# QR-Code based Student Bus Pass System

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*Abstract*: Over the last few decades, there has been an increase in the use of public transport like social travel (ST). Also many student use the bus pass for their regular traveling. The traditional system of bus pass system is fully depends upon paper means every student carry the paper pass. Means this system has use huge amount of paper. Rather than traditional system, there is invent in this and people create online bus pass system but it is very complex to maintain the users online. To overcome this problem QR based student bus pass system get use. This system provide only QR code to the student, means the use of paper is reduce. There are 80% of student use the smartphone, so without internet need this system working. Means student does not need to internet, and reduce the headache to carry pass. Sometimes student pass get wet in rainy season also, so this problem also overcome by this system. In this system simply student should fill up the form and pay money. Admin get all the information of student like name, mobile and email id and photo. Admin store this all the information in database by creating new id and QR code. Admin send the mail to customer or student. This QR code contain the id, name, source to destination and validity of the card this will helpful to find perfect person in small amount of time. This system minimize conductors overhead for identify the person and students overhead for carry paper pass.

*Keywords*: Database, Internet, Pass, QR Code, ST

## 1. Introduction

Many of people use the public transport like social travel (ST). There are many problems that are being faced by the general public in terms of being managed in the over crowded bus. Another problem that the nation or mainly student faces that is paper based bus pass system. There is traditional bus pass system, in which the student get pass as paper, means they show the pass to bus conductor, and then bus conductor will validate either student is able to travel or get facility. Also student should carry the paper always with him. This is a headache for both the student and bus conductor also. There is problem that in monsoon paper get wet or sometime student forget his pass at home, it is really big problem for him. After that many IOT based systems are try to make change in traditional system, i.e. RFID based smart card system, Android based online bus pass system but there are some problem for this like costing and maintenance. To overcome this issue this QR based bus pass system is develop. This system is fully depends upon traditional system means first of all student submit their personal information like name, address, phone number and email id with passport photo. Admin get all information and after that he will be insert in database with two additional attributes one is student id that is auto generated and second is QR code. This

QR code contain the student information like Student id, name, source to destination, pass validity. This system is cost effective over all the systems. Whenever bus conductor ask for the pass he just press the pass button on the pygmy machine. This button directly start the camera for scanning the QR code. Whenever system scan the QR code, on screen conductor see all the information about student like name, id, source and destination and validity. And system will send this id to server and server check it in database. If information is match then automatically increment the traveling counter in database. If counter is less than 3 then for that day he will able to travel and use his pass. This will create secure system because photo is scan and the correct person should carry it. This product will be great help of government and Mother Nature of reducing the uses of paper in a large extend. This product also helpful for bus conductor to reduce the effort to find the correct owner of the pass and also passenger, that not necessary to carry paper based bus pass.

## 2. Literature survey

The QR base bus pass system required extensive research into similar systems. For research purpose we have used similar kind of projects. There are some systems like RFID based bus pass system, android-based bus pass system. We have find some features and used it for development purpose.

Table 1
Literature Survey

| S. No | Title Of Paper | Feature | Drawbacks |
|---|---|---|---|
| 1 | Abishek Balu et.al., "Biometrics Based Bus Ticketing System" ,2018 | This system is more secure. | Require more cost, require more time to processing |
| 2 | Chin-Ling Chen1 et.al.,"Mobile device integration of a _fingerprint biometric remote authentication scheme", 2011 | This system if fully integrated with android. So anyone can use and also scalable. | Require more time to authenticate the user. |
| 3 | Ben Ammar Hatem, et.al."Bus Management System Using RFID In WSN" ,2010 | This system is cheaper than biometrics and user friendly also. | Anyone can use this type of card, so less secure. |

**International Journal of Research in Engineering, Science and Management**
**Volume-2, Issue-1, January-2019**
**www.ijresm.com | ISSN (Online): 2581-5792**

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## 3. Methodology

This section will introduced us the architecture of the system and modules of system. It also contain what is actual input and generated actual output. The development of the system in briefly.

### A. System architecture

The system architecture show the brief working of the system. All the data of student will store on the cloud. Whenever QR Code get scan by the system, the system access all the data from QR Code and show on display. After scanning all the data QR id attribute is get selected and transfer to cloud via internet. It will perform all the operation like validation and finally show the validate student.
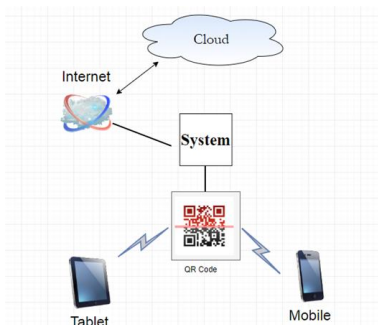


Fig. 1. System architecture

### B. Modules of system

This system consist the modules like QR Code generation, QR Code scanning and data validation.

### C. QR code generation

After submitting the registration form by student. The required data will store on cloud and generate QR Code. For QR Code generating purpose we are going to use the python inbuilt tool. Python has inbuilt tool like pyqrcode. This will help for generating QR Code. This generated QR Code is held the all the necessary information of the student like name, pass validity, source and destination.

#### 1) QR code

QR Code is "Quick Response" code. Which is open source and highly fault tolerance. These features are attract us to use.

### D. QR code scanning

For QR Code scanning purpose, this system is used the Simple CV library for python and raspberry pi 3. The Simple CV and Z bar library is compatible for python and raspberry pi 3. Intension to use python for performing operation is python provide more and more feature like camera interfacing with raspberry pi.

### E. System features

The paper use in traditional bus pass system is most problematic issue now a day. Also carry the physical bus pass is heavy headache for student. This system overcome all the problems.

- The QR Code Based Bus Pass System deals with real time problem. To overcome the huge amount of paper use is done with QR Code. QR is the open source technology. Rather than using the paper bus pass, we provide the simply QR code to student. Student should carry this while travelling. This means the paper use get reduced.
- By using QR Code instead of paper pass, one more problem get overcome i.e. to carry physical bus pass. Some time student forget the pass or in rainy season pass get wet. By using mobile phone, we can carry the pass as QR Code. This means headache of student get reduced.
- All the information store on cloud which is provided by user. This will helpful for provide the transparency between user and system owner and also all the information will secure.

## 4. Conclusion

This is real time system for those student who are facing the problem for carry the physical bus pass, especially in the rainy season, where there is probability that pass get wet or get cut. Also by analyzing the huge amount of paper use now a days. In our system we provide the QR Code as a bus pass which is sent by email on student's mobile phone. So both the problem get solve.

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