

SURVEY ON AUTOMATED BILLING SYSTEM IN PLAZZA USING ZIGBEE

¹ SHRUTIKA MAHENDRA MOHITE, ² POOJA BAPURAO SHELKE,
³ SNEHAL AVINASH RAJAPURE, ⁴ PRIYANKA NAVNATHA BHOSALE

^{1,2,3,4} Department of Computer Engineering, Rajgad Dyanpeeth Technical Campus,
Pune University, Dhangawdi Pune- 412205 ,Maharashtra India

¹ shrutikamohite@gmail.com, ² poojashelake1194@gmail.com
³ snehalrajaoure7@gmail.com, ⁴ priyankabhosale2694@gmail.com

ABSTRACT :

A supermarket is a place where customers come to purchase their daily using products and pay for that. So there is a need to calculate how many products sold and generate the bill for the customer. When customers go to shopping mart for shopping, we have to work for selecting the right product. Also, after that, it is hectic to stand in line for billing all the goods. Under the existing operation structure of supermarkets, this article aims to propose a Smart Shopping System based on NFC Technology. This system includes technical support of mobile applications, and users will be able to conduct a series of actions like product searching, pre-ordering and online payment on the mobile app. With NFC users can even pay the bills without credit card which would simplify the purchasing process.

KEY WORDS : *NFC Reader, NFC Tag, Mobile Payment, Android Application, Zigbee Module*

1. Introduction

the advancement of practical circumstances, individuals now have more boulevards to orchestrate their uses. Numerous would pick internet shopping In the interim there are still customary ways, yet it would devour considerably more time and vitality. NFC (Near Field Communication) is an arrangement of short separation remote correspondence arrangements taking into account RFID what's more, web innovation. Any two cell phones share the same NFC convention will have the capacity to naturally enact the correspondence framework inside 10cm and move information in a non-contact mode to supplement capacities like computerized wallet or verification frameworks. Supermarket is the place where customers come to purchase their daily needs products and pay for that. So there is need to calculate how many products are sold and to generate the bill for the customer. When we go to shopping mart for shopping, we have to work for selecting right product. Also after that it's hectic to stand in line for billing all the products. Contemporary embedded systems are habitually based on microcontroller's i.e. CPUs in the company of integrated memory as well as peripheral interfaces but ordinary microprocessors by means of external chips for memory and peripheral interface circuits are also still common, especially in more complex systems. Near Field Communication (NFC) technology may not only be useful for streamlining inventory and supply chains: it could also make shoppers swarm. ZigBee is based on an IEEE 802.15 standard. ZigBee devices often transmit data over longer distances by passing data through intermediate devices to reach more distant ones, creating a mesh network; i.e., a network with no centralized control or high-power transmitter/receiver able to reach all of the networked devices.

This system provides centralized and automated billing system using NFC and ZigBee communication. Each product of shopping mall, super markets will be provided with a NFC tag, to identify its type. Each shopping cart is designed or implemented with a Product Identification Device (PID) that contains microcontroller, LCD, an NFC reader, EEPROM, and ZigBee module. Purchasing product information will be read through a NFC reader on shopping cart, meanwhile product information will be stored into EEPROM attached to it and EEPROM data will be send to Central Billing System through ZigBee module. The central billing system gets the cart information and EEPROM data, it accesses the product database and calculates the total amount of purchasing for that particular cart .blend of NFC and portable terminals. With NFC cell phones can supplant customary charge cards and advance the shopping background, at last understanding a superior administration for clients. Main aim of this paper was to provide an automatic billing to avoid queue in malls and super markets.

2. Basic information of the system

NFC for the most part has focal points including low expenses, straightforward operations and high security, which shows gigantic potential outcomes in specific enterprises. This shrewd shopping framework is a use of NFC expecting to actualize versatile installment. Aside from a more easy to understand shopping knowledge, it can likewise cut down the operation taken a toll.

