

Smart Shopping Cart

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Abstract: - Most of the people in this modern world spend the lot of time in departmental stores. It has been found that a lot of time is being wasted particularly at the billing section. Here by this paper represents a new methodology of smart shopping cart which saves the lot of time. The cart contains a sensor RFID tag, LCD module so that the product can be scanned in the cart and the final amount is displayed in the LCD placed in the trolley itself and there by pay only the cash at the counter. On swipe the credit cards. It will overcome the barcode technology which gets lot of problem during scanning. This proposed method is safe and secure. The cost of this project is also very low. This methodology helps both the shopper and shopkeeper.

Keywords: - RFID Card, RFID reader, Zigbee, Atmega micro controller

I. RFID TRANSPONDER

Tag in general of microchip antenna case battery (for active tags only) the size of the chip depend mostly on the antenna. Its size and form is dependent on the frequency the tag is using. The size of tag also dependent on its area of use. It can range from less than a millimetre for implants to the size of the book in container logistics. In addition to the microchip, some tag also have rewritable memory attached where the tag can store update between reading cycle or new data like serial number. The antenna is clearly as said before the antenna has the large impact of the size of the tags, and since this is a passive tag it does not have internal power supply.

or mounted in strategic locations so as to ensure they are able to read the tags pass through an “interrogation” zone.

RFID system can be classified by the type of tag and reader. A passive reader a tag (PRAT) system has a passive reader which only receives radio signals from active tags battery operated, transmit. The different characteristics of RFID are shown in the following table listed below

Frequency	Mode	Range	Transfer Rate	Penetrating Capability
125-135kHz	Passive	Short range (upto 0.5m)	Low	Liquid
13.56MHz	Passive	Medium range (upto 1.5m)	Moderate	Liquid
860-930MHz	Passive	Medium range (upto 5m)	Moderate to High	Liquid and Metal
433MHz	Active	Ultra long (upto 100m)	High	Liquid and Metal
2.45GHz	Active	Long range (upto 10m)	Very High	Liquid and Metal



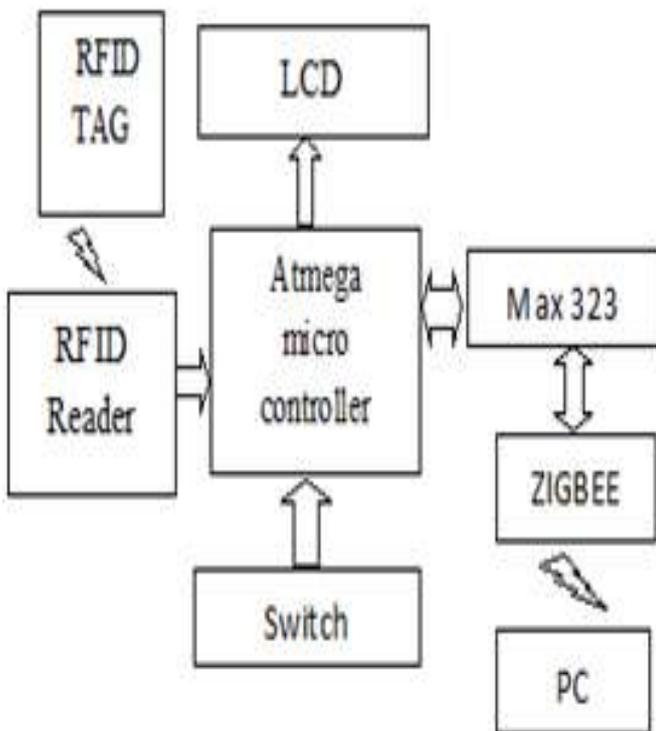
II. RFID TAG READER

RFID reader is used to read the data's present in the RFID tag. RFID reader or receivers are composed of a radio frequency module, a control unit and an antenna to interrogate electronic tags via radio frequency (RF) communication. Many also include an interface that communicates with an application. Reader can be hand held

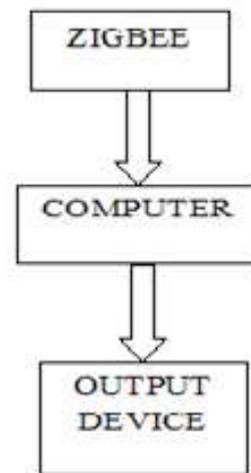
The proposed modal involves three main modules such as a micro controller, LCD display, RFID reader, RFID tags. The customer has to follow the steps which are mentioned below and it is a easy process which can be used by all. When any selected product is dropped in into the cart, RFID reader the reads the tag reads the tag inside the product and the information of the product is extracted and displayed on the LCD screen. At the same time billing information is also updated. The working of the intelligent shopping cart can be explained with the following steps:

