# Railway Concession Automation

**Pranav Ayare[1], Mohammed Waseem[2], Varsha Wangikar[3]**
*[3]Assistant Professor*
*[1-2]B.E. Students*
*Department of Information Technology,K.C. College of Engineering & Management Studies & Research, Kopri, Thane(E)-400 603, India.*

---

**Abstract -**As android is the most widely used in the field of mobile computing, an android application would allow users to register and apply for Railway concession at anytime as per their convenience. Thus the application would be easily available as most of the students in today's world use android phones and also android applications are compatible with other platforms. QR code is used to identify each student uniquely. This QR code will contain some personal information of the student that is unique to him.

***Keywords***: QR code, Android, Detection, Verification, ID card

## 1. INTRODUCTION

QR code (abbreviated from Quick Response Code) is the trademark for a type of matrix barcode (or two-dimensional barcode) first designed for the automotive industry in Japan. A barcode is a machine-readable optical label that contains information about the item to which it is attached. A QR code uses encoding modes to efficiently store data.

The QR code system became popular outside the automotive industry due to its fast readability and greater storage capacity compared to standard barcodes. Applications include product tracking, item identification, time tracking, document management, and general marketing.

A QR code consists of black squares arranged in a square grid on a white background, which can be read by an imaging device such as a camera, and processed using Reed–Solomon error correction until the image can be appropriately interpreted. The required data are then extracted from patterns that are present in both horizontal and vertical components of the image.

The process of Railway Concession though convenient and useful for college students is time-consuming and includes paperwork. However in today's smart world, there is a need to reduce this manual work. This system accepts and stores request for railway concession from college students. The student registers for the concession by filling a form using an android application and then scans the QR code embedded into their ID card. The QR code is used to identify each student uniquely. This QR code will contain student's information that will be stored in the server when the request is sent to it. This approach is adopted because an application would allow students to register and apply for concession anytime and the barcode will help to authenticate the student's identity. Finally when the requests are gathered on the server, the student's details are verified with the student database to check whether the details are correct or not. These details would help to verify whether the student is a regular one and what was the last time he applied for railway concession. And lastly the student's concession form is printed by the server.

Our basic idea is to design an application to implement our concept. How is this actually possible, is explained with details in this paper.

## 2. LITERATURE SURVEY

### 2.1 Existing System

As our system is based on using QR code detection, we researched on 'What is QR code and how it has been implemented in different ways ?

'This project focuses on reducing the human effort required in the process of railway concession. In our system we are trying to limit the human resource required in the entire process and make it as simple as possible. For identifying a student from his ID two methods can be used:

- QR code
- Barcode

### 2.2 Designing of Android Mobile Based System Using QR Code

This paper explores a solution to create a cashless mobile payment system. The aim is to provide the most

cost efficient and secure alternative to current systems. Current systems use SMS and USSD to process payments. These are not cost effective methods of communication. There is also no current method of processing credit payment on a mobile phone without the need for a specialized piece of hardware. The system is broken up into three parts, a visual QR code, Qpay Android application and a payment server. The identification of mobile phone is encoded in a QR Code allowing the built in camera on a mobile phone to scan a card. This was improved on by using a HTTPS connection between mobile phone and server. HTTPS provides an encrypted communication channel. This paper shows that a mobile phone is capable of processing QR code payments on a mobile phone. Time taken to process a payment was within an acceptable limit.

### 2.3 Barcode Detection from Barcode Images Captured by Mobile Phones

Reading barcodes is a daily need of today's world and normally it requires a scanner. In this paper we have presented a method so that we can read barcodes accurately using mobile phones which are commonly used today. The various problems of binarizing the 2D barcode images clicked by mobile devices is considered in this paper. The poor quality of the images due to low resolution of mobile cameras, noise, non-uniform illumination and distortion of the camera makes the task of binarization more difficult. Most of the binarization techniques makes use of global thresholding which may not have accurate result, hence the technique which finds the threshold for each pixel is presented in this paper. The proposed method can handle objects of different sizes and the uneven illumination problem.

Processing of Barcode images has drawn a great deal of attention recently due to the advancement in mobile phone-based applications. Capturing a barcode printed in a newspaper using mobile phone that subsequently direct to a website is communicative and mobile. However, reading the barcode images captured by mobile phones poses great challenges due to the problems such as small sensor size, lacking of auto focus, shaky hands and uncontrolled lighting environment.

## 3. PROPOSED SYSTEM

Now as we have understood the existing system and have figured out that there are a lot of problems in it

We propose a system where QR code will be embedded in the student ID, then the student will require to only scan their ID on their respective android device, rest process will be taken care of by our system. Then the person in-charge will only require to send a print order when a student approaches the admin office.

