

Implementation of Smart Restaurant Using Smart Phone Application

Prof. Shezad Shaikh¹, Kajal Choudhary², Shivani Bhavsar³, Sharmin Mansuri⁴, Ankita Saner⁵

Department of Computer Engineering, D.N. Patel College of Engineering, Shahada, India¹⁻⁵

Abstract: "Online Restaurant Management System" is a web application. This system is developed to automate day to day activity of a restaurant. Restaurant is a kind of business that serves people all over world with ready-made food. This system is developed to provide service facility to restaurant and also to the customer. A Restaurant Management System (RMS) is a type of Point-of-Sale (POS) software specifically designed for restaurants, bars, food trucks and others in the food service industry. Unlike a POS system and RMS encompasses all back-end needs, such as inventory to staff management. Also e-Restaurant is a restaurant reservation system designed to replace the pen & paper approach to reservation management. The software has been build from the ground-up to be as easy to use as possible as well as extremely powerful and highly customisable to suit any restaurant environment.

Keywords: E-Restaurant, touch screen display, IoT.

I. INTRODUCTION

In this era there is a need of automated system for restaurant for fast and easy service to customer as well as he employees of the restaurant so keep in mind this criteria we are implementing such system. In general, people go to restaurants for relaxing, chatting and having food/drinks pleasantly. Usually on the weekends the restaurant are fully occupied. At this time, people have to wait for someone (typically a waiter) from the restaurant to order food/drinks. In addition, waiters are very busy when the restaurant is crowded. Sometimes they might forget to take orders from customers, forget the orders, serve wrong order and deliver after long time. When the restaurant introduces a new menu or some recipes are new for customers, they do not understand it well by just seeing the menu card printed with a food/drink name. In recent days web enable computer system is imply to control traffic flow of order, to create proper billing, reduce waiting time, reduce human mistake. Usually waiters is require to take order, making reservation, to serve meal. After finishing customers has to paid the bill at the counter. In spite of this operation is very easy it increase the workload of waiters which is noticeable which degrade service quality. Since manpower is one of the most important cost factors in restaurants, and at the same time a key reason for altered performance, an automated order taking process might work as a solution. An automated solution can be assumed to facilitate an increase in overall productivity by decreasing the time and effort involved in this procedure, while keeping customer satisfaction at the same level, or even increasing it. By using computer system multiple tasks can be done more perfectly without invoking any human error. The advancement of graphical-touchable interactive menu allows customer to view order on top of the table, customer place order by using their fingers and order will be transmitted directly to server in real-time. The system provides automated order taking and menu management functionalities for the restaurant. Firstly, the project starts with requirements analysis in collaboration with the restaurant. Secondly, based on the requirements the menu management system is designed, implemented and tested. Finally, in evaluation part, the system is analyzed to study the effects of introduction of the menu management system in the restaurant. This evaluation part shows whether the system decreased the order processing time and customer QoE in the restaurant.

II. LITERATURE REVIEW

The manual system has various problems. The most common problem is blooper while making customer order waiters making various mistakes. At times, a waiter can forget to add a precise item, make changes, or disremember to give the order to kitchen. Customer has to wait for waiter to take their order. They must rely on the waiters to remember their order and specific details. They may also give wrong bill. The customer mobile application of this system allows walk-in customers to place their food order without the need of waiter. They can request a self-order via the application and restaurant chef will approve their request if the table is seated. Other features for customer is my order status, this feature allow customers to track their food order status (Served/Preparing/Queuing). Some other functions of the mobile application include request bill, view menu details, and view restaurant details. This system is used to maintain restaurant data, manage reservation, perform food ordering, payment, and reporting. Data maintenance includes membership and menu. While for the kitchen, system is featured with intelligent food order arrange to improve food preparing. Staff can mark the food status to served, preparing or queuing. Intelligent restaurant is created to reduce the work load of waiters

and to improve the efficiency. This system works on android tablet. The android application access database and download real time menu list. Customer can browse and choice the items and order it. Waiters came to confirm order and count bill. The order given by customer displayed in the kitchen section. When food item ready it informs to the waiters as well as cashier by mark them as done [1]. Intelligent e-restaurant for customer–centric service provides an online menu ordering and reservation process. This system uses RFID –based membership card, this provides easy identification of customers according to their consumption record. Through PDA waiters take order and though WLAN order is provide to kitchen. According to order chefs prepare menu and waiter convey it to customer. RFID-based PDA is used to diagnose the membership ID to calculate the bill [2].

