



Design and Implementation of Digital Cart Using Barcode Scanner and Arduino

Swapnali S. Mane¹, Maya S. Hajare², Akshata P. Arjunwadkar³, S.S.Sankpal⁴

Asst. Professor, Department of E&TC, P.V.P.I.T., Budhgaon, Sangli, Maharashtra, India⁴

B. E Student, Department of E&TC, P.V.P.I.T. Budhgaon, Sangli, Maharashtra, India^{1,2,3}

ABSTRACT: Now a day's it is common to see people getting enthusiast in online shopping through e- commerce websites but still the shopping centres are popular. We come across many types of carts used for shopping in malls and shopping centres. We are proposing Digital Cart which uses the Barcode scanners, LCD display, Keypad and Wi-Fi module to sends the data wirelessly to the main server. We propose to have product details which they customers scans the products on screen in the display connected to Arduino which is situated in Digital Cart. The cart is interfacing with the main server and it will have the facility to generate the bill for all products added into the cart. The proposed system will be helpful for avoiding queues in shopping malls for billing. It also helpful to reduce total manpower and also customers aware about total bill during shopping. Hence the shopping becomes easy and enjoyable.

KEYWORDS: Barcode Scanner, shopping cart, digital cart, Arduino, auto billing

I. INTRODUCTION

Now a day's people prefer to go mall rather than shop, because they get all things at the same place. In mall customer have to drop every product which they wish to purchase into the shopping cart and then proceed to checkout at the billing counter. The customers have to wait in long queues to get their products scanned using barcode scanner and get it billed. The billing process is quite tedious and highly time consuming and need more and more human resource in the billing section, and yet waiting time remains considerably high.

Continuous improvement is required in the traditional billing system to improve the quality of shopping experience to the customer. We designed "Digital Cart" which aims to reduce and possibly eliminate the total waiting time of customers, lower the total manpower requirement and increase efficiency overall.

To get rid of this, we have proposed "Digital Card" using Barcode scanner, keypad, LCD display and Wi-Fi module. It facilitates the user to self-scan the barcode of the purchased product and wrongful entries can be corrected at the end of the shopping. After pressed the 'SEND' button all data on LCD send to main PC through Wi-Fi. At the end the customer just have to pay the bill.

II. RELATED WORK

S.Sainath, et al [2] designed the automated shopping cart system integrates shopping cart with two set of barcode scanner placed at two different checkpoints the entry and exit points respectively. It facilities the user to self- scan the barcode of the purchased products. Wrongful entries can be corrected by making use of keypad.

Komal Ambekar, et al [3] designed a new smart shopping trolley using RFID this implementation is used to assist a person while shopping and avoid standing in long queue and thus save time. The smart shopping trolley would consist of microcontroller, android device, RFID reader and display

Komal Manchhirke et al[4] a new technology smart shopping cart using RFID and ZIGBEE, they are proposing smart shopping cart facility to browse available product list on screen in the display connected to Microcontroller which is situated in smart cart.

International Journal of Innovative Research in Computer and Communication Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Website: www.ijircce.com

Vol. 6, Issue 3, March 2018

III. PROPOSED WORK

In this project, we are designing Digital Cart system which is more useful to reduce or eliminate the total waiting time of the customers in queue. The customers have to self-scan the product which they wish to purchase and put it into the cart, the all details about the product displayed on the display. This process continue till the completion of the shopping .If customer wants to scan another product than previous one he/she have to press INSERT button. After pressing SEND button the all details on LCD display send to main server via Wi-Fi module. And the details on the cart are erased, so cart is ready for next shopping.

