Intelligent Trolley for Automatic Billing in Mall Using Internet Server

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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.

Keywords: Intelligent Trolley, equipped with RFID tags, displayed on LCD.

1. INTRODUCTION

Human beings have always developed technology to support their needs ever since the beginning of mankind. The basic purpose of innovation in technology, irrespective of the domain, has been in simplifying tasks and making everyday chores easier and faster.

In the modern world, every supermarket and hypermarkets employ shopping baskets and shopping trolleys in order to aid customers to select and store the products which they intend to purchase.

The billing process is quite tedious and highly time consuming and has created the need for shops to employ more and more human resource in the billing section, and yet waiting time remains considerably high.

In this paper, we seem it fit to propose the "Intelligent Shopping Basket" which aims to reduce ,and possibly eliminate the total waiting time of customers, lower the total manpower requirement and expenses for markets and increase efficiency overall.

2. RELATED WORK

The design of smart shopping cart consisted of four main elements which are hardware integration, software interface, wireless communication and network database.

The Automated Shopping cart system integrates a Shopping cart (trolley) with 2 sets of barcode scanners placed at 2 different checkpoints – the entry and exit points respectively. It facilitates the user to self-scan the barcode of the purchased products A wireless smart-device makes note of all the scanned commodities of the particular trolley (with allotment number); and is linked with the Supermarket's backend database which contains details of the products such as Cost Price, Available stock.

3. MOTIVATION

The objective of this project is to improve the speed of purchase by using RFID. This project is design to use RFID based security system application in the shopping trolley. This project is used in shopping complex to purchase the products.

In this project RFID card is used as security access for product. If the product is put in to the trolley means it will shows the amount and also the total amount. But in this project RFID card is used for accessing the products. So this project improves the security performance and also the speed.

4. DATA SET

The dataset used in this project has been collected from some of the Malls.

From the dataset, we pre-processed and selected only the attributes which are important for our project customer-ID, password, etc. And also cultivated area for every mall considered according to the metro cities.

5. METHODOLOGY

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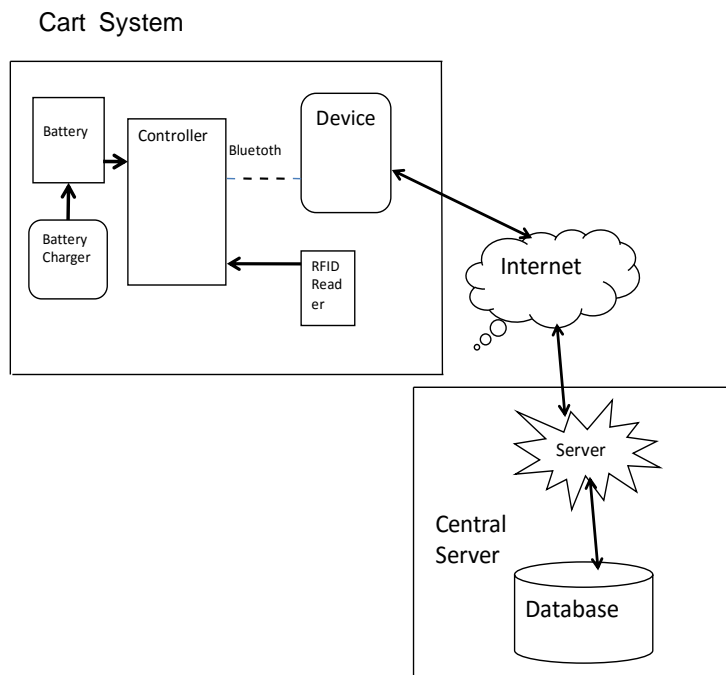
Fig.1: Cart System

6. RECOMMENDED SYSTEM

After getting all the result graph charts and tables, then we have write a program which takes into account the necessary tables from our results to post process the data and give the best result in order of preference to choose the products.

If there are not any feasible choices the program simply outputs 'NONE' or Customer have to create CustomerID. These recommendations are based on a combination of CustomerID and password.

7. MODULES

MODULE 1:

MODULE NAME: DATABASE CREATE		
ACTION	INPUT	EXPECTED OUTPUT
Select dataset	Upload Action	Dataset Upload Successfully
RESULT : SUCCESS		

MODULE 2:

| MODULE NAME: ANDROID APPS DEVELOPMENT		
ACTION	INPUT	EXPECTED OUTPUT
Create two android apps	Android apps	Android Apps Created Successfully
RESULT : SUCCES		

8. RESULTS AND PERFORMANCE ANALYSIS

Unique RFID tags given in table II are used to indicate distinctive products being shopped.

