RESEARCH ARTICLE   OPEN ACCESS

A Review on Smart Trolley and Billing System

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ABSTRACT
As the technology is developing and seeing new inventions in various fields including machine learning, internet of things and so on, there is an increase in the expectations in the customers point of view. With the fast moving life. Today purchasing various items in malls or supermarkets require a trolley. Product procurement represents a complex process. On each occasion customer has to pull the trolley from rack to rack for collecting items and simultaneously customer has to perform estimated expense computation the consumers absolutely have no time to stand in long queues in order to get their work done. At the end, customer has to wait in queue for billing and payment. To overcome that we have been developed a smart way for shopping. In this paper, we are presenting a smart shopping system using RFID and Raspberry Pi controller. The trolleys in the shopping malls are automatically bill of all the products put into them and the final bill is sent to a web application which can be display on TFT Display which attached to trolley and pay the on trolley to avoid waiting in billing queue while constantly thinking about the budget. The system is also subjected to anti-theft management where the system doesn't let any customer take non-billed items.

Keywords: RFID, SMART SHOPPING, RASPBERRY PI, IR SENSOR, PYTHON.

I.INTRODUCTION

The word smart is trending lately in the field of IoT. Every object around us is being made smart so as to make our work easier. With the increase in internet technology, food items are available at our door steps whenever needed. But the experience of going to a mall and shopping the things all by ourself has its own advantages and disadvantages as well. The advantage is that we can carefully select the best product according to our choice and judge the product by seeing, touching and feeling it. The major drawback of this is standing in stretched out line of customers for paying off the bill. The brought forward smart shopping structure avoids this drawback and also has additional features for the convenience of the consumer. The intensified Smart Shopping Cart System helps the customers in minimizing the considerable amount of time that customers used to spend in shopping. In this smart shopping cart system, real-time updates on the inventories are also provided in the store management section. The main technologies that play a vital role in this proposed system are : (i) Raspberry Pi for achieving wireless communication with Server (ii) Infrared sensors (iii) RFID tags for product identification, and (iv) Web application displaying amount payable and managing the inventories detail. Radio frequency identification is swiftly and quickly advancing technology. Small tags present in the RFID systems are attached to the products. The RFID readers wirelessly read the tag attached to the product for collecting the information about it, that might be related with some random data records. Thus, RFID systems identify the objects and collect the information about it automatically, similarly as the optical bar code readers do. The Smart Shopping System with the Smart Cart has the prospective to make a very smart shopping affair easy, congenial, amiable and systematic to the customers, it also makes controlling of the inventories more comfortable and easier for the store management.

II.PAPER REVIEWED

1.RFID Based Automatic Billing Trolley :
In this paper the author designed system for shopping mall. The system is placed in the trolleys. It consist of RFID reader and each product has RFID tag. When person puts any product in the trolley its code is detected and the price of those product stored in memory as we put the product the cost gets added to total bill. The billing is done in trolley itself. Item name and its cost display on LCD. At the billing counter the total bill transferred to PC by wireless RF module. The disadvantage of this project is after completion of shopping a key

is pressed indicating the final billing of all the product. After pressed the key we can't add or remove the products.

2. Smart Trolley System For Automated Billing Using RFID And Zigbee:

In this paper the author designed system for shopping mall. In this paper they developed a smart way for shopping. In that each and every product has RFID tag instead of barcode scanner. The smart trolley consist of RFID reader LCD display and Zigbee transmitter. In this system When a person puts any product in the trolley it will scan the product and the cost and the name of the product will be displayed on the LCD. The sum total cost of all the products will be added to the final bill, which will be stored in the microcontroller memory. It will wirelessly transfer the product information of the items placed in the trolley using a Zigbee transmitter to the main computer. Disadvantage of the system is in Zigbee there is distance barrier is occur.

3. Smart Trolley And Automatic Billing:-

In this paper the author invented such a system it consist of RFID, ARM7 , Display, Power supply, Switch, IR sensor pair, Barcode reader Visual Basics. The system works as the inventor use the barcode reader as well as RFID. In that if we put any product into the trolley then the product has RFID then the RFID reader reads the value or if the product has barcode sticker then the barcode reader read the value of product and the total bill is displayed on the display. If we want to remove any product from the trolley then there is a switch, if we press the switch then we remove the product from the trolley. And our shopping is done through the serial communication we transferred the total bill to the counter for printing the hardcopy of the product bill. There is also facility for the payment is credit card or any other. The disadvantage of the system is the their uses both the reader RFID and Barcode Reader because of that the system becomes more complex.

4. Implementation Of Smart shopping Through Automated Billing Trolley:-

In this paper the author found such a system it consist of GSM, RFID, Automatic Billing, OTP, ZIGBEE, PIC. In this system the product can be read by the RFID reader and the price of the product is displayed on the display. And in that system require the current mobile number for the GSM to generate the OTP for Net-banking to pay the online billing. In that system we also add or remove the products and the total bill also updated accordingly need.

5. Smart Trolley With Smart Billing:-

In this paper the author invented such a system that present the paper smart trolley with smart billing. In that they representing the system with additional functionality that functionality will calculating and updating the customer bill when they stored the purchased product into the cart. Also customer able to view their products weight and name on the display. They represented this paper because they added some additional features in existing system like in this system the product weight and name shown on display, if product weight is less than stored weight then buzzer will beep. Also when shopping is done the customer have to press a button then the billing counter display the number of particular trolley on LCD and then customer have to goes and take away product   after   paying   bill.

If the customer wants to remove some product then that cancellation is done at the billing counter. The new bill is generated only if the customer removed some product from their shopping.

Limitations:-   :-
It   is   difficult   to   stick   RFID   tag   to   some   products.
Here ZIGBEE is used to establish the communication between Cart and billing counter so the ZIGBEE having a distance barrier.

I.

III.CONCLUSION

We have reviewed different papers on smart shopping systems. From the above all five paper we conclude that shopping can be easier by using smart trolly and such systems can be built by using different controllers but it makes the system bulky. To overcome this problem we can use the Raspberry pi to implement smarter system. By using raspberry pi, the system becomes less bulky and easy to interface and there is no need of extra module to interface the RFID and other component. The coding will be done in the Python because of python the code is less lengthy and easy to understand.

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