Self–service ordering information system uses Zigbee based wireless technology. It uses full function device (FFD) and reduced function device (RFD). FFD and RFD communicate with each other [3]. In order to improve quality of service and business of the hospitality industry by consolidate technology. This system fetches all information from a centralized database. The tablet on the customer table contain android application with all restaurant details. Customer tablet, kitchen display and cashier counter connects to each other through wi-fi [4].

III.PROPOSED SYSTEM

Usually waiter is require to take order, making reservation, to record customer order and then transmit to kitchen for preparation. After finishing customers has to paid the bill at the counter. In spite of this operation is very easy it increase the workload of waiters which is noticeable which degrade service quality. Nowadays by using advance technology we can improve service quality. The methodology that practiced in this project development is System Development Life Cycle or known as SDLC. SDLC is a conceptual model that widely used in project management which describes the stages involved in an information system development project start from the initial phase through the maintenance phase of the completed system. The common development phases, deployment and maintenance. Although there are many other approaches available for selection, however SDLC is still more suitable to our development condition. Prototype methodology is defined as a Software Development model in which a prototype is built, test, and then reworked when needed until an acceptable prototype is achieved. It also creates a base to produce the final system. Software prototyping model works best in scenarios where the project's requirement are not known. It is an iterative, trial, and error method which take place between the developer and the client. Prototyping Model has following six SDLC phases as follow:

- **Requirements gathering and analysis**
A prototyping model starts with requirement analysis. In this phase, the requirements of the system are defined in detail. During the process, the users of the system are interviewed to know what is their expectation from the system.
- **Quick design**
The second phase is a preliminary design or a quick design. In this stage, a simple design of the system is created. However, it is not a complete design. It gives a brief idea of the system to the user. The quick design helps in developing the prototype.
- **Build a Prototype**
In this phase, an actual prototype is designed based on the information gathered from quick design. It is a small working model of the required system.
- **Initial user evaluation**
In this stage, the proposed system is presented to the client for an initial evaluation. It helps to find out the strength and weakness of the working model. Comment and suggestion are collected from the customer and provided to the developer.
- **Refining prototype**
If the user is not happy with the current prototype, you need to refine the prototype according to the user's feedback and suggestions. This phase will not over until all the requirements specified by the user are met. Once the user is satisfied with the developed prototype, a final system is developed based on the approved final prototype.
- **Implement Product and Maintain**
Once the final system is developed based on the final prototype, it is thoroughly tested and deployed to production. The system undergoes routine maintenance for minimizing down time and prevent large-scale failures.

