

Smart Shopping Cart

¹K Gayatri, ²M Sravani, ³V B K L Aruna

^{1,2}Student, ³Assistant Professor

ECE department, VR Siddhartha Engineering College, Vijayawada, Andhra Pradesh, India

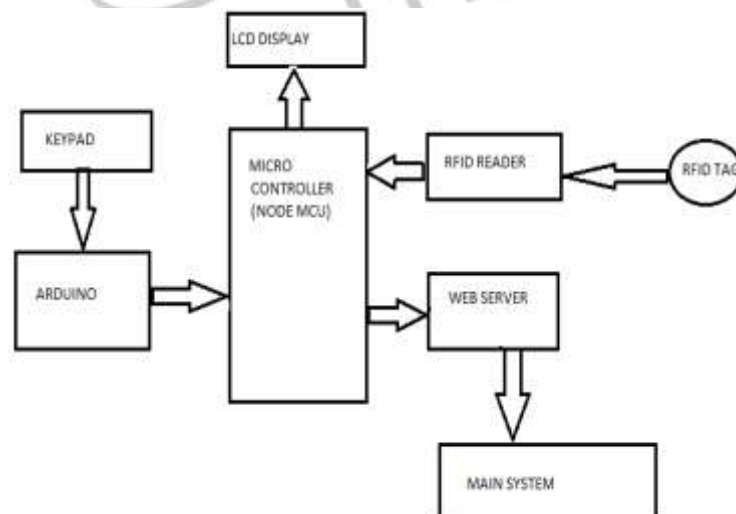
Abstract - Purchasing and shopping at big malls is becoming daily activity in various cities. The rush is even more when there are special offers and discount. After total purchase one needs to go to the billing counter for payments and the cashier prepare the bill using barcode reader which is a time consuming process and results in long queue at billing counters. The aim of this system is to develop a system to overcome this long queues and time consuming process at shopping malls. The system is placed in all the trolleys .The system consists of a RFID reader and all the products are equipped with RFID tags. When a person puts any product in the trolley, the reader detects the item, item name and its cost will be displayed on the LCD screen. By adding the products simultaneously the bill also gets updated. After completion the whole data will be stored in the database .Registered customers are provided with cards, they can use those cards while shopping in order to store their shopping data in the data base , they can check their data anywhere by the login credentials provided. The administrator can access the data at any time through the webpage provided which is sorted by date. This system will save time of customers, man power required in mall.

Keywords - Arduino Uno, RFID reader, RFID tags, IoT module.

I.INTRODUCTION:

Programmers build up software applications every day in order to augment efficiency and productivity in a mixture of situations. A system is a way of working, organizing or doing one or many tasks according to a fixed plan, program, or set of rules. Radio frequency identification (RFID) is a rapidly growing technology that has the potential to make great economic impacts on many industries. While RFID is a relatively old technology, more recent advancements in chip manufacturing technology are making RFID practical for new applications and settings, particularly consumer item level tagging. These advancements have the potential to revolutionize supply-chain management, inventory control, and logistics. At its most basic, RFID systems consist of small transponders, or tags, attached to physical objects. When wirelessly interrogated by RFID transceivers, or readers, tags respond with some identifying information that may be associated with arbitrary data records. Thus, RFID systems are one type of automatic identification system, similar to optical bar codes. Supermarket is the place where customers come to purchase their daily using products and pay for that. Barcodes -The vast majority of modern supermarkets use barcode system to identify products and check-in customers waiting in queue. Barcodes represent a series of vertical black lines of different thickness and separation distance which can be coded into data information. The barcode reader, shown in figure 1b, reads the data represented by barcodes. In modern supermarkets, this data involves a unique ID of each product.

II.BLOCK DIAGRAM:



III.HARWARE USED:

- NODEMCU ESP8266
- Arduino Nano
- RFID reader and RFID cards

- PUSH buttons
- Power supply

IV.PROTOTYPE:

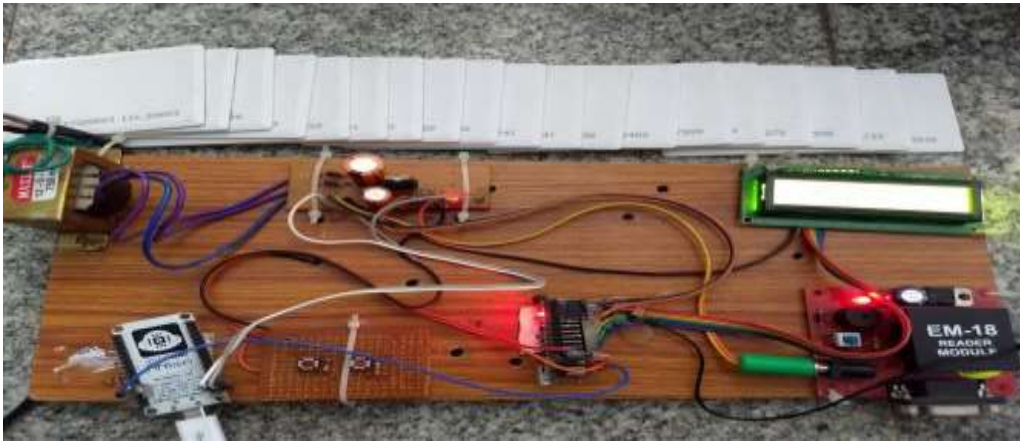


Fig 1: prototype

V.FLOWCHART:

