

**QR-CODE BASED USER AUTHENTICATION FOR
SMART CLASS ATTENDANCE OVER WI-FI
NETWORK**

AFIQAHT BT AZMURI

**BACHELOR OF COMPUTER SCIENCE
(NETWORK SECURITY) WITH HONOURS
UNIVERSITI SULTAN ZAINAL ABIDIN**

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ATTENDANCE OVER WI-FI NETWORK**

AFIQA AZMURI

Bachelor of Computer Science (Network Security) with Honours

Faculty of Informatics and Computing

Universiti Sultan Zainal Abidin, Terengganu, Malaysia

DECLARATION

I hereby declare that this report is based on my original work except for quotations and citations, which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at Universiti Sultan Zainal Abidin or other institutions.

Name : Afiqah Binti Azmuri

Date :

CONFIRMATION

This is to confirm that:

The research conducted and the writing of this report was under my supervisor.

Name : Dr. Mohamad Afendee bin Mohamed

Date :

DEDICATION

First and foremost, praised be to Allah, the Most Gracious and the Most Merciful for blessing and giving me the opportunity to undergo and complete my final year project, QR Code Based User Authentication For Smart Class Attendance Over Wi-Fi Network.

I express my warm thanks to Dr. Mohamad Afendee bin Mohamed for the continuous support and guidelines in completing this project. Thank you for brainstorming the ideas along the solution together for me illustrate the main idea and help in understanding my project more. My appreciation to all member of panels for assessment for their valuable feedback and their comment on improving my project for better purpose especially during my project presentation not to mention it that helps me improve my presentation skills and my project progress.

I also would like to take this opportunity to express my heartiest gratitude to everyone who supported me throughout my final year project. I am thankful for their aspiring guidance, invaluable constructive criticism and friendly advice during the project work. I am sincerely grateful to them for truthful and illuminating views on a number of issues related to the project.

Last but not least, a lot of thanks for my beloved family and friends for never ending support and advice for brightening my spirit and encouragement for this project.

Thank you,

Afiqah binti Azmuri

ABSTRACT

Smart Class Attendance System using Quick-Response (QR Code) is a student attendance management 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 lectures in colleges and universities used manual sheet paper for class 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 class 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 lecture. 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 lecturing 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.

ABSTRAK

Sistem Kehadiran Kelas Pintar menggunakan Cepat-Response (QR Code) adalah sistem pengurusan kehadiran pelajar untuk universiti yang digunakan dengan menggunakan Kod Pantas Bertanduk, yang merupakan tanda dagangan untuk jenis kod bar matriks (atau barcode dua dimensi). Sistem ini dapat menguruskan kehadiran pelajar setiap hari. Walau bagaimanapun, kebanyakan kuliah di kolej dan universiti menggunakan kertas lembaran manual untuk kehadiran kelas. Cara ini mempunyai banyak kekurangan. Sistem rekod manual tidak cekap dan memerlukan lebih banyak masa. Lebih-lebih lagi, dengan mempunyai kertas manual untuk kehadiran, pelajar yang melangkau kelas cenderung menipu dengan meminta rakan-rakan mereka menandatangani atau menampung kehadiran mereka. Oleh itu, sistem kehadiran berdasarkan Kod Pantas Pantas dimaksudkan untuk memperbaiki sistem kehadiran manual dan karenanya tujuan makalah ini adalah untuk mengkaji semula penyelidikan yang ada. Sistem Kehadiran Kelas Pintar melaksanakan Kod Pantas Pantas untuk pelajar mengimbasnya melalui aplikasi telefon pintar khusus, yang dipaparkan untuk pelajar semasa atau pada awal setiap kuliah. Para pelajar perlu mengimbas kod untuk mengesahkan kehadiran mereka. Sistem kehadiran datang dengan sistem web dan aplikasi mudah alih, yang mana semua pelajar terpaksa memasangnya. Setelah pelajar mengimbas Kod QR, data pelajar akan secara automatik dipindahkan ke pangkalan data dan kehadiran harus direkodkan. Teknik-teknik yang kita gunakan untuk melaksanakan sistem adalah Kod QR. Oleh itu, sistem kehadiran pintar ini

akan lebih tepat berbanding dengan sistem rekod manual. Selain itu, sistem ini dapat mempercepat proses mengambil kehadiran oleh pengajar universiti dan akan menjimatkan masa pengajaran dan seterusnya meningkatkan proses pendidikan. Sebagai kesimpulan, matlamat utama kertas ini adalah untuk membangunkan sistem kehadiran yang cepat dan cekap menggunakan Kod QR.

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LIST OF ABBREVIATIONS / TERMS / SYMBOLS

QR	Quick-Response
DFD	Data Flow Diagram
ERD	Entity Relationship Diagram
FYP	Final year project
RN	Random Number
ID	Identity

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CHAPTER I

INTRODUCTION

1.1 Project Background

Regular attendance in all classes at school or university is essential to improving academic achievement. It has been compulsory for each classes in universities or colleges to take an attendance for each students. However, most of the lectures in colleges and universities used manual sheet paper for class 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 class 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, lecturers and students can saves more time in class and the attendance record would be more accurate.

1.2 Problem Statement

The problem that occurs makes this application develop which are:

- i. The manual timesheets is not efficient and requires more time.
- ii. The manual timesheets is not accurate because students can cheat by signing their friend attendance.
- iii. The manual timesheets can require more works because lecturers have to key in the data in the online system.

1.3 Objectives

Generally, the project objective is to develop the new system that can replace the older manually system such as system that using manual timesheets which is not systematic and efficient to be used in today's environment. The main objectives of this project are as follows:

- i. To study the user authentication based on QR Code.
- ii. To design and develop an application that can generate a new QR Code, scan and record the attendance.
- iii. To evaluate and testing the functionality of the application.

1.4 Project Scope

The scopes for this project are identified to make the system development process easier. The scope is divided into two which are the admin scope and user scope.

1.4.1 Admin

- i) A person acts as admin. The admin must register to use the application.
- ii) Admin need to sign in into web application.
- iii) Admin can generate a new code for each subject.

1.4.2 User

- i) A person act as user. The user needs to register to use the application.
- ii) The user needs to sign in into android application.
- iii) The user can scan the QR Code for the attendance.

1.5 Limitation of Work

There are several limitations that occurred throughout the development of the system. This application has very limited functionalities.

- i. This application cannot view the history of the scanning attendances.
- ii. This application need Wi-Fi for performing client server process and

QR Code scanning process.

1.6 Report Organization

This report is divided into 5 chapters. Each chapter will represent every step taken and matters relating to the completion of the application. Chapter 1, Introduction are discussing about the project background and the problems that occur in the existing system. The objectives and the scopes of the new application that will be builds are also explained in this chapter.

In Chapter 2 of Literature Review, it describes the research about the existing system. Basically, the difficulties and other problems are analysed for improvements. Methods, techniques, equipment, and appropriate technologies are studied to develop the application.

Chapter 3 are discussing about the methodology to be used in the project. The methodology will be act as a guide for the development process and also helps to make sure the project will runs smoothly as planned. In this chapter also include system requirement and specification that will be used to assist the development of the project. Furthermore, in this chapter also have system design and modelling, the flow of the application that will represent in the form of figures such as context diagram, and data flow diagram. System framework also will be shown here.

Chapter 4 involves implementation and testing whereby the application being developed and implemented the method or algorithm and the process testing the application. . In this section there are few screenshots of the project. The test case also provide in this chapter.

Lastly, chapter 5 which is conclusion and discussion. In this section, the result will be discussed, and the conclusion was made. This section also describes the achievement of the expected results, expectations and suggestion for improvement and enhancement to the results of the proposed project.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

This section discusses and portrays about literature review for Smart Class Attendance System Using Quick-Response Code that being developed. A literature review is about past research or recent research or what need to search or seek the truth for the purpose portraying or illustrate the research problem, solutions and the importance of seeking a solution. A literature review is not about information gathering. In a given subject or chosen topic area, the literature review shows in-depth grasp and summarize prior research that linked to the research subject. Literature review involves the process of reading journal, articles, books and research paper and later on analysing, summarize and evaluate the reading based on connection to the project. It is a guideline for establishes the credibility for the better project.

2.2 QUICK-RESPONSE CODE

2.2.1 Online Session Security System Using QR Code, OTP and IMEI

This paper [1] propose to use a QR code, an open source confirmation of-idea verification framework that uses a two-figure authentication by joining a secret key and a camera prepared cell phone, going about as a confirmation token. The code is scan with the QR code scanner of cell phone. Examining result produce one string which is the mix of IMEI number of a telephone which is enlist by the client and the arbitrary number, where irregular number is created by the arbitrary number capacity.

2.2.2 A Students Attendance System Using QR Code

This paper [2] proposes a system that is based on a QR code, which is being displayed for students during or at the beginning of each lecture. The students will need to scan the code in order to confirm their attendance. The paper explains the high level implementation details of the proposed system. It also discusses how the system verifies student identity to eliminate false registrations by using face detection and GPS location.

2.3 USER AUTHENTICATION

2.3.1 A New Two Factor Authentication Scheme Using QR-Code

This paper [3] discusses ‘2CAuth’ a new two factor authentication scheme that enhances secure usage of application information and preserves usability, without sacrificing user’s privacy. A significant feature of the scheme is that it does not call for any synchronization between Mobile Network Operator (MNO) and users. The analysis of the scheme clearly brings out its effectiveness in terms of its usability even at times of peak loads on mobile networks. The scheme has the dual advantage of carrying out the verification of transactions which involve the physical presence of the user as well as those to be done in his absence.

2.3.2 Security Analysis Of Mobile Authentication Using QR-Codes

According to this paper [4], the QR-Code authentication system using mobile application is easily implemented in a mobile device with high recognition rate without short distance wireless communication support such as NFC. This system has been widely used for physical authentication system does not require a strong level of security. The system also can be implemented at a low cost. However, the system has a vulnerability of tampering or counterfeiting, because of the nature of the mobile application that should be installed on the user’s smart device. In this paper we analyze the vulnerabilities about each type of architectures of the system and discuss the concerns about the implementation aspect to reduce these vulnerabilities.

