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This Report Presented in Partial Fulfilment of the Requirements for the Degree
of
Bachelor of Science in Computer Science and Engineering.

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APPROVAL

This Project/internship titled **"Smart Attendance System Using QR Code"**, submitted by Naim Parvez Galib, ID No: 161-15-7421, Al Imran, ID No: 161-15-6778, Ahmed Ali, ID No: 161-15-7150 to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 05-12-2019.
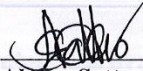
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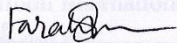**Professor and Head**
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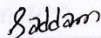**Abdus Sattar**   Internal Examiner
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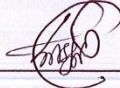Daffodil International University

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DECLARATION

We hereby declare that, this project has been done by us under the supervision of **Mr. Dewan Mamun Raza**, Lecturer, and Department of CSE Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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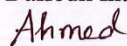
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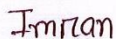Department of CSE
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Finally, we must acknowledge with due respect the constant support and patients of our parents.

ABSTRACT

"Smart Attendance System with QR Code" is an android based project. [1] In every classroom the teacher need to know how many students are attending on his/her class. Attendance system is a process which helps the teacher to know which student is regular and which are not. But if we take too much time in this system then it kills the valuable time of a class. So we make this Application. Which will make the attendance system easier for a teacher in the classroom. Here the teacher can take attendance easily using a QR Code. There are many other attendance system application. But the difference in our system is, here we are using a device Id which is unique for every device's. So this application will prevent the students to give proxy for others. Which is the main advantage of our system. Here teacher will generate QR code and display it with a projector and all the students can scan it at a time. This way the teacher don't need to call everyone by name. This modern way will help all the teachers and students to save their time. Every Educational institute can use it and save their time. After completing all the process, the system is tested and it performs perfectly.

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CHAPTER 1

INTRODUCTION

1.1 Project Introduction

This is an Android based Project. There are many Android based Application. Ours is Attendance based. Yes, there are many attendance based applications too. Example: punch card, finger print, bar code, QR code. Our project is also QR code based. But comparing with others system we have make an advance one. Before knowing the advantage of this system we must know that the main dis advantage of these type of system is having proxy issues. Which we have successfully prevented. And the reason of making android attendance system is because now a days it is very easy to afford a mobile phone. Hats why our project is android based.

1.2 Motivation

There are many ways to take attendance in a classroom. Even our varsity class also use smart attendance system. But that is time wasting. They take the attendance like the older way, but in computer. Yes that is somehow looks digital but not faster. So we decided to make a project, which will make the attendance system faster. At first we could not find a proper way that how to do it. But then we found out that there are some projects but they have some lacking's. And the major problem with them is the proxy giving problem. So we choose the QR based project and remove the proxy problem

1.3 Objectives

- Here the key intention is to make the attendance process faster.
- It's totally security.
- We use the device ID which give the efficient result
- Here we use user authentication system.
- We use registration system for teacher and student (User friendly)

1.4 Expected Outcome

- It will give faster result
- Students can't give proxy
- Device ID is unique. Which makes it perfect and secure.
- All students can give attendance at once.
- This will give the classroom more time to study.

Chapter 2

BACKGROUND

2.1 Introduction

Mobile phone is now available and affordable for everyone. And also we have many educational Institute in our country. If there is student there is an attendance system. So, mobile base attendance system is very easy and digital way to count out the student's number. So why not an attendance based application. Which will give us easy and faster way to take attendance from a classroom.

