

E-BANKING SECURITY AND AUTHENTICATION USING MULTILEVEL QR

AMBILI M P

Department of Computer Science and Engineering

*College Of Engineering Vadakara
Calicut, Kerala*

Abstract—People can do almost everything online (banking, shopping, storing and sharing personal information). To access these services in the most secured manner is very critical. Many authentication methods are available such as username and password, barcode, finger print and face detection. But these methods have some advantages as well as disadvantages. User- name and password are not providing security; fingerprints and face identity are the methods which are very costly and not affordable by common users. To overcome all the drawbacks the QR code is introduced. QR code has many applications. QR codes are used in banking transactions for security; it provides more security than barcode. The QR code stores complex password. QR code can be scanned using smart phones. When a user opts for online banking transaction he opens the bank website. On the same page, QR code is displayed after registration, user can scan the QR code image with a scanner. A string is generated after scanning. For authenticating user, Account number and ifsc code is used. The multilevel security is used in this application; therefore this system is very secured method for online transaction than existing system.

Index Terms—Barcode, QR code, Finger Print.

I. INTRODUCTION

The internet-banking concept is a part of our lives. It is much more comfortable to make transactions and to check the account status from your home rather than going to a bank or calling a bank-officer. Authentication can be conducted by using simple username and password (that is the weakest method) by multimodal biometrics. But, most of these methods are based on what user is (voice, iris, retina etc.) or what user remembers (a password). The drawback of these methods is either they are very costly or there is possibility that user will forget the key. Authentication by using QR code is a web based application. It is designed

for providing security by using multifactor authentication method. QR(Quick Response) code is two dimensional barcodes. The proposed system makes use of QR codes for ensuring security of user's data by user authentication.

The Proposed system is a multilevel authentication system. The user is asked to enter his/her details. System admin will verify a user and allow him/her to proceed further. The system will generate a random number which will be encoded into a QR code. This QR code will be scanned by using camera equipped mobile phone.

II. PURPOSE

In order to overcome weaknesses and inconvenience of security, our proposed authentication system is designed to provide greater security and convenience by using Account number ,ifsc code and two-dimensional barcode.

III. RELATED WORK

A. Different methods of authentication

Internet banking applications can be connected in a variety of ways. The most popular ones comprise of using a user and a static or dynamic password.

B. Username and static password

This is the most flawed method to validate the data. In this, one must register by giving relevant information. A week later, the bank sends an activation email to gain access to the application. This is followed by a link that contains the provision to set an initial password. After this step is completed, the user can enter his/her details to login.

C. Username and dynamic password

Mobile banking is used to get dynamic password. So

SMS OTP process is needed to be used to complete verification process. The contact no needs to be registered on the account by the user. After entering the login credentials, the users cell phone receives an SMS which has a onetime password that should be entered in the authentication form. Then user gains access to his or her account. For IV. QR CODE this, it is required to register the user's phone number on his/her account.

D. Biometrics

This word has Greek origin and is formed from "bios"(life) and "metrikos" (measure). It consists of complicated ways of automating the identity of a person by using recognizable (face geometry, iris, retina, fingerprint, voice,etc.) and/or manual (writing dynamics, signature, etc.)properties of a people.

E. Barcode

A barcode is an machine-readable, optical representation of data. Data can be systematically represented using barcodes to alter the gaps and widths of parallel lines. Barcodes are called as one-dimensional (1D) or linear. Barcodes are useful in a lot of instances, such as in tracking of people and also a wide variety of objects such as express mail, parcels, rental airline luggage, registered email, cars and even nuclear wastes. Another function of barcode is to keep track of time spent on a job and to scan customer orders in the applications that control floor wise cataloguing supermarkets and retailer shops.

F. RFID code

A Radio Frequency Identification Tag (RFID) tag is an electronic tag that exchanges data with a RFID reader.RFID needs a lot of manual work before it can be utilized. The RFID tags are individually attached to things, containers and pallets. A wave having frequency in the range of radio waves is given out of the small antenna of the RFID tag. A wireless reader of RFID tags captures and interprets the signal emitted by this wave, thus securing details about the object that the tag is attached to the uses of RFID are almost similar to those of barcodes but RFID tags are quite expensive.