2.3.3 Online Banking Authentication System using Mobile-OTP with QR-code

In this paper[5], they propose a new Online Banking Authentication system. This authentication system used Mobile OTP with the combination of QR-code which is a variant of the 2D barcode. This is because in their problem statement, the use of electronic banking services is increased gradually in daily life and existing online banking required the usage of security card from each bank which does not match modern mobile environment because we do not know when and where online banking will be used. If there is emergency situation to do online banking, the online banking cannot be done without the security card. In order to overcome such discomfort of security card, online banking authentication system using 2D barcode instead of security card is proposed. The bank generates the QR-code using user input transfer information and then user need to recognize as to read the code using their mobile phone, after generate the OTP code using transfer information and the hashed user's mobile device number in their mobile phone. Finally, terminate the transfer by user typing of generated OTP code on the screen.

2.4 WI-FI NETWORK

2.4.1 Fast Wi-Fi Setup Using QR Code & NFC

The purpose of this project in this paper[6] was to configure a smart phone to a given Wi-Fi network using NFC tags and QR Code. In this thesis, the methodology of both

technologies, NFC and QR Codes, is discussed. Near Field Communication (NFC) is a recent technology with many applications. Most of recently released smart phones have a built in NFC reader/writer chip, allowing them to write and read an NFC tag. In this project Adafruit's PN532 NFC/RFID controller breakout board and Mbed LPC1768 microcontroller were used to communicate with an NFC capable smart phone in Peer-to-Peer mode. QR Codes are 2dimensional barcodes developed for holding more information than basic barcodes. In this thesis Wi-Fi network information is encoded to QR Code and displayed on an E-paper display. A library developed by Fukuchi Kentaro was used for encoding the Wi-Fi data. Later the displayed QR Code was scanned with a Samsung Galaxy s4 phone to establish a Wi-Fi connection.

2.5 SUMMARY OF LITERATURE REVIEW

Table 2.5.1 Summary of Literature Review

NO	AUTHOR/ YEAR	TITLE	OBJECTIVE	METHOD	DESCRIPTI ON
1	Chirag Patil1, Umesh Naik2 & Pallavi Vartak3	Online Session Security System Using QR Code, OTP and IMEI	To have the capacity to get to the administrations in the most secured way	-QR Code -One-Time Password -IMEI	- utilizing a two variable confirmation: read a QR code and a secret key,

	2017				IMEI.
2	Fadi Masalha, Nael Hirzallah 2014	A Students Attendance System Using QR Code	To speed up the process of taking attendance by university instructors	-QR Code -A-GPS	-proposed a way to automate this process using the students' devices rather than the instructor's device.
3	Mete Eminagaoglu, Ece Cini, Gizem Sert, Derya Zor 2014	A Two-Factor Authentication System with QR Codes for Web and Mobile Applications	To design and implement an alternative two-factor identity authentication system by using QR Codes.	-QR Code -Two-Factor Authentication -One-Time Password	Application that have relevant mechanism and process that could be more user-friendly and practical than OTP.
4	Siwon Sung, Joonghwan	Security Analysis Of Mobile Authentication	-Analyze the vulnerabilities about each type	-QR Code Authentication System	This paper is discuss the concerns

	Lee, Jinmok Kim, Jongho Mun & Dongho Won, 2015	Using QR-Codes	of architectures of the system		about the implementati on aspect to reduce these vulnerabilitie s.
5	Young Sil Lee, Nack Hyun Kim, Hyotaek Lim, HeungKuk Jo, Hoon Jae Lee, 2010	Online Banking Authentication System using Mobile-OTP with QR-code	To propose a new Online Banking Authentication system	-Mobile OTP -QR Code	This paper propose new authenticatio n system for online banking can provide greater security and convenience by using mobile OTP with the QR- code
6	Fenot Hailemicha el,	Fast Wi-Fi Setup Using QR Code & NFC	The purpose of this project was to configure a	-QR Codes -NFC	This paper is discuss about how QR

	2014		smart phone to a given Wi-Fi network using NFC tags and QR Code.		Codes can be generated and used to establish Wi-Fi network communication
7	ViSolve Marketing Team 2011	Implementation of One-Time Password (OTP) Two-Factor Authentication System	- to generate and validate the password	- Authentication -OTP	This paper explains two-factor authentication compatible with password based infrastructure

2.5.1 SUMMARY

In this chapter, it discusses the existing research and paper related to my project. Few of research related to the QR Code, authentication and algorithm will be discussed which is provides guidelines, approach, and ideas to work on the current project. This chapter highlight the important part of each research and feasible study. References from this studies are clearly stated in the reference list. From this literature review, the enhancement and improvement will be made.

CHAPTER 3

METHODOLOGY

3.1 INTRODUCTION

In this chapter, it will describe the application more clearly with the methodology being used in this project. The methodology used in researching and developing the project are stated. The steps in the methodology will be further explained and concluded. Besides that, the hardware and software requirements needed for project development will be list and briefly explained. The project methodology should be organized in a scientific investigation to solve problems, hunting for facts or truth about the subject to make sure this project complete and working well. It is an important step of development since it will guide researcher through software development. In order to plan a good project, it should start with a good understanding on user requirement. The nature of the problem is studied and related idea of the knowledge is identified. On a phase in every development process

which steps in waterfall model involve requirement analysis, system design, implementation, testing, deployment, and maintenance. Requirement Analysis is the process of gathering the data and requirement can be done by existing studied system or related documentation of system, through journal, articles and literature review.

Meanwhile system design is the design of the system involves the Context Diagram (CD), Data Flow Data (DFD) and Entity Relationship Diagram (ERD). In other hands, implementation is where this phase is the phase where the system started developed in small programs called units, which are integrated into the next phase or step. In this phase, the developing and testing application occurs, the system or application being tested or evaluate after the implementation phase completed. Deployment at this phase, In this chapter, it will describe the flow of the application more clearly with the methodology being used in this project. The methodology is the description in the thesis to achieve the object which is describing the way doing or the design for carrying out research or the development of a procedure. The methodology is used to ensure the systematic process of developing the project and perform a theoretical analysis of the methods applied to a field of studies. On a phase in every development process which steps in waterfall model involve requirement analysis, system design, implementation, testing, deployment, and maintenance. Requirement Analysis is the process of gathering the data and requirement can be done by existing studied system or related documentation of system, through journal, articles and literature review. Meanwhile system design is the design of the system involves the Context Diagram (CD), Data Flow Data (DFD) and Entity Relationship Diagram (ERD). In other hands, implementation is where this phase is the phase where the system started developed in small programs called units, which are integrated into the next phase or step. In this

phase, the developing and testing application occurs, the system or application being tested or evaluate after the implementation phase completed. Deployment at this phase, after the testing phase, is completed which are include the functional and non functional testing and finally maintenance which evaluates the potential for added enhancement and measure the effectiveness of the system.

3.2 SOFTWARE & HARDWARE REQUIREMENT

This section will show the list of all software and hardware that involved in the development process.

3.2.1 Hardware Requirement

Table 3.2.1.1 Hardware Requirement

HARDWARE	DESCRIPTION
Laptop	Intel @Core i5-7200U CPU @ 2.50ghZ 2.71GHz RAM: 8 GB OS: WINDOWS 10 <ul style="list-style-type: none"> • Used to develop the application
Mobile Phone	Asus Zenfone Laser 2 5.0 <ul style="list-style-type: none"> • Used to run the application • Used to scan QR Code
Portable Hard disk	WD My Passport Ultra 1 Tera <ul style="list-style-type: none"> • Used to store reports and projects
Flash drive	Strontium Pollex 4GB <ul style="list-style-type: none"> • Used to store reports and projects

3.2.2 Software Requirement

Table 3.2.2.1 Software Requirement

SOFTWARE	DESCRIPTION
MySQL	<ul style="list-style-type: none">• System database application
Android 6.0.1	<ul style="list-style-type: none">• Operating system to run the application
Android Studio	<ul style="list-style-type: none">• To develop the application
cloud.myfik.net	<ul style="list-style-type: none">• As a cloud server
Notepad++	<ul style="list-style-type: none">• Used to edit coding of application

3.3 SYSTEM DESIGN

In the system design, the flow of the system is organized to enable the system development will progress smoothly and efficiency. The way of the system functioning is drawn in the diagram to make clear understanding of the each process of the system during the development phase.

3.3.1 Data Communication Design

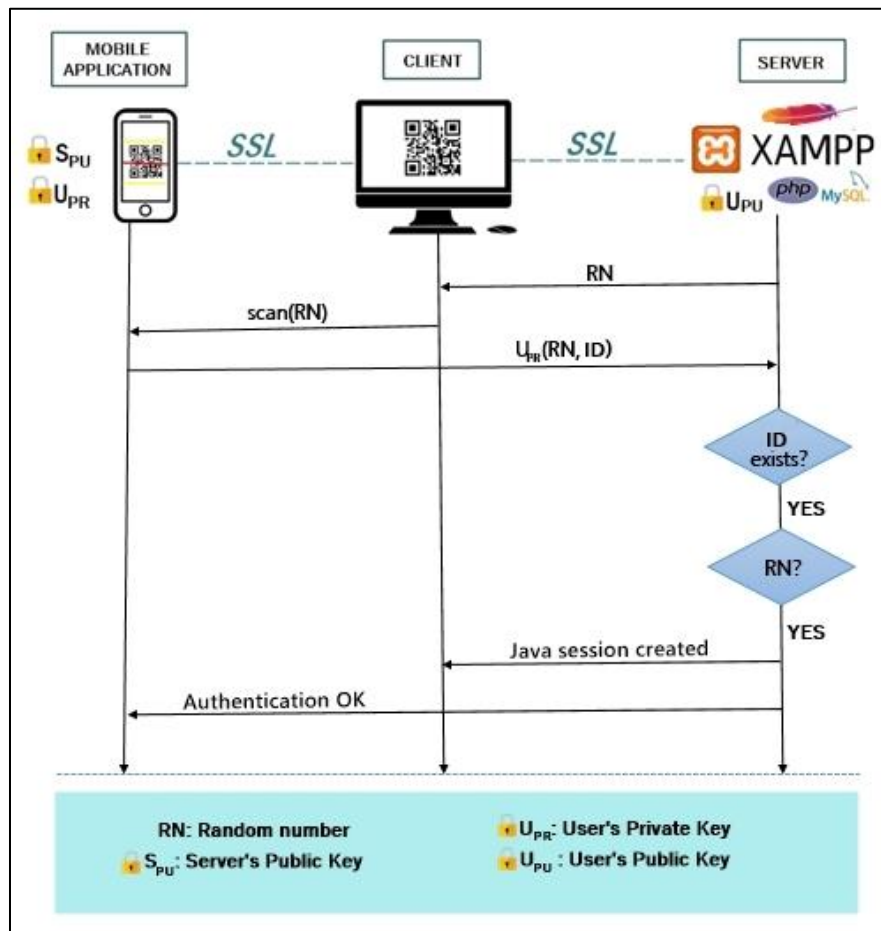


Figure 3.3.1.1 Data communication Diagram

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.

