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Android Based Smart Shopping System

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***Abstract*- E-commerce has taken the world by surge due to its limitless advantages. Even so, many customers find themselves getting stuck in chicanery and receive trite products. They tend to incline towards the traditional or off-line shopping which is more trustworthy. But traditional shopping seems too time consuming and includes a lot of labor. In an attempt to bridge this gap between the extant traditional shopping and the burgeoning online shopping, this paper discusses an application wherein people can exploit the advantages of both off-line and on-line shopping. This system can be implemented by any shop and can be used at internet and smartphone friendly places. The application mentioned here would read the barcode of the product and add it to the cart in application with methods to change or edit the list. Payment gateway is provided to make payments. Shops can provide an online portal, which would avoid losing customers. Since the application is available on the smartphone it is easily accessible and readily available.**

***Keywords*- android, application, payment, QR code, shopping, scan**

I. INTRODUCTION

With the technological boom, people tend to shop online more for trivial things. The traditional way of buying things which includes going to the store and handpicking products is slowly losing its popularity. Even so, a plethora of people become a prey to trickery and scams while shopping online. They might get unoriginal products or products that are completely divergent from the ones displayed on the shopping sites.

There are ample possibilities of getting payment method hacked or visiting fishy sites. In these type of cases, traditional shopping has an upper hand, as handpicking products would always ensure the quality and authenticity of the products. But traditional way of shopping seems time consuming in today's fast paced world. With workload on peoples shoulders increased, traditional shopping is something people tend to avoid. The aim of this project is to ameliorate these disadvantages and to bring together the advantages of both the types of shopping.

One of the main reasons that people avoid going to shops and buying articles is the endless queues at the counter. People have to get into long lines irrespective of the quantity of objects they need to buy and wait for their turn even if they are in a hurry.

This is because the cashier has to scan the barcode of every article and generate a bill which is a time consuming process. This application is designed to overcome this flaw. The customer can scan the barcode using his/her mobile phone. The information pertaining to product is stored in database. The details of the purchase will be displayed on the phone screen. After the purchase is concluded, the overview of the purchase will be displayed with the total expenditure and the purchaser can pay the bill online. In order to make a payment, a payment gateway is implemented through which the payment can be carried out. This method is easily accessible and effortless and is available on smartphones

II. EXISTING SYSTEM

When it comes to physical shopping, the customer goes to the shop and handpicks the products that he/she wants to buy. This ensures the quality of products and the customer can change his/her purchase decisions based on his/her liking for that quality. After this, the customer is supposed to wait in a queue to make the purchase and pay the bill. A cashier at the counter scans the barcode of every product and generates a bill.

Irrespective of the quantity of products the customer has, he/she has to stand in the queue. This can be time consuming and a bit annoying for people who make small purchases or who are in a hurry. Due to this people turn towards online shopping. Online shopping can be done from the comfort of your house and the bill can be paid online instantly. Every kind of shopping can be done online without worrying much about availability.

With negligible labour, this mode of shopping is something which attracts people who live a hectic life. But online shopping comes with its own flaws. The chances of frauds and hacking is very high. There are many instances where people get products that does not imitate the display picture. A lot of people have complained about receiving a

completely different product and the exchange and refund process being tedious online.

This creates a conflict in the customer weather to choose offline or online shopping.

III. PROPOSED SYSTEM

In the proposed work, the user will be able to scan the product which he wants to purchase with the help of scanner provided by this app. For this purpose the user first need to register and fill the required credentials like name of the user, mobile number, e-mail ID etc. Once the details are filled they can access the app where in the scanner will be displayed on the mobile screen. With the help of mobile camera, the scanner will scan the barcode of the products which the user wish to purchase.

When the barcode ID scanned the details of the products like name, cost (MRP) and weight of the product will be displayed on the mobile screen through which the customer will get a better idea about the product. The scanned product will get added in the list of items purchased. When the same product is scanned multiple times, its quantity and price will proportionately and accordingly increase the total bill.

