



# Advanced Network Security For College Lab

<sup>1</sup>Sushant Prasade, <sup>2</sup>Vinayak Mali, <sup>3</sup>Pradnya Desai, <sup>4</sup>Samruddhi Patil

<sup>1,2,3</sup> Ms. Priyanka R. Jadhav, <sup>4</sup>Assistance Professor

<sup>1,2,3,4</sup> Department of Computer Science and Engineering

<sup>1,2,3,4</sup> Nanasahab Mahadik College of Engineering, Peth, Maharashtra

**Abstract:** Advanced network security for college labs is a student attendance management and registry system for university applied by using Quick-Response Code, which is the trademark for a type of matrix barcode (or two-dimensional barcode). The system is able to manage the student daily attendance. However, most of the practical in colleges and universities used manual sheet paper for lab attendance. This way has many drawbacks. The manual record system is not efficient and requires more time. Moreover, by having the manual sheet of paper for attendance, students that skipped the practical tends to cheat by asking their peers to sign or cover their attendance. Thus, the attendance system based on Quick- Response Code is meant to improve the manual attendance system and therefore the aim of this paper is to review the existing research. This project implementing Quick-Response Code for the students to scan it via a specific smartphone application, which is being displayed for students during or at the beginning of each lab session. The students will need to scan the code in order to confirm their attendance. The attendance system comes with a web system and a mobile application, which all the students have to install it. Once the student scan the QR Code, the data of the students will automatically transfer into the database and the attendance should be recorded. The techniques that we use for implementing the system is Reed-Solomon Error Detection and Masking Pattern technique for encoding and decoding the data in QR Code. Thus, this smart attendance system will be more accurate compared to manual record system. Besides, this system can speed up the process of taking attendance by university instructors and would save practical time and hence enhance the educational process. As a conclusion, the main aim of this paper is to develop an accurate, fast and efficient attendance system using QR Code.

**Index Terms** - Quick-Response (QR Code), smartphone application

## I. INTRODUCTION

Regular attendance in all labs at school or university is essential to improving academic achievement. It has been compulsory for each labs in universities or colleges to take an attendance for each students. However, most of the Practical in colleges and universities used manual sheet paper for lab attendance. Obviously, the manual record system is not efficient and requires more time. Sometimes it may also not accurate because most of the students that skipped the practical tends to cheat by asking their peers to sign or cover their attendance. QR Code started popular among people, and it has made user life easier when everything can be accessed by scanning the QR Code using smartphone to view an information. Thus, Quick- Response Code is meant to improve the manual attendance system and therefore the aim of this paper is to review the existing research. With this application students can saves more time in lab and the attendance record would be more accurate.

