# NFC Based Smart Purchase Application

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**Abstract –** *Over a decade, means of shopping has enhanced from local shops to shopping malls and E-commerce. Not all shopping systems are convenient and user - friendly. The objective of this application to provide a solution to the challenges of conventional shopping methodologies and provide more expedient and comprehensible shopping experience to the purchaser. The product is to being scanned by the purchaser using (Near Field Communication) NFC supported smartphone. In the shopping malls and marts, cluster of analogous products will have a single (Near Field Communication) NFC tag which encompasses all product related information. The Information encompassed may include pictures of products, a brief narrative of the product, estimated cost of the product, etc. NFC (Near Field Communication) supported smartphone is to be used to touch or wave upon that product, so that the product gets added to basket and provisions are given to purchaser to add/ remove the product. Featured offered by the application includes user identification, latest product notification, alternate product recommendations, and upcoming as well as on-going deals. At administrator side (merchant end), purchaser can pay for products either by cash, card, or E-wallet.*

*Key Words*: **NFC, M-commerce, Tags, Near Field Communication, E-commerce, Contactless communication.**

## 1.INTRODUCTION

This application aims at upbringing more convenient and user- friendly methodologies over existing ones. This can be achieved by deploying an android based M-commerce application. The objective is to overwhelm the dilemmas of conventional shopping and comprehensible shopping experience to the purchaser. With the utilization of NFC (Near Field Communication) technology, the application will give purchasers a more confined experience. This application will additionally offer a brief idea on advancements of this technology in future for billing and security.

## 2. PROBLEM STATEMENT

Our present systems including conventional commerce and e - commerce techniques of merchandizing domain come up with several detriments. This model of application aims at discarding every inconsistency from existing systems and to produce responsive system and convenient functioning.

## 3. OBJECTIVE

The system's goal is consumer's expediency and time efficacy. This is achieved by deploying M-Commerce system instigated using NFC (Near Field Communication) technology. The utilization of NFC would value the system in numerous ways, mainly with automation and security. Traditionally purchaser would have to meander the stores/ shopping complexes/ malls in search of their desired commodity. They handpicked the desired product, positioned them in a trolley/cart and then carried it, till all the desired products are added to cart. Once all the commodities are acquired, the purchaser was asked to wait in queue for billing process, which was time - consuming. And eventually hold all shopping bags back home. With the use of M-Commerce application, this tedious process could be streamlined and made consumer-friendly.

## 4. LITERATURE SURVEY

This literature survey overview aims to scrutinize the topic of "NFC Based Smart Purchase Application". The subsequent segments delve into different allusions that discuss a variety of topics associated to the project.

Communication between NFC (Near Field Communication) device and a smartcard is done through the APDU (Application Protocol Data Unit), executed in the proximity card processor. NFC (Near Field Communication) devices can either operate in Active mode or passive mode. It depends on if the field is generated by it. power supply is required by active device. It is not required by passive devices. When the module is set to active mode data get transmitted by Amplitude Shift Keying (ASK) technique. [1]

Automation: Shopping process ought to become digitally immersive. Android mobiles having NFC (Near Field Communication) can be paired with NFC tags. Also, can be programmed by NFC apps for performing task with the help of automation. [2]

Convenience: The user involvement with NFC's is considered more convenient, majorly in the fields, where the supplementary expense of using an NFC tag is less pertinent to the overall cost.

Inexpensive and Effectual: The fiercest claim in favor of NFC (Near Field Communication), across other means of short-length wireless interaction are the tags which are exceptionally economical for production as well as have high sustainability. Further advancements can unbind its use in variety of technologies. Along with naive circuit with less

modules, Near Field Communication tags can be generated on large scale with a low component cost.

The objective to test the application is rectifying errors. Testing is considered as steps of trying to discover weakness in the product.

• System analysis is a crucial aspect that safeguard the entire cohesive software system to meet vital constraints. It analyzes a configuration to produce certain known and predictable results.

Functional Analysis

• Correct Input: valid input referring distinguished classes ought to get accepted.

• Incorrect Input: invalid input referring to distinguished classes ought to get rejected.

• Functions:  functions ought to get implemented.

• Output: application outputs referring to distinguished classes ought to get implemented.

• Systems: systems for interfacing or techniques ought to get mentioned.

## 5. SCOPE

The scope of this application is to boost space and time effectiveness, to make the stores/ shopping complexes/ malls systems work more effective and stay convenient on the client side. So as to entirely avoid the use of trolleys by use of NFC (Near Field Communication) tags. This application is beneficial for purchasers who regularly visit stores to purchase items either on weekly or monthly basis.

