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Restaurant Management System

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Abstract: ***The project focuses on developing an Android application that allows customers to easily book tables and menus of their choice at a restaurant according to their convenience.***
The traditional manual system for table reservations in restaurants is becoming obsolete, and digital systems are gaining popularity. The manual system relies on waiters and booking diaries, with no automated record-keeping. Main objective of the project is creating the Reservation System that addresses the shortcomings of the manual system, such as inefficiencies in time and cost management.
The current generation prefers high-tech services, especially those available online. Therefore, the project aims to efficiently automate restaurant operations for owners. The proposed reservation system offers customers the convenience of reserving tables, menus, or both.
For menu bookings, customers are required to pay 50% of the total amount in advance. Customers can cancel their bookings if they are unable to arrive on time, and can rebook for the next available time slot, provided that the cancellation is made at least 30 minutes before the selected time. However, if the cancellation is made after this timeframe, the advance payment will not be refunded.
Keywords: Restaurant Management, Recommendation, Tablet, Menu, Intelligent, Android application.

I. INTRODUCTION

This application serves as a convenient self-service system for table and menu bookings in restaurants. The system allows for customization of booking the process and efficient management of restaurant reservations and availability reservations. An admin portal, which has access to the owner, facilitates checking of availability and bookings for customers. The services provided include table and menu bookings, all managed through the system, with the main objective of providing ordering and reservation services to customers.

he restaurant management system allows admin(only one admin) to easily edit, add, and delete reservation, track availability and manage client data.

The primary goal of this task is to enable restaurant owners to directly interact with clients. Additionally, the application allows clients to place requests to find free tables based on their specific seating requirements in their preferred area. This concept is designed to address the inconvenience people often face in finding desired restaurants and making bookings, which can be time-consuming. Managers also benefit from the application as it helps them digitally track bookings through the provided admin portal, instead of analyzing paper receipts.

Customers are required to register and become members in order to access the full features of the application. They can then check seat availability at specific timings and make bookings accordingly.

Customers also have the option to view booking details and cancel bookings if needed. In case of any confusion about restaurant locations, the application provides location maps and contact details for clearing queries via email or other contact information provided. This approach ensures a seamless and user-friendly experience for customers while providing efficient management tools for restaurant owners.

II. METHODOLOGY

The main objective of our project is to enhance the efficiency of ordering food while minimizing human error & providing quality services to restaurant customers. The application on the tablets should be capable of seamless communication with other devices.

The process begins with the customer or visitor opening the application and searching for food items from nearby locations. The customer can view the categorized menu card by scanning the QR code available on the table and order food items, either with or without logging in or registering. Selected food items are added to the cart which is available at hotel side for temporary storage.

If the customer decides to make a purchase, the application checks if his table is active or not, if the table is active, he can order or else the new table is created by the waiter. If not, the dine out service is also available at the hotel and he can directly pay to the billing counter.

In our project, we have created a database containing information about the listed daily needed food items, and costs. Once the login task is completed, the waiter can place an order from his tablet search the table number on his tablet and order the food. The waiter order is verified using the contact information provided during the login registration process. Upon successful verification, the admin checks if the order is confirmed by the waiter or not. If not, the process restarts. If the conditions are satisfied, the admin transmits the order data to the respective restaurant. Finally, the delivery boy delivers the order to the customer within the estimated time.

If there are any modifications required in the food menu, the admin can make changes in the database, and the updated menu will be reflected on the customer's Android device.

This ensures seamless communication and smooth processing of food orders, while maintaining accurate and up-to-date information on the menu items.

The use of tablet menus in restaurants has greatly transformed the dining experience for customers. Several existing programs have provided an app that enables restaurants to upload their menus onto iOS and Android-based tablets, making it easier for customers to browse through the menu using touch-screen gestures.

Our goal is to take this concept further by providing an advanced menu display that recommends dishes based on a recommendation algorithm, and instead of using an expensive iOS tablet, we opt for an Android-based tablet. Our system utilizes a cloud-based server to store the menu database, which not only makes it cost-effective but also secure. According to other developers who have created similar applications, customers seated at tables with tablets tend to spend approximately 10% more than those at tables without tablets.

This could be attributed to the fact that customers tend to buy more when they can place their orders instantly, without waiting for service. Our proposed system consists of several modules that work together seamlessly to provide a unique and innovative dining experience for customers.

