



REAL TIME PRODUCT MONITORING AND TRACKING SYSTEM USING FINGERPRINT RECOGNITION

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ABSTRACT: Shopping is an activity of buying goods from the shop. Shop is a place where a customer can fulfil all their needs. Android based systems should be technically implemented in such a way that ensures adequate user requirements. The proposed methodology is implemented to allow the person to do shopping using fingerprint authentication of customer and the bill will be automatically generated. This is done by the android application and also through web application. The development in operating system of the mobile phones gives rise to the application development on the large scale. The aim is to provide convenient and secured fingerprint authentication and billing. We propose a billing system using android application, in our project the customers have to give their fingerprint and tray number as input details. After the purchase was finished, admin will match the customer fingerprint and the bill will be generated automatically after the fingerprint matching process. Finally, the proposed system will be presented with the obtained results.

I.INTRODUCTION

Now a day's interest in shopping malls is widely increasing among people. In our project a mobile application is developed to make work of the admin easier. The application is designed in such a way that the admin can view the product availability in his shop. Real time product monitoring and tracking system using finger print recognition is innovative smart phone technologies to convert our existing product purchase techniques. It implement fingerprint authentication as user privacy and security device. We are using the finger print recognition in online transactions. It provides the unique one in the human product purchase items. Finger prints provides more authentication due to its feasibility, accuracy, reliability and acceptability. The finger print is one of the popular biometric methods used to authenticate the products. The process of searching the content of the customer purchased product details is time consuming. The function of this system is take user fingerprint image as an input and search for a match in the database and then shows the results. These details are maintained by the administrator and avoid



the much collusion between the purchase item details.

II.IMPLEMENTATION TECHNOLOGIES

The technology selected for implementing Android Based Voting System is PHP/MYSQL. Apache is used as the HTTP server. The development was done in a 'windows' environment using Adobe Dreamweaver CS6.

A. Android

Android's source code is released by Google under open source licenses, although most Android devices ultimately ship with a combination of open source and proprietary software, including proprietary software required for accessing Google services. Android is popular with technology companies

that require a ready-made, low-cost and customizable operating system for high-tech devices. Its open nature has encouraged a large community of developers and enthusiasts to use the open-source code as a foundation for community-driven projects, which add new features for advanced users or bring Android to devices originally shipped with other operating systems. At the same time, as Android has no centralized update system most Android devices fail to receive security updates: research in 2015 concluded that almost 90% of Android phones in use had known but unpatched security vulnerabilities due to lack of updates and support. The success of

Android has made it a target for patent litigation as part of the so-called "Smartphone" between technology companies. Android is a comprehensive software stack of mobile devices that includes an operating system, middleware and key application. This rich source of software bunch is used in Mobile Technology through its innovation module of The Android Software Development Kit (SDK). Android can be considered as a unified software package. This software package includes an operating system, middleware and core applications. Android SDK provides some tools and API's which are required to develop Android applications using the programming language of Java. Android is built on open Linux Kernel. This particular software for Mobile Application is made to be open source, thereby giving the opportunity to the developers to introduce and incorporate any technological advancement. Build on custom virtual machine android gives its users the addition usage and application power, to initiate an interactive and efficient application and operational Software for your phone. It is a mobile operating system (OS) , based on the Linux kernel and designed primarily for touch screen mobile devices such as smart phones and tablets. Android's user interface is mainly based on direct manipulation, using touch gestures that loosely correspond to real-world actions, such as swiping, tapping and pinching, to manipulate on-screen objects, along with a virtual keyboard for text input. In addition to touch screen devices, Google has further developed



Android TV for televisions, Android Auto for cars, and Android Wear for wrist watches, each with a specialized user interface. Variants of Android are also used on notebooks, game consoles, digital cameras, and other electronics. [2] proposed a system in which an automatic anatomy segmentation method is proposed which effectively combines the Active Appearance Model, Live Wire and Graph Cut (ALG) ideas to exploit their complementary strengths. It consists of three main parts: model building, initialization, and delineation. For the initialization (recognition) part, a pseudo strategy is employed and the organs are segmented slice by slice via the OAAM (Oriented Active Appearance method).