3.3.2 Data Flow Diagram (DFD Level 0)

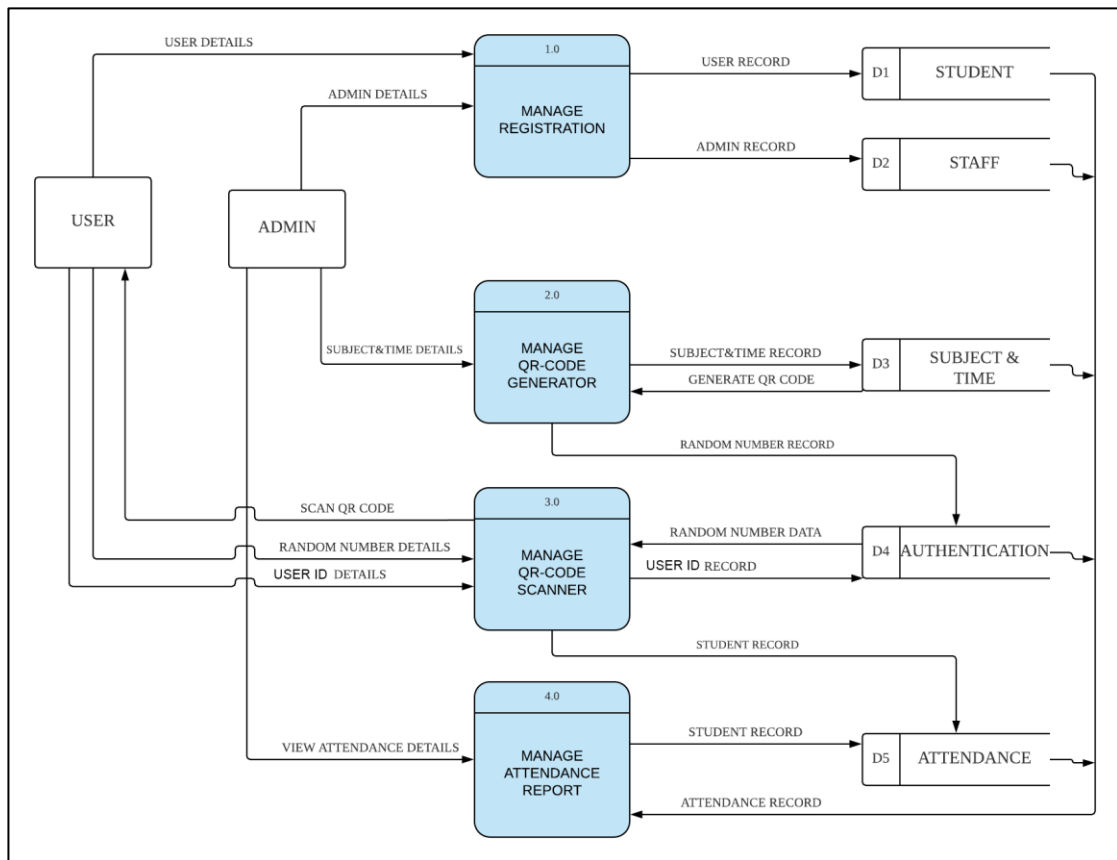


Figure 3.3.2.1 Data Flow Diagram Level 0

Figure 3.3.2.1 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.

3.3.3 Data Flow Diagram (DFD Level 1)

i) Manage QR Code Generator

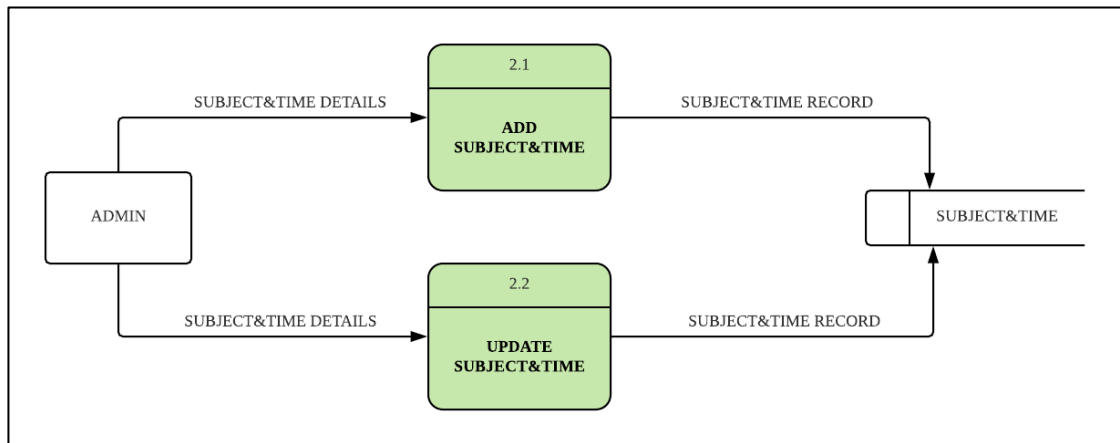


Figure 3.3.3.1 Data Flow Diagram Level 1(2.0)

Based on the figure above, it shows the DFD level 1 for QR Code Generator that will allows admin to add and update subject & time.

i) Manage QR Code Scanner

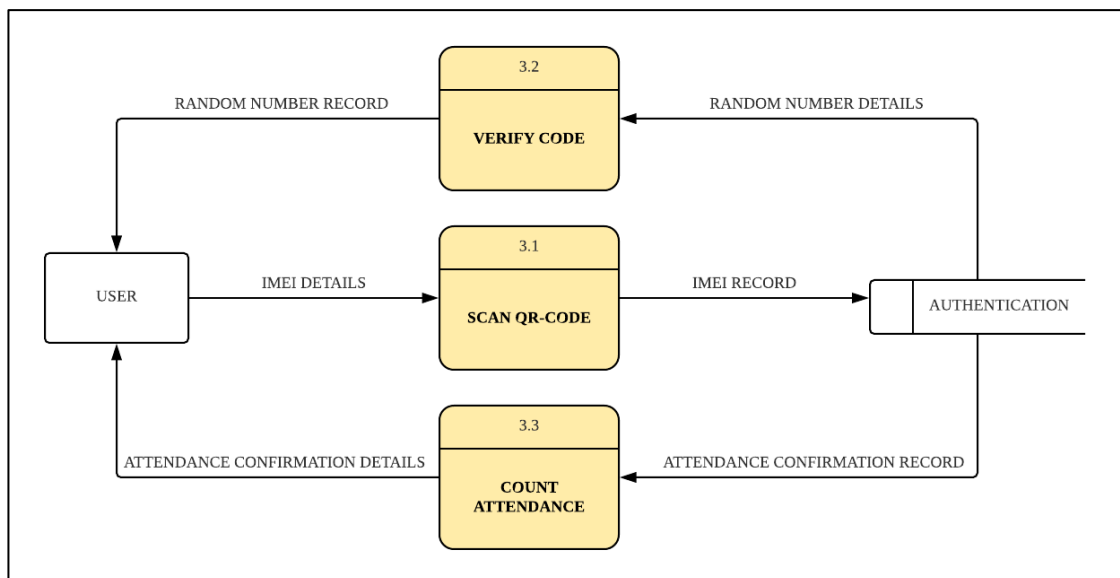


Figure 3.3.3.2 Data Flow Diagram Level 1(3.0)

Figure 3.3.3.2 shows DFD for Manage QR Code Scanner allows user to scan QR Code when user gets the code verification from server. Then, server will count the attendance if the process authentication is successful

