

Digital Smart System for Restaurants using Wireless Technology

Mr. M. D. Ramteke, Ms. Anushri Pahune, Ms. Akansha Sahu
Datta Meghe Institute of Engineering, Technology & Research,
Sawangi(Meghe), Wardha, India

ABSTRACT— The frequent growth of wireless technology and mobile device In this era creating a huge impact on our life. Some Early effects have been made to combine and utilize both of these technologies in advancement of hospitality industry. This research work aims to automate the food ordering process in restaurants, and also improve the dining experience of customers. In this paper we discuss both the design and implementation of automated food ordering system with real time for restaurants. This system implements wireless data access to servers. This total procedure will be build up by using ZIGBEE system with wireless technology. By using ZIGBEE technology we can reduce the manpower in hotels and also reduce the wastage of time. Here we developed one digital menu card, by select the items from menu, list display in LCD, select one item then enter to transmit. Order data to the server point. In receiver section, receive the order from respective table number and selected item then server go to serve respect item to respective table customer.

KEYWORD: MICROCONTROLLER, ZIGBEE, LCD, KEYPAD, MENU CARD.

I. INTRODUCTION

Now a day there is a vast enhancement in digital equipments and wireless expertise technology. This has increased the potential of digital devices as well as there is continues growth in wireless technology. The requirement of user's has increased and they want connection to anything from anywhere. This system is focusing on ordering process of food items. In conventional food items the customer has to do self service. Supposing if there is only one brand then the waiter will be taking the order which is more prone to human errors especially during peak hours. So, in our system we are using keypad as a menu to place order wirelessly, trough which we have overcome the given points. Now the customer can fix order to one or more than one food item by sitting on its table. Therefore it is very suitable for restaurant & time saving. It enables one to interact with what is displayed directly on the screen, where it is displayed, rather than indirectly call the waiter & ordered the menu. These devices also allow multiple users to interact with the keypad simultaneously. Touch based interfaces have been around for a long time in consumer electronic devices, and even longer in research labs, but it has only been recently that

The wider public has taken a keen interest in this mode of Human-computer interaction. The keypad is an assistive technology. This interface can be beneficial because it is time saving. The purpose of this project is to introduce a wireless Zigbee based ordering systems for restaurants. Compared to traditional restaurant system, by using this system customer get faster and better service, restaurant staff co-operates more efficiently with less working mistakes and enterprise owner thus receives more business profit.

II. BLOCK DIAGRAM

Transmitter section is used for ordering from the menu. A keypad is used to select the items. Four rows of the keypad are connected to PORT A of the microcontroller (ATmega16), while the three columns are connected to PORT D.

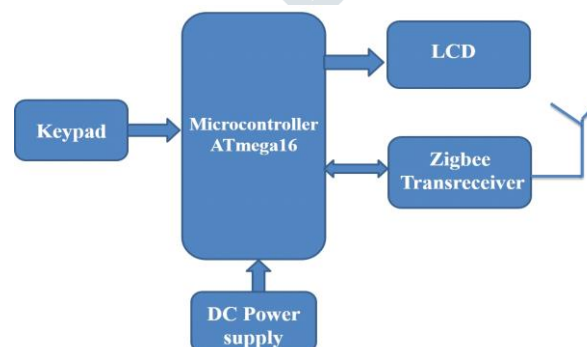


Fig.1.Transmitter

Zigbee transmitter is connected to the transmitter and receives pins of the microcontroller (ATmega16). Here the transmitter pin of the microcontroller is connected to the transmitter of the Zigbee transmitter module. LCD is also connected in order to view the selected food items.

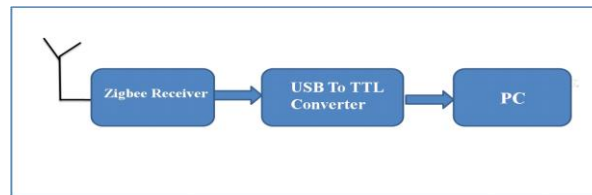


Fig.2.Receiver

The Microcontroller is the heart of the complete system. It is actually responsible for all process being executed. It will monitor & control all the peripheral devices or components connected in this system. The controller here we use will be PIC16F877A family.

Push button Switches consist of a simple electronic 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.

Zigbee is for low data rate, low power applications and is an open standard. This theoretically, enables the mixing of implementations from different manufacturers, but in practice, Zigbee products have been extended and customized by vendors and, thus, plagued by interoperability issues. In contrast to Wi-Fi networks used to connect endpoints to high-speed networks, Zigbee supports much lower data rates and uses a mesh networking protocol to avoid hub devices and create a self-healing architecture. Zigbee networks can form autonomously, based on connectivity and function.