B. Eclipse

In computer programming, Eclipse is an integrated development environment (IDE). Java application development is supported by many different tools. One of the most powerful and helpful tool is the free *Eclipse* IDE (IDE = Integrated Development Environment). It contains a base workspace and an extensible plug-in system for customizing the environment. Eclipse is written mostly in Java and its primary use is for developing Java applications, but it may also be used to develop applications in other programming languages through the use of plugins, including: Ada, ABAP, C, C++, COBOL, Fortran, Haskell, JavaScript, Julia, Lasso, Lua, NATURAL, Perl, PHP, Prolog, Python, R, Ruby (including Ruby on Rails framework), Rust, Scala, Clojure, Groovy, Scheme, and Erlang. It can also be used to

develop packages for the software Mathematica. Development environments include the Eclipse Java development tools (JDT) for Java and Scala, Eclipse CDT for C/C++ and Eclipse PDT for PHP, among others.

C. MySQL

MySQL is an open-source relational database management system (RDBMS) in July 2013, it was the world's second most widely used RDBMS, and the most widely used open-source client-server model RDBMS. It is named after co-founder Michael Widenius's daughter, The MySQL acronym stands for Structured Query Language. The MySQL development project has made its source code available under the terms of the GNU General Public License, as well as under a variety of proprietary agreements. MySQL was owned and sponsored by a single for-profit firm, the Swedish company MySQL AB, now owned by Corporation. For proprietary use, several paid editions are available, and offer additional functionality.

1) MySQL Admin:

This tool comes from the creators of MySQL, so you can be assured they have a solid understanding of database optimization and stability for power users. There are currently two versions of MySQL Administrator: 1.0 and 1.1. MySQL.com recommends you use 1.1 if your MySQL installation is 4.0, 4.1 or 5.0. Read more about the MySQL Administrator on MySQL.com's web site.



2) Database:

A database is a structure that comes in two flavors: a flat database and a relational database. A relational database is much more oriented to the human mind and is often preferred over the gabble-de-gook flat database that are just stored on hard drives like a text file. MySQL is a relational database.

3) MySQL Database:

A MySQL database is nothing in itself. Rather a MySQL database is a way of organizing a group of tables. If you were going to create a bunch of different tables that shared a common theme, you would group them into one database to make the management process easier.

4) Creating Database:

Most web hosts do not allow you to create a database directly through a PHP script. Instead they require that you use the PHP/MySQL administration tools on the web host control panel to create these databases. Create a database and assign a new user to this database.

∴. Server - local host ∴. Database - test ∴.
Table - example ∴. Username - admin ∴.
Password - ladmin. The server is the name of the server we want to connect to. Because all of our scripts are going to be placed on the server where MySQL is located the correct address is local host. If the MySQL server was on a different machine from where the script was running, then you would need to enter the correct url (ask your web host for specifics on this).

D. PHP

PHP is a server-side scripting language designed for web development but also used as a general-purpose programming language. Originally created by Rasmus Lerdorf in 1994, the PHP reference implementation is now produced by The PHP Group. PHP originally stood for *Personal Home Page*, but it now stands for the recursive backronym *PHP: Hypertext Preprocessor*. PHP code may be embedded into HTML code, or it can be used in combination with various web template systems, web content management system and web frameworks. PHP code is usually processed by a PHP interpreter implemented as a module in the web server or as a Common Gateway Interface (CGI) executable. The web server combines the results of the interpreted and executed PHP code, which may be any type of data, including images, with the generated web page. PHP code may also be executed with a command-line interface (CLI) and can be used to implement standalone graphical applications. PHP has been widely ported and can be deployed on most web servers on almost every operating system and platform, free of charge. The PHP language evolved without a written formal specification or standard until 2014, leaving the canonical PHP interpreter as a *de facto* standard. Since 2014 work has gone on to create a formal PHP specification



E. JAVA

Java programming language was originally developed by Sun Microsystems which was initiated by James Gosling and released in 1995 as core component of Sun Microsystems' Java platform (Java 1.0 [J2SE]). As of December 2008, the latest release of the Java Standard Edition is 6 (J2SE). With the advancement of Java and its widespread popularity, multiple configurations were built to suite various types of platforms. Ex: J2EE for Enterprise Applications.

