

Innovative Cart for Smart Shopping

Vrushikesh Patil¹, Akanksha Nighute², Shivani Sarnaik³, Prof. Pournima More⁴, Shubham Narke⁵

^{1,2,3,5}(Student, Dept. of Computer Engineering, G.H.Raisoni College of Engineering & Management, Pune, Maharashtra, India)

⁴(Professor, Dept. of Computer Engineering, G.H.Raisoni College of Engineering & Management, Pune, Maharashtra, India)

Abstract - Now days almost everyone opts shopping through mall or complex. As people have become habitual to faster services and technology, no one would prefer waiting in long queues for billing. As per the customers perspective the Smart Application is the best solution to provide efficient and effortless shopping. For providing ease an application will account with the process of registration/log-in. Customers can jot down the products into a list at first (aim is memorizing products). The products bar-code will be scanned and the equivalent information will be displayed on the android screen. Adding and removing of products can be achieved via Tabs provided. After the entire shopping, bill will be displayed on screen. If invalid products get detected, those invalid products will be discarded. Thus, Ingenious Cart minimizes the waiting time. And more over as it is an easy to use android application with the simplified GUI it makes the customers comfortable with the entire shopping process through this adroit journey along the respective markets/store.

Key Words: Bar-code Scanning Technology, Android Application, Administrator System Software.

1. INTRODUCTION

With every day increase in the urbanization and the exploring activity of the population, there is surely a need of ingenious system for supporting these activities efficiently. The intent of ingenious cart is to make the customers shopping escapade. As we have huge malls and a large mob which is to be handled with the due ease, there has to be certain automated system. It has always been a need of new and advanced innovations in every particular field according to the growing population and standard needs of lifestyle. Today humans have reached a level where one could not waste even a single minute of the time. It's all about technologies and a level-up in them every time as we move ahead. Thinking of such a situation it inspired the team to work on a better solution which would completely benefit the customers as well as the stores in the mall. This proposed system is a venture to avoid long waiting customer queues at the billing counter thus, saving customers vital time. The adroit shopping application would help to carry out the faster billing process. The implementation of this venture will be conducted under the android application

domain. Using barcode scanning algorithms, android studio (for creation of application). Using all these methods an ingenious venture will be accomplished. The best solution is to provide an application for the purpose of creating a list of items to be purchased, which also provides the information like availability of products and special offers. Second Core part in the ingenious cart system is the software which is provided at the administrator side so as to add/update/remove the cashier. The cashier would be able to view the product purchase list details and thus makes the payment process much faster at the counter. The advantage provided in this application is the barcode scanning feature so the customer can scan the product immediately when the product is picked from rack. Because of such a scanning feature one would definitely reduce the waiting time at the billing counter and find it as more easy to purchase for the products. This makes shopping faster and efficient.

2. LITRATUREREVIEW

1. Innovative Shopping Cart For Smart Cities, 2nd IEEE International Conference On Recent Trends in Electronics Information & Communication Technology (RTEICT), May 19-20, 2017, India. The purpose of this paper is to solve issues related to product selection and billing. Interactive Kiosk based cart is designed which uses the RFID technology to identify the products details. Merit: waiting time reduced. Demerit: Not cost effective

2. Development of Smart Shopping Carts with Customer Oriented Service, International Conference on System Science and Engineering (ICSSE) National Chi Nan University, Taiwan, July 7-9, 2016. Objective is to provide ease in shopping through face recognition history, billing system. Smart User Interactive Interface Design, The algorithm of the utilized face recognition is local binary patterns histograms (LBPH). Demerits: Big storage capacity required, heavy hardware's (increases cost).

3. Smart Shopping Trolley Using RFID, Komal Ambekar, Vinayak Dhole, Supriya Sharma, Tushar Wadekar, International Journal of Advanced Research in Computer Engineering & Technology (IJARCET) Volume 4 Issue 10, October 2015. To provide ease in shopping via RFID. Following technologies are used Zig-Bee communication,

RFID reader. Techniques used require more attention.

4. An Improved Smart Shopping Mobile Application, International Journal of Advanced Research in Computer Science, Volume 9, Special Issue No. 2, April 2018. To provide product selection at home and then transfer the list to the respective shop/store. As per the customers convenient time slot pick-up the products from respective store.

