

# E-basket for Shopping Mall using Arduino

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**Abstract-** Most of the people in this modern world spent lot of time in departmental stores and super market for shopping. There has been emerging demand for quick and easy payments of bill in super market. But it has been found that a lot of time is wasted particularly at the billing section. This paper presents a new methodology of smart shopping basket which saves a lot of time at billing section. This basket contains barcode scanner, LCD module and Arduino UNO where the products are scanned and used for billing purpose. This system helps the customer to reduce the waiting time at the billing section.

**Keywords-** Arduino, Bluetooth, Scanner, Barcode, Billing, Shopping

## I. 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. One regular task that human beings spend considerable amount of time is in shopping. A large number of customers will tend to walkout of a queue if the line is too long. The current shopping environment can be simply be classified into two categories:

(1) Shopping in absentia: Shopping in absentia is supported in numerous ways including online shopping, tele-shopping, etc. wherein a shopper does not have to be physically present in the shopping area.

(2) Shopping in-person: Shopping in-person involves a personal visit to the place of shopping and selecting the products based on various factors including need, convenience, brand, etc. Shopping mall is a place where people get their daily necessities ranging from food products, clothing, electrical appliances etc. Now a day's numbers of large as well as small shopping malls has increased throughout the global due to increasing public demand & spending.

The drawbacks of the shopping in person are that each customer has to wait in the queue at the checkout counter. Even while billing, if the customer wants to remove some of the products because of exceed of budget, here again

the items are required to be recheck for what products have been removed from the basket. The proposed project is an automated shopping trolley with bar-code scanner which aims to reduce the total waiting time of customers for billing purpose and the total man power requirement for markets, in order to improve efficiency of shopping malls [3]

## II. PROPOSED METHOD

The E- Basket system infuses a Shopping cart (trolley) with a barcode scanner placed at checkpoint. It makes possible for the user to self-scan the barcode of the purchased products which he is willing to purchase. A wireless transmission smart-device [2] makes note of all the scanned items in the particular trolley and is linked with the supermarket's backend database which contains features of the products such as cost price. The scanned products are automatically billed in the wireless smart device for their purchases, thereby significantly reducing total waiting time and transmitted to the shop's central billing program

The proposed method consists of a barcode scanner which is used to scan the product price. This is further used for billing the total price of the products. Once the done key is pressed, the total bill is send to the counter for billing purpose. The flow of the process is shown in the flowchart below:

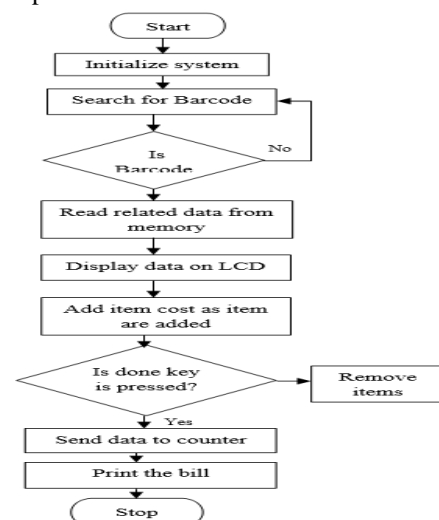


Fig.1: Flowchart of the proposed method

### III. IMPLEMENTATION OF THE SYSTEM

The smart shopping carts system’s block diagram consist of seven blocks containing Arduino UNO, barcode reader, LCD display, bluetooth module and Android phone.

Here Arduino is used as controller. In the system after scanning the barcode of the product, the output of barcode reader is given to the Arduino. The Arduino controls the total item list and the total cost. This data containing the item list and the total price is displayed on LCD placed on the cart. This data after the end of shopping is further sent to the android app of shopkeeper for billing purpose.

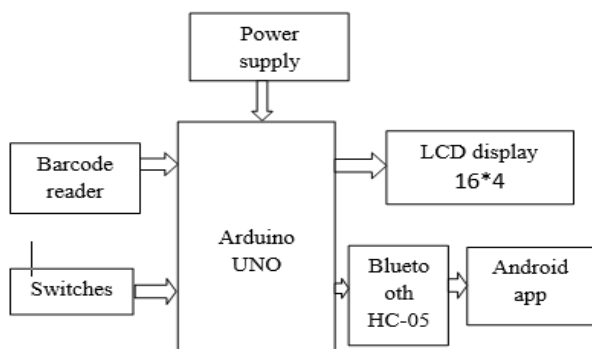


Fig.2: Block Diagram of the proposed method

The total process takes place with two modes of operations:

- 1) Add mode
- 2) Remove mode

a. Add Mode:

In this mode when customer scans the product through the barcode reader, the product is added to the cart. Barcode device is used as input device. The output of the barcode reader is given to the Arduino which is used as controller. Arduino prepares the bill according to the product inserted into the cart containing item name, quantity, price and total bill. This data is further displayed on LCD display. Here 16x4 LCD is used for displaying purpose where first 3 lines are used for product information and 4th line is used to display the total cost of product. When the customer presses the done switch on the cart then he completes the shopping. After done switch is pressed all the data which is displayed on the LCD is transferred to android app through bluetooth device. Bluetooth is used as communication media between the cart and the android app. The bill is finally saved & the hardcopy is printed.

b. Remove Mode:

The second mode is the remove mode. In this mode the customer removes the product by scanning the product again. When the product is removed the changes are reflected on the LCD.

### IV. APPLICATIONS

Electronic commerce has developed to such an extent to provide convenience, comfort and efficiency in day to day life.

A supermarket is a place where customer comes to purchase the products required in day to day life. After the shopping, the customer feels hectic to stand in queue for billing all the products. Billing in shopping mart is major factor. Previously it was controlled manually. But now a day’s everything is automatic and advanced for regulations of process without direct human intervention

Proposed smart shopping cart system will keep the track of purchased products using barcode scanner and bluetooth module. The system can be implemented in big as well as small shopping malls which reduces the customers time for billing, which further makes life easier.

### V. ADVANTAGES

a. Bill calculation at trolley itself:

In the proposed system the product prices are scanned and the total price is displayed on the cart itself which gives in advance a clear picture to the customer about how much money they will spend and helps the customer to buy the products within their budget

b. Low chance of traffic & mismanagement:

Users can be aware of the total bill amount during the time of purchase, reduces time spent at billing counter and increase satisfaction.

c. Reduction in support staff:

Reduces manpower required in billing section. This can reduce the expenses incurred by the management.

### VI. FUTURE SCOPE

In future the system can be implemented by using Raspberry pi, which makes the system more compact.

## VII. CONCLUSION

The payment of bill by standing in long queue is a tiring factor when people want to purchase commodities from marts. Though people can pay instantly using electronic money facility, they are forced to wait in the queue for longer time. The proposed system implemented using Arduino technology does the billing of products at the cart itself which will overcome the problem faced by the customers of standing in long queues for billing purpose

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