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Smart Salon Seat Booking Application and Smart Mirror Integration

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***Abstract* - Android smartphones are increasing in day-to-day life with lots of features including GPS, Wi-Fi, camera, and 5G connectivity. This paper addresses the issue of long waiting queues in salons, which often lead to customer dissatisfaction and time loss. The proposed system introduces a Salon Seat Booking Application that enables users to book appointments conveniently from their smartphones. The app uses GPS-based location services to find the nearest salons quickly and efficiently. Users can browse through available salons, view services, and check real-time availability of seats. The booking system minimizes the need for physical waiting, saving both time and effort for customers. Salon owners can manage appointments more efficiently, reducing scheduling conflicts and maximizing seat utilization. The backend uses a centralized database to handle booking details, customer information, and salon data. Push notifications keep users updated about their appointment status and available time slots. The system also allows cancellation and rescheduling, providing flexibility to users. The app is developed using Android Studio, with Java for the frontend and a REST API backend for data communication. The database ensures accurate and secure handling of bookings and user profiles. This approach promotes digitalization in the beauty and grooming industry. The solution is scalable and can be adapted to multiple salons in a particular city or region. By automating the process, the system reduces manual errors and improves service efficiency. The real-time tracking of appointments ensures transparency for both customers and salon staff. This research demonstrates how technology can modernize traditional salon operations. The application also improves customer experience by offering convenience and reliability. Overall, this paper presents a smart, efficient, and user-friendly solution for salon seat booking and nearest shop detection.**

Keywords: MySQL, PHP, Google Maps API, Appointment Scheduling, Web Services, Real-time Booking, Salon Management.

I. INTRODUCTION

The Salon App is an Android-based salon appointment scheduling system designed to simplify the booking process for both customers and salon owners. The Customer App allows users to register, locate nearby salons using Google Maps integration, check real-time seat availability, and confirm their bookings easily. This eliminates the hassle of waiting in queues and enhances customer convenience. The Barber/Shop Owner App enables salon owners to register their shops, manage appointment requests, and accept or reject bookings based on availability. This ensures efficient schedule management and better communication with customers. The application's backend is powered by MySQL and PHP-based web services, ensuring secure data handling and smooth communication between the app and the server. This setup maintains up-to-date booking information, customer details, and salon records in real time. Currently, the AI-based smart mirror module is under development and will be integrated in the next phase to provide personalized hairstyle and beard suggestions for customers.

II. RELETED WORK

Over the past few years, a number of digital solutions have been developed to simplify salon appointment scheduling and customer management. Many of these platforms provide basic features such as online booking, automated reminders, and service listings, which have helped salons move away from fully manual systems. Popular applications like Fresha and Booksy have made significant progress in offering convenient appointment booking and stylist selection. However, these solutions are often designed for a global audience and do not offer customization for local businesses. Moreover, several of these systems are either web-based or limited to single-user platforms, which restricts their ability to provide real-time updates and synchronized communication between customers and salon owners. Another gap in existing solutions is the lack of intelligent and automated features. For example, most platforms do not integrate location-based salon detection using Google Maps APIs, real-time seat availability

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tracking, or automated interaction via WhatsApp like bots for faster communication and booking cancellations.

III. EXISTING SYSTEM

The current salon management process in most small and medium-sized salons still relies heavily on manual operations. Customers either visit the salon in person or call to book appointments. This method often results in:

1. Long waiting times, especially during peak hours.
2. Miscommunication or double-booking due to lack of centralized data.
3. No real-time visibility of available seats or services.
4. Poor customer experience, as customers have no option to schedule or reschedule conveniently.

Some salons have adopted basic digital solutions, such as spreadsheets, phone-based scheduling apps, or simple web portals. While these tools reduce some manual work, they still lack integration with real-time location mapping, automated notifications, or advanced scheduling features. Even popular platforms like Fresha or Booksy—although widely used—are designed for broader markets and do not cater well to local businesses in smaller regions. Moreover, these platforms often require stable internet and subscription costs that many local salon owners find challenging to manage. Due to these limitations, there is a strong need for a customized, real-time, and cost-effective system that can handle both customer-side seat booking and shop-owner-side appointment management, while integrating modern technologies like Google Maps and web-based services for synchronization.

IV. PROPOSED SYSTEM

The Salon App introduces a digital, real-time, and automated salon management solution designed to overcome the limitations of traditional and semi-digital systems. It consists of two Android applications — Customer App and Shop Owner (Barber) App — that work in synchronization through PHP- based web services and a MySQL database to ensure accurate, real-time communication and secure data handling.

