Smart Shopping Trolley System using Microcontroller

KHUSHBOO PANDE[1], SHRUTI TEMBHURNE[2], SHIVANI YERNE[3], PROF.V.S.GAWALI[4]

[1,2,3]*Student, B.E(Appearing), Department of Electronics and Telecommunication , Government College of Engineering, Chandrapur, Maharashtra, India*
[4]*Assistant Professor, Department of Electronics and Telecommunication, Government College of Engineering, Chandrapur, Maharashtra, India*

---***---

ABSTRACT:- *Today visiting shopping mall to buy our daily needs is now become one of the regular activity .whatever people wants to purchases they put that product in the shopping trolley after that they have to go to billing section for final bill. But in shopping mall counter section are limited which are unable to handle this all customer .a rush is even more when there is festival season or during some after on product .as there are regular lot of people use to come in shopping mall and in billing section. the cashier use bar code reader method and scans each and every product one by one hence barcode method become a time consuming process which leads to long queue in cashier section. In this paper we have presented architecture which is based on radio frequency identification (RFID) using microcontroller which will help to speed up the process at billing section .the RFID based system is applied in each and every shoping trolley and every product will contain a RFID tag. When such product we will put in trolley the RFID devices will detect that tag and instantly the cost of product will be displayed on the shopping trolley so this system helps a lot to reduces valuable time of customer at billing section*

*Key Words***: RFID DEVICE, SHOPPING TROLLEY, RFID TAGS, MICROCONTROLLER, BAR CODE, BILLING SECTION.**

1] INTRODUCTION:-

As the technology is developing and seeing new inventions in various fields including machine learning, artificial intelligence, and internet of things and so on, there is an increase in the expectations in the consumer point of view. In this fast moving lives, the consumers absolutely have no time to stand in long queues in order to get their work done. So we presenting our project "smart shopping trolley system using RFID and microcontroller."

The trolleys in the shopping malls are entented so as to automatically bill the products put into them and the final bill is send to a web application .

1.1EXISTING SYSTEM:-

The system which is used nowadays in the shopping mall is a barcode system In this system, the barcode readers are used to detect barcode label which is attached to every product. An electronic device is associated with the barcode reader to read written barcodes.in that, we used a sensor that converts light into an electrical signal. data sent by a sensor is decoded by the barcode reader and then the barcode image is analyzed and this analyzed information is sent to the scanner's output port. when any customers brought any product and put that product in the shopping trolley and go to the cashier section the cashier used this barcode system which is a slow method therefore in this way billing method becomes slow resulting in the long queue at the cashier section

2] LITERATURE SURVEY:-

The main aim of the literature survey Is that we get an idea about the various paper that have new concepts and technology and due to a survey of different types of paper we will get an idea about the new technology.

2.1] Automated Billing Cart

It is based on the Android platform it means that it will contain a barcode scanner and customers scan the product and automatically information regarding product like its cost, contains its barcode id number. All are stored in a warm database and after some process, it will be displayed on the android app. As customers scan the product, sequentially product's data will be added in the cart. Every cart as a unique ID and with the help of this ID android app fetch the information and database can be accessed with the help of wifi mobile.[1]

2.2] Automated shopping trolley system using raspberry pi device

It is based on the raspberry pi device. In such a system a trolley consists of a raspberry pi device, barcode scanner, and touch screen and due to this customer required less time when it reaches to bill counter[2].

2.3] Arduino based smart cart

This type of smart cart uses technology based on Arduino and RFID. The RFID technology is used to scan the product and to make its payment. AVR microcontroller is used for peripheral interfacing and to record management. Such

type of system helps to keep track of the rise and fall of purchase.[3]

3] HARDWARE REQUIRED

3.1] RFID TAGS

3.2] RFID READER

3.3] NODE MCU

3.4] LCD DISPLAY

3.5] I2C MODULE

3.1] RFID TAGS

RFID tags contain information on unique products like a product's name and its cost etc. It may say that it is similar to barcodes but RFID tag doesn't need to be scanned directly and line of sight with RFID reader is not required. RFID technology can quickly scan many things.

3.2] RFID READER

It is a device which identifies, categorize and track assets via transferring data wirelessly between itself and RFID tags label by using radiofrequency waves. The main function of the RFID readers is to interrogate RFID tags.

3.3] Node MCU

Node MCU is the firmware on ESP8266. It is a SOC (system on chip). It is a cheap, wifi module chip that can be configured to connect to the internet for things(IoT) and similar technology projects.

Normal electrical and mechanical equipment cannot connect to the internet on their own. They don't have the inbuilt setup to do so. You can setup ESP8266 with this equipment and to amazing stuff controlling, monitoring, analysis and much more.