2.1 Related Work

There are many attendance based application that has been implemented yet. But what about perfection? If your work has no perfection then there is no work to do with it. Example: bar code, fingerprint, punch card, image recognition. But as I told you our project has some advance and faster technique than others. We have the attractive UI design too. We give some of the Screenshot images below:
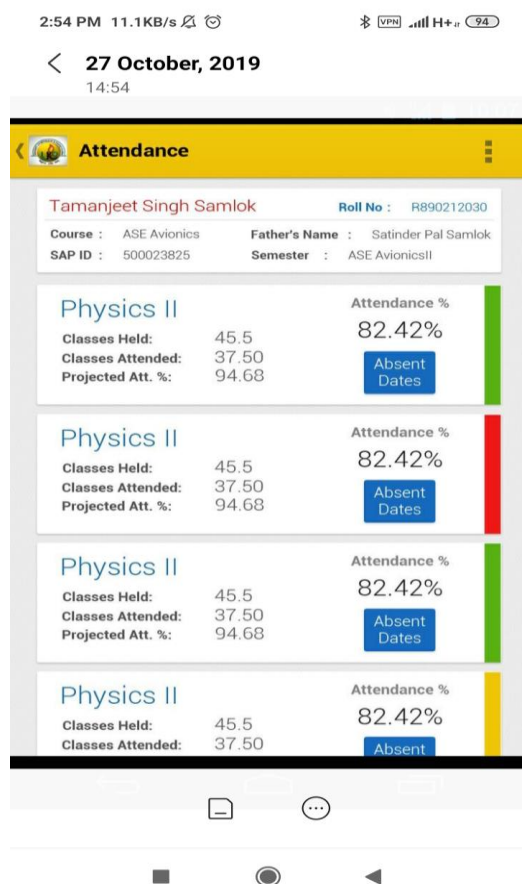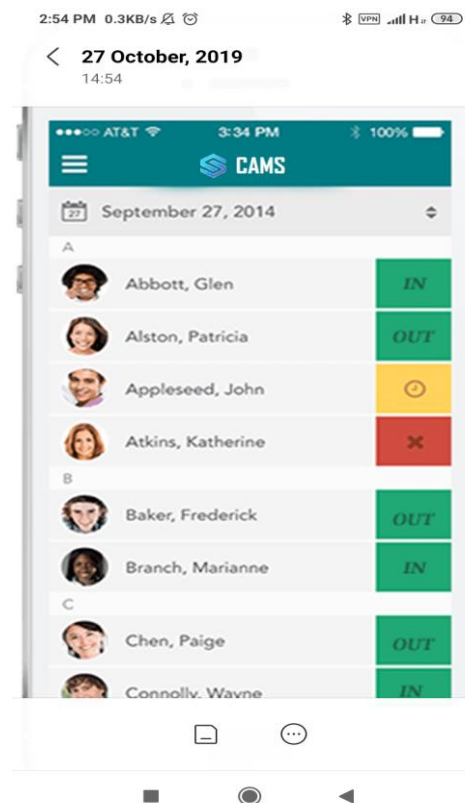
Reference: Internet   Reference: Internet

Figure 2.1: Related work.

2.3 My Project Work

There are many app that you can get from internet, especially from google play store. But all of them have some problems. I am not saying that our project is 100% perfect. But at least we have overcome some problems that the other projects were facing. First of all we make a user friendly Interface which makes it more attractive. For the UI design we use **Java, XML**. But Eye catching is not enough. Perfection must needed. And we can say that we have a better perfection for our project. We also use registration process. For the registration we use **firebase** and for Authentication System we use **GoogleAuth**. This time we don't have various features. We only use the attendance system.

2.4 Comparative Studies

You will get many implementation in google (play store) where few property are coupled to our application. Some of the applications are not dynamic. There the teacher need to inspect the Quick Response (QR) code for each student. We add Student scan system which is better than others. In our Apps student just input their name and id and A QR code will generate automatically teacher will scan this QR code than Student will register to the class automatically.

2.5 Scope of Problems

At First this apps is designed as user friendly. Into other applications in google (play store) and their project has some problem. But our work is pleasant for time saving. We have many scope to improve our application. Now the number of mobile phone user is 154 million and most of them use android phone. So, we tried to develop something that will be useful and helpful for everyone. This application will be supported all kind of android device and it has a unique ID for each user. This application is secured for everyone. We used a login system through Google account.

- If the device is lost or damage than it's important to register again.
- If someone do factory reset than he need to register to the class again.
- We need vysor application to share my QR code into projector screen.

2.6 Challenges

Although by doing anything unique there you will meet new problems. To finish our project we also have to face some problems. In our country the number of students on some classes are more than 30/35. To inspect the Quick Response (QR) code for all students is time wasting. And that was the main challenge. We wanted to make something different in our application .In this short time we couldn't find out what could be the solution. In this reason, first we try to add fingerprint system. But that was costly. So we wanted to make something cheaper for our application which was challenging for us.

- This application is only for varsity student.
- Device id can stop proxy.

CHAPTER 3

REQUIREMENT IDENTIFICATION

3.1 Requirement examination

Demand all piece of work which will guide to spot the essential of dissimilar shareholders. It must be documented, computable and tested. It can be effective and ineffective.

It has two phase:
- Primary Research: get all resources from various sources and surveys
- Secondary Research: Compare the new file with the existing files.

3.2 Effective Requirements

Effective requirement is related to the practical function of the system. Our system have many functional requirement such as Device ID, student information, classes, section, QR generate system ,sign in through Google account and maintaining database.

3.3 Ineffective Requirements

Ineffective requirement is related to the security, viability, versatility, quality and ease of use. Our application have a great user interface for easy to use. Our application quality is very good to compare with other related application. In our application security system is very good. Our application will supported all kind of android operating system. Teacher can give input and modify information of students. Our application is android operating system based device with internet connection.

