

User Friendly Ordering System

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Abstract-Time is a commodity that needs to be managed effectively and efficiently in order to maximise productivity. As the process of doing business gets more complex and cumbersome, technology and automation become vital resources for the success and continue growth of sales organization. Through the strategic use of technology and automation, a sales of organization can increase the productivity and efficiency of it sale force by alleviating them from repetative and mundance administrative task associated with doing business. The biggest benefit of automation is that it saves labor. However, it is also to save energy and materials to improve quality accuracy and precision. The main intention of this reaserach is to automate the food ordering process in cafeteria. This paper gives the breif knowledge about the design and implementation of food ordering system. This system implements wireless data communication. We are providing each unit with a microcontroller based order placement unit. The unit have a keypad to browse through the menu. The menu and its cost will be display on the TFT screen connected to microcontroller. Thus the user can finalise the order using keypad. This order is to be transmitted to the central server located in the kitchen through wireless module which is place at both transmitter and receiver section. Multi[ple such slave units can be installed.

Keywords

Wireless Network, AVR Microcontroller Atmega16, Thin Film Transistor (TFT) display, RFID Reader.

I. INTRODUCTION

There is huge change in the way people access with technology due to the fast growth in information technology, mainly in wireless communication. To the believe of enhance customers dining experience, various practices have been done by the survivors by means of adopting digital communication and various advance techniques. The believe and satisfaction can be created in customers via communication. Hence we should improve the mode of communication by using effective and wireless network. Thus wireless communication based ordering system could be helpful in creating an impression and to earn the believe of

customers. Cafeteria service such as making reservations, processing orders, and delivering meals generally requires servants to provide customer information and then transmit orders to the kitchen for processing order. Then the customer pays the bill and the cashier collects the amount. Although this process is basic, it may significantly increase the servants workload and can also cause errors in menu ordering process of customers, especially when the customers rapidly increases during busy hours, which can highly degrade overall service quality. Hence to overcome the mentioned drawbacks, this paper is proposed on automation of food ordering system using microcontroller ATmega16 and CC2500 wireless module is being used in the system for interconnection provided with Thin film transistor display. This improves technology especially design for cafeteria to improve the service quality.

II. LITERATURE REVIEW

i Manual based system

Manual preventive maintenance systems have been around for many yeras. usually this are little more than a record of the planned maintenance done, with a card system being used to determine when it is next due. The main problem associated with manual based system is training and advising people to be disciplined enough to maintain the maintenance system. Along with this writing reports takes lot of time. There is inconsistency of data and it is also space consuming. Human errors also increases in manual based ordering system.

ii. Self Service Food Ordering KIOSK Technology-

This is another type of food ordering system used by restaurants which provides large screen for navigation. It replaces human assistants. Apart from this it has some drawbacks like regular maintenance at intervals, increases hardware cost and authorisation cost. It also increases cost of installation. Customers dont have to wait for waiter to take order but in perspective of hospitality, this system not proves itself worth. This doesn't seem comfortable even though it decreases order processing time.

iii. Q-Order-

Other advancement in food ordering system is Q-Order which is portable ordering system. This system is somewhat advanced because the Q-Order device uses wireless technology to communicate with kitchen. This system also involves waiter as in case paper based system. The main disadvantage of this system is that it is also an time consuming system. Here the customers have to wait for an arrival of waiter to take their order. The concept of human error also increases in this system and the customers may give an unsatisfactory response.

iv. Computerized Ordering system-

This system is somewhat similar to KIOSK technology in terms of order placing but differs from in terms of serving. Here the customer has to orally tell his order from the available menu to counter. At the same time name of customer is noted. This system looks quite advance because of use of computerized order but it becomes inconvenient to place order on the system when large number of people arrives at a time.

III. PROPOSED WORK-

The systems which are discussed above are time consuming and increases human error, which can be reduced to some extent but are unavoidable. The self service restaurants are more popular in metro cities which is the main problem with the self service ordering system, so this are rarely seen in small cities. The biggest disadvantage with zigbee based system is its high cost and limited range so it can't be utilized by small restaurants. Our aim behind designing this system is to implement a cost effective system which could be utilized by small restaurants that are unable to invest huge installation amount in these systems. The newly design system is emphasised on increasing user friendly equipment, low cost and easy navigation and also increase range of wireless communication and reduction in order processing time. This is implemented by using TFT screen, keypad, wireless module and microcontroller.

IV. PROJECT DETAILS-

A TFT (Thin film Transistor) Display Screen will be placed on each table. Now the TFT will act as a menu card displaying all the items available in the restaurant with their cost. The available menus to be displayed on TFT are programmed in Atmega16 microcontroller. According to customers requirement he or she will

select menu item and quantity by touching on Touchscreen placed above the GLCD. Instantly the order will be transmitted to and quantity by using keypad placed with the system. Instantly the order will be transmitted to receiving module in kitchen. Wireless module CC2500 is used for communication between transmitter on the table and receiver in cooking department in restaurant. Both transmitter and receiver contains microcontroller. The microcontroller which is at the receiver section takes the order which is displayed on TFT along with user table number. On the screen, there will always be option for billing which will directly calculate billing amount for given order. The bill will be printed automatically on the customer table through printer which is placed with the system.

