

# SHOPPING TROLLEY FOR SUPER MARKET BILLING SYSTEM

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## ABSTRACT

*In this project to avoid the long queue in billing section to introducing smart trolley technology in all super market for consider those difficulties. To proposed the system implementation WSN (Wireless Sensor network) using microcontroller as a technology. To implement the RFID (Radio Frequency IDentification) in the shopping trolley in order to save the shopping time, to calculate the barcode in a material, calculating the total amount for the thing added in the purchasing trolley. An RFID Reader with electronics hardware system is fitted with the trolley to make the purchase comfortable. When the item is shown in front of the reader (fitted in the trolley) the amount for the item is added to the purchase bill and it is shown on the LCD (Liquid Crystal Display). It also has the provision for removing the items from the trolley where the cost is reduced from the total cost. All this information is send to a computer for billing update through a wireless link. This facilitates the billing system even faster and reduces time.*

**Keywords:** Shopping malls, RFID tag, RFID reader, ESP module, LCD display, IOT, ESP and Trolley.

## I.INTRODUCTION

In order to avoid the long queue in billing section we are introducing smart trolley technology in all super market for consider those difficulties. We proposed the system implementation WSN (Wireless Sensor network) using microcontroller as a technology updated in order to fulfill these needs and technology had come forward in implementing several automatic identification technologies. To implement the RFID (Radio frequency identification) in the shopping trolley in order to save the shopping time and we can calculate the barcode in a material, and doing calculation by providing the total amount which is the thing added in the purchasing trolley. An RFID Reader with electronics hardware system in fitted with the trolley to make the purchase comfortable. All the items are fitted with a RFID card whose price is fixed into the card. When the 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. All this information is sent to a computer for billing update through a wireless link. This facilitates the billing system even faster and reduces time. Also this whole information will be send through Ethernet

module to internet. Also we use ESP (Extra Sensory Perception) method which is helpful to owner. This task is to develop a system that can be used solve the above mentioned challenge.

