

Menu Ordering System

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Abstract: Computerization frameworks are expanding in everyday life to build proficiency and make life simpler. Some early endeavors have been taken to use these advancements in cordiality industry. The robotizing framework we are utilizing here, is a mechanized request and pay framework in a restaurant. In this system, the customers make their order with the help of a TFT touchscreen placed on each table and payment of bill is done using an RFID card which is depicted as an ATM card. Once the bill payment is done, the order is sent to the kitchen in the restaurant via Bluetooth. The order will then display using LCD display at the receiving end showing the order and the requested table's order. This saves a lot of time and the customer satisfaction are raised because they get their order promptly.

Keywords—TFT touchscreen; HC-05 module; RFID module

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I. INTRODUCTION

In the past 10 years India as a country has developed significantly. Standard of dwelling of human beings has also improved. Now increasingly more humans are willing to spend money on meals in restaurants, due to which competition in the catering enterprise is becoming increasingly intense. But these industries need to give you some new modern ideas or else they may locate themselves lagging at the back of the others.

So to address these issues we have thought of a thought of touchscreen based requesting framework for restaurants. With this we will probably build up an easy to use touchscreen based menu card which will be set on each table at the client side. Presently the client should choose the menu things by going ahead things showed on LCD.

The Menu Ordering System brings included quality, worth and energy to the feasting experience for clients. With furious rivalry in the providing food business, it is a demonstrated interest in fortifying your image personality and devotion. Utilizing contact screens introduced at each table, with a bit of the screen, clients can on-screen ordering process and view the bill and pay through RFID card thereby creating a cashless system.

In order for the Menu Ordering System to emerge as a feasible choice everywhere, we decided to create a cost effective prototype with fundamental functions. Our project uses a TFT 2.4 inch Touch Screen and our transmission is through Bluetooth. This marginally reduces the fee and the digital eating experience isn't tarnished. It is not a popular bringing up in India to discover eating places with a comparable menu ordering system. This is mainly due to the initial large funding required. Therefore we've used a low-priced touch display to update the concept of the tablet.

This paper is organized as follows. Section I shows introduction. Section II describes the literature survey. Section III gives the proposed system. Section IV and V describes the hardware and software development. Section VI shows the results of the developed system. And finally in section VII and VIII draw conclusion and future scope respectively.

II. LITERATURE SURVEY

Customary requesting strategies are the techniques wherein clients determine what they need to the server who takes the request on a paper. By and by he at that point takes the request to the requesting division.

Self-carrier or self-ordering systems in restaurants refer to the eating places taking order from customers using technology together with the internet, kiosks and many others. Usually the users prefer self-provider because of velocity and convenience in making order and transaction while minimizing the miscommunication [1].The advantage is that there are not any cash related problems as the transactions are done online.

Some ZigBee based requesting frameworks are likewise present. These frameworks use ZigBee module for correspondence purposes [2]. ZigBee innovation is favored for hub to hub interchanges.

III. PROPOSED SYSTEM

A. Correlation with different System

Customary arrangement of providing food is a very tedious furthermore, is inclined to befuddle of requests because of human mistakes. The issues with one help requesting framework is that self-administration eateries are progressively famous in metro urban areas. So in littler urban areas there are scarcely any self-assistance eateries accessible. Numerous multiple times these self-help frameworks take irrational measure of postponements to convey the request. The issue with the ZigBee based framework is its significant expense. Our point is to build up a practical framework which could work in little eateries that are not ready to contribute colossal measure of cash in these frameworks.

B. Working

In this system, we have modified the TFT Touch Screen to show the menu and its cost utilizing Arduino Uno. The TFT being wired to the Arduino Board is constrained by the ATmega 328p in the board. The client at the table would then be able to pick the items from the showed choices and go ahead to the payment procedure. Figure 1 and figure 2 shows the block diagram and circuit diagram at transmitter side respectively.

The RFID module likewise associated with the arduino is then prepared for checking. The client examines his card before the RFID peruse. It peruses the 12 digit interesting card number that each card contains. This is then sent to the arduino board utilizing the TX pin.

