QR Code Approach for Examination Process

Falguni Patil
Dept. of Computer Engineering
MMCOE Karvenagar, Pune.
Maharashtra-India
Email: falgunirpatil13@gmail.com

Utkarsha Bhandari
Dept. of Computer Engineering
MMCOE Karvenagar, Pune.
Maharashtra- India
Email:bhandariutkarsha26@gmail.com

Madhuri Kasar
Dept. of Computer Engineering
MMCOE Karvenagar, Pune
Maharashtra-India
Email:kasarmadhu55@gmail.com

Abstract - Using the QR codes is one of the most intriguing ways of digitally connecting consumers to the internet via mobile phones since the mobile phones have become a basic necessity thing of everyone The detection of QR codes, a type of 2D barcode, as described in the literature consists merely in the determination of the boundaries of the symbol region in images obtained with the specific intent of highlighting the symbol .In order to improve the practical application property of the two-dimensional barcode Quick Response (QR) code, we investigate the coding and decoding process of the QR code image. The barcode is a real mechanism for data reads. Data can be stored, embedded and through the scanning device to show. The store of data which being read. In this paper, we present a methodology for creating QR code approach for virtual word examination process by using different techniques like SHA256, encoding, decoding, and Error correction.

Keywords- *SHA (256) Algorithm, QR code Smart phone, Android SDK.*

*****

I. INTRODUCTION

A QR-code is a two-dimensional barcode introduced by the Japanese company Denso-Wave in 1994. This kind of barcode was initially used for tracking inventory in vehicle parts manufacturing and now is widely used in a variety of industries. QR stands for "Quick Response" as the creator intended the code to allow its contents to be decoded at high Speed .Each QR-code symbol consists of an encoding region and function patterns, Function patterns include finder, separator, timing patterns and alignment patterns. The finder patterns located at three comers of the symbol intended to assist in easy location of its position, size and inclination. A QR-code is a matrix code developed and released primarily to be a symbol that is easily interpreted by scanner equipment. It contains information in both vertical and horizontal directions, whereas a classical barcode has only one direction of data (usually the vertical one). Compared to a 1D barcode, a QR-code can hold a considerably greater volume of information: 7,089 characters for numeric, 4,296 characters for alphanumeric data, 2,953 bytes of binary (8bits) and 1,817 characters of Japanese Kanji/Kana symbols. Besides this, QR code also has error correction capability. Data can be restored even when substantial parts of the code are distorted or damaged .In the QR-code standard, comers are marked and estimated so that the inside-code can be scanned. The barcode recognition process has 5 steps: (1) edge detection, (2) shape detection, (3) identification of barcode control bar, (4) identification of the barcode orientation, dimensions and bit density using the control bar, and lastly, (5) calculation the value of the barcode .For camera phones. However, students in the learning process must carry on this thick textbook and volume examinations. Besides, students using the paper-based examinations when evaluating their own learning have few shortcomings, such as high cost in designing the questions, lack of timeliness and flexibility in acquiring feedback, and no rich content in presenting the questions, and lack of great inconvenience and inefficient (Huang, Wu, & Chen, 2012). Therefore, students' exam performance may be decreased, and the evaluation is a big inconvenience. In this study, we develop a QR code that integrates with smart phone, and student can login system for approach of objective type of examination. This technology-integrated approach makes the benefits of evaluation activities with high processing speed, real-time feedback, volume reduction, and environmental protection advantages. Students can use tablet PC or mobile devices to scan and analysis QR code. The content of the QR code can connect to the system through the network. In this paper, we present a methodology for creating QR codes by which the user entered data is encoded into the QR code image that QR image is captured through the java enabled mobile camera device and then information is retrieved through the decoding process with the help of error correction.

II. LITERATURE REVIEW

- *EXISTING SYSTEM:*

The QR code is applied quickly and widely in education. We employ framework to address the problem of scanning QR codes in adaptive examination approach. Many scholars indicated that QR code has many potential benefits for learning purposes. There are two main processes encoding and decoding. The user entered data is encoded into the QR code image that QR image is captured through the java enabled mobile camera device and then information is retrieved through the decoding process. The error correction is provided in this process. The 4 error correction levels i.e. L, M, and Q & H. The "L" i.e. low level which provides 7% of error recovery. As included above the major application of paper is automated examination process .In this application we are going to implement the client-server architecture. The client side application is a mobile based application & the server side application is web based

application. We are going to provided authentication at the server side.

A DRAWBACKS OF EXISTING SYSTEM

However, the majority of modern mobile devices do not meet the minimum working requirements of complex general purpose object detection algorithms and most of the efficient specifically designed barcode detection algorithms require user interaction to work properly to overcome the drawback this paper we present in order to improve the practical application property of the two-dimensional barcode Quick Response (QR) code, we investigate the coding and decoding process of the QR code image. Also the error correction algorithm is discussed in detail.

