Restaurant Automation System Using QR Codes

KARTIK PATIL[1], N.V.KAREKAR[2]
[1, 2] *Department of Information Science, Gogte Institute of Technology, Belagavi-590008, Karnataka, India*

Abstract- ***Most of the restaurants store all of their data in manual way and the restaurants have a huge number of customers daily. So because of large number of customers, the restaurants need the assistance of some system to preserve and store the records accurately. For managers it is difficult to view the tables, orders, kitchen, reception and the counter simultaneously. Hence, the restaurants need a full-fledged software to maintain their day to day transactions, orders and also regular update on records, cash transaction in the existing system. Entering all the details manually is taking lots of time and also there are chances for mistakes. Every restaurant needs certain employees to take the order in-person, to offer a rich dining experience and process the payment. In today's market, labor rates are increasing day by day making it difficult to find employees when needed. Hence, to solve this issue, what we propose is a "Restaurant Automation System", originally designed for small scale business like College Cafeterias, Fast Food restaurant or Take-Out, but this system is also applicable in any food delivery industry. The main advantage of my system is that it greatly simplifies the ordering process for both the customer and the restaurant and also greatly lightens the load on the restaurant's end, as the entire process of taking orders is automated.***
Indexed Terms- system, rates, mistakes, small scale

I. INTRODUCTION

Mobile communication systems continue to grow in popularity and have become an integral part for communication in both personal and business purpose. With the advancement in information and communication as it takes lot of time & technology (ITC) business transactions has greatly influenced. The adoption of wireless technology & emergence of mobile devices has led to automation in the restaurant industry. Business in restaurant industry can be improved with the combination of wireless and mobile technologies. The competition in restaurant business has increased with the advancements in food ordering techniques. In earlier days, food ordering was a completely manual process where a waiter used to note down orders from the customers using pen and paper, take the orders to the kitchen, bring the food and make the bill. Although this system is simple it requires Extensive investment in purchase and storage of paper, large manpower and also is prone to human errors and greater time consumption. The Major Objective is to help restaurants solve these problems by implementing a low-cost solution to increasing customer and restaurant staff satisfaction. The idea is creating a menu using QRCODE technology. QRCODE tags will be affixed to the restaurant menu with a specifically-designed QRCODE reader App to the menu. Customers can use the QRCODE reader to read by hovering over it. Since QRCODE are so low profile (almost as small as a sticker!), restaurants can keep the current design/layout of their menus and integrate our new technology with low switching costs. As soon as the QR code is read, a specifically designed web application will be launched for the customers to select the menu items and order the food. The selected items will be stored in a backend server database which the admin can access directly from the kitchen, reducing the work that waiters need to do. This will allow the restaurant to hire less waiters and will also improve any miscommunication between server and patron. Imagine if you are in a foreign country where you do not speak the native language. Our solution will allow you to intuitively point and select the items you want, keeping difficult communication between server and guest minimal. Some restaurants thrive through the friendly service that their staff brings to the table. Our product is designed for fast-casual type and lowly staffed restaurants where you are solely interested in getting your food and eating.

II. OBJECTIVES

Mobile communication systems continue to grow in popularity and have become an integral part for communication in both personal and business purpose. With the advancement in information and communication as it takes lot of time & technology (ITC) business transactions has greatly influenced. The adoption of wireless technology & emergence of mobile devices has led to automation in the restaurant industry. Business in restaurant industry can be improved with the combination of wireless and mobile technologies. The competition in restaurant business has increased with the advancements in food ordering techniques. In earlier days, food ordering was a completely manual process where a waiter used to note down orders from the customers using pen and paper, take the orders to the kitchen, bring the food and make the bill. Although this system is simple it requires Extensive investment in purchase and storage of paper, large manpower and also is prone to human errors and greater time consumption. The Major Objective is to help restaurants solve these problems by implementing a low-cost solution to increasing customer and restaurant staff satisfaction. The idea is creating a menu using QRCODE technology. QRCODE tags will be affixed to the restaurant menu with a specifically-designed QRCODE reader App to the menu. Customers can use the QRCODE reader to read by hovering over it. Since QRCODE are so low profile (almost as small as a sticker!), restaurants can keep the current design/layout of their menus and integrate our new technology with low switching costs. As soon as the QR code is read, a specifically designed web application will be launched for the customers to select the menu items and order the food. The selected items will be stored in a backend server database which the admin can access directly from the kitchen, reducing the work that waiters need to do. This will allow the restaurant to hire less waiters and will also improve any miscommunication between server and patron. Imagine if you are in a foreign country where you do not speak the native language. Our solution will allow you to intuitively point and select the items you want, keeping difficult communication between server and guest minimal. Some restaurants thrive through the friendly service that their staff brings to the table. Our product is designed for fast-casual type and lowly staffed restaurants where you are solely interested in getting your food and eating.

III. METHODOLOGY

Our automation system uses QR codes to launch the web application. The web application is developed in Angular, with Node.js, Express.js and Mongo DB Database. The application is hosted on AWS (AMAZON WEB SERVICES).

The QR codes are unique for every table at the restaurant. The user can scan the QR code with their devices to launch the web application.

As soon as the code is scanned, it registers the table number and launches the application.

