INTELLIGENT SHOPPING CART WITH ONLINE PAYMENT FOR FUTURISTIC SHOPPING EXPERIENCE

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ABSTRACT:

Shopping in malls and supermarkets is becoming a daily activity in everyone's life. There will be big rush at these malls, especially at the billing counter. People purchase different items and put them in the respective carts. After completing the purchases, one need to go to the billing counter for payments. The cashier prepares the bill using bar code reader which is a time-consuming process and results in long queue in the billing counter. So, to avoid this, a cart which reads the price of the products purchased with the help of Arduino Uno, (Radio Frequency Identification) RFID reader and RFID tag is introduced. The amount of each product and the total amount for the purchased products will be displayed in the LCD mounted in their cart. If a product is to be removed from the cart, they can use the push button provided in the cart. Then, by viewing the total price, people can make their payments through online by scanning the QR code available uniquely for the shop, by using the open source applications such as PhonePe, Paytm, google pay etc. Thus, the payments can be done easily and the time of the customer is also saved.

KEYWORDS:

Arduino Uno, RFID reader, RFID tag, PhonePe.

1. INTRODUCTION

Now-a-days, purchasing in supermarkets is becoming a daily routine. There is a big rush in the malls and supermarkets, especially on weekend and holidays. People purchase their necessary things and put them into their respective cart in the shop. After completion of the purchase, they have to wait at the billing counter to pay their bill.

The cashier generates the bill by scanning the products using the barcode reader. Each product has to be scanned and the total amount to be paid will be given as a bill. The customer has to wait for a long time to pay the bill which results in a very long queue increasing the waiting time of the customer.

2. PROPOSED SYSTEM

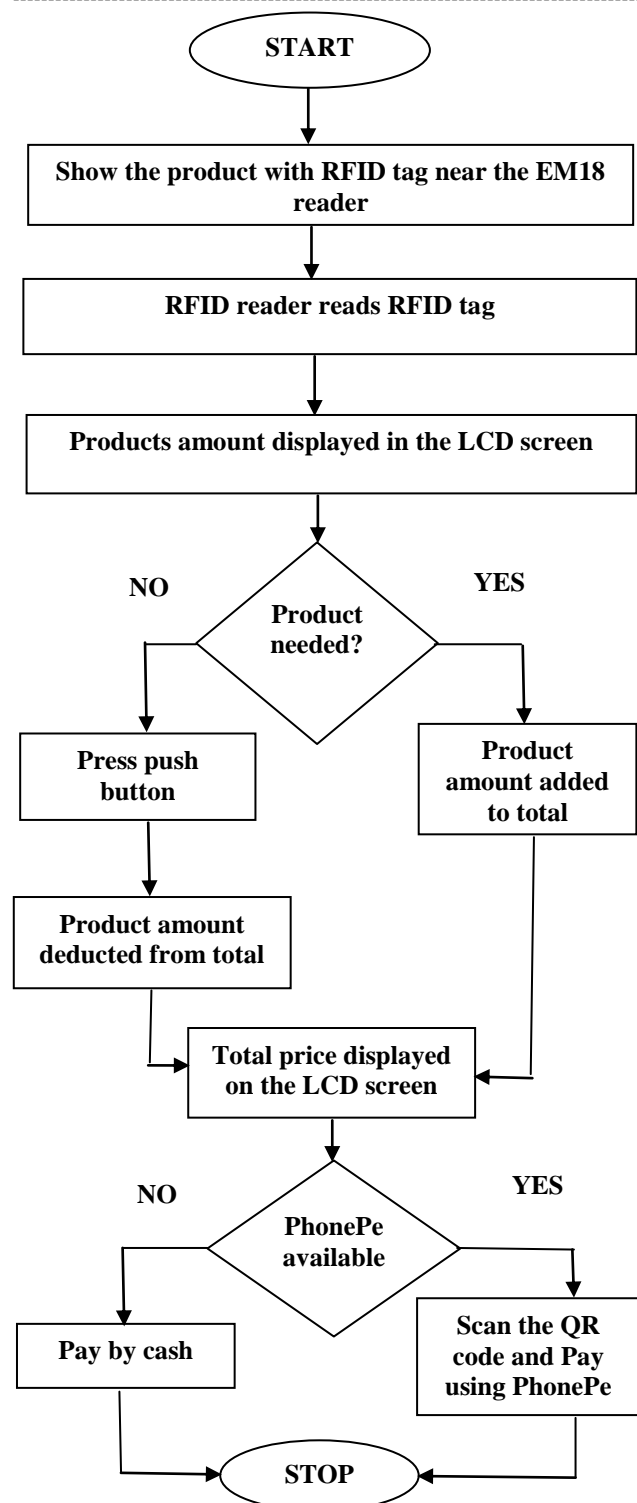The below Figure 1 shows the flow diagram of the proposed system

