

QR-code based Information Access System for Smartphones

Burhanuddin Kanchwala, Pranil Gholap, Vikrant Amin, Harshada Chavan, Dr. Mahavir Devmane

Department of Information Technology, Mumbai University, Mumbai, Maharashtra, India

ABSTRACT

The Project Aims at developing a Software System Where Student can access information in their smart phone by scanning QR code. Quick Response codes (QR-codes) are two-dimensional barcodes that can encode various types of information. QR codes can be attached to physical objects. Already in several metropolitan areas, such codes have been placed, e.g., in stores, at the entrance of buildings to provide floorplan information, on walls for announcing upcoming event. The QR Code would contain the student unique id. Android application would scan the QR code attached in student identity card to get student id, application would request to server via http request to get student related information from server. System would also contain a web interface to insert the student related information. Student will be able to access all his academic related information by just scanning his QR-code. He/ She will be able to do so by the Android application provided to them. This application will be connected with a database and the communication will be provided using the Django framework.

Keywords: QR-code, android application, Python, Django.

I. INTRODUCTION

The Project Aims at developing a Software System Where Student can Access information in there smart phone by scanning QR code. Quick Response codes (QR-codes) are two-dimensional barcodes that can encode various types of information. QR codes can be attached to physical objects. Already in several metropolitan areas, such codes have been placed, e.g., in stores, at the entrance of buildings to provide floorplan information, on walls for announcing upcoming event . The QR Code would contain the student unique id. Android application would scan the QR code attached in student identity card to get student id , application would request to server via http request to get student related information from server. System would also contain a web interface to insert the student related information.

Student will be able to access all his academic related information by just scanning his QR-code. He/ She will be able to do so by the Android application provided to them. This application will be connected with a database and the communication will be provided using

the Django framework. Accessing information becomes tedious for student as most of the work related to the student's information is saved on the paper and maintained aa file for the same. File management becomes the tedious task. Also this files can be lost or mismanaged.

This project aims to remove all this hassle that students faces. Once the QR-code is generated, student will be able to access all his information. The main advantage is all this said information will be stored in the digital format in database. So possibility of the data loss is minimum and if there is any misplaced or incomplete data, a warning will be given quickly so that the Database Administrator will know something is missing and rectify the error, which is cannot be achieved easily in file system.

Main Objectives include:

1. Efficient information access.
2. Efficient student data management.
3. Improved teacher-student interaction.
4. Effective database management.

II. METHODS AND MATERIAL

1. Identification of QR Codes Based on Pattern Recognition

Barcodes, which are considered as an automatic recognition method with high-speed reading, high accuracy, low-cost and high-reliability, is widely applied in commodity labels, data security, anti-counterfeiting, electronic commerce and many other fields. Comparing with a one-dimensional barcodes, a two dimensional (2D) barcodes carry information along both horizontal and vertical directions, enabling greater information capacity, higher reliability and supporting different levels of error correction. So far, the common 2D barcodes are PDF417 code, Data Matrix code and QR code.

It has many advanced features, such as readability from any direction and high efficiency in storing Chinese characters. The application of 2D barcodes combines the technology of automatic recognition, encoding, decoding and printing of barcodes together, among which the automatic recognition.

2. QR-Code Generator

QR Code has been approved as an AIM Standard, a JIS Standard and an ISO standard. In 2000 years, QR Code is being issued as National standard in China The QR code provides 40 specifications and correct grade such as L, M, Q, H. A QR Code can hold a considerably greater volume of information: 7,089 characters for numeric only, 4,296 characters for alphanumeric data, 2,953 bytes of binary (8 bits) and 1,817 characters of Japanese Kanji/Kana symbols. QR Code also has error correction capability. Data can be restored even when substantial parts of the code are distorted or damaged.