II. METHODOLOGY

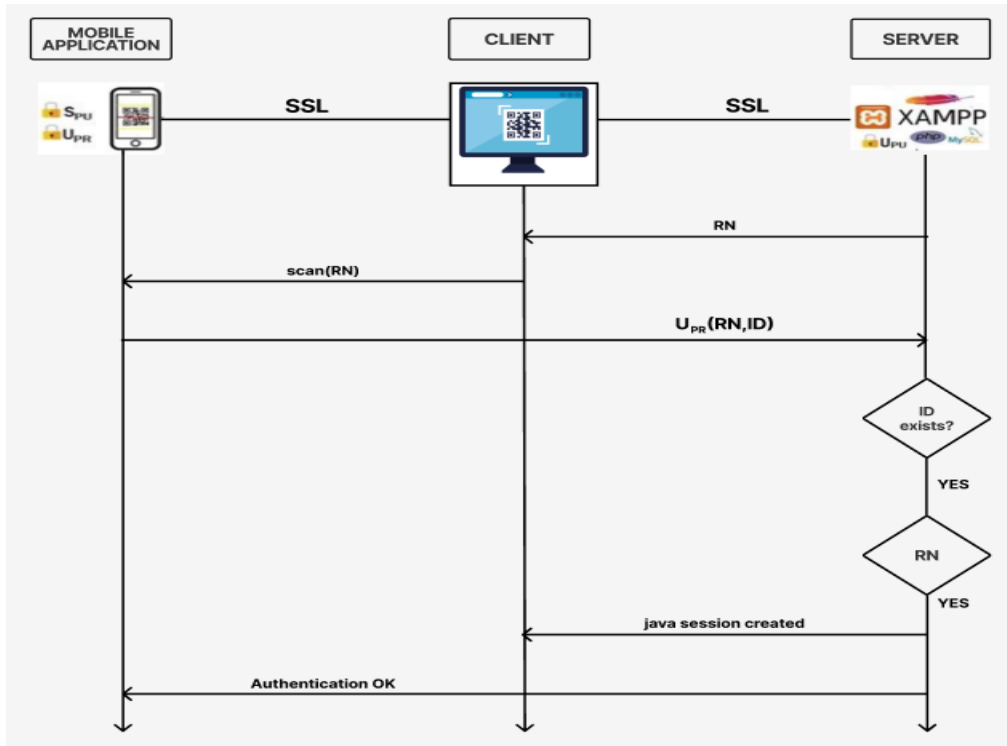


Figure 1: Data Communication Design

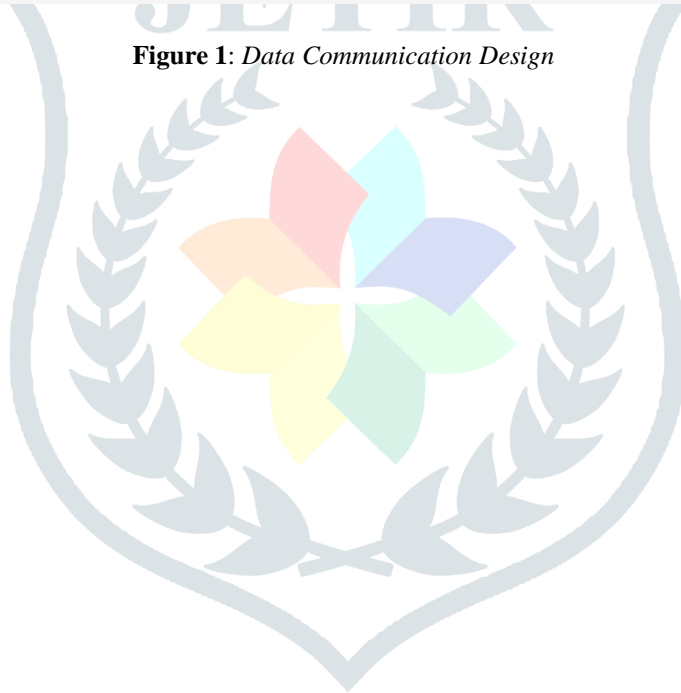


Figure above demonstrates the data communication design of the proposed system. Firstly, client will transfer information to the server. Server indicates and then converted the information to a QR Code with random value (RN) on the client screen. Then, user uses their mobile device (phones) to read the random value (RN). If the random value is accurate, user will transfer the student ID and random value (RN) to the server. The server will check if the ID is correct as registered and the accuracy of random value. If all the data is accurate, the server will create a JAVA session to the client and authentication is successful.