This system will work as shown in figure

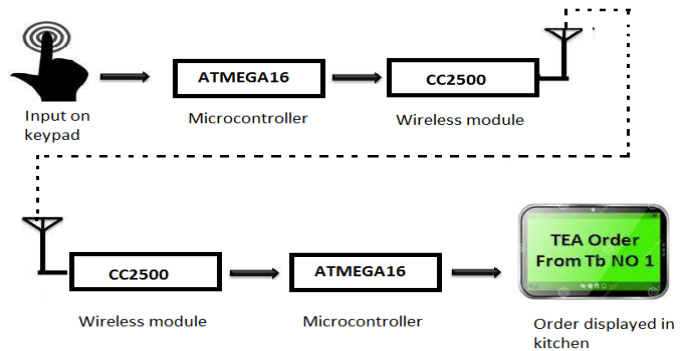


Fig.1 Overall working of proposed system

V. SYSTEM DEVELOPMENT

i. Microcontroller

The AVR core combines a rich instruction set with 32 general purpose working registers. All the 32 registers are directly connected to the Arithmetic Logic Unit (ALU), allowing two independent registers to be accessed in one single instruction executed in one clock cycle. By combining an 8-bit RISC CPU with In-System Self-Programmable Flash on a monolithic chip, the Atmel ATmega16 is a powerful microcontroller that provides a highly-flexible and cost-effective solution to many embedded control applications. The ATmega16 AVR is supported with a full suite of program and system development tools including: C compilers, macro assemblers, program debugger/simulators, in-circuit emulators, and evaluation kits.

ii. CC2500 module

CC2500 modules are used as a wireless modem in both the units. CC2500 wireless trans receiver can act a transmitter and receiver as well. The CC2500 is a low cost true single chip 2.4 GHz transceiver designed for very low power wireless applications. The circuit is intended for the ISM (Industrial, Scientific and Medical) and SRD (Short Range Device) frequency band at 2400-2483.5 MHz. The RF transceiver is integrated with a highly configurable baseband modem. The modem supports various modulation formats and has a configurable data rate up to 500 kbps.

iii. RFID Reader

Radio-frequency identification (RFID) is the wireless use of electromagnetic fields to transfer data, for the purposes of automatically identifying and tracking tags attached to objects. The tags contain electronically stored information. Some tags are powered by electromagnetic induction from magnetic fields produced near the reader. Some types collect energy from the interrogating radio waves and act as a passive transponder. Other types have a local power source such as a battery and may operate at hundreds of meters from the reader. Unlike a barcode, the tag does not necessarily need to be within line of sight of the reader, and may be embedded in the tracked object. Radio frequency identification (RFID) is one method for Automatic Identification and Data Capture (AIDC).

iv. TFT Display

Both transmitter and receiver section contains the TFT display as a output device for user interface the TFT display is connected with the microcontroller and communicating using Intel’s 8080, 16 bit interface. TFTs can be made using a wide variety of semiconductor materials. A common material is silicon. Other materials which have been used as semiconductors in TFTs include compound semiconductors such as cadmium selenide, or metal oxides such as zinc oxide. TFTs have also been made using organic materials, referred to as organic field-effect transistors or OTFTs.

v. Printer

A thermal printer is attached with the transmitter unit of the system to print the bills of the customer. The printer is taking commands over UART protocol to print bills. Bills can be paid on the delivery of the food to the delivery boy. Thermal printing process which produces a printed image by selective heating

coated thermo chromic paper. The coating turns black in the areas where it is heated, producing an image. Thermal transfer printing is a very different method that uses a heat-sensitive ribbon instead of heat-sensitive paper, but uses similar thermal print heads.

