

“Smart Trolley Using Bluetooth Module”

Miss.Prajakta B.Kamble¹, Miss.Parikshita U.Garud², Mr. Prof.R.A.Kharade³

^{1,2} Students, Department of Electronics and Telecommunication, DACOE, Karad

³Professor Department of Electronics and Telecommunication, DACOE, Karad

Abstract: In our daily life shopping at a mall is a regular activity in all cities. Customer purchase various items or products in the malls and put them in the trolley. In the existing system customers have to find the product on the list, queue to pay, at the billing section. It is a time consuming and hectic process. To avoid this problem, we are coming with a new idea, called as smart trolley using Bluetooth module. In this whole assembly RFID Tags are used instead of barcodes. Every product in the mall has RFID Tag. Passive RFID Tag has internal power supply. No need of external power supply. Whenever customer purchase any product and put it in the smart trolley, the information of that product like cost and name of that product will display on LCD. After total billing at trolley Bluetooth module is used to transfer all the data to the pc at the main billing section.

KEYWORDS- PASSIVE RFID TAG, RFID READER, BLUETOOTH MODULE, LCD DISPLAY.

1. INTRODUCTION

Various technologies have been introduced in recent years for smart shopping. A supermarket is a point where customers purchase products which are used for periodic routine. Generally, for shopping of daily used products or for specials occasions customer require at least 30 minutes. After collection of all products it is very hectic problem to stand at a billing counter with a trolley. So we are defining a new idea for a smart shopping which is known as smart trolley with a Bluetooth module. After buying a product, the name and cost of that product will display on the LCD Display. When customer places a product in the smart trolley the RFID Reader will read the product ID and information related to it. The cost of each and every purchased product will get automatically added to the Previous one. Each and every product has passive RFID Tag. Because RFID system has number of advantages over a barcode reader. Barcode reader system read only one item at a time. The reading frequency of RFID is 40 tags. The system is very simple to use and it does not require any training for the customers. After total billing at trolley Bluetooth module is used to transfer all the data to the pc at the main billing section.

Literature Survey

Dr. Suryaprasad J in “A novel Low –Cost Intelligent Shopping Cart” [1] proposed to develop a assembly to scan

all types of products at the shopping point using RFID Reader antennas. Which also helps customers to search and select products.

Satish Kamble in “Developing a Multitasking Shopping Trolley Based on RF ID Technology” proposed to decrease the time required for overall shopping.

The main aspect of newly defined system is to provide a low cost, easily usable and rugged system for shopping.

2. BLOCK DIAGRAM

Smart trolley using Bluetooth module has following blocks. Transmitting section contains

- RFID Tag
- RFID Reader (EM 18)
- Bluetooth Module (HC 05/06)
- Power supply
- LCD display
- And receiving section contains only pc.

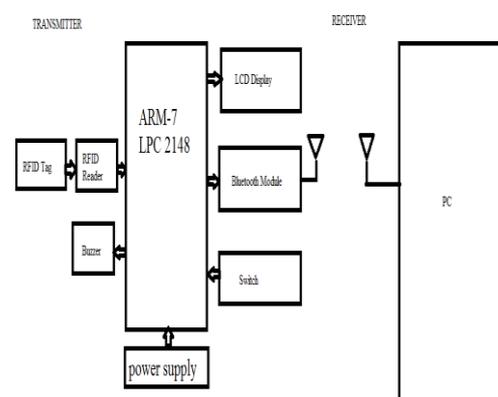


Fig.1:Block Diagram

3. HARDWARE COMPONENT

3.1. ARM LPC 2148

An ARM processor is one of a family of cpu’s based on the RISC architecture developed by Advanced RISC Machines. ARM makes 32 bit and 64 bit RISC multicore processor. LPC 2148 is the widely used IC from ARM 7 family. It is

manufactured by Philips and it is preloaded with many inbuilt peripherals making it more efficient and a reliable option for the beginners as well as high application developer. ARM-7 is one of the widely used microcontroller family in embedded system applications. ARM processors require significantly fewer transistors. This approach reduces costs, heat, and power use. ARM architecture is the most widely used architecture in mobile phones. LPC 2148 is a 64 pin IC. It has two ports i.e. port 0 and port 1. Each port is 32 bit wide. For port 0 three pins are not used (i.e. pin no. 24, pin no.26 and pin no. 27).

3.2.RFID Reader

RFID stands for Radio Frequency Identification. RFID technology is an automated data capture technology that identifies labeled or tagged objects wirelessly. The system consist of RFID Tag and Reader that relays the information on the tag, in the digital form, to a computer system. Reader antennas convert electrical currents into electromagnetic waves that are then radiated into space where they can be received by a tag antenna and converted back to electrical current. Just like tag antenna there is a large variety of reader antennas and optimal antenna selection varies per the solution's specific application and environment. Two most common antenna types are linear polarized and circular polarized.



