

Design and Development of a Wireless Smart Attendance System

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Statement of Originality

This is to certify that the work presented in this thesis entitled “Design and Development of a Wireless Smart Attendance System” is the outcome of the investigation carried out by us under the supervision of Mohammad Mamun Elahi, Assistant Professor, Department of Computer Science and Engineering, United International University, Dhaka. We also declare that neither this project nor any part currently submitted anywhere else for the award of any degree or diploma.

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Finally, we thank our parents for giving birth to us at the first place and supporting us spiritually throughout our life.

Abstract

In traditional attendance system the teachers either call the name or Identity Number (ID) of the students to which student respond or pass the attendance sheet to the students to sign. The difficulty in such attendance management system increases when the number of students are increased. Also, in case of passing attendance sheet to the students, some student sign multiple times and the students give proxy attendance. To overcome these inconveniences, this project represents a wireless smart attendance system, which describes the Design and development of a wireless smart attendance system that will take an attendance by using information extracted from the RFID database handling system. It is capable of collecting, recording and processing information on students of their activities, attendance or different sessions etc. The system can also generate real-time combined detailed reports on attendance, in time and out time of the students during the class hours. The implementation of the system is simple, inexpensive making it a good candidate for commercial and academic purpose.

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Chapter 1

1. Introduction

1.1 Introduction

In our modern life, we all want to make everything easy. Day by day discovering new technologies that made our life easier. Information Technology (IT) is improving many things in academic sectors like management systems and student monitoring. In our common life, we give attendance by sign in the attendance sheet or roll calls. These system create many security and identity problem, so need to manage the student attendance system. Information Technology is trying to solve this problem and maintain it. Biometrics techniques are invented a unique idea. They try to improve security verify and identification using face identity, barcode, signatures fingerprint, voice, recognition, Near-Field Communication (NFC), irises, Bluetooth, and RFID and etc. RFID is an automation technology that solves identification, management, tracking system smartly.

1.2 Motivation and objectives

By using our project teacher can easily notice all student and parents also. RFID based attendance system explain how can we count attendance automatically by using RFID cards. One of our website monitors central database. As the system is active website based so it can be access through wirelessly. We will store student's all personal information details and their courses details.

1.3 Literature Review

1.3.1 Introduction

Nowadays, in the RFID based system use will continue to increase. RFID tag basic classified as read/write and read only. The data store on the read/write tags can be edit, added to, within the range of the reader. The data stored on the read only tag can read. Recent time more popular

RFID based system because of RFID uses electromagnetic fields to automatically identify and tag attach to object.

1.3.2 Different sectors of RFID Uses

We know that RFID based attendance system is the demand of the hour and it uses different sector for example is used in the hotels, hospitals, office environments, homes, workshops, campuses, universities, transport, industry etc. according to (www.fungglobalretailtech.com). A number of related works exist in literature, application of RFID Technology to different areas and specifically to the area of academic attendance monitoring problem.

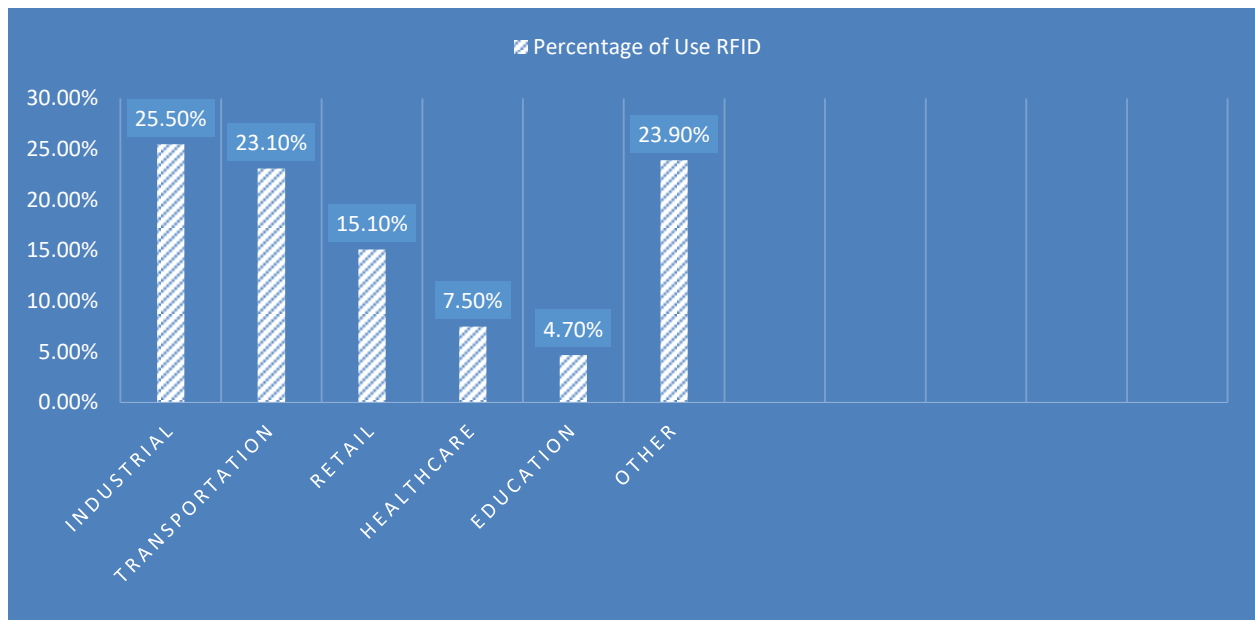


Figure 1. 1: percentage of RFID used

Our project maintains whole university from of the central server. This system counts automatic attendance. We bought necessary devices from the Suzuki Electronics and We used in four main devices nodemcu, RFID tag and module, power supply, jumper wire its cost 800 to 850 taka only. If we implement whole system then every class need per single system its cost will be around 4.5 to 5 lakh taka only.

RFID based attendance system using wireless communication is not complex design. This system is much easier to implement. Any individual can purchase hardware components listed in the letter section of report and can set up in the breadboard.

The output will be display in the website. When RFID tag attach in the RFID module then RFID reader read barcode from the RFID tag and send the data into the server. Then client visit website show information and this information comes from the database server.

1.4 IOT

1.4.1 Introduction of IoT

IOT is a blessing for the whole Universe to create our life easier. IOT is trying to make everything smart like smart home, smart institute, and smart attendance system etc. In every sector Internet of things have its own identity

1.4.2 What is IOT?

Internet of things (IOT) have many things that discover new application and smart device that refers the boosting network of physical instances that the feature of an IP address to internet connectivity. The Internet of Things (IOT) alternated the world we live in. IOT is a system that requires smart device, mechanical machines, people those steps with unique identifiers (UIDs) and the ability to send information over a network without demanding human-to-human or human to computer interaction. IoT connects the things or device that are more secure and that things are mobile, pc, Bluetooth, security camera, Sensor, RFID, etc.

1.4.3 Importance of IOT

Whole world is depending on Internet. No one can live a single day without internet. New technology changes our world day by day. IOT is one of the best stages to connect multiple devices. Business, Institute, healthcare in every sector IOT has its footsteps. IoT have many sensible devices that collect data and establish connection from device to data or device to device, then share that data or information across the internet where it can be processed and utilized for various purpose and decisions. IOT tries to make everything smart by using smart

device.

1.4.4 IOT Challenges

IOT challenges mainly based on most four important things, which given below:

Security and Privacy:

Data integrity and confidentially achieve by using IOT device. When data is passing it will' be encrypted because of many important or personal information is passing by this device.

Technological Interoperability:

It is very challenging to connect people to people by using smart device. These devices can discord concerning their technological capabilities.

Semantic Interoperability:

It is important that all the devices interpret and share information properly which is covered by the semantic view of interoperability.

Smart Things:

Internet is trying to make our life easier. By using these things, IOT devices capable of tolerating hash environments have to be developed.

Resilience and Reliability:

IOT devices are provision awkward. Devices have low memory and computing capacity. Sometimes energy awkward.

1.5 Problems and limitations of current system

Attendance system means that keep records all students are genuinely enter in their institute. When students enter in their institute security guard ask them please show your id card, after showing that then they get permission to enter. This system is continuing day by day. When teachers take attendance in the class they start roll call then give attendance. This is our present attendance system.

First, it is a waste of time. When teacher came at their class they, start roll call so time is resume and it also affect teacher's lecture. Teacher cannot complete their lecture properly. Sometimes teachers give this attendance sheet to students, so anyone can give proxy, sometime attendance sheet may get misplaced. We all know that 5% or 10% marks are including in our attendance, but this calculation is so hard. This system has no authentication, anyone can show others ID

card, or anyone can proxy. Therefore, it is impact on our security.

1.6 Proposed solution

After our analysis we identify that two ways that can solve this problem.1) RFID 2) Biometrics by using RFID need a RFID tag and module. After touch RFID tag on RFID module all information store in sever, then server moves all information on website/mobile app. Biometrics have two part

1. Physiological
2. Behavioral

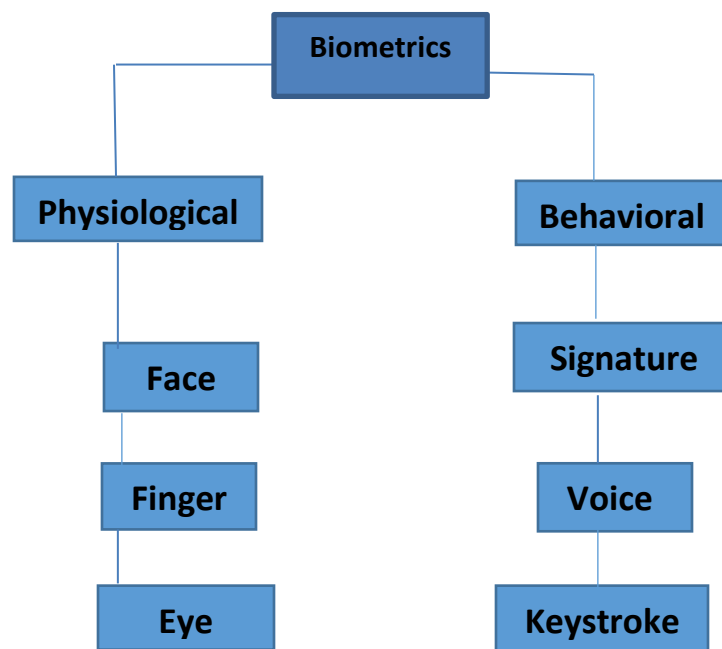


Figure 1. 2: Types of biometrics

1.7 Organization of the Report

Chapter 2 gives an overview about RFID technology and related works. Chapter 3 discusses about our proposed attendance system and its features. We explain how our system works. Chapter 4 gives a review of components in our hardware part and discusses its different features. Chapter 5 discusses how data transfer from hardware to XAMPP as a local server. Finally, in Chapter 6 we explain our plan and have some limitation that we discuss in this part.