3. PROPOSED SYSTEM

The best solution is to provide an application for the purpose of creating a list of items to be purchased, which also provides the information like availability of products and special offers. Second Core part is the ingenious cart system software which is installed on the administrator PC in order to reduce the waiting time at the counter via transferring the customers purchase details. The scanning can be done immediately when the product is picked from rack. This makes shopping faster and efficient. One of the solutions uses the interactive kiosk based cart which works using RFID technology to identify the product details but, this method is not cost effective. Some solutions make use of methods like LBPH (Local Binary Patterns Histograms) which need much attention [3]. The solution provided in the ingenious cart for android shopping is rather much effective, negligible cost and additionally provides features like creation of checklist, alerts regarding availabilities and special offers. Thus, makes shopping much easier for customers. The underlying aim is to effectively reduce the waiting time at the billing counter in the malls. By providing the barcode scanning process at the time of product selection, every time product would be selected the bill will be updated accordingly and displayed via android screen which is installed on the customer's android device.

- Basic processing will be as follows:-
- User login or registration into the android shopping application.
- Creation of checklist (easy way to memorize the items to be purchased). - Selection and picking of items from rack.
- Scanning the barcode via customer device camera through the android cart application.

- Details will be fetched for respective product from the database.
- Display of price and quantity onscreen.
- After final shopping, approach to the counter.
- Counter person gets the user details on the system via the PC software verifies within few minutes and then checkout.
- Along with this, invalid products will also be discarded if any.

Technologies Used:

- Android Studio
- NetBeans – Firebase
- MySQL

Languages:

- Java
- Android.

3.1. Android Studio



Fig 1. Android Software Environment

Android Studio is that the official integrated development setting for Google's mechanical man software package, engineered on Jet Brains IntelliJ plan computer code and designed specifically for mechanical man development. it's on the market for transfer on Windows, Macintosh OS and Linux system) primarily based operating systems. Java language is principally wont to write the mechanical man code although different languages is used mechanical man

could be a powerful software package and supports nice options like media support, UI, storage, property, multitasking mechanical man runs on devices of all shapes and sizes, providing you an enormous chance for continued user engagement. The goal of mechanical man project is to make a made real-world product that improves the mobile expertise for finish users. Mechanical man Studio provides the quickest tools for building mechanical man apps on each form of mechanical man device

Some features of Android are-

- The nature is highly customizable.
- Reasonable Price
- The use of apps is easy and efficient
- Hardware and Software features.
- Full control over OS.

3.2. NetBeans

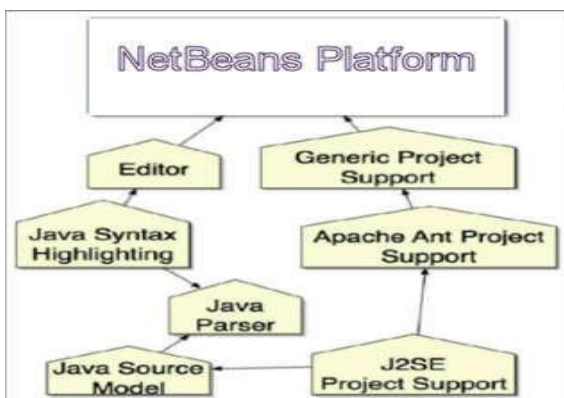


Fig 2. NetBeans Platform

NetBeans is associate degree integrated development surroundings for Java. NetBeans permits applications to be developed from a collection of standard software package elements referred to as modules. NetBeans runs on Windows, MacOS, UNIX and Solaris.

Few features of NetBeans are:

- Maven
- JavaEditor
- JavaEE
- Git

3.3. Firebase

Firebase is Google’s mobile platform that helps you quickly develop top quality apps. Firebase may be a mobile and net application development platform. base provides practicality like analytic, database, electronic communication and crash reportage therefore you'll move quickly and specialize in your users. Firebase is constructed on Google infrastructure and scales mechanically, for even the most important apps. base product work nice separately however share information and insights, in order that they work even higher along. It provides services like authentication, real time information, cloud storage, hosting, etc. The base period of time information may be a cloud-hosted NoSQL information that allows you to store and adjust between your users in period of time. Period of time syncing makes it straightforward for users to access their information from any device, be it net or mobile. base Authentication provides back-end services, easy-to-use SDKs, and ready- created UI libraries to evidence users to your app. exploitation base Authentication makes building secure authentication systems easier, whereas conjointly up the sign-in and on boarding expertise for finish users. We are able to evidence users through the strategies like Email countersign, Google, Facebook, etc.

