Limitations of the Sulochana Salon Website

### 2.1 Internet Dependency

The Sulochana Salon Website is a web-based platform, meaning it requires a stable internet connection for users to access services. Since appointment scheduling, notifications, and payments are handled in real time, any network downtime or slow internet speed may prevent customers from booking services or staff from managing appointments.

❖ Impact:

- Customers may face delays or booking failures due to network issues.



## Project Proposal

- Salon staff cannot access or update schedules, leading to missed appointments.
- Online payments may fail or be delayed, affecting business transactions.
- ❖ Solution:
  - To address this, an offline mode can be integrated into future updates. This would allow customers and staff to save bookings locally, which can then sync automatically once the internet connection is restored. Additionally, implementing automatic retry mechanisms for failed payments can ensure seamless transactions.

### 3 User Learning Curve

While the system is designed to be intuitive, some salon staff members and clients who are not familiar with digital tools may require additional time to learn and adapt. Many salon employees are accustomed to manual appointment scheduling, making it challenging for them to transition to an online booking system.

- ❖ Challenges:
  - Staff may struggle with managing appointments, service updates, and client profiles.
  - Clients unfamiliar with online platforms may find it difficult to navigate the website, book services, or process payments.
- ❖ Solution:
  - To ease the transition, training materials such as video tutorials, step-by-step guides, and FAQs should be provided for both salon staff and customers. Additionally, integrating a chatbot or live customer support will help users navigate the system in real time.

#### 3.1 Scalability Challenges

- ❖ The current system is optimized for a single salon branch, meaning it does not yet support managing multiple salon locations under a single admin panel. As the business grows, it may need to handle:
  - Multiple locations with independent schedules
  - Different staff assignments per branch
  - Centralized customer and appointment database



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- ❖ Without these features, salon owners with multiple branches may find it difficult to manage operations efficiently, leading to data inconsistencies, performance issues, and scheduling conflicts.
- ❖ Solution:
  - Future updates will include:
    - Multi-branch support allowing salon owners to manage several locations under a centralized dashboard.
    - Cloud-based infrastructure to handle large-scale operations and real-time data synchronization.
    - Load balancing and database optimization to prevent performance slowdowns as user numbers grow.

### 4. Data Security & Privacy Concerns

As a web-based system handling customer data, security is a major concern. The platform collects sensitive user information, including names, contact details, booking history, and payment data. Without proper security measures, the system is vulnerable to hacking, unauthorized access, and data breaches.

- ❖ Potential Threats:
  - SQL Injection & XSS Attacks – Hackers could exploit vulnerabilities to access the database.
  - Unauthorized User Access – Weak authentication mechanisms could lead to data leaks.
  - Data Loss – Inadequate backup systems may result in the loss of critical business data.
- ❖ Solution:

To mitigate these risks, the system has implemented:

- SSL Encryption to protect sensitive transactions.
- Role-Based Access Control (RBAC) to restrict access based on user roles.
- Secure Password Storage (Hashed & Salted) to prevent credential theft.
- Regular Data Backups to ensure recovery in case of unexpected failures.





## 22. Lessons Learned from the Project

The development of the Sulochana Salon Website provided valuable insights into software engineering best practices, user engagement strategies, and security considerations. By implementing Agile methodology, collecting regular feedback, and focusing on system performance, the team was able to refine the website's functionalities effectively. Below are the key lessons learned from the project:

### 1. Importance of Regular Feedback

One of the most valuable lessons learned during the development process was the importance of gathering regular feedback from both salon staff and customers. Early user feedback helped identify pain points in the booking process, usability issues, and feature improvements that were not initially considered. For instance, some salon staff members preferred a more simplified dashboard, while customers requested clearer appointment confirmation messages.

By incorporating this feedback into each development phase, the system was continuously refined, ensuring that both clients and administrators found it easy to use. This iterative approach also reduced the need for major design changes later, saving development time and effort.

#### Key Takeaways:

- a. Regular feedback loops ensure better alignment with user expectations.
- b. Conducting usability tests and surveys improves customer satisfaction and user adoption.
- c. Early-stage feedback prevents costly modifications in later development stages.

