

ARDUINO BASED SMART RESTAURANT FOOD MENU SYSTEM

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Abstract: Automation systems are increasing in day to day life. Applications like home and industrial automation reduce man power while increasing the efficiency. Here in this restaurant menu ordering system that lets you automate menu for ordering food in restaurants. In these modern days the number of restaurants is increasing. They also require very fast processing for serving food to the customers. With the increasing number of customers, it would require more man power, since the current situation has become hectic for the restaurants. Also changes in the hardcopy of the menu can't happen. In the last years the restaurant industry has lived through many changes. Anyway, there is an area that was not improved since several decades. While technology is changing the way we do almost everything, menu cards are still mostly untouched - although they have several disadvantages that can be improved significantly by a digital approach. The Digital Menu for Restaurants project aims to improve this situation. Consumers today are adapted to interact with computer systems in many aspects of their day today life. Sometimes we even prefer them to traditional methods, especially when they help to provide fast and convenient service. Enable a super efficient wireless ordering process for your fine dines restaurant, garden restaurant, cafe or food court. Staff can be more attentive to the guest needs rather than expend energy running back and forth to the kitchen. We can see these automation system partially when you for KFC or McDonalds or Dominos. There when we order they are noted in the system and it is sent to their kitchen. When our order is ready our token number is announced. With this system we don't need to wait for the server to take the order. A tab is provided with menu instead of a paper menu.

Index Terms –RFID Reader, RFID Tag, Arduino, Bluetooth etc.

1. INTRODUCTION

There is a major scope in enhancing the visual experience by replacing paper menu with electronic menu card. To avoid delay in ordering process, wireless communication can be used here to replace the waiter who manually delivering the order to kitchen. Currently due to a increased literacy, awareness of advance communication technology among people, they are crazy about the latest technology and they are eager to automated their routine tasks. So introducing new technology and new approach in conventional food ordering system will lead to improved experience of a customer. It reduces customer's time for waiting. So customers don't have to wait for the waiter to take the order. Thus it saves the time. This project is users friendly and fast. For this wireless notice board project 16×4

LCD acts as display device. ESP01 module acts as a communication device. Push button output will go to arduino device then after processing arduino it will send message to LCD. Message will also go to ESP01 module through UART communication that is RX and TX. The code where written in such a way once the message reached it will display it in the LCD. Wi-Fi technology is being used to send message in working area.

The advancement in technology has greatly influenced the business transactions. The adoption of digital technology has led to automation in the hospitality industry. Business in hospitality industry such as restaurants can be improved with the help of digital systems. The competition in restaurant business have increased with the advancements in food ordering techniques. This project aims to automate the food ordering and billing process in restaurant as well as to improve the dining experience of customers. Here we discuss about the design & implementation of Smart Restaurant ordering system with real time with customer's feedback for restaurants. The system on user's table will have all the details of his account as well as menu. The order details from the customer's table are updated and

subsequently sent to kitchen after swiping the RFID card from which the amount will be deducted. The restaurant owner can manage the menu modifications easily. Touch screen provides fast access to any and all types of digital media, with no text bound interface getting in the way. Faster input can mean better service. Touch screens are practical in automation which has become even simpler with advancement in technology.

2. PROBLEM STATEMENT

The traditional food ordering system is entirely a manual process which involves waiters, pen and paper. The customer has to wait for waiters to take the order. The waiter notes down the orders from customers, take these orders to kitchen department , update them in records and again make the bill. Though this system is simple; it may involve errors while noting down the orders as well as in making calculations. Even it is sometimes difficult to interpret the handwriting of the waiter. To overcome these limitations in manual system, some systems are being developed to automate food ordering process. By using Smart Restaurant Ordering System, the ordering system is made more efficient and can help the manager to avoid human error and enhance business development. In this system, ordering transaction is a step by step process to make the transaction more systematic and system can guide the staff to avoid any order mistakes. The transaction between waiters and restaurant departments and also between waiters and cashier will be systematic and efficient. Besides the efficiency, this system can give better quality of service to customers and will attract more customer to get this quality services.

3. LITERATURE SURVEY

6. IMPLEMENTATION

A) Pixel Point

PAR Pixel Point Company uses this software for managing the restaurant. The system consists of the company's software and hardware. This network system is compatible to TCP/IP, enabling information sending through both wireless and conventional networks [1].

B) LRS Restaurant Server Pager Starter Kit

This system improves the food-ordering service quality in restaurants and reduces the waiting time of clients. The on-site paging system is used at UHF frequency or the frequency range of 467 MHz for sending the order data [2].

C) Billpro Pocket and Billpro POS for Restaurant

This system receives a client's order and makes a list by means of the designed client's template in the kitchen. The food ordering device is portable. The waiter takes the client's order and sends it to the client's template in the cook room [3].