- **Simple:** Java is designed to be easy to learn. If you understand the basic concept of OOP, Java would be easy to master.
- **Secure:** With Java's secure feature, it enables to develop virus-free, tamper-free systems. Authentication techniques are based on public-key encryption.
- **Architectural-neutral:** Java compiler generates an architecture-neutral object file format, which makes the compiled code to be executable on many processors, with the presence of Java runtime system.
- **High Performance:** With the use of Just-In-Time compilers, Java enable high performance.
- **Distributed:** Java is designed for the distributed environment of the internet.
- **Dynamic:** Java is considered to be more dynamic than C or C++ since it is designed to adapt to an evolving environment. Java programs can carry extensive amount of run-time information that can be used to

verify and resolve accesses to objects on run-time.

F. APPSERV

AppServ is a “application server, in an n-tier software architecture, serves an API to expose business logic and business processes for use by third-party

applications. It is full-featured of Apache, MySQL, PHP, phpMyAdmin. Package of AppServ are as follows

PHP

MYSQL

Apache

PhpMyAdmin

All packages download from Official Binary Release. AppServ objective just make easy to setup. We do not provide anything else more than Official Binary Release package. Because we think the Official Binary Release work better than compile by individual or third-party binary. AppServ can guaranty any package from AppServ can work stable like Official of Apache, PHP, MySQL Release. Objective of AppServ Just Easy to install. You can setup web server, database server in 1 minute. For some question AppServ can be Real Production Web Server or Database Server.



III-EXISTING SYSTEM

In current scenario we are using rfid readers and barcode scanner for billing purpose. In rfid technology, we are using rfid readers, tags and zigbee or Bluetooth module to connect with the central server. In this technology, we need a more number of rfid tags for each and every product. In case of using zigbee module, there is problem of latency time, unsecured communication with the server and minimum coverage distance. The main disadvantage of using zigbee is, it can access single peripheral device at a time. The initial cost of rfid tags and reader is more. After the billing process removing rfid tags from the purchased product consumes more time and there is possibility of missing the rfid tags. In barcode scanners due to the presence of line of sight the product should have to be kept in focus to LOS and it have to be kept at very minimum distance while scanning the product. These technologies use lcd display. Sometimes the lcd will not work properly and it could be damaged easily.

Problems in existing system:

The problems with the existing system includes the following,

A. Cost estimation is high

The implementation of the above system is very expensive. Its hardware requirements are very high and its implementation in real time is very difficult and cause more problems. The central server which has a database also requires software

implementation and the total estimation of the project will be high.

B. Product delivery is not secure

Sometimes confusion will occur while delivering the packed products to the customers and there is a possibility of wrongly exchanging the items between the customers.

C. Identity customer items is not reliable and flexible

It is not very easy to identify the respective purchased products of the customer and it is one of the major problems.

B. Proposed System:

There are many problems in existing system, to solve those problems we are develop the system as fingerprint recognition based product purchase. The main purpose of the fingerprint is for user authentication and verification which gives the big security to the product. Administrator can easily identify the person who is purchased the items. During shopping, after finishing our purchase we need to make our products to be scanned by the barcode scanner and reader to get the bill. In our methodology we are going to replace the system of using barcode scanner and excel sheets in making bill. Our application is fully automatic and it is a latest trend preferred by all the users where our application can be easily used by all android users. We have created a application whereby simply choosing the product and the quantity we can get the



bill. This application is less expensive and commercially acceptable.