4. SYSTEM ARCHITECTURE

The architecture given below depicts the entire process of the planned Ingenious Cart project for making customers shopping experience better.

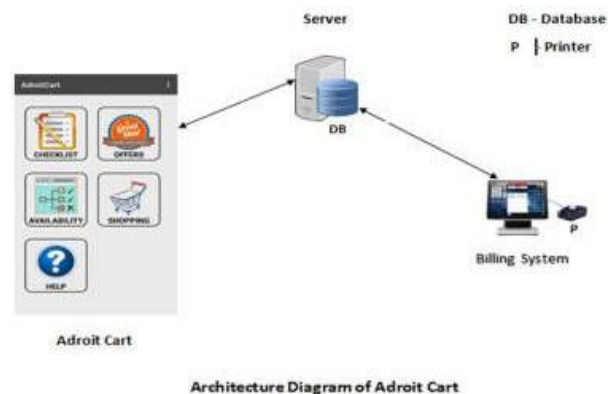


Fig 3. System Architecture

A system architecture or systems architecture is the conceptual model that defines the structure, behavior, and more views of a system. An architecture

description is a formal description and representation of a system, organized in a way that supports reasoning about the structures and behaviors of the system. As per the above system architecture once the device gets connected to the internet one could select the products for purchase. All the customer details could be fetched by the cashier using the unique customer ID via the ingenious cart system/PC software at the billing counter.

5. WORKING

5.1. Android Application (Adroit Cart)



Fig 4. Adroit Cart Module

After the valid user login the adroit cart window opens up, where the user can select the appropriate tab in-order to navigate through the particular ingenious feature and proceed towards the further shopping purchase with ease.

5.2. Barcode Scanner



Fig 5. Barcode Scanner

After the product selection the process is to scan the product in-order to fetch the details to be transferred to the cashier system.

5.3. Administrator System



Fig 6. Administrator Login

Login window for the use of store admins and cashiers. Here the admin can add/update/delete the cashier.

5.4. Cashier Login



Fig 7. Cashier Login

The cashier would be able to view customer purchase details and perform final checkout after bill payment.

5.5. Bill Payment

This is the last procedure in-order to checkout where all the product details with amount is displayed and thus the payment is made successfully.

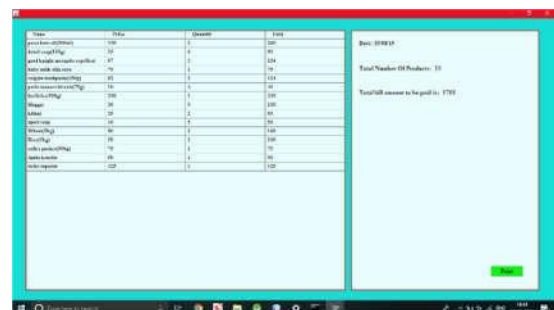


Fig 8. Bill Payment

The right window pane consist of details like product count and date along with the total sum of amount to be paid. Additionally there is a print button to generate a pdf of the bill.

6. CONCLUSION

Thus, we come to conclusion that Adroit shopping cart is a necessity for shopping malls in order to provide faster billing, and efficient services to the customers. This system avoids long queues. Using such a system customers can do affordable purchase. Can be used by huge retail stores, smart shopping malls. The app notifies regarding availability of products. Provides information related to special offers. The Project Implementation will help all people who are shopping in the super market and face problem of standing in a long queue for final billing .The device is simple to operate and does not need any help. This venture is mainly useful for middle class people who face difficulties while shopping in supermarket. The project implementation is easy, very economical and will reduce the time required at billing counter. In our project we designed automated shopping trolley for billing system, which can be used in any supermarket and by any person easily. In future the scope could be in following areas:

- 1] To make the adroit cart application more workable we can add a feature which will open the bottom end of the cart containing the products and eventually the products will be dropped into the bags attached below the cart.
- 2] Product guide: In the adroit application the product guide map can be an additive feature in coming future which will save customers time by navigating him/her to a particular product section.
- 3] Online payment service through direct net banking can be provided with further more security and guidance.

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