In case the purchaser wants to remove a product from the list, a remove option is available. By clicking on this icon, the item will be removed and accordingly the total amount and price will be deducted. After the purchase is done, the total price will be displayed.

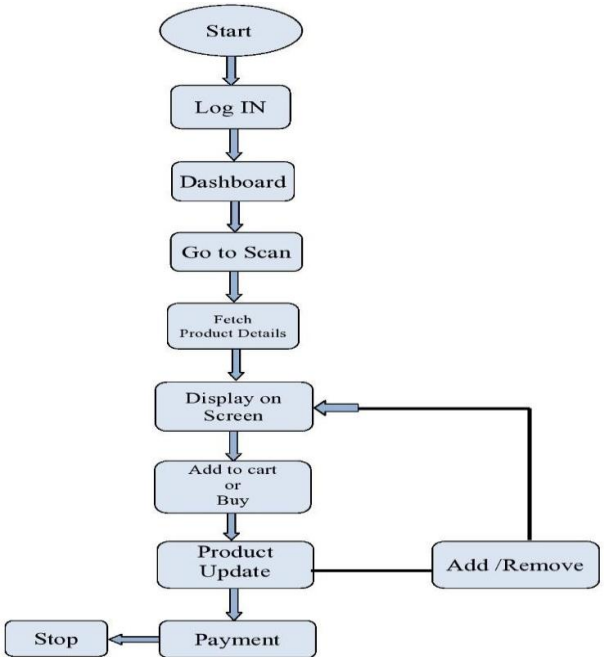


Fig 1. Working Flowchart.

By clicking on proceed option, the bill will be generated. After this the customer has to pay the bill by online payment mode. For the online transaction, an online payment gateway is integrated with the application. Once the bill payment is done, notification regarding the successful transaction will be sent to the registered mobile number or e-mail ID.

IV. TECHNOLOGY USED

1. QR Code:

Quick response code (abbreviated as QR code) are fast becoming a commonplace for commerce. Even menial money transactions are now-a-days dependent on these codes which contain small black and white blocks. These codes are optical label which is machine readable and contains information about the item to which it is associated. QR codes uses numeric, byte binary, alpha-numeric and kanji encoding to store data. Some extensions may also be used.

In comparison to standard barcodes, these have greater storage capacity and faster readability. These codes are user friendly and can be scanned using any smartphone camera or scanner. It doesn't require involved equipment or procedure to scan. This is the main reason why QR codes are widely becoming popular. This project proposes using QR codes in place of the traditional barcodes. Its orientation friendly characteristic will aid the customers to scan the code in any direction without much fuss. These are smaller in size and hold a lot more information, so ample information can be stored and retrieved without much complications.

V. SOFTWARE USED

1. Java:

Java is a programming language which requires minimum implementation dependencies. It is object- oriented and class based general purpose programming language. The application developers can write the code once and run it anywhere on any platform that supports Java without the necessity of recompilation. Regardless of underlying architecture, Java applications can run on any Java Virtual Machine (JVM). These are typically compiled to byte code. The syntax is similar to C and C++ with fewer low level facilities.

2. RxJava:

RxJava is an extension of ReactiveX and is Java based. ReactiveX provides reactive programming concept to varied programing languages. Reactive programming is a situation where program reacts whenever data appears. It is event based concept and events can propagate to registered observers. The best observer pattern, functionality pattern and iterator pattern are combined.

3. Android Studio:

Android Studio is the official integrated development environment (IDE) for Google's Android OS (Operating

System), which is built on JetBrains' IntelliJ IDEA software and designed concretely for Android development. It is often readily downloaded on Windows, macOS and Linux based operating systems.It is a replacement for the Eclipse Android Development Tools (ADT) because the primary IDE for native Android application development.

4. Extensible Markup Language (XML):
XML exemplifies a rule set related to encoding documents in both human-readable and machine- readable format. The design objective of XML emphasize simplicity, generality, and usability over the internet cross section. It is a data in text format with support through Unicode for different human languages. In-spite of the fact that the architecture of XML focuses on documents, the language is commonly used for the definition of erratic data structures such as the ones used in web services.

