iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 8 **Issue:** IV **Month of publication:** April 2020

DOI:

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 8 Issue IV Apr 2020- Available at www.ijraset.com

RFID Based Trolley for Super Market Automation using MSP430

Sai Prasanna. K[1], Ram Naresh Reddy. Y[2], Sai. M[3], Sainath. P[4]
[1]*Aisstant professor, Department of ECE, B. V. Raju Institute of Technology, Narsapur*
[2, 3, 4]*Department of ECE, B. V. Raju Institute of Technology, Narsapur*

Abstract: ***Problem statement:-In today's scenario people are so busy , everyone have to manage their time . Now-a-days many of them are wasting their time at the billing counter of many super markets. They need to wait for their term so as to have billing their items. To make checkout of each and every product it takes huge amount of time for an individual ,so the super market needs more and more number of workers . To resolve this problem we have came up with an idea called Intelligent Shopping Basket .***
Solution:- In this " Intelligent Shopping Basket," we will be using RFID (Radio Frequency Identification)reader with an electronic Hardware system that is fixed in trolley. where the customer just needs to place the required item in the basket or trolley by placing the item near to the RFID module. Every product is included with the RFID chip. The RFID module can recognize the product and also the price.
The cost will be displayed on the LCD which is installed on the trolley. Whenever we add the items one by one in the trolley the count and the price will also get a total and displayed on LCD. If the total is above Rs:500 then the buzzer will get switched on to alert the customer.
And finally, if the customer wants to end their shopping he/she has press a switch to end up the shopping so that the data which are collected by the microcontroller is transferred to the central billing system through the Zigbee module. and the bill will be generated automatically at the accounting system.
Keywords: RFID Reader, RFID Tag, LCD, MSP430, Buzzer.

I. INTRODUCTION

As technology is developing day by day the Barcode system has become an inefficient way to business applications. Everyone feels bored to stand in a line for a long time for billing. To this problem, RFID (Radio Frequency Identification) can be used as a substitute. We can create an RFID attached trolley which can be uAs the technology is developing day by day the Barcode system has become an inefficient way to business applications.
Everyone feels bored to stand in a line for a long time for billing. To this problem, RFID (Radio Frequency Identification) can be used as a substitute.
We can create an RFID attached trolley which can be used by the customers for shopping. This trolley can display the name, price, and quantity of the product by using an LCD. At the billing counter sometimes the products have no complete information for the billing purpose. If we try to bill at the trolley itself, we can identify the problem at the product placed location itself. This could be done by attaching an RFID chip to every item and RFID reader to every trolley with an LCD as well. In this RFID based trolley, there is no need to pull the trolley to where ever we go, the trolley follows the customer itself. After completion of shopping, the customer has to press a switch to transfer the bill to the central billing system.
This can be done by using the Zigbee device, this device wirelessly transmits the total bill to the central billing system so that the bill will be automatically generated. There is no need to stand in a queue for a long time for the final billing procedure. This makes the shopping system very fast and time-efficient.

II. PROPOSED SYSTEM

In the proposed system, we are attaching the RFID reader at the trolley side and every item in the supermarket has its different RFID tag with different ID. Once the customer drops a certain item in the trolley, then the tag connected to that product was read by the RFID reader and sent to the controller. The Msp430 controller counts the item value and shows its value on the LCD screen of the trolley. Like that we can add any number of items of our need and check the total bill on the LCD screen. After successful completion of the shopping, one should click the upload button at the trolley side.

