

Pocket Bill: The Digital Receipt Management System

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Abstract—With the help of information technology, business aspects and rules can be attained easily. Here we discuss about the billing system and how to incorporate the Digital Receipt system and its management in the present scenario. Here we discuss four specific ways to implement digital receipts system. The SMS/MMS service can be used to send the receipt in the SMS format or in image type via MMS. The E-mail could be sent to the customers Id with the receipt attached with PDF or image format. The receipt in any format could also be stored over the cloud. These ways to implement the digitalization are discussed in detail. The main advantage of the digital receipts is to reduce the use of Paper in day to day life degrading environment. This in turn reduces the regular cost of paper rolls involved in billing for the company. The customers get a safe, long lasting receipt. Advantages of implementation of digital receipts have also been mentioned.

Keywords- Digital Receipt, cloud storage, android, blowfish, bills.

I. INTRODUCTION

The world is made in such away that when we buy some Goods/products/services we always want a proof of purchase. The proof of purchase, i.e. the Receipt is a very useful piece of paper that serves many purposes in life. The daily cash transfer for the buyer tracking for the seller and after sales service for the product. The world is moving fast towards the globalization, urbanization, towards the new and modern ways of Billing and accounting in Businesses and in corporate world. The project describes the new way of Receipt generation, a change in the long followed printed receipts. The most common way of receipt is a Cash memo or invoice, made in hand, authorized by the owner. Through the advancements in technology, and its use in business, the new way followed is Printed receipt. Among printed receipts we here would like to take the ones on the Rolls (any paper roll like Thermal rolls used widely today).

These rolls are used in cash registers, adding machines, ATM machines etc. The cash registers now are the modern day cash registers that use a Thermal Paper (some use normal paper rolls) [1]. As we go to a Super Store (or nowadays even the local shops in cities) the products we buy are billed through the cash registers and the receipt we get is not of use for many of us customers considering the Cost of it to the Environment. And if we do consider that it is of importance to the customer, then it is a difficult task to keep the receipt safe for a long period of time [1]. The Alternative method of providing receipt we are to talk about is the Digital Receipt making. There are a few different ways of implementing this system into the prevailing Cash register system. The advantages of the Digital receipt considering all the aspects of Business Studies and Information Technology. However, in an increasingly paperless world it is significant to acknowledge the lack of innovation in the receipt industry. For over 100 years merchants have required the issuance of paper receipts as a proof of purchase for both parties, and since then there has

been little technological evolution regarding how we track our consumer purchase history.

II. DETAILS OF THE PROJECT

In every shop, General shop and other places bills are done in a electric machine or on pc but give paper bill too. But the bills are maintained manually like in files or in wallet. It is hard to maintain the bill manually and difficult to find out whenever if we need. We can't take bills where we go and not feasible to carry it. Pocket bill software is digital bill application where we can take bills everywhere and in proper combination in a proper set. This digital bill can be e-mail to customers or it can be sent on cell through message. As we all know "Android(Smartphone)" and "Cloud computing" is trending topic in IT industry ,we will try to explore these fields and can make people aware about its benefits .We will be connecting these modules and make sure that the bill data will be secured and protected from unauthorized person. Clients or customers can access its bills from android app and can carry the bill anyplace, anytime. The purpose of project is to make ease for everyone who can carry every type of bill whether it could be a hospital bill, hotel bills, general store bills, medical store bills, and many others. Whenever we need bills in emergency we can keep it in a database with app mobile.



Fig: 2.1 Image of digital receipt

The figure tells you about what we are trying to convey our purpose to convert the paper receipt or bill into a digital receipt which will be of great work and of use and will be a good contribution to the environment and for green earth.

III. EXISTING SYSTEM

A recent study shows that 80% of the World's population receives one to three receipts a day, 11% of which immediately get thrown away^[1]. Further, paper receipts are inconvenient for consumers, who face the frustration of losing receipts needed to make returns, organize expenses, and file taxes. In a sample of 61 consumers, 70% reported having no organized method for storing receipts, whereas 60% said losing receipts is their biggest frustration. 30% of survey respondents believe paper receipts are a growing environmental concern^[3]. The cash registers are made such that they keep record of the products in the store and the products are bar coded. The customer selects various products, there barcode is read on the product and billed. The bill is then printed on the paper. we suggest the Image of the bill be created and provided to the customer through any of the four under mentioned techniques.

A. Via Bluetooth

The Bluetooth is found in any Smartphone (common like sunglasses in present world) or any normal Mobile phone . The bill generated could be generated in the form of image that is compatible in mobile phones. The cash registers in the new modern world with increasing number of functionalities can easily be provided with Bluetooth on it. The customer giving order is very normal to carry a mobile phone that includes the Bluetooth functionality very well available in it. Upon billing the customer shall just provide with his Bluetooth device's (mobile) name so that the bill's image could be sent to the customer's device. The very easy and convenient method provides the customer with the long lasting format of receipt. This method doesn't involve much of cost as it would only require a Bluetooth functionality to be added to the cash registers and a program to make image of any receipt that's all.

