© 2018 IJSRSET | Volume 4 | Issue 7 | Print ISSN: 2395-1990 | Online ISSN : 2394-4099
Themed Section : Engineering and Technology

Smart Food Ordering System Using Zigbee with Customer Feedback

Md Ashraf
B.Tech ECE,
Lords Institute of Engineering & Technology,
Hyderabad

Syed Saifuddin
B.Tech ECE,
Lords Institute of Engineering & Technology,
Hyderabad

Syed Saif
B.Tech ECE,
Lords Institute of Engineering & Technology,
Hyderabad

Ilyas Khan
B.Tech ECE,
Lords Institute of Engineering & Technology,
Hyderabad

B.Sanjai Prasad
Assistant Professor ECE,
Lords Institute of Engineering & Technology,
Hyderabad

Kiran Kumar
Assistant Professor ECE,
Lords Institute of Engineering & Technology,
Hyderabad

ABSTRACT

A new design scheme of hotel menu card and ordering system applied to all range hotels is proposed in this paper. The 802.15 Zigbee technology is used as wireless communication standard in this paper. There is no need of waiter to take order from table according to system proposed in this paper. The proposed system will have two sections; one section is customer section where the customer and other is billing or supply section. In customer section customer will look for menu and order its menu using keypad. In billing and supply section order will be displayed on their monitor. The communication of customer section to billing or supply section will be done by ZigBee. The proposed system is easy to install and gives a rich environment to the hotels or restaurants.

Keywords : ARM7 ,ArduinoATmega328, RFID,ZIGBEE Keypad, lcd.

I. INTRODUCTION

In today's world we have automation in all sectors except menu card and ordering system. In hotel and catering industry new technologies are always welcomed and are being used by the people. Billing standards are already upgraded in restaurants by using the computers and giving printed bills instead of handwritten. The customers of restaurants or hotels are always concerned of the time consumed along with the money and taste. The older methods of ordering menus in the hotel industry includes more human efforts for getting the order from customer by giving them the printed menu cards on their table, as well as billing is a great task by giving a special attention to their orders. The menu card and ordering System using a LCD for menu and display and ordering menu using keypad will get a great response from hotels. As it will save time of customers, and it will reduce the human efforts of waiter of collecting menus from customers from their table along with that, waiters will get rid of their great task of giving special attention on each table. This system is smarter to communicate. ZigBee will provide a faster and

accurate data transmission in a low cost. The system which is proposed in the paper can be used even by an illiterate people. This system can be used by all range of hotels and restaurants, as its cost of installation is cheaper due to the use of ZigBee communication which is used as a wireless interface and LCD and Keypad as customer interface.

II. BLOCK DIAGRAM

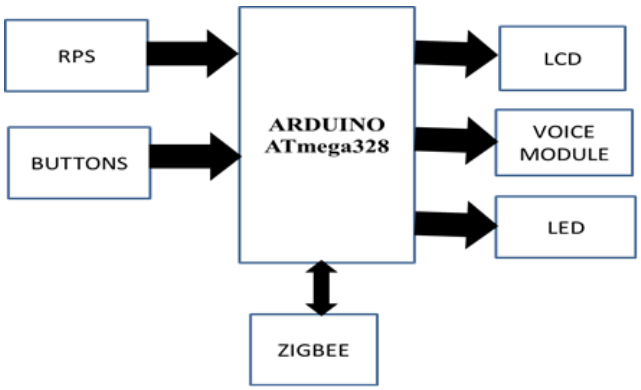

Figure 1

III. HARDWARE DESIGN

A. ARM7(LPC2148)

ARM7 LPC2148 Microcontroller Socket is used with LPC2148 Pro Development Board. It is a standalone board for LPC2148 microcontroller. It has 12MHz crystal for system clock and 32KHz crystal for RTC. It has power on reset circuit.

LPC 2148 is widely used IC from ARM7 family. It is preloaded with many inbuilt peripherals making it more efficient and a reliable option for beginners and as well as high end applications developer.

LPC 2148 needs minimum listed hardware to work properly.

- ✓ Power supply.
- ✓ Crystal oscillator.
- ✓ Reset circuit.
- ✓ RTC
- ✓ UART.

