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QR Code Based Secure Transaction Using Mobile Application in Commercial Sectors.

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ABSTARCT: A process to create a cashless mobile payment system . The aim is to contribute the most cost efficient and secure alternative to current system. Current system use SMS, USSD to process payments. These are not cost effective methods of communication. The identification of mobile phone is encoded in a QR code allowing the built in camera phone to scan a card. This was improved on by using HTTPS connection between the mobile phone and the server. HTTPS provides an encrypted communication channel. Time taken to process a payment was within an acceptable time. This paper analyzes the method of QR-Code recognition, password method-the existing user-authentication technique. designs a new user-authentication technique. This proposed user-authentication technique is the technique in which QR-Code, which can be simply granted is read by smart phones and transmitted to a server, for authentication-QR code-based payment scheme of sale terminals, its payment solutions support mobile users and mobile terminals to trade at any time and anywhere.. It has the advantages in view that it will simply the process of authentication and the disadvantage is smart phone needs network connections for transmitting the payment from one to another.

KEYWORDS: smart phone, QR code, Authentication, HTTPS, SMS.

I. INTRODUCTION

QR two-dimensional bar code has big information content, small size, wide application and low production cost, which provides unlimited opportunities for mobile commerce . Many investigators have reported on electronic payment system based on QR. Xie Yuzheng, etc. designed the micro payment platform based on QR barcode. K. SEINO, etc. described a application which is used to track fishery products with QR barcode. Another example is the design of the computer science laboratory Sony Cyber Codes .With more and more products using two-dimensional bar code, merchants and manufacturers want mobile payment system to support the two-dimensional bar code, allowing the user to purchase goods directly through bar code scanning. Currently the intelligent mobile phone with a camera that supports QR two-dimensional bar code software can provide a more convenient purchase experience to the mobile user. It is completely necessary for mobile users, merchants and manufacturers to have an innovative mobile payment system based on QR bar code. The objective of the paper is to design and implement an innovative mobile payment system based on QR bar code.



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Fig1:QR CODE

QR Code is a form of 2D bar codes. A sample is shown in Figure 1. It was developed by DensoWave, a Japanese automatic data capture equipment company, in 1994. “QR” stands for “Quick Response.” It is readable by moderately equipped mobile phones with cameras and QR scanners. Information such as URL, SMS, contact information and plain text can be embedded into the two dimensional matrix. With smart phones, we can visit the Website linked by the URL quickly, we can send the SMS message directly or we can save the contact information onto the address book easily. This format of 2D bar codes is so popular and emerges gradually around the world because it has a large data capacity in a small printout size and high speed scan utilities via mobile devices are readily available. A QR code is capable of holding 7,089 numeric characters, 4,296 alphanumeric characters, 2,953 binary bytes. The data capacity is much higher than other 2D codes. It stores information in both vertical and horizontal directions. A QR code can be read from any direction in 360° through position detection patterns located at the three corners as shown in Figure 1. A QR code can be read even it is somewhat distorted by either being tilted or on a curved surface by alignment patterns and timing patterns. The errorcorrection capability against dirt and damage can be up to 30%. A linking functionality is possible for a QR code to be represented by up to 16 QR codes at maximum so that a small printing space is possible. The size of a QR code can vary from 21x21 cells to 177x177 cells by 4 cell-increments in both horizontal and vertical direction. Data can be easily encrypted in a QR code to provide a confidentiality of information embedded in the code. It can also handle various languages.

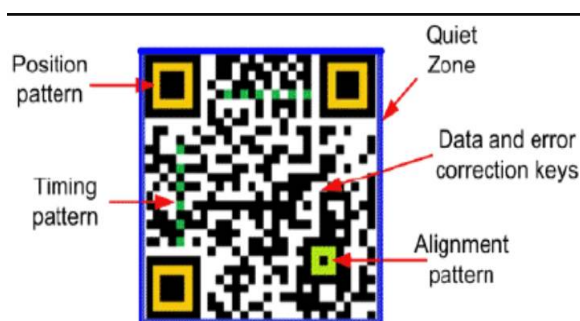


Fig 2:STRUCTURE OF QR CODE



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FEATURES OF THE QR CODE:

High capacity data storage, small printout size, Kanji and Kana character set capability, dirt and damage resistant (QR codes have an error correction capability), readable from any direction in 360 degrees. One QR code can be divided into up to 16 smaller QR symbols. Information stored in multiple QR code symbols can be reconstructed as a single data symbol.