B. Via SMS/MMS

There is another method that can act as a viable medium of delivering the receipts. Almost all the mobile models support the images (jpg etc.). If the customer agrees to use the SMS/MMS option he shall provide the Cell Number on which he is to get the receipt. As image included in the message makes it a MMS, and in most mobile phones, MMS service is blocked by default, we need to either ask the customer to either start his MMS service or choose other option. Though customers can receive many of the general receipts in the form of SMS (Intimation of order status is nowadays made also of and total bill amount etc.), like the one step towards making Ticketing completely E based, they've brought about changes in their Ticket checking rules and successfully incorporated the E-Ticketing saving 8 lakhs pages a day^[1]. The saving of paper

could be unimaginable if the super store chains implement the digital receipt system^[1].

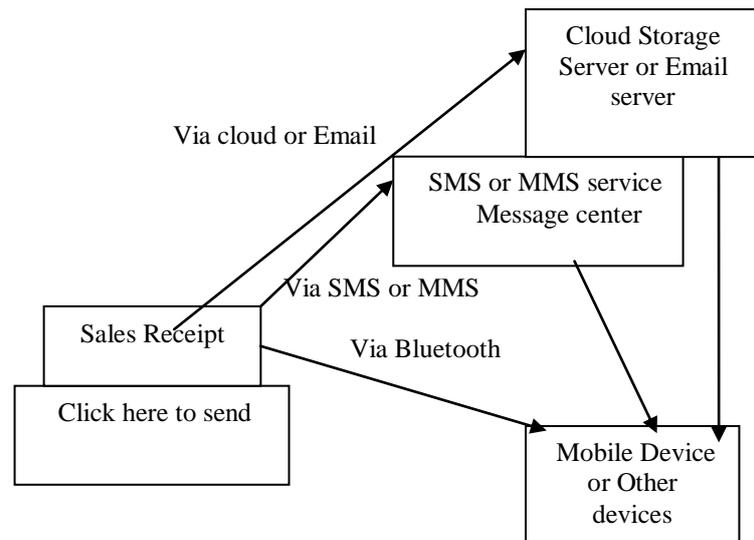


Fig 3.1 Implementation Of Digital Receipt with SMS, Bluetooth, Cloud And Email

Limitation of this System:-

The existing system consists of various facilities like Bluetooth facility, SMS/MMS facility, Email and Cloud facility for digital receipt but there are some limitation of this system .The Bluetooth facility takes lot of time to connect with the device and also limited to some range.SMS or MMS is very costly because the cell provider costs lot of charges for SMS service. The system has many facilities which confuse both cashier and customer which service he should use.

IV. PROPOSED SYSTEM

4.1. Block diagram

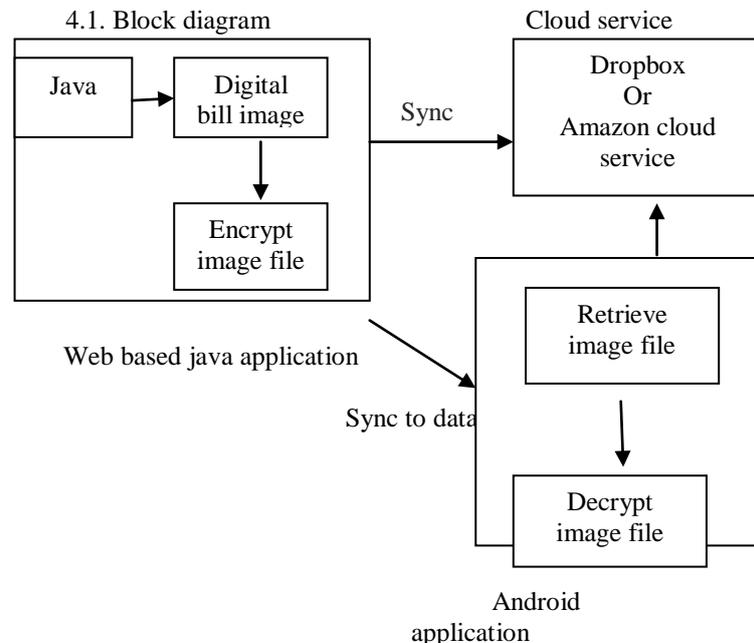


fig: 4.1 The proposed system for digital receipt management system

The above figure fig3.1 is the proposed system for digital receipt management system. There are three major modules which are connected to each other. In proposed system we have introduced two trending topics which have more future scope in every field of IT industry. Here we are applying Encryption Algorithm to Encrypt and Decrypt image.

4.2 Methodology, techniques and algorithms.

In this project, we are using one of the main programming domain i.e. java which can be applicable to both in our desktop application and android application. We are also using cloud as storage for storing large amount of data's and various types of files. Here we apply PaaS i.e. Platform as a Service in our project.



Fig: 4.2.2 Sample of Cloud storages and Cloud Services

1. Java based Web application:-

It is a java based application used in cashier counter. Whenever customer pays for what he has bought the items he will receive a digital receipt from the cashier counter and a digital receipt to his account in a database which can be accessed through android in offline or online mode. Here as it is a java web application using JavaScript for its GUI. From this we can send SMS and E-mail the digital bill to the respective customers.