3.3.4 Entity Relationship Diagram(ERD)

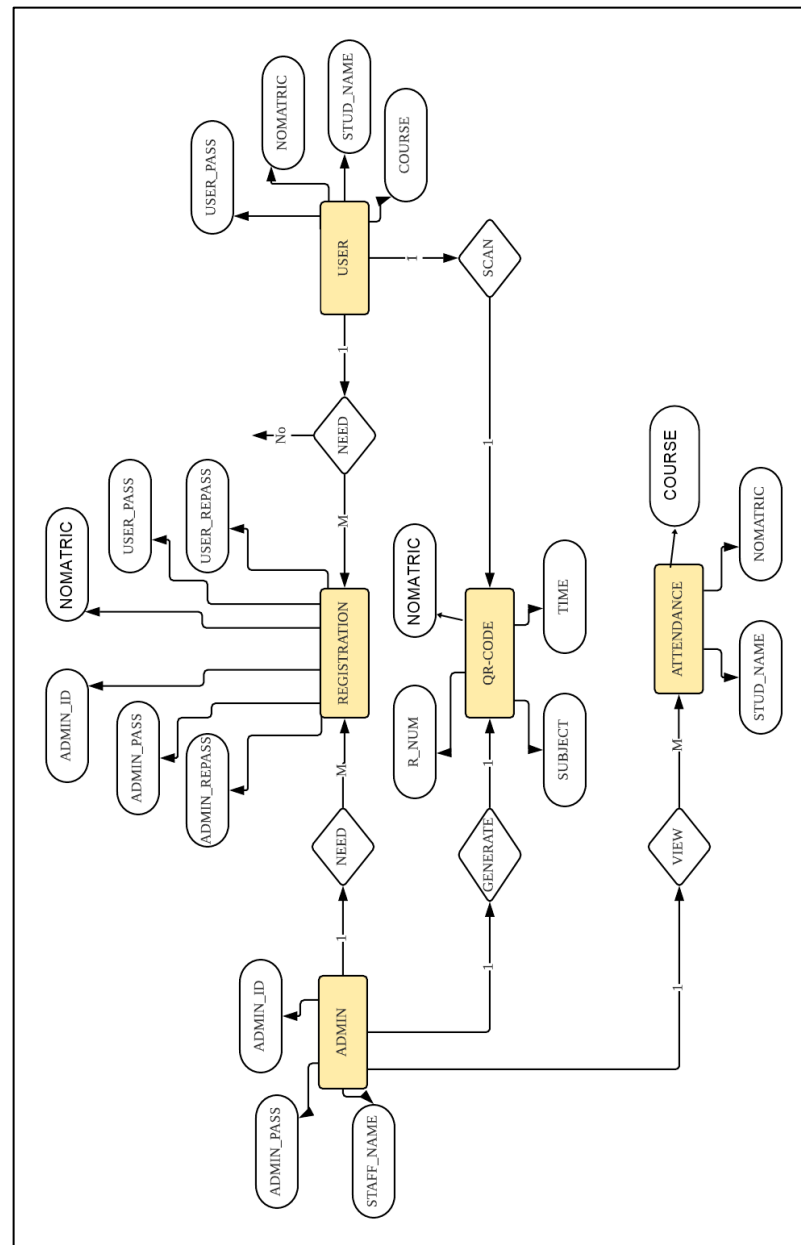


Figure 3.3.4.1 Entity Relationship Diagram

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

3.4 ALGORITHM

3.4.1 Quick-Response Code

For this project, the algorithm used is Quick-Response Code. A QR code is an extraordinary kind of standardized tag that can encode data like numbers, letters, and Kanji characters. The QR code organization was made in 1994 by Japanese organization Denso-Wave, which is a subsidiary of Toyota that manufactures auto components. The standard is characterized in ISO/IEC 18004:2006.

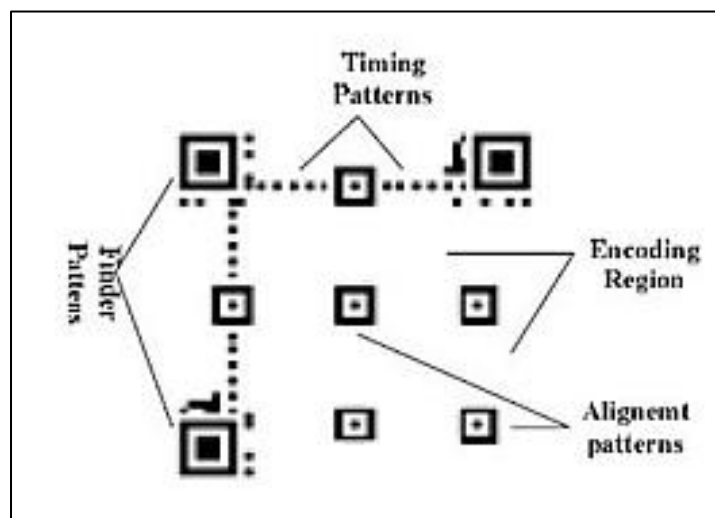


Figure 3.4.1.1 Structure of QR Code

A QR-code picture contains a useful example and an encoding area as can be found in Figure 3.4.1.1. The patterns included in a QR-code image are finder, alignment, timing, and separator patterns. Each of these patterns has its own functionality.

1. **Finder pattern:** This pattern can be found at the edges of a QR code picture. The finder pattern is a square that contains that contains a dark square. There are three finder pattern on each QR code picture; at the upper left, upper right, and base left. There isn't finder pattern at the base right. The essential usefulness of the finder

pattern is to tell a scanner or decoder that the picture that has been encoded as a QR-code picture. No information is put away in the finder pattern.

2. **Alignment pattern:** This alignment pattern provides information scanner devices to correctly position the data stored in the encoded data region, thus, there is no data stored in the alignment pattern. The arrangement design is situated between encoded information and is normally in the focal point of the picture. The structure of this example comprises a little square with a small speck inside. In addition, the number of alignment patterns can vary for various QR codes.

3. **Timing pattern:** This pattern lies between two finder patterns. Timing patterns are organized each vertically and horizontally. There is a black dot inside every timing pattern. The foremost cause of the timing pattern is to correct the central coordinate for every information cell when any distortion takes place for the duration of decoding of symbols or when an error is located in any cell pitch in the QR code. No information is saved in the timing pattern.

4. **Encoded data:** This pattern is positioned at the middle of the image. Data is stored inside this pattern. In addition, when information is inserted, it is converted to binary data. This binary information is converted lower back to the ordinary text when the picture is decoded by means of a scanner.

QR Code structure is very essential to for encoding and decoding QR Code because this is the major elements of the process. Next, there are a various version of QR Code

from version 1 until version forty Each model has a distinct module configuration or quantity of modules.

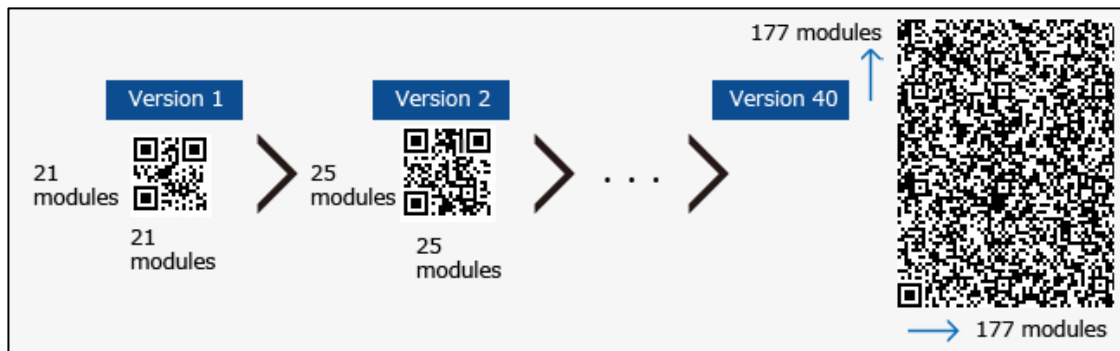


Figure 3.4.1.2 Versions of QR Code

Module configuration refers to the variety of modules contained in a symbol, starting up with Version 1 (21 row and 21 column) up to Version 40 (177 row and 177 column). Each version thereafter will increase by way of four rows and four columns. The greatest version is version 40 with outcomes in the 31,329 needed to encode the 3kb of data.

The QR code standard has four modes for encoding text: numeric, alphanumeric, byte, and Kanji.

1. Numeric mode is for decimal digits zero thru 9.
2. Alphanumeric mode is for the decimal digits 0 thru 9, as nicely as uppercase letters (not lowercase!), and the symbols (\$, %, *, +, -, ., /, and :) as nicely as a space. All of the supported characters for alphanumeric mode are listed in the left column of this alphanumeric table.
3. Byte mode is for characters from the ISO-8859-1 character set. However, if UTF-8 is used in byte mode, some QR code scanners can notice automatically.

4. Kanji mode is for double-byte characters from the Shift JIS persona set. While UTF-8 can encode Kanji characters, it must use three or 4 bytes to do so. Shift JIS, on the other hand, uses just two bytes to encode every Kanji character, so Kanji mode compresses Kanji characters extra efficiently. If the complete enter string consists of characters in the double-byte range of Shift JIS, use Kanji mode. It is also possible to use a couple of modes within the identical QR code.

Next, the maximum character storage capacity is 40-L which represents for version 40 and has low error correction level. All the character refers to individual values of the input mode or datatype.

Table 3.4.1.1 QR Code Storage

Input Mode	Max. characters		Bits/char	Possible characters, default encoding
Numeric	7089		$3_{1/3}$	0, 1, 2, 3, 4, 5, 6, 7, 8, 9
Alphanumeric	4296		$5_{1/2}$	0-9, A-Z(upper-case only), space, \$, %, *, +, -, ., /, :
Binary/byte	2953		8	ISO 8859-1
Kanji/kana	1817		13	Shift JIS X 0208

In addition, a QR code encodes a string of text. Each encoding mode has a four-bit mode indicator that identifies it. The encoded records must start with the suitable mode indicator that specifies the mode being used for the bits that come after it. The following table lists the mode indications for every mode. For example, if encoding HI QR CODE in alphanumeric mode, the mode indicator is 0010.

Table 3.4.1.2 QR Code Indicator

Mode Name	Mode Indicator
Numeric Mode	0001
Alphanumeric Mode	0010
Byte Mode	0100
Kanji Mode	1000

The format information records two things: the error correction level and the mask pattern used for the symbol. For this project, QR codes use Reed-Solomon error correction. This process creates error correction code words (bytes) based totally on the encoded data. A QR code reader can use these error correction bytes to determine if it did not study the records correctly, and the error correction code words can be used to correct those errors. There are four levels of error correction: L, M, Q, H. The following table lists the stages and their error correction capabilities.

Table 3.4.1.3 Error Correction Level

Error Correction Level	Error Correction Capability(%)
L (Low)	Recovers 7% of data
M (Medium)	Recovers 15% of data
Q (Quartile)	Recovers 25% of data
H (High)	Recovers 30% of data

The higher the error correction level, the larger the QR code will have to be that require more bytes.

