

## ADVANCED SHOPPING CART USING IOT

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**ABSTRACT:** *The main goal of the plan is to implement a smart shopping cart with RFID technology to improve the shopping experience. The plan is to implement RFID surveillance in the shopping cart. In this regard, RFID cards are used as a means of protection when purchasing goods. In a large shopping center. If the item has been placed in the shopping cart, the price of the item will be displayed, so the total amount will be displayed, if desired. To remove a product from the shopping cart, you can withdraw that product, and the amount of that particular product will be deducted from the total. At the same time, technology is used to purchase products to improve safety and shopping speed in shopping centers. Because the problem we encounter in shopping malls is the instinct of RFID technology, that is, instinctively identifying the goods in the shopping cart, thereby destroying the shopper, and the shopper will interfere with the task of buying and paying for the goods. In this project, we use Arduino controller, RFID and LCD technology to implement an RFID-based shopping cart. The complete list of products added to the shopping cart and their value will be sent to the checkout website via the Wi-Fi module.*

**Keywords:** RFID, ESP8266 Wi-Fi module

### 1. INTRODUCTION

The dynamic growth and exciting new developments of the Internet of Things (IoT) have paved the way for the unique use of technology in many fields. Interact with devices and use them in daily life.

Nowadays, supermarkets and large shopping malls are so commonplace that they are no longer only available in cities. Anyone can go to these stores to buy the goods they want, but this is not very convenient, especially when buyers have to queue for hours on busy days.[5] RFID technology has developed rapidly recently. We have seen applications in various industries, from scanning employee IDs in the office to publishing books in libraries. RFID stands for radio frequency identification, where information is digitally encoded on a label that can be RFID tags are usually captured by radio waves, and the captured data is stored in a database. RFID tags are similar to conventional barcodes in use and function because they are used for data processing. However, there are some key differences. For barcodes, barcode readers usually have to visually register the code to obtain information, while RFID uses radio waves. No line of sight is required as a data logger.[1] RFID has an automatic tracking function and allows new information to be updated from time to time, while barcode scanning requires manual tracking of data and cannot update records. The disadvantages of barcode systems include durability issues. The goal is to create a system that combines the convenience of RFID tags and wireless detection with a simple and convenient tracking system that customers can use to purchase products. No need to wait in line. What the buyer has to do is to add the product to the shopping cart and let readers search for the product to obtain information. The car is equipped with an LCD touch screen with product information.

## LITERATURE SURVEY

The author has developed a smart shopping cart equipped with facial recognition and information retrieval functions. They also use automatic billing to avoid queues at checkout and ensure a seamless shopping experience by adding the Internet of Things to the shopping cart to provide customers with smart systems.

The author managed to implement a cheap, intelligent and fully functional system to make the purchase convenient and convenient. They use RFID technology because it has effective tracking and security features. And according to the availability of the product in the shopping cart, delete, recommend, increase and reduce the cost of the product. The author developed a smart shopping cart through recruitment The RFID reader in the shopping cart is connected to the central server through a wireless mode called ZigBee, which can automatically generate invoices when scanning products, and then forward them to the central department for invoice processing. The disadvantage of this system is that it only allows payment by meter, which hurts the user experience.[11]

The author created a conceptual model that uses products and RFID tags installed on ZigBee to transmit invoices to a central server. The disadvantage here is also the lack of alternative payment methods for invoices, rather than traditional anti-payment methods. After identifying the customer, you should receive the invoice immediately, which will cause the customer to queue up.

The author has developed an advanced shopping cart, in which each shopping cart has an RFID reader, and each product has an RFID tag. After scanning the product, the information will be displayed on the LCD screen to provide consumers with all the information about the product. Customers avoid long lines, but there are also the disadvantages of being stolen and collisions.[8] The author successfully created a central automatic accounting system. Each

car is equipped with a product identification device (PID), which includes an RFID reader, LCD display, EEPROM, microcontroller, and ZigBee module for wireless transmission. The biggest advantage of this system is that customers can live without cash by successfully implementing the queuing avoidance method. ...