Chapter 2

RFID and Related Works

2.1 Introduction

RFID is radio frequency identification. RFID, which entangles “RFID tag” and “reader”, data, flows from tag to the reading equipment. RFID that has identification, which used for tracking system.

2.1.1 History

Radio frequency identification (RFID) is an undisputed part of our life. Charles Walton (1921 to 2011) is the first parson who invented RFID (radio frequency identification) device on (November 6, 2011). Then Los Alamos appears with a RFID passive tag system, which used UHF radio waves.

2.1.2 What is RFID

Radio frequency identification short from RFID, which explains how uniquely, identifies objects. It is a machine and a schedule of wireless communication that settles information from an RFID tag and for separate objects and which helped to expanse.

2.1.3 What is NFC

Near Field Communication is a subset of RFID. RFID and NFC are almost similar. A group of transmission protocols which is *NFC* (Near-field communication) that define two electronic devices, one of which is a portable device like this a Smartphone, to provide transmission.

NFC runs at a high frequency, which is 13.56 MHz only a single NFC tag can scanned at one time. NFC automation is a newer, more finely honed version of RFID. It goes to 4 inches (10cm) at a maximum range and builds peer-to-peer communications. We do not use NFC because of RFID can read data fast within a minute. RFID is a one-way communication but NFC is a peer-to-peer communication.

2.2 How does the RFID reader and tag work

Three parts have RFID.

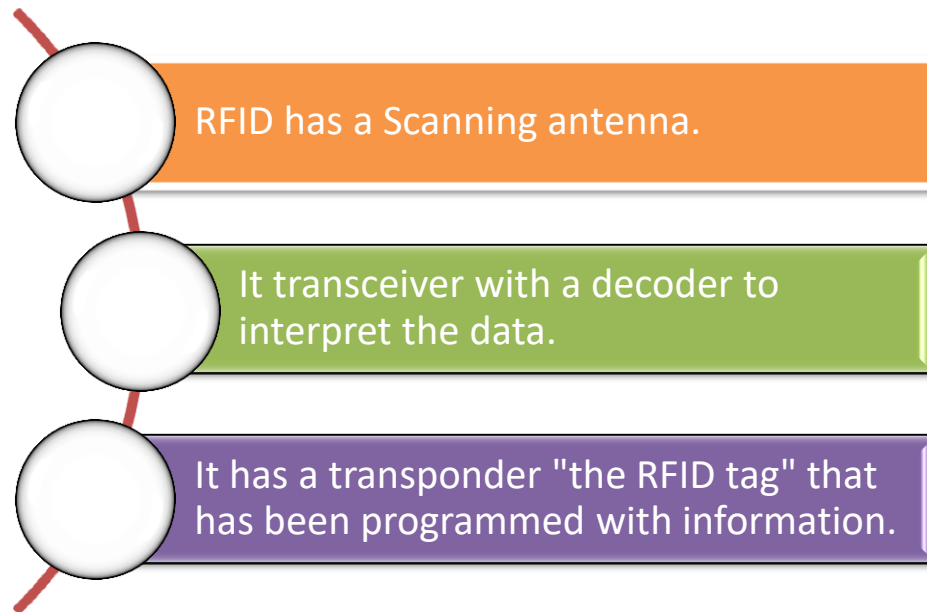


Figure 2.1: Parts of RFID

RFID uses bar code to track the items so it is a tracking system. RFID tags can read data that refers automatic identification and data collection and this method identify items, collect information and this information directly enter in to computer systems with no human interfere.

Between RFID tag and RFID reader have an electromagnetic field. By this field by establish their connection. RFID module has power but RFID tag has no power. Therefore, it is necessary for Electromagnetic field. Transmit data to the RFID reader a scanning antenna is used. The reader then alters the radio frequency. After collect information from the Tag, it transferred data by a communications interface, and then stored information in to the database.

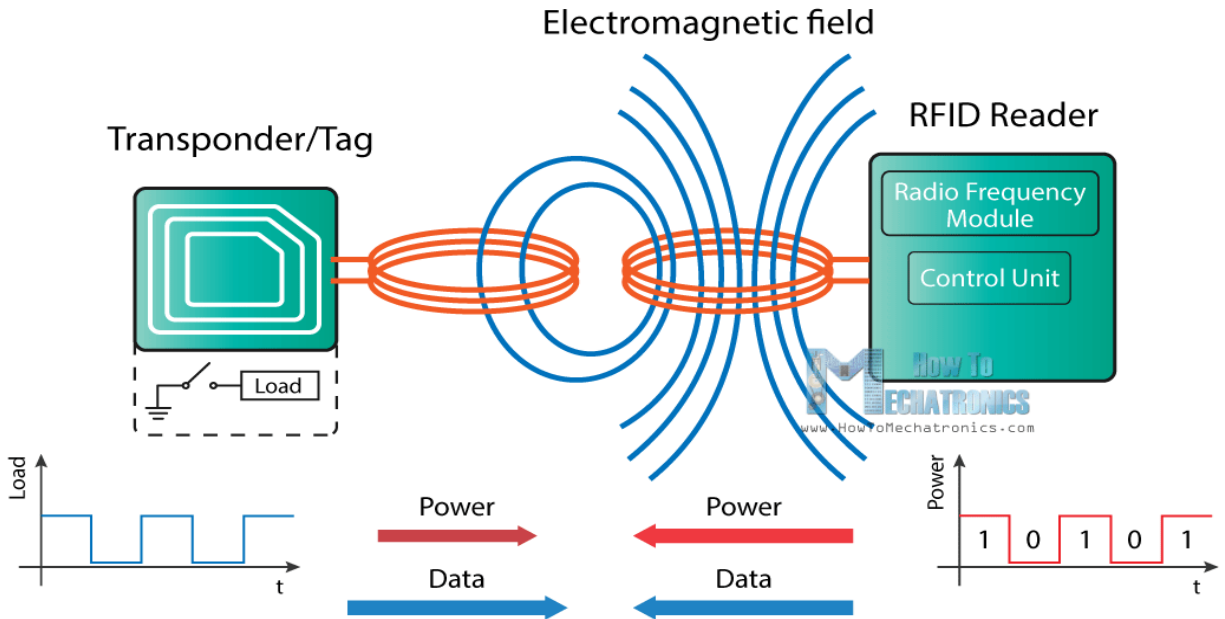


Figure 2. 2: RFID tag and reader connection

2.3 Users of our system

Now RFID is being used everywhere. Many companies are using RFID for supply chain management, so RFID is the world's most extolled wireless technology that helps them to track their supply chains. In our project, we used RFID that will carry by teachers, students.

Our system has two types of accessing modes.

1. Administrator
2. User

1. **Administrator:** Administrator has to update and monitor the registered student details, add a new student, provide register number for all students, assign each student a course, etc. Administrator can update his profile and can give help to the teachers and students.

User:

1. **Teacher:** Teacher can add attendance of the students; also, can view the student's details in graphical order, also of a single student and about the views from the students.

2. Student: Students can only view their personal details, can view their attendance and registered course.
3. Parents: parents can view their child's attendance details and registered course, so it is helpful to keep update their kids.
4. A student has their own account and they can do online registration. Information can be passes through email, also they add their course what they want to study.

