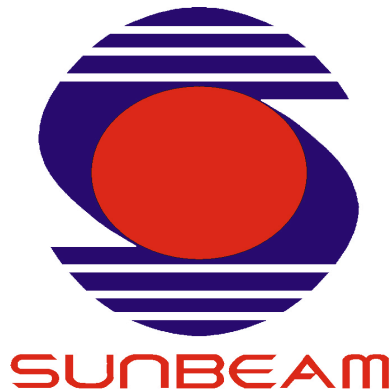**A**
PROJECT REPORT ON

E-SALON MANAGEMENT SYSTEM

SUBMITTED IN
PARTIAL FULFILLMENT OF

DIPLOMA IN ADVANCED COMPUTING (PG-DAC)

BY

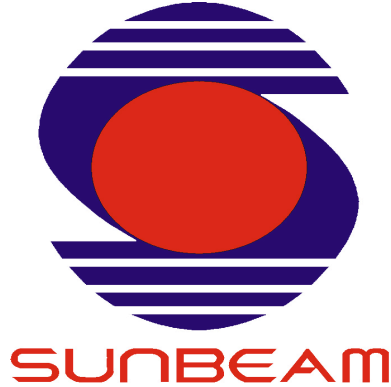## Vishal Bhong
Seema Fasale
Anupam Prajapati

UNDER THE GUIDENCE OF

Snehal Patil

AT

SUNBEAM INSTITUTE OF INFORMATION TECHNOLOGY, PUNE

SUNBEAM INSTITUTE OF INFORMATION TECHNOLOGY, PUNE.

CERTIFICATE

This is to certify that the project

E-SALON MANAGEMENT SYSTEM

Has been submitted by

Vishal Bhong
Seema Fasale
Anupam Prajapati

In partial fulfillment of the requirement for the Course of **PG Diploma in Advanced Computing (PG-DAC AUG2024)** as prescribed by The **CDAC ACTS, PUNE.**

Place: Pune   Date: 30-JAN-2024

Snehal Patil   **Alumni Mentor**
Project Guide

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A project usually falls short of its expectation unless aided and guided by the right persons at the right time. We avail this opportunity to express our deep sense of gratitude towards Mr. Sarang Patil (Director, SIIT Pune), Mr. ----------(Course Coordinator, SIIT, Pune) and Mr. Snehal Patil (Our Project Guide and Supportive Faculty Member, SIIT Pune). We are deeply indebted and grateful to them for their guidance, encouragement and deep concern for our project. Without their critical evaluation and suggestions at every stage of the project, this project could never have reached its present form. Last but not the least we thank the entire faculty and the staff members of Sunbeam Institute of Information Technology, Pune for their support.

ABSTRACT

The **E-Salon Management System** is a cutting-edge, web-based application designed to revolutionize salon operations by providing a seamless digital platform for customers, barbers, and administrators. Traditional salon management often faces challenges such

as inefficient appointment scheduling, long waiting times, and a lack of organized record-keeping. This project aims to eliminate these inefficiencies by introducing a centralized system that enhances service quality, improves resource utilization, and fosters a better customer experience.

This platform enables **customers** to register, browse available salons and services, book appointments in real time, and receive instant confirmations, ensuring a hassle-free experience. Customers can also track their appointment history, provide feedback, and manage their bookings through an intuitive interface. **Barbers and salon owners** benefit from a feature-rich dashboard that allows them to organize their schedules, manage appointment requests, update their service offerings, and track customer interactions. Meanwhile, **administrators** gain full control over the system, including user and salon management, monitoring reservations, handling payments, and generating insightful reports to analyze business performance and optimize operations.

The system is built with **robust functional and non-functional requirements** that ensure a high degree of **scalability, security, reliability, and performance**. **Scalability** is achieved by designing the system to handle an increasing number of users and transactions efficiently. **Security** is reinforced through encrypted authentication mechanisms, including **JWT-based login**, **role-based access control (RBAC)**, and **data encryption**, ensuring that sensitive information remains protected. The system also adheres to **data privacy regulations**, maintaining user confidentiality and preventing unauthorized access. Additionally, **performance optimization techniques** are implemented to ensure smooth operation under high traffic loads, keeping response times minimal even when multiple users access the system concurrently.