**II.VISUAL ABSTRACT**

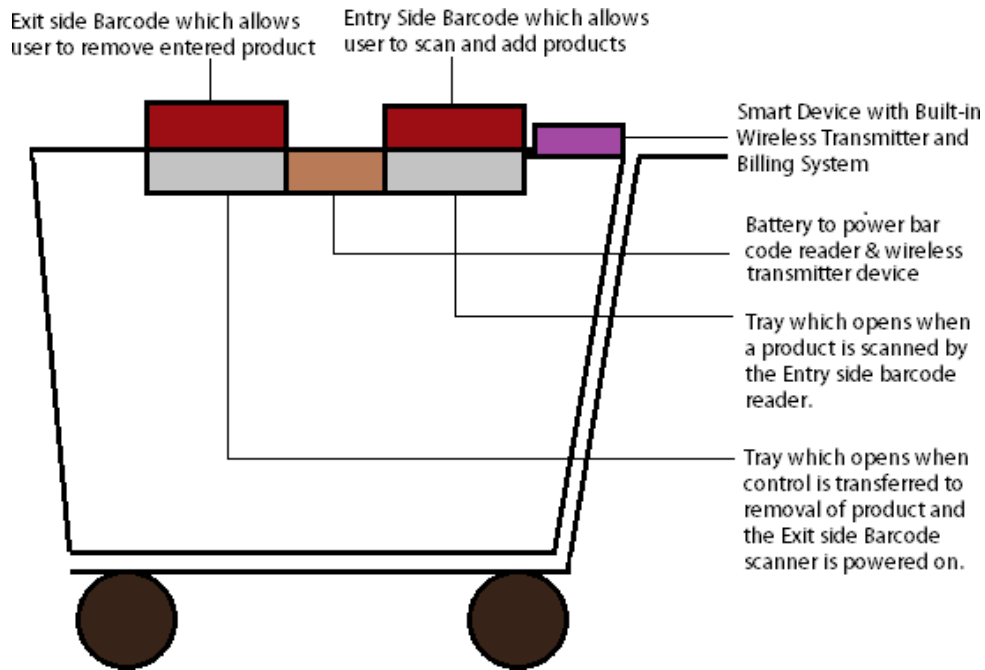


Fig. No 1.1 Barcode Trolley

**III. BLOCK DIAGRAM**

**3.1 Transmitter**

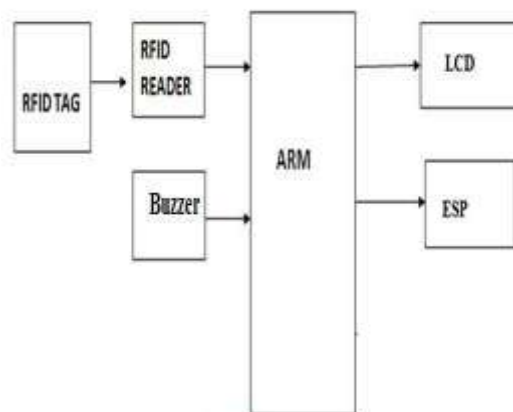


Fig. No 3.1.1.Block Diagram of Transmitter

### 3.2 Receiver:

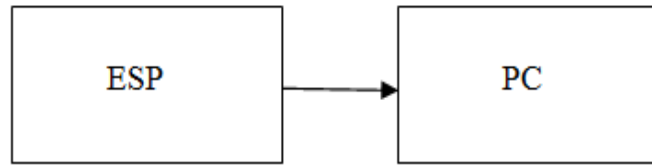


Fig.No 3.2.1. Block Diagram of Receiver

## IV.ZIG BEE MODULE

Zig Bee technology is a standard for data communications with business and consumer devices. It is designed around low power consumption allowing batteries to essentially last forever. The Zig Bee standard provides network, security and several application support services. Zig Bee is a low cost, low power wireless mesh networking standard. The low cost allows the technology to be widely deployed in wireless control and monitoring applications, the low power-usage allows longer life with smaller batteries and the mesh networking provides higher reliability and larger range.



Fig. No.4.1. .Zig Bee Module

## V.LCD DISPLAY

A 16x2 LCD means it can display 16 characters per line and there are 2 such lines. In this LCD each character is displayed in 5x7 pixel matrix. This LCD has two registers, namely, Command and Data. The command register stores the command instructions given to the LCD. A command is an instruction given to LCD to do a predefined task like initializing it, clearing its screen, setting the cursor position, controlling display etc. The data register stores the data to be displayed on the LCD. The data is the ASCII value of the character to be displayed on the LCD.



Fig. No.5.1. 16x2 LCD Display

**VI.READER AND TAG(RFID)**

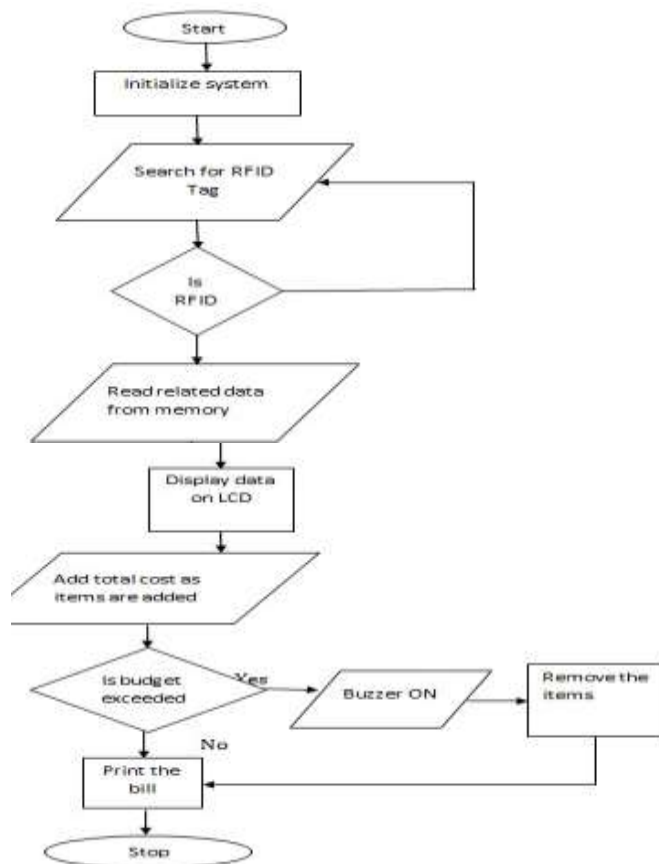
A radio frequency identification **reader (RFID reader)** is a device used to gather information from an **RFID** tag, which is used to track individual objects. Radio waves are used to transfer data from the tag to a **reader**.