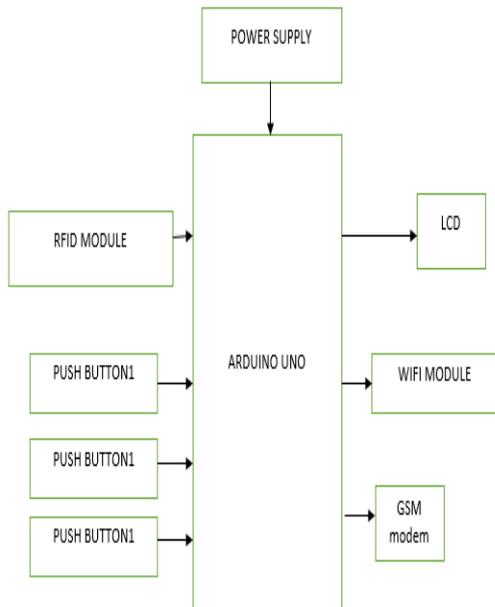
## 2.EXISTING SYSTEM:

The current system requires a lot of manual operations on the client side. It helps to track and identify the shopping cart, which is useful for managing the business, but it is meaningless to the buyer. This is not a viable time-saving solution. Shoppers in the store, usually when paying and paying online. This is due to the lack of alternative payment methods and conflict issues, because signals can be easily intercepted. The main disadvantages are customer dissatisfaction and ease of use.

## 3.PROPOSED SYSTEM:

The goal is to create a system that combines the convenience of RFID tags and wireless identification, as well as a simple and easy-to-use tracking system, so that buyers can purchase goods without queuing. All the customer has to do is to add the product to the shopping cart, and then ask readers to search for the product for information. The system allows customers to scan merchandise, and the shopping cart will automatically update the total cost and invoice for the customer. The budget for triggering the alert, and the disposition of the product if it is deemed unnecessary and its total bill value. The system is designed to send billing information to a central server in real time using the ESP8266 WiFi module, which tracks all shopping carts and allows customers to access the built-in purchase tracking application. Due to the functionality, versatility and adaptability of a shopping cart with RFID, digital payment makes it a modern shopping system. Purchased by the buyer, click the button in the shopping cart, and the final invoice will be created

**4. BLOCK DIAGRAM:**



**5. MODULE DISCRIPTION**

**5.1. ARDUINO UNO:**

Arduino Uno is an open source microcontroller card based on the Microchip ATmega328P microcontroller developed by the company. The card is equipped with digital and analog input/output (I/O) pin groups, which can be connected to various expansion cards (shield) and other circuits. It has 14 digital I/O pins (six with PWM output function), 6 analog I/O pins, and can be programmed with Arduino IDE (Integrated Development Environment) via USB Type B cable. It can be powered by a USB cable or an external 9-volt battery, although it can accept voltages between 7 and 20 volts. It is similar to Arduino Nano and Leonardo. The hardware reference design has been licensed in the same way as Creative Commons Attribution 2.5 license. It can be found on the Arduino website. Design and manufacturing files are also available for some hardware versions.

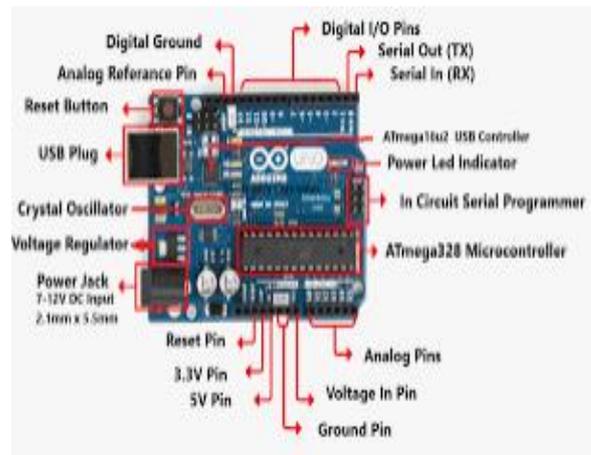
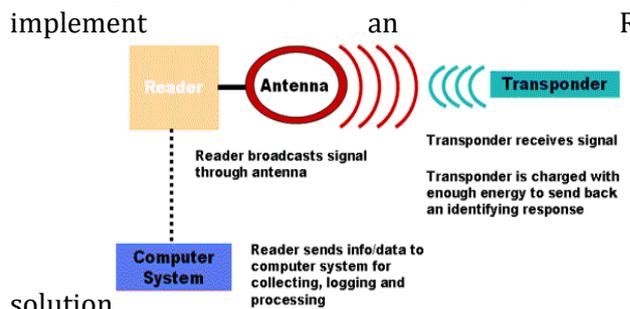