A. *Modules*

1) *Module 1: Login Module:* The login module enables restaurants to access the application using their pre-registered login details. Each user is provided with a unique login ID and password, which they use to log in to the application. This ensures secure and authorized access to the application.
2) *Module 2: Registration Module:* In this module the Registration of New Staff Member is done. Every Staff member is given with his own login id and password. This module is available only for admin. The admin can add, edit, or remove the staff member.
3) *Module 3: Add/Update/remove Menu:* In this module the menu card of Restaurant is managed. It can be managed by Admin, Head chef, and chef. They can add new dish to menu card or remove dish or change the price of dish in menu card.
4) *Module 4: Add/Manage Table Module:* In Table module the tables are managed by admin, waiter, chef. They can change weather the table is active or Inactive. If the table is active means the table is occupied, if the table is inactive means the table is unoccupied is can be used.
5) *Module 5: Add/Manage Category:* In category module the category of food item is managed. Such as weather the food item comes under Starter, Veg or non-Veg, Chinese, Dessert, Beverages, etc. all this category is managed by admin. Admin can add new category to menu.
6) *Module 6: Order Module:* In this module the waiter takes the order from customer and after confirming the order the order is sent to chef. The Chef can see the order from which table the order has came and he can make food according to received order. This module is managed by waiter, chef, and admin.
7) *Module 7: Billing Module:* In this module the automatic Bill is Generated and can be printed on counter.
8) *Module 8: Logout Module:* The logout module is used when the staff member completes the work hour. They can logout from the Application.

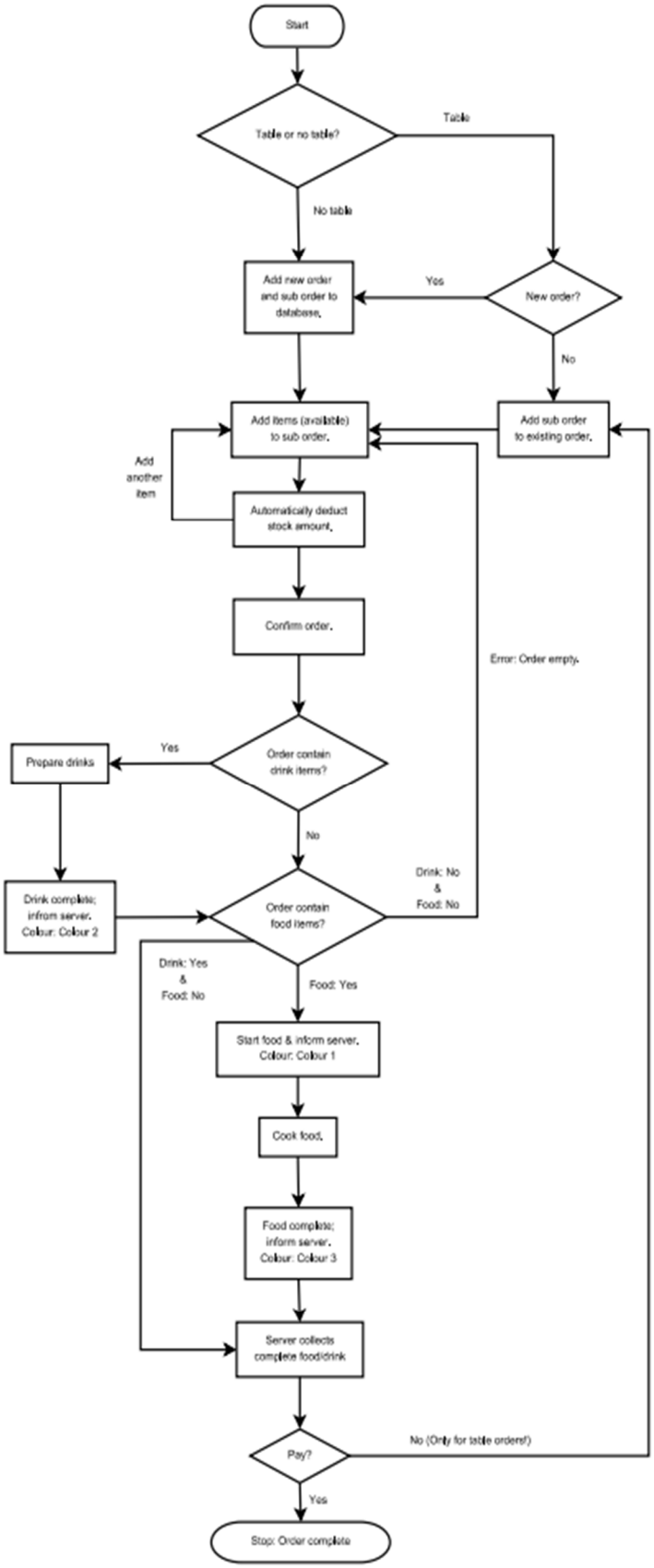
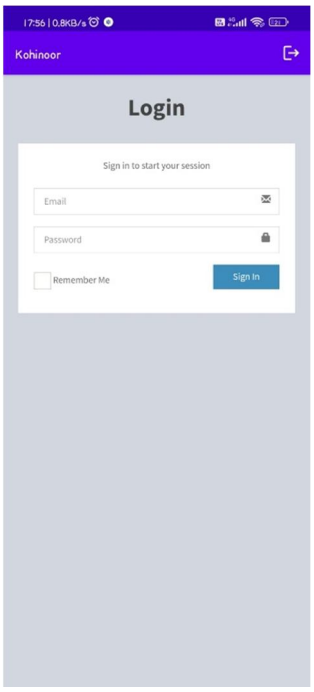
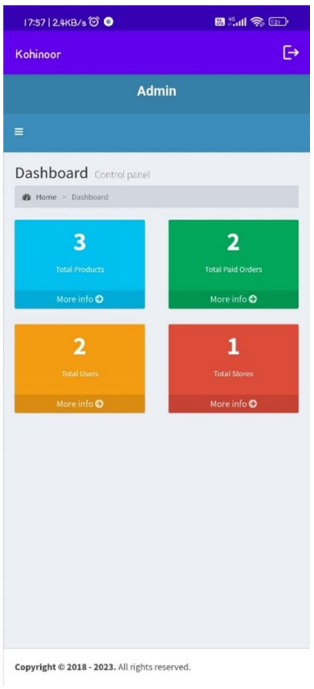