As in the present scenario the complete process for getting a railway concession is manually done. An automated system for this purpose would allow students to apply for the concession without waiting in a queue. Also a student can apply for concession anytime by using an android application. Request will be sent to a server. Server verifies the student's details and accepts his request. Next time the student enters the admin office his/her concession form will be printed. This automation system allows the complete process to complete in 1 day at the most. Previously the manual process took 3-4 days for completion.

## Advantages

- Time Reduction
- No specific time required for registering
- Apps can be launched quickly.
- Easy to execute/perform by the user

## 4. METHODOLOGY

### 4.1 Algorithm

- Student fills the registration form
- Student scan their ID
- Student's details are verified by the admin application
- Student details are sent to the server
- The request is stored on the server
- When student approaches admin office, person in-charge searches his request and gives print order.

### 4.2 Flowchart

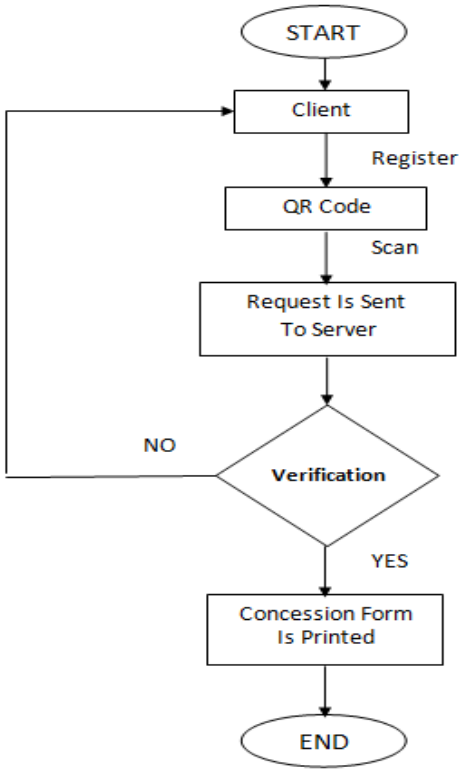


**Fig -3** Working Flow.

The working of the system is enlarged in the FIG 1. This system accepts and stores request for railway concession from college students. The student registers for the concession by filling a form using an android application and then scans the QR code embedded into their ID card. The QR code is used to identify each student uniquely. This QR code will contain student's information that will be stored in the server when the request is sent to it. This approach is adopted because an application would allow students to register and apply for concession anytime and the barcode will help to authenticate the student's identity. Finally when the requests are gathered on the server, the student's details are verified with the student database to check whether the details are correct or not. These details would help to verify whether the student is a regular one and what was the last time he applied for railway concession. And lastly the student's concession form is printed by the server.

## 5. CONCLUSION

This project includes the techniques of Desktop processing, Mobile computing and automation. It is a completely new system based on the idea to reduce human effort, by using the latest technologies dominating the mobile computing market (Android) we want to automate the process of railway concession. This project also will provide portability and thus provide ease in the entire process. Examining QR Code vs Barcode, it is noted that barcodes have been the standard for many years. However, when comparing QR Code vs Barcode, it is easy to see why barcodes are being replaced by the newer QR codes. These QR Codes are becoming more common place due to their greater storage potential and ease of being read by a scanner. Damaged data can be restored from a QR Code but not from a barcode.

## Acknowledgment

This work is a part of graduation project done by students of Information technology. We thank everyone who supported and motivated us. And special thanks to our guide Prof. Varsha Wangikar.

## REFERENCES

[1]ISO,"Information technology Automatic identification and data capture techniques Barcode" ISO, Geneva, Switzerland.

[2]D. Samretwit and T. Wakahara, "Measurement of reading characteristics of multiplexed image in QR code," 2011 Third International Conference on ,2011, pp. 552–557.

[3]T.Wakahara and N. Yamamoto, "Image processing of 2-dimensional barcode,"14th International Conference on, 2011, pp. 484–490.

[4]IEEE Paper on Designing of Android Mobile Based System Using QR Code.

[5]IEEE Paper on Barcode Detection from Barcode Images Captured by Mobile Phones.

**BIOGRAPHIES**

**Pranav Ayare**
Bachelor Of Engineering
Department Of Information Technology
K.C. College OF Engineering Management Studies & Research

**Mohammed Waseem**
Bachelor Of Engineering
Department Of Information Technology
K.C. College OF Engineering Management Studies & Research

**Asst. Prof. Varsha Wangikar**
B.E(Computer Science & Engineering), M.E(Computer Engineering)
Department Of Information Technology
K.C. College OF Engineering Management Studies & Research