C. Modules Description

The proposed system has the following modules. They are

Fingerprint modules

Authentication Module

Product Module

Purchase Module

Bill Generation Module

Fingerprint modules

Fingerprints are one of the biometrics, used to recognize persons and verify their identity. The analysis of fingerprints for identical purposes generally requires the similarity of same print pattern. The finger print module can directly interface with the customer purchasing product to identify the products. User has to store the fingerprint images into this purchase process to do this all process.

Authentication Module

In authentication modules, the matching algorithm is used to identify the actual and exact image. The purpose of this process is to increase the security for product; it gives more identification in customer products. In this project each product cost will be estimated based on the fingerprint authentication. After completed scan process the final report will be displayed. Suppose if unauthorized person

finger print is scanned means then alert message will be displayed and all the entered product details are automatically deleted from the system.

Product Module

Product module is describes about the categories wise products available. This is maintained by the administrator. In future this is used to give the product stock details in this system. Admin have to add all these details before customer starting the purchase. Admin has the rights to do any changes in the product specification and cost.

Purchase Module

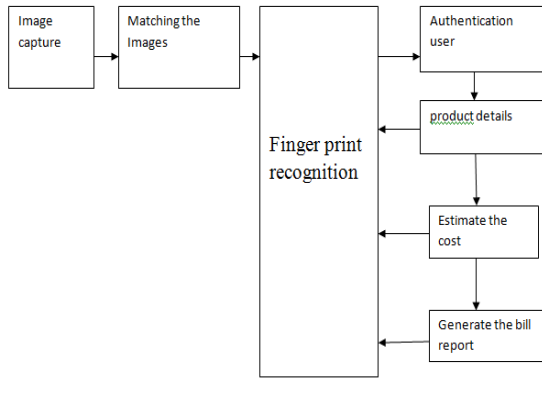
This process is start only after the verification process is completed. Customer while entering the purchase he/she has to punch the fingerprint in their respective places. Each customer tray no is added into the system. The customer purchase is verified using two things. One is customer fingerprint image and other one is customer tray no. It is matched with already stored database data means then it will redirect to the purchase form.

Bill Generation Module

This module is carries to generate the bill report for the products. Admin will access this bill report part and admin only have rights to estimate the product cost.



D.BLOCK DIAGRAM:



V-RESULTS

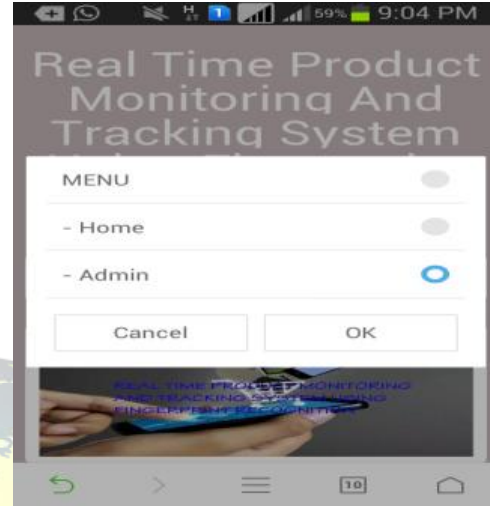


Fig 1: Home page

IV-REQUIRMENTS

Software Requirements:

Operating System	: Windows7
Front End	: Php
Back End	: App server2.5.10
Technology Used	: Android 2.2
IDE	: Eclipse Indigo
Emulators	: AVD
Plug-in	: ADT plug-in
Tools used	: Android SDK.

Hardware Requirements

Processor	: Pentium P4
Speed	: 2.4GHZ
RAM	: 2 GB
Hard Disk	: 500GB
Monitor	: LCD
Kit	: Keyboard,Mouse
Memory	: 1GB RAM
Smart Phone	: Android (2.3 to 4.2)

