



## DESIGN OF ORDERING SYSTEM FOR RESTAURANTS BASED ON WSN

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### ABSTRACT

The project in the main aims in coming up with utterly automatic menu in restaurants with the assistance of bit screen device and a liquid crystal display to supply a easy setting. there's no would like of an individual to require the order from the table. The menu are going to be displayed mechanically on the table and that we will directly order the menu with the assistance of bit screen. Touch screens give quick access to any and every one kinds of digital media, with no text-bound interface getting into the means. quicker input will mean higher service. employing a bit interface will effectively increase operator accuracy, cut back coaching time, and improve overall operational efficiencies, a properly designed bit interface will improve every operator's accuracy. bit screens area unit sensible in automation, that has become even easier with bit screen technology. house owners conversant in the icon system appreciate bit screens that build automation systems user friendly. The system consists of a microcontroller, that is interfaced with the input and output modules, the controller acts as Associate in Nursing intermediate medium between each of them. that the controller may be termed as an effect unit. The input module is nothing however slightly screen device that is placed onshow|LCD|digital display|alphanumeric display} to own graphical image display, that takes the input from the user and provides an equivalent to the microcontroller. The output module is RF module that makes the communication between system at table and system at ordering department. The controller additionally takes the responsibility toshow the menu things on the liquid crystal display. At the receiving finish the chosen things are going to bedisplayed on liquid crystal display with user table range.

**Keywords: Touch screen, Zigbee, Automation, Wireless communication**

**1. INTRODUCTION:**

Currently, the restaurants face the matter of your time that is consumed by the standard method of order inserting. The client goes into the eating place, then he doesn't understand whether or not there's seat obtainable or not. After that, moreover, the waiter can return then order are going to be placed this method is completely allotted by waiter thus, it will cause any human errors. the purchasers area unit a lot of involved concerning the service and welcome of restaurants. {this is this is often|this will be} one vital facet wherever it can impact on business dealings [1]. As from the observation, now a day, some restaurants area unit providing alphabets to the client table . however this method still desires human power and there's only 1 phablet thus its time intense. The flaw within the current eating place system is highlighted by this paper. This paper highlights the normal menu ordering system compared to the projected bit screen menu system

**1. PRINCIPLE**

The system is principally divided into 3 elements, viz. table unit, room unit and management unit that is at reception.

**2.1 operating principle:** The client will place the order from the table exploitation bit screen show wherever the menu is displayed. client will choose the things that square measure displayed on menu. For authentication purpose, the client must have RFID tag with him. The RFID tag is provided at the reception. Once the things square measure chosen, the order are send to the central unit via Zigbee module. At identical time, the placed order will be displayed on

the LCD at room aspect The central unit is usually a laptop with a Zigbee module wherever the information has been saved. Basically, for the information base we tend to square measure exploitation the MATLAB secret writing for creating a forepart. At the central unit, the account data of the client are processed and therefore the central unit can challenge al the knowledge concerning the asking and account standing to the client. once the placed order can show within the room on LCD, at identical time buzzer can sound to alert cook. The LCD can show the things that square measure demanded by the client in conjunction with the table variety. once the order can settle for at the room, the message are displayed at the table screen to acknowledge the client that the order has accepted.

2.2 Principle Diagram

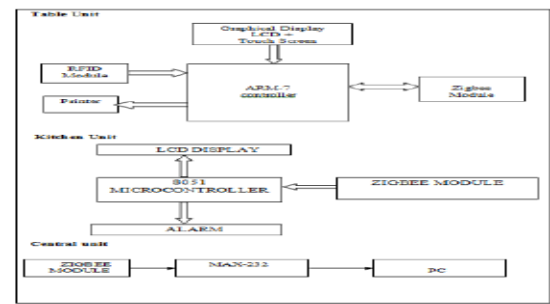


Figure 2.1: Block diagrams of Restaurant automation system

**3. HARDWARE COMPONENTS**

**3.1 Zigbee Module**

This system has been implementing by exploitation Zigbee CC2500 module as shown in fig. The CC2500 is extremely low value two.4 gigacycle transceiver designed for terribly low power wireless application. The RF transceiver is integrated with an extremely configurable baseband electronic

equipment. Zigbee relies on associate degree IEEE 802.15 commonplace. although its low power consumption limits transmission distances to 10–100 meters line-of-sight, betting on power output and environmental characteristics. Zigbee encompasses a outlined rate of 250 kbit/s, best fitted to intermittent information transmissions from a sensing element or device

needs of mechanically distinguishing and pursuit tags connected to things. The tags contain electronically hold on data. Some tags square measure hopped-up by magnetic force induction from magnetic fields created close to the reader. Some varieties collect energy from the interrogating radio waves and act as a passive electrical device. alternative varieties have an area power supply like electric battery and should operate at many meters from the reader.

**3.2 ARM7 LPC 2138**

The LPC2131/32/34/36/38 microcontrollers square measure supported a 16-bit/32-bit ARM7TDMI-S CPU with period of time emulation and embedded trace support, that mix the microcontroller with embedded high-speed non-volatile storage starting from 32kB to 512kB. A 128-bit wide memory interface and distinctive accelerator design alter 32-bit code execution at the most clock rate [2][3]. For essential code size applications, the choice 16-bit Thumb mode reduces code by over half-hour with lowest performance penalty.

**3.4 Microcontroller 89C51**

The AT89C51 may be a low-power, superior CMOS 8-bit personal computer with 4Kbytes of Flash programmable and eradicable browse solely memory (PEROM). The device is factory-made victimization Atmel’s high-density nonvolatile memory technology and is compatible with the industry-standard MCS-51 instruction set and pinout. The on-chip Flash permits the program memory to be reprogrammed in-system or by a standard nonvolatile memory engineer. By combining a flexible 8-bit electronic equipment with Flash on a monolithic chip, the Atmel AT89C51 may be a powerful personal computer that provides a highly-flexible and cost-efficient answer to severalembded management applications.