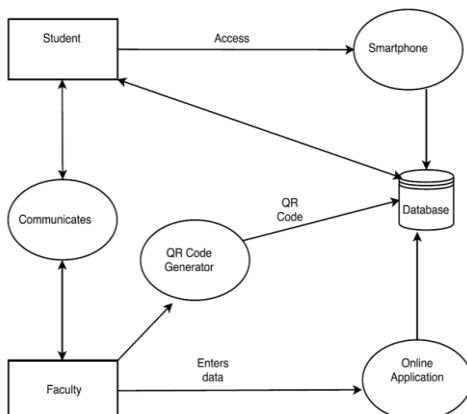


Figure 1: DFD Level-1 for QR-code generator

3. Scanning the QR-code:

Information access by just scanning of QR-code. All the information will be saved in a database so less file and paperwork, which will directly lead to less files. Updating any data if there requires any correction can be done quickly and easily because the data is centralized. Database is managed by a professional database administrator. Database will store information related to student's fees payment, marks, attendance, any curricular information.

Database will store student related data like Name, Address, Roll no, How much fees paid, What department he/she has taken admission, whether he has filled the required documents or not. All this information will be stored in the database. The faculty and the database administrator will have the access to this data in database. All these data will be secured for unauthorized access by using the combination of ID and password. So that only authorized person will be able to access these data.

If any modification needs to be made, student need to contact the database administrator for the same. Database administrator will modify the required data. Student will just be able to view the data by scanning their QR code but can't modify it. Student can only view his/her data. The role of the QR-code here is to be like a medium for the student to access his/her data because the main aim of this project is to make the information access for the student easy and less tedious. Unlike the traditional methods where student needs to open the website for checking his attendance, in the proposed system, with the QR-code provided he/she can view the required attendance report just by scanning the same.

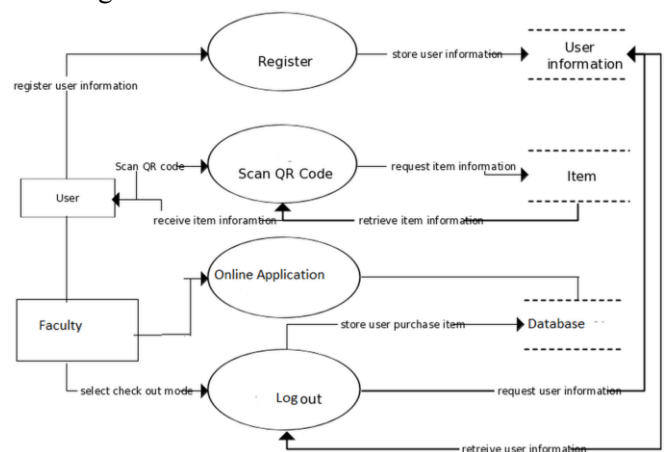


Figure 2: Level-2 DFD showing the role of android application in scanning QR-code.

III. RESULTS AND DISCUSSION

Our project is basically an Android application that Scans QR-Code which will be generated by python script. A web portal will be provided for the faculty so that they can insert information which student can access using their smartphones.

Our application will match the reviews according to the ratings and will suggest an overall rating for the same. So far we have implemented a module 1 in which a python script will generate QR-code that will be unique for every students. Matching of the QR-code with student data will be done according to the pattern recognition mechanism of QR-code.

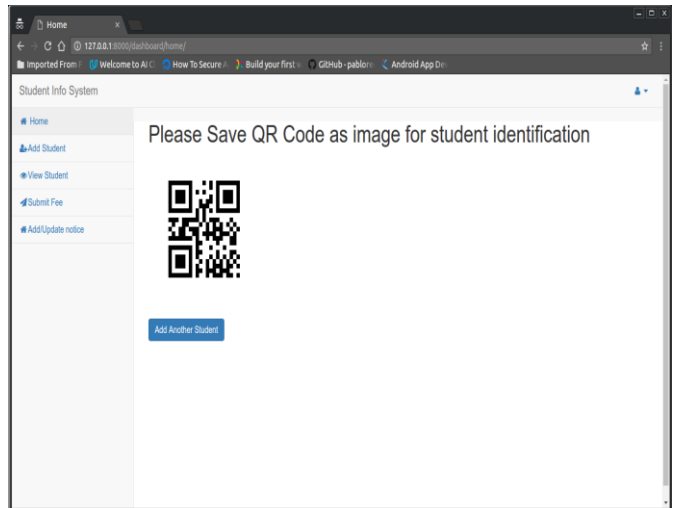


Figure 5: Web interface for QR-CODE generation for students

IV. FUTURE SCOPE

As the main aim of our project is easy access of the required information, this project in future can be implemented as the default way of accessing not only student related data but any other required information. QR-code that is generated can be attached to any physical object so that it won't be lost easily. More functions like form filling, attendance report generation, fees enquiry, holiday and important notice can be displayed directly in the application.