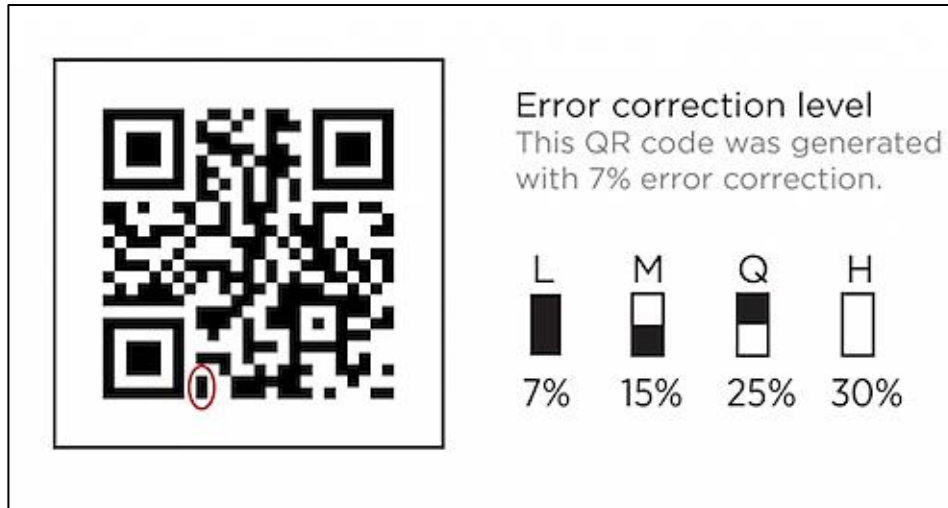


Figure 3.4.1.3 Error Correction Level Position

Based on figure 3.4.1.3, it shows the position of error correction level was placed on QR Code. White box represents bit 0 while black box represents bit 1.

In data masking, a mask pattern modifications which modules are dark and which are light according to a particular rule. The reason of this step is to adjust the QR code to make it as handy for a QR code reader to scan as possible. If a module in the QR code is "masked", this virtually means that if it is a light module, it be modified to a dark module, and if it is a darkish module, it have to be changed to a light module. In other words, covering truly skill to toggle the colour of the module. The QR code specification defines eight masks patterns that can be utilized to the QR code.

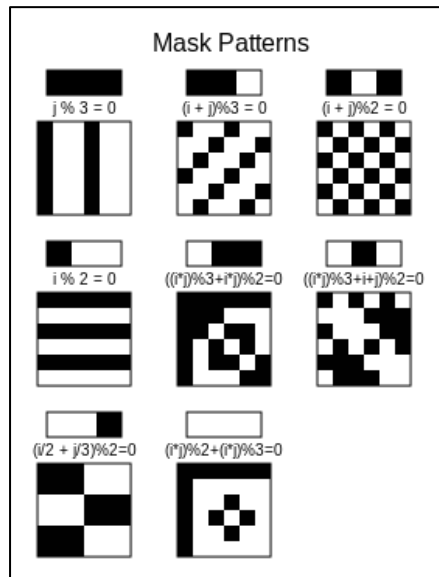


Figure 3.4.1.4 Mask Patterns

Figure 3.4.1.4 shows eight types of masking pattern. Mask patterns have to solely be applied to records modules and error correction modules. In other words, function patterns such as finder patterns, timing patterns, separators and alignment patterns are not enable to be mask. Same goes to masks reserved areas such as structure facts region and version data area. After a masks pattern has been utilized to the QR matrix, it is given a penalty score primarily based on four evaluation conditions that are described in the QR code specification. A QR code encoder ought to follow all eight mask patterns and consider every one. Whichever masks sample consequences in the lowest penalty rating is the masks pattern that need to be used for the last output.

In summary, QR codes are generated with the following steps. First, decide which encoding mode to use and encode the data. Then, generate error correction codewords and place the information and error correction bits in the matrix. Next, practice the masks patterns and decide which one consequences in the lowest penalty. Last but not least, add layout and version information.

3.5 SUMMARY

In this chapter, the methodology chosen is Waterfall Model which is suitable for my project. System requirement includes hardware and software which are needed and fulfills the project requirement. Android studios as a platform to develop an application. Java Language is the universal language used in this project. System Design is fundamental in building the project to more clear about the system. This project accompanied by documentation for each requirement, which enables to review it for validation.

CHAPTER 4

RESULT & DISCUSSION

4.1 IMPLEMENTATION AND OUTPUT

This chapter discusses about the implementation, deployment, and result of the entire application after being developed. The implementation process is must need a method to carry out, execute the project after the system design. The system being implemented into a real prototype or integrate software based service for the end-user. After implementation, the system testing is executed to test the whole system for the functionality and credibility of the system being developed. In this process, the algorithm or technique being applied along with the development of the application.

4.1.1 Deployment and Configuration

In this stage, the deployment takes place on deploy the system requirements to enable development of this project. The hardware requirement being setup and testing either it suitable and compatible with the project requirement. The process conducted by allowing the virtualization for Intel Core i5 which allows android is

running with better graphics and virtualize the emulator. The process deployment of cloud.myfik.net as a web server, PHPMyAdmin, and MySQL that need to configure and deploy to develop an application. Configuration and deployment of QR Code Scanner being implement into Android Studios by using JAVA language and connect with PHP for comparison process to authenticate the user. The process conducted involving software and hardware requirement based on system design to ensure all meet the expectation.

4.1.2 Interfaces

The interfaces are a central part of android development application whereby shows the flow of interfaces on an application.

4.1.2.1 Managed Staff

a) Login Page Admin

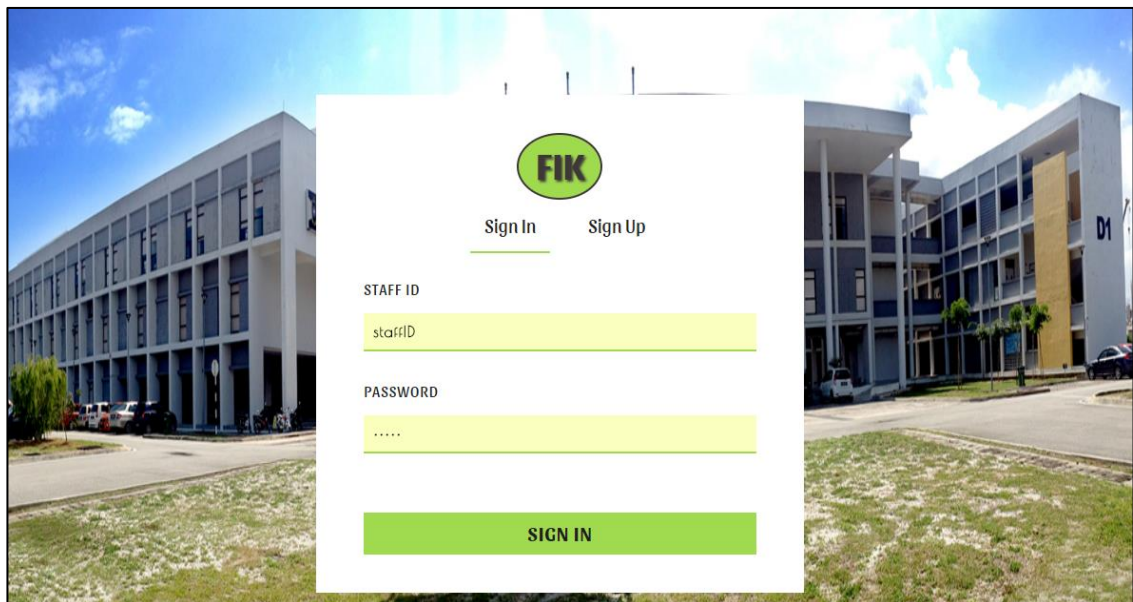


Figure 4.1.2.1a Login Form

The figure shows the login form for the Attendance System. The menu consists of two field that mandatory for user to fill Staff ID and Password field. System will check whether the user is authorized or not.

b) Register Page Admin

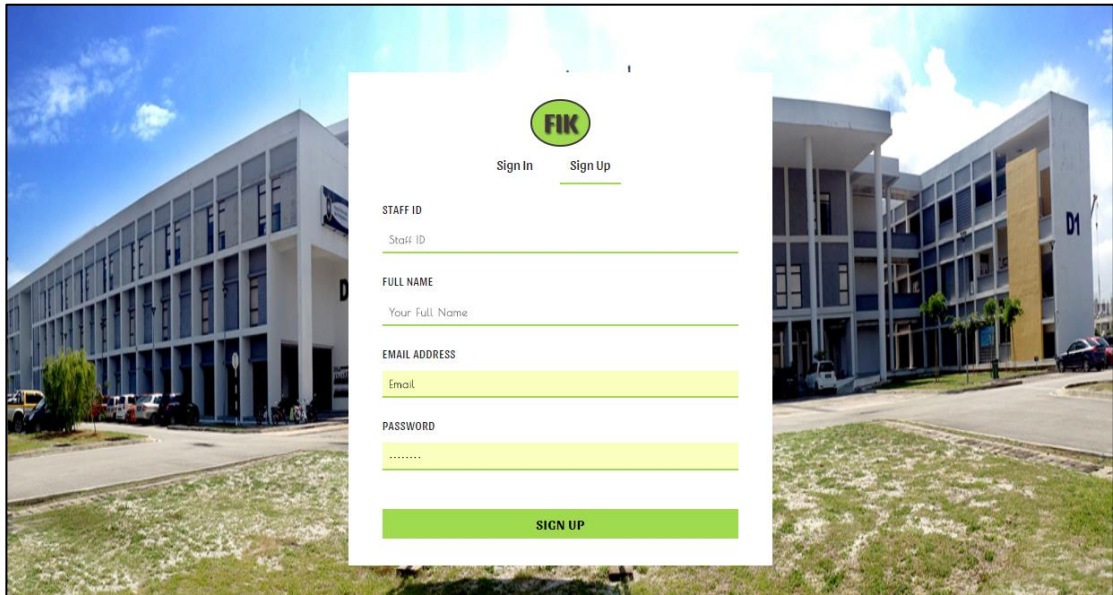
The image shows a registration form overlay on a background of a modern building. The form is white with a green border. At the top, there is a green circular logo with the letters 'FIK' in white. Below the logo, there are two links: 'Sign In' and 'Sign Up', with 'Sign Up' being underlined. The form contains four input fields: 'STAFF ID' with a placeholder 'Staff ID', 'FULL NAME' with a placeholder 'Your Full Name', 'EMAIL ADDRESS' with a placeholder 'Email', and 'PASSWORD' with a placeholder '.....'. At the bottom of the form is a green button with the text 'SIGN UP' in white.