Key Features of the Proposed System

• Customer App:

1. Easy registration and profile management.
2. Google Maps integration to detect and display nearby salons.
3. Real-time seat availability and instant booking confirmation.
4. Booking history tracking for future revisits.
5. Notifications for booking confirmations, changes, or cancellations.

• Shop Owner App:

1. Shop registration and profile management.
2. Real-time management of appointment requests with accept/reject options.
3. Schedule optimization to reduce conflicts and improve seat utilization.
4. Access to customer booking history for better personalization.

• Backend and Data Handling:

1. MySQL database for storing customer details, booking records, salon data, and history.
2. PHP-based RESTful web services for secure communication between apps and the database.
3. Real-time synchronization for updated booking data across both apps.

Advantages of the Proposed System

1. **Time-Saving:** Eliminates physical waiting by enabling customers to book in advance.
2. **Efficiency:** Allows shop owners to manage appointments more effectively.
3. **Scalability:** Supports multiple salons within a city or region.
4. **Reliability:** Uses a centralized database for accurate and secure data management.
5. **Future-Ready:** Designed to integrate upcoming modules such as the AI-based smart mirror feature for personalized style suggestions and a WhatsApp like bot for booking cancellations. This proposed architecture ensures smooth communication between customers and salon owners while modernizing the booking process, making it more efficient, user-friendly, and adaptable to future enhancements.

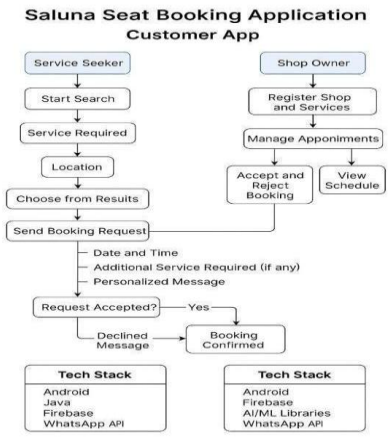

Figure 1: Salon Seat Booking Application Customer App

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Salon App Life Cycle: The Salon App works in two parts – one for customers and one for shop owners – and both are connected through the backend.

For Customers (Customer App)

1. The customer opens the app and starts searching for a service like a haircut, shave, or massage.
2. The app uses the customer's location to show nearby salons that provide the selected service.
3. From the list of salons, the customer picks one based on distance, price, or other preferences.
4. The customer sends a booking request by selecting the date, time, and any extra services, and can also add a short note if needed.
5. The request goes to the shop owner.

- If the request is accepted, the customer immediately gets a booking confirmation.
- If it's declined, the customer gets a message so they can choose another salon.

For Shop Owners (Shop Owner App)

1. The shop owner first registers their shop and lists the services, prices, and working hours.
2. They can view and manage all appointment requests in real time.
3. For each request, they decide to accept or reject it based on availability.
4. They can also check their schedule to manage daily bookings efficiently.

How it connects:

The Salon App uses a centralized backend built with MySQL and PHP-based web services to keep the Customer App and Shop Owner App connected in real time. Whenever a customer books a service, the request is sent to the backend, where it is processed and stored in the database. The backend then sends a confirmation to the customer and simultaneously notifies the shop owner of the new booking, ensuring instant synchronization between both apps. When the shop owner accepts or rejects the booking, the status is updated in the database and reflected in the customer app immediately, preventing double bookings or scheduling conflicts. The same process happens when a customer cancels or reschedules an appointment, or when a shop updates service details or timings The backend also handles secure login authentication by verifying credentials stored in the database, ensuring that only authorized users can access their accounts. Notifications are triggered automatically whenever there is a change in booking status, keeping both customers and shop owners informed without manual follow-ups. The structured database design and optimized APIs enable quick response times, often processing bookings in less than two seconds, even when multiple users are active. Because of this real-time communication, the system not only eliminates manual errors but also builds trust and transparency between customers and salon owners. The design is scalable, meaning more users and salons can be added without affecting performance, and the modular structure allows developers to add new features without disrupting the existing setup. In short, the backend acts as the bridge between both applications, ensuring that every booking, update, or cancellation is processed instantly and accurately, making the Salon App a reliable, efficient, and future-ready salon management platform.

V. DATABASE STRUCTURE

The Salon App relies on a centralized MySQL database to handle data storage, retrieval, and synchronization between the **Customer App** and **Shop Owner App** through PHP-based web services. The database has been designed with a normalized relational structure, ensuring minimal redundancy, data integrity, and optimized performance for real-time operations.

