PROJECT PROPOSAL REPORT

GROUP PROJECT

CST 394-2

Group No: CST-21

**Niyo Salon
[The Modern Salon & Tattoo Studio Management
System]**

Computer Science and Technology

Department of Computer Science and Informatics

Faculty of Applied Sciences

Uva Wellassa University of Sri Lanka

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Declaration

We hereby declare that the project will be developed by us and will be our own effort and that no part will be plagiarized without citations under the supervision of Dr. S.H.D. Senanayake, Department of Computer Science and Informatics, Uva Wellassa University of Sri Lanka and co-supervision of Ms. W.M.S.M. Weerasinghe Department of Computer Science and Informatics, Uva Wellassa University of Sri Lanka. This Project Proposal is submitted for the partial fulfillment of the requirement of the course unit CST 394-2, Project II for the degree of Computer Science and Technology.

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Chapter 1 Introduction

1.1 Project Title

Niyo Salon - The Modern Salon & Tattoo Studio Management System.

1.2 Project Description

The Modern Salon & Tattoo Studio Management System is a comprehensive digital platform designed to revolutionize the operational efficiency and customer experience of beauty and tattoo studios. Traditional salons and studios often rely on manual processes for appointment scheduling, customer records, and promotional activities, leading to inefficiencies such as double bookings, revenue leakage, and poor client retention. This system addresses these challenges by integrating advanced technologies like artificial intelligence (AI) and automated workflows into a unified platform. Key features include an AI-driven blog generator that curates and publishes trending hairstyle tips and beauty insights, allowing customers to view designs by the actual pre-works, and a dynamic appointment scheduler that syncs with staff availability to prevent conflicts. The platform ensures cross-device responsiveness, enabling seamless access via desktops, tablets, and smartphones. By automating administrative tasks and enhancing customer engagement through personalized interactions.

1.3 Background and Motivation

1.3.1 Background

The beauty and tattoo industry in Sri Lanka, while thriving, remains heavily dependent on outdated manual processes. A 2023 survey by the *Sri Lanka Salon Association* revealed that 65% of salons still use paper-based systems for appointments, leading to frequent double bookings and staff scheduling conflicts [1]. Furthermore, the absence of digital tools for customer relationship management results in a 25% annual loss of repeat clients [2]. Internationally, industries similar to beauty services, such as healthcare and retail, have successfully adopted AI technologies to streamline operations.

1.3.2 Motivation

The motivation stems from firsthand observations of local salon owners struggling with inefficiencies and the lack of affordable, tailored digital solutions. During interviews with Colombo-based studios, one owner noted spending 20 hours weekly resolving booking errors, time that could be redirected toward creative services [1]. Additionally, the rising demand for personalized beauty experiences—such as AI-generated style recommendations—underscores the need for innovation [3]. By bridging this gap, the project not only aims to modernize salon operations but also to empower small businesses to compete in an increasingly digital marketplace.

1.4 Problem in Brief

Traditional salon and tattoo studios face critical challenges:

1. **Manual Appointment Scheduling**: Paper-based or spreadsheet-driven systems often result in double bookings, staff conflicts, and customer dissatisfaction. For example, a salon in Kandy reported losing 15% of its monthly revenue due to no-shows and last-minute cancellations that could not be efficiently managed [1].

2. **Ineffective Customer Retention**: Without tools to track preferences, example previous works to review or send targeted promotions, studios struggle to build loyalty. A Galle-based tattoo artist noted that 60% of first-time clients never returned due to lack of follow-ups [2].

3. **Technological Lag**: The absence of tools limits customer engagement. For instance, clients often hesitate to commit to permanent tattoos without previewing designs, resulting in lost opportunities.

These issues collectively hinder growth, reduce profitability, and diminish the ability of studios to innovate in a competitive market.

1.5 Proposed Solution

To address the identified challenges in traditional salon and tattoo studio management, we propose the development of an integrated, web-based Business Management System designed specifically for the beauty and tattoo industry. This solution will utilize modern technologies such as AI-driven content generation, automated workflows, and responsive web design to improve operational efficiency, enhance customer engagement, and support business growth.