A. BLOCK DIAGRAM

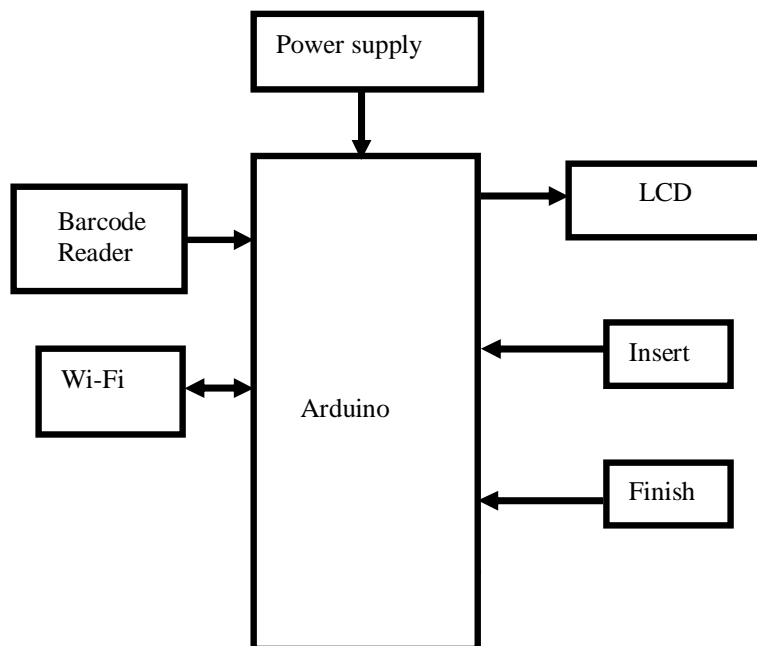


Fig. 1. Block diagram

This system uses two inputs Barcode Scanner, Keypad and for outputs LCD display and Wi-Fi module. The Barcode Scanner use to scan the Barcode ID on product while Keypad system is used when the customer wants to scan another product and send data to main server after completion the shopping. The LCD display used to display the product details such as product name, cost, quantity and total amount etc. and Wi-Fi module used to send LCD data to main server.

When the customer enters the shopping mall, he/she receives a cart on which there are Barcode scanner, LCD display, Keypad and WI-FI module. On keypad there are two buttons one is "INSERT" and another is "SEND". Thus now the customer can use the cart for shopping. The customer places the product into the cart which they wish to purchase, after scanning the product. The barcode reader reads the tag information on the product and display the related results on the LCD display. The data on the LCD display is product name, product price, quantity and total amount etc. These steps are repeated till the customer finishes his shopping and press "SEND" button. If customer wants to scan another product from previous one, he have to press "INSERT" button. Once the customer press "SEND" button the all data on LCD display send to main server via WI- FI module and the data on the LCD display are erased. So the next customer ready to use that cart.

At the end of shopping the customer can straight away pay the bill and leave the shopping mall. IF he wants to remove any product then it happen manually.



International Journal of Innovative Research in Computer and Communication Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Website: www.ijircce.com

Vol. 6, Issue 3, March 2018

B. SYSTEM SPECIFICATION

There are different components are used in this system to run the robot. The specifications of these components are as follows:

- ATmega 328P Microcontroller : Arduino is the main controller of the system. It will control all the operations of the system. It is the 28 pin IC operates on 5V supply.
- Liquid Crystal Display(LCD) : In this system, 16*2 LCD is used. It will display the product details such as product name, product cost, quantity and total amount. The LCD is used for the user convenience.
- Barcode Scanner: It is used to scan the Barcode ID on product.
- Wi-Fi module : The ESP 8266 Wi-Fi module is used. It operates in 2.4 -2.5GHZ frequency range. It is used to communicate cart with main server.
- Keypad : Here two push buttons are used namely INSERT and SEND. INSERT is used to add new product and SEND used to send LCD data to main server.

IV.PESUDO CODE

- Step1:Initialise cart
- Step2:Scan product
- Step3:Display the product details on LCD Display
- Step4:Send LCD data to main server
- Step5: Conformation
- Step6: Pay bill
- Step7: Exit

V. RESULT

Our project entitled “Digital Cart” is successfully completed and the results obtained are satisfactory. Actually this project is based on demo. It will be easier for the people who are going to take the project for the further modifications. This project will help to reduce and possibly eliminate the total waiting time of the customers, lower the total manpower requirement and expenses for markets and increase efficiency overall.



Fig2.Digital Cart

This figure2 shows the hole system of the self-scan digital cart with barcode scanner .



International Journal of Innovative Research in Computer and Communication Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Website: www.ijircce.com

Vol. 6, Issue 3, March 2018



Fig3.Scan Product

Figure 3 : Customer self-scan the product which they wish to purchase



Fig4.LCD Display

Figure 4: shows that whenever the product is scan then the product name product cost and total amount of bill is display on the LCD screen

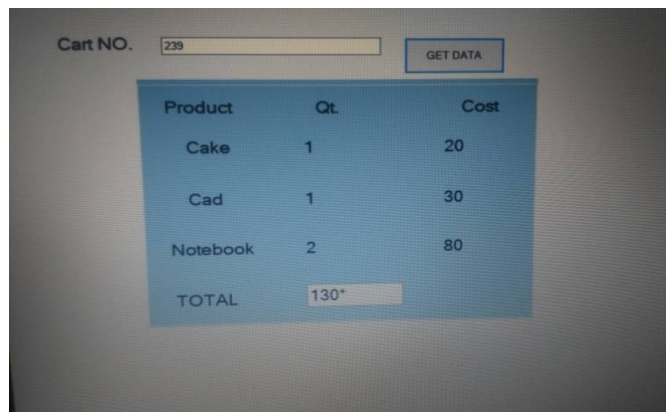


Fig5.Main Server



ISSN(Online): 2320-9801
ISSN (Print) : 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Website: www.ijircce.com

Vol. 6, Issue 3, March 2018

Figure 5: shows the view on the main PC which contains the cart number ,product name ,quantity ,cost of each product and total amount of bill.