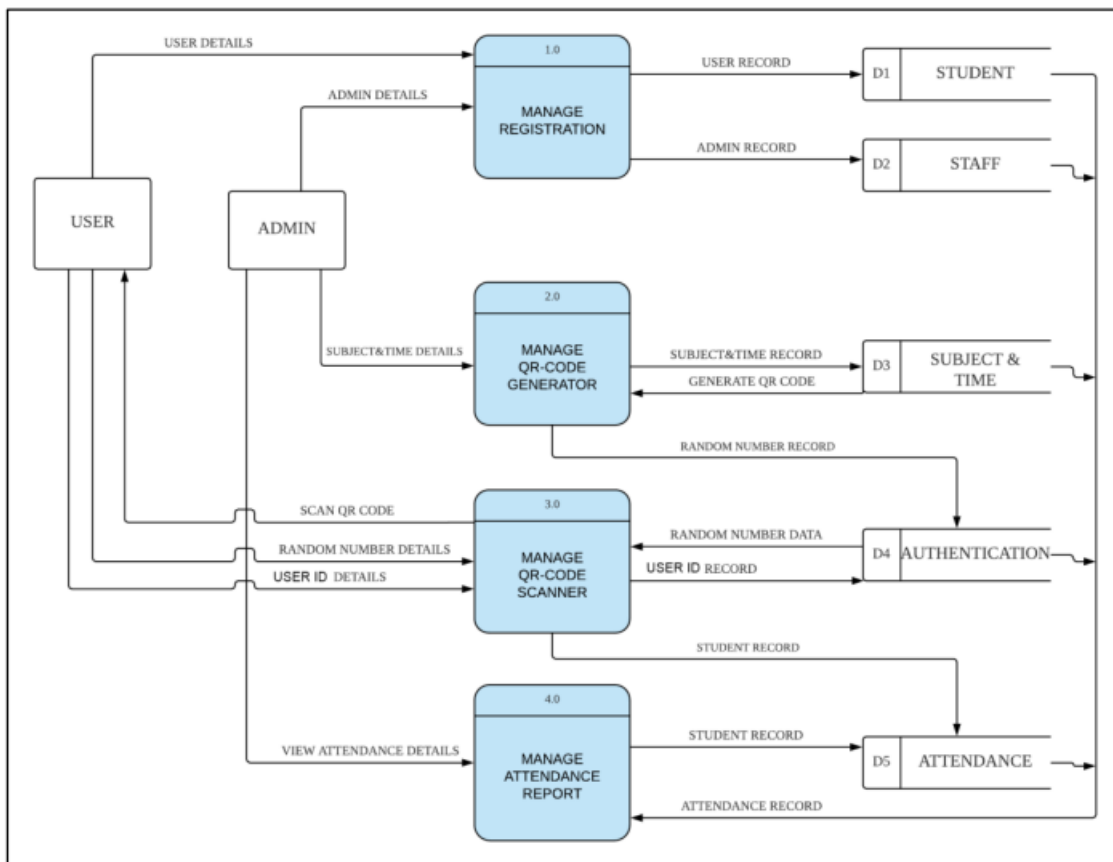


Figure 2: Data Flow Diagram

Figure above portray a data flow diagram that consists of four processes and five data stores. Three processes involved admin which is manage registration, manage QR Code generator and manage attendance report. There are only two processes that involved user which is manage registration and manage QR Code scanner. Process that includes user and admin is process of managing registration that will be saved into D1 and D2 respectively. Manage QR Code generator process which only involves admin will be saved into D3-QR Code and D4 Authentication. Meanwhile for manage QR Code scanner process that involves user will be saved into D4- Authentication and D5- Attendance. For process manage attendance report, it will be saved into D5- Attendance.