One of the key innovations of this project is the integration of **real-time notifications, secure online payment processing, and automated reminders**, which enhance both customer engagement and business efficiency.

By digitizing and automating the salon appointment and management process, the **E-Saloon Management System** not only improves the overall service experience for customers but also increases operational efficiency for barbers and administrators. This system marks a significant step toward **modernizing the salon industry**, enabling businesses to offer **highly personalized, professional, and efficient services** while reducing manual workload and minimizing errors. The project is a **technologically advanced solution** tailored to meet the growing demands of the beauty and wellness industry, ensuring sustainable business growth and customer satisfaction.

INDEX

LIST OF TABLES

Section	Table Title	Page

INTRODUCTION

1.1 Introduction

The E-Saloon Management System is a web-based application designed to simplify and enhance the operational efficiency of salons by providing a centralized digital platform for customers, barbers, and administrators. In today's fast-paced world, traditional salon management methods—such as walk-in appointments, manual scheduling, and paper-based records—often lead to inefficiencies, long waiting times, and customer dissatisfaction. This project aims to address these challenges by introducing a modern, automated system that improves convenience, accessibility, and service quality.

The system enables customers to seamlessly browse available salons and services, book appointments in real-time, receive instant confirmations, and manage their booking history. It provides a user-friendly interface that enhances the customer experience by reducing waiting times and ensuring service availability. Barbers and salon owners benefit from an efficient scheduling system that allows them to manage appointments, update service details, track customer interactions, and optimize their workflow. Administrators oversee the platform's operations, handling user accounts, monitoring appointments, managing payments, and generating business reports for informed decision-making.

Key features of the E-Saloon Management System include real-time notifications, secure authentication using JWT, role-based access control (RBAC), appointment reminders, and encrypted data storage. The system is designed for high scalability, allowing multiple users to interact concurrently without performance issues. It also ensures data privacy and security, complying with industry standards to protect user information.

By integrating automation and digitalization into salon management, this system enhances efficiency, improves customer engagement, and optimizes resource utilization. The E-Saloon Management System is a step toward modernizing the beauty and wellness industry, offering a streamlined and professional approach to salon management that benefits both businesses and customers alike.

Product Overview and Summary

2.1 Purpose

The **E-Saloon Management System** is developed to modernize and streamline the operations of salons by providing a digital platform that enhances convenience, efficiency, and customer satisfaction. The traditional salon management process, which relies on manual appointment scheduling and walk-in services, often leads to long wait times, mismanaged bookings, and customer dissatisfaction. This project aims to solve these challenges by offering an automated system for seamless appointment booking, staff management, and business administration.

The primary purpose of this system is to **provide a hassle-free experience for customers**, enabling them to book appointments at their preferred salons, select services, receive instant confirmations, and track their booking history. It also empowers **barbers and salon owners** by offering an efficient scheduling system to manage appointments, accept or cancel bookings, update service details, and organize their workload. Additionally, **administrators** can oversee operations, manage users, monitor transactions, and generate reports to improve decision-making.

This system is designed with a focus on **usability, security, and scalability**. Features such as **JWT-based authentication, role-based access control (RBAC), real-time notifications, secure payment processing, and automated appointment reminders** ensure a smooth and secure experience for all users. By implementing these functionalities, the **E-Saloon Management System** enhances operational efficiency, optimizes time management, and improves customer engagement.

Ultimately, the purpose of this project is to **digitize the salon industry**, offering a **modern, user-friendly, and reliable** solution that benefits customers, barbers, and administrators alike. The system aims to reduce manual dependency, eliminate errors, and create a **seamless, professional, and highly efficient** salon management experience.

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2.2 Scope

The scope of the **E-Saloon Management System** encompasses the development of a comprehensive salon management platform that facilitates seamless interaction between customers, barbers, and administrators. The platform is designed to enhance salon operations by offering an all-in-one solution for **appointment scheduling, service management, and customer engagement** through a digital interface.

The **E-Saloon Management System** aims to serve three primary user groups:

Customers:

Individuals seeking salon services can **browse salons, book appointments, manage bookings, track their appointment history, make secure payments, and provide feedback** on the services they receive.