The system will also leverage modern AI technologies to personalize user experience. Face shape, age, and skin tone will be detected using in-browser pre-trained models to suggest matching hairstyles and hair tints. Try-on feature will allow users to visualize these recommendations using hair segmentation overlays. This will build user confidence, reduce indecisiveness, and improve overall engagement.

1. **Automated Appointment Management**:

   - The system will provide a real-time, interactive booking platform that displays staff availability and allows customers to schedule, reschedule, or cancel appointments with ease. By integrating email and SMS reminders, the system will significantly reduce the risk of double bookings and no-shows, thereby improving time management

2. **Enhanced Customer Retention and Engagement**:

   - To build and maintain strong customer relationships, the system will include:

     - Personalized notifications for promotions, service reminders, and treatment follow-ups.

     - A customer profile system that stores preferences and past service history for tailored experiences.

3. **Technology Integration for Business Growth**

- The platform will incorporate the following features to modernize studio operations:
  - An AI-powered blog generator that curates and publishes trending hairstyle and tattoo content, helping studios maintain a digital presence and engage clients with relevant information.
  - A design preview tools to allow customers to view virtual try-on feature or actual previous hairstyles and tattoo designs before committing, increasing confidence and conversion rates.

4. **Secure Payment and Cancellation Handling**

- The system will support online advance payments with secure gateways (e.g., PayHere). It will also include an admin-controlled refund and cancellation policy, ensuring financial security and professionalism in appointment handling.

By addressing both operational inefficiencies and customer experience gaps, these solutions position the business to thrive in a digital-first era.

1.6 Project Aim and Objectives

1.6.1 Project Aim

To develop an integrated, scalable Business Management System that digitizes salon and tattoo studio operations, enhances customer satisfaction, and drives sustainable revenue growth through innovative technology.

Target Audience:

- **Salon and Tattoo Studio Owner**: Simplify operations, reduce costs, and attract more clients.

- **Customers**: Enjoy seamless booking, personalized recommendations, and immersive experiences.

1.6.2 Objectives

Main Objective

To develop an integrated web-based salon and tattoo studio management system that streamlines appointment handling, supports virtual styling, enhances customer engagement, enables design previews based on actual previous works, and supports operational efficiency through intelligent and interactive features.

Sub Objectives

1. To develop a real-time online appointment scheduling system that allows customers to book, reschedule, or cancel appointments based on staff availability, reducing manual errors and scheduling conflicts.

2. To implement automated SMS and email notifications for appointment confirmations, reminders, promotions, and post-treatment follow-ups, improving client communication and reducing no-shows.

3. To implement an AI-powered personalization module that detects the user's face shape, age, and skin tone in real-time using pre-trained models, and based on that, intelligently recommends the most suitable hairstyles and hair tints. This module will also allow users to preview these recommendations through a virtual try-on feature.

4. To incorporate an AI-powered blog feature that auto-generates and publishes trending beauty and tattoo content to engage users and support digital marketing efforts.

Chapter 2 Methodology

The Tattoo Management System will follow the Scrum methodology to ensure a structured, adaptive, and customer-focused development process. This approach supports iterative development, stakeholder collaboration, and quick adaptability to changes [4].
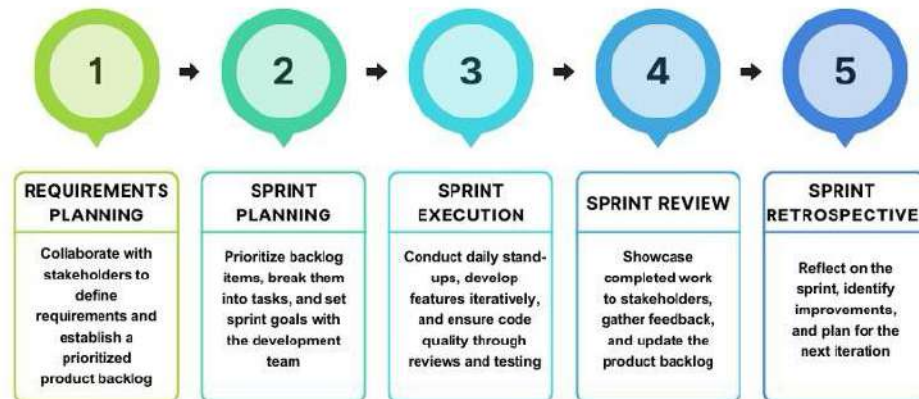
Figure 1 Scrum Methodology Diagram