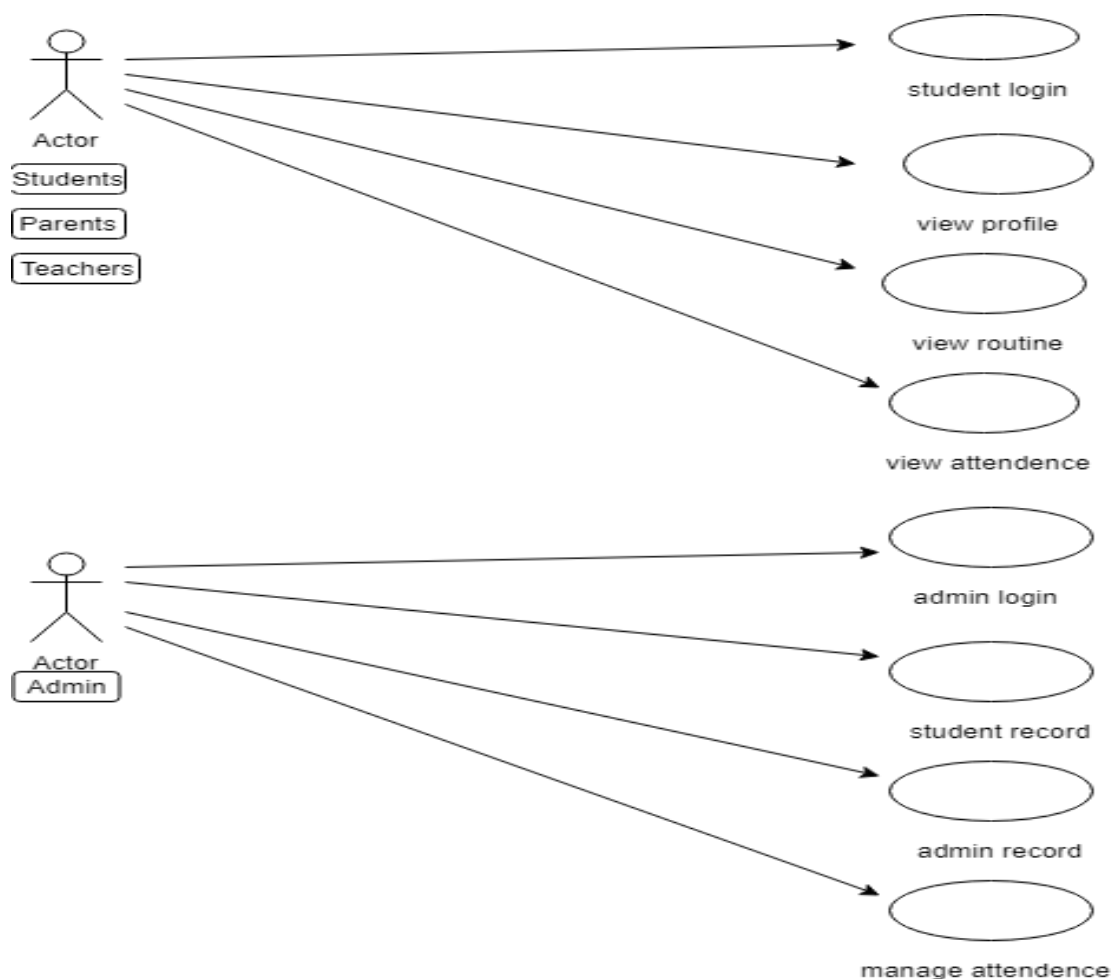


Figure 2. 3: Users of our system

2.4 RFID application

RFID (Radio Frequency Identification Device) system used in many ways. Radio Frequency Identification Device (RFID) has many applications. In our Thesis project, we used RFID

application for smart attendance system. It also used Animal tracking tags, inserted beneath the skin may be rice-sized to identify trees or wooden items Tags can be screw-shaped. Credit card shaped used in access applications.

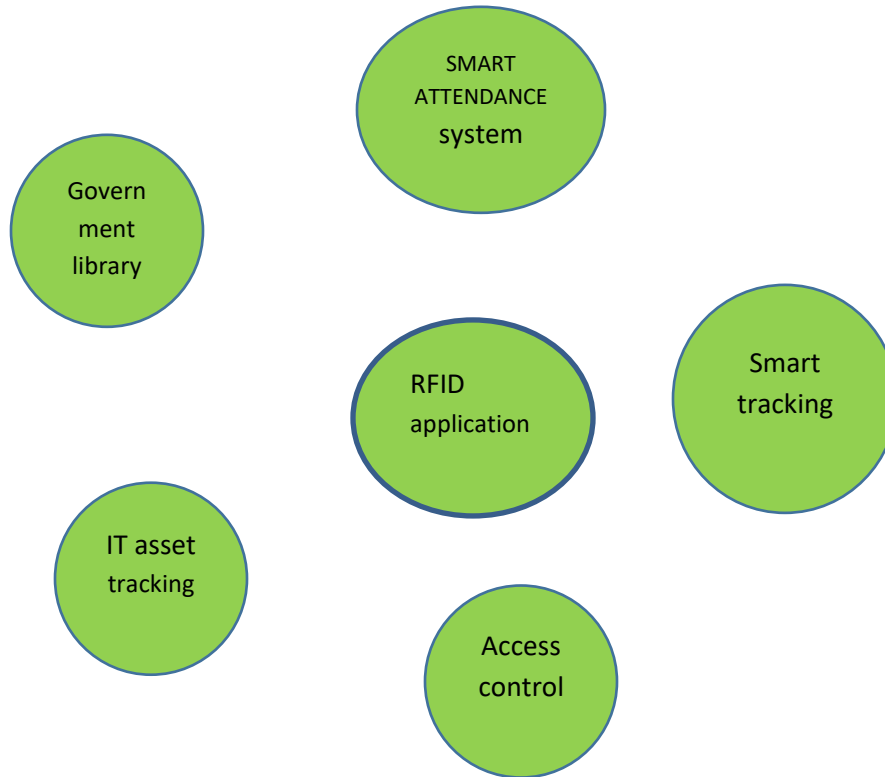


Figure 2. 4: Affirmation of RFID

2.5 Frequency of operation

Frequency Range are-

1. Low Frequency (range 125 kHz or 134 kHz)
2. High Frequency (range 13.56 MHz)
3. Ultra-High Frequency (range 860-960 MHz)

There are three types of frequency and have individual frequency. It is Frequency of operation. This individual range changing from country to country. RFID tag used this frequency in better part of the country.

Low Frequency range is up to 10 cm. High Frequency is up to 1m range and ultra-high frequency (UHF) has 10 to 15 m. range.

2.6 Working principle

LF and HF RFID Tags: Which is Near Field Computing called Inductive Coupling

UHF RFID Tags: Which is Far Field Coupling called Electromagnetic Coupling.

Electromagnetic RFID reader induce enough power into tag, it synchronization clock to tag, Acts as carrier for return data from tag.

These are the basic three purposes can solve by using the radio waves that are sent by this RFID reader. RFID tag and reader that is very near to each other in Low frequency and High Frequency operation that's why Inductive Coupling is based on the working Principle. So, the RFID reader, which generated by the field, used to get couple with antenna of a RFID tag. Because, mutual coupling voltage will be covered across the coil of a RFID tag. Few portions of the voltage is finding rectified and applied like a power supply, controller as well as memory elements. When voltage that is add across coil is also use particular frequency that means RFID reader sending radio waves of an individual frequency. Therefore, this founded voltage applied to derive a synchronize clock for the controller.

Far Field Coupling: Ultra-High Frequency has distance between RFID reader and tags are in miter distance called far afield coupling. In this system, reader is sending continuously sending radio frequency wave near the tag. RFID tag sends a low signal along the reader. On the contesting of load signal, the intensity of this low signal depends on it. In case the load signal is match perfectly we get more signal towards the RFID reader. If the signal from the RFID reader is strong then there is possibility to get a feedback-transmitted signal from the RFID tag.

2.7 Different types of RFID

RFID has three types of tags.

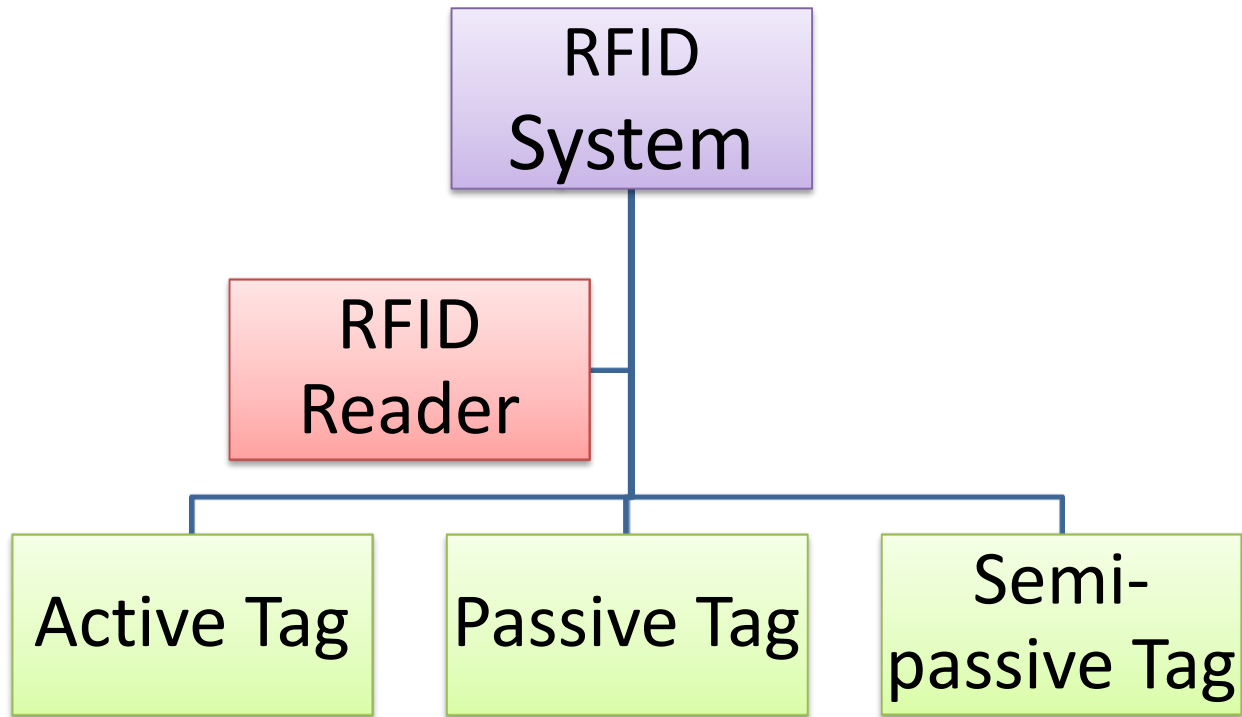


Figure 2. 5: Types of RFID system

2.7.1 Properties of Active tag

1. They do not require any external source.
2. They have their own in-built battery.
3. It can transmit high frequencies so it can be detectable to a longer range.
4. Bigger in size.
5. Expensive



Figure 2. 6: Active tag of RFID

2.7.2 Properties of passive tag

1. They do not have any battery source built in them.
2. They transmit low frequencies so they are detectable up too few meters of distance.
3. Small and short range .
4. Unlimited lifetime .
5. Electrical current induced by antenna by the incoming signal inputs Power in the tag to transmit the ID.



Figure 2. 7 : Passive tags of RFID

2.7.3 Properties of Semi passive tag

1. Similar to passive with additional small battery.
2. Battery powers the tag, when a signal is receive.
3. Bigger in size and longer range.
4. Limited lifetime.



Figure 2. 8: Semi passive tag of RFID

2.8 Different Sectors of RFID

1. Have Authentication and increase security.
2. RFID is automatic identification system like a barcode on a Credit card or ID card.
3. RFID uses radio waves to communicate with readers.
4. Fast data transfer and Data can read from 3 cm to 100 meters distance.

RFID uses in every sector. Here is the percentage of RFID used. Industrial, Transportation, Retails, Healthcare, and Education in all sectors RFID has its own stepping down.