Barbers/Salon Owners:

Salon professionals and business owners can **register, list their services, manage their schedules, confirm or cancel bookings, and track their earnings**, ensuring efficient salon operations and better resource management.

Administrators:

System administrators oversee the platform's operations, including **user management, appointment monitoring, payment processing, and report generation**, ensuring smooth and efficient business management.

Key Features Within the Project Scope:

- **User Registration & Authentication:** Secure sign-up and login processes with role-based access control (RBAC).

- **Service Discovery & Booking:** Customers can browse available salons, check real-time appointment availability, and make hassle-free bookings.
- **Barber Management:** Barbers can manage their profiles, services, schedules, and customer interactions efficiently.
- **Booking & Scheduling:** Customers can book services, reschedule, or cancel appointments with real-time status updates.
- **Secure Payment Processing:** Integrated payment gateway for secure online transactions.
- **Review & Rating System:** Customers can provide feedback on services, ensuring quality control and customer satisfaction.
- **Notifications:** Real-time alerts and updates for bookings, payments, and appointment status.
- **Admin Panel:** Administrative tools for managing users, monitoring system activities, generating reports, and resolving disputes.

Out of Scope (Not Included in This Version):

- **Mobile application development** (currently focused on the web-based platform).
- **AI-driven personalized service recommendations** (can be considered for future updates).
- **Integration with external salon product vendors** for additional services like product purchases.
- **Multi-language support for international expansion** (initial version is region-specific).

Future Scope:

- **Development of a mobile application** for both iOS and Android to expand accessibility.
- **Integration with smart booking systems** for automated appointment reminders and scheduling.

- **AI-based recommendations** for personalized service suggestions based on customer preferences.
- **Advanced analytics and reporting tools** to help salon owners improve business performance.
- **Loyalty and reward programs** to enhance customer engagement and retention.

The **E-Saloon Management System** aims to **digitally transform the salon industry** by offering a **modern, user-friendly, and efficient** platform that benefits customers, barbers, and salon owners alike. Through **automation and technology**, the system enhances convenience, operational efficiency, and business growth.

Requirements

3.1 Functional Requirements

Customer Web Page

1. **Registration**
   - o Customers should be able to register with their personal details.
   - o Password validation should be enforced.
2. **Login**
   - o Customers should log in using their credentials.
   - o Forgot password functionality should be available.
3. **Booking Appointments**
   - o Customers should view available slots and book appointments.
   - o Customers should receive booking confirmation notifications.
4. **Appointment History**
   - o Customers should view their past and upcoming appointments.

Barber Web Page

1. **Registration**
   - o Barbers should register with their details.
   - o Password validation should be enforced.
2. **Login**
   - o Barbers should log in using their credentials.
3. **Managing Appointments**
   - o Barbers should view, confirm, or cancel upcoming appointments.
   - o Barber's appointment status should update accordingly.
4. **Profile Management**
   - o Barbers should update their profile information.

Admin Web Page

1. **Login**
   - o Admin should log in using credentials.
2. **Managing Users**
   - o Admin should view, add, edit, or delete customer and barber accounts.
3. **Appointment Management**

o   Admin should view all appointments and manage them.
4. **System Reports**
      o   Admin should generate reports with relevant data.
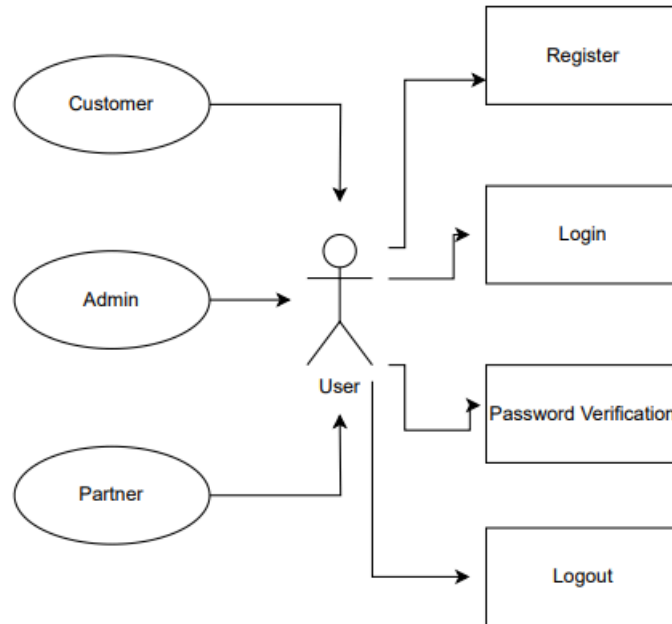
Non-Functional Requirements

