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AUTOMATED PRECISE BILLING SYSTEM FOR SHOPPING TROLLEY

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ABSTRACT

A supermarket is a place where the customers come to purchase their daily items. The main purpose of supermarkets is to provide availability of all the products and save the customer's time. But, sometimes when they go for paying their bill they wait in queue for a long time, because scanning the products and total the bill and sometimes they get confused while comparing the entire price of all the products with the budget within the pocket before billing. To overcome these problems, we've designed a sensible trolley employing a Smartphone and Arduino. With this system, there is no need for the customer to wait in the queue for the scanning of the product items for billing purposes. This system provides on-spot scanning of the product and shows its price details on LCD, Mobile applications as well as billing counters. Whenever a customer is done with his/her shopping and near the billing counter, the data from the Arduino is going to transfer to the billing counter LCD Module and the customer through the Bluetooth module. In this way, it'll save the time of purchasers also.

Keywords: Arduino Mega, LCD module.

1. INTRODUCTION

In a Supermarket, Customers put their purchased items within the cart and once the shopping is completed they need to face the queue for an extended time for billing products purchased. It takes a long time for scanning each item that is implanted in the cart sometimes they get confused while comparing the total price of all the products with the budget in the pocket before billing. This problem has been overcome by this automated precise billing system. The barcode scanner application and the load cell can tally the data and then transfer it to the Arduino Mega. It will collect the data (items purchased) and transfers it to the mobile application, billing counter(software), and LCD. It will display for both the billing counter and also Customer's mobile application. This automatic billing system implemented here can greatly reduce the queue at the billing counter and reduces the customer's shopping time.

2. LITERATURE REVIEW

1. Contemporary embedded systems are habitually based on microcontroller's i.e. CPUs within the company of integrated memory also as peripheral interfaces but ordinary microprocessors by means of external chips for memory and peripheral interface circuits also are still common, especially in more complex systems. Radio frequency identification (RFID) technology won't only be useful for streamlining inventory and supply chains: it could also make shoppers swarm. ZigBee is predicated on an IEEE 802.15 standard. ZigBee devices often transmit data over longer distances by passing data through intermediate devices to realize more distant ones, creating a mesh network; i.e., a network with no centralized control or high-power transmitter/receiver ready to reach all of the networked devices. This paper provides centralized and automatic billing system using RFID and ZigBee communication. Each product of mall, super markets are going to be given a RFID tag, to spot its type. Each handcart is meant or implemented with a Product Identification Device (PID) that contains microcontroller, LCD, an RFID reader, EEPROM, and ZigBee module. Purchasing product information are going to be read through a RFID reader on handcart, meanwhile product information are going to be stored into EEPROM attached thereto and EEPROM data are sent to Central Billing System through ZigBee module. The central billing system gets the cart information and

EEPROM data, it access the merchandise database and calculates the whole amount of shopping for for that specific cart. Main aim of this paper was to produce an automatic billing to avoid queue in malls and super markets.

2. Dr.Suryaprasad J has introduced a "A Novel Low-Cost Intelligent Shopping Cart" [1] for bargain-priced smart shopping assist to guide customer to select a items during a shopping malls and insist the customer about the good deals available on the products as they move around within the shopping complex.

3. Udita Gangwal et.al,[2] proposed a concept that is "SMART TROLLEY IN MEGA MALL". In present era, automatism of mall they developed a microcontroller based CART which is completely computerized. Only the billing section person has got to hold the barcode detail which present within the product covers and it read by the barcode scanner. Then the info of the merchandise are going to be displayed. By using that cart, during a very less time customer can purchase sizable amount of product. At the billing counter, computer are often simply affiliated for confirmation and deliver the bill.

4. J.S.Awati,et.al.[3] described"Intelligent Shopping Cart" which focuses to reduce, and perhaps evicting the total waiting time of customers, lowering the manpower requirement for markets, and enlarging the overall efficiency. The Future of peddle industry also lies in more computerized devices.

5. Satish Kamble [5] initiated "Developing a Multitasking Shopping Trolley supported RFID Technology" the people, in the mall got to wait in a queue at the billing counter. For decoding, this problem RFID tags are used. This paper represents some applications using RFID technology such as locating bygone items and tracking moving objects.

6. Chandrasekar. P [6] explained "Smart handcart with Automatic billing System through RFID and ZigBee" has developed a handcart containing a microcontroller in Product Identification Device (PID), an LCD, an RFID reader, EEPROM, and ZigBee module were utilized in this model. Shopping product intimation will be read through an RFID reader on the cart, meanwhile, the product information will be accumulated into Electrically Erasable Programmable Read-Only Memory attached to it and the data from this will be generated to Central Billing Section through the ZigBee module. Then the separate bill detail of the cart is going to be calculated by the billing counter and therefore the customer will receive the right bill for their respective products.

3. METHODOLOGY

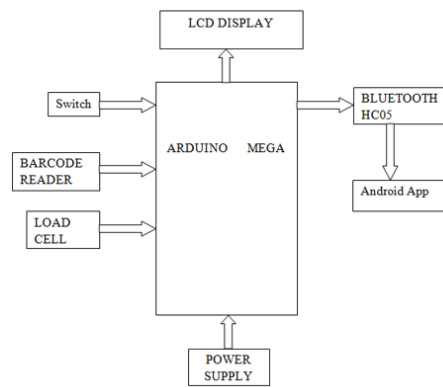


Fig. 1 Block diagram

In the existing system, a barcode scanner application is used in the cart to identify the products added to the cart. A weight sensor is employed within the cart to calculate the load within the cart. We add the items to the cart by barcode'. If we want to remove the item from the cart then, switch ON the 'REMOVE switch' and scan the item which we don't need. A microcontroller unit-Arduino board collects the data from two points and sends the list of purchased items to the customer and the Billing counter using the LCD module. Once we are done with the shopping switch ON the 'TOTAL switch'. If both scanner data and the weighed data get tallied then it shows the list of purchased items regarding the discrepancy on the mobile app of the customer, software of the Billing counter LCD, and LCD which is implanted in the trolley. Then, the market's supervisor packs the items in the list while cross-verifying the printed bill. Thereby, providing us a secured automated precise billing by preserving the products of the supermarket as well as reducing the queue time for the customers.

4. CONCLUSION

In the Smart shopping trolley system, now the customers need not wait in the queue for his/her turn for the scanning the products with secure billing. Especially, during weekends or during the festival season, there is no waste of time waiting in the queue. The customer has to do the billing at the billing counter itself. So the supermarkets use this concept as one of their business strategy to attract customers. The goal of our project is to make the customers a pleasant shopping experience, reducing the billing delay, and flaw-free shopping a Smart Shopping Cart was developed in this proposed work with less expensive implementation, implementation, that can work smoothly in real-time and efficiently.

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