IOT BASED SMART SHOPPING CART

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ABSTRACT:

Smart Shopping cart gives solution to reduce the shopping time at supermarkets, malls and department stores etc.. Every supermarket employs shopping trolley in order to aid customers to select the products which they intend to purchase. At billing counter customer face many problems like waiting and don't know even they have sufficient money for the products they purchase..The billing process at the counter is a time consuming and also need more human resource in the billing section. To tackle this problem, we have proposed a solution in which a smart shopping cart is used to overcome these problems.It has RFID reader and LCD display, which can be used to scan the products and display the product information, cost and total bill. The customer can pay the bill through any one of online payment options such as Paytm, UPI, PhonePay etc. This solution will increase the consumer experience and reduces the shopping time.

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. 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 . 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 requires 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 two tags whereas reading frequency of RFID is 40 tags . So the use of RFID is more useful than traditional barcode reading technique.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 smart shopping cart for shopping malls is helpful for customer.

II. LITERATURE SURVEY

Mobeen Shahroz , Muhammad Faheem Mushtaq , Maqsood Ahmad , Saleem Ullah , Arif Mehmood , And Gyu Sang Choi proposed IoT-Based Smart Shopping Cart Using Radio Frequency Identification The modern age of technology in which most of the customer needs to wait in the supermarket for shopping because it is a highly time-consuming process. A huge crowd in the supermarket at the time of discount offers or

weekends makes trouble to wait in long queues because of a barcode-based billing process. In this regard, the Internet of Things (IoT) based Smart Shopping Cart is proposed which consists of Radio Frequency Identification (RFID) sensors, Arduino microcontroller, Bluetooth module, and Mobile application. RFID sensors depend on wireless communication. One part is the RFID tag attached to each product and the other is RFID reader that reads the product information efficiently. After this, each product information shows in the Mobile application. The customer easily manages the shopping list in Mobile application according to preferences. Then shopping information sends to the server wirelessly and automatically generates billing. This experimental prototype is designed to eliminate time-consuming shopping process and quality of services issues. The proposed system can easily be implemented and tested at a commercial scale under the real scenario in the future. That is why the proposed model is more competitive as compared to others

III. EXISTING SYSTEM

Shopping in malls and supermarkets is becoming a daily activity in everyone's life. There will be big rush at these malls, especially at the billing counter. People purchase different items and put them in the respective carts. After completing the purchases, one need to go to the billing counter for payments. The cashier prepares the bill using bar code reader which is a time-consuming process and results in long queue in the billing counter. So, to avoid this, a cart which reads the price of the products purchased with the help of Controller, RFID (Radio Frequency Identification) reader and RFID tag is introduced. The amount of each product and the total amount for the purchased products will be displayed in the LCD mounted in their cart. If a product is to be removed from the cart, they amount of it is also removed.Adding and removing of products can be done and prices are displayed accordingly. Then, by viewing the total price, people can make their payments through card wallet.The card wallet can recharged whenever needed. Thus, the payments can be done easily and the time of the customer is also saved.As people have become habitual to faster services and technology, no one would prefer waiting in long queues for billing. As per the customers perspective the Smart shopping is the best solution to provide efficient and effortless shopping.Thus, Ingenious Cart minimizes the waiting time. And more over as it is an easy to use method with simplified steps it makes the customers comfortable with the entire shopping process through this adroit journey along the respective markets/store.

IV. PROPOSED METHODOLOGY

In this smart shopping cart we propose that every customers will experience a digital and planned shopping. The key objective of future system is to deliver an expertise concerned with, low-cost, easily accessible, and an even System for supporting shopping. The RFID power-driven electronic shopping trolley is built to improve the complete shopping understanding for computer electronics store consumers. Upon enlisting a thing in the shopping trolley, the consumers can admittance variety of item information.A customer goes into a shopping centre then she/he first takes a trolley. Every last trolley is joined with a RFID reader per user. The context work is the idea at which the purchaser buys a thing, the purchaser must be inspecting the thing first with help of identical tag are available in each item using the RFID per consumer. At that point that attained thing can be fixed into the cart. While the customer is inspecting the RF tag of the item, a cost of the buying item is taken. When the customer punch RFID card to RFID reader, RFID reader will give identical number of RFID card to via serial communication. Every product in the shop or a mall will have an RFID tag on it.Each Cart will have an RFID reader and LCD display implemented on it to Display Product Info, Price and Quantity.The Card will be recharged with amount and the bill price will be deducted from wallet of card.The products taken are shown in LCD and also after it dynamically added for bill.Product without bill can be shown if amount exceeds the bill also buzzer is connected simultaneously.Through this method customers get knowledge of the product and also can plan about purchase of product without hesitation.Using this system theft or irregularities in billing can be avoided.Major drawbacks of existing conventional shopping method such time consuming cash payments ,unknown knowledge of product,cross check over wallet price and product price can be overcomed through this process.The crowding is avoided also it makes the process faster than conventional one.Smart shopping cart enable user to shop they want with the knowledge of price of the product.