3.4] LCD DISPLAY

Lcd stands for 'liquid crystal display'. It is a flat panel that uses liquid crystal in its primary form of operation. It is used to show the output on its display.
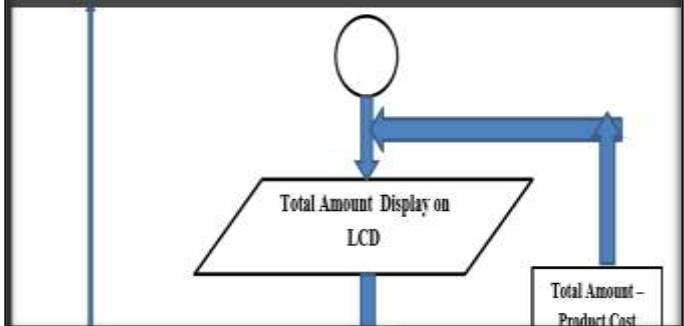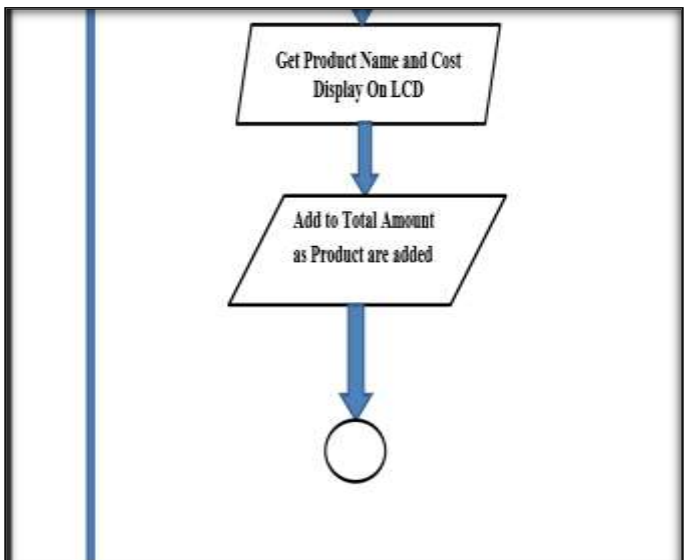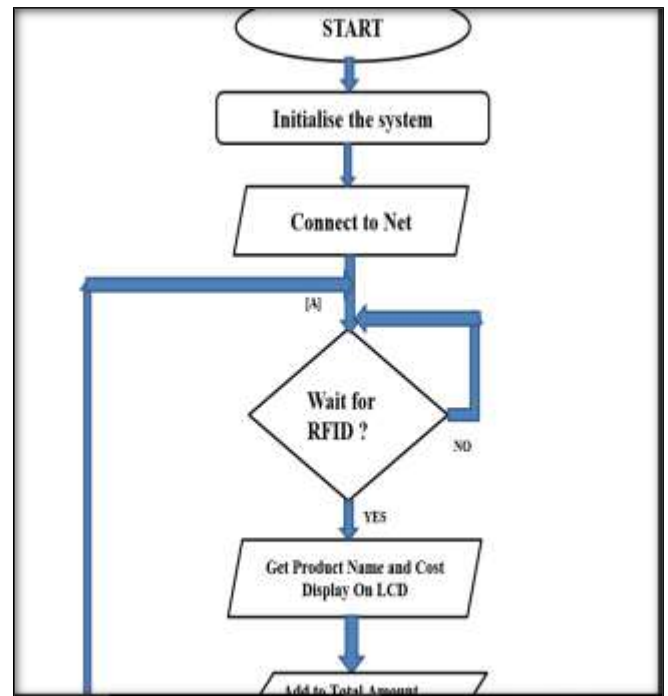
4] SOFTWARE REQUIRED

4.1] XAMP SERVER

4.2] HTML [Hyper Text Markup Language]

4.3] My SQL ,PHP [Personal Home Page]