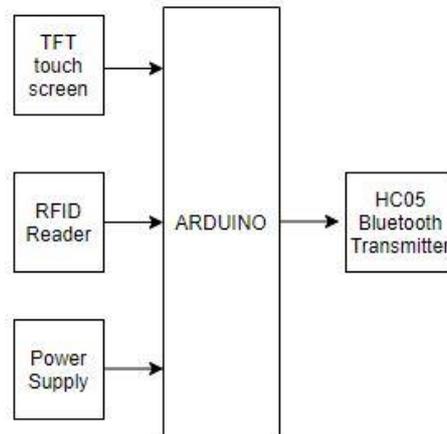


Fig.1. Block Diagram of Transmitter side

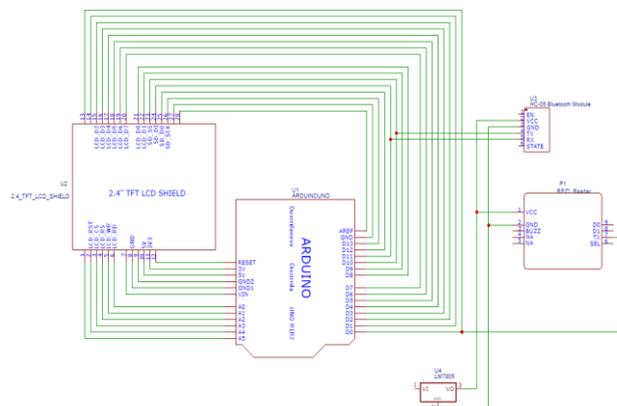


Fig 2 Circuit Diagram at Transmitter side

The smaller scale controller will check whether this card number is available in the framework. If so, the customer's name and balance is displayed on the screen. A message "Payment done" just as "Request sent" will likewise be shown. The client's structure will be sent to the beneficiary side by means of Bluetooth. The request is then shown on the LCD display. Figure 3 and figure 4 shows the block and circuit diagram at receiver side respectively.

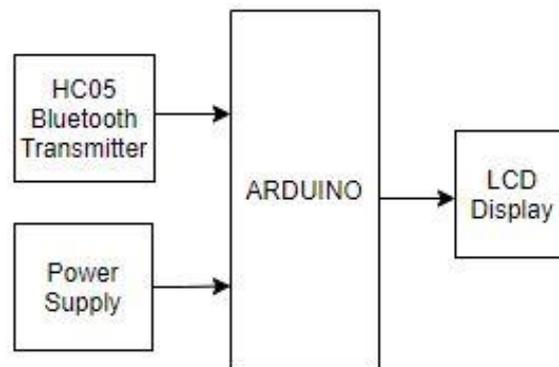


Fig 3 Block Diagram at Receiver side.

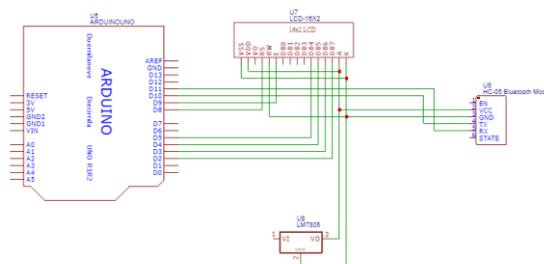


Fig 4 Circuit Diagram at Receiver side

IV. FRAMEWORK DEVELOPMENT

A. *Arduino*

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 ceramic resonator, 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 an AC-to-DC adapter or battery to get started. Here, we are able to program the TFT, RFID and Bluetooth module using the microcontroller and many of the pins required for these hardware components are used from this board.

B. *Bluetooth Module*

In this system, the communication between the customers at the kitchen table (touchscreen) and the kitchen of the restaurant (LCD display) is done using Bluetooth. We chose Bluetooth because we require low data transmission and over a short range. Bluetooth is a technology for wireless communication. It uses the 2.45 GHz frequency band. The connection can be point-to-point or multipoint where the maximum range is 10 meters. The transfer rate of the data is 1Mbps (or a maximum of 2Mbps).

C. *RFID*

Radio Frequency Identification (RFID) refers to a wireless system comprised of two components: tags and readers. The reader is a device that has one or more antennas that emit radio waves and receive signals back from the RFID tag. Tags, which use radio waves to communicate their identity and other information to nearby readers, can be passive or active. Passive RFID tags are powered by the reader and do not have a battery. Active RFID tags are powered by batteries. RFID tags can store a range of information from one serial number to several pages of data.

D. *Liquid Crystal Display*

An LCD, or Liquid Crystal Display, is a type of screen that is used in many computers, TVs, digital cameras, tablets, and cell phones. LCDs are very thin, but are actually composed of several layers. Those layers include two polarized panels, with a liquid crystal solution between them. Light is projected through the layer of liquid crystals and is colored, which produces the visible image.