The RFID card reader reads the product, details were displayed on the display unit. The product details of the shopped items are temporarily stored in the local memory.

Once the shopping "Complete" button was pressed, the memory contents were read and billing was done.

The same product information data was sent back to the server to update the inventory.
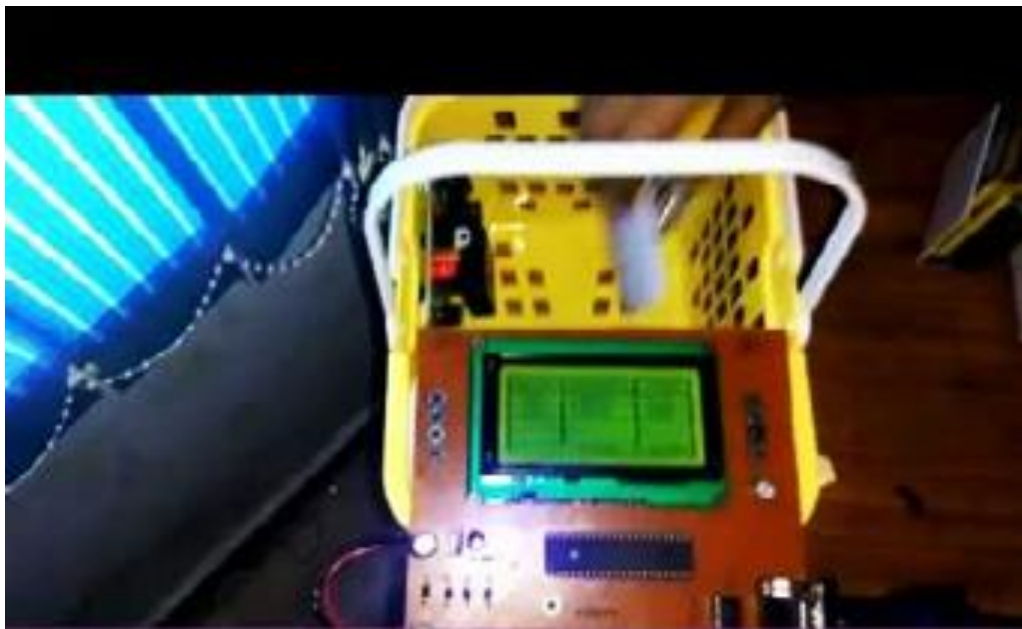
RFID TagID	Product Name	Price
1800891A6CE7	Dettol	15
1800892C05B8	Marie	10
19004AE9D46E	Parle	4

Fig.2: Sample Database of Product Details

TEST CASES:

The following test case scenarios were used in the integrated system testing to prove the working of the created system.

1) Server and shopping cart communication using the wireless Bluetooth module.

2) Identifying items based on RFID tags and communication with central database.

3) Automatic billing of products

d) Display the product name & price.

e) listing of the products with their price on LCD display.

f) Update inventory in the central system of each purchase of a product.

g) Automatic billing update when the products are put in the cart or removed from the cart.

h) View of total bill on the master pc.

All test cases were successfully tested. The system developed is user friendly and no special training is required to use the cart.

9. FUTURE WORKS

The challenges here are to not only make the system intelligent by automation, but also to handle the concerns that are raised due to the automation process such as probability of false alarms, energy consumption, cost-effectiveness, etc.

1) The basic function of calculating and viewing customers bill as and when s/he places the shopped products in the cart.

2) The customer tracks the details of the purchased items as well as the current bill amount on the monitor that is attached to the cart.

3) In addition to that, it includes the handling of the following special cases, which ensures that the system is fair in all respects. All the cases mentioned below are detected by the system.

a) Attempt to take products by keeping these into the cart without scanning their barcodes.

b) When the customer scans a product, but forgets to keep it in the cart.

c) Attempt to scan one product, but place multiple products in the cart.

d) Attempt to take away one product of high price by scanning the barcode of another product.

e) Consumers change their mind, our implementation allows for removing any i product already placed in the cart, without help from anyone.

10. CONCLUSION

Experience with Smart Shopping has indicated that there are many technical restrictions to be met in deploying a pervasive retail system.

The model reveals for developing a Smart Shopping System which automates the whole billing agenda. The system which is proposed is highly depending, authentic, trusty and time savable. The benefits of using this agenda in terms of cost and time saving ness can be summed up as:

The salary amount given by the mart to the employees will reduce since the manpower shall slowing as the whole system is becoming smart.

Cases of theft will be controlled, which further adds to the cost efficiency

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