©IJRASET: All Rights are Reserved

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 8 Issue IV Apr 2020- Available at www.ijraset.com

III. BLOCK DIAGRAM

A. *Transmitter*

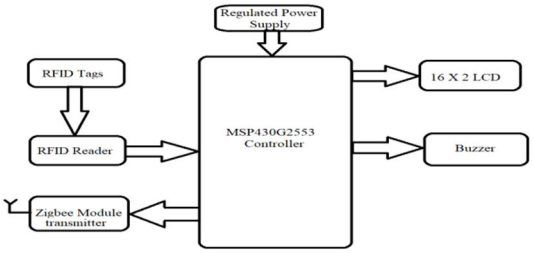


Fig III. I Transmitter Block Diagram

B. *Receiver*

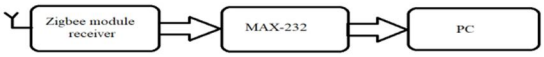


Fig III. II Receiver Block Diagram

IV. COMPONENTS

A. *RFID Reader*

Radio frequency identification (RFID) technology is a important part of wireless communication technology that allow users to single identify tagged items or people. Now A Days RFID is becoming a cost-effective technology. The Department of Defence is using this RFID technology into their supply chains. However the foundation of the Radio Frequency Identification technology was laid by our past generations, only recent days advances are opened an expanding application range to its practical implementation in all outlooks. RFID Technology category under the term Automatic Identification, of the kind mentioned bar code, Audio recognition, magnetic inks, optical character recognition, touch memory, smart cards, Biometrics Etc. Auto ID technologies are used for controlling information and material flow, especially suitable for large production networks. The RFID technology in the sense gathering data about a particular item without touching or seeing the data carrier, through the use of inductive coupling or electromagnetic waves is done. The data carrier is nothing but a microchip connected to an antenna (together is called a transponder or tag), subsequent allowing the chip to transmit information to a reader (or transceiver) within a mentioned range, which can forward the data to a host computer. The software information (software information for reading and writing tags) and the tag can be intensified by data encryption and decryption for security and critical applications at an extra price, and anti-collision algorithms may be implemented for the tags if some of them are to be read concurrently. One of the most important feature is allowing RFID for tracking objects and its ability to provide individual Identification.

B. *LCD display*

Liquid Crystal Display is an electronic display device that is used for many of the applications. 16x2 LCD is the display that can display the 16 characters per line and there are 2 lines. In this 16x2 LCD, each character is displayed in the 5x7 pixel matrix. This 16x2 LCD is capable of displaying 224 different characters and symbols. This LCD has two registers they are data and command registers. Various commands given to the display are stored in the command register. The data register is used to store the data that has to be displayed. The contrast of the LCD is adjusted by varying the potentiometer which is connected across the VEE pin.

C. *Buzzer*

The buzzer is an electronic device that is used as an audio indicating device. It has an operating voltage of 4-8V DC. It produces continuous beep type sound when it is triggered. These buzzers are mainly used for output signaling source.

D. *Power Supply*

To feed the power to all devices we need a step-down transformer. The mains supply of AC. 230V is fed into this transformer so that drops the voltage to 9V. This voltage fed into the rectifier so that it produces an output of pulsating DC voltage. To remove the pulses from the voltage the output of the rectifier to fed into the filter so it removes all the AC components, to get the pure constant DC voltage the output of the filter has to fed into the voltage regulator. And this voltage is supplied to all the devices.

©IJRASET: All Rights are Reserved

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 8 Issue IV Apr 2020- Available at www.ijraset.com