### 2. Agile Workflow & Iterative Development

The Agile development process played a crucial role in keeping the project on track. Unlike traditional development methods, Agile allowed the team to break down the project into smaller, manageable sprints, ensuring that key features like appointment booking, real-time notifications, and payment integration were implemented and tested incrementally.

- The iterative approach enabled:



## Project Proposal

- Faster delivery of essential features such as user registration and authentication.
- Continuous improvement based on real-time user feedback.
- Quick bug fixes and performance optimizations.

This method also allowed the development team to prioritize high-impact features first, ensuring that the core system was functional before adding advanced enhancements like AI chatbots and product sales.

### Key Takeaways:

- Agile reduces project delays by focusing on incremental feature development.
- Continuous testing during sprints helps identify and fix issues early.
- Agile workflows allow flexibility in adapting to changing user requirements.

### 3. Security Focus & Data Protection

Security was one of the most critical areas in this project, as the system handles sensitive user data such as customer names, contact details, and payment information. One of the biggest challenges faced was ensuring secure authentication and payment processing, as poor security measures could lead to unauthorized access, data breaches, or fraudulent transactions.

To address these concerns, the following security best practices were implemented:

- a. Role-Based Access Control (RBAC) – Ensures that only authorized users (admin, staff, and clients) have access to specific system features.
- b. SSL Encryption – Protects user data during transactions and communication between the client and server.
- c. Password Hashing (bcrypt algorithm) – Prevents password theft by securely storing credentials.

Automated Data Backup & Recovery Plan – Ensures that critical business data is not lost due to system failures. Despite these precautions, an important lesson learned was that cybersecurity is an ongoing process, requiring regular updates, security audits, and threat monitoring to prevent potential vulnerabilities.

### Key Takeaways:

- Security should be prioritized from the start, not as an afterthought.
- Implementing encrypted authentication and secure payment gateways is crucial.



## Project Proposal

- Regular security audits and penetration testing are needed to maintain data protection.

### 4. Real-Time Updates & System Performance Optimization

During the initial testing phase, slow database queries and delayed notifications were identified as a potential performance issue. This was particularly concerning for real-time features such as appointment confirmations, reminders, and live availability updates.

To solve this issue, the following performance optimization techniques were applied:

- Database Indexing & Query Optimization – Improved search speed for appointments, customers, and services.
- Asynchronous Processing – Ensured that notifications and emails were sent instantly without slowing down the system.
- Caching Mechanisms – Reduced server load by storing frequently accessed data, speeding up page load times.

By optimizing real-time synchronization, customers could instantly see available time slots and receive appointment confirmations within seconds, significantly improving user experience.

#### Key Takeaways:

- Real-time synchronization improves appointment booking efficiency.
- Database indexing and caching reduce system lag and improve response time.
- Optimizing notification delivery enhances customer engagement.

## 20.Resource Identification

### a. Hardware Resources

Resource	Description
Web Server	Apache/Nginx (for hosting the salon website).
Database Server	MySQL for managing user and appointment data.
Development Machines	Laptops/PCs for developers, testers, and designers.
User Devices	Clients can access the website using mobile phones, tablets, or desktops.
Backup Storage	Cloud-based backup system to store essential data securely.

Table 29

### b. Software Resources

Software	Purpose
Operating System	Windows/Linux (for development environment).



## Project Proposal

Frontend Technologies	HTML, CSS, JavaScript, Bootstrap for UI development.
Backend Technologies	PHP 7.4+, Laravel (for server-side logic).
Database Management System	MySQL for structured data storage.
Development Tools	Visual Studio Code, Git (for version control).
Testing Tools	Selenium, PHPUnit for automated testing.
Security Tools	SSL Certificates, bcrypt for password hashing.

Table 30

### c. Human Resources

Role	Responsibilities
Project Manager	Oversee project planning, risk management, and reporting.
Frontend Developer	Develop the UI, ensure responsiveness, and implement user interactions.
Backend Developer	Handle database, business logic, authentication, and API development.
UI/UX Designer	Create wireframes, user flows, and improve website accessibility.
QA Engineer	Develop test cases, conduct functional and security testing.
Database Administrator	Optimize database performance, ensure data security and backups.
System Administrator	Manage server setup, SSL configurations, and maintenance.