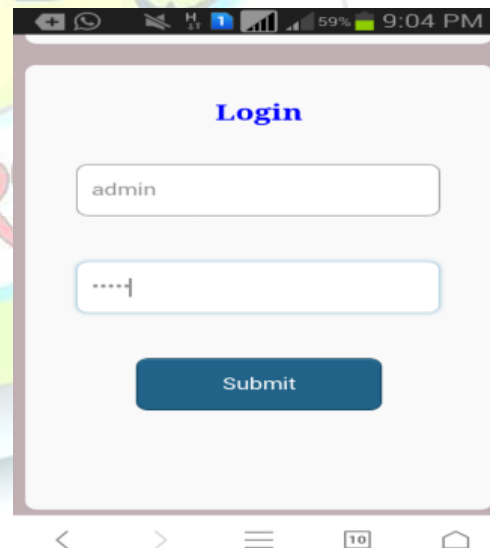
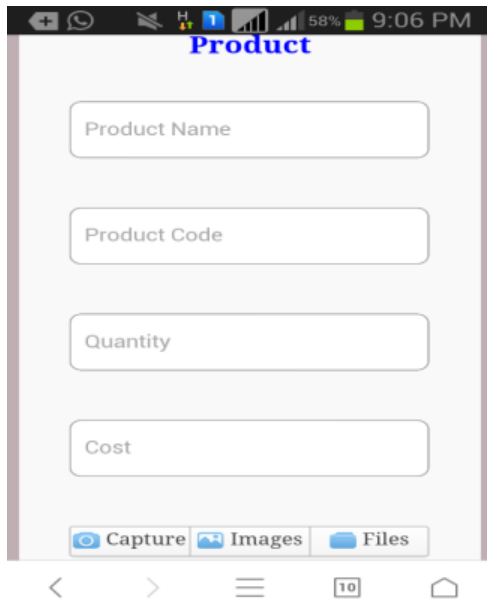