1. Requirements Planning:
    a. Collaborate with stakeholders such as tattoo shop owner, staff, and frequent customers to gather detailed requirements.
    b. Identify and prioritize the core functionalities, including appointment scheduling, user account management, AI-generated blog content, automated notifications, and advanced features.
    c. Define a clear project scope with measurable objectives aligned with customer experience and operational efficiency.
    d. Create a product backlog that includes epics, user stories, and acceptance criteria for features like online bookings, payment handling, and treatment follow-ups.

2. Sprint Planning:
   a. Select and prioritize items from the product backlog that are critical for the next sprint, such as online booking or SMS reminders.
   b. Break down each item into actionable tasks and assign responsibilities to the development team.
   c. Define a sprint goal (e.g., "Enable complete online appointment booking with payment handling").
   d. Estimate time and resource requirements for each task and assess sprint capacity.
3. Sprint Execution:
   a. Conduct daily stand-ups to monitor progress, identify blockers, and align on goals.
   b. Maintain close communication with stakeholders to validate ongoing development, such as UI for appointment booking or logic for loyalty points.
   c. Implement, test, and refine features iteratively, including real-time tattoo try-on previews and automated notifications.
   d. Conduct peer code reviews and continuous integration testing to maintain quality and performance standards.
4. Sprint Review:
   a. Present completed features, such as appointment rescheduling, or AI blog updates, to stakeholders for feedback.
   b. Discuss what went well and what challenges were encountered during the sprint.
   c. Update the product backlog with new insights or enhancement requests from stakeholders.
   d. Celebrate accomplishments and acknowledge team efforts.
5. Sprint Retrospective:
   a. Analyze the team's performance and highlight areas for improvement.
   b. Encourage open discussion around communication, tooling, or process gaps.

      c. Define action items to boost efficiency in future sprints.

      d. Plan the next sprint by refining backlog items and setting the upcoming sprint goal.

By applying Scrum to this project, the development process remains flexible, feedback-driven, and value-oriented, ensuring the final system is both robust and tailored to the needs of modern salons and their clients.

Chapter 3 - Requirements Identification

3.1 Functional and Non-functional requirements

3.1 .1 Functional Requirements

- **Appointment Scheduling**
  - Book, reschedule, and cancel appointments online.
  - Manage staff availability.

- **User Account Management**
  - Customer and admin login & profile management.

- **Customer Interaction Enhancement using AI-Based Personalization**
  - Integrate in-browser AI models to detect users' face shape, estimated age, and skin tone in real-time.
  - These attributes will be used to recommend personalized hairstyles and hair tint options that best match the user's features.

- **Virtual Try-On Feature**
  - Enable users to preview recommended hairstyles and hair colors through overlays and hair segmentation.
  - This allows customers to experience a realistic visual try-on before making a booking.

- **AI-Generated Hairstyle and Tips Blog**
  - Automatically generate hairstyle tips and trends.

- **Notifications & Reminders**
  - Email/SMS for bookings, offers, and reminders.

- **Categorized hairstyles and tattoo gallery**
  - Owner can store the previous works in the site where customers can view easily.

- **Booking Management**
  - o Advance payment to confirm booking.
  - o Owner can cancel if the client is absent 10 minutes before.

- **Customer Treatment Follow-up**
  - o Track long-term treatments (e.g., personalized reminders for upcoming sessions).

3.1.2 Non-Functional Requirements

1. **Usability**
   - o Clean, modern, and user-friendly interface (especially for non-tech users).

2. **Performance**
   - o Fast page loading, even on mobile.

3. **Availability**
   - o System should be accessible 24/7, except for maintenance.

4. **Security**
   - o Password hashing, access control, data privacy for bookings & payments.

5. **Scalability**
   - o Can handle many bookings, users, and new features in the future.