## 6. PROPOSED SYSTEM

NFC (Near Field Communication) technology integrated, Android Operating system based smart phones are utilized for the proposed application system. The shopping process will be achieved by the client end with the help of android based smart phones which will read the tag, process the tap, and store data on NFC (Near Field Communication) Tag of that commodity that is required. The tags that are allocated towards commodities would retrieve product information. This is carried out with the help of main database which is stored on the server. This sever where the information is stored is at Administrator side. Commodity's Near Field Communication tags are read. Th information will get stored in the application through the use of this technology. User is offered with the permission to add an item, remove an item, save item for later purchase, increase, or decrease the number of commodities to be purchased. Additionally, client would be made aware of the ongoing offers as well as upcoming offers provided by the store he/she is given provision to avail within application. Client is made aware of their timely expenses and given the right to verify if their purchase if made. Lastly, the client will

checkout their purchase to Retailer. This is achieved by hovering or swiping with merchant device. The virtual cart having commodities will be processed. Same data will get recorded at the retailers end along with client history.

The time taken by this application is short, the application process time is less than 2 seconds, to establish a secure communication between the android based, NFC (Near Field Communication) supported smart phone device and the server and hardly required maximum of 3 seconds for reading the tag, processing the data, and adding commodity to cart, based on NFC (Near Field Communication) tags. Payments can either be made using cash or through online modes. This may include payment gateways. Rising growth and innovations in NFC (Near Field Communication) based payments. This will be applied for the prototype application.
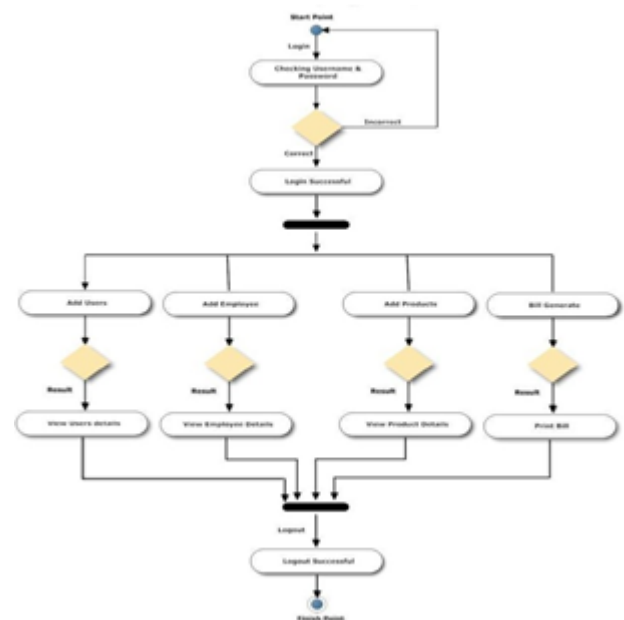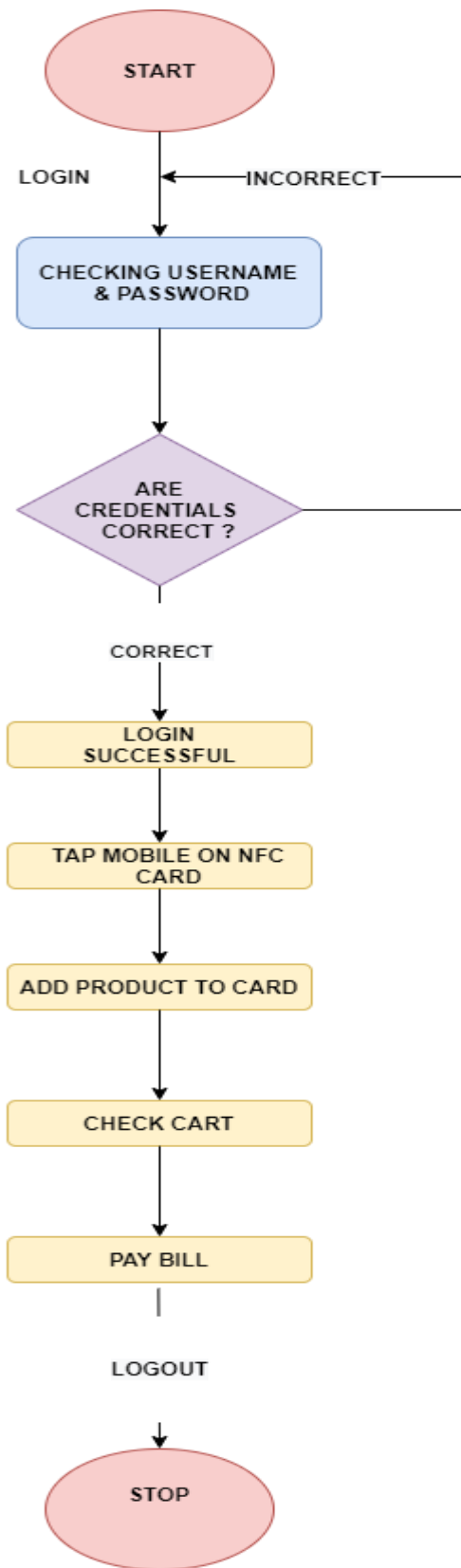