Fig 2: Admin login



Product

Product Name

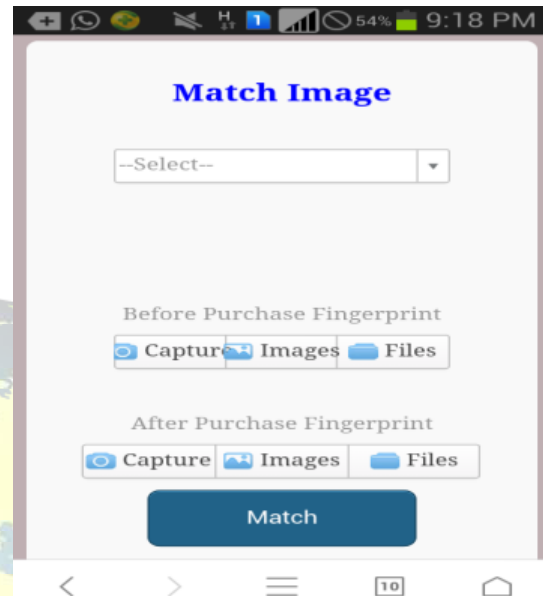
Product Code

Quantity

Cost

Capture Images Files

Fig 3: Product uploading



Match Image

--Select--

Before Purchase Fingerprint

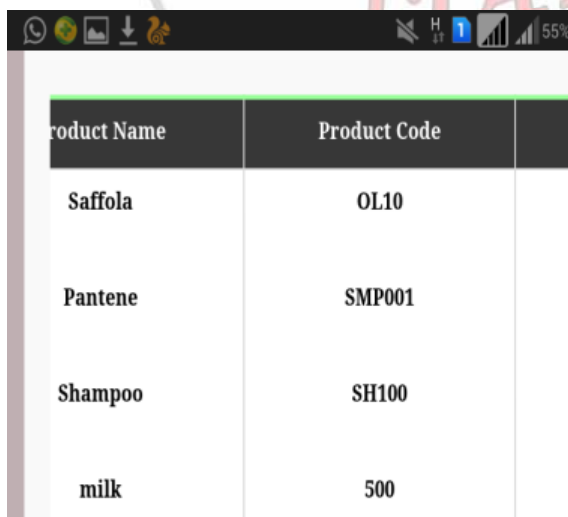
Capture Images Files

After Purchase Fingerprint

Capture Images Files

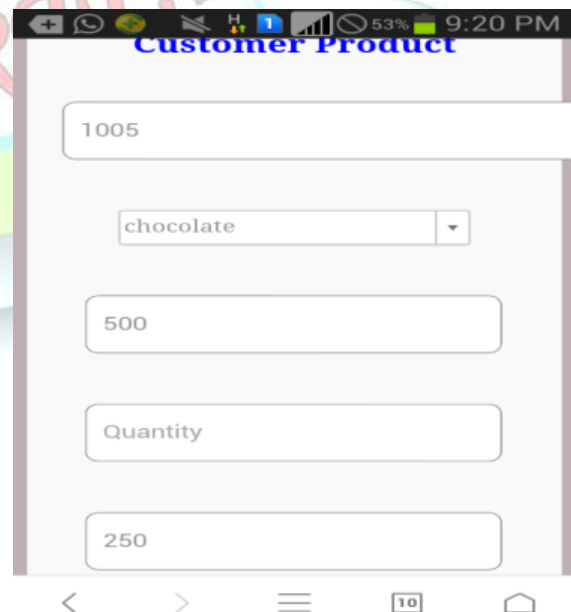
Match

Fig 5: Fingerprint matching module



Product Name	Product Code
Saffola	OL10
Pantene	SMP001
Shampoo	SH100
milk	500

Fig 4: View available product



Customer Product

1005

chocolate

500

Quantity

250

Fig 6: Purchase module



VI-CONCLUSION

Real-time product monitoring and tracking system using fingerprint authentication is android based application project and is developed for tracking the order by capturing fingerprint images. Fingerprint recognition is used as form of biometric to recognize identities of human beings. It will definitely helpful for the admin who will do the billing process and this application will make his work more easy.

VII-REFERENCES

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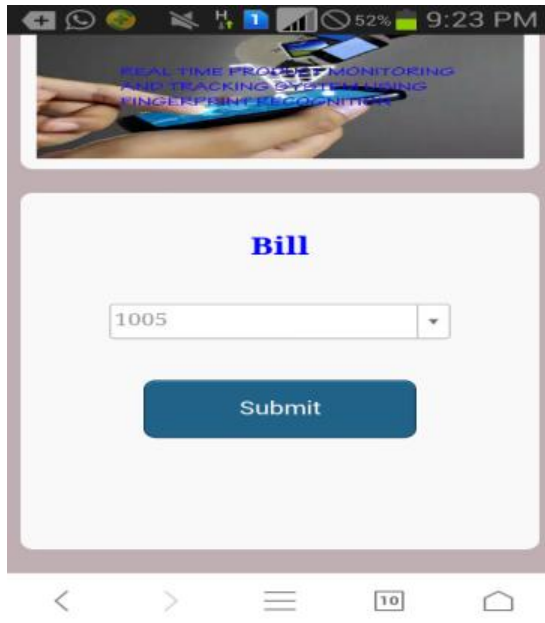


Fig 7: Bill generating module

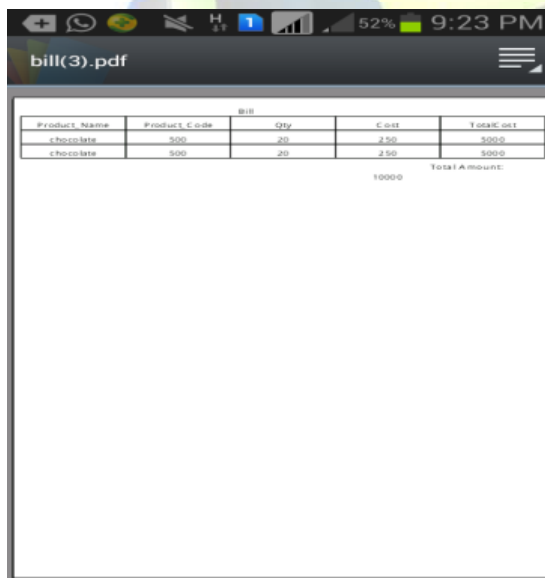


Fig 8: Bill



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