3.4 Register Process

```
                                        ┌─────────────────────┐
                                        │ Teacher Application │
                                        └─────────────────────┘
                                                  │
                                                  │ Scan QR Code
                                                  ▼
┌─────────┐   Log In   ┌─────────────────────┐   ┌─────────────────────┐
│ Student │──────────▶ │ Student Application │──▶│  Generate QR code   │
└─────────┘            └─────────────────────┘   └─────────────────────┘
                                                           │
                                                           ▼
                                                  ┌─────────────────────┐
                                                  │  Register Student   │
                                                  └─────────────────────┘
```

3.5 Attendance Process

```
                                              ┌────────────────────┐
                                              │ Teacher Application │
                                              └────────────────────┘
                                                        │
                                                        │ Generate QR code
                                                        ▼
┌─────────┐      ┌─────────────────────┐      ┌────────────────────┐
│ Student │ ───▶ │ Student Application │ ───▶ │  QR code for a date │
└─────────┘      └─────────────────────┘      └────────────────────┘
      Log In                                            │
                 Scan the QR code                       ▼
                                              ┌────────────────────┐
                                              │   Attendance is     │
                                              │     submitted       │
                                              └────────────────────┘
```
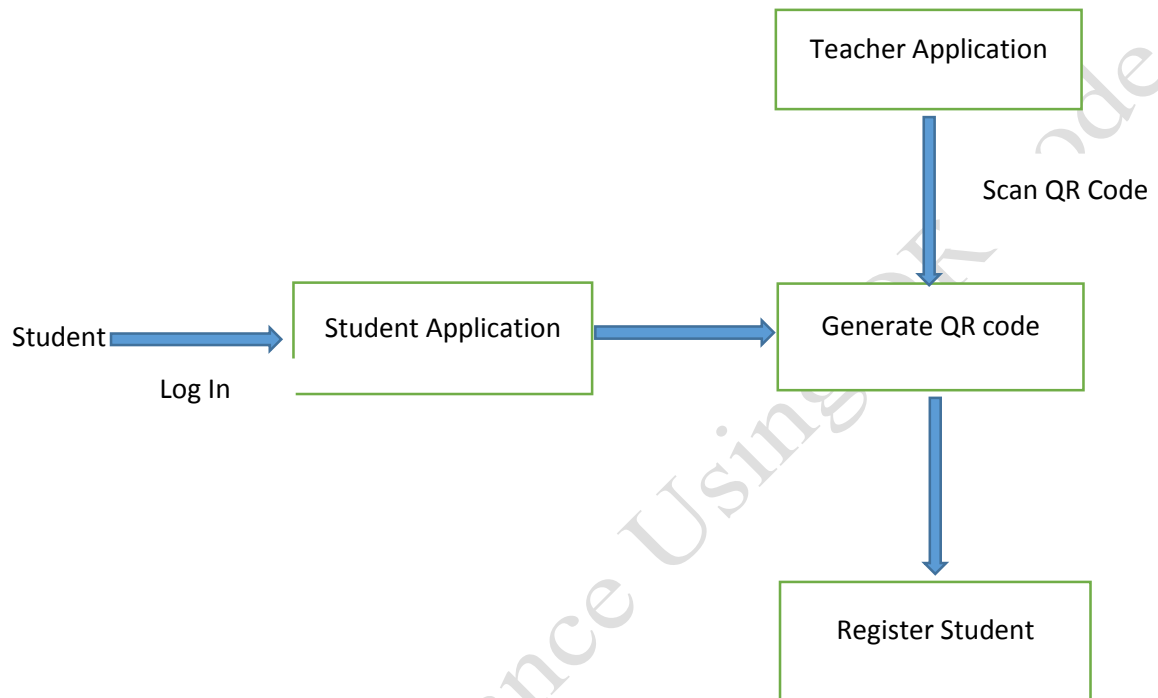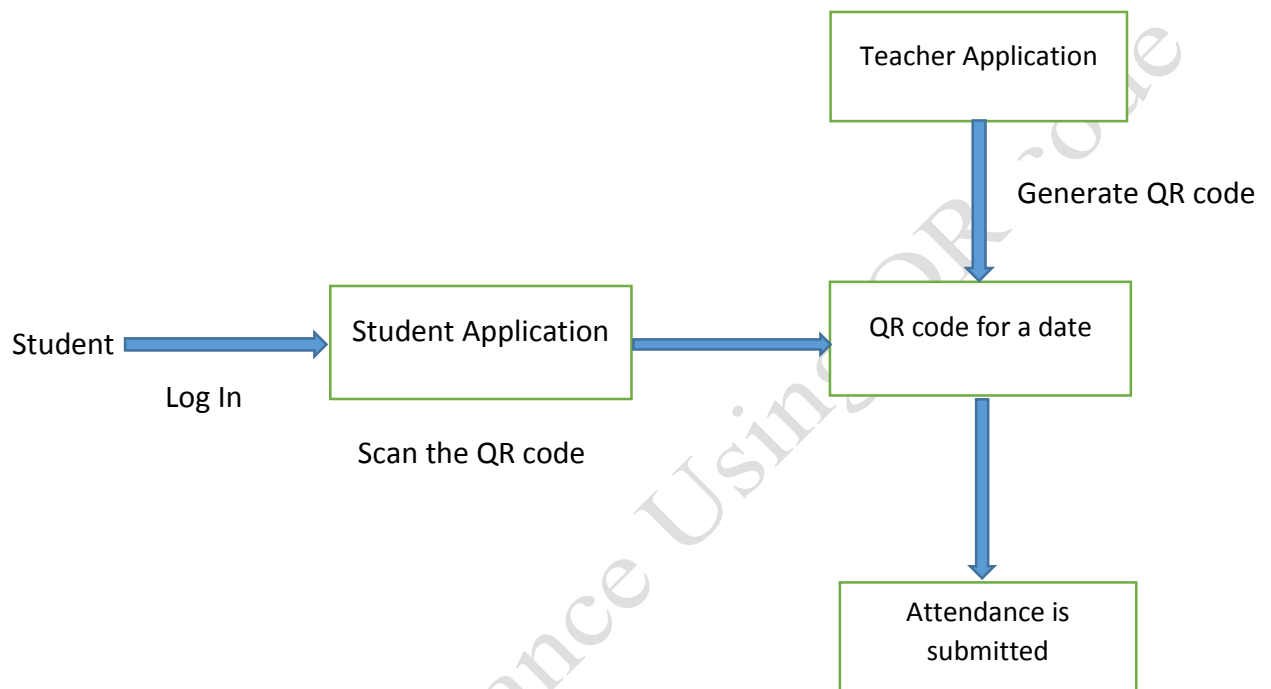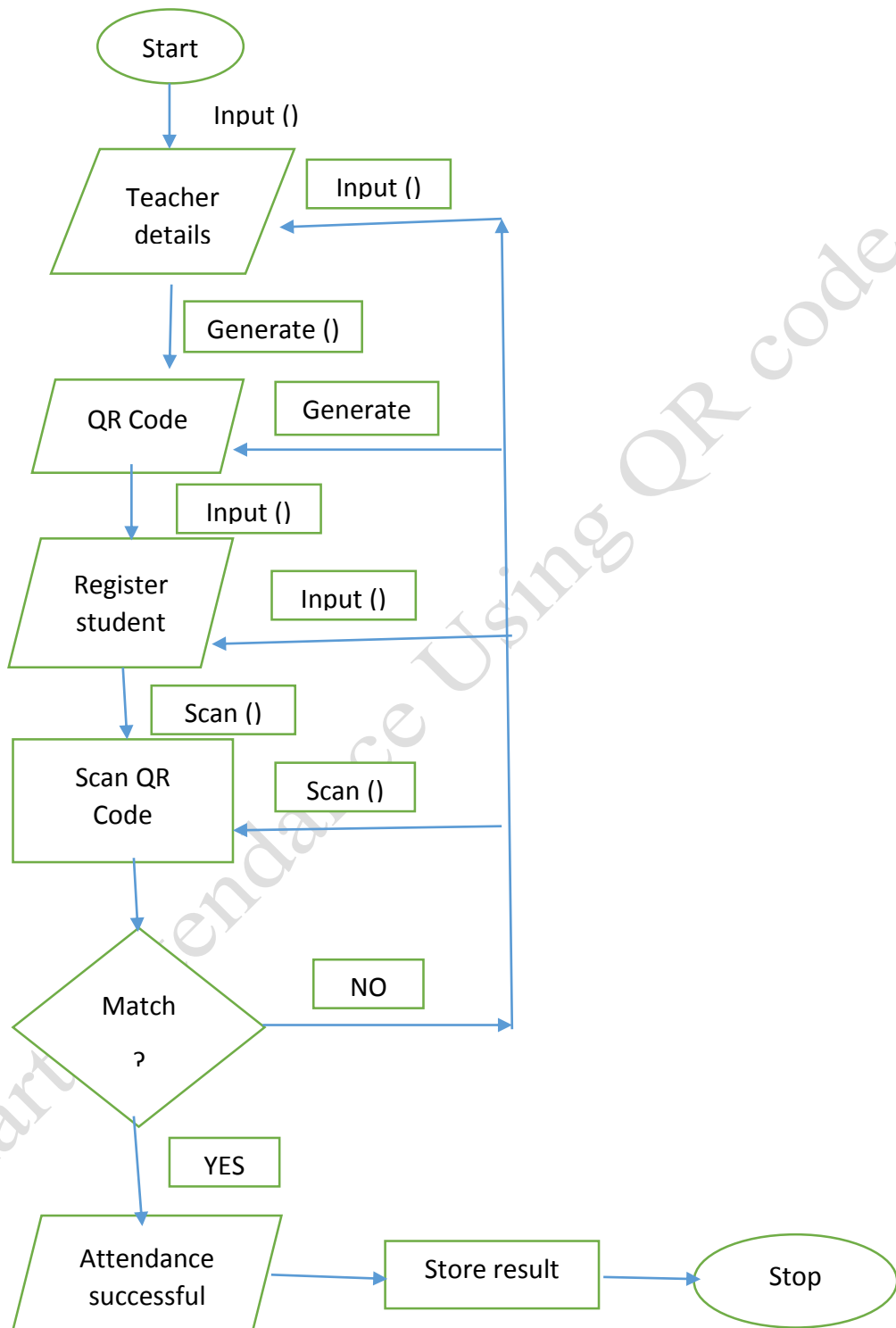
3.6 Flow chart