1. **Performance**
      o   The system should handle multiple concurrent users without performance degradation.
      o   Response time for any user action should not exceed 2 seconds.
2. **Usability**
      o   The interface should be user-friendly and intuitive.
      o   Instructions and error messages should be clear.
3. **Security**
      o   User data should be securely stored and transmitted.
      o   Implement authentication and authorization mechanisms.
4. **Scalability**
      o   The system should handle an increasing number of users and data without performance issues.
5. **Reliability**

- o The system should have minimal downtime.
- o Implement backup and recovery procedures.
6. **Compatibility**
   - o The system should be compatible with major browsers and devices.
   - o Cross-platform compatibility should be ensured.

Other Requirements

1. **Regulatory Compliance**
   - o Ensure compliance with data protection and privacy laws.
2. **Accessibility**
   - o The system should be accessible to users with disabilities.
   - o Follow WCAG (Web Content Accessibility Guidelines) standards.
3. **Documentation**
   - o Provide comprehensive user and technical documentation.
   - o Include a troubleshooting guide.
4. **Support**
   - o Offer customer support for any issues or queries.

Project Design

4.1 Data Model

The data model of the **E-Saloon Management System** is designed to efficiently manage the relationships between **customers, barbers, salons, services, reservations and payments.** A well-structured data model ensures **data consistency, integrity, and optimal performance** across the platform while enabling seamless interactions among different entities.

Table: payment

Key Type/Constraint	Column Name	Data Type	Length	Allow Null
PRIMARY KEY	payment_id	integer		0
	reservation_id	integer		1
	amount	decimal		1
	payment_method	varchar	255	1
	status_payment	varchar	255	1

Table: salon

key Type/Constraint	Column Name	Data Type	Length	Allow Null
PRIMARY KEY	**salon_id**	**integer**		**0**
	name	**varchar**	**255**	**1**
	location	**varchar**	**255**	**1**
	description	**varchar**	**255**	**1**
	rating	**integer**		**1**
	created_at	**timestamp**		**1**
	updated_at	**timestamp**		**1**

Table: Reservation

Key Type/Constraint	Column Name	Data Type	Length	Allow Null
PRIMARY KEY	**reservation_id**	**integer**		**0**
	user_id	**integer**		**1**
	salon_id	**integer**		**1**
	service_id	**integer**		**1**
	appointment_date	**datetime**		**1**
	reserve_status	**varchar**	**255**	**1**
	created_at	**timestamp**		**1**
	updated_at	**timestamp**		**1**

Table: <u>Admin_Task</u>

Key Type/Constraint	Column Name	Data Type	Length	Allow Null
PRIMARY KEY	**Task_id**	**integer**		**0**
	Task_name	**integer**		**1**
	desc	**integer**		**1**
	assigned_to	**varchar**	**255**	**1**
	status_Admin	**bool**		**1**