PRODUCT CART

In the initial process, when a customer adding product into the cart the RFID reader reads the RFID tag. After reading a RFID tag the product information are passed to controller which controls the data and transmit.Each product will have unique ID.

DYNAMIC INVOICE

The information transmitted is displayed with product details with price and the bill is generated and amount from card wallet is deducted.If the amount exceeds card balance then extra or unblilled product in the cart is identified

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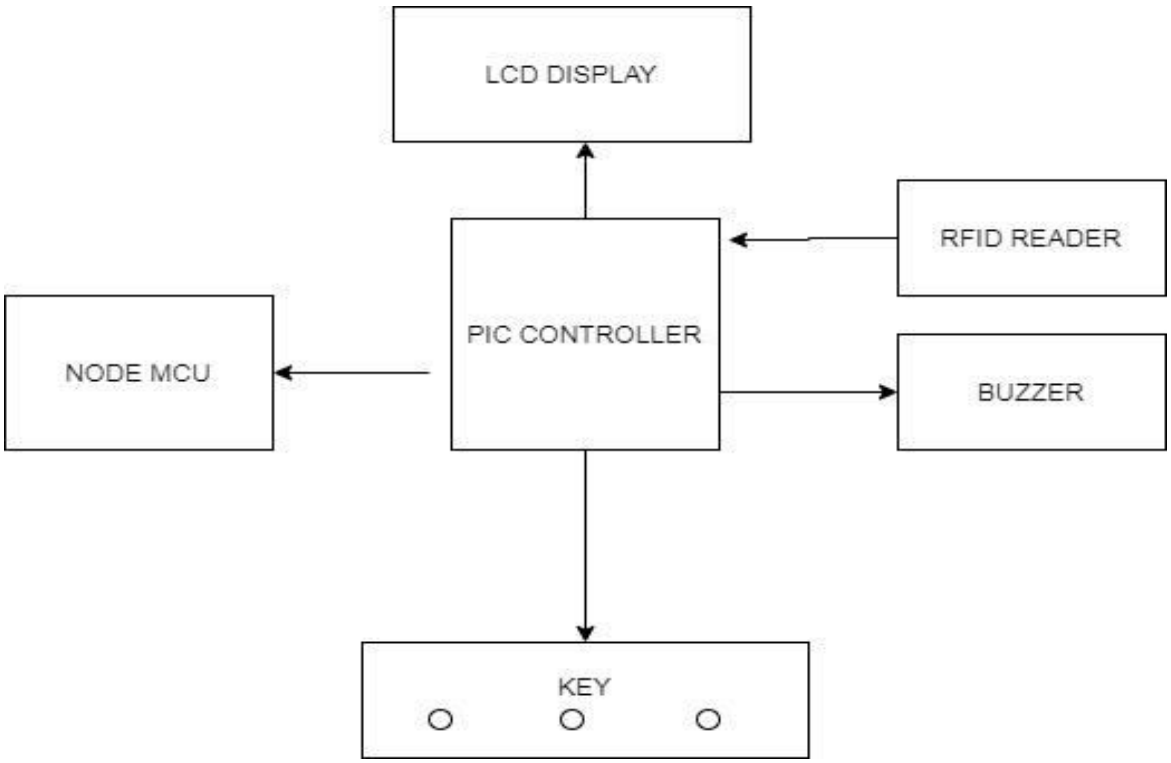
The acknowledgement of purchase of products are sent to respective customer.

V. ARCHITECTURE



VI. DESIGN AND IMPLEMENTATION

Controller is connected to RFID reader and components respectively.Every product has RFID tag which reads the product information and passed to controller which controls the data and transmits the data.The transmitted data are displayed in LCD placed in cart.The product details like name,price,type etc..are displayed.The product invoice is dynamically generated after product added to cart also displayed in screen.The payment for invoice is deducted from card wallet and done.If payment exceeds card wallet balance then it is noted for unbilled or extra product in cart.Buzzer is connected simultaneously to controller.The acknowledgement are given to customers after purchase respectively.

VII. FUTURE ENHANCEMENT

Cart leads to efficient shopping and save time of people at mall and other shopping places.It gives a complete knowledge about products and prices.The cart enables us to plan shopping accordingly which is major factor of this system.As the price of the product is known purchase of the product can be done easily.The invoice of the product is generated which helps the customer to get to know that it is eligible to buy or decline.The card wallet system is more effective it can be taken from and also can be recharged.If card wallet is insufficient card may decline and purchase of product is not possible.So,in shopping cart card is driving factor which makes shopping easier.Cashless payments are going to be the future,owing to that we proposed a system which covers overall needs of smart shopping also overcomes the drawbacks of conventional shopping method.This smart shopping method will improve not only the shopping experience also enhance lifestyle of people.

VIII. CONCLUSION

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