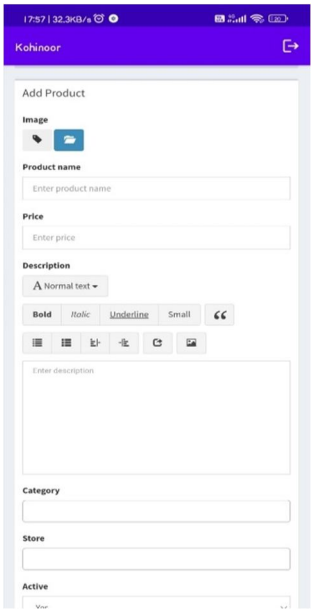
Figure : Flow chart to show the flow of events of an order.

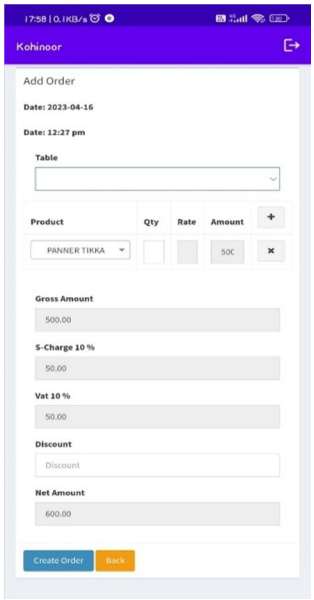
III. RESULTS AND DISCUSSION

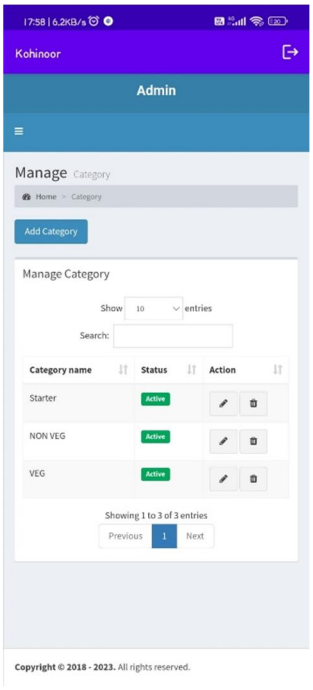
The overall design and development of the restaurant management system have been deemed satisfactory. The system is now capable of functioning as a Point of Sale (POS) solution for small and medium-sized enterprise (SME) restaurants. The various functions of the system are working correctly, and the overall design is easy to comprehend. The reports and invoices generated by the system are simple to understand and can be easily printed if required (refer to Appendix G to Q for the final results). Even individuals with limited knowledge of digital transformation in the restaurant industry can understand and utilize the restaurant management system for assisting with POS operations in an SME restaurant.

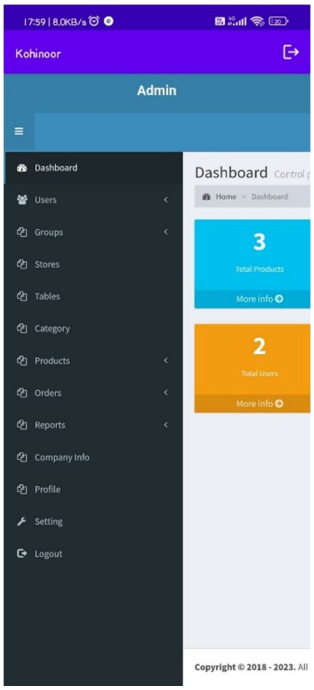












The restaurant management system provided is an excellent starting point for individuals with limited technology experience in a restaurant setting. While there may be a learning curve for employees accustomed to traditional methods, consistent use of this system for Front of House (FOH) operations in the SME restaurant will ultimately streamline daily operations. The system's reporting capabilities will also facilitate transaction tracking, making decision-making and sales forecasting more efficient. Overall, integrating this restaurant management system will greatly improve the restaurant's operations and enhance its business management capabilities.