Table 31

## 21.Design of the system

### a. Database

#### ER Diagrams

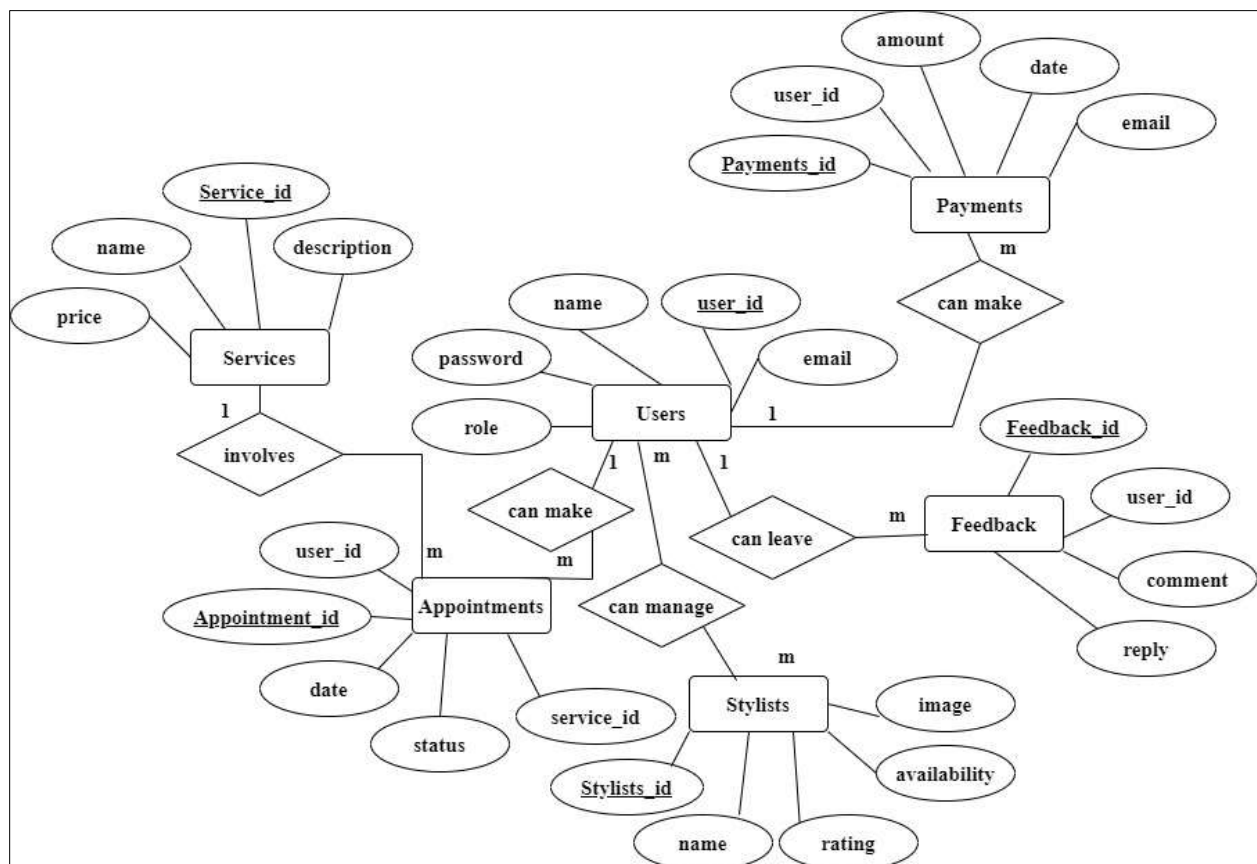



Figure 128 - ER Diagrams



## Project Proposal

### Normalized Relational Schema

#### Step 1: Understand the Entities and Attributes

 From the diagram, we have the following tables with their respective attributes:

##### 1. Users Table

user_id	name	email	password	role
---------	------	-------	----------	------

##### 2. Promotions Table

promotion_id	title	description
--------------	-------	-------------

##### 3. Reviews Table

review_id	user_id	comment	reply
-----------	---------	---------	-------

##### 4. Services Table

service_id	user_id	name	description	price
------------	---------	------	-------------	-------