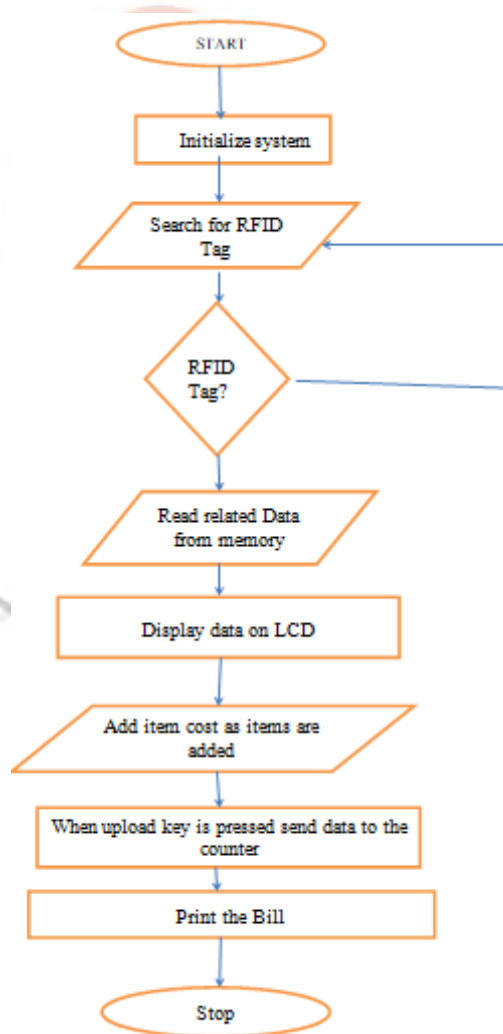


Fig 2: flowchart

VI.WORKING:

In this system two buttons are provided which has three types of functionalities, at first the buttons are used to add or delete the items from the cart and then are used to upload the shopping data to the data base and at last i. e. after uploading the data the buttons are used to select whether the customer is a registered customer or an unregistered customer. When the power supply is given, at first LCD will display “WELCOME.. TROLLEY BILLING” and after a delay of 2000ms it delays

“WAITING FOR ITEMS...”. When the customer chooses his product then he has to put the product near to the RFID reader in order read the RFID tag attached to the product. The distance between the RFID tag and RFID reader should be less than 1cm .this distance depends on RFID reader range which is 125 khz in this system. The main principle of RFID card reader is when a card is placed near the RFID reader, it reads the information that is present in the card through the EM waves present on the reader and the micro-chip(black in colour) present in card. After the RFID card is read by reader, if the RFID number is valid then the details of that product corresponding to that RFID card will be displayed on LCD screen along with the Total bill. If the card is a invalid card the LCD displays “INVALID CARD. PLZ CHECK...”In order to delete a product from the bill the customer has to first press delete button then the LCD displays “your removed item is: “ that means at that instant the customer has to the place the item which he wants to be deleted from the cart. After completion the customer has to press the button in order upload the data to the data base. And then the LCD displays “1.REG PERSON 2.UNKNOW PERSON” i. e. it is asking whether the customer is a registered person or an unregistered person, if the customer is a registered person the he has to press first button or else if the customer is a unregistered person the he has to press the second button .The difference between a registered customer and an unregistered customer is that the registered customer is a customer who is registered to the market website through the website and provided with a unique id card. if the customer is registered customer then his/her shopping data will be send to the provided data base. They can check their shopping data anywhere by using the login credentials provided. If the customer is a unregistered customer then his/her data will be sent directly along with the registered customers data to the admin data base. One special feature is provided is that after processing the shopping data of registered customer, the registered customer will receive a message of total bill to the registered mobile number provided. if the customer is a registered customer then LCD displays ”PLZ SWIPE YOUR CARD...” and “RG CARD...” i. e. he has put his unique id card near the RFID reader to read the data from the card .if the card is a valid card then the LCD displays” PROCESSING... PLZ WAIT...”or else if the card is invalid card then the LCD displays ”INVALID CARD ...PLZ CHECK...”.At last after completion whether he is a registered customer or an unregistered customer has to press the upload key to generate the bill .This will save the time of the customers at the Billing counters.

