Automated Smart Shopping Trolley

Ranjitha N, Rashmi M L, Supritha J,
Vidyashree A R
Under graduate students,ECE Dept.,
Vidyavardhaka College Of Engineering, Mysuru,India

Jagadeesh B
Assistant Professor,ECE Dept.,
Vidyavardhaka College Of Engineering
Mysuru,India

***Abstract*—The Automated Shopping Trolley is a Smart Trolley which integrates a Embedded chip with Android operating system for bar code reader with Bluetooth wireless device and a battery kit to allow users to self-checkout at super markets. AVR Microcontroller is used at trolley side to calculate item and price. Smart LCD unit is designed at trolley side for customer monitor purpose. Wireless Zigbee protocol device enable to transfer item and prices list to bill counter section. This method reduces work time at bill counter section and save time of customers.**

Keywords—AVR Microcontroller, Zigbee Module, Android OS Barcode Scanner

I. INTRODUCTION

Nowadays, if a consumer would like to buy something at a shopping mall, consumers need to take the particular items from the display shelf and then queue up and wait for their turn to make payment. Problem will surely arise when the size of a shopping mall is relatively huge and sometimes consumers don't even know where certain items are placed. Besides, consumers also need to queue for a long time at the cashier to wait for turn to make payment, The time taken for consumers to wait for the consumers in front of the queue to scan every single item and then followed by making payment will definitely take plenty of time. This condition will surely become worst during the season of big sales or if the shopping mall still uses the conventional way to key in the price of every item by hand to the cash register. On the other hand, consumers often have to worry about plenty of things when going to the shopping mall. While doing survey we found that most of the people prefer to leave the shopping mall instead of waiting in long queues to buy a few products. People find it difficult to locate the product they wanted to buy, after selecting product they need to stand in a long queue for billing and payment. To try to solve the problems previously identified, recent years have seen the appearance of several technological solutions for hypermarket assistance. All such solutions share the same objectives to save consumers.

II . LITRATURE SURVEY

S.Sainath,K. Surendar [1] proposed an "Automated Shopping Trolley for Super Market Billing System". Concept of Radio Frequency Identification(RFID) is used to implement an intelligent Shopping and Billing Trolley. Some of the issues found in this paper are RFID Reader is used which is Expensive and complex, RFID tag is used for each product. The number of RFID tags increases with the increase in the number of products.

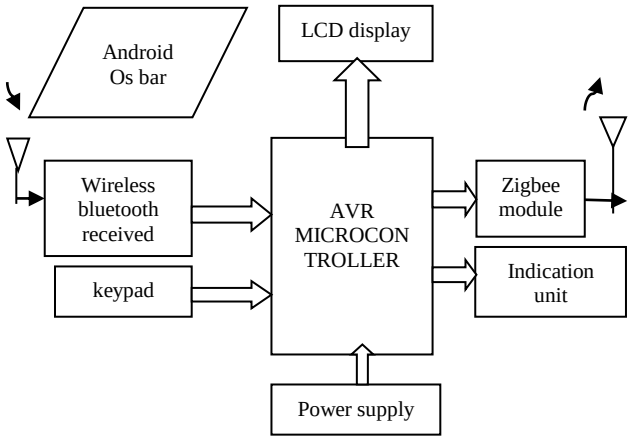
Dhavale Shraddha D,Dhokane Trupti J[2] proposed a "IOT Based Intelligent Trolley for Shopping Mall"

In this paper RFID Reader ,RFID tags and ESP module are used. The drawback of this paper is the use of RFID Reader and RFID tags which are very expensive and complex.

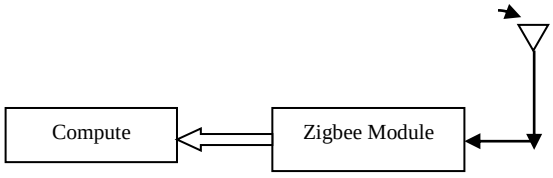
III. METHODOLOGY

In the proposed system all the drawbacks of existing systems are reduced. AVR Microcontroller development board ATMEGA-328 microcontroller is used which is 10-times faster than 8051 and 4-times faster than PIC Microcontroller and android OS Bar code scanner is used.

