

# Automated Exam Process using QR Code Technology

Dr.A.P.Adsul<sup>1</sup>, Gayatri Kumbhar<sup>2</sup>, Vrunda Chincholkar<sup>3</sup>, Yogesh Kamble<sup>4</sup>, Anuja Bankar<sup>5</sup>

<sup>1,2,3,4&5</sup>Sinhgad Institute of Technology and Science

## Abstract:

*Currently exam conduction is predominantly paper based. This paper provides idea about generating QR code containing (MCQ) questions which can be viewed by students. The QR code can be decoded by the students on their mobile handset, after which the questions can appear on their mobile screen. After answering the questions in a stipulated time period, answers can be sent to the server. The result is calculated on the server and displayed. This paper proposes a QR Code based examination system to automate this process.*

*This work proposes uses of two-dimensional (2D) barcodes, which has the capability of storing data, to assist in reducing the action of hardcopy for exams. A QR code is a type of matrix barcode designed for the automotive industry. More recently, the system has become popular outside of the industry due to its fast readability and comparatively large storage capacity. Cost of printing papers and their transportation can be reduced. Malpractices can be put to an end.*

**Keywords:** QR (Quick Response) code

## 1. Introduction

The recent interest in the use of visual tags in everyday life is a natural consequence of the technological advances found in modern mobile Phones. The QR code is a matrix consisting of an array of nominally square modules arranged in an overall square pattern, including a unique pattern located at three corners of the symbol and intended to assist in easy location of its position, size and inclination. A wide range of sizes of symbols is provided together with four levels of error correction. Module dimensions are user specified to enable symbol production by a wide variety of techniques.



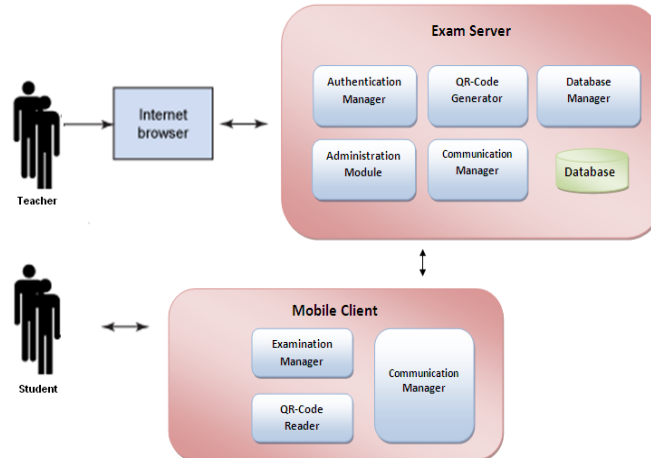
Figure 1: Structure of QR code

There are two sections in this system. In the encoding section conversion of input data to a QR Code symbol takes place. In this the data analysis and encoding is done then after Error correction coding the final message is structures. Following the Module placements in matrix with masking

Another section is the Decode section. This section contains decoding of the input QR Code image and displays the data contain that QR code. The decoding procedure starts with the reorganization of black and white module then Decode format information. Following the determination of version of QR code and releasing Masking. Then restoring of data and RS codewords follows the Error detection and then decode the Data codewords.

## 2. Architecture Diagram

This work proposes a QR Code based examination system to automate the exam process. Basically this work suggests client server architecture where in server will be used to generate QR code of exam paper and client (student) will give exam on their Smartphone. Teachers will prepare question paper using server and our system will generate final QR code of the paper which then be displayed to students. A QR code (abbreviated from Quick Response code) is a type of matrix barcode (or two-dimensional code) first designed for the automotive industry. More recently, the system has become popular outside of the industry due to its fast readability and comparatively large storage capacity. The QR code consists of black modules arranged in a square pattern on a white background.

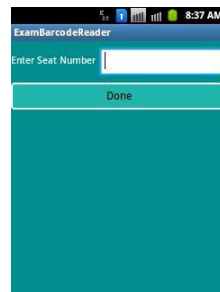


**Figure2:** Architecture Diagram

### 3. System Implementation

To implement this system different class are generated such as the system classes, their attributes, operations and relationships among objects. Here the classes are QRreader, activity, command listener, activity, CameraCanvas, Image, QRdecoder, ExamManager. There exists composition relationship between QrReader and CameracCanvas, aggregation relationship between QrReader and QRDecoder. There is generalization relationship between activity class and QrReader class. QrReader class includes operation startapp(), pauseapp(), destroyapp(), startcamera(), takepicture(), commandaction().

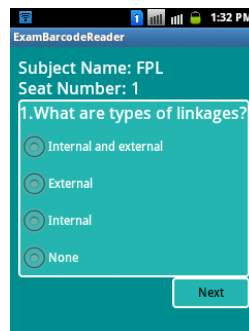
#### 1. Client Home Page



**Figure 3:** Client Home

It is the client home page. Student enters his unique seat number and can proceed to scan the QR code image.

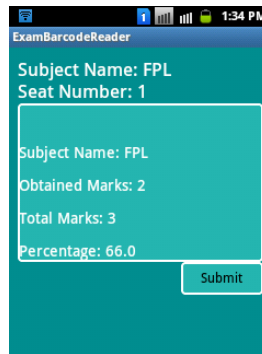
#### 2. Display Question



**Figure4:** Display Question

Choose the appropriate answer for the displayed question and press next button.

#### 3. Display Result



**Figure5:** Display Result

Result for the examination is displayed after answering all the questions.

#### **4. Conclusion**

Automated exam process using QR code technology simplifies the conduction of examination by direct access of questions to the Exam-Taker directly on his mobile handset and automating the write process ranging from validating the answer to providing results of the exam with zero human interfaces. The work recommends a set up of an automated examination system to process, mark, score, grade and report on these assessments. Although the system has the potential to make the question paper easily available to students using the QR code also it is handy for the students to give the answers to the questions which is time saving for teacher as well as student and also checking is 99 percent error free. Thus the system presents a framework to implement exam using QR Code.

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