Secure Banking System Using QR Code Authentication

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***Abstract*— This work is based on the design and implementation of a secure authentication method which utilizes a QR code an open source concept authentication system that uses a two-factor authentication by combining a password and a camera-equipped mobile phone, which acts as an authentication token. QR code is extremely secure as all the high-sensitive information is stored and transmitted and encrypted; however it is cost-efficient and easy to use. In this the QR code has a complex password which is stored. Smart Mobile phones are used for scanning the QR code. The code is scanned with the help of QR code scanner. Scanning generate the string which then combination of IMEI number of the phone which is register by the user. The random number is generated by the random number function. If the network is available on the smart phone then that generated string is automatically entered into the login page and homepage of bank. Otherwise six digit pin code is generated and it can be manually enter in the login page and home page of bank and then it is open for transactions. In a modern world where we are able to do almost everything on – line .Nowadays it is a matter of time were we are too able to access these services in the most secured manner. Indeed, as viruses and cracking methods become it is becoming more complex and powerful day by day, the available security techniques must improve as well as, allowing users to protect their data and communications with the maximum confidence. The aim is to develop an authentication method using a two factor authentication: a trusted device that will read a QR code and that will act as a token, and a password known by the user.**

Index Terms: **Analysis, Authentication, QR code, Website, Data-Base.**

I.INTRODUCTION

Now a day's all the things that we do we are able to do because of online. For example l banking, shopping, communicating etc. In this the most important thing is that while doing this online transition our information is not gets damaged. As the method of cracking the security code get more complex and powerful. There is got it develop more powerful security application. These powerful applications allow user to work on untrusted computers confidently. This work is predicated on the 2 way authentication system. In this the QR code provides security. QR code is the Quick Response code (QR). The existing system having security methods like password, username, figure prints, and face detection. But in these methods security isn't up to the mark, so there's got to develop such security system which provides high Security.

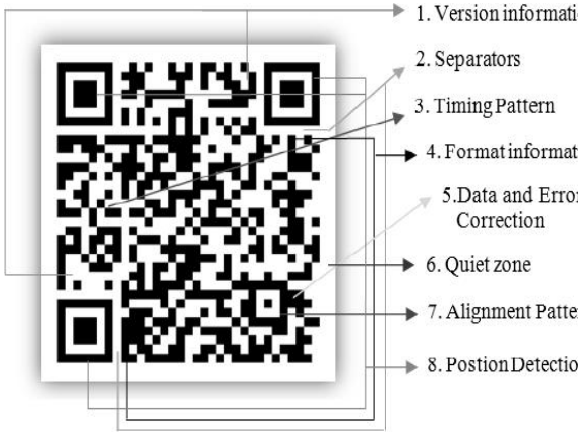

Figure 1: Illustration of QR Code

The QR code may be a matrix consisting of an array of nominally square modules arranged in an overall square pattern, including a singular pattern located at three corners of the symbol and intended to help in easy location of its position, size and inclination. A wide range of sizes of symbols is provided alongside four levels of error correction. Module dimensions

are user specified to enable symbol production by a wide variety of techniques. There are two sections in this system. In the encoding section contains input file to a QR Code symbol takes place. In this the info analysis and encoding is completed. After Error correction coding the ultimate message is structures. Following the Module places the matrix with masking another section is the Decode section. This section contains decoding of the input QR Code image and displays the info contain that QR code

II. METHODOLOGY

In this the in mobile equipment identity (IMEI) number and random number are encrypted using the public key. This encrypted string generates the QR code using the QR code generation function which is present in java. Then this QR code image is display on the client machine. User can scans this QR code using their mobile phone. After scanning, from the phone the generated IMEI number and random number automatically gets entered into the login page. After successful login to the home page of the bank the page gets open. Hence in this you don't need to remember the password. The server decrypts the string using the user public key and verifies that a row exists in the transactions table with our random number and then accordingly updates the row of transaction table. Subsequently the server checks that the IMEI is correct or not from the database. If the login is successful the transaction is deleted. It means that every time the generated QR code image will be different. Now the PHP session is created and when user logs off and the session is destroyed. Use of QR code ensures that data will be decoded by legitimate user only as decoding device will be required to decode it. All four sides of the QR code are surrounded by the quite zone border. QR code consists of function patterns and encoding regions. The localization of QR code gets help from finder patterns of its most marked feature. Obtain the approximate region of QR code, and implement coarse positioning for QR image according to the finder patterns. According to located QR code obtain the version number determine the size of QR code. Data and error correction code words ensure that the QR code will be read successfully. In this method to validate the data. One must register by giving relevant information. once this is done the bank sends an activation email and send a unique code to gain access to the application. After this step is completed, the user can enter his/her details to login. After this process is done one can get access to his /her Bank account detail and can even transfer money from his account to other once this is done he/her can see their transaction and other detail .Once the online banking is done they can log out of the system. For the android part we just need to scan the qr code while login using our Mobile phone scanner and the page will be reflected.