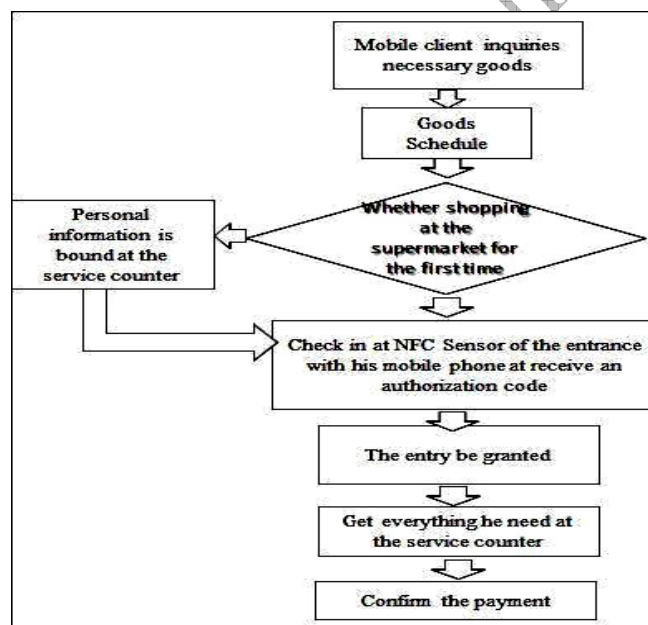
A. Software Structure

The framework comprises of the accompanying divisions: the correspondence subsystem, the administration subsystem, the power control subsystem, the pre-request subsystem, the route subsystem, the checkout subsystem, the entrance control subsystem and the alert subsystem. The correspondence subsystem is based upon the blend of wired and remote systems. Its fundamental capacity is to coordinate the trading of signs between various subsystems and correspondences with the distributed computing stage. The administration subsystem is intended to handle methods like the robotizations of stock reports and promoting reports. The force control subsystem is set to adjust the electrical heap of the grocery store. The pre-request subsystem will answer all the online request demands from clients. The route subsystem should direct clients to find the general store. The checkout subsystem and access control subsystem will work together at the clerk. The alert subsystem will handle crises like products taking breakdowns.

B. The Purchase Process

Clients will have the capacity to hunt down item points of interest in advance through the versatile application. When they are signed in, they can likewise pre-arrange any items they need. On the off chance that it is the first time the client goes to the general store, then he ought to register his own data at the administration counter. For clients who effectively finished the enlistment, the framework will match his record with the character data consequently, so the entire procedure will just happen for one time. On the off chance that the client has as of now pre-requested certain items, he can straightforwardly go to the grocery store and check in at the NFC sensor of the passage with his cell telephone. The framework will exchange the aggregate sum of cash into a third party installment stage from the charge card the client doled out. On the off chance that the operation is effective, the client will get an approval code from the framework on his cellular telephone (with a time of legitimacy that can be balanced continuously as per specific circumstances). In the event that the code coordinates the access control framework, the section will be allowed. After the client get all that he require, he can look at with his cellular telephone at the register and affirm the installment.

The whole process is given as flowchart in fig.1



C. Refund Policy

At the point when the client has presented the solicitation of returning merchandise on the portable customer application, the framework will advise journalist administration staff to recognize the products. In the event that

it meets the approach, the administration staff can acknowledge the solicitation on approved cell phones and the framework will enact the discount process with the outsider installment record of the client.

D. Navigation

The customer application gives the land data of the grocery store, so clients will be prompted with the best course by the route framework on their telephone.

3. LITERATURE REVIEW

This paper [1] focuses on The rate of versatile shopping has been expanded since individuals can utilize the web while strolling in the city or taking open transportation. In which can include items into portable shopping basket by filtering the standardized tag through cell phone camera and put in a request with associated online store.

This paper [2] discusses on A modern forward looking product is the one that aids the comfort, convenience in everyday life. we talk about an imaginative idea of RFID Based Smart Shopping and Billing. The key thought here is to help a man in regular shopping as far as diminished time spent while acquiring an item. The primary objective is to give an innovation arranged, minimal effort, effectively versatile, and rough framework for helping shopping in individual.