2.9 Security and track student in campus

This RFID system ensure about student security Cause this RFID system has database which stored the information of student's entry in the campus area as well as when student leave the campus and notification is sent within a second to parents and the main server of the University, then our website can access broadcast network to access the central database. Thus, Parents and the University both have information about students.

Chapter 3

3. Proposed System Architecture

3.1 System Architecture

This RFID (Radio Frequency Identification Device) System can use for teacher's room, library access, Employee of the institutions. RFID (Radio Frequency Identification Device) used in any place where security matters.

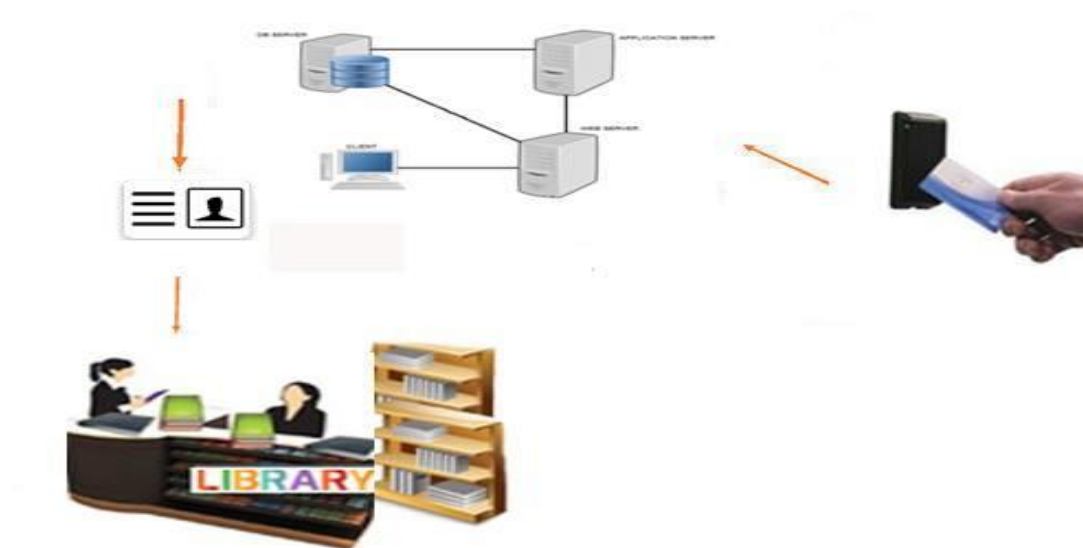


Figure 3. 1: Block diagram of our project

3.2 Feature of our project

In our project there are many features that's are given below

- 1. Access Anywhere (LAN):** After store all information on server, information are passes on our website that have access everywhere and anytime.
- 2. Information store only database:** Students all information are store in database. Students profile, their details, their entry/out all information are store in database.
- 3. Wireless communication:** Our website is a wireless communication. Anyone can access it. This website can use in mobile also used by mobile apps.
- 4. Central monitoring:** Our website is under central monitoring. Students are actually entering

in their class or, not all kind information are monitoring centrally.

5. Fast data transfer: Central server stores all information and it transfers all information in our website. This transition is too fast. That is why it can transfers first data.

6. Authentication Valid students to entry classroom: Design and development of a wireless smart attendance system is our website that have high authentication. This website only authenticates valid students to entry classroom. RFID is the only way that tries to identify all students. All students authenticates by three steps given below these steps:

i) Valid students by registered: This website is visible for everyone. Anyone can visit to our website but valid students can register only. Then they can see their details.

ii) Must entry University main gate: A student must entry their university main gate. Then this information is update into the website. Without Entry University main gate, a student cannot identify their authenticity to enter in to the class.

iii) Time and Course wise Authenticate: Everything in updated in this website. How many courses a student have and in which time, every detail in our website. By using this time and course, it is easy to authenticate all students.

3.3 Block diagram and working process of our system

Our project is a web-based application. All information is store in server. RFID tag tracked by RFID reader. RFID reader has a power and is a network-connected device that sends data and commands to the tags. RFID reader process like an access point for RFID tagged sections. The RFID reader reads the student's ID by using reading process and Arduino IDE passes student's information to the XAMPP server through the router via Wi-Fi that is a transmission process. Server (MySQL and PHP) is use to identify student ID and to send student's information to the database. The student touches the RFID tag to the RFID reader where RFID reader reads student's ID, then send it through Nodemcu. On the server side (MySQL and PHP) where it searches Student's ID in central server database then the information can show on the website.

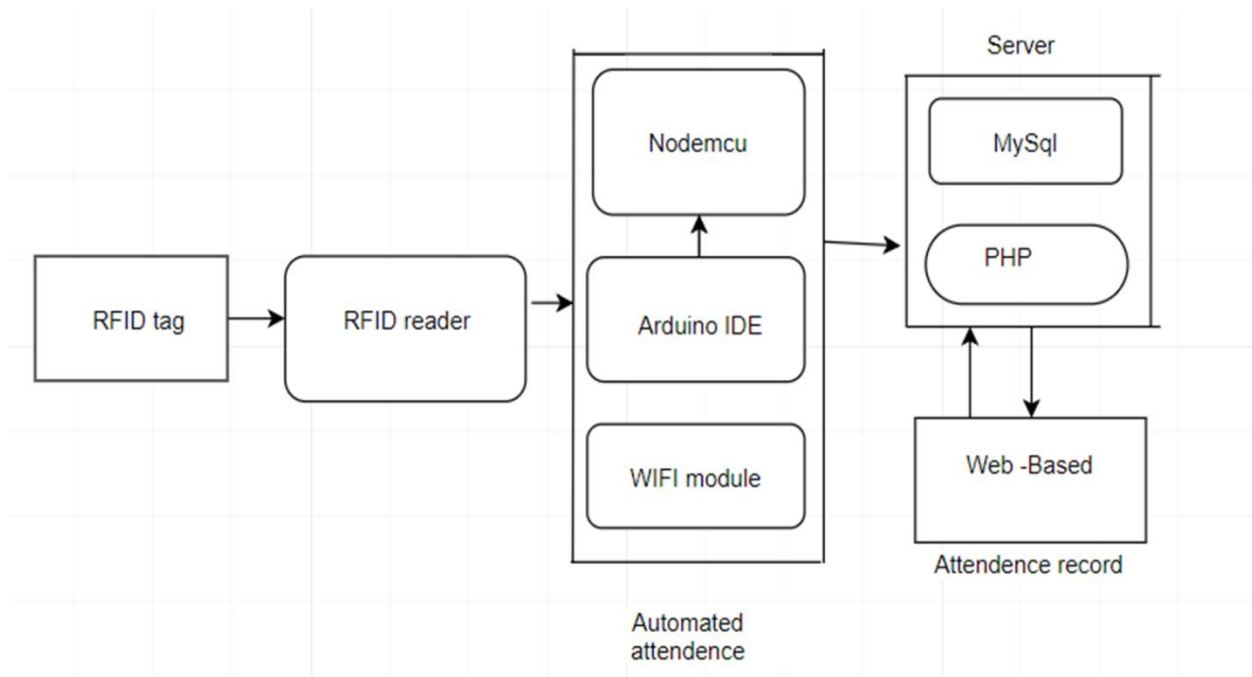


Figure 3. 2: Block diagram of working system

3.4 Functionality of RFID based attendance system

1. Attendance taken within a minute with the help of wireless network.
2. Course based entry for register student in the classroom.
3. Password recovery via email.
4. Encrypted storage password.
5. Parents can show students details.
6. Keep track from university main gate.
7. Time is set for particular course and particular attendance.

Chapter 4

4. Hardware and Software components

4.1 Hardware

4.1.1 Introduction of our hardware system

Our hardware system is a simple design and need five types' components. So that our hardware system cost will be low. This system provides wireless communication that is mean hardware system transfer data into the server using Wi-Fi.

4.1.2 Components used in our system

4.1.2.1 RFID Tag

Be composed of a silicon microchip connected to a small antenna, mounted on a substrate, and encapsulated in various types of materials in the manner of plastic or glass veil and with a sticky on the backside to connect to objects.



Figure 4. 1: RFID tag

4.1.2.2 RFID reader

Be composed of a scanner with antennas to transmit and receive signals and is carrying the load for connection with the tag and receives the information from the tag.



Figure 4. 2: RFID reader

4.1.2.3 NodeMCU

NodeMCU is a free origin IoT platform. It comprehend firmware , which escape on the ESP8266 Wi-Fi Sock from Express, and hardware that is establish on the ESP-12 module. The term "NodeMCU" by default, assign to the firmware rather than the development kits. The Lau scripting language used by the firmware. It is established on the Eula system, and configuration on the Express if Non-OS SDK for ESP8266. It causes many free origin systems, such as Lua-cjson, and spiffs.



Figure 4. 3: NodeMCU

4.1.2.4 Jumper Wire

A **jump wire** is an electrical wire and group of them in a cable, with a pin at individual edge, which normally used to interconnect the components of a breadboard. Internally or with other equipment or components, without soldering.

4.1.2.4.1 Types of Jumper Wire

Jumper wires have the three types:

1. male-to-male
2. male-to-female
3. female-to-female.

The variation between individual is in the edge point of the wire. Male edges have a pin extending and can connection into things, while female edges do not and are used to connection things into.



Figure 4. 4: Jumper Wire

4.1.2.5 Breadboard

Breadboard is a way of constructing electronics without having to use a soldering iron. Most components can push straight into the holes. Need not required soldering and easy to change connection and replace components.