One of the most common devices attached to a micro controller is an LCD display. Some of the most common LCD's connected to the many microcontrollers are 16x4. This means 16 characters per line by 4 lines and 20 characters per line by 4 lines, respectively. The LCD requires 3 control lines as well as either 4 or 8 I/O lines for the data bus. The user may select whether the LCD is to operate with a 4-bit data bus or an 8-bit data bus.

Heat transfer through and by means of matter not involving motion of the matter. The amount of heat transfer depends on the thermal conductivity of the material, its cross-section area normal to the direction of the heat flow and the temperature gradient or differential. Heat transfer by moving matter. The fluid used for convection absorbs the heat by conduction and then moves away carrying the heat within it.

III. CIRCUIT DIAGRAM

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 keypad sensor which takes the input from the user and provides same to the microcontroller. The Zigbee 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 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 online transaction.

The circuit diagram of transmitter section is shown in Fig, built around ATmega16 microcontroller, a LDC module, a Zigbee module and a keypad. Microcontroller (ATmega16) acts as brain which controls all the other electronic components. LCD is configured in 4-bit mode used to view the selected item from the menu. LDC communicates with microcontroller using port B.A keypad is used to select the items from menu. The row pin connected to port C where column pin is connected to port D as shown in circuit diagram. Zigbee module is used as communication link between transmitter circuit and receiver circuit. The job of data transmission is done by Zigbee module, it transmit the data what user gives by pressing keypad.

The working of receiving unit is same as transmitting unit but except keypad because it located in kitchen and no need of inputs. The order given by user is received by Zigbee module connected in receiver module. The received data is displayed in LCD which is also configured in 4-bit data mode.

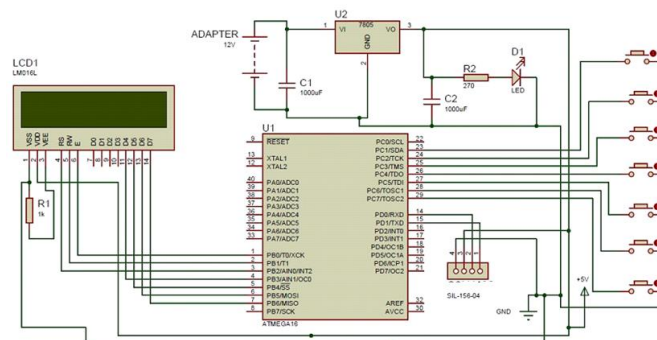


Fig.3.Circuit Diagram

For Smart Restaurant Food Menu System project LCD acts as display device. The code where written in such a way once the message reached it will display it in the LCD. Bluetooth technology is being used to send message in working area. Keypad verifies resistive values and sends to PIC controller. The PIC controller transmits appropriate ordered menu to kitchen system via Zigbee modem the transmitted menu data will be received by kitchen Zigbee module and fed to Pc.

IV. FLOW CHART

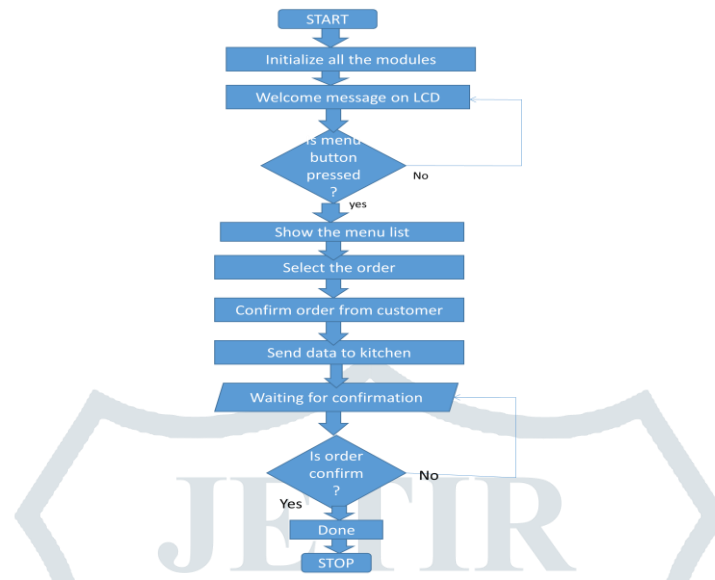


Fig.4.Flow chart

V. APPLICATION

- **Hotels:** This system is useful for the customer stays in hotel. They can place there order even from room and the order will be delivered to them.
- **Restaurant:** In this system customer orders the food by using Touch pad. They can order the food by their choice.
- **Railway:** In railways they can order their food as per their choice by this system with detail of there sit number and the order will be delivering to them.
- **Cinema:** While placing order the customer needs to stand in a queue wait for its turn. This system will helpful to place the order and reduces the time consume.

