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## Wireless Based Auto Smart Trolley With Time Saver

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**Abstract:** In present days interest in shopping malls is mostly increasing between people. People get daily necessities from shopping malls. RFID technology each product in the shopping mall will be produce with a RFID tag. LCD, RFID reader and a CC2500 transmitter Connect to the trolley section. RFID reader will read the buying product information on the shopping cart and the information regarding the product is displayed on LCD which is interfaced to the Arduino uno .people placed items in the trolley the RFID reader on the trolley reads the each tag and sends a signal to the controller. The controller received the signal.It shows the name of item on LCD and also total sum of items purchased. Once the shopping is completed, the customer will press a Finalise button on the trolley send the total sum spent on the products to the billing counter section using CC2500 module. she/He take back product from the trolley, the same tag will be again read by the RFID reader. At the billing counter, the total bill will be transferred to PC at the billing counter side by using CC2500 module.Main aim of this paper was to provide an automatic billing to avoid queue in mall and super markets.

**Index Terms-** keypad, CC2500 Module, LCD , Arduino uno , RFID(Radio frequency identification)

### 1.INTRODUCTION

The advent of wireless technology along with the other communication techniques help in making ecommerce high popular. Modern innovative product is the one that aids the easy, convenience and efficiency in everyday life. In this project, we discuss an different concept of RFID Based Smart Shopping and Billing System. The primary objective is to provide a innovation oriented, minimal effort, easily scalable, and rugged system for aiding shopping in person. The smart shopping trolley will help shorten the checkout lines thereby helping the purchaser at retail stores. The System consists of an RFID based trolley which communicates with the billing counter wirelessly using a CC2500 Transmitter . Each trolley will consist of a comparable type of hardware with unique trolley address. The customer scan tag to reader and the LCD screen on the shopping cart will keep updating the full purchasing details . The billing counter can at any point of time inquire about the current items present in the trolley shopping experience and come more often to shop

## II.EXISTING SYSTEM

The Internet of Things (IoT) assemble Smart Shopping Cart Is Fig 2 Existing which comprises of RFID sensors, Arduino uno, Bluetooth module, and Mobile application. RFID sensors rely upon remote correspondence. One part is the RFID tag attached to each one product and the other is RFID reader that reads the product information efficiently. After this, each one product information shows in the Mobile application. The purchaser easily manages the shopping list in Mobile application according to preferences. Then shopping information transmit to the server wirelessly and automatically generates billing.

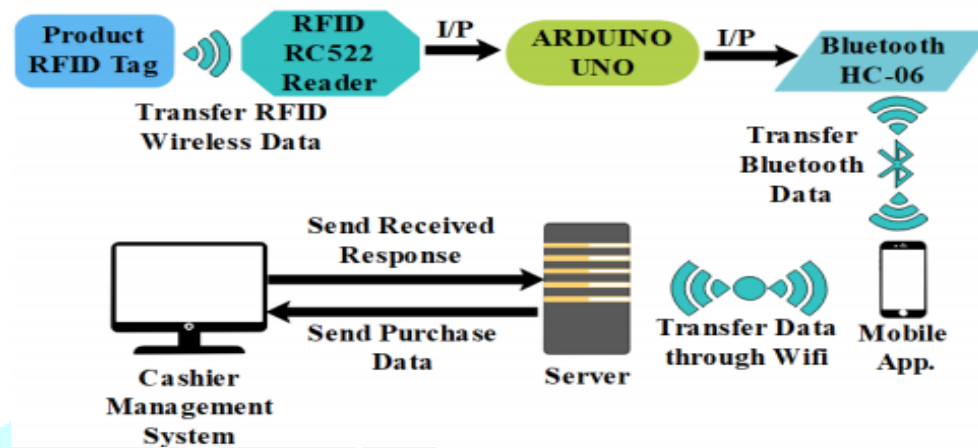


Fig 2.1: block Diagram of Existing System

The electronic RFID passive tag attached to the product that has stored information about the product. When the product comes in the range of RFID reader module then it reads the RFID tag through electromagnetic waves. Electromagnetic waves produce induction and provide power to the RFID tag. In response, the RFID tag sends data to RFID reader wirelessly through radio waves. Electronic MFRC522 RFID reader module that connected to Arduino Uno. After getting data from the RFID tag, the RFID reader sends the data to the Arduino Uno through its connected pins. Arduino Uno is the mediator unit of the electronic circuit, which combine and manage the RFID reader and Bluetooth device.