VI. CONCLUSION AND FUTURE WORK

With this system, customers can self-scan the product which they wish to purchase and put into the cart. And send the LCD data to main pc with the help of Wi-Fi system and proceed for payment. So the customer does not face wastage of time at billing counter.

During the shopping, every time customer aware about the total bill. The billing process is quite tedious and has created the need for shops to employ more and more human resource in the billing section. With this technology we also reduce manpower. For further implementation we will provide prepaid card system using this system we can eliminate the queue and waiting time of customer on billing counter.

REFERENCES

1. Komal Manchhirke, Priyanka Goche, Rupali Rathod, Rinku Petkar, Manohar Golait a new technology smart shopping cart using RFID and ZIGBEE, Vol.5 Issue.2, pp.256-259, February 2017
2. G.S.Rajagopal, Mr.S.Grout, M.Janarthanan Smart intelligent system for shopping and billing, Vol.3 Special Issue.19, pp.339-342, 2016
- 3.R. Rajeshkumar, R. Mohanraj, M. Vartharaj Automated Barcode based bills calculation by using smart trolley, vol.6, Issue.3, pp.2539-2542, march 2016.
4. Satish Kamble, Sachin Meshram, Rahul Thokal & Roshan Gakre, "Developing a multitasking shopping trolley based on RFID technology", Vol.3 Issue.6, January 2014
5. H. H. Bi and D. K. Lin, "RFID-enabled discovery of supply networks", IEEE Trans. Eng. Manag., vol. 56, no. 1, pp.129 -141, 2009.
- 6.Y. J. Zuo, "Survivable RFID systems: Issues, challenges, and techniques", IEEE Trans. Syst., Man, Cybern. C, Appl. Rev., vol. 40, no. 4, pp.406 -418, 2010.
7. S. S. Saad and Z. S. Nakad, "A standalone RFID indoor positioning system using passive tags", IEEE Trans. Ind. Electron., vol. 58, no. 5, pp.1961 -1970 ,2011.
8. Christo Ananth, Kanthimathi, Krishnammal, Jeyabala, Jothi Monika, Muthu Veni, "GSM Based Automatic Electricity Billing System", International Journal Of Advanced Research Trends In Engineering And Technology (IJARTET), Vol. 2, Issue 7, pp:16-21, July 2015
9. Raju Kumar, K. Gopalakrishna, K. Ramesha on "Intelligent Shopping Cart" in International Journal of Engineering Science and Innovative Technology (IJESIT) Volume 2, Issue 4, pp.499-507, July 2013
- 10.F. Gandino , B. Montrucchio , M. Rebaudengo and E. R. Sanchez "On improving automation by integrating RFID in the traceability management of the agri-food sector", IEEE Trans. Ind. Electron., vol. 56, no. 7, pp.2357 -2365 ,2009
- 11.J. D. Porter and D. S. Kim "An RFID-enabled road pricing system for transportation", IEEE Syst. J., vol. 2, no. 2, pp.248 -257 ,2008
12. J. S. Awati, S.B.Awati, International Journal of Emerging Technology and Advanced Engineering ISSN 2250-2459, Volume 2, Issue 3, March 2012

BIOGRAPHY

Mrs.S.S.Sankpal



Completed Masters in Engineering from Shivaji University, Kolhapur . Currently working as Asst. Professor in E&TC Department of P.V.P. Institute of Technology, Budhgaon, Sangli. (M.S.)



ISSN(Online): 2320-9801
ISSN (Print) : 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Website: www.ijircce.com

Vol. 6, Issue 3, March 2018

Swapnali S. Mane BE E&TC, P.V.P.I.T., Budhgaon, Sangli. (M. S.)



Maya S. Hajare BE E&TC, P.V.P.I.T., Budhgaon, Sangli. (M.S.)



Akshata P. Arjunwadkar BE E&TC, P.V.P.I.T., Budhgaon, Sangli. (M.S.)