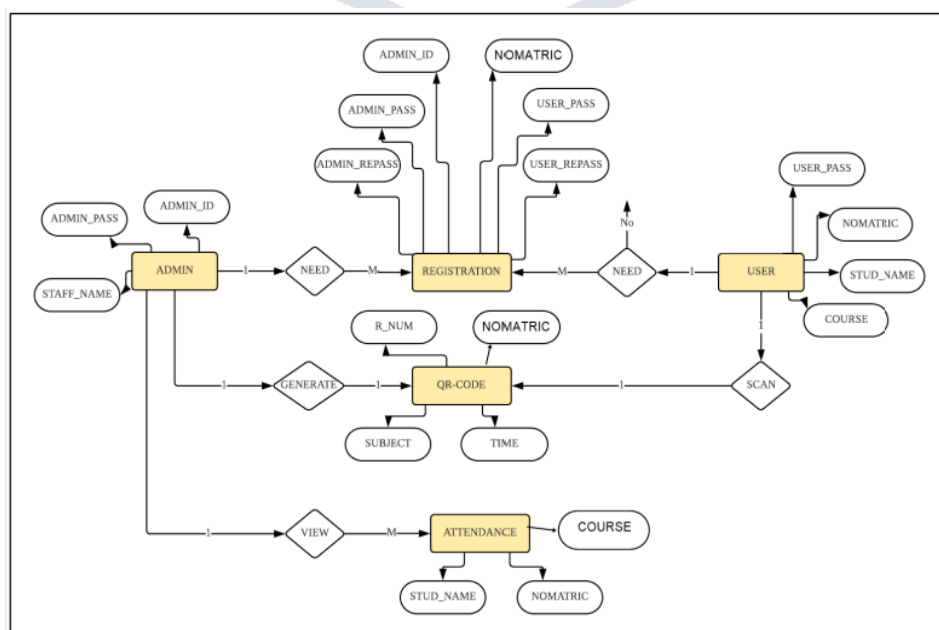


Figure 3: Entity Relationship Diagram

Figure above shows ERD model for QR-Code Attendance System contains five entity and have their attributes.

