

INTELLIGENT SHOPPING CART WITH GOODS MANAGEMENT USING SENSORS

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Abstract - Now days purchasing and shopping at big mall becoming a daily activity in metro cities. We can see huge rush at malls on holidays and weekends. The rush is even more when there are special offers and discount. People purchase different items and put them in trolley. After total purchase one needs to go to billing counter for payments. Usually more time is consumed in preparing the bill than shopping. At the billing counter the cashier prepare the bill using bar code reader which is a time consuming process and results in long queues at billing counters. Our aim is to develop a system that can be used in shopping malls to solve the above mentioned challenge. The system will be placed in all the trolleys. It will consist of a RFID reader. All the products in the mall will be equipped with RFID tags. When a person puts any products in the trolley, its code will be detected and the price of those products will be stored in memory. As we put the products, the costs will get added to total bill. If the product is removed from the trolley its bill will be automatically deducted. Thus the billing will be done in the trolley itself. Item name and its cost will be displayed on LCD. Further we will send the bill and other details of the product to a local server where all the information will be saved and that information will be useful for inventory management. We provide counters which will be useful for people for bill payment. This system will make shopping easy and will reduce time loss.

Key Words: RFID, RFID Reader, RFID Tag, Shopping Trolley

1. INTRODUCTION

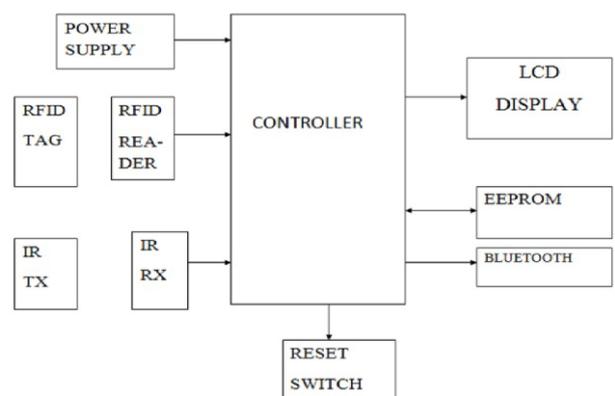
Now days purchasing and shopping at big malls is becoming a daily activity in metro cities. We can see huge rush at malls on holidays and weekends. The rush is even more when there are special offers and discount. People purchase different items and put them in trolley. After total purchase one needs to go to billing counter for payments. At the billing counter the cashier prepare the bill using bar code reader which is a time consuming process and results in long queues at billing counters. Our aim is to develop a system that can be used in shopping malls to solve the above mentioned challenge. The system will be placed in all the trolleys. It will consist of a RFID reader. All the products in

the mall will be equipped with RFID tags. When a person puts any products in the trolley, its code will be detected and the price of those products will be stored in memory. As we put the products, the costs will get added to total bill. Thus the billing will be done in the trolley itself. Item name and its cost will be displayed on LCD. Also the products name and its cost can be announced using headset. At the billing Counter the total bill data will be transferred to PC by wireless RF modules.

2. Purpose:

- 1) It creates a better shopping experience for the customers by saving their time.
- 2) It minimizes the man-power required at the shopping mall, as the checking-out process at the check-out counters is eliminated altogether.
- 3) It handles cases of deception if any, thereby making the system attractive not only to the customers, but also to the sellers.
- 4) The system design considerably minimizes the overhead of wireless communication among the devices involved in the system as almost every processing is done locally at each cart instead of transmitting packets to another node. Hence even when there are a lot of customers present in the shopping mall, there will not be any deterioration in the performance owing to communication gridlock.

3. Block Diagram



4. HARWARE USED:

RFID: It stands for radio frequency identification, RFID is a wireless use of electromagnetic field to transfer data for the purpose of automatically identifying and tracking tags attached to object. RFID tag is attached to the product and RFID reader is used to read this tag.

EEPROM MEMORY: Electrically Erasable Programmable Read-Only Memory and is a type of non-volatile memory used in computers and other electronic devices to store small amounts of data that must be saved. It save the data means saves the product name and total cost.

LCD DISPLAY: LCD is used for display purpose. On the LCD it display product name and cost.

8051 MICROCONTROLLER: 8051 is an 8-bit microcontroller which means that most available operations are limited to 8 bits. The microcontroller is used for to perform the main part of our system. It perform a total coasting of a product and display via LCD.

Concept of Microcontroller: Microcontroller is a general purpose device, which integrates a number of the components of a microprocessor system on to single chip. It has inbuilt CPU, memory and peripherals to make it as a mini computer. A microcontroller combines on to the same microchip:

1. The CPU core
2. Memory (both ROM and RAM)
3. Some parallel digital I/O

Microcontroller will combine other devices such as:
A timer module to allow the microcontroller to perform tasks for certain time periods.

A serial I/O module to allow data to flow between the controller and other devices such as a PIC or another microcontroller.

An ADC to allow the microcontroller to accept analogue input data for processing.

RESET switch: This switch is used to reset the billing and trolley can be used another person

5. External Interface Requirements

User Interfaces: After the completion of the shopping the customer has to press the 'complete' button. This enables the total bill being generated after confirmed purchase of all the selected products in the shopping trolley. At the same time, this information is sent to the database server through Internet. The server database is then updated to reflect the existing stock available after deducting the

number of products purchased. This ensures a smooth inventory management.

Hardware Interfaces: RFID readers will check for the encountering of RFID tag continuously with RFID readers, for updating of the purchased products and for deletion of the removed products. If there is any product in the trolley then bill is updated to the main server and hence device which is embedded on the trolley displays 'update billing'.

Communication Interfaces: Wireless connection between trolley device and database.

Software Interfaces: The software interface used is Bluetooth for communication.

6. System Features:

The main objective of proposed system is to provide a technology oriented, low-cost, easily scalable RFID system for shopping. The objective of this project is to improve the speed of purchase by using RFID. This project is designed to use the security system application in the shopping trolley. If the product is put into the trolley then it will display the amount and also the total amount. RFID card is used for accessing of the products. So this project improves the security performance and also the speed.

1. Reduces manpower required in billing section which in turn can reduce the expenses incurred by the management.
2. Customer can be aware of the total bill amount during the time of purchase.
3. Reduces time spent at billing counter and increases customer satisfaction.
4. Local server can save all the data which can be useful for inventory management.
5. Customer can see their transactions which are did before.

APPLICATIONS

1. We implement to simplify the billing process, make it swift and increase the security Using RFID technique. This will take the overall shopping experience to a different level.

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2. Automatic billing of products by using RFID technique will be a more viable option in the future. item The system based on RFID technique is efficient, compact and shows promising performance.

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