Android App Based Wireless Billing for Shopping Malls

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Abstract—People are getting smart day by day with the upcoming technologies and they want everything fast and up to date. Everyone want their work complete with just one click. So we thought of works where people actually waste their precious time where they should not. One of them was standing in queue at the billing counter in malls. So we designed the system in which there is a trolley with barcode scanner and raspberry pi. All the scanned barcodes will be transferred to pi and through pi to android application. On the android app all items with quantity, price will be displayed and the customer can pay total bill through the app. So, basically the project is based on online billing of bought products. This eliminates the process of standing in queue and saves the time of customer. Customer can also delete or add item during shopping according to his budget and comfort.

Keywords— Android App, Barcoad Scanner, Trolly Unit, RaspberryPi.

I. INTRODUCTION

Shopping is a part of life. We can buy necessary commodities of life like food, clothes and electrical appliances from shopping malls. Shopping from malls has become part of life. People have shifted their interest of buying things from small shops to malls. As mall is a place where we get all things at one place so number of people coming to malls is increasing day by day and it is getting difficult to stand in queue for long time for billing of bought products. So there is need to reduce the queue. Many super market chains are also trying to reduce labor costs by shifting their interest to self-service check out machines.

Therefore our designed system will help in reducing the queue in shopping malls and will help in saving time of consumers as we know the process is very time consuming and physically stressful. So to avoid this we have designed this prototype module which will be very useful in day to day shopping.

I contains the introduction of our research paper "Android app based wireless billing for shopping malls", Section II contains the related work based on literature survey, Section III contains the methodology of designed prototype, Section IV contains the result and discussion related to designed prototype, section V contains the Conclusion and Future Scope.

II. RELATED WORK

In paper [1], smart shopping cart eliminates tedious process of scanning the product at the counters. As this process is already done by the customer during shopping itself. For test run, it was arduino based platform and xbee module.

In paper [2], Shopping cart can accurately follows master by identifying shape characteristics of the specific image that master wears. They also have idea to use RFID technology to scan tags on commodities and then total price is calculated.

In paper [3], there is co-operative performance of three separate system: a website developed for shopping market, electronic smart cart device and antitheft RFID gates. All data about purchased products and user data are stored in cloud based system. The framework [4], an interactive kiosk based cart designed uses the RFID technology to identify product details which are already available in the database. Proposed system have facility to browse the available products list on screen of the display connected to cart interacting with main server and will generate bill once all required products placed in cart. In paper [5], Shopping is done by automatic product detection and smart billing with help of hi-fi technology. Payment is processed by mobile banking or cash payment. In paper [6], The system consist of 4 key modules a)Product detection b)Product recommendation c) Budget setting d)Automatic billing. The 4 modules are integrated into embedded system and provide automatic billing using RFID and RF communication. In paper [7], Electronic hardware system consist of RFID reader in trolley, LCD and keypad and PIC microcontroller. After

completing shopping, customer needs to press a button on keypad and bill will be generated on master computer.

III.   METHODOLOGY

In this unit the RaspberryPi system is attached to a barcode scanner. The user has to put the items in the trolley as the user puts the items in the trolley the barcode scanner on the trolley reads the barcode and sends it to the RaspberryPi system. The RaspberryPi system then stores it in the memory and compares it with the lookup tab. If it matches then it sends the barcode to the android phone of the user. As soon as the barcode is received, the android application then search the name of item and display the name, quantity and price of the product. Then customer can pay the total bill by online banking.

The selected products are displayed on user's android phone and their price is also displayed along with it. After this the customer can pay the total bill wirelessly by using android app.
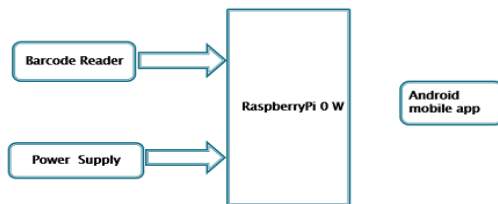

Fig. 1. Proposed architecture

1. Raspberry Pi 0 W: It has processor BCM2835 1GHz ARM 11, RAM OF 512MB, 1Micro SD, 1 Micro USB socket, 802.11 wireless LAN, Bluetooth 4.0, mini HDMI for video output, Size 65mm X 30mm X 5mm.
2. Barcode Scanner: Supported interfaces through USB and wired, laser type, handheld, manual operation.
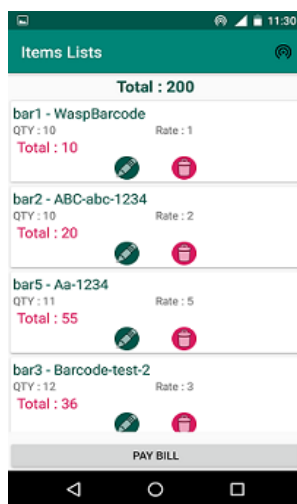3. Android app: Android app development using android studio software tool.

Fig. 2. Design of android app.

IV.   RESULTS AND DISCUSSION

- Time saving process of scanning of products at the billing counter.
- Time saving process of payment of product at billing counter.
- Automatic billing process through android app on phone.
- Smooth and easy shopping. No issues of change of coins and notes by direct payment through android app using online banking.
- According to our budget we can do shopping by adding or removing the products if the payment goes out of budget.
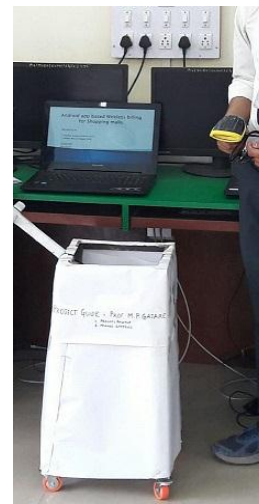

Fig. 3. Actual system Image

V.   CONCLUSION AND FUTURE SCOPE

In this paper a successful implementation of smart, advanced, methodical and low cost system to make shopping more convenient and user friendly. From the results obtained on implemented prototype module most of the intended objectives will be achieved. This makes the system to be reliable for real-time application. RaspberryPi technology is replacing other technologies due to its high working efficiency with assurance of security. It has developed a wide scope in many applications and has the potential to enhance and ease the experience of shopping.

Thus this system has successfully achieved goal of budget setting, product recommendation, add and deduct cost of product according to the condition when product is kept in cart and taken out respectively. The android app has successfully received data wirelessly and generated complete bill with all required details.

In future we can use app for both scanning and billing and as a result this will help in reducing system cost.

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