International Journal for Research in Engineering Application & Management (IJREAM)
ISSN : 2454-9150 Vol-04, Issue-01, Apr 2018

An Enhanced Security By Using 2LQR Code for Fortified Authentication

[1]Prof. B. K. Patil, [2]Poonam Polshetwar

[1]P. G. Student, [2]Assistant Professor, Computer Science & Engineering, Everest Educational Society's Group of Institutions, Aurangabad, Maharashtra, India.

Abstract: **Quick Response Code was specially designed for information storage and the applications which are high speed applications. So we create a quick response code which having the two levels mainly public level and private level. First level is the public level in which QR code is accessible or readable by anyone whereas private level is in the encoded format so that only authorized person can read the data. The Private level data is created by using replacement of modules with the different modules, such as black modules are get switch by the specific texture pattern. The authentication is given to the code by using P & S (Print and Scan) Process.**

Keywords – Security, Authentication, information Storage, QR Code.

I. INTRODUCTION

In this we shown rich QR code that has two levels and can be utilized for archiving as well as storing data in it. This new QR code, named two-level QR code, has public and private levels. The general public level is the same as the standard QR code level and the Private level is the level which stores the data in the encoded format, and also which is used as a private code.

In old days codes are used but they are in the form of barcodes. In barcode less information is stored comparatively QR code, because it is having very narrow type of structure. The aim of project is message sharing as well as sending currency through the QR codes.so I have started my work from the use of QR codes, and also searched for it on the Google. Then I moved towards why QR instead of Barcodes? So QR codes have a long way from their creation, firstly developed for parts of industrial process of vehicles .Nowadays they are having number of purposes like product labeling, ticketing etc.QR codes being used to send messages to a website for browsing, to bookmark a webpage, to initiate calls, send messages, send emails, produces links to web URL's, .

Nowadays QR codes are rapidly used everywhere, so that I can get idea from netsurfing that we can use this application for the banking system, as QR code having a so much of security, I also added the two level of security that is the QR code becomes the 2LQR code.QR code contains the information or it stores the information in horizontal pattern as well as in the vertical pattern.so it stores more information than barcode.

II. ARCHITECTURAL DESIGN

Above figure shows the 4 parts i.e., User, Bank Server ,QR Code Generator, Database. Firstly the user have to register there self and then the will be stored in the database with the proper details, then the login process is done if the username and password is correct for the login then it will display that login successful and then we have a OTP code generator i.e, in the form of QR it can be scanned by the QR code and then that validate the QR code, so now the user may use the application for the purpose of sending money adding beneficiary etc.

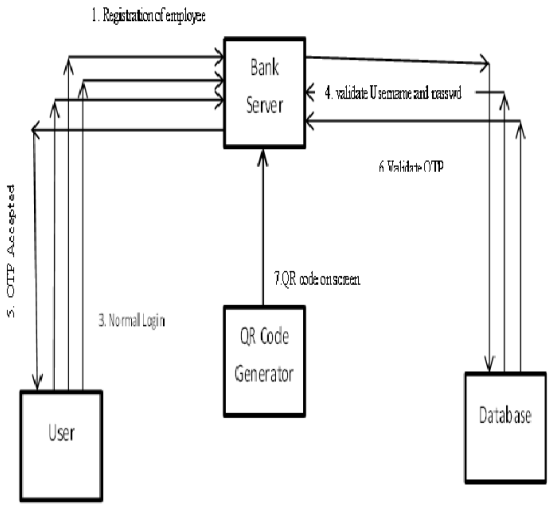


Figure 2.1: Architecture design for Banking system

III. MODULES

Sender :

2LQR_Code generator

The 2LQR code has two levels: a public level and a private level. The public level can be read by any QR code application. The private bit string is encoded using error correction code (ECC) to give guarantee the message error correction after the Process & Scan operation. We use the

 DOI : 10.18231/2454-9150.2018.0084

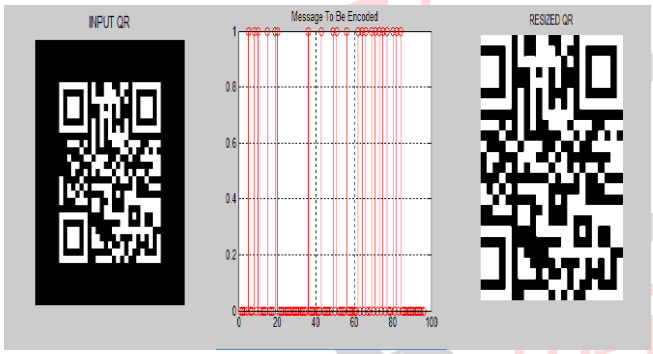
block codes, and more precisely cyclic code or Reed-Solomon code, for message encoding two parallel procedures are completed. On one side, the decoding of public message is achieved by using standard QR code decoding algorithm. The last steps of the 2LQR code reading process are separated using key K and ECC decoding of the obtained code word C priv. We use the parity-check digits for error detection and correction. For error correction and decoding, one of the classical ECC decoding algorithms (i.e. error syndrome decoding, maximum likelihood decoding algorithms) can be used. The result of this algorithm is the restored private message (Mpriv).