Fig:1 Hardware component Aurdinouno

**5.2. RFID MODULE:**

RFID is the abbreviation of radio frequency identification, which refers to the technology in which readers use radio waves to capture digital data encoded on RFID tags or smart tags.[12] RFID is similar to a barcode because the tag or the data on the tag is captured by the device that stores the data in the database. However, RFID has some advantages over systems that use barcode asset tracking software. In particular, RFID tag data can be read from outside the line of sight, and barcodes must be read. Align with the optical scanner. If you want to implement an RFID



solution

FIG:2

**5.3. WIFI MODULE:**

The ESP8266 WLAN module is an independent SOC with an integrated TCP/IP protocol stack, through which each microcontroller can access your WLAN network. ESP8266 can host APP or load all Wi-Fi network functions from another APP processor. Each

ESP8266 module has been pre-programmed. Use ATcommand Suite firmware, which means you can plug it into an Arduino device and have as many Wi-Fi functions as a WiFi screen (ready to use)The ESP8266 module is a lucrative circuit board with a large and steadily growing community.

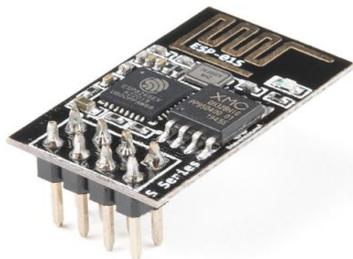


FIG:3

**5.4.GSM Module:**

Digital cellular technologies such as GSM (Global System for Mobile Communications) are used to transmit mobile data and voice services. In 1970, Bell Labs realized this concept through a mobile radio system. As the name suggests, this is the name of the standardization organization, which was established in 1982 to create a common European standard for mobile phones.[10] This technology accounts for more than 70% of the global mobile digital subscriber market. The technology was developed using digital technology. Today, GSM technology supports 1 billion mobile phone users in the above 210 countries/regions. This technology can provide simple to complex voice and data services. This article provides an overview of GSM technology.



GSM Modem

FIG;4

**6.RESULTS**

**ADVANCED SHOPPING CART:**



FIG:5

**SHOPPING CART KIT:**



FIG:6

**WORKING CONDITION OF SHOPPING CART KIT:**



FIG:7

**OUTPUT OF SHOPPING CART KIT IN GSM MODULE:**

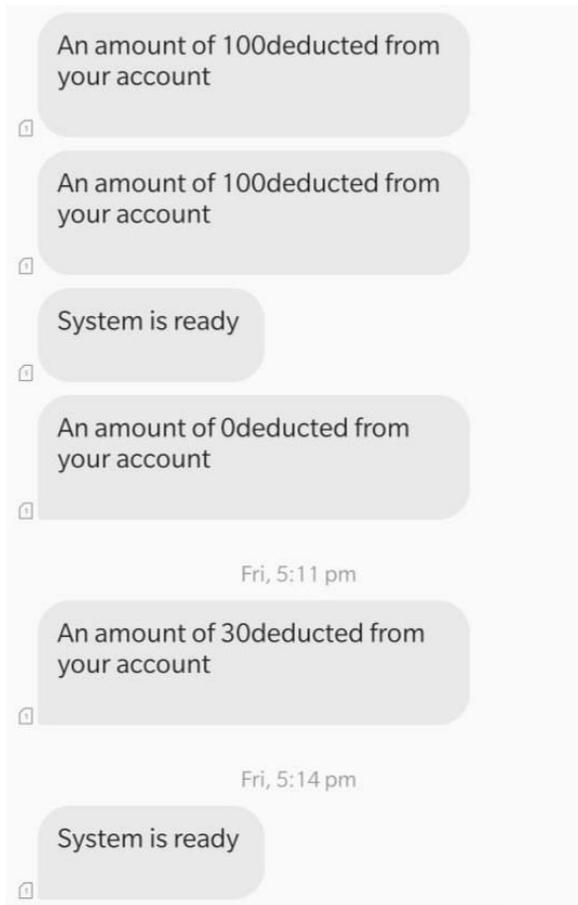


FIG:8

**6.CONCLUSION**

A system based on RFID technology has been successfully developed, which can replace the traditional bar code system. The bar code system has several disadvantages, including strict line-of-sight requirements and the need to place oneself on a specific boundary when scanning, not to mention issues related to its persistence and the inability to update information. The only known limitations of RFID scanning are distance and range. Information and data coverage have been considered for changes. They can also operate under extreme temperature conditions and will not suffer physical wear,

breakage or damage under water. This makes the process reliable, flexible and adaptable. The fixed door and servo motor together ensure that no unscanned products enter the shopping cart before payment. Provide different payment methods through e-wallet or bank The account ensures that every penny is paid and prevents penny fraud. The proposed project is feasible because it relies on existing technology. After purchase, please block the app using the ionic framework and make it available to all customers. The only disadvantage is that if the server goes down for some reason, it will crash.

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