4.2 Process Model

1. Database Diagram
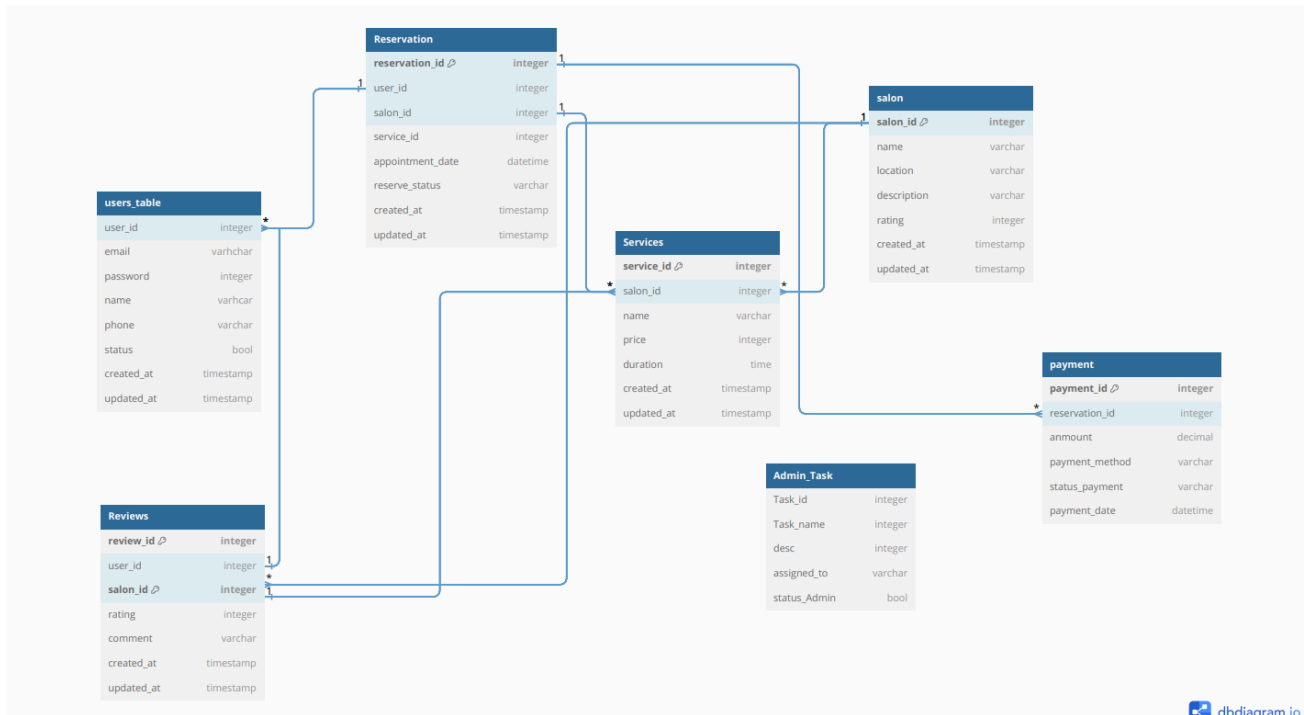
2. Flow Diagram

A **flow diagram** is a graphical representation of the process flow within a system, illustrating the sequence of actions and interactions between different entities. It helps in visualizing the logical structure and operational workflow, ensuring clarity in system behavior.

In the **E-Saloon Management System**, the user journey begins with authentication, followed by various functionalities such as **browsing salons, booking appointments, managing schedules, making payments, and leaving reviews**. Given below is the **flow diagram of the user journey** in the system:

1. **User Authentication:**
   - The user (customer or barber) must first **register and log in** to access the system.
   - Credentials are validated using **secure authentication mechanisms** (JWT-based login).

2. **Browsing & Selecting Services:**
   - The customer can **search for salons, view available services, check pricing, and barber availability**.
   - Service details, working hours, and ratings are displayed for informed decision-making.

3. **Appointment Booking & Management:**
   - The customer selects a **service, date, and preferred time slot** based on availability.
   - The barber can **accept, reschedule, or cancel the appointment**, ensuring proper schedule management.

- The system **notifies both parties in real-time** about booking confirmations or changes.