After getting data from the RFID reader, it sends towards the Bluetooth module. Bluetooth module connects the electronic circuit to the android mobile application and helps to communicate with each other. When RFID reader reads the data from the RFID tag then it comes to Arduino. Arduino is responsible for the transfer of data between the android mobile application and Arduino Uno. The Bluetooth module provides a way to Arduino to communicate with the android mobile application. Android mobile application perform two different major tasks first mobile application gets data of the product from the Arduino Uno by Bluetooth. Second, according to this data android mobile application gets the further detailed information about the product from the server computer and displays it to the customer on display

Problem identifications are all customer's who come to the store should know how to install and login to the application finds difficult for those who do not know. Those who are illiterate and those who do not know how to use the application for adults will find it difficult. All customers who come to the store can use this application only if they have a smartphone, this application cannot be used by ordinary mobile holders.

The proposed method is used with RFID technologies and CC2500 transceiver which is used to transmit and receive the signal. This method needs low power and flexible.

### III. PROPOSED SYSTEM

In this method we are using the RFID reader along with Arduino UNO and for the power supply we are connecting lithium battery. The RFID reader is placed at each trolley and there will be a unique RFID Tag for each product which will have the price of the product so the consumer who were purchasing can easily able to calculate their bill amount and will be able to know the price of the product so as this should be known to the consumer the LCD display is also placed along with the Arduino. In case if the product purchased was not needed we can also delete the product by pressing the delete button and once the tag is shown to the reader it will automatically be removed from our purchased list and displayed in our LCD. Here we attached CC2500 transceiver for this transmitting and receiving process along with acknowledgement.

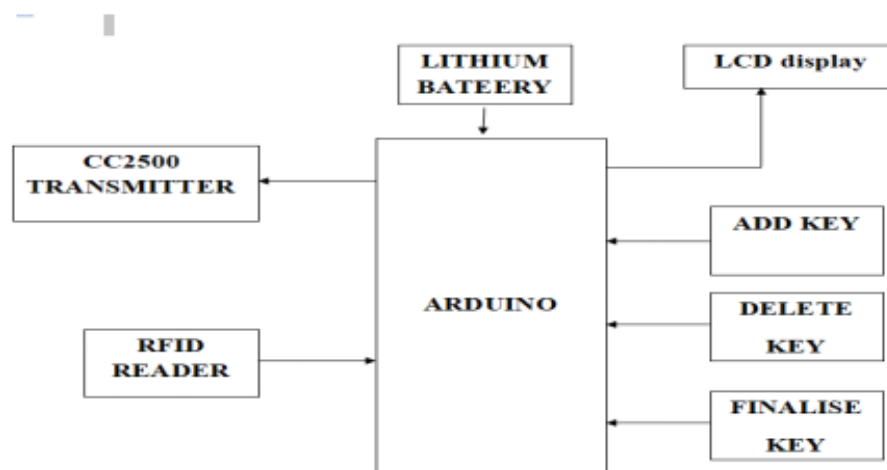


Fig 3.1 (a): Trolley section block

#### Trolley section

A purchaser goes in to shopping mall and supermarket he/she first takes the trolley. All the things in the mall and super market will be prepared with RFID cards. Fig 3.1 (a) The trolley connected to the Arduino uno, CC2500 transmitter, RFID reader, RFID tag and key pad. She/He places items in the trolley the RFID reader on the trolley RFID reads the tag and sends a signal to the Arduino uno. Arduino uno is attached to an RFID reader.

The Reader send this code to Arduino Uno reads the information and display the products names and price details. As we put the items, the price will get added to whole. Thus, the all information are displayed on LCD. Customer know the bill are trolley.Tags is attached to the all products. RFID tag consists of a very little microchip and antenna. Communication between the RFID Reader and tags occur wirelessly and usually doesn't need a line of sight between the devices.

The reader constantly sends the radio frequency. If all things attached is within the range of this radio waves then it sends the acknowledgement back to this RFID reader. RFID reader identifies the products price as like as barcode scanning. There are three different type of RFID Tags they are, passive tag, Active tag, semi-passive tag. The main use of RFID tag was there is no need of power supply for the passive tag and also it covers minimum of 10M. They used to get their minimal power from incoming of radio frequency waves from the reader and tag. LCD is interfaced with Arduino Uno.

It is used to acknowledge the consumer about their actions on purchasing and inserting the products to the trolley, removal of item, item's value and total request value of things in the trolley. Once the shopping is completed, the customer will press a button on the trolley send the total sum spent on the products to the billing counter section using CC2500 transmitter module. Payment card consists coil and chip. The payment card is similar to debit card. The card show RFID reader and amount to be debited. Thus the billing will be done in the trolley itself for the betterment of both the customer and the seller.

