

SECURE DATA SHARING USING QR CODE

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Abstract

This project “Secure Data Sharing Using QR Code” is an android application, in which we share data through QR code. QR code (abbreviated from Quick Response code) is the trademark for a type of matrix barcode. The Quick Response system became popular outside the automotive industry due to its fast readability and greater storage capacity compared to standard UPC barcodes. Applications include product tracking, item identification, time tracking, document management, and general marketing. In this project we are able to generate the QR code which contains confidential data and share QR code any person to access the data in very quick.

Keywords: QR code, Security, Data Sharing.

Introduction

In the digital era, the documents are exchanged over the public channel. It makes the malevolent users to steal the sensitive data in easier way. This insists to develop security model for secured transferring of messages over the internet. Authentication is the security process which engages message transfer between authorized sender and receiver. The message transfer should ensure that messages are not altered or modified. This means that any alteration of the document, however small, should be detectable during the extraction stage. Authentication processes may vary from simple passwordbased authentication system to costly and computation intensified authentication systems. They ensure our privacy, keeping our sensitive information secure. It enforces non repudiation, preventing us from later rejecting the validity of transactions authenticated with our passwords. The username identifies the intended receiver and intended sender and the password validate us. But passwords have some weaknesses: more than one person can possess its knowledge at one time. Moreover, there is a constant threat of losing your password to someone else with venomous intent. Quick Response (QR) code is the recent technology used for secured communication process. It is a type of barcode matrix which was introduced by Japanese corporation Denso Wave. A barcode is an optical machine-readable data that relates to committed objects. It is linear and one-dimensional in expression. Later, they evolved into rectangles, dots, hexagons and other geometric patterns in two dimensions. Albeit 2D systems use a variety of symbols, they are in general referred to as barcodes as well. It has been used in several applications due to its merits like increase in capacity, reduced size, etc . Combined with the diversity and extendibility offered, it makes the use of QR code more appealing than that of the barcodes. Statistically, QR codes are capable of symbolizing same amount of data in approximately one tenth the space of a traditional barcode. Information such as URL, SMS, contact information and plain text can be embedded into the two dimensional matrix. Moreover, with the explosive increment of the trend to use smartphones has also played an important role in the popularity of QR codes.

Statement of the problem

Now a days sharing information in secure manner it's becoming very crucial. Using cryptography techniques to share the information secure manner. It creates time complexity in performing encryption and decryption operations. It does not provide quick accessing of data. The study on QR codes provides quick respond and access to the user in different scenarios.

Objectives of the study

- This project secure data “sharing using QR code “is an android application, in which we share data through QR code.
- In this project we are able to generate the QR code, which contains confidential data.

- To share QR code any person to access the data very quick.

LITERATURE SURVEY

The author studied about robust image hashing schemes. Author studied and proposed under the name of contextual QR code. It relates to the static QR code information with a particular context. The authors developed a specific application, which takes into account the individual user's parameters (time, device type, IP address, location) in order to personalize (add the name of a user, change the language) an output message and to transmit user information into a server database. The author discussed about the facial biometrics for 2D barcodes systems. A rich set of QR code data is used for enhancing storage capacity enhancements. In order to enhance the storage process, HCC2D code was developed for storage efficiency. It included both color and gray scaled QR code. The author discussed about the message hiding for QR code which enhanced the security aspects. The message length was devised for hiding the secret message of QR code. The maximum secret message length, mentioned in this paper, is equal to 1215 bytes for QR code V40. There are also some approaches that embed an invisible watermark into the QR code image. codes are used for context aware navigation. QR code also acts as a location source in which the physical location of the QR code is encoded inside a uniform resource locator. Context based QR code can also consider proximity apart from location. Proximity based QR codes can be very useful if the location of the user is very difficult to find. As far as private message sharing and document authentication is concerned contextual QR codes keeps a record of the various user's attributes.

Proposed Method

This work concentrates over devising the standard QR code encoding capacity. The devised process is achieved by black modules of textured patterns. The aim of the study is to enhance the security of the information in both private and public use. The proposed algorithm is designed by two steps. The first level is about standard QR code reader and second level discusses the characteristics of initial QR code.

Standard QR code generation:

Initially, the conventional generation method is used for storing the public content. The traditional QR code process includes the following steps:

- Optimal mode is selected for examining the content of the message.
- The examined message is encoded using shortest string of bits.
- Then, Reed- Solomon code is applied for correcting the errors.
- The encoded data are aligned properly to scan the QR code for further process.
- The mask pattern is applied to read the QR code.
- The codewords are arranged in zigzag pattern of matrix structure.
- Atlast, the function patterns like position tags, alignment, timing, format and version patterns are added to the QR code.

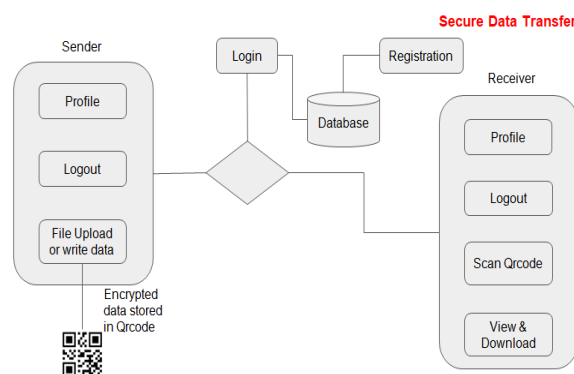


Fig. 1: System Overview

Implementation Modules

Sender

- In this module, the sender user register and login to the system. After successful login, he can perform operations like, view profile, upload file or write data, generate QR code, and share QR code with intended receiver.