D) Restaurant System by Ericsoft This program administers and manages general restaurant services wirelessly. Food ordering is taken by waiters who then order the cashier, who in turn tells the cook room what to cook [4].

5. METHODOLOGY

A. Existing System

The existing system, the design implementation using ARM9 s3c2410. The performance which is 3 times lesser when compared with Arduino Micro controller. In the case of multiple interrupt, the response time is quite higher. It is not configurable.

B. Proposed System

By gathering each benefit from various previous works, this paper aims to implement a restaurant ordering system which enables each customer to wirelessly order his own choice of food straight from the e-menu shown on an embedded touch screen on each customer table without bothering any staff and send the order straight to the cook room. The whole food process can also be monitored via this LCD. The proposed system consists of three main components, namely, Push Buttons embedded on the customer table, a main server and another touch screen in the cook room, shown in Figure 1. When the customer orders food, the data is sent to the server, which will compile the data in order to prioritize the customers and to group the orders before sending the order to the cook room. The status shown at the client's table is „waiting for food“.

Table Section

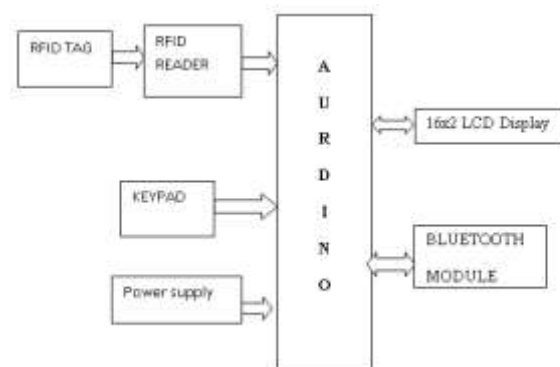


Figure 1: Block of Table Mode

Kitchen Section

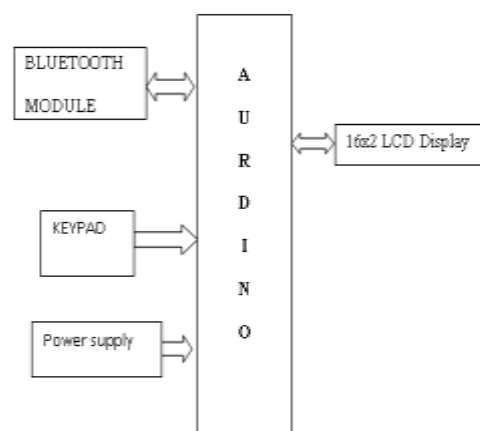


Figure 2: Block of Kitchen Mode

The system consists of microcontroller, which is interfaced with input and output modules. The controller acts as an intermediate medium between both of them. Hence the controller acts as control unit. The input module is nothing but the touch screen sensor which is placed on TFT display to have graphical image display, which takes the input from the user and provides same to the microcontroller.

The RF module is output module which makes a communication between system at a table and a system at a ordering department. The controller also takes the responsibility to display the menu items on a graphical LCD. The selected items will be displayed on along with table number at the receiving end. These selected items will be confirmed by receiving section where and the costumer will be acknowledged. The costumer will also be updated about the progress in order. Also the customer will pay the bill using his authenticated RFID card. The order will be placed at kitchen section after the customer pays the bill. The bill will be paid with the help of RFID card. The customer needs to swipe the RFID card at the billing module then the amount or the total cost of the selected items will be deducted from the user account. And only after the deduction of amount the order will be placed in the kitchen section where it will be confirmed and the customer will be acknowledged with the confirmation of order.

A. Arduino Mega 2560

It is an open-source computing platform based on a simple i/o board and a development environment. Arduino can be used to develop stand-alone interactive objects or can be connected to software on your computer. The open-source IDE can be downloaded for free (currently for Mac OS X, Windows, and Linux) Arduino Mega is composed of Atmega 2560 microcontroller It has 54 digital input/output pins, sixteen analog inputs, four UARTs (hardware serial ports), a crystal oscillator of 16 Mhz, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything that is needed to support the microcontroller.

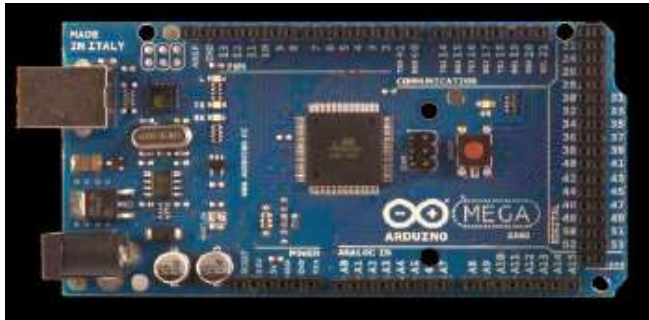


Fig.3: Arduino Mega 2560 Development Board

B. Push Button Switch

Push Button Switches consist of a simple electric switch mechanism which controls some aspect of a machine or a process. Buttons are typically made out of hard material such as plastic or metal.