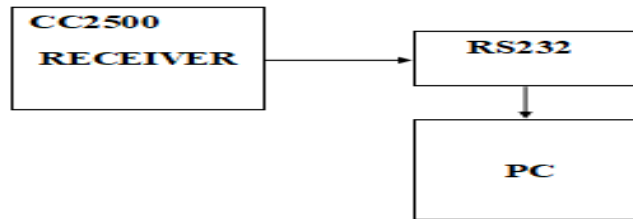


Fig 3.1 (b): Management section block

## Management section

Management side Fig 3.1(b) connect to the CC2500 , RS232 and PC .The bill amount will be received by the CC2500 receiver and sent to the PC through RS 232 converter. Then cashier shown the shop system current shopping details and Previous shopping history are checked .

## 3.2 RFID Tag and Reader

RFID tag and RFID reader now we are used passive tag it is one type of tag don't give power supply .The tag inside fix the coil and chip, The data within the tag required to be read and the tag's antenna receives signal from the reader antenna when the things are read. RFID tag is attached is within the range of this radio waves the it sends the feedback back to this RFID reader captured as data.

## 3.3 CC2500 Module

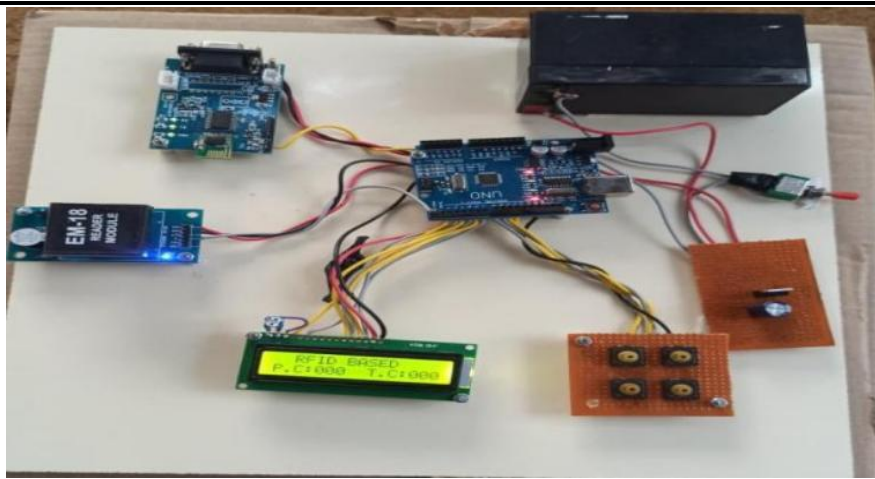
CC2500 RF Module is a transceiver module which gives simple to utilize RF correspondence at 2.4 GHZ. It tends to be utilized to send and get information at 9600 baud rates from any standard CMOS/TTL source. This module is an immediate line in trade for your sequential correspondence it requires no additional equipment and no additional coding to it works in Half Duplex mode for example it gives correspondence in the two ways, yet just a single bearing at same time

## 3.4 Arduino

Arduino is a sole board microcontroller utilized for perform both the analog and digital devices. The Arduino has serial communication including universal serial bus to load information from the USB supported devices. Arduino has the ATmega328 microcontroller. The Arduino provides an integrated development environment for programming.

## IV.RESULT

In the beginning , When kit switch on by providing the power to Lithium -ion battery on the kit.the Fig 4.1 below images are seen which show "RFID BASED" on the LCD screen of the device. When an RFID tag is scanned by the RFID reader, the Fig 4.2 images as shown below are displayed along with the details of the name of the product.cost of the product and the total billing amount.After completion of the shopping, press the shopping completed button. The Fig 4.3 image as shown below is seen and the information is sent to the PC using CC2500 technology.



Proposed system kit



Fig 4.1: LCD on stage , Fig 4.2 :Product name , Fig 4.3 : shopping Completed

## V. CONCLUSION

In this paper we direct to plan to modify the billing process, growing the protection using RFID technique. The cart has the feature calculate mechanically and show the entire costs of all the production within it. This makes it simple for the buyer to acknowledge what amount he or she has got to pay during shopping and not at the checkout. One can remove the product from the cart by just scanning it again if he or she does not want it. The system proposed is highly dependable, honest and time-effective. There will be depletion in wage amount given to workers,depletion robbery. Also, the system is very time-efficient. This will take the looking knowledge to a special level. smart trolley like products name and products cost are continuously display.Advantages are Easy to shop,Easy to use,Flexible Safe, secured and needs low power.

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