3.2 System Requirements

3.2.1 Hardware Requirements

For Hosting Server:

- Processor: Quad Core (e.g., Intel i5 or equivalent)
- RAM: 8 GB minimum

- Storage: 100 GB SSD
- Network: Reliable internet connection with 99.9% uptime

For End Users:

- Device: Smartphone, tablet, or PC
- RAM: 2 GB+
- Browser: Chrome, Firefox, Safari (latest versions)

3.2.2 Software Requirements

Component	Technology
Backend	- Spring Boot, Python
Frontend	- React, Tailwind CSS
Database	- MySQL
AI / Blog	- Python script for AI-generated blogs (optional)
Notification Service	- SMTP or SMS gateway (e.g., Twilio, Firebase)
OS (for server)	- Ubuntu 20.04 LTS or Windows Server
AI / Personalization	- MedaPipe, TensorFlow.js (face analysis, segmentation, overlays)

3.3 User Roles

- ➢ **Admin**
  - o Manage appointments, users, and staff
  - o Modify the content of the system

- ➢ **Customer**
  - o Register/login
  - o Book appointments and view previous tattoos/hairstyles
  - o View treatment history

> **Staff**
>
> - o View their schedules
> - o Update availability
> - o Manage treatment sessions

3.4 User Levels

Level	Description	Permissions
Admin	Superuser	Full access to backend, bookings, services, Adding or removing staff member.
Staff	Mid-Level user	View/manage bookings and view schedule, mark completed sessions.
Customer	End user	View/edit own data, appointment scheduling, view system.

Table 1 User Levels

Chapter 4 Project Plan

4.1 Gantt chart

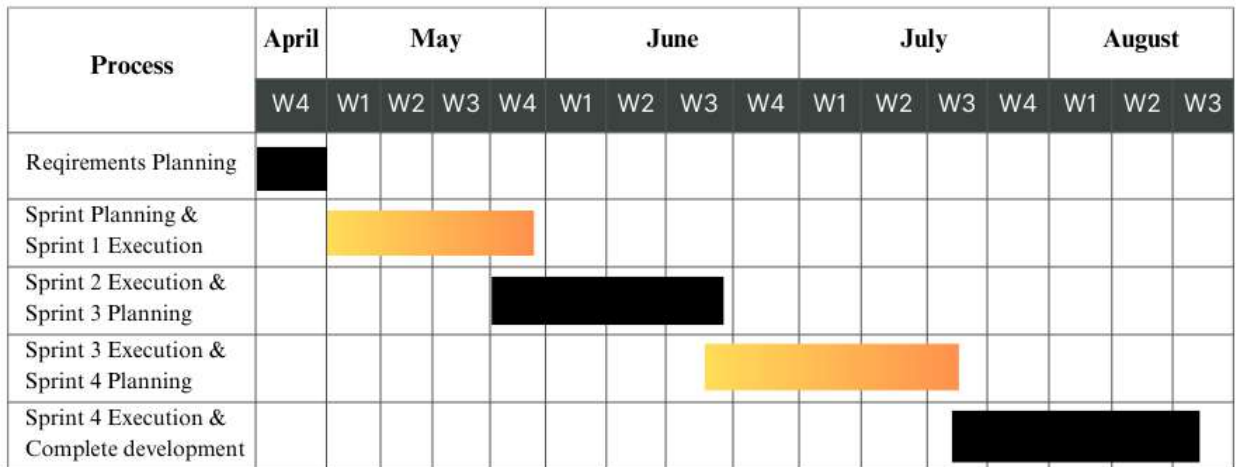| Process	April	May				June				July				August		
	W4	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3
Reqirements Planning	█															
Sprint Planning & Sprint 1 Execution		█	█	█	█											
Sprint 2 Execution & Sprint 3 Planning					█	█	█	█								
Sprint 3 Execution & Sprint 4 Planning									█	█	█	█				
Sprint 4 Execution & Complete development													█	█	█	

Figure 2 Gantt Chart Implementation

4.2 References

[1] Sri Lanka Salon Association. 2023. *Annual Survey on Beauty Industry Challenges*.

[2] R. Kumar. 2022. Customer Retention Strategies in Service Industries. *Journal of Business Technology* **15**, 3 (2022), 45–60.

[3] McKinsey & Co. 2023. *Digital Transformation in the Global Beauty Sector*.

[4] R. S. Pressman. 2014. *Software Engineering: A Practitioner's Approach*. McGraw-Hill.