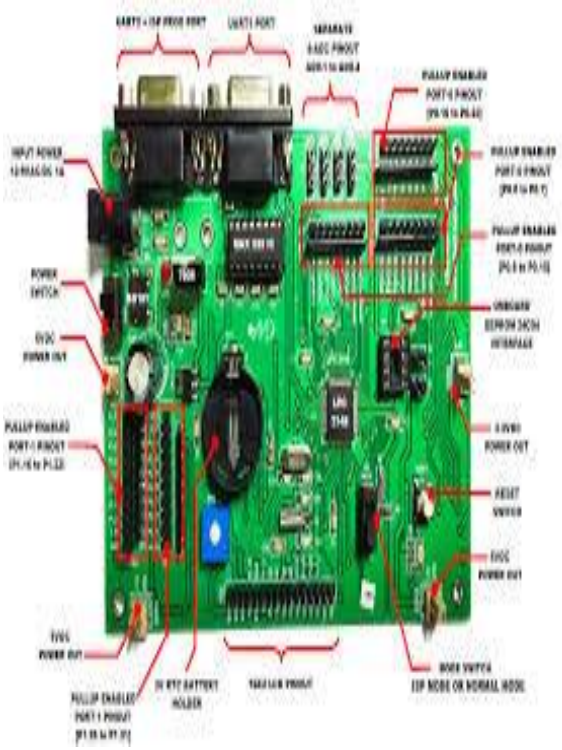

Figure 2.LPC2148

B. ARDUINO UNO

The Arduino Uno is a microcontroller board based on the ATmega328. It has 14 digital input/output pins (of which 6 can be used as PWM outputs).

6 analog inputs, a 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-

DC adapter or battery to get started.

- Microcontroller : ATmega328
- Operating Voltage : 5V
- Input Voltage (recommended) : 7-12V
- Digital I/O Pins : 14
- Analog Input Pins : 6
- DC Current per I/O Pin : 40 mA
- DC Current for 3.3V Pin : 50 mA
- Flash Memory : 32 KB (ATmega328)
- Clock Speed: 16 MHz

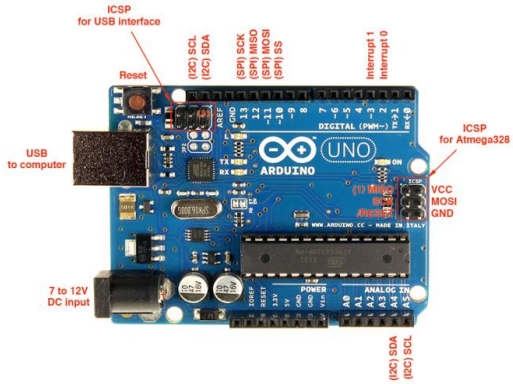

Figure 4. Arduino ATmega328

C. ZIGBEE

The IEEE 802.15 standard is named as ZigBee. It is a wireless communication protocol that operates in the frequency range of 2.4GHz. The reason behind choosing the ZigBee as wireless interface is, it is an open source communication standard. No licensing for band usage is required. It use the OQPSK modulation technique, where the phase of the message signal will vary in terms of its phase with 4 angles. The ZigBee is also faster in data transfer with 20 to 250Kbps based on the frequency used. The major preferable feature in ZigBee is, the Zigbee devices can be used as either receivers or transmitters. So there is no need to use the separate devices for transmission and reception. The operating range of a ZigBee device practically tested is nearly 50m which is an enough range for restaurant geographical measurements.

Figure5. zigbee

D. RFID

Radio-Frequency Identification (RFID) is a device which is used to communicate with RFID tags by receiving and transmitting signals.

A RFID system is made up of two parts: a tag or label and a reader. RFID tags or labels are embedded with a transmitter and a receiver. The RFID component on the tags has two parts: a microchip that stores and processes information, and an antenna to receive and transmit a signal. The tag contains the specific serial number for one specific object. To read the information encoded on a tag, a two way radio transmitter- receiver called interrogator or reader emits a signal to the tag using an antenna. The tag responds with the information written in its memory bank. The interrogator will transmit the read results to an RFID computer program

Figure 6. RFID Reader

E. KEYPAD:

A keypad is a set of buttons arranged in a block or "pad" which usually bear digits, symbols and usually a complete set of alphabetical letters. If it mostly contains numbers then it can also be called a numeric keypad. We are using 4x3 matrix keypad .It contain 4 rows and 3 columns. A matrix keypad consists of a set of push buttons or switches .Which are arranged in a matrix format in rows and columns.