➢ *PROPOSED SYSTEM ARCHITECTURE:*

The problem which is occurred in the existing that are overcome in proposed system. In our system we overcome the previous system's limitations and disadvantages. This technology of examination process with smart phone - integrated approach makes environmental protection advantages Students can use tablet PC or mobile devices to scan and analysis QR code. The content of the QR code can connect to the system through the network. In addition, this study also combines adaptive learning method.

Examinations generally fall into two categories: objective and subjective. Our product will set up of automated examination systems to process, mark, score, grade and report on these assessments. Objective examinations are suited to this automated process, as there is little, or no room for interpretation or conjecture over the outcome. Within objective examinations there are also several categories, such as the commonly known Multiple Choice Questions (MCQ), True/False and Extended Matching variety. Other variations such as Single Correct Answer (SCA) and Multiple Correct Answers (MCA) can complicate the picture further. In this system also use QR code technology-integrated approach makes the benefits of evaluation activities with high processing speed, real-time feedback, volume reduction, and environmental protection advantages. The University of Bath was the first runner that applied QR code at the library to search catalogue of books.
.

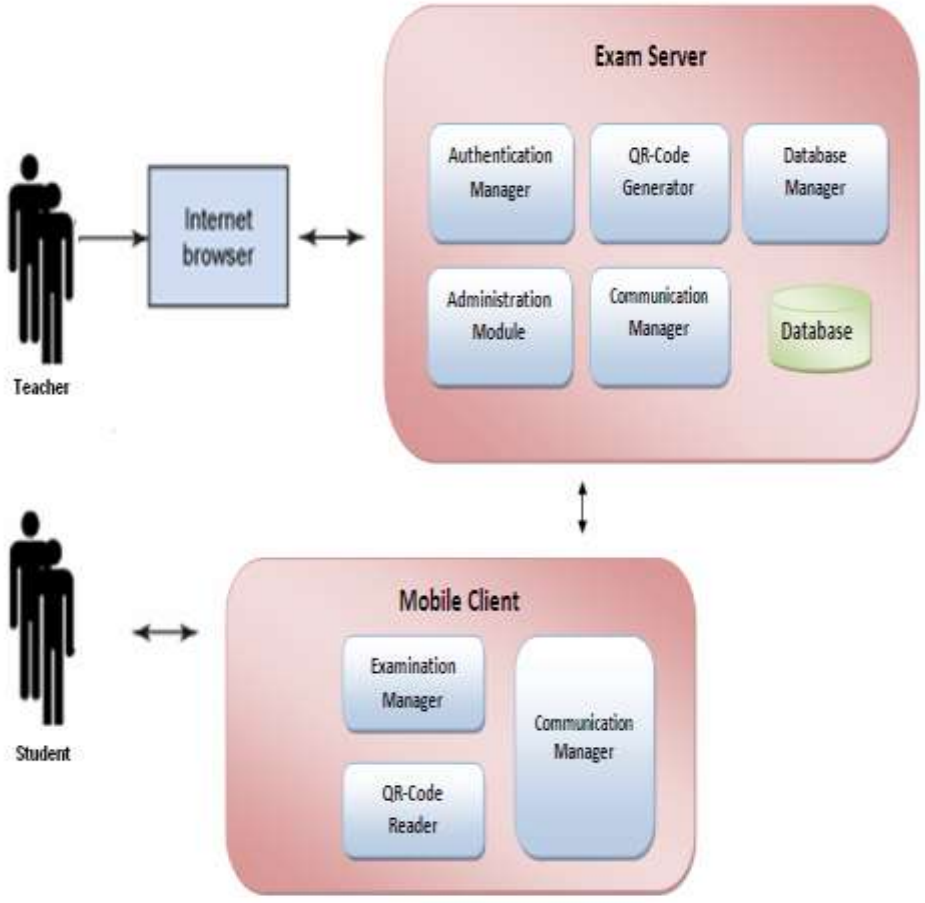

Fig 1: System Architecture

III. SYSTEM DESIGN

In this system we are going to use client server Architecture. The application may use android smart phone with minimum 2 Mega pixel to scan QR Code. Our product will generate a QR-Code of each question paper and students will scan the code to generate the question on their mobile screen. Students will then answers the question on their screen and send the results to server. It Encode all types of data 7,089 characters for numeric data, 4,296 characters for alphanumeric data, 2,953 bytes for binary data, and 1,817 characters for Japanese Kanji and Kana data.

Android-SDK is an emulator used for android application that integrates the QR code technique and tablet PC to support Examination strategy. After login the system, the system can detect learner's learning status so as to provide suitable questions for examination. When finished the examination, the scores can be analyzed and reported by the system. The operating process and individual students' account were completely recorded by the system, including student accounts, questions, and result status.

- MOBILE CLIENT(module1)
  - This is made for the use of scanning QR code which is generated by Server.
  - In the side of student consist of android phone contain QR Code Reader
  - They will be enabled with objective exam.

- EXAM SERVER(module2)
  - These are especially for the use of the generating QR code.
  - The teacher should be able to control the function of whole QR code generation from a single centralized server.
  - He can access any information related with previous work and should be able to take decision on that.