Starting page is the home page. Here the home page contains 3 main components: USER LOGIN, ADMIN LOGIN and KITCHEN ADMIN LOGIN.

- The user can create an account (needed only once) and then login to access the menu, cart etc. The user can then go through the menu and choose the desired dishes by moving them to the cart. After final selection, the user will do to the cart to confirm the order before finally checking out.
- The admin can log into their account to access all the information like the present orders, pending orders and past orders. They can also access the user information based on past orders, add or remove items from the menu. They also have the power to view the database and view, remove users.
- The kitchen admin can access the current orders, mark them as complete when done, and dismiss it.

a) Customer Module - The customer module is a web based application that provides a user friendly graphical user interface. With the help of this module the customer can order the meal. This module contains the details of the food to be ordered which includes price of the menu, ingredients and a visual display of the food items. Special dishes (e.g. the Chef's Choice) if any could be changed and modified easily at any time by the admin/manager and displayed. Any

personalization required by the customer in the food item can easily be implemented under this module. The customer module is run on any smart device and the application to be run on it is made in Visual Studio Code. The customer module is connected to the server module through a wireless fidelity network.

b) Server Module - Server module is a web based module which is handled by the admin (restaurant manager) for managing the database and controlling the entire system. Here the entire details of the item ordered by the customer, time of ordering, bill amount, bill status etc. is maintained. Also the admin can anytime add and modify menus (e.g. Today's Special), their prices and advertise specific food item including special discount and combo offers. Server Module is being implemented using Mongo DB.

c) Kitchen Module - Kitchen module is a graphical user interface which would be used by the chef. This module will display the food item to be prepared by the chef and the orders will be in first come first serve basis.

Figure 1: Working

Figure 2: Modules in the Project

IV. REQUIREMENTS SPECIFICATION

Software Requirements:

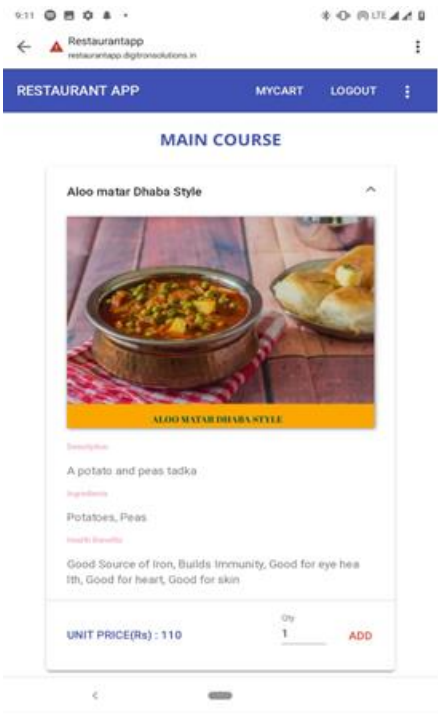
- Programming Language: JavaScript, Typescript, HTML, CSS
- Development Frameworks: Angular.js, Node.js. Express, MongoDB
- Operating System: Windows
- Development Environment: Visual Studio Code

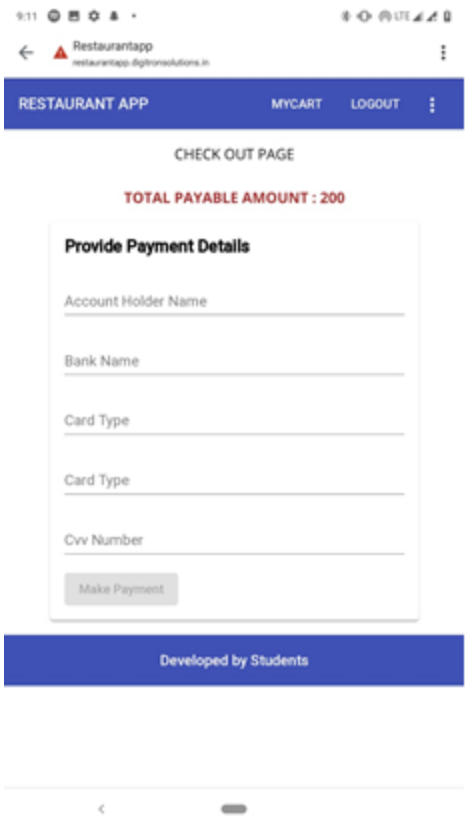
Hardware Identification:

- Display unit- Laptop Display
- Minimum of 4GB RAM
- Requires i5 processor
- Minimum of 2GB memory
- A handheld smartphone
- A mini USB cable
- An open wireless network with internet access

V. RESULTS

After receiving the data from the customers, system processes the orders and produces the bill. The result is displayed as below.





VI. CONCLUSION

The proposed system provides a low cost, efficient, convenient and easy to use system for placing orders for food in hotels and restaurants. Now a day's people are very familiar with touch screen interface due to greater advancements in the field of technology. It will be easier for the users to navigate through the web pages by simply touching the display screen. The chances of errors are reduced and updating of menu and its prices can be done easily. It will be much comfortable and easier for the customers to place orders of their wish. This system is user-friendly and also ensures good quality of service and customer satisfaction.

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