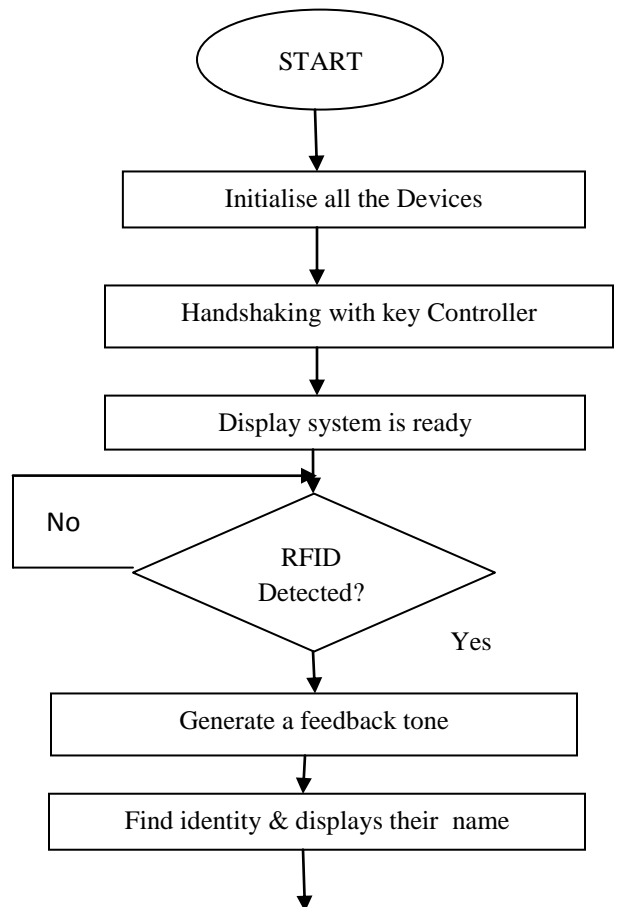
vi. Buzzer

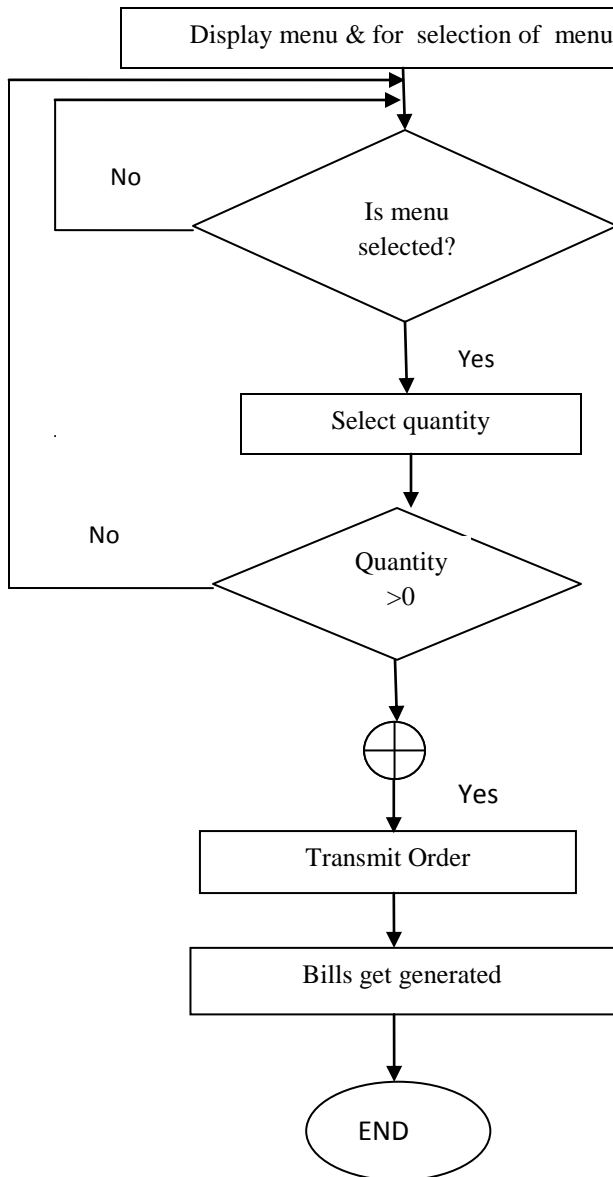
Buzzers are connected to both the units in order to provide necessary feedback and indications to the user. Early devices were based on an electromechanical system identical to an electric bell without the metal gong. Similarly, a relay may be connected to interrupt its own actuating current, causing the contacts to buzz. Often these units were anchored to a wall or ceiling to use it as a sounding board. The word "buzzer" comes from the rasping noise that electromechanical buzzers made.

VII. SOFTWARE DEVELOPMENT-

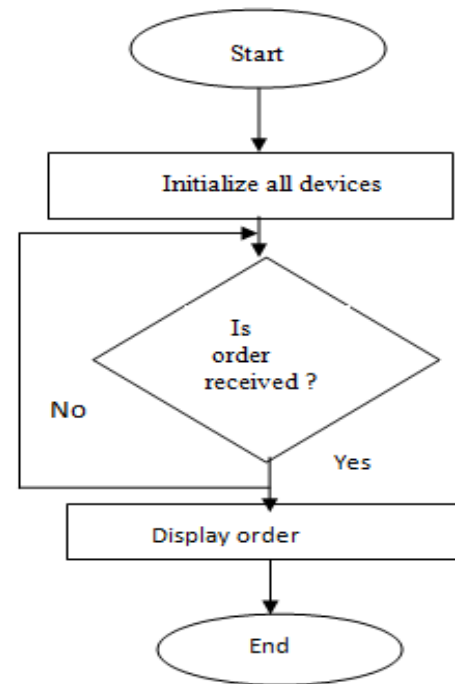
A. Flowchart

1. TRANSMITTER





2. RECEIVER



VII. CONCLUSION-

[1]The wireless ordering system has egressed progressively and revolutionized the restaurant business industry and other fields.

[2]This system is convenient, easy and effective thereby improving the restaurant staff’s works performance besides providing quality of service and customer satisfaction.

[3]This system has addressed many hindrances in food ordering process and management of restaurants by lessening the time of customer and management for ordering of food and cost for the pen and papers.

[4]This system provides pleasure to customers for making orders and management can meliorate their management.

5.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 can come to know about their ingredients, which in turn will help them to have their choice of Food/Dish without having any confusion and can enjoy their meals satisfactorily.

VIII. References

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