IV. SYSTEM ARCHITECTURE

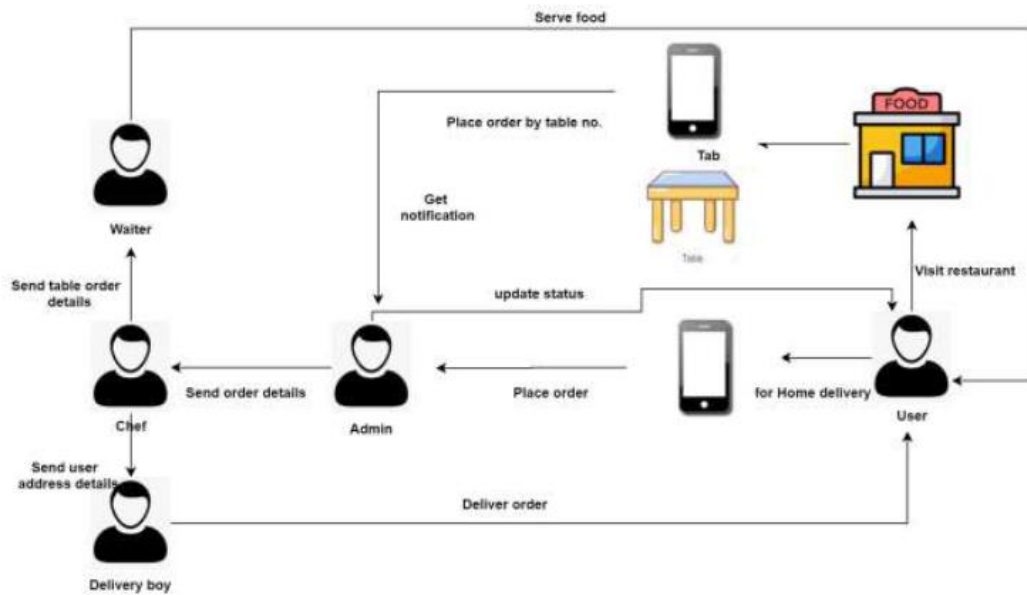


Figure 1.1 : System Architecture

V. RESULT



Figure 1.2 : Menu list

Fig.1.2 shows sample menu list it includes assorted items like veg, non-veg etc. also items cost also include in addition to that we can put extra effort on quantity, and taste like spicy, medium spicy. After selecting particular item there is a place order button if we press that button then we saw total cost, quantity. This project also consists of various types of modules which can be described in below table.

Table 1.1 Different Project Module

No	Objective/Test Cases	Test Data	Expected Result	Test Result
1.	To test the auto-generate unique menu ID.	a)Add new valid menu information.	a) Prompt a successful message. b) Menu ID field value will auto plus one.	Pass
2.	For admin add new menu with valid information.	a)Add new valid menu information.	a) Prompt a successful message. b) Menu ID field value will auto plus one.	Pass
3.	For admin add new menu With invalid information.	a) Enter new menu Information but omit one or more	a) Display “This field cannot be empty”. b) Display “Incorrect currency format”.	Pass
4.	For Admin edit new menu with correct search key and correct menu data.	a)Enter correct search key and menu Data.	a) Menu information will be displayed. b) Prompt a successful message.	Pass
5	For Admin edit new menu with incorrect search key.	a) Enter incorrect search key. b) Enter updated	a) Prompt an error message. b) Display “This field cannot be empty”.	Pass
6	For Staff and Non Member Add new member with valid data.	a) Enter new valid member information.	a) Prompt a successful message.	Pass
7	For Staff and Non Member Add new member with invalid data.	a) Enter new member information but omit one or more compulsory	a) Display “This field cannot be empty”.	Pass
8	For place new order.	a)Select menu make choice and submit order.	a) Order place successful and show Status.	Pass

VI.CONCLUSION

The online smart restaurant management system is time saving and error free as compared to the traditional system. This system attracts customers and also adds the efficiency of maintaining the restaurant ordering and billing. Hence it is the modern way to grow up the business using commerce. Here implementation of an advanced E-restaurant menu ordering system using smart android mobile phone. This system entirely reduces the unnecessary time. Every order is associated with an individual seat at the table, and orders are builds one customer at a time, just like on paper, but with greater accuracy. Items can also easily be shared by the whole table, moved or modified, and noted and the cost can be calculated in real time. The idea of the advanced e-restaurant can also be extended for the future using GPRS module. GPRS module can be used to monitor and request of the menu order from table will be directly sent to the predefined web link for process of even billing the item purchased.

REFERENCES

[1]. SakariPieska, Markus Liuska, JuhanaJauhiainen, (December 2-5, 2013). AnttiAuno-Intelligent Restaurant System Smart-menu: Budapest, Hungary: 4th IEEE International Conference on Cognitive Infocommunications.
 [2]. Tan-Hsu Tan, Ching-Su Chang and Yung-Fu Chen, (September 2012). Developing an Intelligent e-Restaurant With a Menu Recommender for Customer – Centric service. IEEE Transaction on systems, man and cybernetics-part c: Application and review,vol.42,no-5.
 [3]. Sun Guiling, Song Qingqing, Design of the Restaurant Self-service Ordering System Based on ZigBee Technology Communication and embedded system lab College of Information Technology and Science: NankaiUniversity Tianjin, China
 [4]. SushmitaSarkar, ReshamShinde, PriyankaThakare, NehaDhomne, KetkiBhakare, (February 2014), Integration of Touch Technology in Restaurants using Android IJCSMC, Vol.3, Issue.2.
 [5]. Harish Phapale, Prashant Patil, Sanjay Turate, Anshu Chaudhary, Prof.Mahesh Bhagwat (April 2016), e-restaurant management system Using zigbee and iot IJAR CET Vol. 5 Issue. 4.