##### 5. Stylists Table

stylist_id	name	rating
------------	------	--------

##### 6. Appointments Table



## Project Proposal

appointment_id	user_id	service_id	date	rating
----------------	---------	------------	------	--------

### 7. Payments Table

payment_id	user_id	amount	email	date
------------	---------	--------	-------	------

### 1. Users Table

user_id (PK)	FullName	email	password	Role	Phone	Gender	DateOfBirth	Address	ProfilePicture
-----------------	----------	-------	----------	------	-------	--------	-------------	---------	----------------

### 2. Appointments Table

AppointmentID	UserID	Date	TimeSlot	Service	Stylist	Status
---------------	--------	------	----------	---------	---------	--------

### 3. Services Table

ServiceID	ServiceName	Price	Description	Duration	Image	ParentID
-----------	-------------	-------	-------------	----------	-------	----------

### 4. Stylists Table

stylist_id (PK)	StylistName	Bio	rating
-----------------	-------------	-----	--------

### 5. Payments Table

payment_id (PK)	user_id (FK)	amount	email	date
-----------------	--------------	--------	-------	------

## Step 2: Second Normal Form (2NF)

Definition:

The table must satisfy 1NF.



## Project Proposal

Remove partial dependencies (i.e., no non-prime attribute should depend on part of a composite primary key).

### Identifying Partial Dependencies

#### Appointments Table:

Attributes like `Service` and `Stylist` are dependent on `AppointmentID`. These are fine because `AppointmentID` is a single primary key.

#### Services Table:

`ParentID` is a separate relationship indicating service categories.

### Step 2: Normalization Steps

Normal forms (1NF, 2NF, 3NF) to each of these tables:

#### 1. 1NF (First Normal Form)

- Ensure all tables have atomic columns (i.e., no repeating groups or arrays).
- Each table already has atomic attributes, so they satisfy 1NF.

#### 2. 2NF (Second Normal Form)

- Each non-key attribute should depend on the entire primary key.
- Since each table has a single-column primary key, and no partial dependencies exist, all tables satisfy 2NF.

#### 3. 3NF (Third Normal Form)

- All attributes should depend only on the primary key, and there should be no transitive dependencies.



