

# Smart Shopping Trolley with Automated Billing using Arduino

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**Abstract:- Using a barcode to find out the name and type of product with the Price limit for the customer to reduce the time spent in commercial places using card sensor and display the price of the product with an audio alert when passing the product. With Arduino Uno, the microcontroller that hides the data and displays It on the screen. In this project, a proposed “Intelligent Shopping Trolley” is represented with the objectives of reducing the total waiting time of customers, lower the total manpower requirement and expenses for markets and increase efficiency overall. In a world where technology is replacing the ways we pursue everyday activity, the future of the retail industry also lies in more and more automated devices.**

## I INTRODUCTION

Shopping mall is a place where people get their daily necessities ranging from food products, clothing, electrical appliances etc. Sometimes customers have problems regarding the incomplete information about the product on sale and waste of unnecessary time at the billing counters. Continuous improvement is required in the traditional billing system to improve the quality of shopping experience to the customers. [3] Now day's numbers of large as well as small shopping malls has increased throughout the global due to increasing public demand & spending. At the time of festivals, special discounts, holidays, etc. there is a huge rush in shopping malls. The use barcode reading technique in such situations always results in waste time since customer has to wait till whole items get scanned. These advantages can be avoided by using IOT based intelligent trolley proposed in this paper.[1] This system uses RFID technique instead of barcode. Proposed system uses separate RFID reader for each trolley and RFID Tag for each product. When customer buys any product RFID reader reads the tag which is present on the product. The cost of product and the total bill of shopping items can be displayed on 16\*2 LCD. IOT based intelligent trolley presented here is easy to use and does not require the special training to customers. RFID technique has many advantages over barcode systems. RFID reader reads the tag from a distance of 300 feet whereas barcode

can read the information at distance not greater than 15 feet. Also the barcode need one site of propagation. Reading frequency of barcode reads is only twotags whereas reading frequency of RFID is 40 tags.[5] So the use of RFID is more useful than traditional barcode reading technique. Here use of RFID is helpful for customer. Then what about owner? As each one of us is aware that single owner can have ownership of more than 2or3 malls or in each mall many sections are available, then how someone make control over it. Solution to above mentioned challenge is the use of ESP module. It will reduce the required hardware and also gives the real time information about commercial activity in all malls from any location. Using this system, customer will have the information about price of every item that are scanned in, total price of the item and also brief about the product. So use of this IOT based intelligent trolley for shopping malls is helpful for customer as well as owners.[6] In this project, a proposed “Intelligent Shopping Trolley” is represented. with the objectives of reducing the total waiting time of customers, lower the total manpower requirement and expenses for markets and increase efficiency overall. In a world where technology is replacing the ways we pursue everyday activity, the future of the retail industry also lies in more and more automated devices.

### A. Problem Definition

The main problem in this project the increased time factor while waiting to checkout, less knowledge among the products price and increased manpower to cover the cashiers.

### B. Project Objectives

Project objective describes the status, which should be achieved at the end of the Project It represents an information management according to the three Dimensions of the magic triangle (quality, time and costs)

## II. BLOCK DIAGRAM

The following block diagram represents the interface between the project blocks including the transmitter circuit and the receiver circuit.

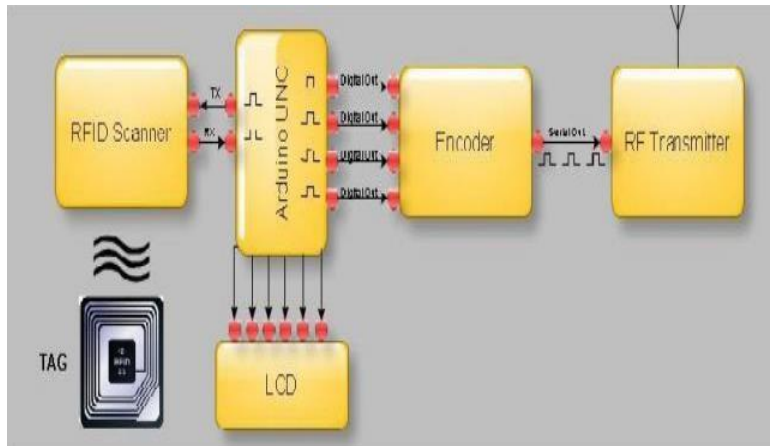


Fig. 1: Trolley Block Diagram

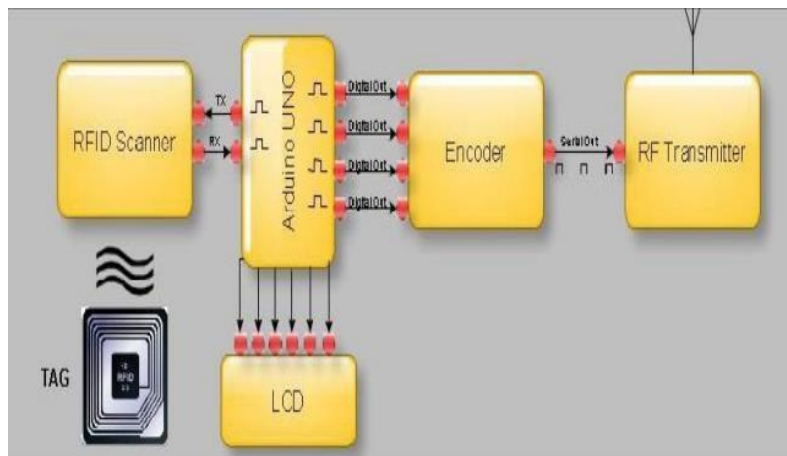


Fig. 2: System Block Diagram

**III. TRANSMITTER CIRCUIT DIAGRAM**

The transmitter circuit exists in the shopping trolley

which is controlled through Arduino board. The Arduino was included in order to read the TAG of each item Scanned by the RFID module that is interfaced to the Arduino.