5] FLOW CHART
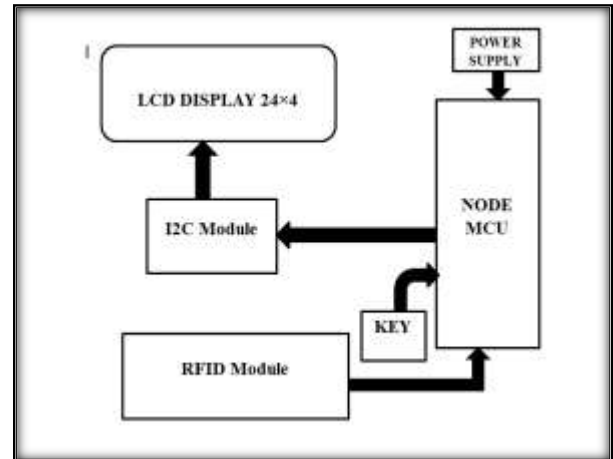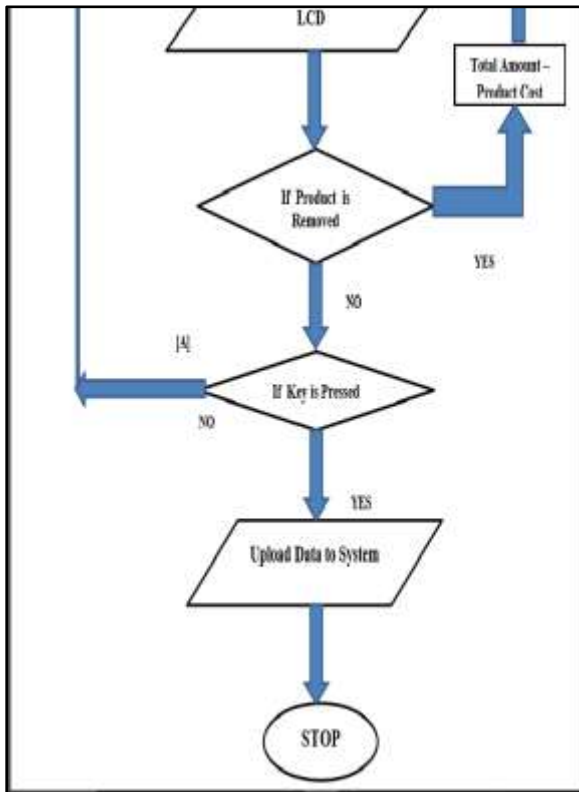
6] WORKING

All the information about the product which is kept in the supermarket or big mall is stored in the database of the main server.RFID tags are used to keep the information of the product separately. Information kept in the tag may vary from mall to mall but the main information like the name of the product and its cost is kept in all malls.

When a customer wants a product to purchase he/she have to scan the RFID tag attached with the product with an RFID reader. and Price will be displayed on LCD as soon as the RFID reader identifies any product RFID tag again with RFID reader then that particular product amount will be deducted from the total amount of product which is present in the trolley.

After completion of shopping the customer need to press the key which is provided in the shopping trolley. To get the bill, customer needs to go to billing counter .then after taking user information and shopping trolley no, that particular trolley information i.e total price of product kept in the trolley is updated in webserver of the mall and its bill then generated then the user can purchase via cash or cashless in counter

FIGURE 1:- Block Diagram Of Smart Trolley

7] RESULT

FIGURE 2:-Started connecting to Network

FIGURE 3:-Connected to Project (Project is hotspot name)

FIGURE 4:-Punch RFID Of Item

FIGURE 5:-First Product is Scan

FIGURE 6:- Second Product is Scan

FIGURE 7:- Item Is Removed

FIGURE 8:- Data Uploaded To System

8] FUTURE SCOPE

1]The Shopping trolley can be more enhanced by installing an expert system which will help to store user personal information regarding their health .so the system can help the user to find the product which is related to his /her health when he/she arrive next time in the shopping mall

2] NFC based Laptops will be used in place of the website which will generate customer id on the bases of their NFC Smart Phones.

3] If the customer is unable to find a required product in the mall the in future for this problem- the shopping trolley will be advanced to such a level in which it will link with the android device and then customer just need to type the name of the product and then the cart will guide the location of the product

4] Net banking can be included and trolley itself will able to print a receipt and all purchase will be done with the help of trolley itself and hence there will be no need to go to bill section

5] In future by using GSM module, the billing data can be transfer to mobile rather than printing it

6] Robotic arm can be included in the shopping trolley for selecting and dropping object which is placed in a heightened location

9] CONCLUSION

Using a Wireless network for shopping is demonstrated successfully by this project. Hence we can conclude that this is one of the efficient ways we can use. By using the RFID technique we are making billing process happen fast.the proposed system is highly genuine dependable, reliable, equitable and time-effective.due to passive mechanism the system is energy constraint .the adding and reducing item mechanism in the trolley is also very simple

hence there is no complexity if user don't want to purchase any item which he/she earlier put in the trolley hence the mechanism of trolley is flexible and hence it makes implementation simple and also help to reduce long queue during billing section

10] REFERENCES

1] Munib A. Lambay, Anupam Tiwari, Vicky Sharma, "Automated Billing Cart", International Journal of Computer Science trends and technology(IJCST)-Volume 5 issue 2 , Mar-Apr 2017.

2] Ravindra Jogekar, Ruchita Ghodeswar, Payal Kadu,"Automated Shopping Trolley System using Raspberry Pi devices", International Journal of Research Cultural Society, Volume-2, Issue 2 , Feb 2018   Publication date :28/02/2018

3] Ashmeet Kaur, AvniGarg, Abhishek Verma, Akshay Bansal, Arvinder Singh, Arduino based shopping cart. Volume 2, Issue 12, December 2013