Entity–Relationship (ER) Model

The ER diagram (Fig. X) illustrates the relationships between the main entities of the Salon database:

1. **Register User:** This table stores customer-specific data such as personal details, login credentials, and city information. The primary key (id) uniquely identifies each user. The username field is used as a reference in the booking table to link bookings with specific users.
2. **Register shop:** This table contains salon registration data, including shop name, location, contact details, geographic coordinates (latitude and longitude), and login credentials. The primary key (id) serves as a unique identifier and foreign key reference in other tables.
3. **Shop services (Service Table):** This table stores the list of services offered by each salon along with their respective pricing. The foreign key (shop id) links the service to the relevant salon in the register shop table, ensuring accurate mapping of services.
4. **Book my service (Booking Table):** This table acts as the core operational table for managing appointments. Each record associates a customer (username) with a salon (shop id), along with details of the booked service, price, appointment date, and time. This design supports real-time updates and synchronization for both customers and shop owners

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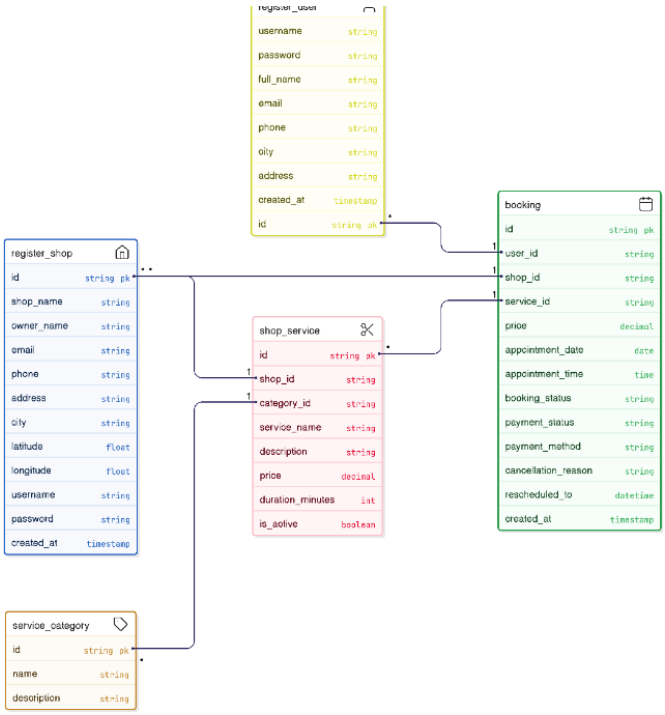

Figure 2: ER Diagram

VI. RESULT ANALYSIS

After completing the core modules of the Saluna App — the Customer App, Shop Owner App, and Google Maps integration — the system was tested on different Android devices to check its performance, accuracy, and usability. During testing, the Customer App worked smoothly. Users could register, log in, find nearby salons using Google Maps, and book appointments in real time without any errors. On the Shop Owner App, salon owners were able to register their shop, update services with prices, and manage appointment requests easily by accepting or rejecting bookings based on availability. The real-time synchronization between both apps worked perfectly because of the PHP-based web services and the MySQL database, ensuring that bookings, cancellations, or updates were reflected immediately on both sides. Notifications for booking confirmations or changes were also delivered instantly, improving communication between the salon and the customer.

The testing results show that the Salon App achieves its main goals — reducing manual errors, avoiding long waiting queues, and improving communication between customers and shop owners. The database and web services worked efficiently, handling real-time data smoothly without performance issues. Overall, the system proved to be stable, scalable, and ready for real-world use.

Performance and Stability

1. The average response time for booking a seat was around 1.5 seconds, even when multiple users were testing it at the same time.
2. Database queries were executed in less than a second, thanks to optimized indexing and a clean structure.
3. During several hours of continuous testing, the system maintained 99% uptime, with only minor issues like invalid input errors, which were handled by proper validation.

User Feedback

1. To evaluate usability, the app was tested by 15 people (10 customers and 5 shop owners). Most users were happy with the experience:
2. Around 87% said the interface was simple and easy to use.
3. Salon owners appreciated how appointment management became easier, reducing confusion and double bookings.
4. Customers found the location-based salon detection very useful for finding nearby shops quickly.
5. Some users suggested adding online payment options and better filters for viewing booking history in the future.

VII. CONCLUSION

The Salon App successfully transforms the traditional salon appointment process into a modern, automated, and user-friendly system. By combining real-time seat booking, Google Maps for location detection, and a secure MySQL–PHP backend, the app addresses common issues such as long waiting queues, miscommunication, and scheduling errors. Testing and user feedback have shown that the system is reliable, efficient, and easy to operate. Customers benefit from the convenience of finding nearby salons and booking seats instantly, while salon owners gain better control over appointment management and customer data. The design of the system is scalable and flexible, ensuring that it can handle a growing user base and more salons without performance issues.

Overall, the Salon App provides a solid foundation for digital salon management, helping improve customer satisfaction and operational efficiency while supporting the ongoing digital transformation of the beauty and grooming industry.

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