What is the role of QR Code in Society?

QR Code is popular in different areas. Now a day, QR Code is increasingly and widely used in various fields. However, QR Code is still new for most companies and individuals. Now a days if you take any product you can see QR code there instead of bar code QR code is use because it can store any types of data, and it can store large datas also . Through the scanner only it can read.

What are the benefits of using QR Code for Companies?

For example we take company side the QR code is send to the particular employee mobile only and other employee or any other persons cannot make affort make use of it .only the authorised persons can use it.If they are not ready to use ,it will retake the company.

How can one take advantage of QR Code in banking System?

In banking system it is very very secure only because the hacker cannot know the fpin and only by knowing the fpin and he/she should have the particular mobile phone and the merchant also checks the authorization and it is a dynamic one no transfer of QR code is available .so the customer can get the qr code from the bank where they have the account and based on the balance from the account the QR code is changed .

Concept Behind the Quick Response Code:

It is a merit of QR Code that it has greater storage capacity. The variety of data that can be hidden in QR code is Plain text, URL, SMS, E-Mail, contact information (Phone number, address, etc.). QR Code Scanning is possible through different platforms by developing a decoding application. The User can reach at Virtual stores by Scanning QR Codes.QR Code is use in online payments by hiding payment details (Intermediate payment channel, Account Information, etc.).Websites can traverse by user to login form or a specific page to access data Encryption. It is store different type of data like Numeric, Alphanumeric, Binary,kanji.

III. BASIC WORK OF MOBILE PAYMENTSYSTEM :

It refers to mobilecommerce payment (or m-payment) which supports “any transaction with a monetary value. A wirelesspaymentsystem refers to an electronic payment system that provides wirelessbased electronic pament solutions to support point-of-sale and/or point-of-service payment. Butthere are different types of payment systems are available in our digital world.

(A). ACCOUNT BASED PAYMENT SYSTEM:

In this account based payment system the customers are having a specified account maintained by a trusted third party i.e) like bank. In the pre-paid transaction the customer account are directly linked to their saving account. The



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consumer maintains a positive balance of this account which is debited when a pre-paid transaction is processed. And in the post-paid transaction the charges from a transaction are accrued in the consumer's account. The consumer is then periodically billed and pays for the balance of the account in the particular banks. It includes

- Mobile Phone-Based Payment Systems
- Smart Card Payment Systems
- Credit-Card Mobile Payment Systems
- Mobile POS (Point-Of-Sale)

MOBILE PHONE BASES PAYMENT SYSTEM:

They enables customers to purchase and pay for goods or services via mobile phones. Payments can take place anywhere far away from both the recipient and the bank. So it is a easy method to pay the bills. Now a days it is widely used by all the age group peoples in a easy manner. For this only mobile phones and the internet connections are needed .

SMART CARD PAYMENT SYSTEM :

They use a smart card which contains memory and a microprocessor together with an operating system for memory control. These smart cards can be used for electronic identification, electronic signature, encryption, payment, and data storage. This uses smart card and its little hard compared to the mobile payment system .

CREDIT CARD BASED PAYMENT SYSTEM:

This type of mobile payment systems allow customers to make payments on mobile devices using their credit cards. These payment systems are developed based on the existing credit card-based financial infrastructure by adding wireless payment capability for consumers on mobile devices. But in this if any number is mismatch means It will not allow to transfer the amount and only well- known person can use this if any no is changed means it will make serious problem.

MOBILE POS (POINT OF SCALE):

Payment-Mobile POS payment system enables customers to purchase products on vending machines or in retail stores with mobile phones. Two popular types of mobile POS systems are: a) automated point-of-sale payments, and b) attended point-of-sale payments. The first type is frequently used over ATM , this can mostly used in several shops and users can purchase goods (such as snacks, parking permits, and movie tickets) through mobile devices. And no need to wait for long time to pay the bill in money. It also save time . The other type of Mobile POS systems is useful for shop counters and taxis. They allow mobile users to make payments using mobile devices with the assistance from a service party, such as a taxi driver, or a counter clerk. P2P mobile payment system to allow mobile users to use mobile devices as a point-of-sale device to issue and deliver secure mobile payment transactions between them at anywhere and anytime. Through this we can avoid so many malware activities, the money is directly send to the owner of the car owner not to the drivers. so that the drivers cant cheat the owner.