IV. QR CODE

The QR codes stands for the Quick Response Code. The barcode mentioned earlier was a one dimensional authentication method. The QR code is a barcode that is

two dimensional. It is a barcode that uses a matrix and was first designed in Japan for automotive industry. A barcode has details of the object to which it is affixed and can be interpreted by a machine known as a barcode reader. To efficiently store data, a QR code uses four standardized encoding modes (numeric, alphanumeric, byte/binary); extensions can also be used.

As compared to general UPC barcodes, QR codes can be scanned faster and can store a greater amount of data. These characteristics made the QR code famous outside the Japanese automotive industry. Quick Response codes are used for man- aging documents, recognisability of objects, general marketing and tracking of products and time. A QR code consists of a white background along with square shaped modules that are blank in colour and arranged in a square shaped matrix. This code can be read by scanners and cameras and mistakes are removed by the Reed-Solomon technique till the image is aptly scanned. Vertical and horizontal components of the image contain patterns that can be chosen and selected to obtain needed data.

A. Finder Pattern

The finder pattern is used to trace the exact location of the QR code. Geometric properties of the code, such as the dimension and the angle can also be examined. A more significant use of the finder pattern is in the detection of the code in angles that are round the clock. Distortion post scanning is made correct using Alignment patterns which are very useful. The correction of this distortion is facilitated by the black module in the central area of the Alignment Pattern.

B. Timing Pattern

If an error pitch is present in the middle part of cell, it can be recognized in both, vertical and horizontal directions using supporting patters called Timing Patterns.

C. Quiet Zone

The function of the data embedding technique can be simplified by recognizing the QR code from its relatively complicated backgrounds using this zone.

D. Data Area

Confidential information can be stored in this section. The black and white sections can be allotted zeros and ones in either of the two possible

combinations and thus, information can be hidden in binary format. For the rectification of mistakes and the respective embedding of data, the Reed- Solomon codes can be used.

E. Links and Bookmarks

All hypertext links and section bookmarks will be removed from papers during the processing of papers for publication. If you need to refer to an Internet email address or URL your paper, you must type out the address or URL fully in Regular font.

V. PROPOSED SYSTEM

A security system is developed by using QR code for security. The Four important modules in the system are registration and login, account number, ifsc code, QR code generation and scanning, transaction. Another important part of system is camera equipped mobile phone. Here, the mobile phone (which will be used for user authentication) is used for scanning the QR code.

A. REGISTRATION AND LOGIN SYSTEM

The user can submit his or her credentials like account number, ifsc code, username and password by going into the registration section on the webpage. Post verification, the database is used to store the relevant data. In a registration if the user does not enter all the values like username, password, account number, ifsc code, mobile number, and email address then registration process will not get completed. Validation is most important part in registration process; if validation is not successful then user is not able to login. Once the verification process is finished the client is asked for changing the password. The client when re-logs the system, with the username and new password generated by the client, then he moves to next authentication process.

B. QR CODE GENERATION AND SCANNING

After entering account number and ifsc code it sends request to generate QR code. Once the request is sent to the server, it generates QR code which will be displayed on the client machine. First random number is encrypted using public key. The encrypted string generates the Quick Response Code using its generation function in java. Now, the client machine displays this image of the QR code. This

QR code is scanned by the user using cell phone. By scanning the QR code, he extracts the information (random no.) stored in the QR code. This random no gets combined with the account number and a string is generated. This string is matched with the string generated in database. The string in database is generated by combining account number that client has entered while registration and the random no. If both the strings i.e. string sent by user and string generated in database matches then it can be confirmed that user is authenticated. For login each time, new QR code is generated.

C. TRANSACTION

After successful login the home page of the bank is opened. User can check his mini statement, can transfer money to another account holder from the home page

VI. CONCLUSION

The security measures initially used in banking transactions included barcodes and fingerprints and they did not provide the required level of safety or appropriate quantity of bit storage capacity. Implementing QR codes with account number and ifsc code as an additional encryption level, we conclude that the security level of banking transactions has considerably increased, thus making the overall process of banking much more convenient.

VII. REFERENCES

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