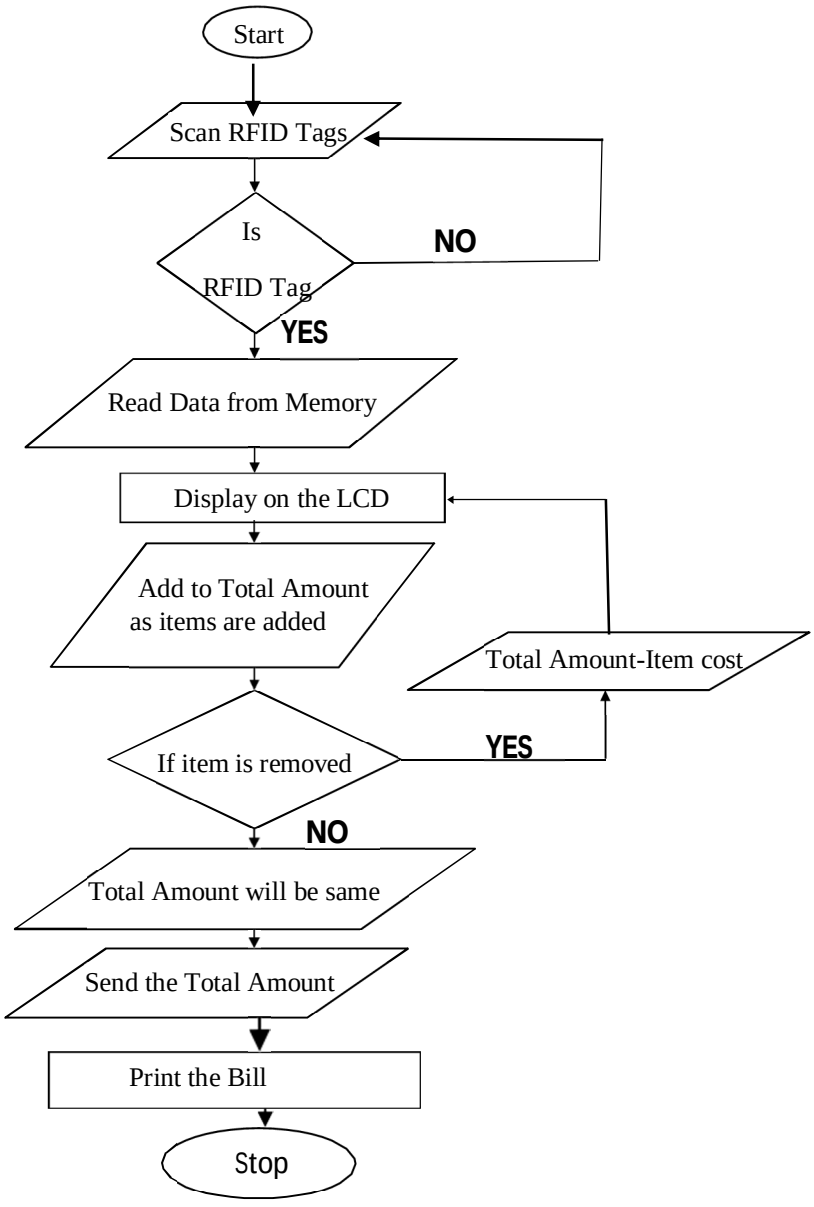
E. Switch

This is the only way of controlling appearance of some voltage on microcontroller's input pin. there's also no need for added explanation of how these components operate.This is about something commonly unnoticeable when using these components in standard of living. it's about contact bounce, a typical problem with mechanical switches. If contact switching doesn't happen so quickly, several consecutive bounces are often noticed before maintain stable state. the explanations for this are: vibrations, slight rough spots and dirt. Concerning the heart beat counter, error occurs in almost 100% of cases.

F. Zigbee Module

Zigbee could be a family of wireless network module that's being controlled globally. ZigBee could be a specification for prime level communication protocols using small, low-power digital radios. ZigBee is meant for devices which require simple wireless networking and do not need high data transfer rate. Its features are mainly targeting on low power consumption and easy implementation. ZigBee protocol works in numerous varieties of networks like tree, star and generic mesh. Network nodes will have different roles like coordinator, router or end device.

V. FLOW CHART



©IJRASET: All Rights are Reserved

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 8 Issue IV Apr 2020- Available at www.ijraset.com