Figure 1 Flow Diagram of Proposed System

The above Figure 1 shows the flow diagram of proposed system. In our proposed system, the cart mounted with Arduino Uno, RFID reader and RFID tag are introduced. The RFID reader reads the products with RFID tag and displays the amount in the LCD display attached to the cart. By scanning the products, each products price will be displayed and also the total amount of the purchase will also be displayed in the LCD. The cart is also provided with a push button, which when pressed helps in removing the product in the cart, which reduces the price and displays in the LCD. The customer can pay the bill by knowing the total price in the LCD screen through online by using the open source applications.
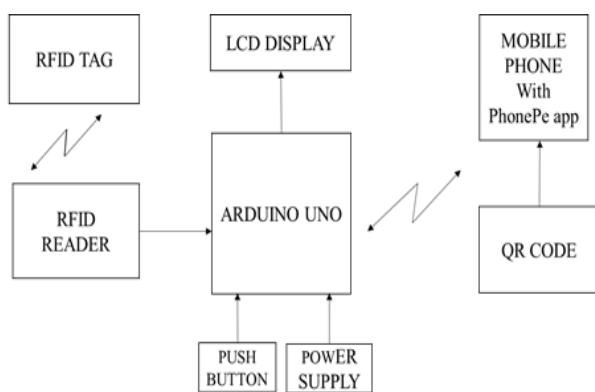

Figure 2 Block Diagram of Proposed System

The above Figure 2 shows the block diagram of proposed system. It consists of Arduino Uno, RFID reader, RFID tag, LCD display, QR code and PhonePe.

A. ARDUINO:

Figure 3 Image of Arduino Uno

The above Figure 3 shows the Image of Arduino Uno. Arduino is an open-source platform which is easy to use for beginners and is also inexpensive compared to other microcontroller platforms. Arduino consists of 14 digital input and output pins, in which 6 pins can be used as PWM (Pulse Width Modulation) outputs. Arduino IDE (Integrated Development Environment) is an open source software which makes it easy to write the code and upload the computer code to the physical board.
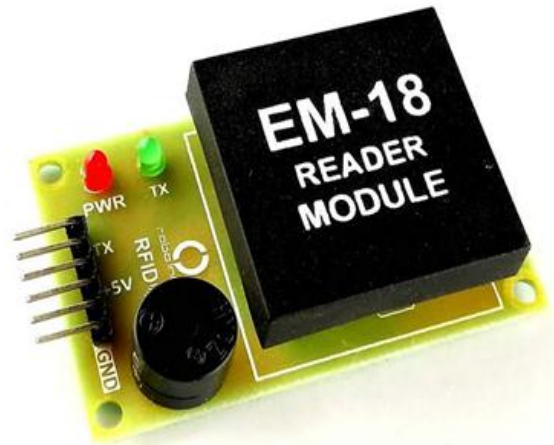
B. RFID READER:

Figure 4 Image of EM-18 reader

The above Figure 4 shows the Image of EM-18 reader. The RFID reader consists of a radio transponder, a transmitter and a receiver. It uses electromagnetic fields to identify the objects which are attached with RFID tags. The reader reads the information contained in the tag. Unlike the barcode, the RFID tag does not need to be in exact line of sight with the RFID reader.

C. RFID TAG:

Figure 5 Image of RFID tag

The above Figure 5 shows the Image of RFID tag. The RFID tag is an electronic tag which exchanges data with the RFID reader through radio waves. They are far more advanced than barcodes. The tags can be attached to any object. Active tags and Passive tags are the two types of RFID tags. Depending on the frequency band used by the tag, the signalling between the reader and the tag is done in several different ways.

D.LCD DISPLAY:

Figure 6 Image of LCD Display

The above Figure 6 shows the Image of LCD Display. LCD (Liquid Crystal Display) is a flat panel display which uses the light modulating properties of crystal to produce visible image for users. This technology used for displays in smaller computers. LCDs consume very less power than the LED (Light Emitting Diode) and the gas-display because they work on the principle of blocking light rather than emitting it.