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IV. SYSTEM DESIGN

This system design which includes several major steps we can see that in detail manner. It will help you to understand the concepts

REGISTRATION:

In order to make payments via QR Code we need to register our details for transaction., the customer must install the app and register the details about the person . The registration is a two step process. Once registered, the customer can create his profile and manage his account as per his needs. The customer is sent an OTP which needs to be entered in order to complete the registration process. FLIPAY requires two parameters for registering the user: 1) Mobile No. 2) Bank Account No Similar to customer registration, Merchants also needs to be registered with the system, Once they are registered they are provided with a QR Code which is embedded with the credentials containing the unique merchant ID which is used to process the payments.

SERVER SIDE PROCESS:

Server send the qr code for the users and that QR code contains the information about the payment details. Each and every transactions will update in the server maintenance. Both customer and merchant movements will monitor by the administrator.

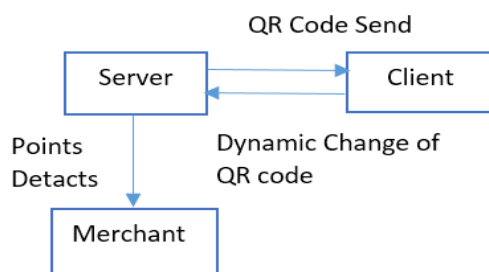


Fig 3: Server Side

CLIENT SIDE PROCESS:

Initially the client want to perform registration.server sends the FPIN , user name and password .With the help of these information the client can login and using that QR code the customer can credit the amount to shop keeper.

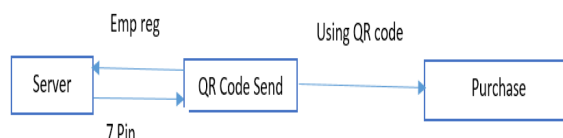


Fig 4 : Client Side

MERCHANT SIDE PROCESS:

Initially merchant got all information from the company who are all tieup with them.Then the merchant checks whether they are authorized person or not.after verify the details they reduce the amount from the customer QR code



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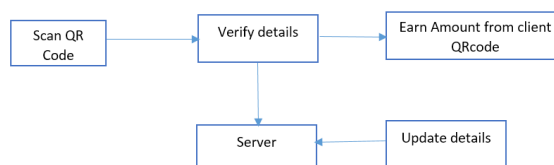


Fig 5: Merchant Side

PAYMENT PROCEDURES:

The server sends the QR Code to the employee side and he/she can use this for payment. The merchant scans the QR code and enters the amount for the particular product and it asks for fpin for secure transaction by doing this the merchant can take the money from that QR code without any cheating. And these are updated in the server and in next transaction the QR code is generated for the reduced amount only.

NOTIFICATIONS:

Merchants get instantaneous SMS and Email notifications as soon as the payment is completed. Notification includes receipt number, name of the corresponding customer and amount of the bill. An online portal is maintained for every on-boarded merchant to have a live monitoring of the transactions. Flipay can be used as a method to track the customer payment patterns. Credit score based discounts could be provided upon evaluation of payments. Logging helps in tracking flaws. Proper methods of reconciliation are followed. Some features of FLIPAY: Provides an easy method of payment for Delivery service incorporated companies by just sending a QR Code with the delivery boy to receive the payment without any flaw. - Gives complete logging of the past transactions. - Credit score based discount offers on the basis of payment patterns. - Sub QR Code can be implemented at stores to enable payment to be made at the same time at different counters.

V. CONCLUSION

The mobile payment system based on the QR code has the following distinctive features.

- It can be a two-dimensional bar code identification of the product provides payment services to buy and sell, enable all goods and products with QR barcode identification to trade anywhere and at any time.
- The mobile payment system can be easily updated in each transaction and the QR code based on the payment will update automatically.
- To improve the mobile user experience in the mobile payment, reduce user input, and it is easy to support after sale services, such as product delivery and pick-up and customer verification.
- Mobile phone payment transaction security can be improved.

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