VI. SCHEMATIC DIAGRAM

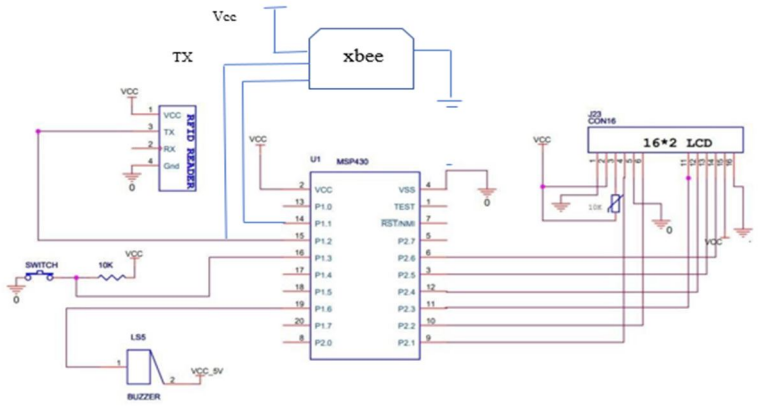


Fig: VI.I Schematic Diagram

VII. WORKING

Any customer who wants to buy the products in a shopping mall, they have to use the trolley to place their products in it. For each trolley is attached with the RFID reader, LCD, controller, and a buzzer, and every product in the shopping mall is attached with the unique RFID tag. Before starting the shopping the customer has to set the controller that how much amount of shopping has to be done. To purchase a product by the customer first he/she has to scan the RFID tag of that particular product by using the RFID reader and place the product in the trolley. The reader scans the details of that product like product cost, company name, etc. And it sents the scanned details to the controller and the controller stores the data simultaneously to send the data to the LCD to get aware of product details to the customer. As the customer scans the products the total amount will be added and it displays in the LCD. If the customer wants to remove a product he/she has to scan that particular product again so that the product cost is removed from the total bill and it is displayed on the screen. When the customer reaches the amount that he/she fixed at the initial stage the buzzer will produce and indicating sound that he/she reached the maximum amount. After the completion of shopping, a key has to press the customer to send the data to the central billing system. This can be done by using the Zigbee device as the customer press the switch the controller sends the data to the Zigbee module and that data will be transmitted to the accounting system. We are using another Zigbee module at the central billing side to receive the transmitted data. As the data is received the PC will automatically generate the bill.

VIII. RESULTS

The RFID tags are attached to each product. As the RFID reader reads the tag on the product, details are displayed on the LCD. Once the shopping is completed, by pressing the switch button the total amount is displayed on the LCD, and the data is transmitted to the central billing system and the bill is generated automatically. This project saves the time of customers and also reduces the manpower in the shopping malls. Finally, this becomes the easiest way of shopping. The main objectives are successfully achieved in the prototype model developed. The model is easy to handle and cost-effective.
Hardware components

IX. CONCLUSION

Using the RFID based trolley for super market automation, the system is developed which reduces and possibly eliminates the total waiting time of customers and also lower the total man power requirement. More customers can be served in same time. Thus benefitting the retailers and customers as well.

X. FUTURE SCOPE

We believe RENOVATION, is as important as INNOVATION, and keeping this in mind, we had some more features that we couldn't implement in our project but will be included to boost it. a number of them are, By adding the Zigbee module to that, it transmits the all details of purchased items to the central billing system (PC) where it directly prints the bill And can also enhance it by adding the automated billing system, where the customer must pay the bill at their own trolley by using ATM card.