- a) The shopper can start shopping by pressing the start button.
- b) Every product is scanned by the RFID reader and amount is displayed in the LCD
- c) The information is also being send to the server by means of wireless communication module like Zigbee
- d) The inventory status of product is updated
- e) The shopper can also kept the products back in to the product section and there by press the delete button
- f) This method is very safe because if shopper does not scan the product and goes near the exit there by alarm is generate

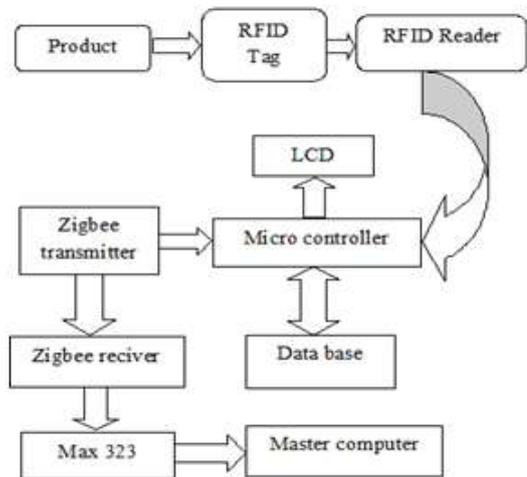
III. BLOCK DIAGRAM



IV. BILLING SECTION

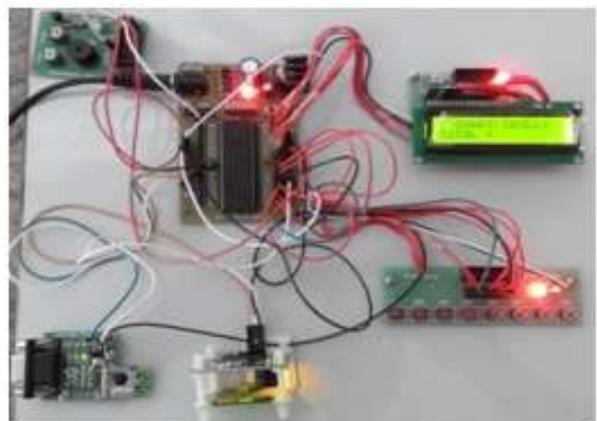


V. SYSTEM ARCHITECTURE



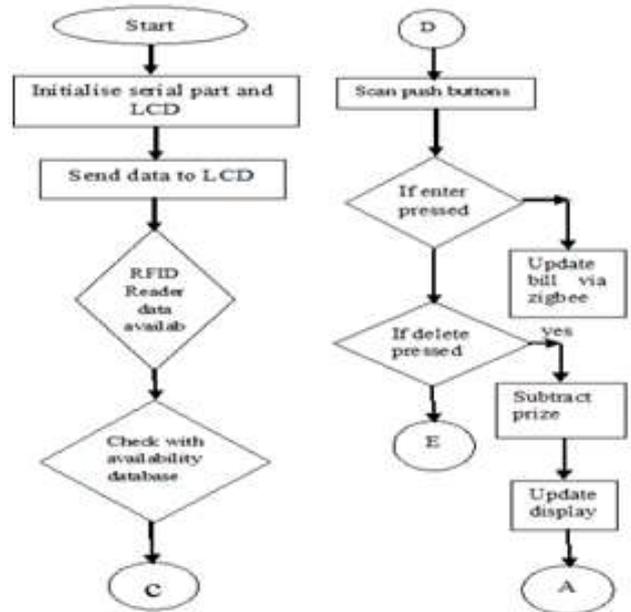
VI. HARDWARE DESCRIPTION

The Atmega16 microcontroller consist of inbuilt ADC, DAC, 32 general input/output lines, and general purpose working registers. AVR is the compilation software for Atmega16 microcontroller. There are different versions of Atmega microcontroller depending on the requirement.