This paper [3] focuses on A complex is a place where people buy product/s for their regular use. The customers have to wait in long queues to get their products scanned using barcode scanner and get it billed to avoid this system. This implementation is used to assist a person while shopping and also to avoid standing in long queues and thus saving time.

This paper [4] discusses on Radio frequency identification (RFID) technology may not only be useful for streamlining inventory and supply chains: it could also make shoppers swarm. ZigBee is based on an IEEE 802.15 standard. ZigBee devices often transmit data over longer distances by passing data through intermediate devices to reach more distant ones, creating a mesh network; i.e., a network with no centralized control

This paper [5] focuses on The fusion of online and offline trading has become a significant pivot point of the Internet Era. Under the existing operation structure of supermarkets, this article aims to propose a Smart Shopping System based on NFC Technology. This system includes technical support of mobile applications, and users will be able to conduct a series of actions like product searching, pre-ordering and online payment on the mobile app.

4. IMPLEMENTATION OF THE SYSTEM

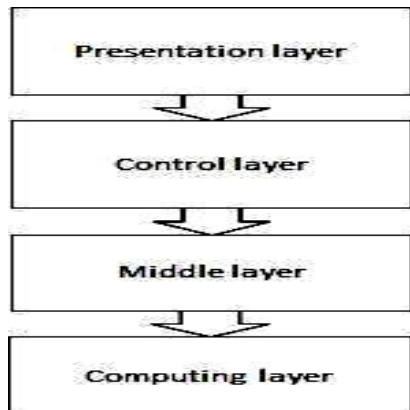
A. Web server system

The web server framework conveys JAVA improvement environment including regular system advances on diverse layers of web ventures. The framework consist four layer presentation layer, control layer, middle layer, computing layer .As we can see, the entire system is constituted by four different layer.

Presentation layer: Administered by ExtJs4. In particular, ExtJs4 is in charge of the interface show. The interface is for the most part built with JavaScript and Css innovations. With the course of action of crucial pictures, the wonderful interface could bring clients suitable visual impressions.

Control layer: DWR of the Ajax innovation is mindful for this level. It can bring the information from the UI through ExtJs4 parts on the presentation level. At that point it will exchange the information to the center level for operations without refreshment.

Finally it will inform the customer application to call the callback capacities and present the outcome to the client.



Middle layer: shaped by Business rationale classes and Spring. The name of the Business rationale class closes with Srv. To start with it associates with the DWR, utilizing the exchanged info information of the DWR to prepare the business rationale. Second it calls the computational level class to finish co-operations with the database. Ultimately it gives back the outcomes to the getting back to back capacity. All the significant business rationale classes are controlled by the Spring IOC holders.

Computational layer: shaped by Spring and computational. The Business Logic classes of the Middle level can call them to execute connections with database. Rests assume responsibility of the connections with the database data through ORM mapping. Spring is in charge of the ordering of DAO(Data Access Object) Classes and the Session associations and Transaction control. This means to rearrange the utilization of Computing and enhance the entrance execution with the usage of the database association pool.

B .Mobile client application

The versatile customer application is created with the Android 4.1 SDK. It conveys numerous strings in information exchange with the web server framework in the organization of Json. The outcomes will be overhauled into the Activity through Handler. With respect to the NFC access control subsystem, the portable customer application will first utilize the API gave by outsider installment stages to check whether the client's parity is adequate. In the event that it is sufficient then the application will send a solicitation to the Web framework to bring the general store NFC approval code. Utilizing the SDK gave by NFC Manager through a furnished NFC connector case with the Bind and Service correspondences fundamental program, the approval code can be gotten through the NFC Adapter and it will coordinate the NFC sensors.

5 .CONCLUSION

The developed application is easy to use, economical and does not require any special training. This project simplifies the billing process, makes it swift & increases the security using NFC technique. This will take the overall shopping experience to a different level. The system proposed is highly dependable authentic trustworthy and time effective. This system which will keep the track of purchased products and also online transaction for billing using NFC and ZigBee.

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