4. **Payment & Confirmation:**
   - The customer proceeds to **payment**, choosing from **various secure payment options** (credit/debit card, digital wallets, cash on arrival).
   - A confirmation receipt is generated, and the **booking status is updated** accordingly.
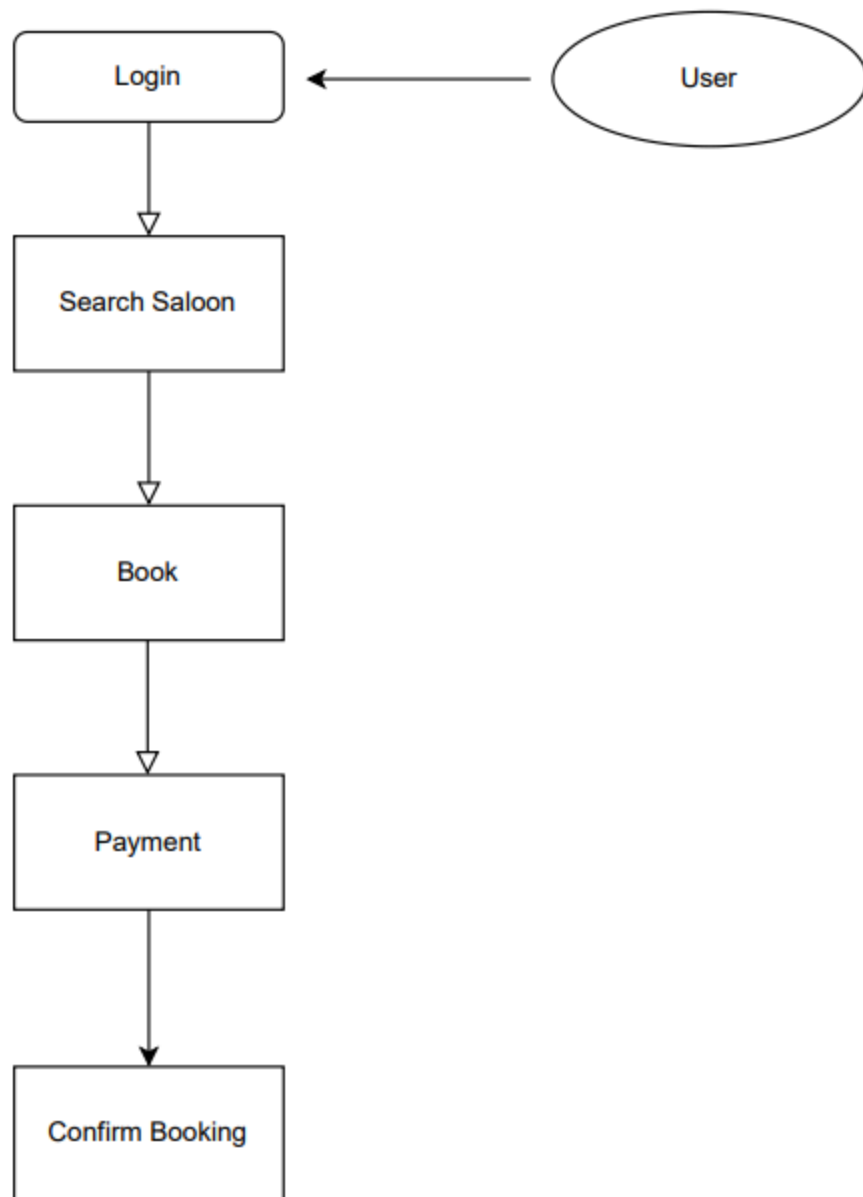
5. **Service Completion & Feedback:**
   - After the service is completed, the system allows customers to **rate the barber and leave feedback**.
   - Reviews contribute to **service quality assurance and reputation management**.

6. **Admin Management & Monitoring:**
   - The administrator oversees **user activity, manages disputes, generates reports, and ensures system security**.
   - The system maintains **appointment logs, transaction records, and analytical insights** for continuous improvement.

The **flow diagram** provides a clear **visual representation of the user journey**, ensuring a **smooth and efficient** salon management experience.

```
   ┌──────────┐                          ╭──────────────╮
   │  Login   │ ◄─────────────────────── │     User     │
   └──────────┘                          ╰──────────────╯
        │
        ▼
   ┌──────────────┐
   │ Search Saloon│
   └──────────────┘
        │
        ▼
   ┌──────────┐
   │   Book   │
   └──────────┘
        │
        ▼
   ┌──────────┐
   │ Payment  │
   └──────────┘
        │
        ▼
   ┌────────────────┐
   │ Confirm Booking│
   └────────────────┘
```

Test Report

This test report outlines the **testing approach, strategies, and results** for the **E-Saloon Management System**. The objective is to verify that the system meets its **functional and non-functional requirements**, ensuring **reliability, security, and performance**. Various testing methodologies, including **unit, integration, system, performance, and security testing**, were used to validate the system's functionality and robustness.