Considerable amount of schema systems exist to bolster the definition of languages related to XML. Programmers have developed a lot of application programming interfaces (APIs) to support the processing of XML data

5. Room Database:
Room is an Object Relational Mapping (ORM) library. Room maps the database objects to Java objects. Room supplies an abstraction layer over SQLite to permit fluent database access while harnessing the full power of SQLite.

Room has two main components of Room DB

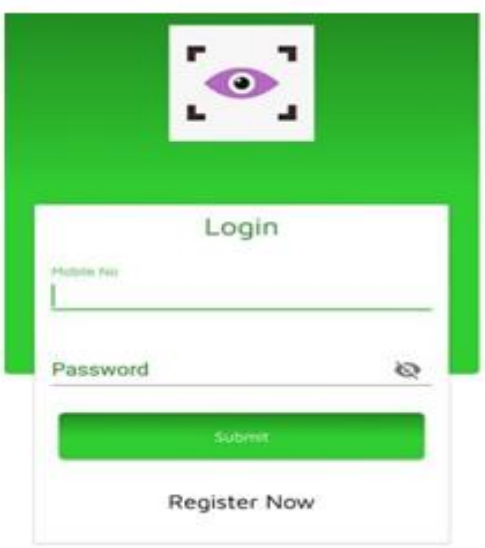
5.1 Entity: Entity is a representation of table within the database. Room creates a table for individual classes that has Entity annotation, the fields in the class represent the columns in the table. Therefore, the entity classes imitate small model classes that don't contain any logic.

5.2 DAO: DAOs are accountable for defining the methods that access the database. In the initial SQLite, the Cursor objects are utilized. With Room, there is no need for all the Cursor related code. It can simply define the queries using annotations in the DAO class.

VI. RESULT

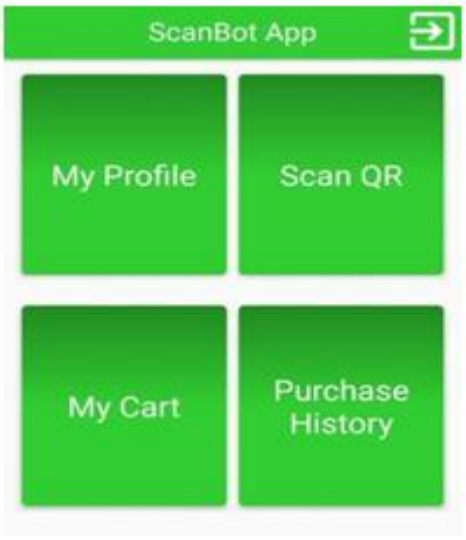
From the android based smart shopping system the customers can easily avail the product from the store, through which the customers will receive quality assured products and the online payment mode enabled through payment gateway also proves to be efficient and time saving process.

This will lead to reduce the gap between the traditional shopping and online shopping where the buyer as well as the seller both are satisfied and benefited. We have implemented this project for a few products in order to demonstrate. This method of shopping can be extended over wide variety of products in any store.



(a)

(b)



(c)
Fig 2. Login pages.

(a)

(b)

(c)

Fig 3. Purchase pages.

(a)

(b)

(c)

Fig 4. Payment pages.

VII. CONCLUSION

The system has been developed with care. It is time efficient and easy to use. The purpose of this project was to develop an android application for purchasing items from stores in less time. The project has included the use of smart phones, which are an integral part of today's lifestyle, in most effective manner. The most prominent advantage of this project is that the customer will not have to stand in long queues to get the bill made and make the purchase. The product in purchase will be authenticated by the buyer himself/herself and the online shopping frauds will be minimized.

FUTURE SCOPE

The application could include different sections to locate the desired product and display it on mobile screen. The system may keep track of purchase history of each customer and provide suggestions based on their history.

With the help of real time analysis notifications about discounts and ongoing offers can be generated. A smart basket can be interfaced along with the application to ensure proper bill payment by tallying the data of the basket and the application.

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