Figure 4.1.2.1b Registration Form

The figure shows the registration form for the Attendance System. The form consists of four fields that mandatory for user to fill. It has Staff ID, Full name, Email and Password. System will check if the username is already exist in the database before register the new user. After user fill the form and click the Sign Up button it will direct the user to the login page.

c) Main Page Admin



Figure 4.1.2.1c Home Page

Figure 4.1.2.1c shows the Attendance System home page after the user login. The system consists of four sub menu in navigation bar. The sub menu is Home, QR Code Generator, View Attendance and Logout. Each of this sub menu have it own function in the system.

d) QR Code Generator Admin


Attendance System QR-Code Generator		
		
Date: <input type="text" value="07/08/2018"/>		
Subject: <input type="text" value="CSN15305"/>		<input type="button" value="GENERATE"/>
No	Name	Code
1	Database	CSN15305
2	Network Programming	CSB31322
3	Network Analysis	CSS13102
4	Multimedia	CSE12312
5	Theory Science Computer	CSN13214
<input type="button" value="Back"/>		

Figure 4.1.2.1d QR Code Generator Page

Figure 4.1.2.1d show the menu for QR Code Generator of the Attendance System. In this page, lecturer can generate the date of the class schedule and subject code in the QR Code.

e) View Attendance

UNISZA		HOME QR CODE VIEW ATTENDANCE LOGOUT			
No	Subject	Name	No matric	Course	Date/Time
1	CSB31322	Nur Zarith Akilla	040251	ISMKRK7	2018-08-04 14:26:41
2	CSB31322	Aina Nor Syakila	040508	ISMKRK7	2018-08-04 14:30:32
3	CSN15305	Sara Ayuni	040333	ISMKRK7	2018-08-05 02:29:10
4	CSN15305	Nurul Syafawani bt Baharom	040511	ISMKRK7	2018-08-05 03:10:55

Figure 4.1.2.1e View List of Attendance

The figure above shows the list of student attendance that are already scanned the QR Code by using the FIK mobile application. This page will show the attendance table consists of subject code, name, matric number and course. It also display the date and time scanned by students.

4.1.2.2 Managed Student

a) User Login Page

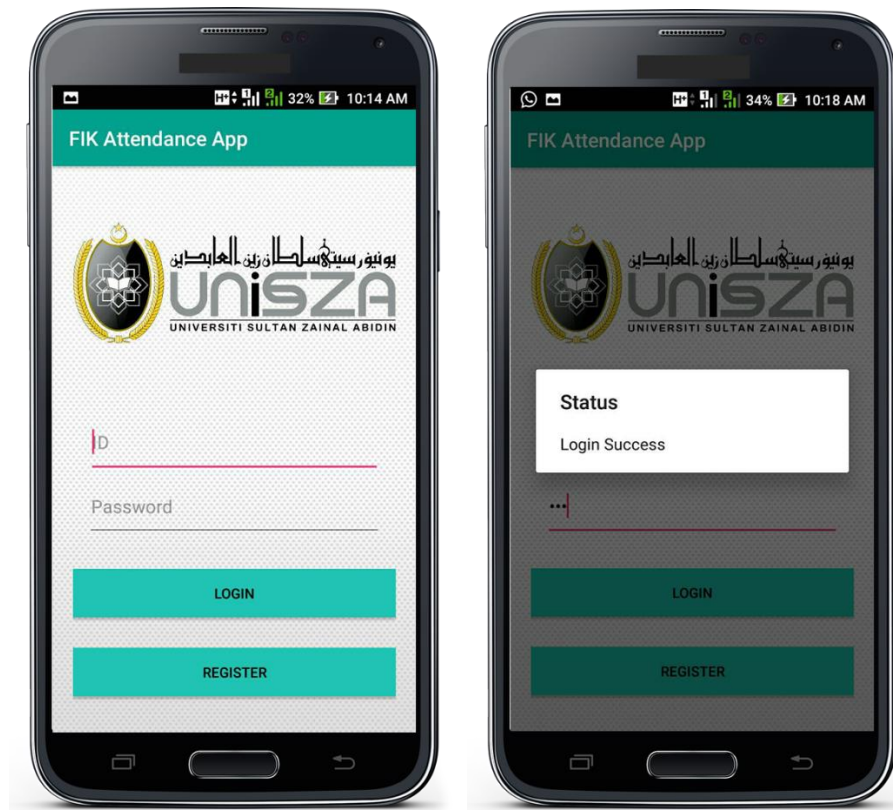


Figure 4.1.2.2a Login Page QR Code Attendance Application

The figure shows the login interface for user, In order to login into the system they need to enter their student matric number and password that has been registered. If the user did not have the account, they have to register first. They need to click the register button in order to do the registration process.

b) User Registration Page

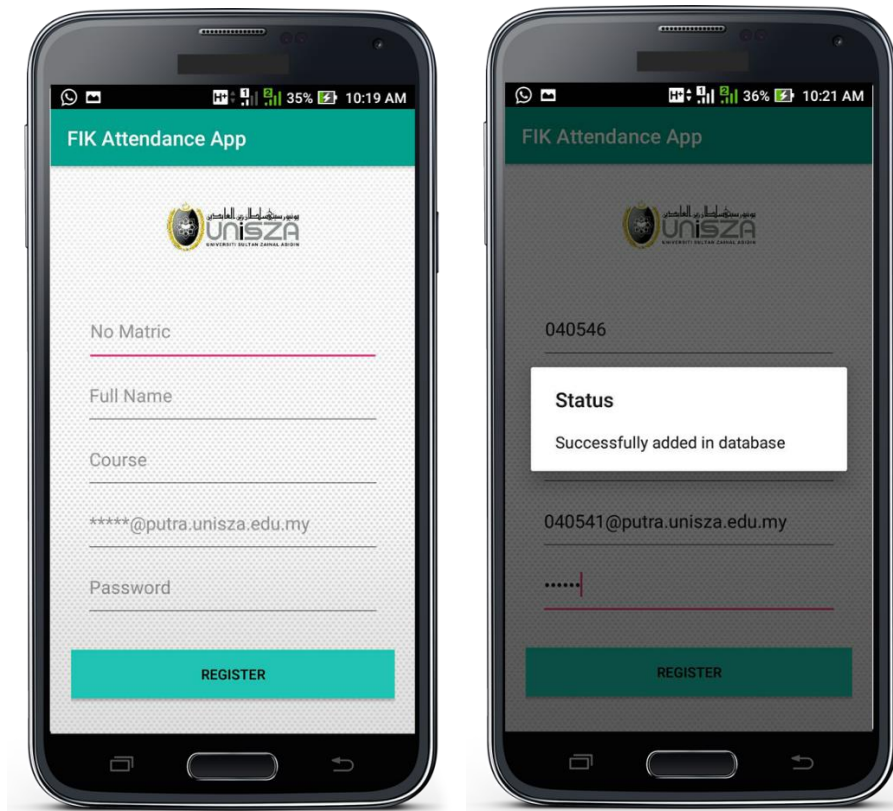


Figure 4.1.2.2b Registration Page QR Code Attendance Application Based

The figure shows the registration form that allows the admin to register themselves into the database. They need to fill up the field and click register. When the details have been stored in the database, they can login and access the system. Thus, registration process is a compulsory for this application.

c) User Main Page

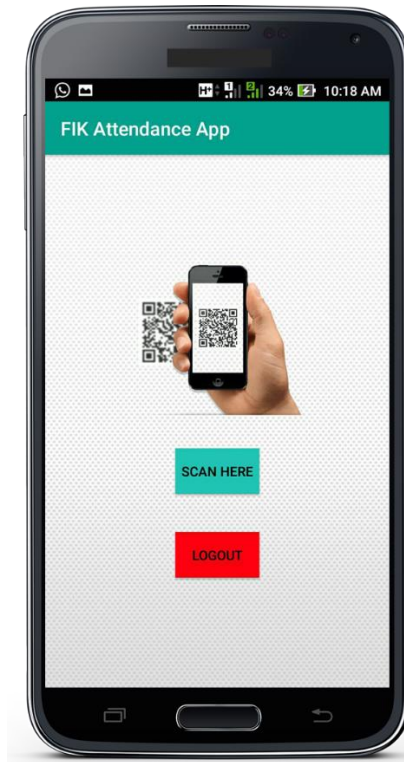


Figure 4.1.2.2c Main Page QR Code Attendance Application Based

Based on figure above, after User successfully login the application, they will direct to user's main menu. In this main page, there are two modules which are for QR Code Scanner and logout session.