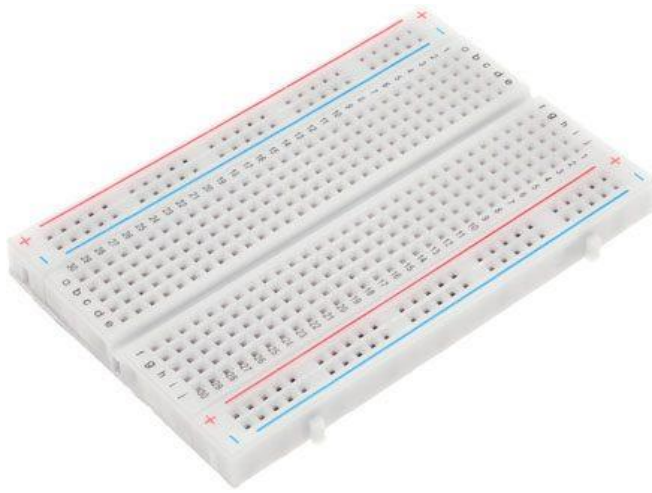


Figure 4. 5: Breadboard

4.1.2.6 Power Supply

This is a power supplying module architecture. It is for breadboards. It is mechanical by a 5V DC jack with an input voltage of 6.5v-12V. The module has a power button and power indicator LED. The module supports output of 3.3V or 5V. Two circuits are set at top and bottom for separated control and output can be change between 0V, 3.3V and 5V.

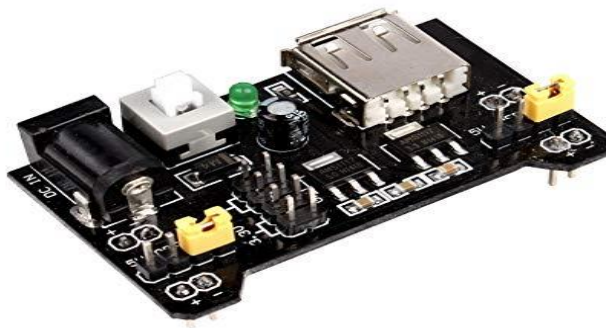


Figure 4. 6: Power Supply

4.2 Software

4.2.1 Arduino IDE

The Arduino IDE means Integrated Development Environment. The Arduino IDE is a cross platform application (for Windows, macOS, Linux) that is written in the programming language Java. It originated from the IDE for the languages Processing and Wiring. There are varieties of development environments that used to program the ESP8266. The ESP8266 section created an add-on for the Arduino IDE that permit us to program the ESP8266 using the Arduino IDE and its programming language.



Figure 4. 7: Arduino IDE

4.2.2 XAMPP Server

XAMPP is sever which one we use as a local server. XAMPP is a completely free and open-source cross-platform web server solution stack package developed by Apache Friends, consisting mainly of the Apache HTTP Server, Maria DB database, and interpreters for scripts written in the PHP and Perl programming languages. Since most actual web server deployments use the same components as XAMPP, it makes transitioning from a local test server to a live server possible. Apache Friends is a non-profit project to promote the Apache web server and is home to the XAMPP project. XAMPP has been around for more than 10 years – there is a huge community behind it.

Front end = Bootstrap, HTML, CSS, JavaScript

Back end = PHP, MYSQL

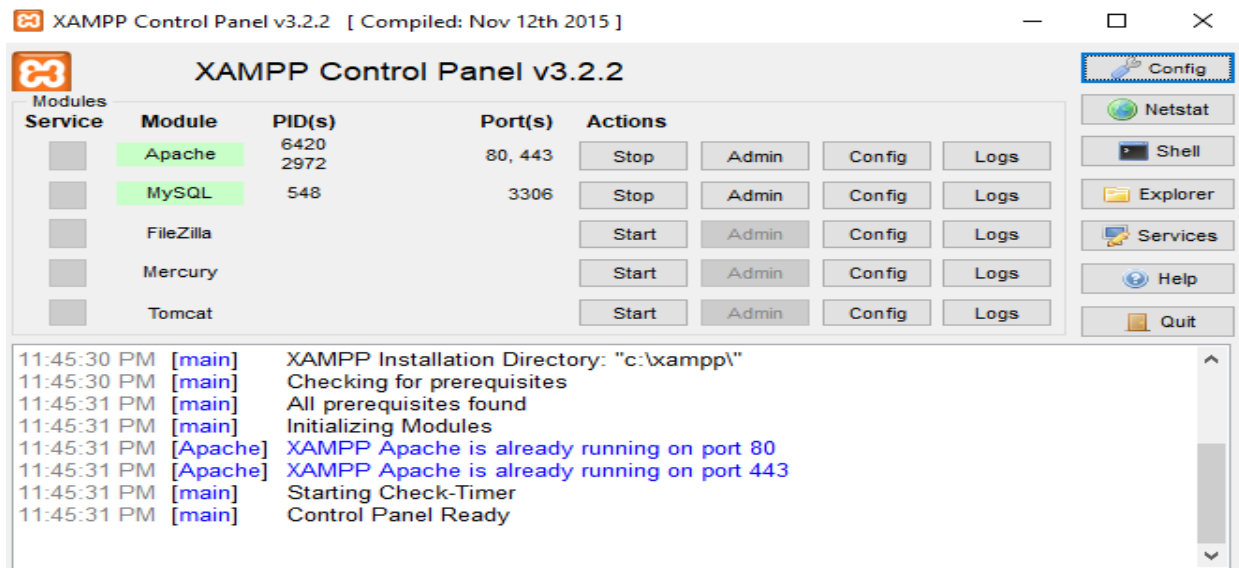


Figure 4. 8: XAMPP

Chapter 5

5. Implementation of our system

5.1 Connection between NodeMCU and RFID

We will assemble the base configuration following the circuit's diagram show below. Then, we connect NmodeMCU and open the Arduino IDE and given the code.

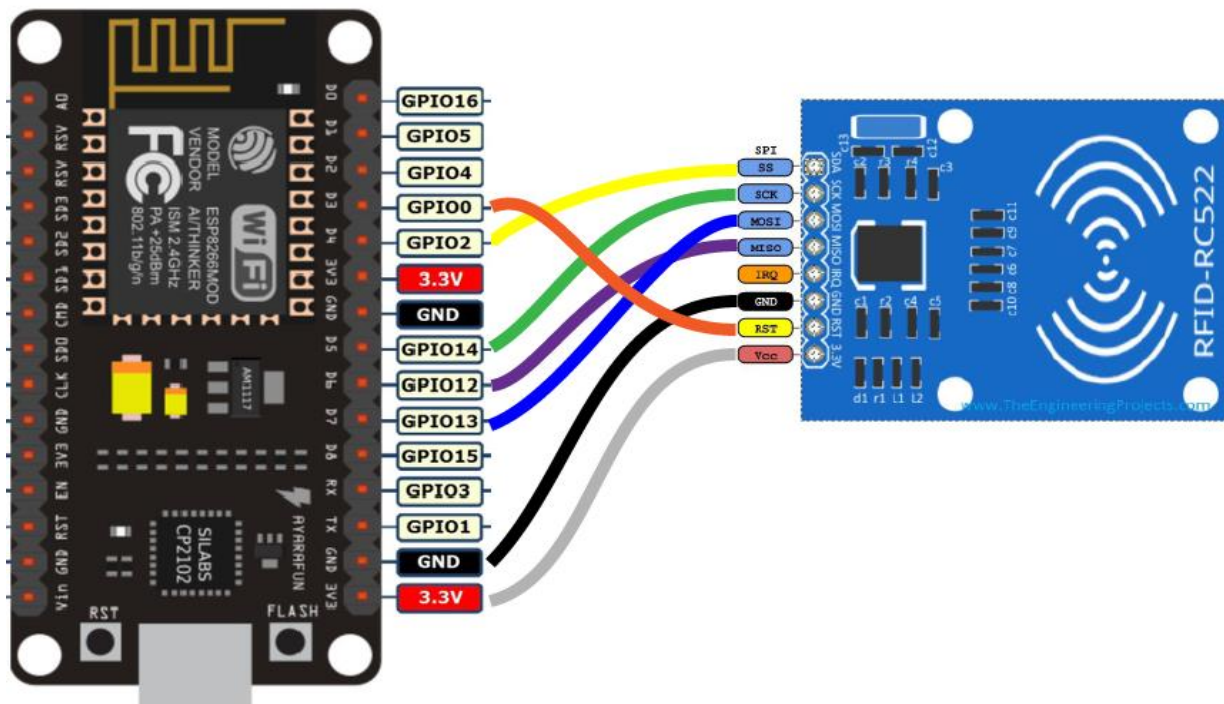


Figure 5. 1: Connection of Arduino Uno and RFID

Table 1: Pin connection

NodeMCU	MFRC522
D4(GPIO2)	SDA (SS)
D5(GPIO14)	SCK
D7(GPIO13)	MOSI
D6(GPIO12)	IRQ
GND	GND
D3	RST(FLASH)
3v	3.3v

SPI:

Serial peripheral interface

1. MISO
2. MOSI
3. SCK
4. SS

MISO:

Master in slave out

MOSI:

Master out slave in

SCK:

Serial clock. It is use for passing the data.

SDA:

Serial data.

5.2 Connection between Arduino IDE and Nodemcu

There are six steps to connect Nodemcu on Arduino IDE.

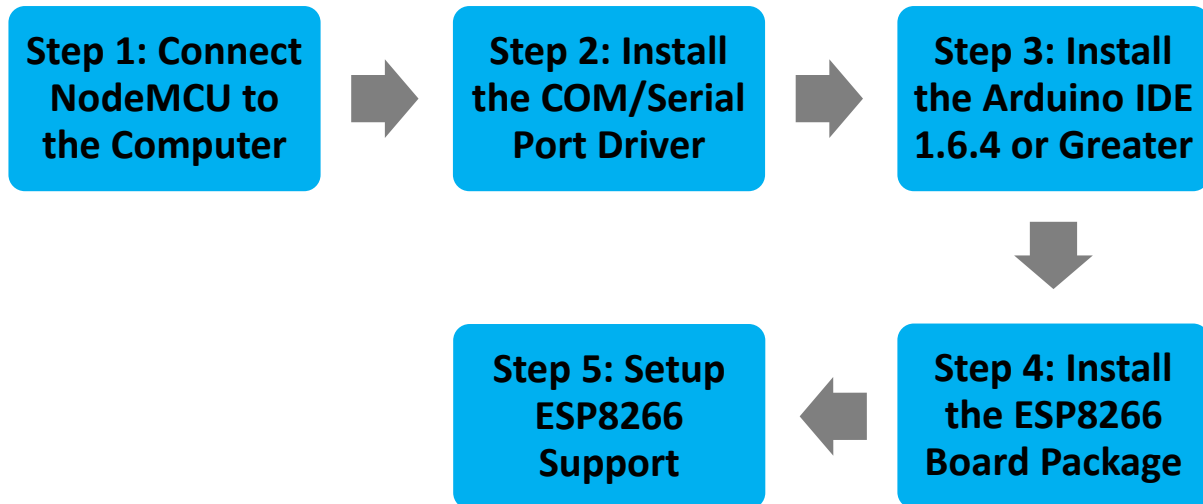


Figure 5. 2: steps of Nodemcu on Arduino IDE

Step 1: Connect NodeMCU to the Computer

We are use the cable connect nodeMCU to the computer, we will see the blue onboard LED flicker when powered up, but they will not stay lit.