Fig.2: RFID Reader

3.3.Bluetooth Module

Bluetooth is a wireless LAN technology designed to connect devices of different functions such as telephones, notebooks, computers (laptops and desktop), cameras, printers, coffee makers, and so on. Bluetooth LAN is an ad hoc network, which means that the network is formed spontaneously, the devices sometimes called as gadgets, find each other and make a network called piconet. Bluetooth technology has several applications. Peripheral

devices such as a wireless mouse or keyboard can communicate with the computer through this technology.

Monitoring devices can communicate with sensor devices in small health care center. Home security devices can use this technology to connect different sensors to the main security controller. Today Bluetooth technology is the implementation of a protocol defined by the IEEE 802.5 standard. Bluetooth is a high speed, low power consumption microwave wireless link technology, designed to phones, laptops and portable equipment together. Unlike infrared Bluetooth does not require line of sight positioning of connected units. The current prototype circuits are contained on circuit board 0.9 cm square, with a much smaller single chip version in development. When one Bluetooth product comes within range of another (this can be set to between 10 cm and 100 m) they automatically exchange address and capability details. They can then establish a 1 megabits/s link (up to 2 Mbps in the second generation of the technology) with security and error correction, to use as required. The radio operates on the globally available unlicensed radio band , 2.45 Ghz and supports data speeds of up to 721 Kbps as well as three voice channels. Each device has a unique 48 bit address from the IEEE 802 standard. Connections can be point to point or multipoint. Maximum range is 10 meters but it can be extend up to 100 meters by increasing the power.

4. Result

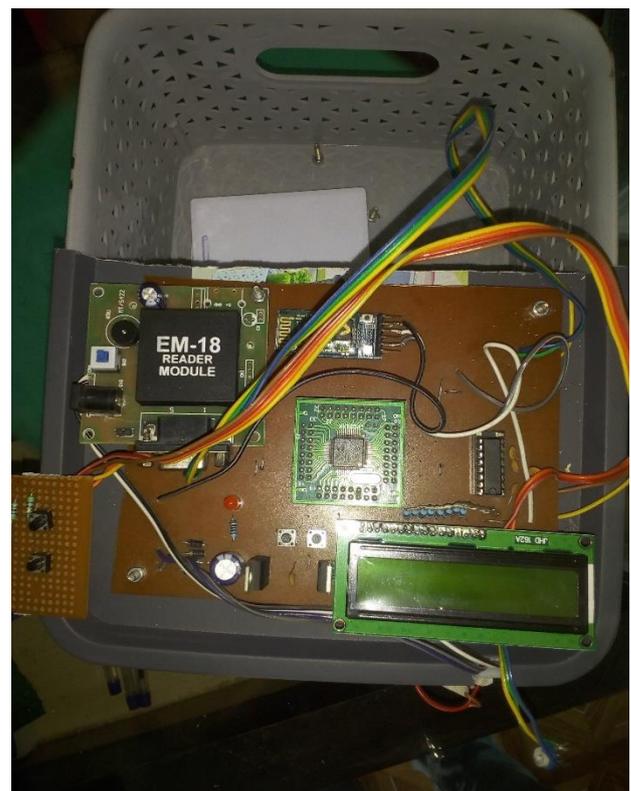


Fig. 3 Project system

5. Conclusion

We intent to simplify the billing process, make it swift and increase the security using RF ID technique. Different parameters such as the system parameters of smart trolley like product name, product cost are continuously display. Thus with the help of conclusion we can say that, Automatic billing of products by using RF ID technique will be more viable option in the future. The system based on RF ID technique is efficient, compact and shows promising performance.

6. References

1. Dr. Suryaprasad J, Praveen Kumar B O, Roopa D Arjun A Novel Low-Cost Intelligent Shopping Cart, Proceedings of the 2nd IEEE International Conference on Networked Embedded Systems for Enterprise Applications, NESEA 2011, Perth, Australia, December 8-9, 2011
2. Zeeshan Ali, Prof. Reena Sonkusare , "RFID Based Smart Shopping and Billing", International Journal of Advanced Research in Computer and Communication Engineering, Vol. 2, Issue 12, December 2013.
3. IEEE ANTENNAS & PROPAGATION MAGAZINE, 48, 2006, PP: 212-218 Theory and propagation magazine, 48, 2006, pp: 212-218, Theory and Measurement of Back scattering from RFID tags, P. V. NIKITIN , K.V.S. RAO.
4. Satish Kamble in "Developing a Multitasking Shopping Trolley Based on RFID Technology"