Volume 2, Issue 12, December-2015, pp. 1096-1099 ISSN (O): 2349-7084

International Journal of Computer Engineering In Research Trends

Available online at: www.ijcert.org

RFID BASED SHOPPING TROLLEY

[1]Mrs.Lekshmy S, [2]Ms.Aniltta T C, [3]Ms.Nivya Shaji

[1,2,3] Department of ECE, Vimal Jyothi Engineering College, Chemperi, Kannur

Abstract- While purchasing in super market we can gather items we want, put it in the container and at the time of billing only we come to know about the total cost. Also we need to stand in a queue for billing those items. To overcome this here we can design a RFID Based Trolley to make the purchase more easily and comfortable.

An RFID Reader with electronics hardware system in fitted with the trolley to make the purchase comfortable. All the items are fitted with an RFID card whose price is fixed into the card. When an item is shown in front of the reader (fitted in the trolley) the amount for the item is added to the purchase bill and is shown on the LCD Display. It also has the provision for removing the items from the trolley where the cost is removed from the total cost. We can set a limit value for the purchase amount in the microcontroller, once the items are added the cost is added up and if it crosses certain limit it gives an alarm signal to indicate that. Along with this a search mode is also provided to the customer. By selecting search mode, customer can easily find out a product that the customer wants to search in the super market.

MCU send data through RF module to the receiver side in the search mode if the particular product is selected using key pad. Send data is corresponds to product details that the customer wants to search in the super market. On receiver side, LED indication for corresponding data/product received will switch ON. Audio indication is also provided by MCU. 2.4 GHz open band wireless transceiver modules are used on receiver and transmitter which have range of 30m.

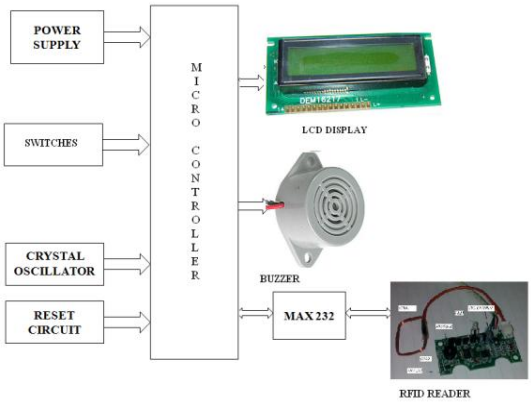
I.INTRODUCTION

Automation plays an increasingly important role in the world economy and in daily experience. Automatic systems are being preferred over manual system. Through this project we have tried to show an RFID based trolley for supermarket. RFID is one the fast growing technology all over the world for identifying and tracing goods. Radio-frequency identification (RFID) is the use of an object (typically referred to as an RFID tag) applied to or incorporated into a product, animal, or person for the purpose of identification and tracking using radio waves. Some tags can be read from several meters away and beyond the line of sight of the reader.

In recent years, electronic systems have progressively replaced mechanical devices and human operation for identifying people or objects in many everyday-life applications. The RFID is a technology that uses communication through the use of radio waves to transfer data between a reader and an electronic tag attached to an object for the purpose of identification and tracking. It is possible in the near future, RFID technology will continue to multiply in our daily lives the way that bar code technology did over the forty years leading up to the turn of the 21st century bringing inconspicuous but remarkable changes when it was new. In every RFID system the transponder Tags contain information. This information can be as little as a single binary bit, or be a large array of bits representing such things as an identity code, personal medical information, or literally any type of information that can be stored in digital binary format.

II.BLOCK DIAGRAM

© 2015, IJCERT All Rights Reserved



III. HARDWARE USED

Trolley

It consists of a PIC Microcontroller 16F877A,RFID Reader,RFID Tags and LCD Display Unit.

Power Supply

The AC supply is applied to 12V step down transformer. The transformer output is the 12V AC which is rectified using a diode bridge. The output of Diode Bridge of 12V DC is filtered by capacitors.

RFID Tags

Tags are of two types: passive tags which have no battery life and active tags which have battery life. RFID tags released for automatically identifying a person, a package or an items. These are transponders that transmit information. RFID tag contains two parts. One is integrated circuit for modulating, storing and processing information and demodulating radio frequency (RF) signal. The second is an antenna for receiving and transmitting signal.

RFID Reader

RFID reader consists of an RF module that acts as a transmitter and receiver of radio frequency signal. Transmitter consists of an oscillator to create the carrier frequency; a modulator to make impact on data commands upon this carrier signal & a receiver that contains demodulator to extract the data returned. When an object is brought close to the sensor, the light from the LED reflects from the object and bounces into the light sensor.