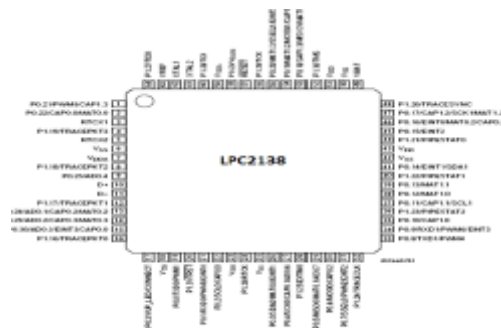


Figure 3.1: Pin Diagram of LPC 2138

**3.3 RFID**

Radio-frequency identification (RFID) is that the wireless use of magnetic force fields to transfer knowledge, for the

**3.5 liquid crystal display:**

A 16x2 alphanumeric display means that it will display 16 characters per line and there square measure a pair of such lines. during this alphanumeric display every character is displayed in 5x7 pel matrix. This alphanumeric display has 2 registers, namely, Command and knowledge.

The command register stores the command directions given to the alphanumeric display. A command is an instruction given to alphanumeric display to try and do a predefined task like initializing it, clearing its screen, setting the indicator position, dominant show etc. the information register stores the information to be displayed on the alphanumeric display. the information is that the ASCII price of the character to be displayed on the alphanumeric display.

### 3.6 Resistive Touch Screen

Resistive bit screens area unit touch-sensitive pc displays composed of 2 versatile sheets coated with a resistive material associate degreed separated by an air gap or microdots. There area unit 2 differing kinds of aluminiferous layers. the primary kind is named Matrix, during which stripy electrodes on substrates like glass or plastic face one another. The second kind is named Analogue that consists of clear electrodes with none patterning facing one another. As of 2011 analogue offered lowered production prices. once contact is formed to the surface of the bitscreen, the 2 sheets area unit ironed along. On these 2 sheets there area unit horizontal and vertical lines that, oncepushed along, register the precise location of the bit. as a result of the bit screen senses input from contact with nearly any object (finger, stylus/pen, palm) resistive bit screens area unit a sort of "passive" technology.

### 4.0 SOFTWARE DESIGN

The programming of LPC2138 ARM controller is with embedded C language mistreatment Keil package. Keil packagemay be a nice platform for

developing embedded C programming for ARM controller. The system flow sheet is shown in figure.

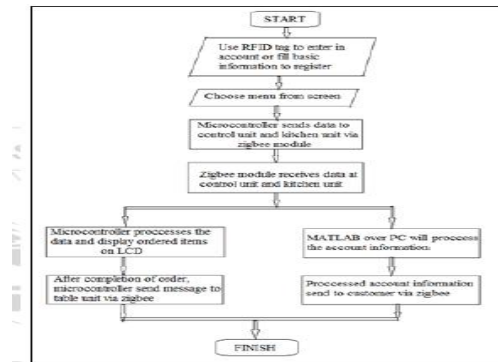


Figure 4.1: System Flowchart

As per figure, first client would got to register/sign in himself at the table unit victimization RFID tag which is able tobe processed by ARM controller. At the table facet user can choose the item from menu victimization the bit screen. The ARM managementler can method the data and can send it to the control unit and room unit at identical time via [4]. Zigbee module. The management unit can method the account data as per the order placed by client. conjointly atidentical time ordered item are going to be processed by room unit microcontroller and it'll show ordered item ondigital display. once the completion of order room unit can send the message to table unit regarding completion of order and conjointly management unit can send updated account data to table unit.

### 5.1 Control Unit



Figure 5.1: Front Panel

Figure showing the front panel for the system where we can check the customer ID, name and account balance. This result arises when a user check the balance after login or after deduction in debit of account due to placement of order [5][6].

### 5.2 Table Unit

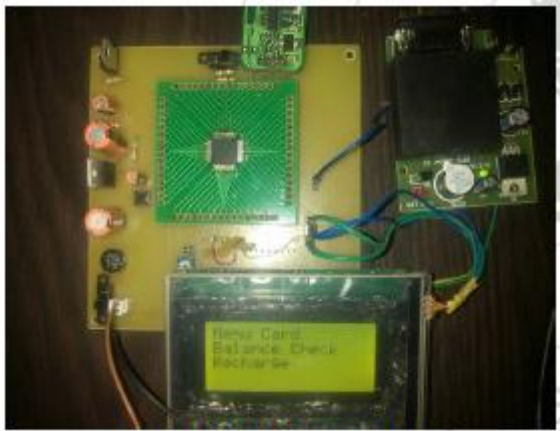


Figure 5.3: Table unit after login

Figure shows different options for customer after login. Customer can choose the options like Menu card, Balance check and Recharge.

### 5.3 Kitchen Unit:

The item that is ordered and the table number where from it ordered shown in figure. Here we have displayed numbers for food instead of name because of lack of space on display. It also shows the table number from where the order has been placed.



Figure 5.6: ordered item and table no. at kitchen unit

## 6.FUTURE SCOPE AND CONCLUSION

Many enhancements will be wiped out the projected system just like the resistive bit screen will be replaced by a lot of responsive electrical phenomenon bit screen. additionally the one will offer provisions to simply acceptdiffering kinds of payments like checks, credit cards, debit cards, tips etc. The system will be any extended to register and link multiple restaurants to reinforce the feeding expertise of shoppers. The project is aimed to produce a less human effort in restaurants by distance communication exploitation Zigbee. this may build a sensible usage of information transfer by reducing the time and man power. this may be used at edifice, Cinema hall etc .

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