Receiver

2LQR_CodeExtractor

A first level accessible for any standard QR code reader, therefore it keeps the strong characteristics of the QR code; and a second level that improves the capacities and features of the initial QR code. Decryption contraries the encryption process and turns encryption text back into its original plaintext form.

IV. PERFORMANCE EVALUATION



(a) (b) (c)

Figure 1.1 (a) Public input QR code (b) Algorithm apply on QR code (c) Rich 2LQR code

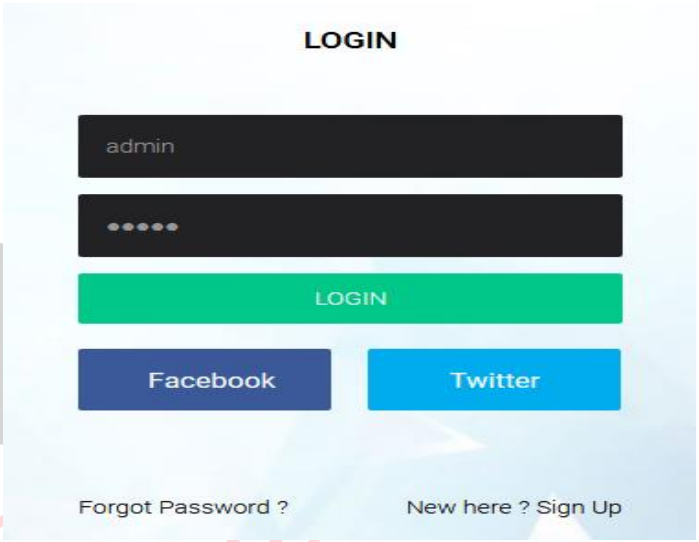
Above figure (a) shows that the 2LQR code is firstly accepted or inserted from the folder which is created automatically as the name of the employee and then by using QR code scanner it scans the code, then it is adjusted by the frequency of the imputed QR, then it is coded by using algorithm and converted into rich 2LQR code.

Features of system

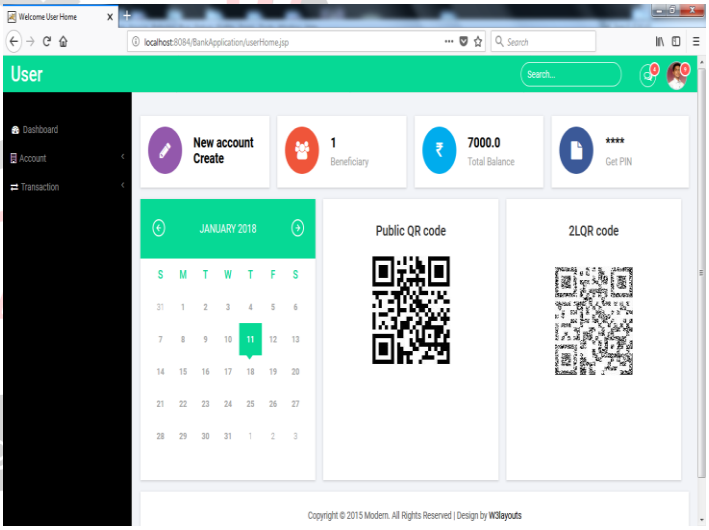
1. Secure encoding of record or content.
2. Two level client verification
3. Content stenography for message encoding

Comparative Study

Code name	Storage Capacity bit/inch^2			Copy sensitivity
	Public	Private	Total	
HCC2D Code	15048	0	15048	No
Multilevel 2D Barcode	11224	0	11224	No
Graphical code for Authentication	0	0	0	yes
QR code with hidden message	7548	3102	10650	No
Proposed 2LQR code	7548	6386	13934	yes



Screenshot no.1 Login Page



Screenshot no.2 Home Page

Above both screenshots shows the login page and the home page of the systems user. The public QR code is converted into the 2LQR code and by using that we can transfer amount to the other one.

IV. CONCLUSION

The two level QR code scheme improves the storage capacity of the QR code and provide document authentication ensuring overall security. Thus we present a new rich 2LQR code, that has two storage levels and can be used for authentication as well as it is used for transferring money to the user in a bank application. This application avoids remembering username and password and also to

 DOI : 10.18231/2454-9150.2018.0084

ease online transactions, QR Login is developed. The main aim is to provide secured login systems which also perform online transactions.

This 2LQR code can be utilized for secure private information sharing for approval component. The private level is made by swapping black modules with specific surfaced patterns. Image texture patterns are considered as black modules by QR code reader.

V. FUTURE SCOPE

In QR code system, the size of QR code will not increase and storage capacity will increase but for scanning this code we need high firmness camera so that QR code will read the material and can provide better accuracy but if we use less resolution camera QR code will not provide accuracy so for future work we can implement code such that it can be read by less resolution camera.

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 DOI : 10.18231/2454-9150.2018.0084