VI. CONCLUSION

In our system we are using keypad as a menu to place order wirelessly by using Zigbee .Now the customer can fix order to one or more than one outlets by sitting on its table. When user sends his need through keypad, then micro controller transmits that information through Zigbee transmitter. The information received by the Zigbee receiver will be displayed on LCD monitor. Then finally the serve can supply items to the customer.

The system would attract customers and atomized system will reduce confusion at food pick up counters. And also adds to the efficiency of maintaining the restaurant's ordering and billing sections. The menu is displayed on the LCD. User should press the corresponding number of the selected item from the display. It is written in such a way that one can select number of items at a time

VII. ACKNOWLEDGMENT

Every research work has support, guidance and help of many people and it becomes the important responsibility of the author to express deep sense of gratitude for the knowledge required for the successful completion of our research work. With all respect and gratitude, we would like to thank all the people, who have helped us directly or indirectly to make our work complete.

REFERENCES

- [1] Noor Azah Samsudin, Shamsul Kamal Ahmad Khalid, Mohd Fikry Akmal Mohd Kohar, Zulkifli Senin, Mohd Nor Ihkasan, "A customizable wireless food ordering system with realtime customer feedback", IEEE, 2011.
- [2] Wenjuan Chang, Chunxiao Fan, Junwei Zou and Xiaoying Zhang, "Design of SCIP System for Push Services Based on Java Card", 978-1-4577-0321-8/11, IEEE 2011.
- [3] Mr. Sun Guiling and Mr. Qingqing Song. "Design of restaurant self-service ordering system based on Zigbee technology." IEEE 2010
- [4] Tan-Hsu Tan, Ching-Su Chang, and Yung-Fu Chen, "Developing an Intelligent e-Restaurant With a Menu Recommender for Customer-Centric Service", IEEE Transactions on systems, man, and cybernetic, Vol. 42, No. 5, September 2012.
- [5] 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.
- [6] Prof. Mayur D. Jakhete, Piyush C. Mankar "Implementation of Smart Restaurant with e-menu Card" G.H.R.I.E.M, Jalgaon India @ June 2015
- [7] Patel Krishna M., Patel Palak P., Raj Nirali R., Patel Lalit A. "Automated Food Ordering System". ITM UNIVERSE, Jarod, Vadodara @ April 2015
- [8] M. Asif M. Sabeel, Mujeeb-ur-Rahman, Z.H. Khan "Waiter Robot-Solution to Restaurant Automation" Riphah International University, Islamabad @ November 2015
- [9] Suresh G. Aldar, Amit P. Kamble, Rahul R. Varale, Prof. Pratik P. Kotekar "Android Based Ordering System For Restaurant" DMGOI, Kolhapur (India) @ March 2016
- [10] Priya Jadhav, Priyanka Teli, Snehal Korade, Varsha Chavan "Implementing Digital Restaurants and Inter-Restaurant Navigation Using Smart Phones" IJCSMC 2015
- [11] Ashutosh Bhargave, Niranjana Jadhav, Apurva Joshi, Prachi Oke, Prof. Mr. S. R. Lahane "Digital ordering system for restaurant using android" IJSRP 2013
- [12] Sadiq Basha., Shanthi. A., Madumitha. P. "Wireless Menu Ordering System for Restaurant", IJIRSET 2015.
- [13] Piyush C. Mankar "Implementation of Smart Restaurant with e-menu Card", IJCA 2015
- [14] Patel Krishna M., Patel Palak P., Raj Nirali R., Patel Lalit A. "Automated Food Ordering System" IJERD 2015.
- [15] Ashwini Bankar, Sheeja S. Suresh "Intelligent Restaurant - Menu Ordering System."
- [16] Dr. Shaik Meeravali 1, K. Sudhakar 2, M. Swathi "Design of the Restaurant Self-Ordering System Based on Zigbee Technology."
- [17] Kunal P. Gundle, Anuja A. Harshe, Kajol B. Kinage, Niraj L. Ghanawat "Digital System for Hotel Using Wireless