Fig.4: Push button Switch

C. Liquid Crystal Display (LCD)

A 16x4 LCD display is very basic module and is very commonly used in various devices and circuits. These modules are preferred over seven segments and other multi segment LEDs. The reasons being: LCDs are economical; easily programmable; have no limitation of displaying special & even custom characters (unlike in seven segments), animations and so on.

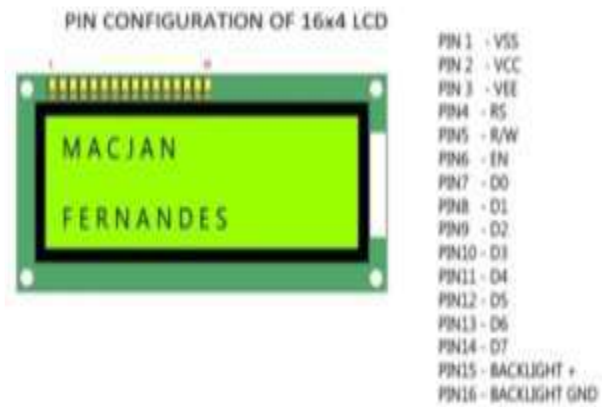


Fig.5: LCD Display

D. RFID

RFID Radio Frequency Identification uses a semiconductor (micro-chip) in a tag or label to transmit stored data when the tag or label is exposed to radio waves of the correct frequency. The acronym refers to small electronic devices that consist of a small chip and an antenna. The chip typically is capable of carrying 2,000 bytes of data or less. The RFID device serves the same purpose as a bar code or a magnetic strip on the back of a credit card or ATM card; it provides a unique identifier for that object. And, just as a bar code or magnetic strip must be scanned to get the information, the RFID device must be scanned to retrieve the identifying information.

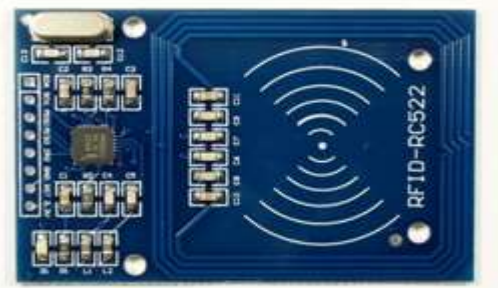


Fig.6 RFID Reader

4. EXPERIMENTAL RESULTS

When the “menu” button is pressed, the menu Will appear on the touch screen as in Figure1.

- Send the food orders to the kitchen.
- Receive notification from the kitchen Figure2
- Waiters can be called using the table device by pressing the “Call Waiter” button, which will immediately activate the buzzer.



Fig.7: Experimental Setup



Fig.8: LCD Showing the status of menu to the customer at table section



Fig.9: LCD Showing the ordered menu to the kitchen section once order given by the customer



Fig.10: LCD Showing the Bill to the customer



Fig.11: LCD Showing the ATM card place to the customer



Fig.12: LCD Showing bill paid success to the customer

5. CONCLUSION

There is great advancement in technology due to its features like low cost and ease of use. This technology allows us a faster and more convenient access to the world. The Restaurant automation is a revolutionary concept & is sure to take people by surprise. This system is convenient, effective and easy thereby improving the performance of restaurant’s staff. It will also provide quality of service and customer satisfaction. It will undoubtedly change the way people dine & their dining habits. It would lead to increased revenues; give the customer a better insight into the kind of food they wish to have, give them a great touch experienced.

REFERENCES

- [1]. "Automated food ordering system", International Journal of advanced Research in Computer science and Software Engineering, ijarcsse February 2013.
- [2]. "Touch screen based menu ordering & displaying system for restaurants". IJCET. Vol.3, pp. 297-307, July./Sept.2012.
- [3] J.Mustafa, R.Kothari, R.Naik, and A.Slatewala," Touch & Dine A Multi-Touchable Restaurant System," in UACEE International Journal of Computer Science and its Applications-Volume 1: Issue 1 [ISSN 2250-3750].
- [4] Multi-Touch information retrieved from <http://www.scribd.com/doc/28414813/Multi-Touch-Technologies> on 10 September 2012
- [5] J. Purnama, et al. "Application of Order Management System in Restaurants", Seminar Nasional Aplikasi Teknologi Informasi 2007, Yogyakarta, 16 June 2007 (SNATI 2007) ISSN: 1907-5022.

[6] N. A. Samsudin et al., "Customizable Wireless Food ordering System with Real time customer feed-back ".2011 IEEE Symposium on Wireless Technology & applications(ISWTA), September 25-28,2011, Langkawi, Malaysia. .