IV. CONCLUSION

The findings of the project indicate that customers who are willing to dine at a restaurant often face the inconvenience of long waiting times when no tables are available. To address this issue, an application has been developed that allows customers to choose their desired table based on location and reserve it according to the number of members in their party. Additionally, the application provides pictures of the restaurant's interior, giving customers a glimpse of the ambiance. This innovative solution caters to the growing demand for efficient table booking and menu selection services, especially in today's fast-paced lifestyle where the use of android applications is becoming increasingly prevalent.

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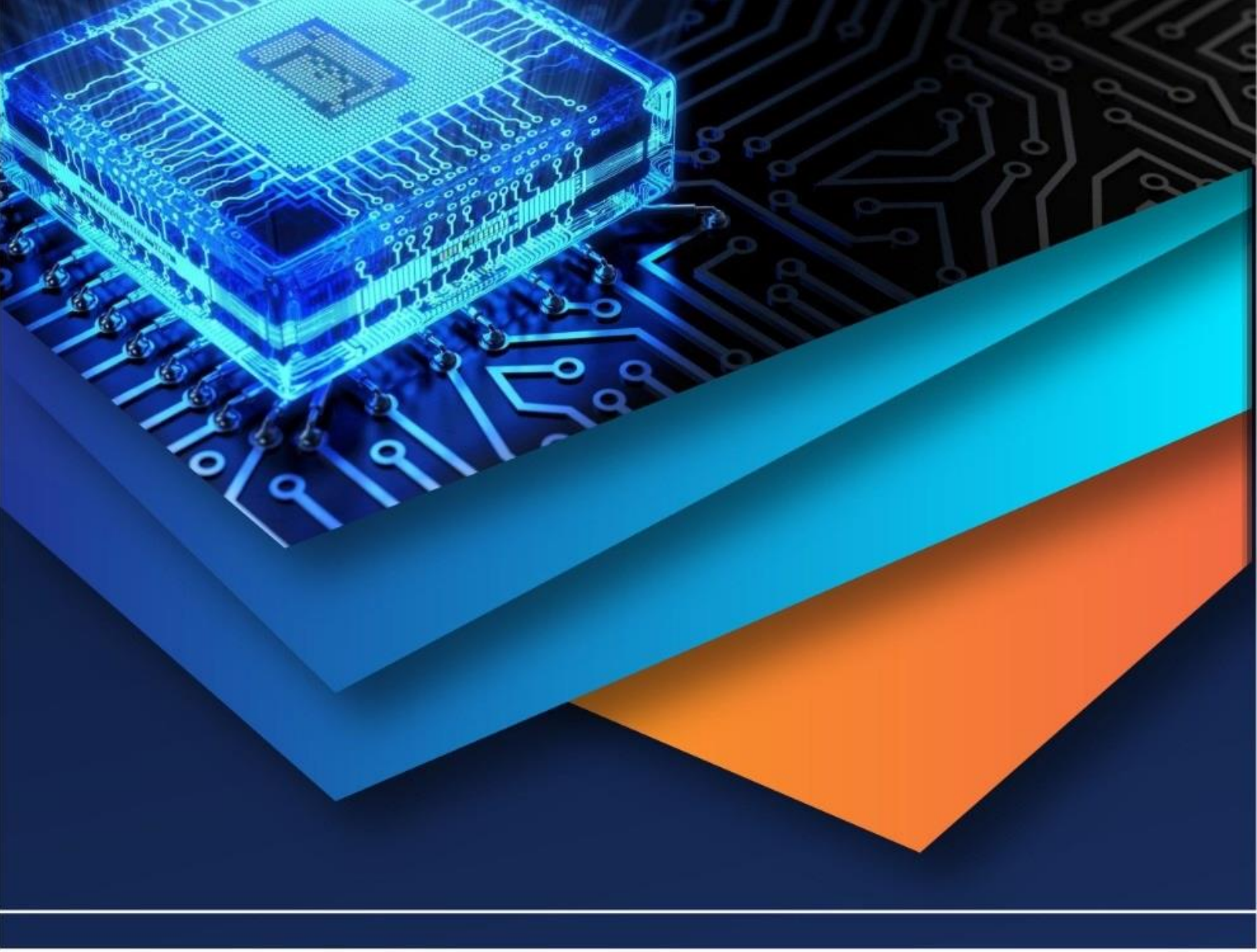

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