Figure 3.3: Flow chart of attendance system

3.7 Use case diagram:

Id

Name

Teacher
Registration

Email

Phone

Attendance
details

Id

Section

Student
registration

Android
Id

QR code
generate

Name

Email

Scan QR code

Class title

Class id

Classes

Subject name

Subject code

Attendance
report

Register
student

Teacher name
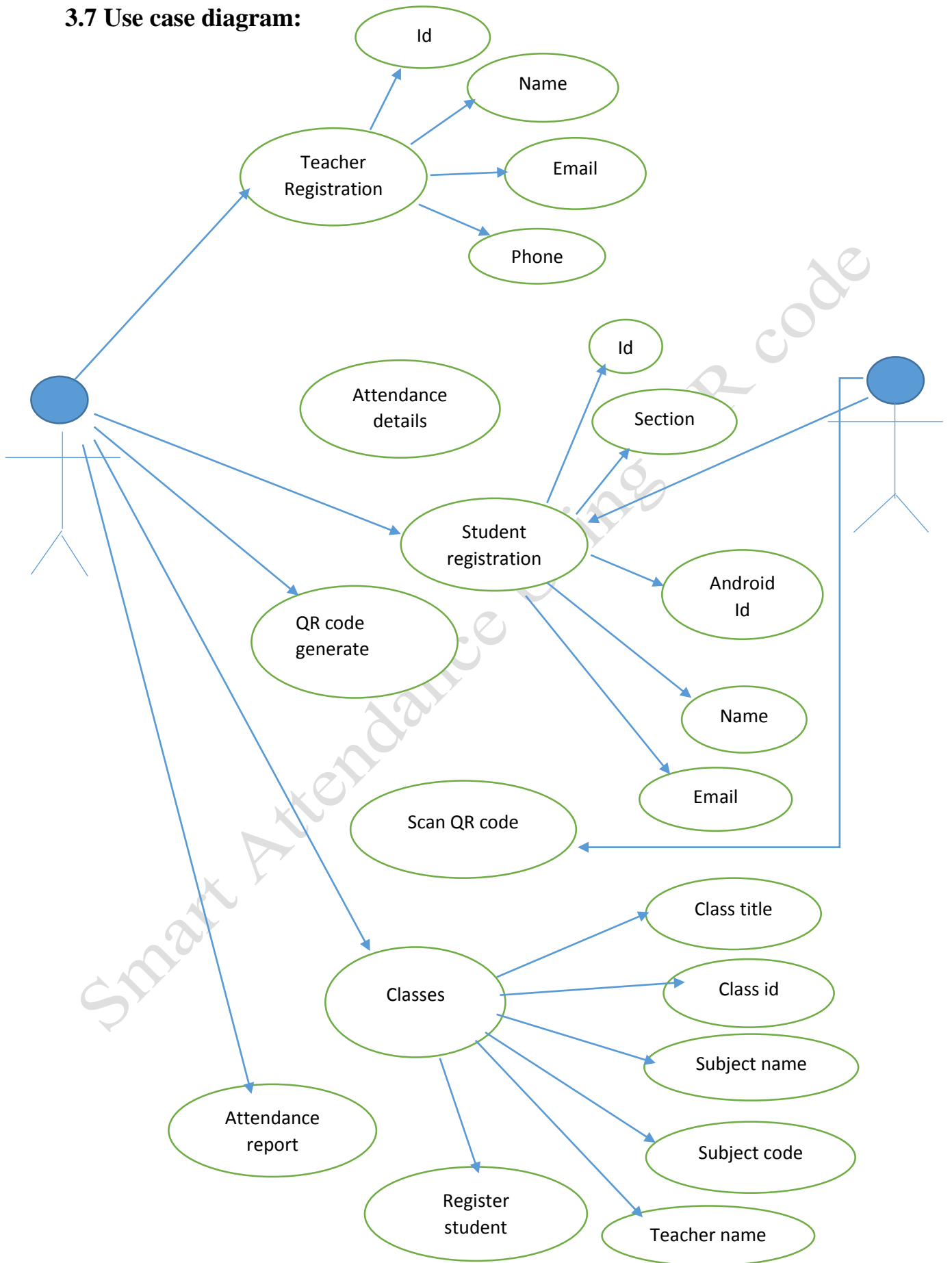
3.8 Rational Data Model

A rational data demonstrate is a statistics representation of a distinct affair contact freely of a specific database item for example, student data. As a Back-end we use core object oriented and Front-end XML. In my application there are database section and firebase as database server. Our application is purpose of finding students ID.

3.9 Pattern Requirements

Pattern requirements will differs me from other implementation, since my work will face on some unknown problem statement.