This is a matrix of keys which responds to specific row and column. In case of matrix keypad both the ends of switches are connected to the port pin. The design has demand for a 4 × 3 matrix keypad i. e. four rows and three columns, altogether 12 keys, where ten keys used for numeral input and remaining two used for adjusting the real-time parameter.

Figure 7. 4*3 matrix keypad

F. LCD

LCD (Liquid Crystal Display) screen is an electronic display module. A 16x2 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.

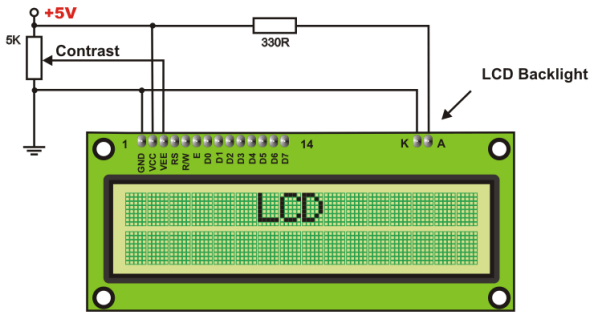

Figure 8. 16*2 LCD

IV. WORKING

A.TRANSMITTER SECTION

The transmitter section consists of a ARM7 (LPC2148) micro controller, keypad along with LCD and Zigbee module.

Transmitter section will be placed on each table. The Zigbee module makes the communication between the system at the table and the system at the kitchen section. The Zigbee module covers up to 50m. According to the user's requirement, they will select the menu item and quantity which is available in LCD.

B.RECEIVER SECTION

The receiver section consists of the Arduino ATmega328, LCD, Zigbee module, voice module, led's and buttons. The Zigbee module receives the ordered information from the transmitter Zigbee and it is displayed on the LCD. If the ordered items are not present in the kitchen, then the chef will leave a message via voice and led indication, whether the item is present or not. If the ordered items are available in kitchen then the items will be supplied.

V. CONCLUSION

The implemented system of restaurant menu ordering system is a modern and smart solution for menu ordering methods in any kind of restaurant. The System will reduce the manual efforts and also gives more accuracy in calculating the bill for each individual table. It is also a low cost alternative to be used by middle and low level restaurants also. In this paper, a high performance-cost ratio wireless handheld ordering terminal is proposed, which is based on the hardware platform of ARM7, and ZigBee wireless communication technology. The ordering terminal has the advantages of simple structure, stable operation, low power consumption and friendly interface, thus it has bright market prospect.

VI. REFERENCES

[1]. ZigBee Alliance Document 053474r06, ZigBee Specification, Version 1.0,2005

[2]. Liu,C.L,Layland,J, 'Scheduling algorithms for multiprogramming in a hard real-time environment,'Journal of the ACM, vol. 20,

[3]. Hangci Zhou, Guangwen Wu, 'the programming based on embedded real time operating system,' Beijing: Beihang University press, 2006.

[4]. Mikko Kohvakka, Mauri Kuorilehto, Marko Hannikainen, and Timo D.Hamalainen, 'Performance analysis of IEEE 802.15.4 and

ZigBee for large-scale wireless sensor network applications,' Proc. the 3rd ACM international workshop on Performance evaluation of wireless ad hoc, sensor and ubiquitous networks, ACM Press, 2006, pp.48-57, doi:10.1145/1163610.1163619.

[5]. Khairunnisa K." The Application of Wireless Food Ordering System" in MASAUM Journal of Computing, Volume 1 Issue 2, September 2009

[6]. N.M.Z. Hashim "Smart Ordering System via Bluetooth" in International Journal of Computer Trends and Technology (IJCTT) – volume 4 Issue 7–Month 2013

[7]. Mudit Ratana, Anand Vardhan Bhalla Comparative study of various touchscreen technologies International Journal of Computer Applications (0975 – 8887) Volume 6– No.8, September 2010