3. Android application



Fig: 4.2.3 Sample of Android Applications

This is third module which is called as android app. Customer can access his bills by first login in the app and than he can be linked to his account where all the bills are stored. Now every person has an android mobile and operates it well. It is feasible for everyone to use this app. Here we are going to use both offline mode and online mode. If there is no internet than we can get the bills from offline mode.

1. Encryption (Blowfish) algorithm:-

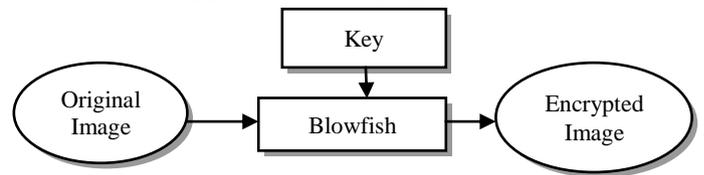


Fig: 4.2.4 Encryption process

Here we get encrypted image by applying (blowfish) algorithm with the key on the original image.

1. Decryption(Blowfish) algorithm:-

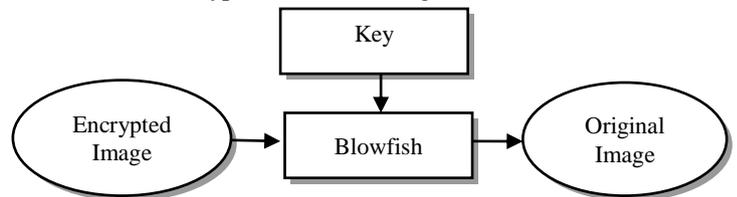


Fig: 4.2.5 Decryption process

Here we get the original back by applying (blowfish) algorithm with the key on encrypted image. We can also use many other algorithms like AES and DES. Blowfish is a cipher based on Feistel rounds, and the design of the F-function used amounts to a simplification of the principles used in DES to provide the same security with greater speed

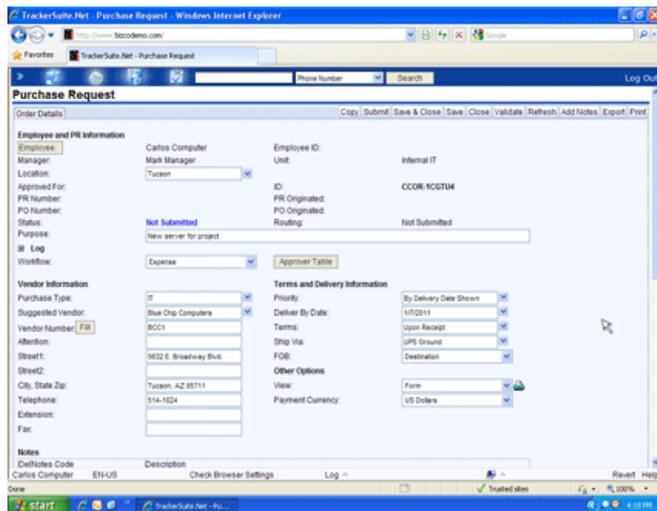


Fig: 4.2.1 Sample of Java Based Web Application

2. Cloud storage

This is cloud storage concept used to store all the bills as a backup for safer and security purpose . Cloud storage can store large amount of user's data or files and access it through cloud or android app.



and efficiency in software. Blowfish is a 64 bit block cipher and is suggested as a replacement for DES. Blowfish is a fast algorithm and can encrypt data on 32-bit microprocessors.

V. CONCLUSION

By using in-store digital receipts on smart phones, we compared different checkout scenarios of receipt obtainment and payment methods. We built our own prototypical solution and tested it in a near real-world environment. Our study revealed that users think the digital receipt idea solution as fun and time-saving, even though it objectively takes bit time than the other methods. Retailers can use this insight as a stepping stone towards mobile payment adoption. It also gives an opportunity for new research on faster digital receipt obtainment and value-added receipt applications.

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REFERENCES

- [1] Keshav Goel , Nileshkumar R. Patel." *Digital Receipts: A Viable Replacement For The Printed Receipts on Thermal Papers*". International journal of innovative research and development. December, 2013.vol2 issue12.
- [2] "The NIST Definition of Cloud Computing". National Institute of Standards and Technology. Retrieved 24 July 2011
- [3] Brat, Ilan; Zimmerman, Ann (2 September 2009). "Tale of the Tape: Retailers Take Receipts to Great Lengths". Wall Street Journal. p. A1. Retrieved 2009-09-02.
- [4] Judash, Jeff. (November 2004). NCR Makes Ground Breaking Printing Technology Standard on NCR SelfServ ATMs in North America. BusinessWire, A Berkshire Hathaway Company. Retrieved November 3rd, 2009, from http://www.businesswire.com/portal/site/home/permalink/?ndmViewId=news_viw&newsId=20091104005700&newsLang=en