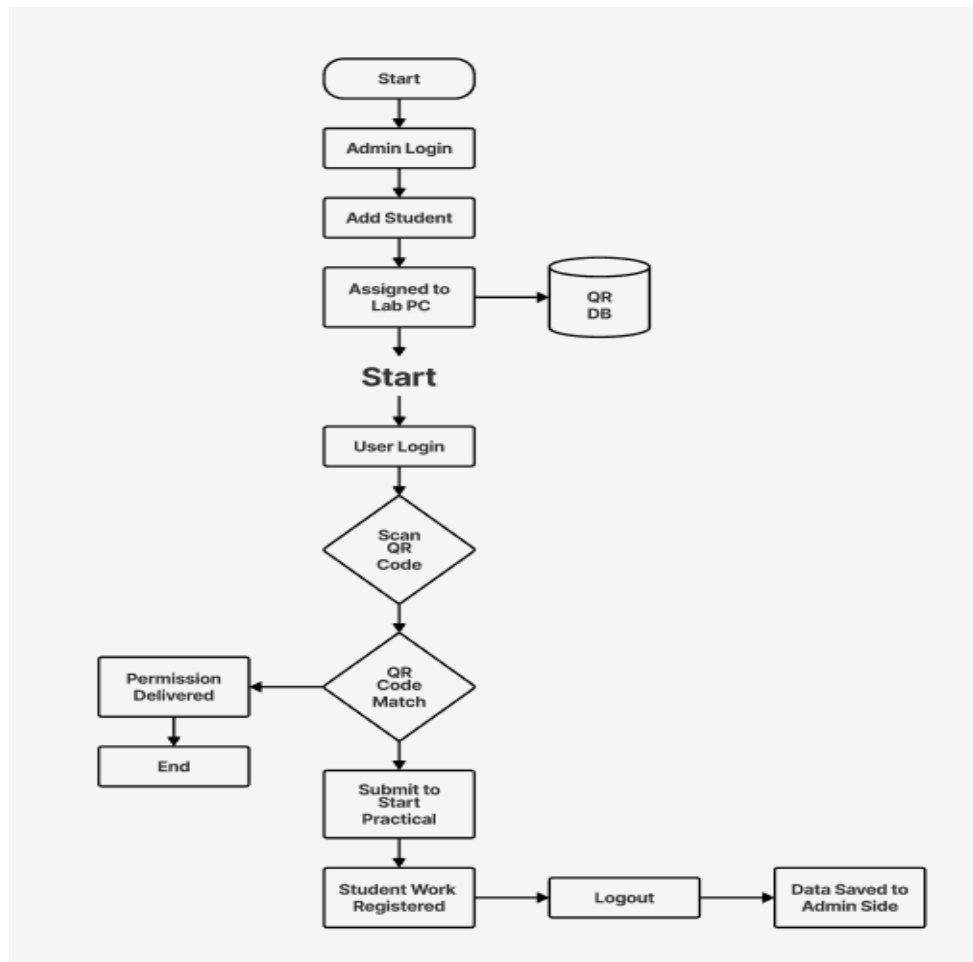


Figure 4: Conceptual design

### III. SOFTWARE & HARDWARE REQUIREMENT

Table 1 : Software Requirements

SOFTWARE	DESCRIPTION
MySQL	• System database application
Android Studio	• Operating system to run the application
Android Studio	• To develop the application
cloud.myfik.net	• As a cloud server
Sublime	• Used to edit coding of application

Table 2 : Hardware Requirements

HARDWARE	DESCRIPTION
Laptop	Intel @Core i5-5500U CPU @ 2.50ghZ 2.71GHz RAM: 16 GB OS: WINDOWS 11 • Used to develop the application
Mobile Phone	Samsung Galaxy A50 • Used to run the application • Used to scan QR Code
Portable Hard disk	WD My Passport Ultra 1 Tera • Used to store reports and projects

#### IV. Conclusion

In this chapter, conclusion about the contribution of this application and suggestion to improve the application to be better in future. QR-Code Based User Authentication For Smart lab Attendance Over Wi-Fi Network has met its objective by providing an application that can generate a new QR Code, scan and record the attendance. This project involved four phases which are the feasible study and literature review that study the previous research or works. Secondly, the design and methodology phase which includes Waterfall Model, system requirement, process model, data model, and algorithm. This period compulsory for the next step which is implementation, testing, and result. This phase involves the implementation of system design and algorithm that develop the application into a prototype. Lastly, discussion and conclusion to conclude the whole project. This project expected to help all the lecturers and students speed up the process of taking attendance in laboratory by university instructors and would save lab time and hence enhance the educational process. For the future works, this project, hopefully develops further with an addition of time scheduling for QR Code generator, profile viewer for users this application will help the community to make their life easier.

#### V. References

- [1]. Khang Jie Liew, Tee Hean Tan et.al : “QR Code-Based Student Attendance System”,2021.
- [2]. Nandang Hermanto, Nurfaizah, Wiga, Maulana Baihaqi et.al : “Implementation of QR Code and Imei on Android and Web-Based Student Presence Systems” , 2018.
- [3]. Erwin Aji Nugroho;Sumarsono Sumarsono;Eko Hadi Gunawan et.al : “Framework of the Asri Nuhi, Agon Memeti, Florinda Imeri, Betim Cico et.al : “Smart Attendance System using QR Code” , 2020Attendance System with QR Code in the Pandemic Covid-19” , 2021.
- [4]. Sangu Venkata Sai Harsith Reddy; Gadhiraaju Reddy Sekhar Raju et.al : “QR Code Based Smart Attendance System”, 2017.
- [5]. Siti Aisah Mohd Noor; Norliza Zaini; Mohd Fuad Abdul Latipl et.al: “Smart Attendance System Applying QR Code”,2018.
- [6]. Visar Shehu; Agni Dika et.al: "Attendance to Checking System Using Quick Response Code For Students At The University Of Sulaimaniyah", 2014.
- [7]. Chirag Patil, Umesha Naik, Pallavi Vartak et.al: “Online Session Security System using QRcode,OTP and IMEI”, 2017.
- [8]. A. Manori, N. Devnath, Vivek Kumar et.al: “QR Code Based Smart Attendance System”, 2017.
- [10].Visar Shehu; Agni Dika et.al: “Using real time computer vision algorithms in automatic attendance