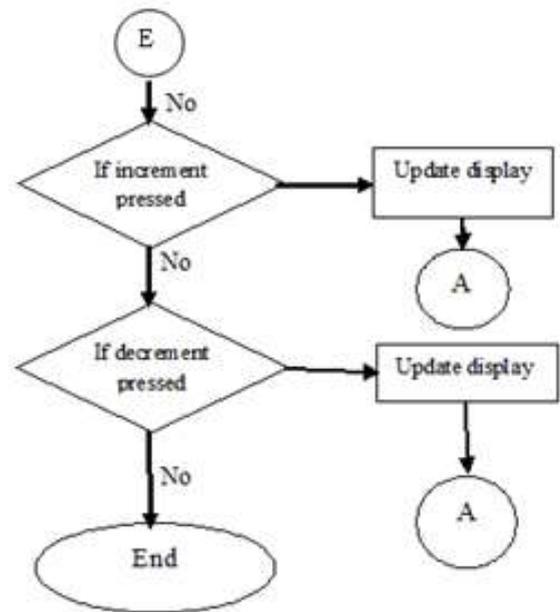


The main advantage of the microcontroller is software used to compile the C code is freeware software. The AVR microcontroller core combines with 32 general purpose registers. It has also got JTAG interface for boundary scan. The Atmega microcontroller can execute 1MIPS per MHz allowing the system designed to optimize the power consumption processing speed.

Zigbee is based on an IEEE 802.15.4 standard its low power consumption limits transmission distance to 10-100 meters line of sight, depending on power output and environmental characteristics, Zigbee devices can transmit data over long distances by passing data through a mesh network of intermediate devices to reach more distant ones. Zigbee is typically used in low data rate applications that require long battery life and secure networking (Zigbee networks are secured by 128 bit symmetric encryption keys.) Zigbee has a defined rate of 250K bit/s, best suited for intermittent data transmission from a sensor or input device. Application include wireless light switches, electrical meters with in home-displays, traffic management system, and other consumer and industrial equipment that requires short-range low-rate wireless data transfer. The technology defined by the Zigbee specification is intended to be simpler and less expensive than other wireless Personal Area Networks (WPANs), such as Bluetooth or Wi-Fi.



VII. DATA FLOW CHART

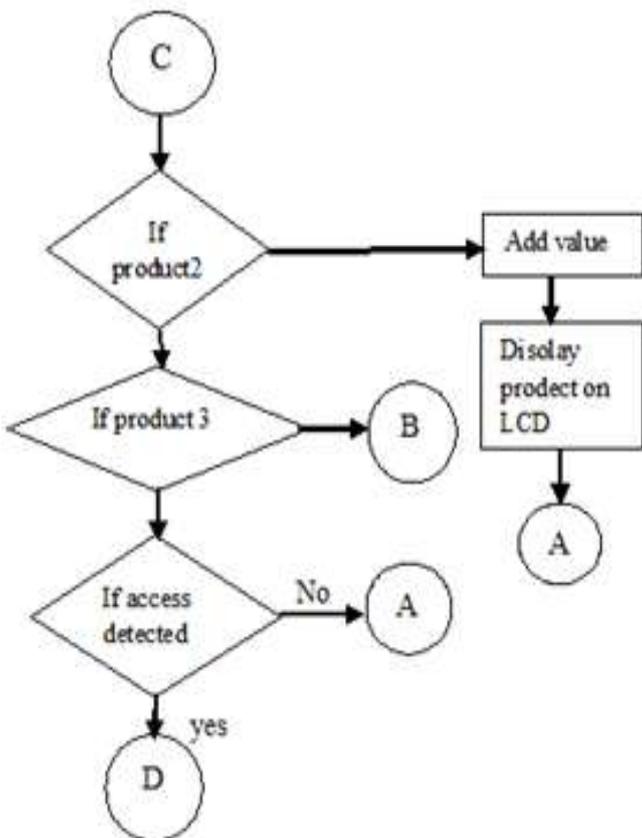


VIII. LIMITATIONS

It cannot be used to keep the all sales track and item availability at the shopping malls because some of the items which are very big in size cannot be placed in the trolley and scanned.

IX. FUTURE SCOPE

- a) This technology only be implemented in all departmental stores and also at aircrafts.
- b) Multinational shops are widely benefitted because it is fast and safe to keep track of product bit. As a result, better and more benefits and more profit margin can be archived.



- c) Modification can be done and installed in ships to keep track of movement of containers on docks and ports.

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