VII.OUTPUTS:



Fig 3: System initialization



Fig 4: Adding items



Fig 5: Removing items



Fig 6: Data processing

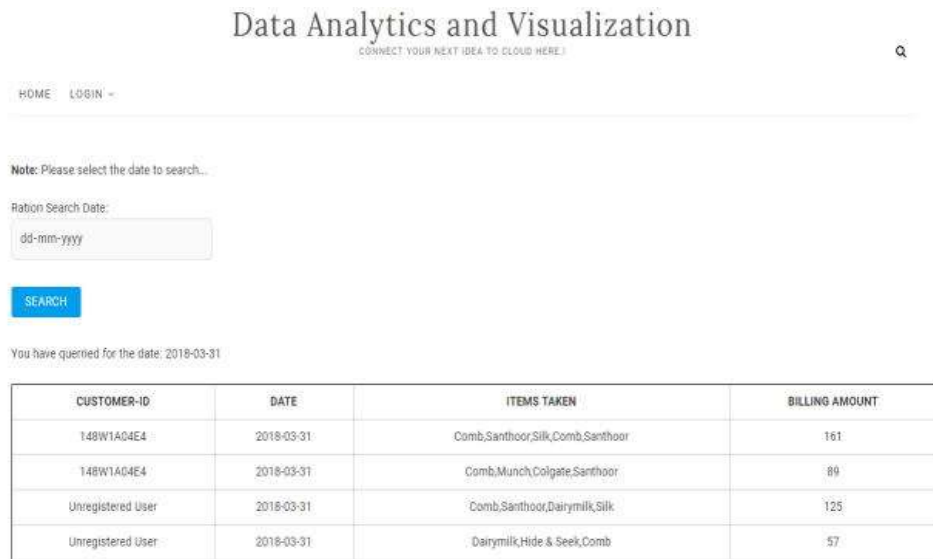


Fig 7: Admin web page



Fig 8: Registered web page

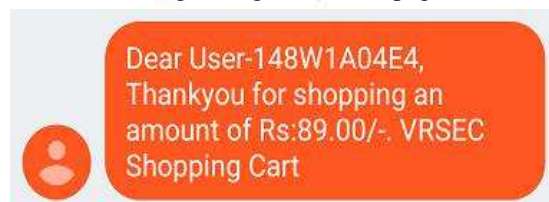


Fig 9: Bill through SMS

VIII.CONCLUSION:

In this project, Smart Shopping Cart is designed to eliminate the long queues at the billing counters in shopping malls and retail bazaars. The intended objectives were successfully achieved in this prototype model. The developed product is easy to use, low-cost and does not require any special training. The system would help the customers to check their shopping data through online anywhere at any time. The architecture of the system can be used in the shopping malls for intelligent and easy shopping to save time, energy and money of the consumers. At the same time it would also reduce the required number of salesmen. Automatic billing of products by using RFID technique will be a more viable option in the future. And this system

technique is efficient, compact and shows promising performance. Thus it guarantees the less time consumption out of all present billing methods. Customers can pay their bill through credit/debit cards.

IX.FUTURE SCOPE:

- Products name and its cost can be announced using headset.
- Tracking of any product.
- With E-banking or net banking enabled, the need of paying bill can also be eliminated, in which case the billing which was already dynamic can also be made mobile.
- The customer just needs to type the name of the product he wants to search on the Android device, and the cart will Automatically guide him/her to the product/s locations.
- Using a larger screen for navigation purpose in the mart itself and using the screen for promotions as a way to mint money and make better profit margin.

REFERENCES

- [1] P. Chandrasekar and T. Sangeetha, "Smart shopping cart with automatic billing system through rfid and zigbee," in Information Communication and Embedded Systems (ICICES), 2014 International Conference on. IEEE, 2014, pp. 1–4.
- [2] Rong Chen; Li Peng; Yi Qin, "Supermarket shopping guide system based on Internet of things," Wireless Sensor Network, 2010. IET-WSN. IET International Conference on , vol., no., pp.17,20, 15-17 Nov. 2010 .
- [3] A. Yewatkar, F. Inamdar, R. Singh, A. Bandal et al., "Smart cart with automatic billing, product information, product recommendation using rfid&zigbee with anti-theft," Procedia Computer Science, vol. 79, pp. 793–800, 2016.
- [4] M. R. Sawant, K. Krishnan, S. Bhokre, and P. Bhosale, "The rfid based smart shopping cart," International Journal of Engineering Research and General Science, vol. 3, no. 2, pp. 275–280,2015.
- [5] D.V.S Chandra Babu, —wireless intelligent billing trolley for supermarketl, International Journal of Advanced Research in Technology, vol.3, issue 1, Aug. 2012.
- [6] Zeeshan Ali, ReenaSonkusare, " RFID Based Smart Shopping and Billing ", International Journal of Advanced Research in Computer and Communication Engineering, Vol. 2, Issue 12, December 2013 6. Raju Kumar, K. Gopalakrishna, K. Ramesha, "Intelligent Shopping Cart," International Journal of Engineering Science and Innovative Technology (IJESIT) Volume 2, Issue 4, July 2013.