Step 2: Install the COM/Serial Port Driver

That one may transfer code to the ESP8266 and adoption the serial console, attach any data-capable micro usb cable to ESP8266 IoT board and the other side to our computer's usb port. The new version NodeMCUv1.0 appears with the CP2102 serial chip, we can download and install the driver from www.silabs.com/products/development-tools The NodeMCUv0.9 appears with the CH340 serial chip; we can download and install the driver from github.com/nodemcu/nodemcu-devkit/tree/master

Step 3: Install the Arduino IDE 1.6.4 or Greater

Download Arduino IDE from Arduino.cc (1.6.4 or greater). We can use our existing IDE if we have already installed it. We can also try downloading the ready-to-go package from the ESP8266-Arduino project, if the proxy is giving our problems.

Step 4: Install the ESP8266 Board Package

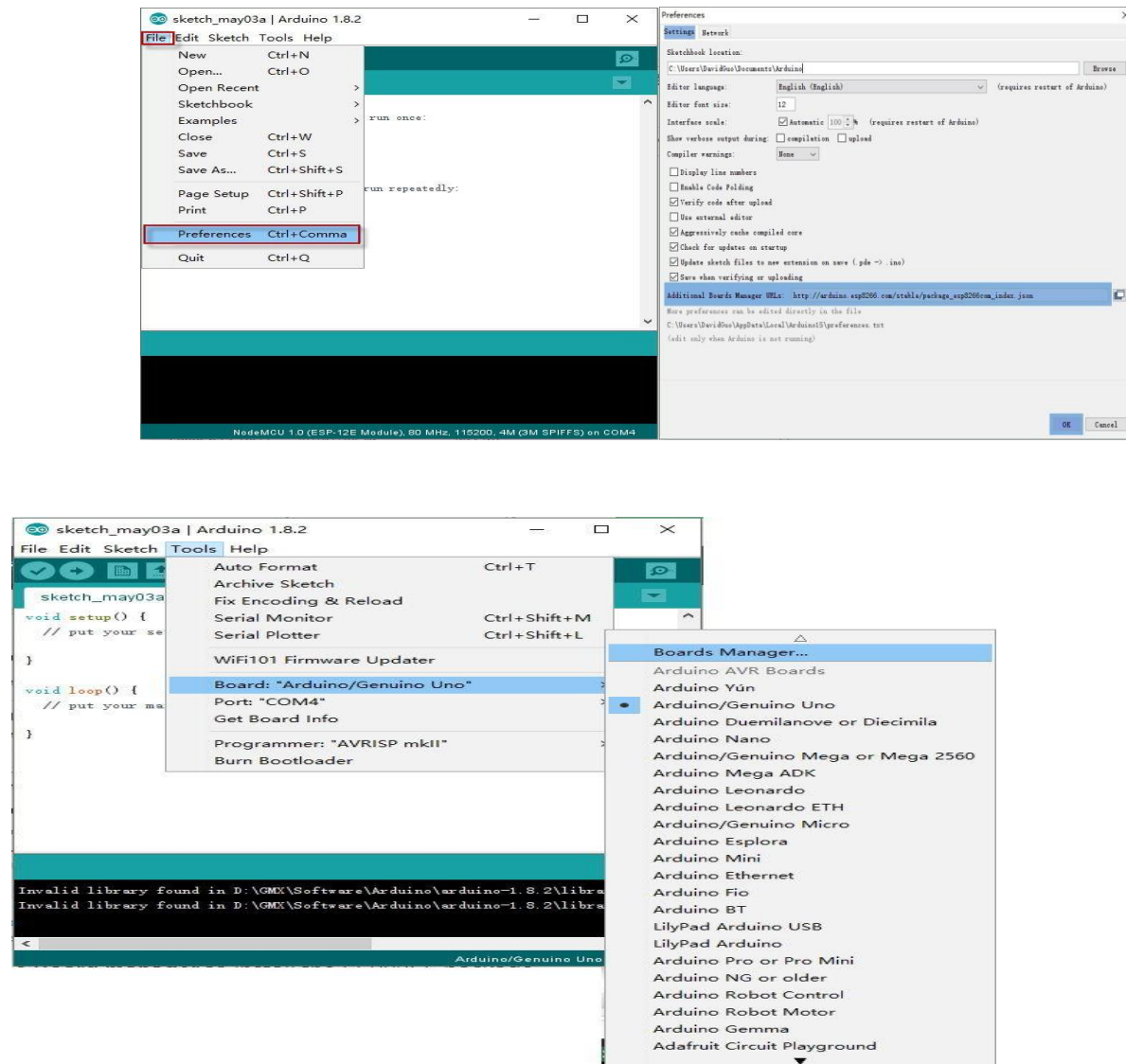


Figure 5. 3: ESP8266 Board Package

Step5: Setup ESP8266 Support

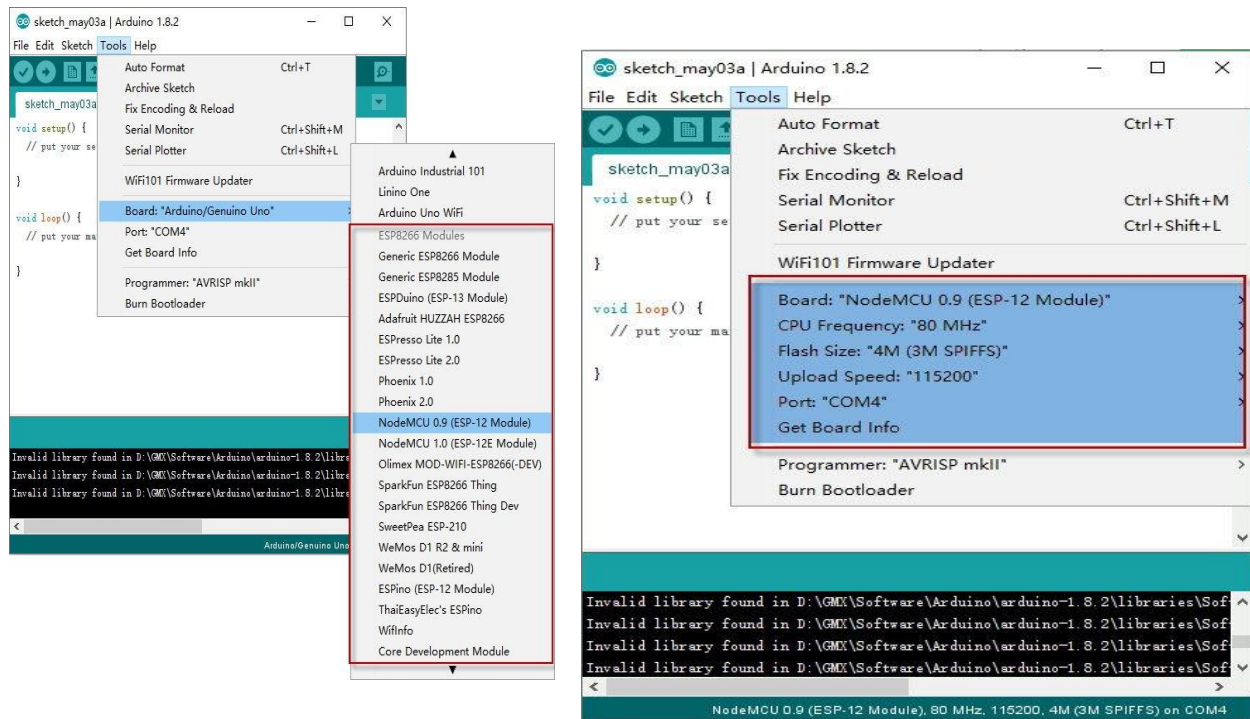


Figure 5. 4: Setup ESP8266 Support

5.3 Flowchart

Of the making procedure when a student start swipes card, if no display error message then card is registered and check RFID tag. If tag is, validate then transfer information into the database, otherwise display error message. All database information store in the server then all information showed on the website.