V. CONCLUSION

In this project, we have implemented accessing of the student's academic information through the QR-code. Android Application will facilitate this function. The database will save the information about this. Our system comprises of Android application, database, front-end comprises of HTML, CSS, and JavaScript. Our backend is MySQL database. Android application will scan the QR-code that will be generated by inserting all the information related to student which will be done by the faculty member. This will be done through the website that is developed. This data will be saved in a database and will be accessed by Django framework.

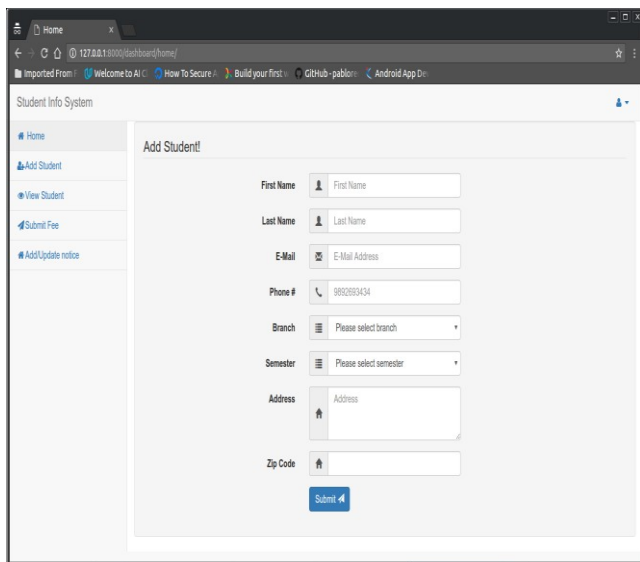


Figure 3: Web Interface for adding student details

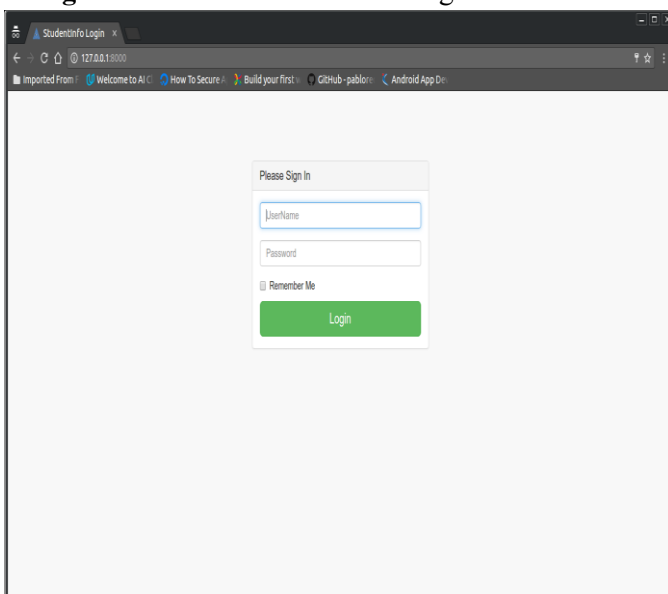


Figure 4: Login page or sign in page to access web interface

VI. REFERENCES

IEEE Papers:

- [1]. "QR-Code Generator" Phaisarn Sutheebanjard, Wichian Premchaiswadi, 2010 Eight International on ICT and knowledge Engineering
- [2]. "Identification of QR-codesBased on Pattern Recognition" Ming SUN, Zhenkken FANG, Longsheng FU, Fan Zhao, College of innformation and Electrical Engineering, China Agricultural University, Beijing.

Website

- [3]. <https://developer.android.com>
- [4]. <https://www.djangoproject.com>
- [5]. <https://developers.google.com/vision>
- [6]. <https://www.python.org>