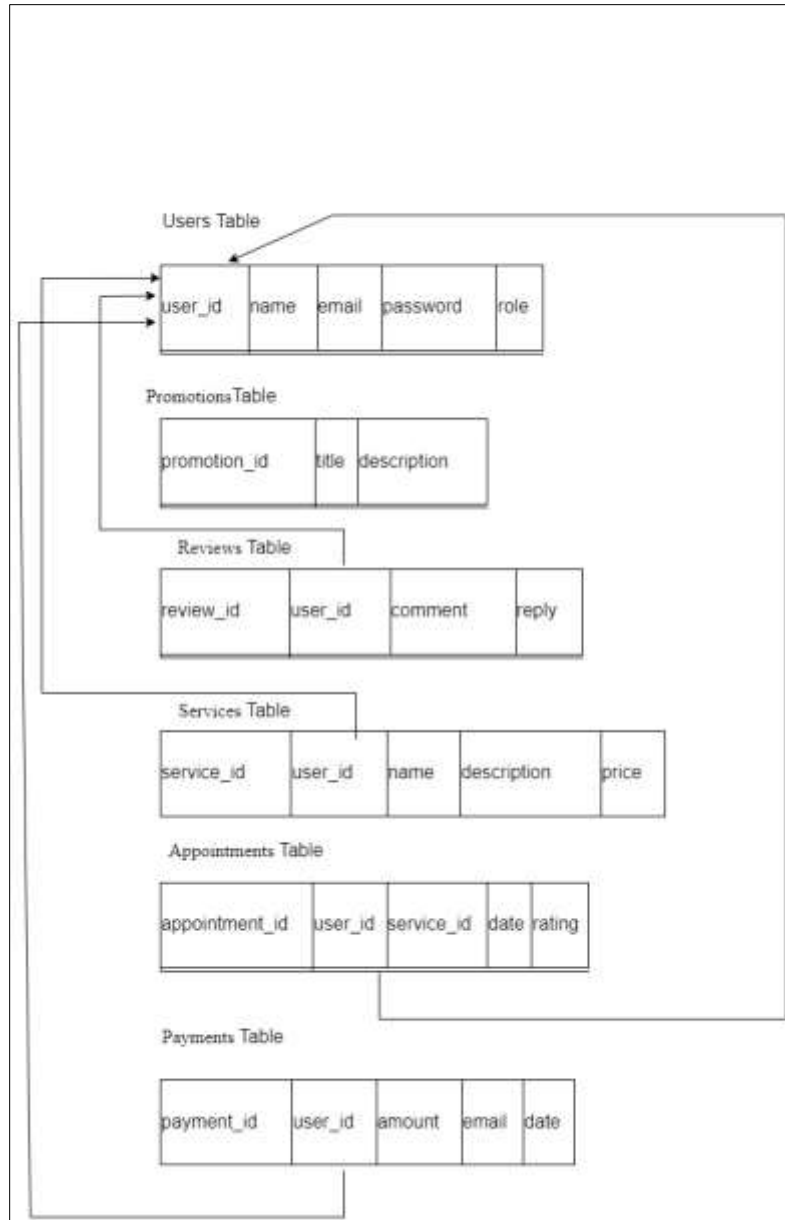


Figure 129

## Step 3: Final Normalized Relational Schema

Based on the analysis, here's the final schema in 3NF:

## Completed Normalized Relational Schema

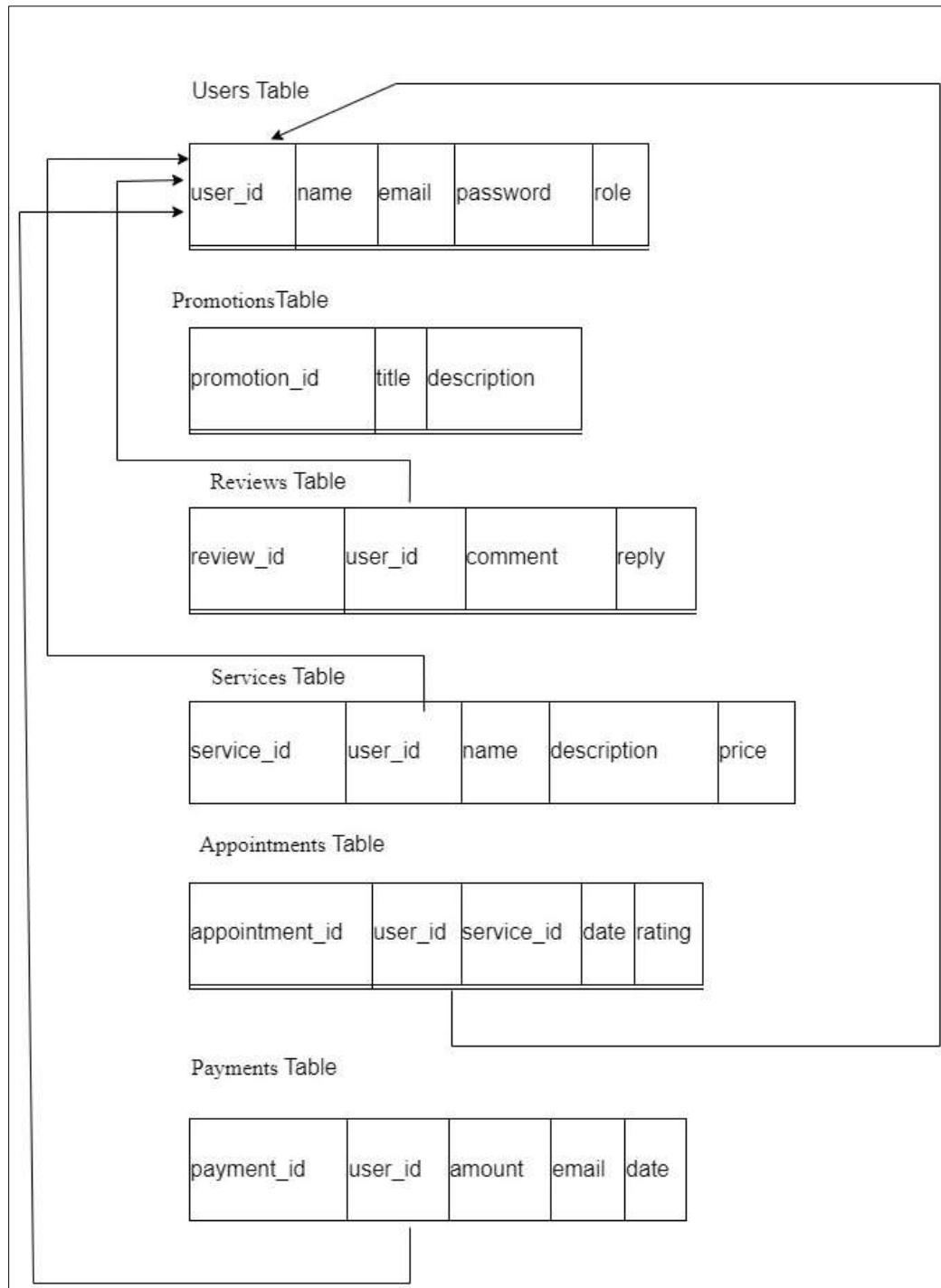


Figure 130 - Completed Normalized Relational Schema



### 22.Future Recommendations

To further enhance the Sulochana Salon Website, the following future improvements are recommended:

#### 1. Product Sales & E-Commerce Integration

##### A. Why?

- ❖ Many salons not only offer services but also sell hair care, skincare, and beauty products.
- ❖ Adding a product sales section allows salons to increase revenue by selling items like shampoos, conditioners, hair dyes, skincare products, and accessories directly through the website.

##### B. Features to Include:

- a. Product Catalog – Display all available products with images, descriptions, and pricing.
- b. Add to Cart & Checkout – Allow customers to select products and complete payments online.
- c. Inventory Management – Automatically update stock levels based on sales.
- d. Product Recommendations – Suggest products based on customers' past appointments or preferences.

##### C. Implementation Strategy:

- a. Integrate a shopping cart system with secure payment options like PayHere, Stripe, or PayPal.
- b. Enable "Buy with Booking" – Clients can purchase recommended products when booking a service.
- c. Offer discounts or loyalty points for repeat purchases to encourage sales.

#### 2. AI-Powered Chatbot for Customer Support

##### A. Why?

- ❖ A chatbot can provide 24/7 instant customer support for clients who have queries about services, bookings, prices, and salon hours.
- ❖ Reduces the workload on salon staff by handling common questions automatically.

##### B. Features to Include:



## Project Proposal

- a. Appointment Assistance – The chatbot can help clients book, reschedule, or cancel appointments.
- b. Service Inquiries – Customers can ask about available services, pricing, and stylist expertise.
- c. Personalized Recommendations – Suggest services based on client preferences and booking history.
- d. Live Chat with Staff – If the chatbot cannot answer a query, it should transfer the chat to a human assistant.

### C. Implementation Strategy:

- a. Use AI & Natural Language Processing (NLP) to make the chatbot understand common salon-related queries.
- b. Integrate WhatsApp, Facebook Messenger, and website chat widgets for easy access.
- c. Train the chatbot with FAQs and past customer queries to improve response accuracy.

## 3. Mobile Application Integration

### A. Why?

- ❖ A mobile app allows clients to book appointments, receive reminders, and check promotions more conveniently.
- ❖ Mobile users make up 65%+ of online bookings, so having an app improves customer engagement and retention.

### B. Features to Include:

- a. Instant Booking & Rescheduling – Clients can book appointments on the go from their phones.
- b. Push Notifications – Real-time updates on appointment confirmations, promotions, and reminders.
- c. QR Code Check-In – Clients can scan a QR code at the salon instead of manually checking in.



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d. Mobile Payments – Integrate Google Pay, Apple Pay, and e-wallets for seamless transactions.

### C. Implementation Strategy:

- a. Develop the mobile app for Android & iOS using Flutter or React Native.
- b. Sync the app with the website's database and appointment system for real-time updates.
- c. Offer an app-exclusive discount to encourage more downloads and usage.

## 4. Real-Time Appointment Reminders & Notifications

### A. Why?

- ❖ Reduces missed appointments by sending reminders before scheduled bookings.
- ❖ Keeps clients informed about booking status, cancellations, and special offers.