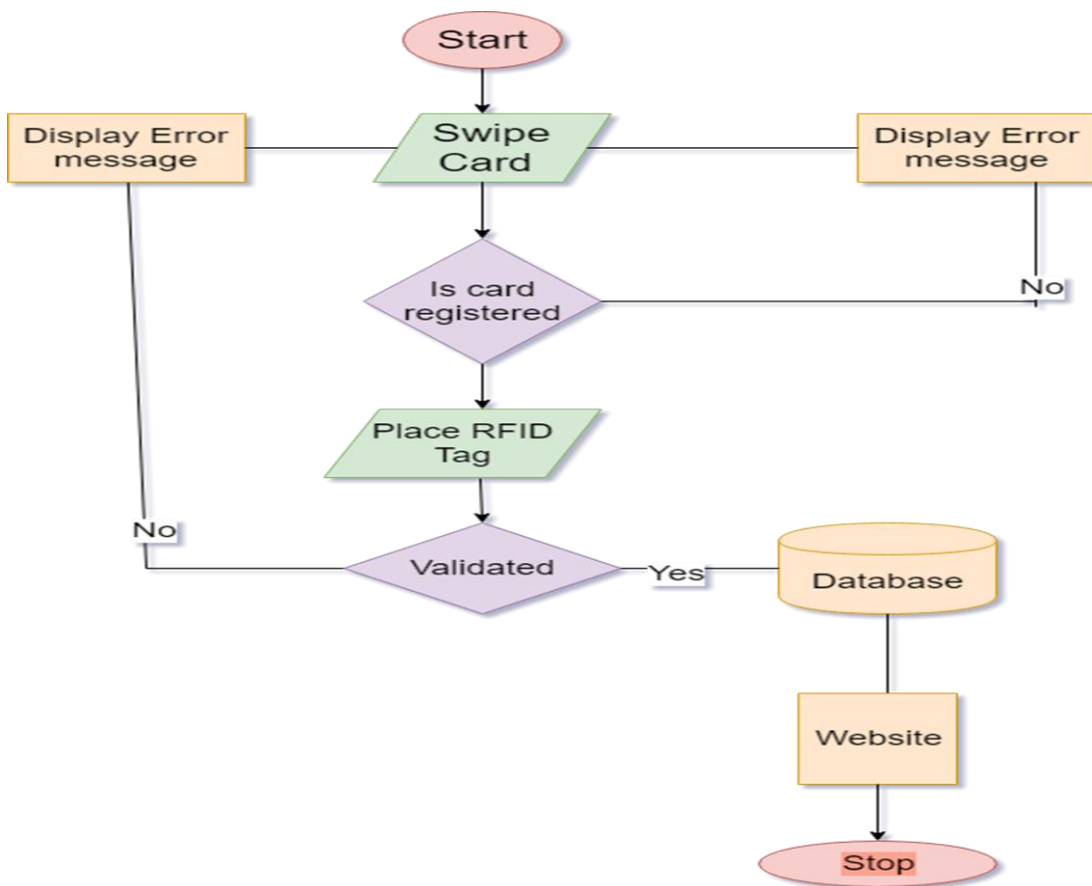


Figure 5. 5: System Flow chart

5.4 Server configuration

Server can divide in two parts.

1. Validity
2. Access Control

First of all, RFID will send a data to server then sever will check

1. Validity
2. Status

Here validity means the students ID is allow or not allow. Status means student in or out.

If the ID is allowed –

1. ID tag number store in database
2. Save time schedule.
3. Confirm course.

If the ID is not allowed –

1. ID tag number do not store in database.
2. Have no access to enter in to the campus.

Database schema:

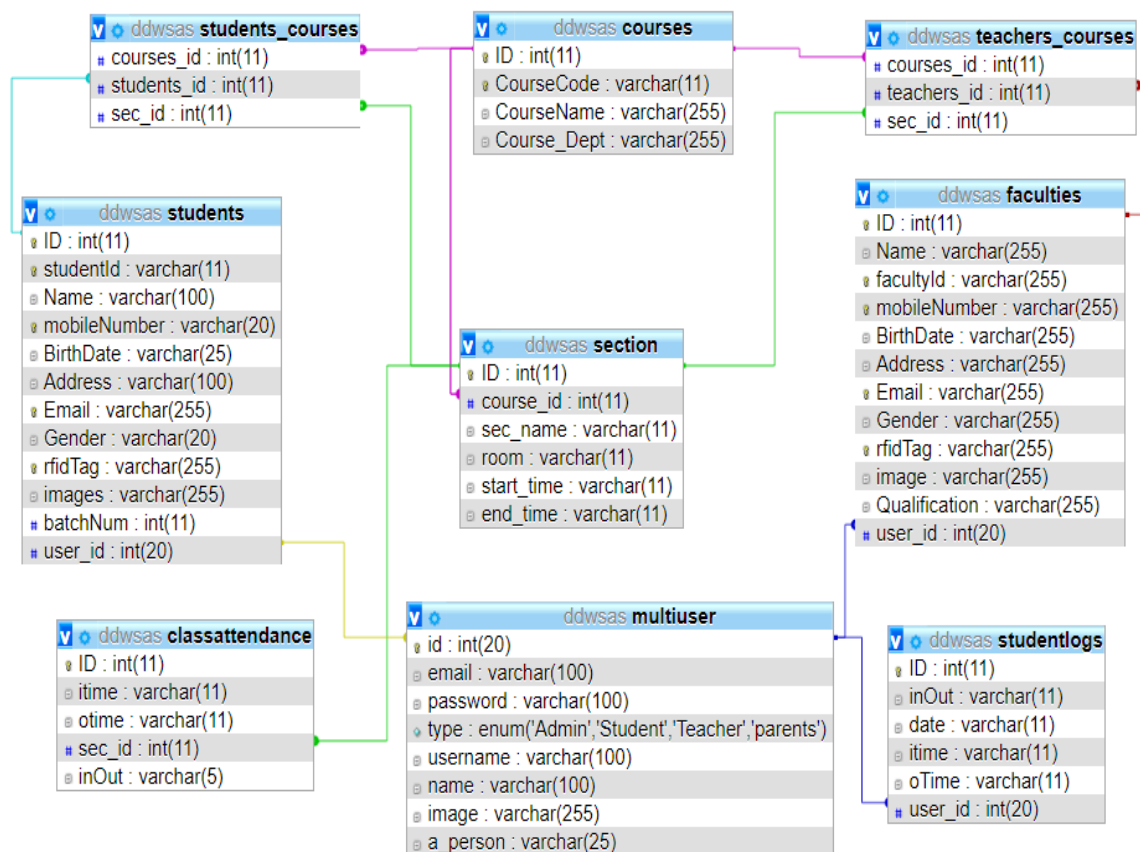


Figure 5. 6: Schema diagram

Here is our project schema diagram. Nine tables are including.

1. **Student's courses:** Student course table has a course id, student's id and section id. Course id is a primary key in this table and section id is foreign key. By using course id this table is connect with another table. This table access from another table then using foreign key.
2. **Students:** Student table has a student id, RFID tag and user id. Student id is a primary key in this table and user id is a foreign key.
3. **Class attendance:** Class attendance table has an attendance id, and section id. Attendance id is a primary key in this table and section id is foreign key.
4. **Multiuser:** Multiuser table has a User id. User id is a primary key in this table.
5. **Student logs:** Student log table has a log id, and user id. Log id is a primary key and user id is foreign key.
6. **Section:** Section table has a course id and section id. Section id this a primary key in this table and course id is foreign key.
7. **Courses:** Course id is a primary key here.
8. **Teacher's courses:** Teacher's courses table includes course id, student's id and section id. All keys are foreign key.
9. **Faculties:** Faculties table has a faculty id, user id. Faculty id is a primary key and user id is foreign key.

All table are connect by foreign key and they have their own individual primary key.

5.5 Some snapshots of work

Homepage:

In homepage anyone can visit without authenticate and if they want to say something they can comment. If they want any information of students, they need registered.

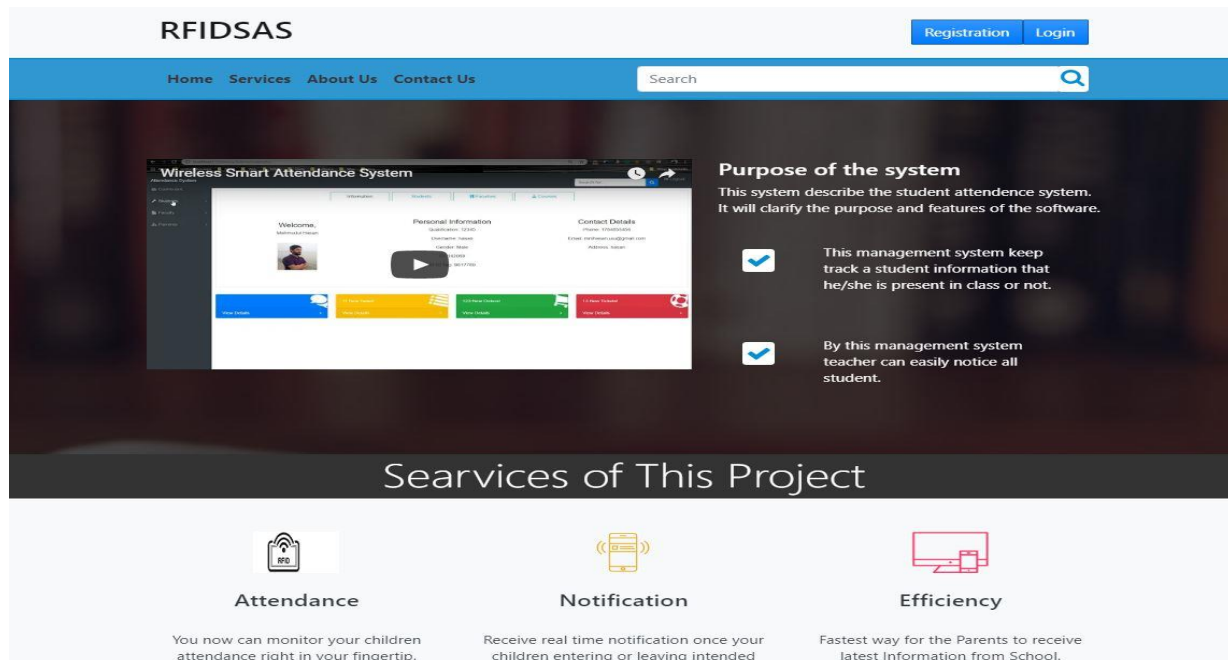


Figure 5. 7: Homepage

Login/Registration:

Login as a student, he/she will be authenticate by his academic mail ID. As a teacher he also need to authenticated by his academic mail id. Parents for one student can take one or two accounts. For registration they need to provide their students email id and then they can visit their profile

Figure 5. 8: Login / registration

Admin page:

An admin can view all students, teacher's information's. If he wants then he can insert new data, delete and can update data.