We give kind of requirement below:

Here I use a simple validation since this is a public figure. So we create a simple sign in system through Google account. Here we create a simple user friendly option which is easy to use.

CHAPTER 4

PATTERN IDENTIFICATION

Pattern identification is a declaration of how a pattern is grow. In Pattern identification part we try to show the sketch off our mobile application. We also discussed about many tools, which has been used to grow the project.

4.1 Front-side Design

Front-end is like sketching all the pattern and dialect of what the user sees when he open the app. It is the essential part of a project to attract the user into the application. Probably a big number of the users look for a simple user friendly interface. In our project we create two apps one is for user and one is for admin to give input information.

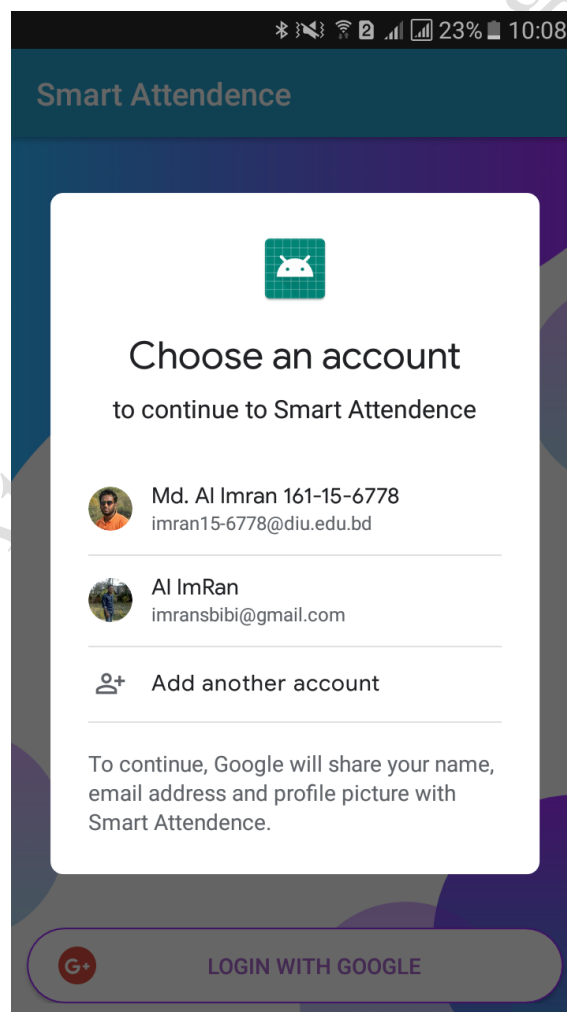The front-side sketching of the applications user part is as follows:

Figure: 4.1 Teacher Login
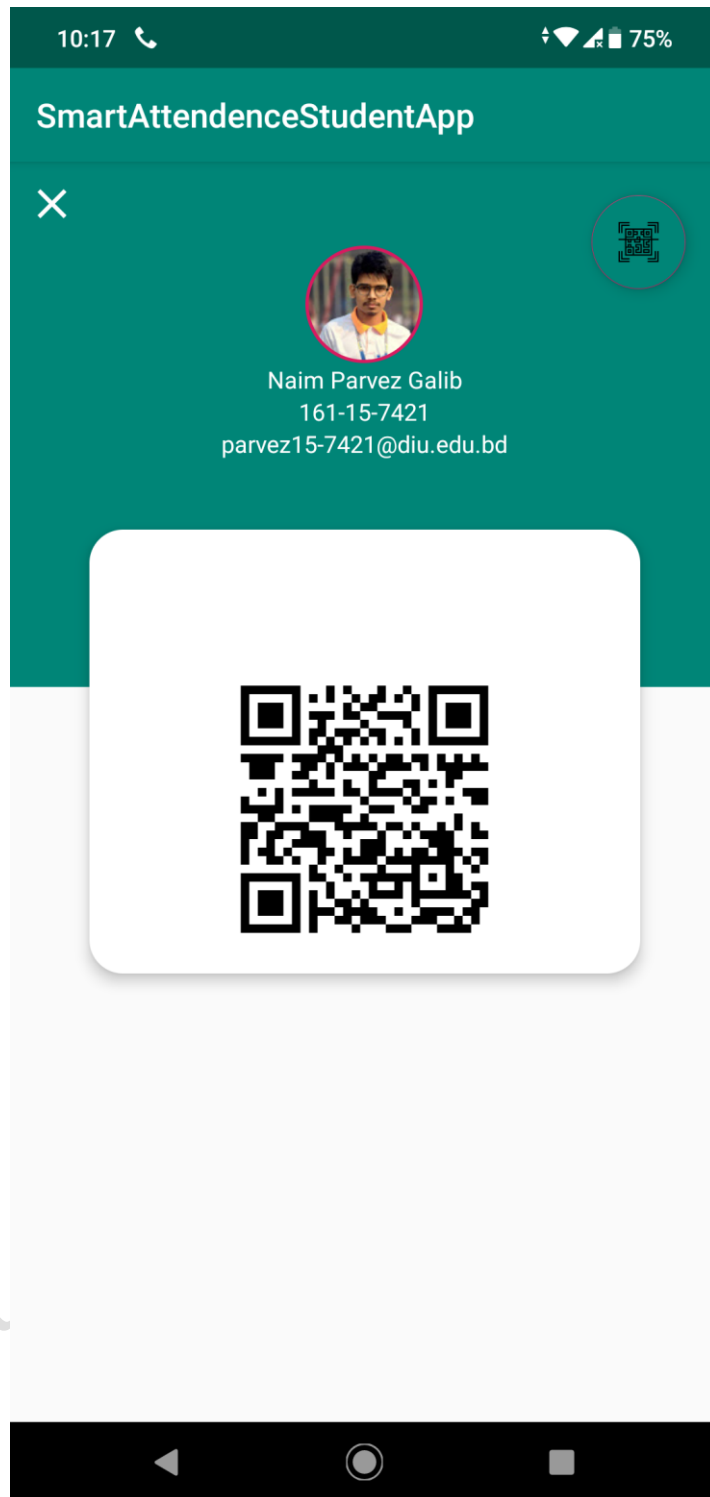
Figure: 4.2 Teacher can create classroom.