Receiver

- In this module, the receiver user register and login to the system. After successful login, he can perform operations like, view profile, scan QR, and view and download data.

QR Generation

- In this module, sender can generate QR Code using QR code generation Algorithm.
- QR code (abbreviated from Quick Response code) is the trademark for a type of matrix barcode (or two-dimensional barcode).
- In generating QR code we can add the data or add file to securely sharing data via QR code.

QR Scan

- In this module, receiver can use the QR scanner in our application to read the data from the QR code.
- The receiver can view the data and download the data into text document.

Results and Discussion

- In this module, sender can generate QR Code using QR code generation Algorithm.
- QR code (abbreviated from Quick Response code) is the trademark for a type of matrix barcode (or two-dimensional barcode).
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RESULTS

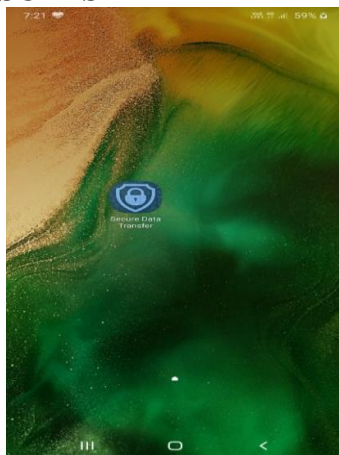


Fig. 2: Android App



Fig. 3: Splash Screen



Fig. 4: New Registration Page

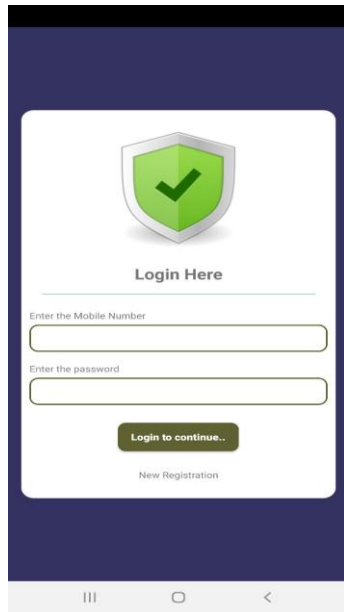


Fig. 5: Login Page

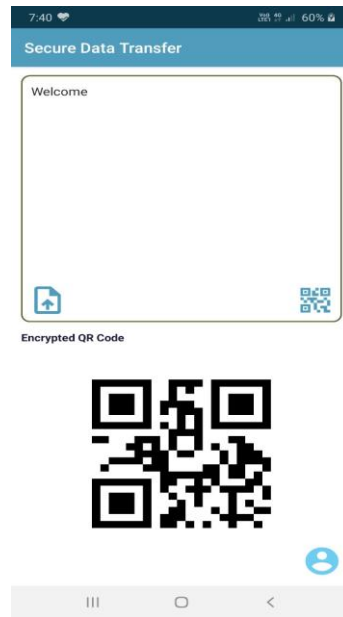


Fig. 6: QR Generation

Conclusion

The recent developments towards data computing technologies have enabled to focus on security concern. In this paper a new rich code called two levels QR (2LQR) Code is proposed. This 2LQR code has two levels: a public level and a private level. The public level can be read by any QR code reading application, while the private level needs a specific application with specific input information. The private level is created by replacing black modules. With specific textured patterns. These textured patterns are considered as black modules by standard QR code reader. Thus, the private level is invisible to standard QR code readers. In addition, the private level does not affect in anyway the reading process of the public level.

References

- [1] IuliiaTkachenko et al, "Two-Level QR Code for Private Message Sharing and Document Authentication", IEEE Transactions on Information Forensics and Security, 11 (3), 2016.
- [2] Information Technology—Automatic Identification and Data Capture Techniques—Data Matrix Bar Code Symbology Specification, ISO/IEC Standard 16022:2006, 2006.
- [3] Information Technology—Automatic Identification and Data Capture Techniques—Bar Code Symbology—QR Code, ISO/IEC Standard 18004:2000, 2000.
- [4] Z. Baharav and R. Kakarala, "Visually significant QR codes: Image blending and statistical analysis," inProc. IEEE Int. Conf. Multimedia Expo (ICME), Jul. 2013, pp. 1–6.
- [5] C. Baras and F. Cayre, "2D bar-codes for authentication: A security approach," in Proc. 20th Eur. Signal Process. Conf. (EUSIPCO), Aug. 2012, pp. 1760–1766.
- [6] T. V. Bui, N. K. Vu, T. T. P. Nguyen, I. Echizen, and T. D. Nguyen, "Robust message hiding for QR code," inProc. IEEE 10th Int. Conf. Intell. Inf. Hiding Multimedia Signal Process. (IIH-MSP), Aug. 2014, pp. 520–523.
- [7] A. T. P. Ho, B. A. M. Hoang, W. Sawaya, and P. Bas, "Document authentication using graphical codes: Reliable performance analysis and channel optimization," EURASIP J. Inf. Secur., vol. 2014, no. 1, p. 9, 2014.
- [8] T. Langlotz and O. Bimber, "Unsynchronized 4D barcodes," in Proc. 3rd Int. Symp., ISVC 2007, Lake Tahoe, NV, USA, Nov. 26–28, 2007, pp. 363–374.