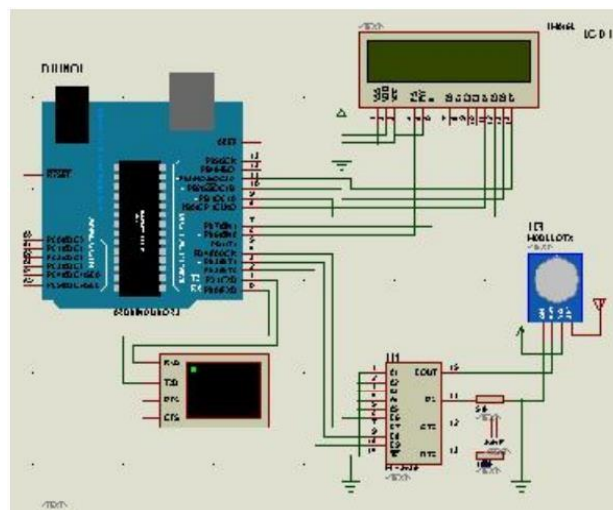


Fig. 3: Transmitter Circuit on Trolley

When the end user brings the item TAG near RFID scanner module the RFID radiate Frequency that charge the Passive TAG, while the TAG is charged it emits a Frequency that can be scanned back by the RFID reader or scanner, the frequency That emitted is generated by a resonance circuit that exists inside the TAG (Coil, Capacitor and resistor). Each

scanned item return information into LCD unit including the name of the item and the price and wait for the user to confirm buying process.

#### IV. RECEIVER CIRCUIT DIAGRAM

The receiver circuit exist in the cashier side, and it is responsible to collect items and process to prepare a temporary storing area and list of price including the total price, the circuit based on arduino developer board and the receiver module was interfaced to receive the item list RF Remote

Receiver Circuit As you can see the RF Transmitter Circuit consists of the Encoder IC and RF Receiver circuit consists of the Decoder IC Since the transmitter does not need a regulated 5V we have directly Powered it with a 9V battery the circuit is interfaced to personal computer to view the price list and the shopping Situation.

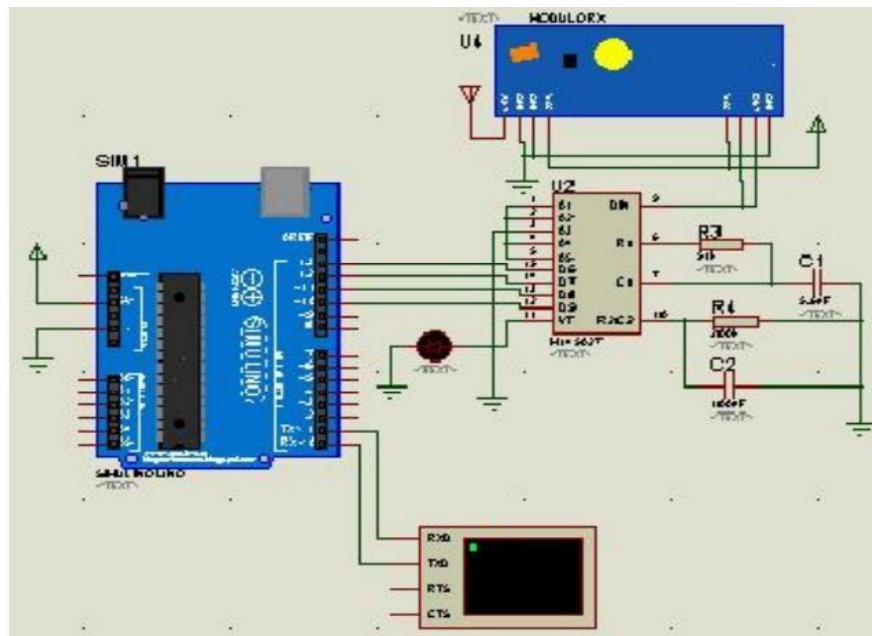


Fig. 4: Receiver Circuit on Cashier Side

The encoder and decoder that used with the transmitter and receiver, was used to Prevent the interference.

#### V. CONCLUSIONS

In this project, an implementation of “Intelligent Shopping Trolley” was done with To achieve the objectives that includes reducing the total waiting time of customers, lower the total manpower requirement and expenses for markets and increase Efficiency overall. The project was successful implemented and tested and achieve the goals by Solving the problem of increased time factor while waiting to checkout, less knowledge among the products price and increased manpower to cover the Cashiers

#### REFERENCES

- [1.] Ekta Maini, Jyoti Sheltar, “Wireless Intelligent Billing Trolley for malls”, International Journal of Scientific Engineering & Technology volume No.3 Issue No. 9, 1175-1178. 1 sept 2014.
- [2.] Satish Kambale, “Developing a multitasking shopping Trolley Based on RFID Technology”, IJSCE ISSN: 2231-2307, volume-3, Issu-6, January 2014. pp: 179-183.
- [3.] Vadita Gangwal, “Smart Shopping cart For Automated Billing using Wireless sensor N/W”, International Institute of Informational Technology. pp:168-172.
- [4.] Vinutha M.L,” Shopping and automated using RFID Technology”, International Journal of electronics and communication engineering and technology, volume No.5, Issue 8, August (2014), pp: 132-138.

- [5.] Hiren Jethava,” Electronic shopping cart facility for blind people using USB firmware”, International journal of Emerging Technology and Advanced engineering, volume 4, Issu6, (January 2014) pp:647-651.
- [6.] Nisha Ashok Somani,” ZIGBEE: A low power wireless technology for industrial applications”, International Journal of control theory and computer modeling, volume no.2, May 2012 pp: 27-33.