#	Name	ID	Birth Date	Contact	Email	Address	Gender	Batch
1	Alif Choyon	11142002	11142002	11142002	Choyon@gmail.com	Dhanmondi 15	Male	0
2	Aziz Mohammad	11143065	11143065	11143065	azizr@gmail.com	Dhanmondi 15	Male	0
3	Md.Mamun Molla	11142024	11142024	11142024	Md.Mamun@gmail.com	Notun bazar	Male	0
4	Md.Hasanuzzaman	11142017	11142017	11142017	Md.Hasanuzzaman@gmail.com	Dhanmondi 15	Male	0
5	Fahim	11143060	11143060	11143060	Fahim@gmail.com	Dhanmondi 15	Male	0
6	Mahmudul Hasan	142069	18/5/94	1764855456	mmhasan.mr@gmail.com	Dhanmondi 15	Male	123
7	Tanima Yousuf	011141062	01114	011141062	tanima@gmail.com	Dhanmondi 15	Male	123
8	imran	imran	12345	imran	imran@gmail.com	12imran	Male	0
9	Asraf Hossain	142789	18/09/90	0123456789	asraf@gmail.com	Dhanmondi 15	Male	142

Figure 5. 9: Admin homepage

Student profile:

Here is a student profile that include

1. Qualification
2. Username
3. Gender
4. ID
5. RFID tag
6. Contract details (email, phone ,Address)

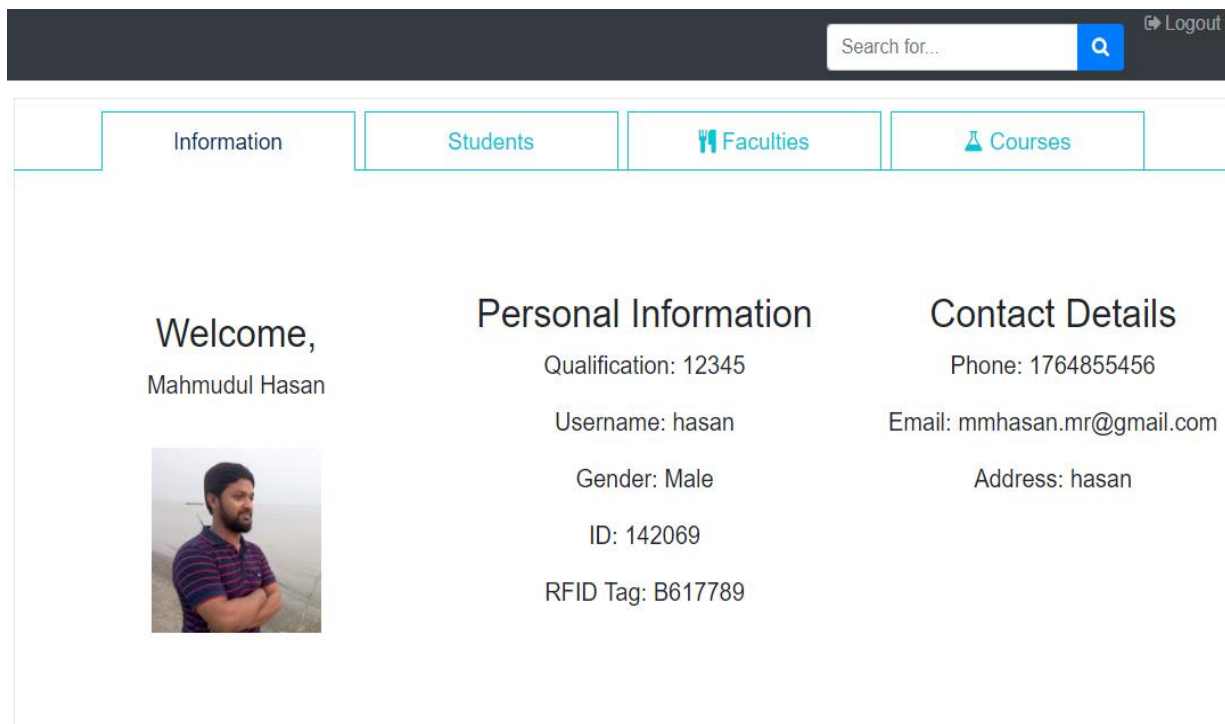


Figure 5. 10: Students profile

Student log:

1. Have in/out status: When student entries class room this time shown in status until out in the classroom and this time shown out status, and save all students in/out status time.
2. Individual tag id: All students need an individual RFID tag for identify them individually.
3. Search student by time and date: Search all student time and date wise and when student comes to the class and out from the class. Students can view his course attendance and communicate with his teachers.

Data Table Example

Show 10 entries

Search:

Name	ID	In/Out	RFID Tag	Date	In Time	Out Time
Md.Hasanuzzaman	11142017	out	BDD7689	12/09/18	02:10:50 pm	03:02:46 pm
Md.Hasanuzzaman	11142017	out	BDD7689	12/09/18	01:33:41 pm	02:10:34 pm
Md.Hasanuzzaman	11142017	out	BDD7689	08/08/18	02:03:55 pm	02:05:32 pm
Md.Hasanuzzaman	11142017	out	BDD7689	12/09/18	01:01:55 pm	01:31:47 pm
Md.Mamun Molla	11142024	out	6A07789	12/09/18	01:34:36 pm	02:10:59 pm
Md.Mamun Molla	11142024	out	6A07789	08/08/18	02:06:04 pm	02:06:42 pm
Md.Mamun Molla	11142024	out	6A07789	08/08/18	02:04:54 pm	02:05:56 pm

Figure 5. 11: student's log

Difference in/out status:

This snapshot proves that when a student in and he/she out.

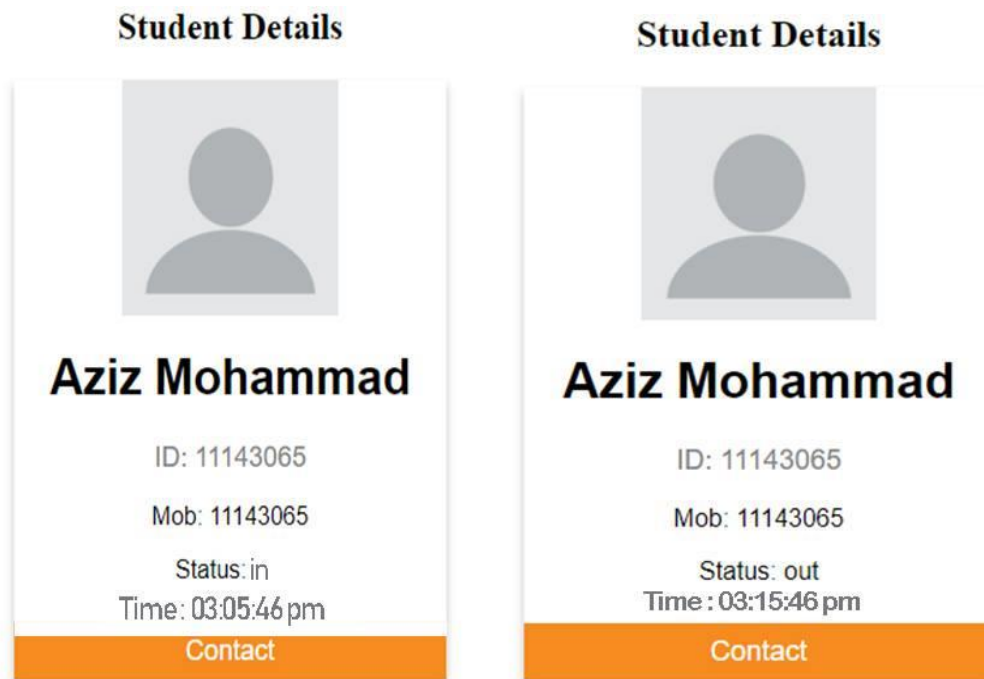


Figure 5. 12: Students details

Parent's page:

Parents can only view his student's information that when he/she in/out from institute and view course details.

The screenshot displays the RFIDSAS Parent's page. The header includes the RFIDSAS logo, a 'Setting' button, and a user profile icon. The navigation bar shows 'Home' and 'Students-Log' with a search bar. The main content area is divided into two sections. The left section, titled 'Student status', contains a table with student in/out records. The right section displays a student profile with a placeholder image and various details.

Name	In/Out	Date	In Time	Out Time
Fahim	out	12/09/18	02:05:20 pm	10:46:51 am
Fahim	out	08/08/18	01:54:11 pm	01:54:16 pm
Fahim	out	08/08/18	11:28:36 pm	01:53:52 pm
Fahim	out	12/09/18	01:27:29 pm	01:35:21 pm

Updated 30/09/18 at 03:17:09 pm

Name: Fahim
Student Id: 11143060
Phone: 11143060
Email: Fahim@gmail.com
Batch Num: 0
Gender: Male
RFID Tag: 09EF7A3

Figure 5. 13: parent's page

Chapter 6

6. Conclusion & Future works

6.1 Limitations of RFID

1. Security is an important issue in RFID based system. Anyone can use others RFID tag, so it will hamper in our security.
2. Time consuming is also an important issue. When start class time and all students come in front of the class and they attach student id card in RFID reader one by one that's take more time.
3. RFID is expensive than barcode system.
4. Liquid and metal things reflect when it comes near the RFID reader and then data is unreadable.

There is some limitation in RFID system. There is also an issue of security system. Therefore, that is why in future we can work on it. That no one can hack the system or no one can give proxy of other. Therefore, we will work on this in future. For future work, we think something on our project.

6.2 conclusions

Design and development of a wireless smart system using is one of best way to take attendance of the student. New Technology's modern invention in the monitoring system that provides more advantageous way and will be a massive success in improving the current traditional way of monitoring students.

The Institution Management faces many challenges like student missing, student bunking class, faculty marking fake attendance, faculty spending 30% time on Error manual Attendance, lack or no communication among students, faculty, parents, and Admin staffs. So all these things solved by Smart Attendance System using RFID. These RFID can detect student entry mark their attendance within 1 minute and sent notification to the parent and student whole information will kept in database server.



Figure 6. 3: Fingerprint of smart attendance



Figure 6. 4: Voice recognition of smart attendance

Server Implement in future

For better server system, we will make a system that student or employee can check every single detail, which is relate with them. We will apply this system in many institutes whole campus to increase security. It can be-

1. Payment history
2. Mark sheet
3. Percentage
4. Result history

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