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RESEARCH ARTICLE

COST EFFECTIVE AUTOMATED MENU ORDERING SYSTEM.

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Abstract

Automation is the Technology Concerned with Application of Mechanical, electronics & computer based systems to operate & control production. Due to advancement in technology we have seen automisation of many things. We have seen an automatised vending machine which will serve a hot or soft drinks, Chocolates & many things. There is automation of tickets on railway station. So into day's world due increased demand and competition we need to serve the people as user friendly as fast as possible. In restaurants menu cards are available on each table. we can refer it & place our order to waiter. But we never noticed disadvantages of this conventional method. You need to wait for the waiter to attend to you. Even it becomes difficult for the restaurant manager to keep the changing prices on menu card. At the same time adding the new menu to the same card becomes tedious job for anyone who is responsible for this job since changing menu card within less time may result in cost rise. To overcome these problems, this system installed on every table for ordering the menu.

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Introduction:-

Utilizing information technology to upgrade the service quality and management efficiency has always been received great concern in information development of catering industry. E-Menu Ordering System can help catering enterprises reduce the costs of human resources, improve work efficiency and leap forward from the external image to the internal service quality. Using wireless modules, can save the development costs. However, the user interfaces are not friendly, input errors easily occurs, and the display is single color. And besides, because of using infrared ray communication, transmission range will be extremely limited. The analysis shows that the scarcity of wireless ordering system for the medium-sized hotels directly leads to promote slowly. Through comparing with different grades of E-Menu ordering systems, the key difference lies in selection of ordering terminal and wireless communication. In this paper, the development of wireless handheld terminal is based on the Software-hardware platform of Atmega8 and using ZigBee short-range wireless communication technologies.

Gap Analysis:-

Existing System:-

In the existing system, order is taken from the customer manually by a written note or by an i-pad which needs a person to go near the table, show the menu card and ask for the order. After placing the order, the person will pass the information to the concerned section and the order is delivered accordingly to the customer.

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Proposed System:-

In the proposed system, Zig-bee is used to transmit the data from transmitter to the receiver. There are two Micro-controllers each at transmitter (customer table) and receiver (kitchen). Whenever a customer comes to a table, they can select their order with the help of a LCD and a keypad provided. As soon as the customer selects the item, it will be displayed on the LCD provided in the receiver section.

Components:-**Atmega8:-**

It is an 8 bit controller. In this project peripherals like UART, EEPROM are used. EEPROM to store the menu and UART to communicate.

LCD:-

A 16*2 LCD is used here. It is used in 4 bit mode to reduce the usage of number of pins in the controller.

Keypad Panel:-

There are two types of touch pads resistive and capacitive. A capacitive touch pad is most commonly used..

Zigbee/XBEE:-

ZigBee network is defined by the ZigBee Alliance and based on the IEEE 802.15.4 standard, which is target data RF embedded applications that require a low data rate, long battery life and secure networking. It is intended to operate in the 2.4GHz unlicensed ISM band [1-2]. There is no large numbers of data which need to convey between the wireless ordering terminal build-in ZigBee module and the center node, and because of having no high requirement of data rate, so ZigBee is well suited for wireless ordering system. Each ZigBee modules includes an IEEE 802.15.4-compliant radio, an 8051 microcontroller, programmable I/O, flexible

Antenna and range solutions, Transmit range is up to 300m, which can meet the demand of wireless ordering system completely.

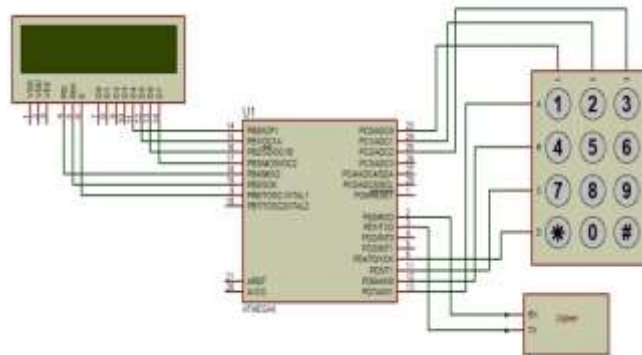
Circuits:-**Transmitter:-**

Figure 1.1:- Transmitter.

A keypad is used to select the items. Menu is displayed on LCD. Instead of keypad one can use the touch panel.

A number is indicated for each item in the menu. It is selected by using keypad. Incase if touch panel is used there is no need of using a keypad

A Zigbee transmitter is used to transfer the menu.