Figure: 4.3 Teacher will scan student information through QR code.
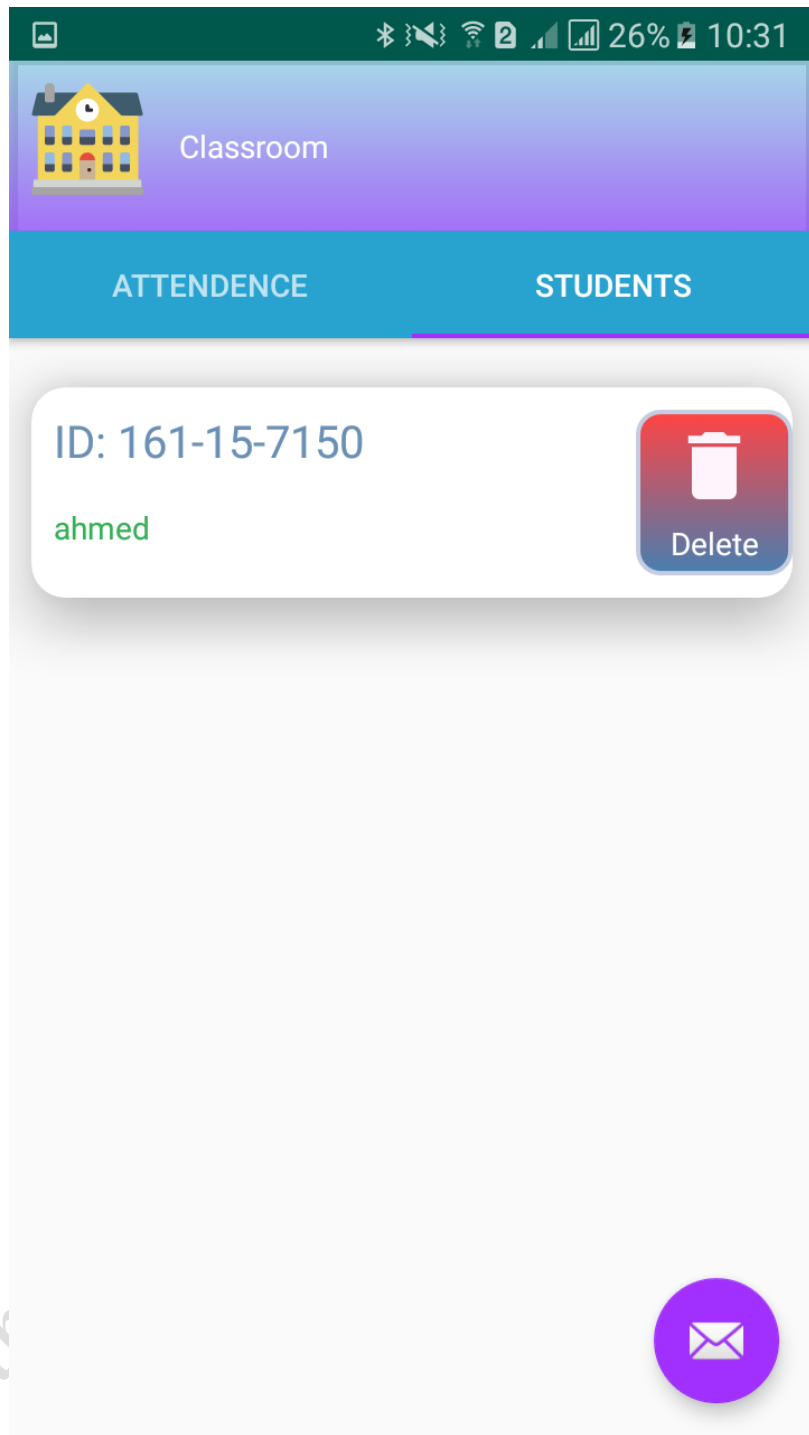
Figure: 4.4 Register Student

Figure: 4.5 Teacher Registered Classes.