E. QR CODE:

Figure 7 Image of QR code

The above Figure 7 shows the image of QR code. QR (Quick Response) is a type of matrix barcode. It consists of two-dimensional barcode. QR codes contains data for a locator, identifier or a tracker that points to a particular website or a application. The QR code uses four standardized encoding modes to store data efficiently.

F. PhonePe:

Figure 8 Image of PhonePe

The above Figure 8 shows the Image of PhonePe. PhonePe is a digital wallet company. It was the first payment app built on Unified Payments Interface (UPI). This application is available in over 11 languages. Users can send and receive money, DTH recharge, mobile recharge, shop online and offline. PhonePe is accepted as a payment option across 5 million online and offline merchants covering mostly all the areas such as groceries, travel, food etc.

3. RESULTS AND DISCUSSION

Figure 9 Image of initial LCD display.

The above Figure 9 shows the image of initial LCD display.

Figure 10 Image displaying the amount of product added to the cart

The above Figure 10 shows the image displaying the amount of product added to the cart

Figures 11 & 12 Image displaying the total amount

The above Figures 11 & 12 shows the Image displaying the total amount

Figure 13 Image displaying the total amount after removing a product from the cart

The above Figure 13 shows the Image displaying the total amount after removing a product from the cart.
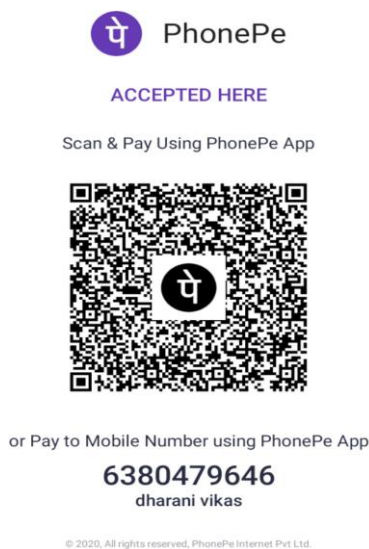

Figure 14 Image of QR code for Payment

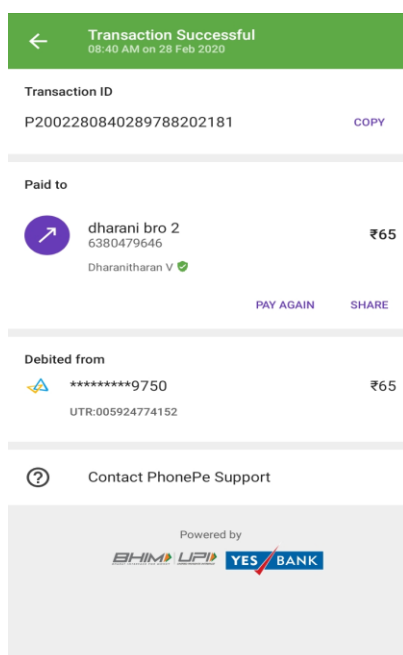The above Figure 14 shows the Image of QR code for Payment

Figure 15 Image of Payment done by the customer

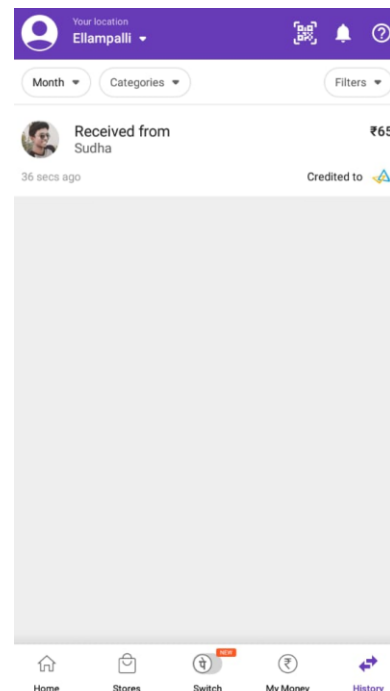The above Figure 15 shows the Image of Payment done by the customer

Figure 16 Image of amount received by the shop owner

The above Figure 16 shows the Image of amount received by the shop owner.

Thus, the price of the product and the total price spent for purchasing is displayed on the LCD and payment is done through online by using PhonePe. Other open source payment applications can also be used to pay the amount.

4. CONCLUSION

In this paper successful use of RFID system for the smart shopping cart has been demonstrated. The waiting time of the customer is the main drawback in the existing shopping system. By the usage of RFID tag and LCD display the price detail is viewed instantly and if there is any unnecessary product it can also be removed and the price is deducted, according to this one can pay the bill using the open source applications such as PhonePe, Paytm, etc.

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