Receiver:-

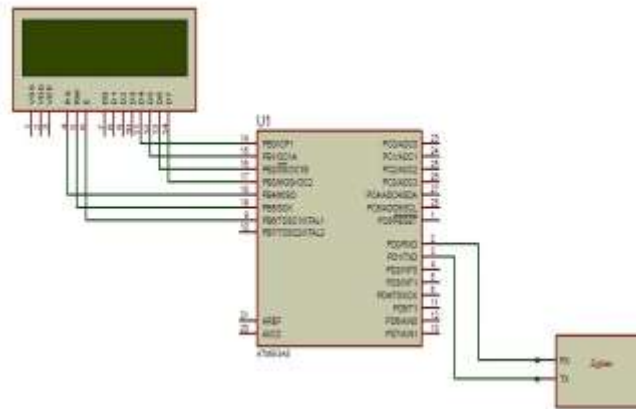


Figure 1.2:- Receiver

Receiver is arranged in the kitchen. Receiver section consists of a micro controller, Zigbee receiver, LCD.

Multiple receivers can be connected on the zigbee network. Zigbee defined has a rate of 250kbits/s.

On the receiver side ordered menu is received from multiple transmitters. Here I am going to show one transmitter and receiver.

Working:-

E Menu is stored in the eeprom of the AVR microcontroller.AVR has 512 bytes of eeprom internally.This is displayed on the LCD.Here LCD is used in 4bit mode to reduce number of pins usage.Data from EEPROM is fetched by the micro controller and is displayed on the LCD.By using the key pad one should select the menu.Suppse 1.Soup 2.Starters 3.Main course is displayed, the user should press 1 from keypad and select the item again and press #.Thus the order is transferred to the receiver through zigbee.ZIGBEE is high level communication protocol using small, low-power digital radios.

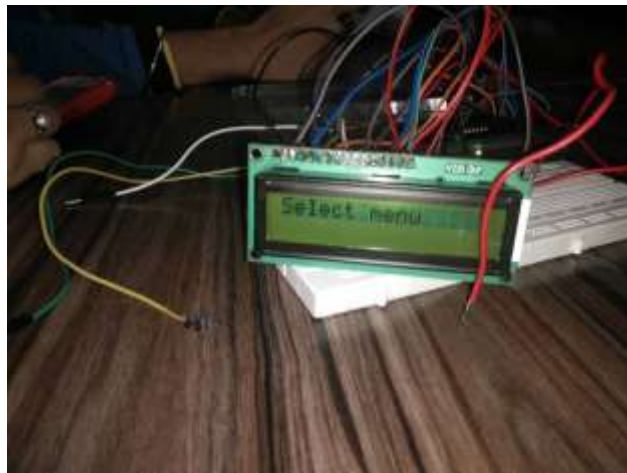


Figure 1.3:- Menu selection

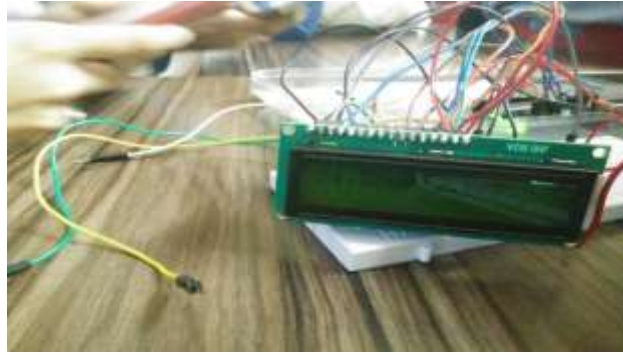


Figure 1.4:- Selecting the Dish



Figure 1.5:- Receiving section

Conclusion:-

Nowadays, most of the people have enough knowledge about computers, due to which our project can come handy and prove useful for people of all classes because it is simple, fast, and appealing; thus attracting more and more customers. By using such systems at the restaurants, it will be easy and much comfortable to place any kind of order of our choice for both customers' as well as for the management staff. However it will also reduce the number of staff in a hotel; which reduces the cost as well as reduces the mistakes; which can be caused by them. This system will also help the customers to place right order for any kind of cuisine by simply browsing and survey about the various dishes before placing an order and which in turn will help them to have their choice of Food/Dish without having any confusion and can enjoy their meals satisfactorily.

Future Scope:-

The main draw back of the system is it does not give the feed back of the requests to the user. This can be eliminated using GSM modem which sends the SMS messages about the requests to the manager when the responder does not respond to the requests of the user.

The system can also extend using smart card technology through which the bill payment can be done based on the smart ATM debit or credit cards directly. The printer can directly issue bills to the customers at tables only. This provides a time saving process and avoids a cash counter for it.

References:-

1. ZigBee/ Xbee Datasheet.
2. Atmel Corporation datasheet Atmega8.