4.2 Back-side Design

Back-side designing is must need for an implementation. The front-side is the representation of the back-side design. Back-end controls the structures, safety and action. It is also known as the server side design. It is the combination of database, server, and application. So we connect database with our application. In our application it has a simple authentication part and I create a simple sign in system through google account.

4.3 Execution Requirement

We use various type of execution elements, features and tools to create our application. Making this well-disposed and beneficial to people is now feasible with these tools. I implement the core code that's means the Java and XML code in my project.

Execution of our project require is given below:

4.3.1 Cyborg IDE

Integrated Development Environment (IDE) is to build cyborg application. It's specifically uses for the development android application development. Though our project is android based we used android studio.

4.3.2 Cyborg SDK and JDK

Software Development Kit (SDK) allows to trial, created and debug android app. A growing Android app must need a Software Development Kit. This Software Development Kit is very capable gadget which includes not only to grow the libraries, but also carry the replica to run trial application.

4.3.3 Fire-Base

This platform helps to build android project developed by Fire-base. It gives commanding, analytical and collisional type functionality which helps to move faster. Fire-base extension are configurable.

4.3.4 QR code Generator:

Quick Response code (QR) is a 2D matrix type barcode that is used to store data. QR code is famous because of its storage capacity and fast readability.
Step of generate QR code:
1. Creating a new project.
2. Setting up library.
3. Generating QR code.
4. Save QR code.

4.3.5 QR code Builder:

 It works with same way as bar codes. It examine image by its scanner. It contains of number of block which contain information.

4.3.6 Firebase Real-time:

It gives MySQL Database to reserve and concur mobile app info. Firebase apps remain responsive if the app goes offline. Data is stored as JSON.

4.3.7 Android virtual Device (AVD)

The creator make use of emulator as a goal stage to execute and trial his application on his PC. This AVD manager provides a graphical interface which run the android application. Emulation tool that is used to debug and test applications. You need to install an Android system picture that your emulators can use, before you create an Android emulator.

4.4 Interaction Sketching and UX:

Interplay direction is a controller that observes that communicate between a processes. Actually Interplay sketching is the system that can understand the user difficulty. We make this application too easy and also easily for finer fillings, experience, and performance of using my application. For UX I tried to give some fantabulous experience by my application.

CHAPTER 5

EXECUTION

5.1 Execution of Database

"Smart Attendance with QR Code" is an application for providing attendance of a class. In our application we use firebase for saving data in database. In our application user information like email, name and id will be saved. We save our student details, student name and saving in database.

5.2 Trial

In trial part the builder build the file and find out the bug of the system. The dynamic interface creates no error with several sizes of android devices all the features like search classes, find students, information work good in almost every android device.

5.3 Execution of Front-side Sketching

Execution is very important to build a fine front-side sketching which will attract the user. It balances the drawing with android view size. It can't fix with the display for many causes. A builder need to try out several times of his android system by creating within an android device. We always try to make finer user friendly interface design for making user attraction and creative UI to my android application. We try some materials and tools sketching for building connection with the user. There are many type of smart-phones that support android. But all of these are not same quality. Some of them have very weak hardware material, in a little bit pressure those device getting hang and behave like peculiar. These reasons occur for different types of version. So, I design the application which will be support to all the devices as like older to newer version and I sure that my android application is secure and will not create any extra pressure on devices. I attached my application front-side implemented sketching.

5.4 Execution of XML code using java

Using android IDE for my application UI design with file and for java core to connect with the XML file, using firebase database to save user data. I use android studio into my system which need an internet connection. In android studio many kind of language are supported. We do our work in java. In XML code I take some text view, button etc. I design my application by using in xml coding.

CHAPTER 6

CONCLUSION AND FUTURE SCOPE

6.1 Goal

This project help teacher to take attendance easier and faster way. Student just scan the QR code and the attendance is given automatically. We tried by heart and soul to complete the project so this project work perfectly.

6.2 Limitation

- Can't share the QR code without the help of projector.
- If we do factory reset the mobile phone then we need to register again to the classroom, because the device create new android id.

6.3 Conclusion

This smart attendance with QR code has been successfully build and tested. On this project our main focus was if a student give proxy attendance of a friend, so we make e new concept on android id. This is unique id for every android mobile. For this it's tough to give proxy attendance. Smart attendance with QR code is most accurate. This is a smart application for this modern and smart world.

6.4 Future work:

Our future work will be provide the class lecture and sheet to student through this application. In future we will add to this project with face recognition, by capture single photo of the whole student present in the class, attendance will give automatically by matching face with capture photo.

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