- SUB MODULES

1. Teacher Registration
   Teacher first of all have to register on exam server. So that they can create objective type of question paper. After encoding it server will generate QR Code for corresponding Question Paper.

2. QR Code Generator
   QR Code generator generates the QR code for our system. It will generate the QR code of the question paper.

3. Internet Browser
   The module should show the web browser for local host. By using open source web server and servlet web container.

4. Student Registration
   The module should register all data of student so that they Can read the QR code Reader then student will give the exam.
5. Communication Manager
   Communication Manager manages the relay between exam server and client. So that intercourse will be appropriate.
6. Database Manager
   Database Managers should be able to update data after registration and that data should not be accessed by mobile client.

The user is expected to have Android Mobile phones and should be able to send and receive data when connected to Wi-Fi range. First the user has to register to Wi-Fi network to use the service. Network gives the functionality to login and registration facility. The registered user uses this network to send and receive messages when connected to Wi-Fi network.

IV. SYSTEM SPECIFICATION

The technologies which are used to implement the system are:

1. The Android mobile terminal with minimum 2MP.
2. The operating system for approach is platform Independent, we develop mobile intranet.
3. Java programming language and android SDK, JDK is used to develop the software.
4. JSP/SERVLET is used for Database Access from the Central server.
5. Heidi SQL it is a light weight Database which is going to be used for database access from the server.

V. ALGORITHM

1. Data Conversion Algorithm(SHA 256) :

In cryptography, SHA-256 is cryptographic hash function designed by the National Security Agency and published by the NIST as a U.S. Federal Information Processing Standard. SHA stands for "secure hash algorithm".
SHA-256 is the most widely used of the existing SHA hash functions, and is employed in several widely-used security applications and protocols. In 2005, security flaws were identified in SHA-1, namely that a mathematical weakness might exist, indicating that a stronger hash function would be desirable. Although no successful attacks have yet been reported on the SHA-2 variants, they are algorithmically

similar to SHA-1 and so efforts are underway to develop improved alternatives. A new hash standard, SHA-3, is currently under development — an ongoing NIST hash function competition is scheduled to end with the selection of a winning function in 2012.Here we are using it for strong data conversion purpose by following few algorithmic steps.

VI. CONCLUSION

We are going to develop a paper for "Barcode Reader Using Camera Device in Mobile Phones"& it will be useful for automated examination process. The strength of our system resides in encoding and decoding. Also, implementing the client server architecture for our major application automated examination process. We have provided authentication for the server. In this paper we generates the QR-code using student r information and then student need to recognize as to read the code using their mobile phone, after generate the QR code using transfer information and the client's mobile phone capture the code . Finally, student will see actual objective type of questions of generated QR code on the screen.

ACKNOWLEDGEMENT

We are working on this project under the guidance of Prof. Ila Sawant, Assistant Professor at MMCOE College of Engineering, Karvenagar PUNE.

REFERENCES

[1] QR code using invisible watermarking in frequency domain, IEEE 2012
[2] Use multiplexing to increase information in QR code, IEEE 2013
[3] QR code image detection using run-length coding, IEEE 2011
[4] Recognition of QR Code with mobile phones, IEEE 2012
[5] Fast QR Code Detection in Arbitrarily Acquired Images, IEEE 2011
[6] A.Z. Tirkel, G.A. Rankin, R.M. van Schyndel, W.J. Ho, N.R.A. Mee, C. F. Osborne, Electronic water mark, in: Proceedings of the DICTA'99, 2000, pp. 666–672.
[7] Cox, J. Kilian, T. Leighton, T. Shamoon, Secure spread spectrum for multimedia, IEEE Transactions on Image Processing 6 (12) (2007) 2003–2007.
[8] Cox., M. Miller., J. Bloom, Digital watermarking, Morgan Kaufmann Publishers, 2010.
[9] W. Bender, D. Gruhl, N. Morimoto, A. Lu, Techniques for data hiding, IBM System Journal 35 (2006) 313–336.
[10] I. Pitas, A method for signature casting on digital images, in: Proceedings of the ICIP' 96, 1996, pp. 215–218.
[11] J. Fridrich, M. Goljan, R. Du, Invertible authentication, in: Proceed- ings of the SPIE Security Watermarking Multimedia Contents, 2010, pp. 197–208.
[12] Z. Ni, Y. Shi, N. Ansri, W. Su, Reversible data hiding, IEEE Transactions on Circuits and Systems For Video Technology 16 (3) (2009) 354–362.
[13] M.D. Swanson, B. Zhu, A.H. Tewfilc, Transparent robust image watermarking, in: Proceedings of the ICIP'96, 1996, pp. 211–214.
[14] R. Wolfgang, E.J. Delp, Watermark for digital image, in: Proceedings of the ICIP'06, 2006, pp. 219–222.
[15] M. Barni, F. Bartolini, V. Cappellini, A. Piva, DCT-domain system for robust image watermarking, Signal Processing 66 (3)