### B. Features to Include:

- a. SMS & Email Reminders – Send automatic reminders 24 hours and 1 hour before the appointment.
- b. Push Notifications (Mobile App) – Notify users about upcoming bookings, discounts, and new services.
- c. Two-Way Confirmation – Allow clients to confirm or cancel their appointment through reminders.

### C. Implementation Strategy:

- a. Use third party SMS APIs (Twilio, Nexmo) and email services (SendGrid, Mailgun).
- b. Customize reminders based on client preferences (e.g., SMS, email, or push notifications).
- c. Track no-show customers and send them follow-up messages to rebook their appointments.

## 5. Showing Available Time Slots for Clients

### A. Why?

- a. Helps clients easily find an available time slot instead of guessing when to book.
- b. Reduces double bookings and scheduling conflicts.

### B. Features to Include:

## Project Proposal

- a. Real-Time Slot Display – Shows available time slots based on stylist availability.
- b. Stylist-Specific Booking – Clients can choose a specific stylist and view their free slots.
- c. Dynamic Slot Adjustment – If a client cancels, the system should automatically update the available slots.
- d. "Next Available Appointment" Feature – Suggest the earliest available time when a client selects a fully booked time slot.

### C. Implementation Strategy:

- a. Use a dynamic calendar system that syncs with the database in real-time.
- b. Implement a color-coded availability display (e.g., green for available slots, red for fully booked).
- c. Allow clients to set a reminder for the next available slot if their preferred time is not available.

## 23. Gantt chart

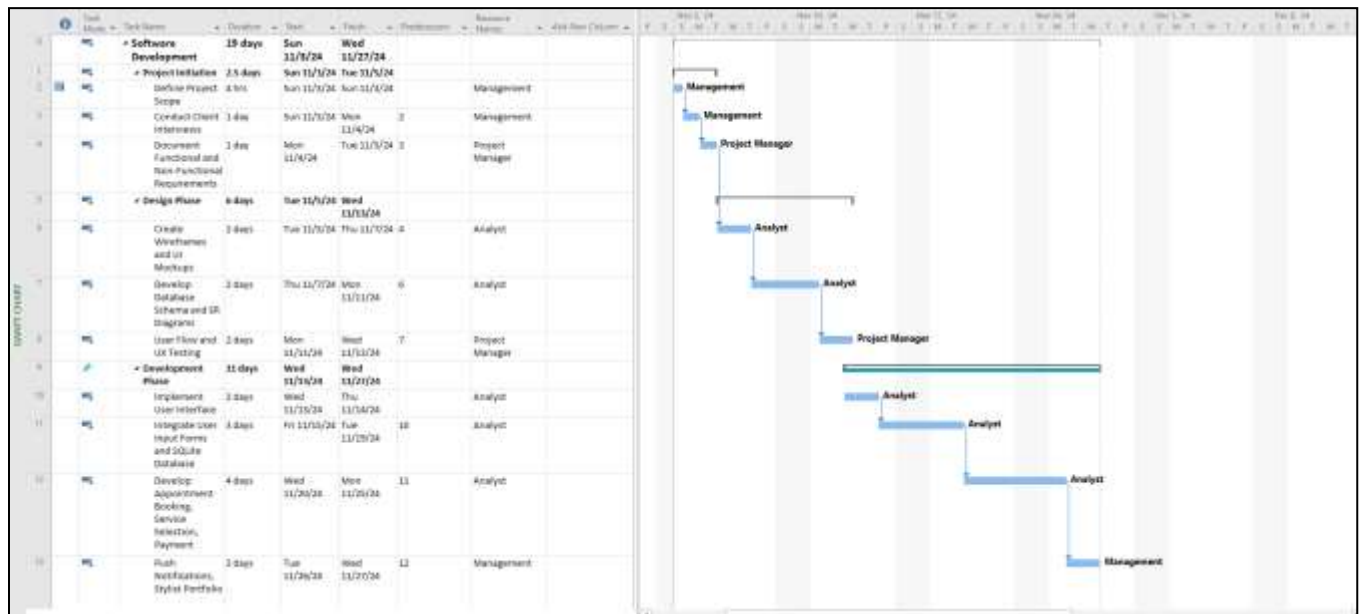


Figure 131 - Gantt chart

# Project Proposal



Figure 132 - Gantt chart