d) QR Code Scanner

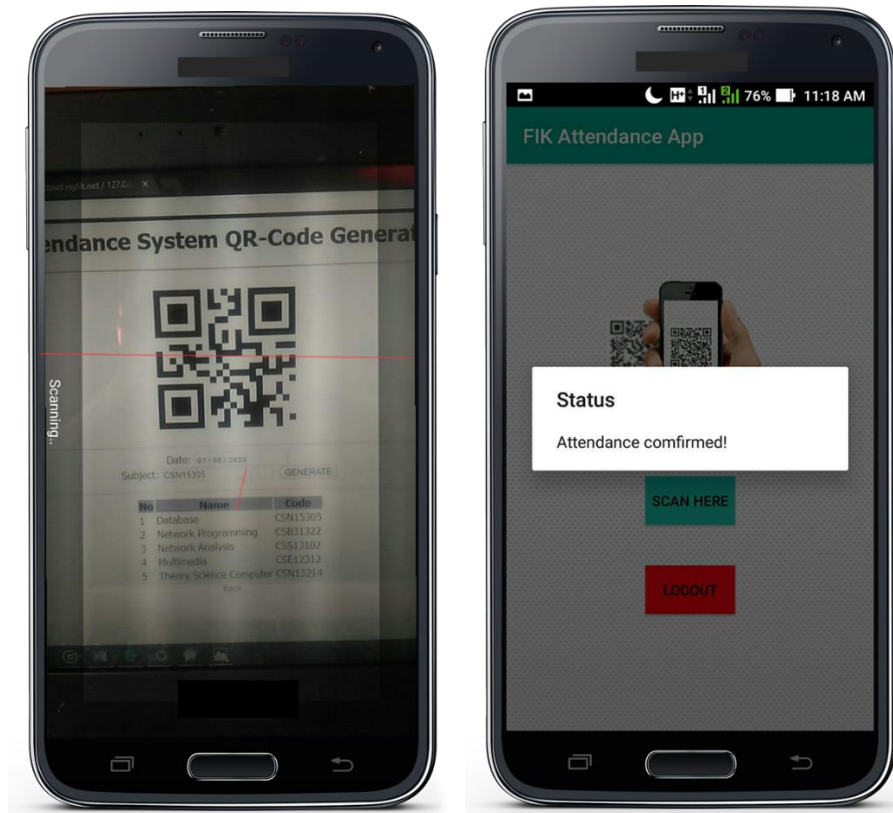


Figure 4.1.2.2d QR Code Scanner Attendance Application Based

Figure 4.1.2.2d shows the scanning process of the QR Code for the attendance. If the attendance is success, it will display alert box contains 'Attendance confirmed!'.

e) User Logout

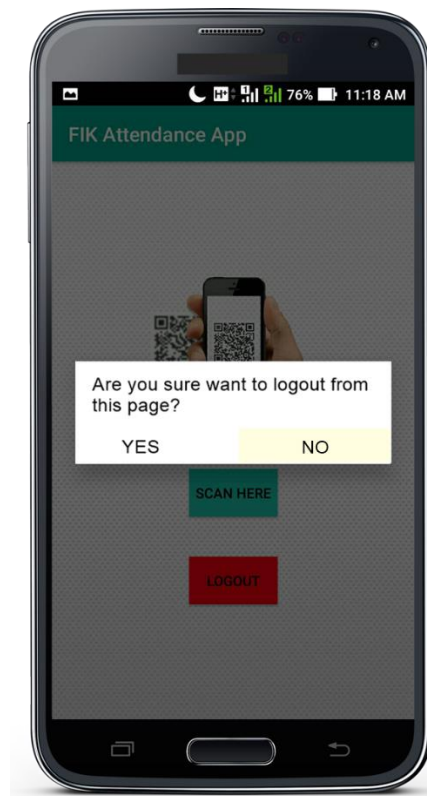


Figure 4.1.2.2e User Logout

Based on Figure above, by clicking the log out setting, admin can log out their session and redirect to Login Page.

4.2 Testing

4.2.1 Types of Testing

In system testing there are various types of testing can be used that meets user requirements system's testing. This types of testing must be suitable to test the functionality of the whole application. The process of testing is testing module by modules and evaluate the application to detect the differences of given input and expected output, features of the application. The verification process is the process to clarify application satisfies the all requirement of the project at the start of the

development phase. In meanwhile, the validation process is the process defines the application meets the specified requirement at the end of the development phase. This project tested by two technique: black box testing and white box testing whereas focused on design, interfaces, basic functionality, and security

4.2.1.1 Black Box Testing

Black Box Testing which is known as Behavioural Testing is the method or technique testing the internal structure or implementation or design of the application that is not known to the tester. In other words, a method to test the application without knowing the internal structure program or code. Supposedly, the testing is done as user's point of view without aware the background process that process input and output. This technique is to detect error and dysfunctional in interfaces error, performance or behavioral error, error in external database access or data structure of the application, interface error and incorrect or missing functions.

4.2.1.2 White Box Testing

White Box Testing is the known as Code-Based Testing or Structural Testing in which is the method or technique testing the internal structure or implementation or design of the application that is known to the tester. In other words, it's the methods or method based on analysis focused on the system or the structure of the component. This testing is being tested on the integration and involves the tester to possess the knowledge of the internal structure program or code. This technique is to detect the flow of specified inputs and output through the code, the incorrect or syntax error or poor performance in the coding element, expected function and functionality on an individual basis.

4.2.2 Test Case

Test Case 1			
Test Case Name : Login, Register and Log Out			
Application : Attendance Web System & Mobile Application			
Step	Procedures	Expected Result	Result
1	Insert user ID, and password	Save the insert data into database	Success
2	Insert correct ID, password for login	Verify the user ID	Success
3	Click 'Register,' 'Login' button	Application redirect user to Login page after register and Main page after login	Success
4	Update User Account	New update data saved into database	Success
5	Repeat step 2 and 3 for login using false username, password	Application display error message	Success
6	Log Out Account	Log out redirected to Login page	Success
Precondition		No credentials are currently login	
Post-condition		New and updated user ID, password, email and course for student saved in Database.	

Table 4.2.2.1 Test Case for Login, Register and Log Out

Based on table 4.2.2.1, it shows that Attendance Web System only authenticate and verified user or staff can access to the application.

Test Case 2 Test Case Name : Generate QR Code Application : Attendance Web System			
Step	Procedures	Expected Result	Result
1	Insert date and subject code in the field	Save the insert data into database	Success
2	Show list of subject name and subject code	Display in a table	Success
3	Click on Generate button	QR Code with input details are generated	Success
Precondition		Staff is currently login	
Post-condition		Class details saved in database and QR Code	

Table 4.2.2.2 Test Case for QR Code Generator

Based on Table 4.2.2.2 Test Case for QR Code Generator, the lecturer will insert the details of the class which are dated and subject code before the class begin.

Test Case 3 Test Case Name : Attendance Application : Attendance Web System & Mobile Application			
Step	Procedures	Expected Result	Result
1	Click on 'SCAN' button in mobile application	Scanning QR Code	Success
2	Scan the QR Code generated by lecturer	Student name and matric number are saved into database	Success
3	Staff click on 'View Attendance.'	Directed to Attendance page	Success
4	View student name, matric number and course	Display in a table	Success
5	View date and time scanned	Display in a table	Success
6	Pop-up notification about attendance confirmation	Alert Box display	Success
Precondition		User is currently login	
Post-condition		Class details saved in database and QR Code	

Table 4.2.2.3 Test Case for Attendance

Based on Table 4.2.2.3 Student will scan the QR Code and after the confirmation is verified, student name, matric number and course will display in a table in Attendance Web System. Lecturer can view the list of attendance in the Attendance page.

4.3 Summary

In this chapter whereby the implementation and testing take places. Implementation stage is where process turn in system design into a prototype. In this step, the algorithm is implemented. After this step, the testing phase takes places. Several testing being tested on android application either meet the requirements. This chapter highlights the importances of implementation phase which vital in the development and testing as compulsory for checking the functionality of an application.

CHAPTER 5

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 Class 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 by university instructors and would save lecturing 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, can be used for more subjects and classes and much more with benefits Application as QR Code Attendance. Last but not least, hopefully, this application will help the community to make their life easier.

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APPENDICES

Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Activity																
Discuss the title for the project with supervisor																
Submission of project title and abstract																
Precision problem statement, objective, scope and literature review																
Presentation Preparation																
Proposal Presentation																
Proposal Correction																
Design CD, ERD, DFD																
Prepare documentation of proposal																
Proposal slide presentation																
Designing the interface																
Final Presentation FYP1																
Report Submission																
Final Submission to Supervisor																

Gantt chart (FYP 1)

Week Task	1	2	3	4	5	6	7	8	9	10
Project Meeting with Supervisor										
Project Development										
Testing and Documentation										
Project Progress Presentation, Panel's Evaluation										
Project Development& Testing										
Report, Seminar Registration										
Seminar Presentation and Panel's Evaluation										
Finalizing Report and Documentation of the Project										
Report, Logbook Submission										

Gantt chart (FYP 2)

QR-CODE BASED USER AUTHENTICATION FOR SMART CLASS ATTENDANCE OVER WI-FI NETWORK

//=====QR CODE GENERATOR=====

<?php

define('N1', 3);

define('N2', 3);

define('N3', 40);

define('N4', 10);

class QRmask {

public \$runLength = array();

//-----

public function __construct()

{

\$this->runLength = array_fill(0, QRSPEC_WIDTH_MAX + 1, 0);

}

//-----

public function writeFormatInformation(\$width, &\$frame, \$mask, \$level)

{

\$blacks = 0;

\$format = QRspec::getFormatInfo(\$mask, \$level);

```

for($i=0; $i<8; $i++) {

    if($format & 1) {

        $blacks += 2;

        $v = 0x85;

    } else {

        $v = 0x84;

    }

    $frame[8][$width - 1 - $i] = chr($v);

    if($i < 6) {

        $frame[$i][8] = chr($v);

    } else {

        $frame[$i + 1][8] = chr($v);

    }

    $format = $format >> 1;

}

```

```

for($i=0; $i<7; $i++) {

    if($format & 1) {

        $blacks += 2;

        $v = 0x85;

    } else {

        $v = 0x84;

    }

}

```

```

    $frame[$width - 7 + $i][8] = chr($v);

    if($i == 0) {

        $frame[8][7] = chr($v);

    } else {

        $frame[8][6 - $i] = chr($v);

    }

    $format = $format >> 1;

}

return $blacks;

}

//-----

public function mask0($x, $y) { return ($x+$y)&1;          }
public function mask1($x, $y) { return ($y&1);            }
public function mask2($x, $y) { return ($x%3);            }
public function mask3($x, $y) { return ($x+$y)%3;         }
public function mask4($x, $y) { return (((int)($y/2))+((int)($x/3)))&1; }
public function mask5($x, $y) { return (($x*$y)&1)+($x*$y)%3; }
public function mask6($x, $y) { return ((($x*$y)&1)+($x*$y)%3)&1;    }
public function mask7($x, $y) { return ((($x*$y)%3)+(($x+$y)&1))&1;    }

//-----