©IJRASET: All Rights are Reserved

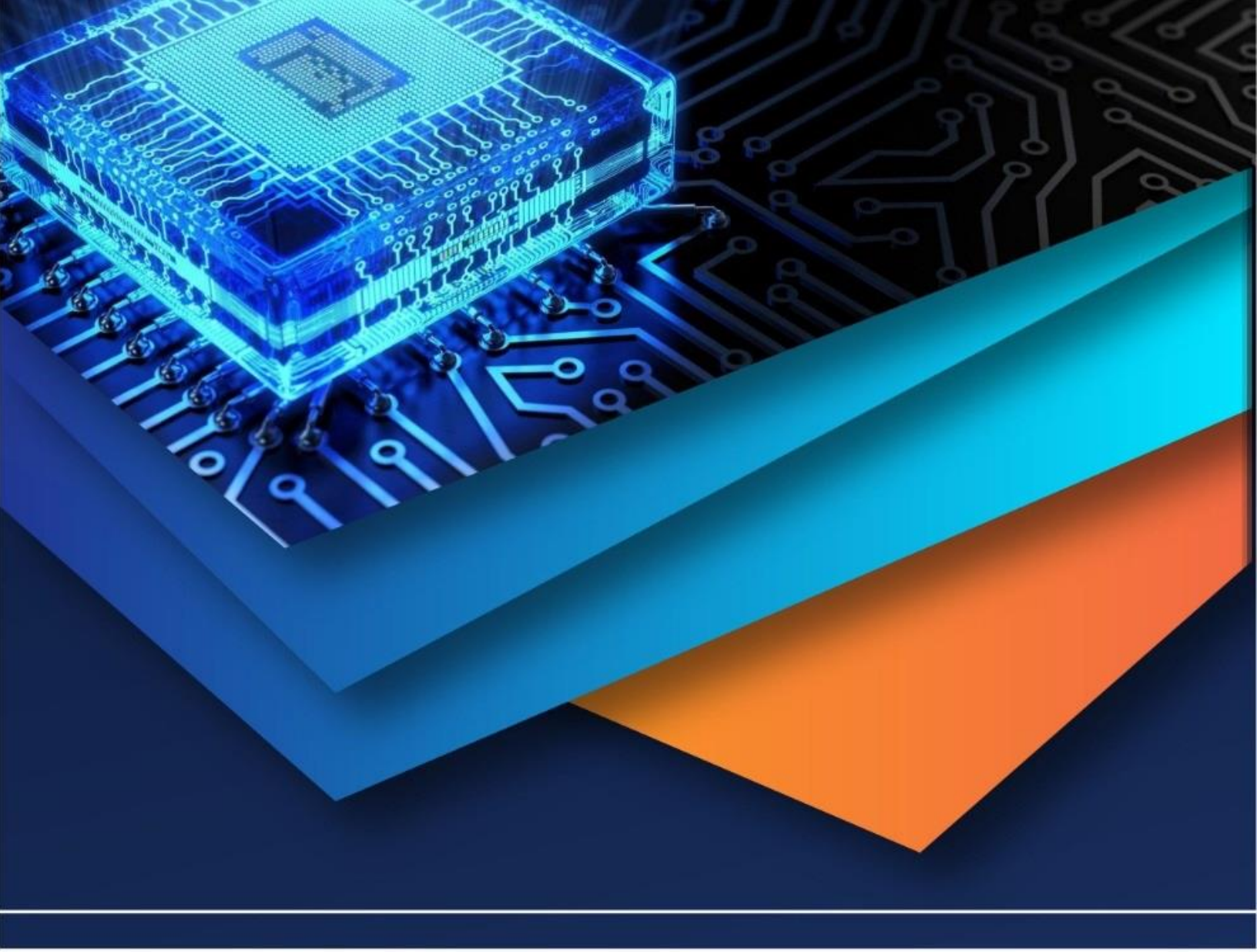
REFERENCES

[1] Mr. Nithin Joe ―RFID Based Smart Trolley for Supermarket Automation‖ International Research Journal of Engineering and Technology (IRJET) Volume 4, Issue 07, July 2017
[2] T. Shanmugapriyan, "Smart cart to recognize objects based on user intention," International Journal of Advanced Research in Computer and Communication Engineering, vol. 2, no. 5, 2013
[3] BBC, (2003), Supermarket Tries Out Smart Tagging, BBC News, www.bbc.co.uk, 16 January.
[4] Sanchita Roy, Udita Gangwal, Jyotsna Bapat, ―Smart Shopping Cart For Automated Billing Purpose Using Wireless Sensor Networks, The seventh international conference on sensor technologies & applications‖ April 2012.

©IJRASET: All Rights are Reserved

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 8 Issue IV Apr 2020- Available at www.ijraset.com

©IJRASET: All Rights are Reserved



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)