LCD Display

LCD has the ability to display numbers, characters & graphics. The display is interfaced to I/O port of micro controller (P0.0-P0.7). The display is in multiplexed mode i.e. only one display remains on at a time. Within 1/10th of a second the next display switches on. In this way sequentially on and off display will result in continuous display of count due to persistence of Vision.

Selection Switches & Control Keys

The details of each card can be entered into the system memory through this selection switches. The limit of the purchase can also be entered with the help of this switch. Different modes can be selected using control keys.

4 MCU (Microcontroller Unit)

MCU is the microcontroller unit, which controls all the functions of other blocks in this system. In trolley side, MCU takes or read data from the RFID reader and controls all the functions of the whole system by manipulating these data.

RF Transmitter

RF transmitter is used to transmit the product details that the customer want to search in the super market. So the data is digital encoded form and the RF transmitter module should have the capability of transmitting digital data. The data rate for the address selection operation is very slow, so a slow speed high range RF module is preferred for the application. The RF module, as the name suggests, operates at Radio Frequency. The corresponding frequency range varies between 30 kHz & 300 GHz.

Any digital data is first converted to a coded form before sending wirelessly to get ensure data integrity from noises and offers security form other faulty messages. The encoded data is decoded in the receiver side and the original data is recovered. Here transceiver receives data input from the MCU, convert it into a coded output signal, this coded output is corresponds to the selected items.

Audio Indication

A buzzer or beeper is a signaling device, usually electronic, typically used in automobiles, household appliances such as a microwave oven, or game shows. Here it is used to indicate if the total price of the products consumed goes above the limit set.

IV. SOFTWARE DESCRIPTION

© 2015, IJCERT All Rights Reserved

Embedded c that is used by the hardware that is RFID receiver (fitted in trolley) and transmitter (RFID tags)that look ups up the specified table of item and mapsthe product with price.

V.WORKING

Radio frequency identification system is most popular method in the field of wireless identification system. It involves radio frequency tag or card and an RF reader, the card is attached with each product, it contains the price of the product. Initially, the information about the card is stored in the microcontroller with the help of control keys connected with the MCU. Here we can set a limit value for purchasing. This limit value can also be entered with the help of control key.

The RFID reader system is attached with the trolley. While purchasing, the items should be shown to the reader. When the tag is brought near to the RFID reader, the RFID card emits an RF wave, the emitted wave contains the price of that product, which is received by the RFID reader and the reader is directly interfaced to the microcontroller. MCU calculates the total amount by adding that product price with the purchase bill. If the total purchased amount goes above the set limit, the microcontroller activates the alarm circuit to ring.

MCU send data through RF module to the receiver side in the search mode if the particular product is selected using key pad. Send data is corresponds to product details that the customer wants to search in the super market.

A liquid crystal display is used for displaying the entire status of the system. A 16X2 character LCD is used in this project. The module has the capability to display 32 characters as total in 2 lines, 16 characters in each line. Here it displays the product price and total purchased amount.

VI. ALGORITHM

Step1: Start

Step2: Initialize System

Step3: search for RFID

Step4: check RFID tag

Step5: Read related data from memory

Step6: Display data on LCD

Step7: Add item cost as items are added

Step8: When upload key is pressed send data to the counter

Step9:Stop.

VII.ADVANTAGES

- Improve the speed of purchase
- Improves the security performance
- Radio frequency based identification of item cost
- Selection keys for entering item details and to set the limit
- ADD and REMOVE mode
- SEARCH mode
- 2.4 GHz RF communication
- Audio indication
- LCD screen

VIII.DISADVANTAGES

- No automatic data transfer to billing section
- Only useful for consumers to know the present status of purchase

IX.APPLICATION

- Automation in super markets

X.FUTURE SCOPE

- Automatic transfer of data to billing section

X1.CONCLUSION

Radio frequency identification technology is considered as the boon for the present day market in proving automatic identification facilities that helps in handling the goods and materials effectively. By using RFID based shopping trolley the security levels are increased, once the product is placed o the system it generates the summary of the the price value. Limit can be set through the control keys. Audio alarm start to beep if purchased amount exceeds the limit. Products can be easily searched and identified through RF wireless communication technique.

© 2015, IJCERT All Rights Reserved

XII.REFERENCES

1.2013 IEEE International Conference On RFID Technologies.

2.IEEE RFID-TA 2015.

3.Programming a PIC Microcontroller.

AUTHOR'S PROFILE

Mrs.Lekshmy S,ASST Professor
Electronics & Communication Engineering
Vimal Jyothi Engineering College ,Chemperi-Kannur

Aniltta T.C Student
Electronics And Communication Engineering
Vimal Jyothi Engineering College,Chemperi-Kannur.

Nivya Shaji Student
Electronics And Communication Engineering,
Vimal Jyothi Engineering College
Chemperi-Kannur.

© 2015, IJCERT All Rights Reserved