V. SOFTWARE REQUIREMENTS

The software was created in embedded C. The stream diagrams utilized for the development of programming are appeared in the accompanying figures.

A. Flow chart of Transmitter side

The TFT touchscreen and UART are instated in the starting. Menu is shown on the TFT touchscreen and afterward the program sits tight for the choice of menu items. In the event that the menu is chosen and the request is transmitted to the requesting kitchen only after the payment is done. Figure 5 shows the flow chart at transmitter side.

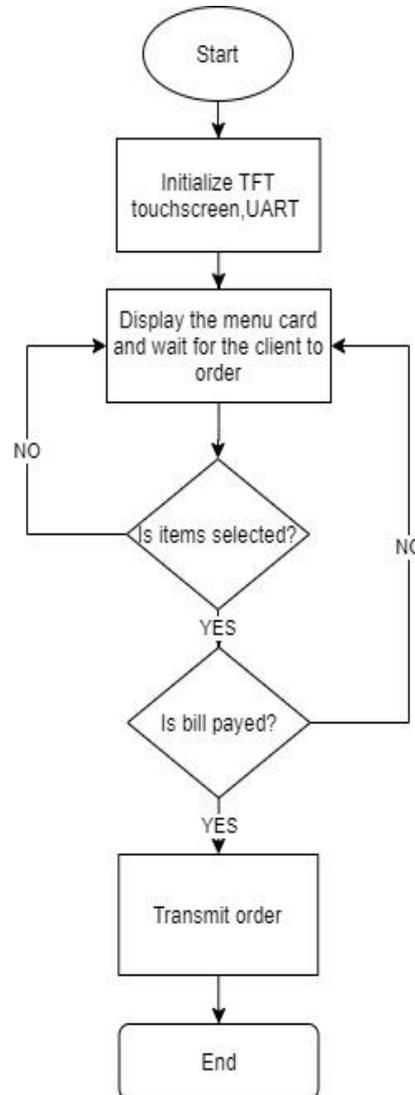


Fig 5 Flow chart at Transmitter side

B. Flow chart of Receiver side

On the recipient side just UART and LCD modules are introduced. On the off chance that the request is gotten than it is shown on LCD alongside the table number. The hex document is then scorched into the microcontroller using software. Figure 6 shows the flow chart at Receiver side.

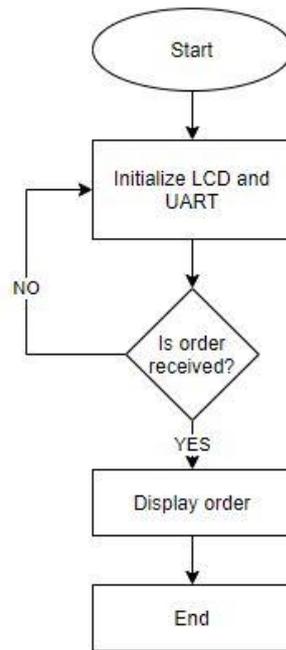


Fig 6 Flow chart at Receiver side

VI. RESULT

The following pictures show the analysis of the system. Figure 7 shows the initial screen of the system. After clicking the “NEXT” button it will move to the main menu which shows the food items and the customer can able to select the food and the quantity as per their requirements.



Fig 7 Screen of Menu System

Figure 8 shows the main menu screen which shows the food and their individual price. After selecting the requirement the customer should click on the “TOTAL” which goes to the total price of each item the customer selected.



Fig 8 Main Menu

Figure 9 shows the payment mode and the payment can be done using RFID tag. When the customer place the tag in front of the RFID reader it will check whether the tag has the required amount, if so, then the order is placed and send to the receiver section.



Fig 9 Payment

Figure 10 shows the receiver output i.e. the transmitted data will be received and displayed in the 20x4 LCD display.



Fig 10 Receiver output

VII. CONCLUSION

The project is a prototype of how a menu ordering system can work. It aims to automate the food ordering process in the restaurant and also to improve the dining experience of the customer. It aids at reducing the need for excess man power and time spent on giving manual order. The user friendly system of menu card and its usability is increased through simple navigation technique of TFT LCD.

VIII. FUTURE SCOPE

Numerous enhancements should be possible in the proposed framework like the resistive touchscreen can be supplanted by additional responsive capacitive touchscreen. RF module which is utilized for correspondence reason begins to breakdown as more and more RF modules are utilized. This issue can be tended to by utilizing costlier correspondence innovations like ZigBee innovation.

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