**Fig -1 (a):** UML Diagram

### 6.1 FLOW CHARTS



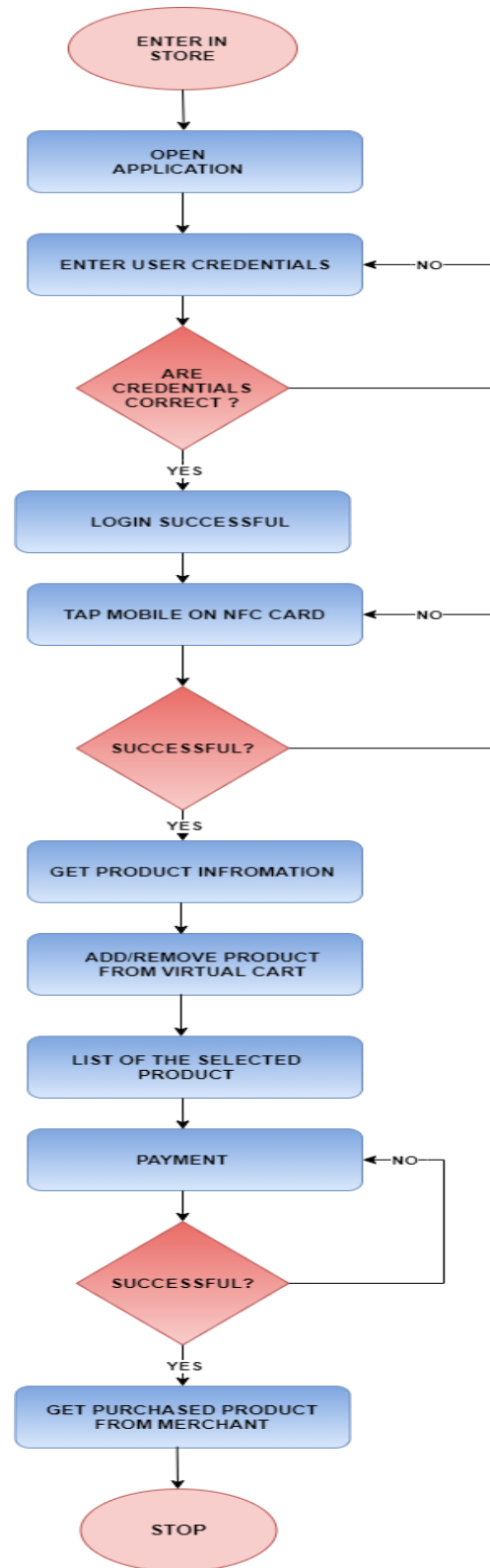**Fig -1(b)**: Data Flow Diagram
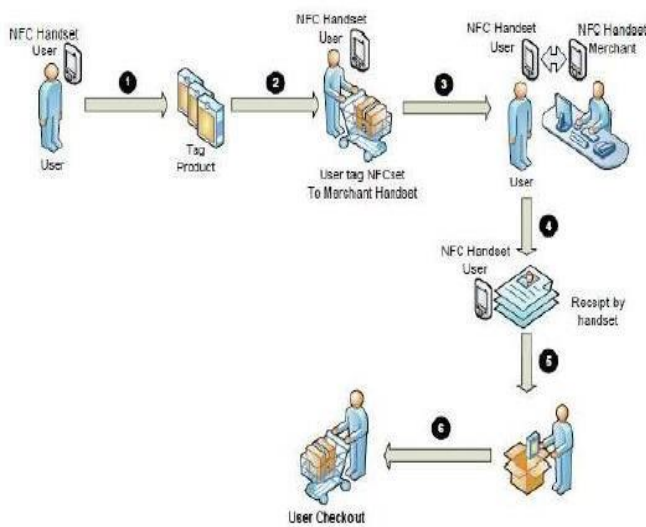


**Fig -2:** Flow Chart

**Fig -3:** Workflow

## 7. HARDWARE REQUIREMENTS

- Intel Processor (IV or Above)

- RAM (1 GB Minimum)

- Hard disk (160 GB Minimum)

## 8. SOFTWARE REQUIREMENTS

- Visual Studio Framework

- Windows / Linux Operating System

- Eclipse / Intelli J IDEA

- Microsoft SQL Server 2008

- Android SDK

## 8. FUTURE SCOPE

This application uses mobile platform. Hence, users need not to necessarily carry cash every time and Thus, reduce shopping time with the help of Near Field Communication (NFC). Currently, the only challenge with this methodology is a low number of NFC enabled smart devices. Limited devices are available, but the cost remains very high. The existing models and methodologies still need to be updated and made more secure with the implementation of advanced techniques. Moreover, Serverless data storage techniques can be implemented for NFC transactions as this will help reduce cyber attackers from accessing bulk user data and Thus, strengthen cyber security.

## 9. CONCLUSIONS

This application uses contactless Tag technology for purchasing of commodities at stores/ shopping complexes/ malls. Thus, the time required for purchase of commodities, and billing-time is reduced as the user can purchase the products directly from his Android Operating system based NFC enabled Mobile. This project is advantageous for users who frequently visits stores/ shopping complexes/ malls to buy commodities on weekly or monthly basis.

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## BIOGRAPHIES

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