Customer Section:



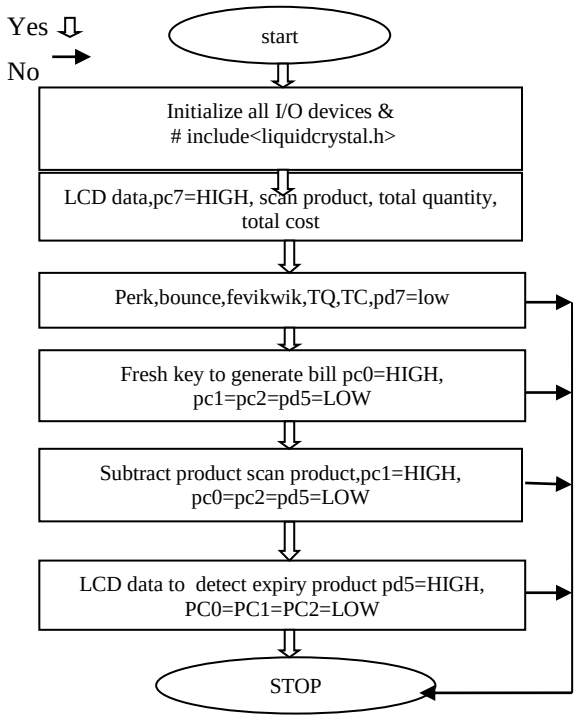
Billing Section:



Basic design flow of the project is shown in the figure. It consists of two main section i.e. 1. Customer section 2. Billing section. Customer section consists of Android operating system for bar code scanner, Bluetooth wireless receiver, AVR Microcontroller, Keypad, LCD Display, Zigbee transceiver module and power supply. Billing section consists of Zigbee module and PC. Android OS scans all bar code reader products via Bluetooth device received to controller for all product details and when putting the item in trolley are read by android operating system bar code reader via Bluetooth device is given to AVR Microcontroller. Arduino software is used to program the AVR Microcontroller board. In AVR Microcontroller items database are created for each product and store in memory. When product is scanned then AVR Microcontroller send display information to LCD display. Items database contains item name, total number of item and price. AVR Microcontroller also display total number of item and total cost details on LCD display. Indication unit is used to get item scanning information. AVR Microcontroller send

the items and billing information to Billing section. Keypad unit is used to change the price when need to update. In billing area there is no need bill again to customer's item and due to this techniques work load of billing person reduce and customer can save time. At PC hyper-terminal software is used to monitor item and billing information.

IV.FLOW CHART



V. RESULT

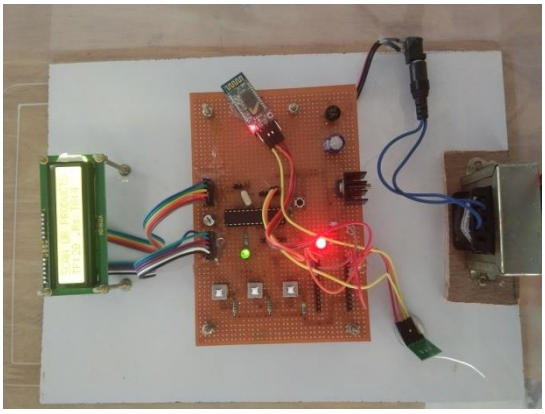


Figure : Customer Section

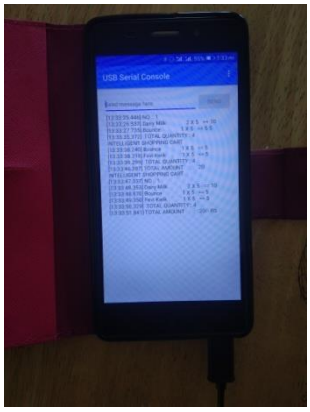


Figure : Billing Section

VI. CONCLUSION

Android OS scans all bar code reader products via Bluetooth device received to controller for all products details and when putting the item in trolley are read by android operating system bar code reader via Bluetooth device is given to AVR Microcontroller. Arduino software is used to program the AVR Microcontroller board. In AVR Microcontroller items database are created for each product and store in memory. When product is scanned then AVR Microcontroller send display information to LCD display. Items database contains item name, total number of item and price. AVR Microcontroller also displays total number of item and total cost details on LCD display. Indication unit is used to get item scanning information. AVR Microcontroller send the items and billing information to billing section. Keypad unit is used to change the price when need to update. In billing area there is no need bill again to customer's item and due to this techniques work load of billing person reduce and customer can save time. At PC hyper-terminal software is used to monitor item and billing information.

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