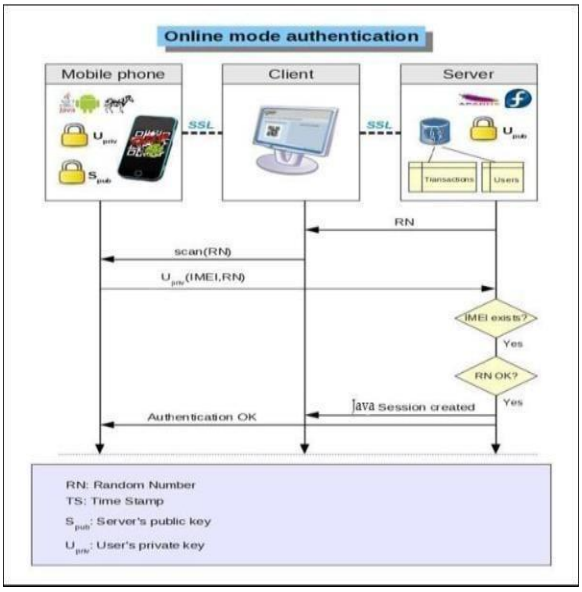

Figure 2: Online Mode Authentication

III.APPLICATION REQUIREMENT

Here are some application's that were used in this project.

SOFTWARE REQUIREMENTS:

1) Android Application: The Android application contains of mostly two layouts one for login options and second page for scanning .The camera scans the QR code. The application must be downloaded on every client's android phone with access to the camera.
2) Website: The website of the bank contains registration page with information about the IMEI number of the user which has to be entered that will get stored into the database so the next time when the user gets online for net banking, he/she will be authenticated with the data stored in database. The website will mostly be used to show

the authentication process and transaction options like withdrawal and deposit.

3) Real Time Database: A real time database is used because of its high performance and scalability. Apart from this, the database will process a lot of data because of the number of clients that will be performing transactions on day to day bases. Database is used for authentication of IMEI number and client's information and data storage.
4) ASP.NET: ASP. NET is one of the next versions of Active Server Pages it is a Web development platform that provides the necessary services for developers to build enterprise-class Web applications. While ASP.NET is largely syntax-compatible with ASP, it also provides a new programming model that enables a powerful new class of applications. You can move your existing ASP applications by just adding ASP.NET functionality to them. ASP.NET is a compiled. NET is a Framework - based environment. You can author applications in any .NET Framework compatible language, including Visual Basic and Visual. Moreover the entire .NET Framework platform is available to any ASP.NET application. Software Developers can easily access the benefits of the .NET Framework, which include a completely managed, protected application.

.net Framework : The .NET Framework is Microsoft's Managed Code programming model for building applications on Windows for clients, servers, and mobile or embedded devices ect . Microsoft's .NET Framework is a software technology that is used for with several Microsoft Windows operating systems. In the following sections tells us about, the basics of Microsoft .Net Frame work Technology and its related programming models

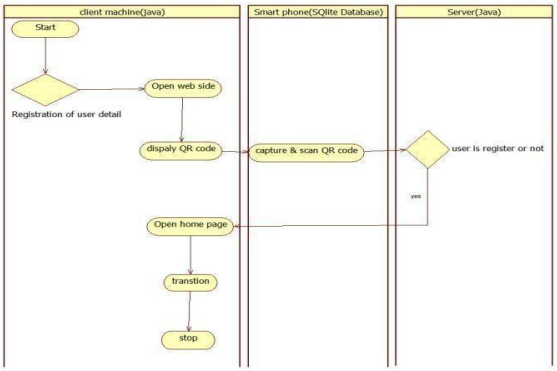

Figure 3: System Overview

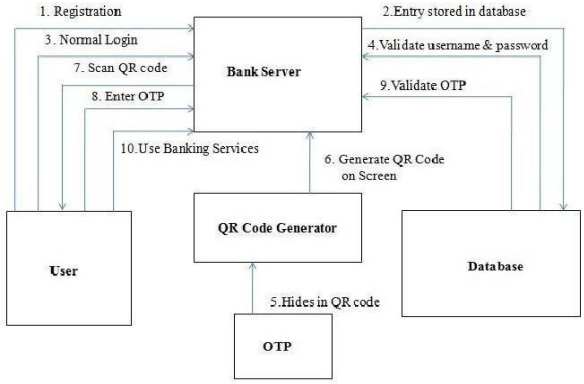

Figure 4: Working of Authentication system

IV.LITERATURE SURVEY

Sr. No	Paper Name	Disadvantage
1.	OTP Encryption Techniques in Mobiles for Authentication and Transaction Security.	Most otp system are Susceptible to real- Time reply and social Engineering attacks. OTP's are also indirectly susceptible to mam in the middle (MITM) and in the browser (MITB) attacks.
2.	SURVEY ON INFORMATION HIDING TECHNIQUES USING BARCODE	1. Label damage. 2. They are able to Breakdown 3. Scratched or Crumpled Barcodes may cause problem.
3.	A Secure Credit Card Protocol over NFC	1. Security problems. 2. Sensitive data can be accessed if card is lost.

V. CONCLUSION

This system uses a algorithm to encrypt the IMEI number combined with the Random digit and therefore the string hidden behind the QR code. The algorithm is light weight and employed by industry for application within the software's to guard the knowledge of the users which is our main Goal and concern within the net banking era. Hence, to enhance the safety of authentication process we are adding this extra layer, by using QR code mechanism for the user.

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