```

```

private function generateMaskNo($maskNo, $width, $frame)
{
    $bitMask = array_fill(0, $width, array_fill(0, $width, 0));

    for($y=0; $y<$width; $y++) {
        for($x=0; $x<$width; $x++) {
            if(ord($frame[$y][$x]) & 0x80) {
                $bitMask[$y][$x] = 0;
            } else {
                $maskFunc = call_user_func(array($this, 'mask'.$maskNo), $x, $y);
                $bitMask[$y][$x] = ($maskFunc == 0)?1:0;
            }
        }
    }

    return $bitMask;
}

//-----

public static function serial($bitFrame)
{
    $codeArr = array();

    foreach ($bitFrame as $line)

```

```

        $codeArr[] = join(" ", $line);

    return gzcompress(join("\n", $codeArr), 9);
}

//-----

public static function unserial($code)
{
    $codeArr = array();

    $codeLines = explode("\n", gzuncompress($code));
    foreach ($codeLines as $line)
        $codeArr[] = str_split($line);

    return $codeArr;
}

//-----

public function makeMaskNo($maskNo, $width, $s, &$d, $maskGenOnly =
false)
{
    $b = 0;

    $bitMask = array();

```



```

$fileName
=
QR_CACHE_DIR.'mask_'. $maskNo.DIRECTORY_SEPARATOR.'mask_'. $width.'_'.
$maskNo.'.dat';

if (QR_CACHEABLE) {
    if (file_exists($fileName)) {
        $bitMask = self::unserial(file_get_contents($fileName));
    } else {
        $bitMask = $this->generateMaskNo($maskNo, $width, $s, $d);
        if (!file_exists(QR_CACHE_DIR.'mask_'. $maskNo))
            mkdir(QR_CACHE_DIR.'mask_'. $maskNo);
        file_put_contents($fileName, self::serial($bitMask));
    }
} else {
    $bitMask = $this->generateMaskNo($maskNo, $width, $s, $d);
}

if ($maskGenOnly)
    return;

$d = $s;

for($y=0; $y<$width; $y++) {
    for($x=0; $x<$width; $x++) {
        if($bitMask[$y][$x] == 1) {

```

```

        $d[$y][$x] = chr(ord($s[$y][$x]) ^ (int)$bitMask[$y][$x]);
    }

    $b += (int)(ord($d[$y][$x]) & 1);
}

}

return $b;
}

//-----

public function makeMask($width, $frame, $maskNo, $level)
{
    $masked = array_fill(0, $width, str_repeat("\0", $width));
    $this->makeMaskNo($maskNo, $width, $frame, $masked);
    $this->writeFormatInformation($width, $masked, $maskNo, $level);

    return $masked;
}

//-----

public function calcN1N3($length)
{
    $demerit = 0;

    for($i=0; $i<$length; $i++) {

```

```

if($this->runLength[$i] >= 5) {

    $demerit += (N1 + ($this->runLength[$i] - 5));

}

if($i & 1) {

    if(($i >= 3) && ($i < ($length-2)) && ($this->runLength[$i] % 3 == 0))

{

    $fact = (int)($this->runLength[$i] / 3);

    if(($this->runLength[$i-2] == $fact) &&

        ($this->runLength[$i-1] == $fact) &&

        ($this->runLength[$i+1] == $fact) &&

        ($this->runLength[$i+2] == $fact)) {

        if(($this->runLength[$i-3] < 0) || ($this->runLength[$i-3] >= (4 *

$fact))) {

            $demerit += N3;

        } else if(((($i+3) >= $length) || ($this->runLength[$i+3] >= (4 *

$fact))) {

            $demerit += N3;

        }

    }

}

}

}

return $demerit;

}

```

```

//-----

public function evaluateSymbol($width, $frame)
{
    $head = 0;

    $demerit = 0;

    for($y=0; $y<$width; $y++) {

        $head = 0;

        $this->runLength[0] = 1;

        $frameY = $frame[$y];

        if ($y>0)

            $frameYM = $frame[$y-1];

        for($x=0; $x<$width; $x++) {

            if(($x > 0) && ($y > 0)) {

                $b22    =    ord($frameY[$x])    &    ord($frameY[$x-1])    &
ord($frameYM[$x]) & ord($frameYM[$x-1]);

                $w22 = ord($frameY[$x]) | ord($frameY[$x-1]) | ord($frameYM[$x]) |
ord($frameYM[$x-1]);

                if(($b22 | ($w22 ^ 1))&1) {

                    $demerit += N2;

```

```

    }

}

if(($x == 0) && (ord($frameY[$x]) & 1)) {

    $this->runLength[0] = -1;

    $head = 1;

    $this->runLength[$head] = 1;

} else if($x > 0) {

    if((ord($frameY[$x]) ^ ord($frameY[$x-1])) & 1) {

        $head++;

        $this->runLength[$head] = 1;

    } else {

        $this->runLength[$head]++;

    }

}

}

$demerit += $this->calcN1N3($head+1);

}

for($x=0; $x<$width; $x++) {

    $head = 0;

    $this->runLength[0] = 1;

    for($y=0; $y<$width; $y++) {

        if($y == 0 && (ord($frame[$y][$x]) & 1)) {

```

```

        $this->runLength[0] = -1;

        $head = 1;

        $this->runLength[$head] = 1;
    } else if($y > 0) {
        if((ord($frame[$y][$x]) ^ ord($frame[$y-1][$x])) & 1) {
            $head++;

            $this->runLength[$head] = 1;
        } else {
            $this->runLength[$head]++;
        }
    }
}

$demerit += $this->calcN1N3($head+1);
}

return $demerit;
}

//-----

public function mask($width, $frame, $level)
{
    $minDemerit = PHP_INT_MAX;

    $bestMaskNum = 0;

```

```
$bestMask = array();
```

```
$checked_masks = array(0,1,2,3,4,5,6,7);
```

```
if (QR_FIND_FROM_RANDOM !== false) {
```

```
    $showManuOut = 8-(QR_FIND_FROM_RANDOM % 9);
```

```
    for ($i = 0; $i < $showManuOut; $i++) {
```

```
        $remPos = rand (0, count($checked_masks)-1);
```

```
        unset($checked_masks[$remPos]);
```

```
        $checked_masks = array_values($checked_masks);
```

```
    }
```

```
}
```

```
$bestMask = $frame;
```

```
foreach($checked_masks as $i) {
```

```
    $mask = array_fill(0, $width, str_repeat("\0", $width));
```

```
    $demerit = 0;
```

```
    $blacks = 0;
```

```
    $blacks = $this->makeMaskNo($i, $width, $frame, $mask);
```

```
    $blacks += $this->writeFormatInformation($width, $mask, $i, $level);
```

```
    $blacks = (int)(100 * $blacks / ($width * $width));
```

```

$demerit = (int)((int)(abs($blacks - 50) / 5) * N4);

$demerit += $this->evaluateSymbol($width, $mask);


if($demerit < $minDemerit) {

    $minDemerit = $demerit;

    $bestMask = $mask;

    $bestMaskNum = $i;

}

}

return $bestMask;

}

}

//=====QR CODE SCANNER=====

import android.support.v7.app.AppCompatActivity;

import android.os.Bundle;

import android.widget.Button;

import android.widget.Toast;

import android.app.Activity;

import android.view.View;

import android.content.Intent;


import com.google.zxing.integration.android.IntentIntegrator;

```



```

import com.google.zxing.integration.android.IntentResult;

public class MainActivity extends AppCompatActivity {

    private Button scan_btn;

    public static String USERID = "";

    public static String USERNAME = "";

    public static String COURSE = "";

    @Override

    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);

        setContentView(R.layout.activity_main);

        scan_btn = (Button) findViewById(R.id.scan_btn);

        final Activity activity = this;

        scan_btn.setOnClickListener(new View.OnClickListener() {

            @Override

            public void onClick(View view) {

                IntentIntegrator integrator = new IntentIntegrator(activity);

                integrator.setDesiredBarcodeFormats(IntentIntegrator.QR_CODE_TYPES);

                integrator.setPrompt("Scanning..");

                integrator.setCameraId(0);

                integrator.setBeepEnabled(false);

                integrator.setBarcodeImageEnabled(false);

                integrator.initiateScan();

            }

        });

```

```

    });
}

@Override

protected void onActivityResult(int requestCode, int resultCode, Intent data) {

    IntentResult result = IntentIntegrator.parseActivityResult(requestCode,
resultCode, data);

    if (result != null) {

        if (result.getContents() == null) {

            Toast.makeText(this, result.getContents(),
Toast.LENGTH_LONG).show();

            String type = "value";

            String valueqr = result.getContents();

            Background background = new Background(this);

            background.execute(type, valueqr);

        }

        else {

            Toast.makeText(this, result.getContents(),
Toast.LENGTH_SHORT).show();

            String type = "value";

            String user = USERID;

            String username = USERNAME;

```

```

        String kos = COURSE;

        String valueqr = result.getContents();

        Background background = new Background(this);

        background.execute(type, valueqr, user, username, kos);

    }

    } else {

        super.onActivityResult(requestCode, resultCode, data);

    }

}

public void OnLogout(View view) {

    startActivity(new Intent(this, LoginActivity.class));

}

}

```

=====PHP ATTENDANCE COUNT=====

```
<?php
```

```
include("connection.php");
```

```
$con = mysqli_connect($HostName,$HostUser,$HostPass,$DatabaseName);
```

```
$valueqr= $_POST['valueqr'];
```

```

$studentID=$_POST["user"];

$studentName=$_POST["username"];

$course=$_POST["kos"];

$query = "SELECT * FROM `subject` i left join student m on i.studentID =
m.studentID where i.subjectID = '". $valueqr. "'";

$result = mysqli_query($con, $query);

    if ($result === FALSE){

echo "Your name has not been registered to this subject.";

    }

    else{

echo "Attendance confirmed!";

$query = "INSERT INTO attendance (studentID, subjectID, studentName,
course) VALUES ('$studentID','$valueqr','$studentName','$course')";

$result = mysqli_query($con, $query);

    }

?>

```