Test Table

SR-N	TEST CASE	EXPECTED RESULT	ACTUAL RESULT	ERROR MESSAGE
1.	**SignUp Page**	"Signup Successfully" message displayed	Ok	Nothing
2.	**SignIn Page**	"Signed-In Successfully" Pop-up displayed	Ok	Please Enter Username and Password Again
3.	**Customer Dashboard**	Displays all available salons and services	Ok	Nothing
4.	**Salon List Page**	Shows all registered salons with details	Ok	Nothing
5.	**Appointment Booking**	Booking confirmation message displayed	Ok	Please Login first
6.	**Payment Page**	Payment processed successfully with receipt	Ok	Payment Failed, Try Again
7.	**Admin Dashboard**	Displays all users, bookings, and reports	Ok	Unauthorized Access

UI of E-Saloon :

Admin Register Page

Admin Register

Full Name

email

password

confirm password

Mobile No.

dd/mm/yyyy 📅

Address

[Submit]   [Clear]

Already have an account.Click here to Login

Barber Register ?

Admin Side Barber Manager Page:

E - Saloon   Dashboard   barberManager   profile   register   Search...   Logout

barbers data :

shop name	email	mobile	address	action
king saloon	king@test.com	9876543215	A/p Hinjewadi, pune, Maharashtra.	delete
Elite cuts	elitecuts@example.com	3653645324	123 Main Street, Pune, Maharashtra, India	delete
Barber's Haven	barbershaven@example.com	6643325463	456 Oak Avenue, Pune, Maharashtra, India	delete
The Cutting Edge	cuttingedge@example.com	3643524552	789 Pine Lane, Pune, Maharashtra, India	delete
Grooming Lounge	groominglounge@example.com	465542435463	321 Elm Street, Pune, Maharashtra, India	delete
Classic Barbers	classicbarbers@example.com	66353533243	654 Cedar Avenue, Pune, Maharashtra, India	delete
Urban Groomers	urbangroomers@example.com	546543252	987 Maple Road, Pune, Maharashtra, India	delete

Admin Side Customer Manager Page:

E - Saloon   Dashboard   barberManager   profile   register   [Search...]   Logou

customers data :

full name	email	mobile	dob	address	action
vishal bhong	vishal@test.com	7397974785	2000-08-03	A/P Nimgaon ketki, near mseb board	delete
Anupam Prajapati	anupam@test.com	7397974785	2002-06-07	A/P Indore, Madhya Pradesh	delete

Barber Side

E - Saloon   Dashboard   profile   hairStyles   Search...   Logout

Hair Styles

style	Price	delete
boxer cut	90	del
Military cut	150	del
one side cut	210	del
Enter new style	Enter price	Add

king saloon

✉ *Email :*   king@test.com

📞 *Mobile No :*   9876543215

Address :

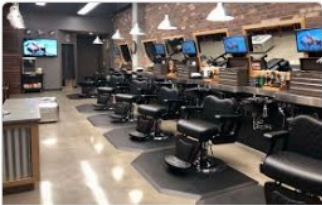A/p Hinjewadi, pune, Maharashtra.

Description :

If you've been dreaming of the perfect hair cut, then (BN) in (LN). We are the perfect hair salon professionals to give you that dream hair cut! Our full-service hair salon's offers great hair salon services at the best hair salon rates around! With over 16 years of experience, our amazing hair salon experts listen to each and every client and give you the exact image you're looking for.

Edit

Appointments

| customer name	mobile no	email	Customer address	Appointment date	Status
vishal bhong	7397974785	vishal@test.com	A/P Nimgaon ketki, near mseb board	2025-02-11	COMPLETED ˅
vishal bhong	7397974785	vishal@test.com	A/P Nimgaon ketki, near mseb board	2025-02-11	PENDING ˅
vishal bhong	7397974785	vishal@test.com	A/P Nimgaon ketki, near mseb board	2025-02-11	COMPLETED ˅
Anupam Prajapati	7397974785	anupam@test.com	A/P Indore, Madhya Pradesh	2025-02-12	PENDING ˅

Customer

Advertisement
This is a space for ads.