**RFID** is a technology similar in theory to bar codes. Automatic identification technology which uses radio-frequency electromagnetic fields to identify objects carrying tags when they come close to a reader.



**Fig. No. 6.1 Reader and Tag(RFID)**

**VII.FLOWCHART OF BILLING SYSTEM**



**Fig. No.7.1.Flow Chart**

## VIII.COMPONENTS

The block diagram consists of the following components:

- RFID Reader
- RFID Tag
- LCD Display
- ARM

### 8.1 RFID Reader

- A radio frequency identification **reader (RFID reader)** is a device used to gather information from an **RFID** tag, which is used to track individual objects. Radio waves are used to transfer data from the tag to a **reader**.
- **RFID** is a technology similar in theory to bar codes. Automatic identification technology which uses radio-frequency electromagnetic fields to identify objects carrying tags when they come close to a reader.

### 8.2 RFID Tag

- **RFID tagging** is an ID system that uses small radio frequency identification devices for identification and tracking purposes
- An **RFID tagging** system includes the **tag** itself, a read/write device, and a host system application for data collection, processing, and transmission
- **RFID** methods utilize radio waves to accomplish this. At a simple level, **RFID** systems consist of three components
- **RFID** tags contain an integrated circuit and an antenna
- Which are used to transmit data to the **RFID** reader (also called an interrogator)
- **Three components:**
- **RFID** tag or smart label
- **RFID** reader
- Antenna

### 8.3ARM

- ARM makes 32-bit and [64-bit](#) RISC [multi-core processors](#).
- ARM processors are extensively used in consumer electronic devices such as [smartphones](#), [tablets](#), multimedia players and other mobile devices, such as [wearables](#).
- Because of their reduced [instruction set](#), they require fewer [transistors](#), which enables a smaller die size for the

integrated circuitry (IC).

- The ARM processor's smaller size, reduced complexity and lower power consumption makes them suitable for increasingly miniaturized devices.

#### 8.4 LCD DISPLAY

- LCD (Liquid Crystal Display) screen is an electronic display module and find a wide range of applications.
- A 16x2 LCD display is very basic module and is very commonly used in various devices and circuits

##### 4.4.1. PIN DIAGRAM

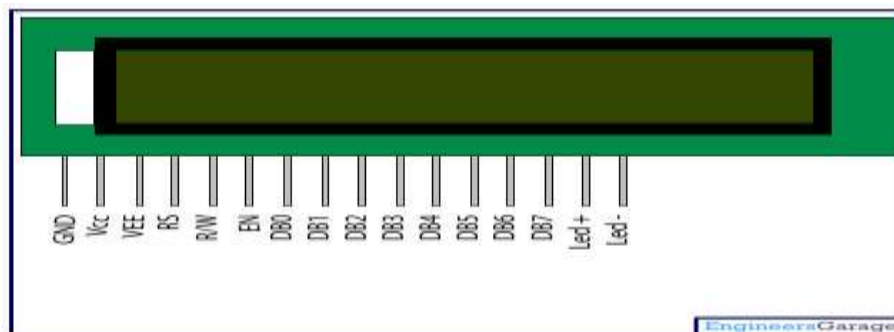


Fig. No.8.4.1.1 Pin Diagram

#### 5. DISADVANTAGES OF EXISTING SYSTEM

- Requires large database
- Cannot track the product information if RFID tag is abraded
- Requires constant battery backup for RFID
- customer are spend more time in billing system

#### 6. ADVANTAGES OF PROPOSED SYSTEM

- Reduces man power required in purchasing section
- Users can be aware of the total bill amount during the time of purchase
- Reduces time spent at the billing counter and increases customer satisfaction
- Display Product Info, Expiry Date and Better Alternative
- Does not need any special training
- Customer can get throughout information at the time of shopping
- Can guess exact amount at the time of shopping

- Save time
- More efficient because use of RFID
- WSN (wireless sensor network) used to send the total amount to the main system

## IX.CONCLUSION

We come to a conclusion that the Intelligent Shopping Basket is most certainly a definite necessity for the Retail marketing industry for fast billing. In future this intelligence system will advise the customer which products can be removed from the basket if the budget exceeds. We have to find the mechanism to deselect the removed products from billing.

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