king saloon
mob - 9876543215
If you've been dreaming of the perfect hair cut, then (BN) in (LN). We are the perfect hair salon professionals to give you that dream hair cut! Our full-service hair salon's offers
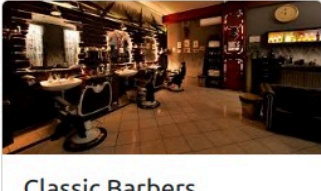
Elite cuts
mob - 3653645324
Elite Cuts is a premier barbershop located in the heart of Pune. Our team of skilled barbers is dedicated to providing exceptional grooming services in a relaxed
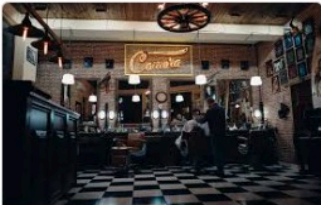
Barber's Haven
mob - 6643325463
Barber's Haven is your go-to destination for all your grooming needs. Nestled in the bustling neighborhood of Pune, our shop offers a wide range of services, including

Classic Barbers

Appointment :)

Shop Name :   king saloon

Shop Address :   A/p Hinjewadi, pune, Maharashtra.

appointment date :   2025-02-11   COMPLETED

Appointment :)

Shop Name :   king saloon

Shop Address :   A/p Hinjewadi, pune, Maharashtra.

appointment date :   2025-02-11   PENDING

Appointment :)

Shop Name :   king saloon

Shop Address :   A/p Hinjewadi, pune, Maharashtra.

appointment date :   2025-02-11   COMPLETED

Conclusion

The development of the **E-Saloon Management System** represents a significant step toward **modernizing and optimizing** salon operations through a digital platform. This project has been designed to bridge the gap between **customers, barbers, and administrators**, ensuring a **seamless, efficient, and user-friendly** experience. By automating the appointment scheduling process, service management, and customer engagement, the system enhances **business efficiency and customer satisfaction**.

The **E-Saloon Management System** is built on a **robust and scalable architecture**, ensuring high performance and security. The integration of **JWT-based authentication, role-based access control (RBAC), real-time notifications, and secure payment processing** strengthens the platform's reliability. Additionally, the use of **optimized database management, encrypted data storage, and cloud-based deployment** ensures smooth operations and data integrity.

Throughout the project, **key functional and non-functional requirements** were identified and successfully implemented. The system effectively supports **user management, appointment booking, secure transactions, and feedback mechanisms**, all while maintaining **scalability, usability, and security standards**.

Key Achievements:

- Development of a secure, scalable, and user-friendly platform

- Efficient service management for both users and service providers

- Real-time event processing and notification system

- Secure and reliable payment integration

Challenges Overcome:

1. Managing Real-Time Appointment Scheduling – Implemented real-time booking updates to avoid conflicts.

2. Maintaining Data Consistency – Ensured ACID-compliant transactions for reliable data integrity.

3. Secure Authentication & Authorization – Used JWT-based authentication and role-based access control (RBAC).

4. Optimizing System Performance – Applied caching, indexing, and efficient API calls to handle high traffic.

5. Enhancing User Experience – Designed an intuitive UI based on feedback for seamless navigation.

6. Secure Payment Processing – Integrated encrypted payment gateways for fraud prevention.

7. Multi-User Role Management – Implemented access control to ensure restricted functionalities per user role.

Future Scope:

1. Development of Mobile Applications – Expanding the platform to iOS and Android for better accessibility.
2. AI-Based Service Recommendations – Implementing AI-driven suggestions for personalized appointment bookings.
3. Advanced Analytics & Reporting – Enhancing business insights with data-driven performance analysis.
4. Multi-Language Support – Adding localization features to cater to a diverse user base.
5. Integration with Additional Payment Gateways – Expanding secure payment options for a smoother transaction process.

6. Smart Salon Integration – Connecting with IoT devices for automated appointment reminders and service tracking.

7. Global Expansion – Adapting the system for international salons and customers.

Final Remarks:

The **E-Saloon Management System** is a **scalable, secure, and efficient** solution designed to meet the evolving needs of modern salon businesses. This project has provided **technical insights into full-stack development, database management, and security protocols**, while emphasizing **user-centric design** for a seamless experience. With continuous improvements and feature expansions, the **E-Saloon Management System** has the potential to become a **leading platform in the salon and beauty industry**, offering **enhanced convenience, efficiency, and business growth**.