

An Intelligent Classroom: Smart Environment for Students.

Poonam Sunil Chavan¹, Dipali Ramnath Kurhade², Dipali Punjaji Muthal³,
Rupali Punjaji Muthal⁴, Umakant D. Butkar⁵

Computer Engineering, Sir Visvesvaraya institute of Technology, Nashik, Maharashtra, India

ABSTRACT

It is the fact that people often walk lights, fans and other equipment are not turned off in the classroom of colleges or schools and sometimes we forget to turn it off and we leave the place.

The time occupied by teachers to take the attendance in the classroom affects the teaching and sometimes it cannot report the attendance rate accurately and in time. To save that time sometimes teachers take the signature of students on paper which leads to fraud in attendance such as many students proxy their friends.

Keyword: - Automation, Attendance, Iot, NodeMCU, Relay, Android App.

1. Introduction:

In the moment's world, artificial intelligence is one of the most fleetly developing technologies; it offers unlimited possibilities. Analysis, soothsaying, recognition came to a new position with the use of artificial intelligence and machine literacy technologies. In recent times, an extremely promising field of exploration is computer vision. Technology in this area is most in-demand in our everyday life. A large number of computers and biases can be connected to the Internet through the Internet of Effects (IoT). These effects or biases have unique individualities. IoT creates a smart terrain by connecting bias with the internet and equipping them with the capability to gather and change data. These biases or widgets are generally connected with micro-controllers, detectors, selectors, and internet connectivity. Similar widgets include light, suckers, and many regular ménage particulars like washing machines, refrigerators, sound systems, coffee makers, alarm timepieces, etc. In IoT featherlight protocols like MQTT and CoAP are used for data transmission. Communication Using the Queuing Telemetry Transport protocol (MQTT), data can be transferred between biases via the Internet of Effects. We're choosing the design content of the Automated classroom, in this, we can control electronic bias automatically as well as fete the faces of scholars and induce the attendance report automatically.

In this paper, the generators depicted the current designs for classroom robotization.

There are two main modules that are;

- 1) Attendance Module
- 2) Automation Module

1) Attendance Module:

Now, days teachers take attendance manually. There are two types to taking attendance, first way that is some teachers prefer to call roll-no./enrolment no. and put a mark for present/absent & second way that is teachers prefer to pass around a paper of signature sheet. After collecting the attendance data, teachers enter the data manually.

This takes so much time & during this time the attention of the student and also teachers is disturbing within this manual work there are more chances of mistake.

Students and teachers may use this module to identify students and mark attendance, through the process of face detection. Face detection is the process of identifying faces within digital images. An image or video can be recognized by this system based on the face present in it.

We need to define a general structure of a face to determine certain picture or video contains a face (or several). A face contains the same features as a human face, including eyes, noses, foreheads, mouths, and chins. Therefore, the objective of face detection is to locate the location in an image where the human face is. After the face is located, the facial recognition algorithm is used to extract the features from the image. In LBPH, the first binary pattern images are computed, and a histogram is generated for facial recognition. This generates a template. There are many variables that make up the template, but all of them represent the unique and distinctive features of the face. It is the process of being able to identify and verify a person's face using biometrics by comparing and analysing the biometric person's face. It is an application that allows you to identify or verify someone from a digital image by using a face recognition system.

2) Automation Module:

Students are leaving the classroom without switching the electronic devices like lights, fans which lead to unnecessary consumption of energy. It is necessary to find out any useful solution to this problem.

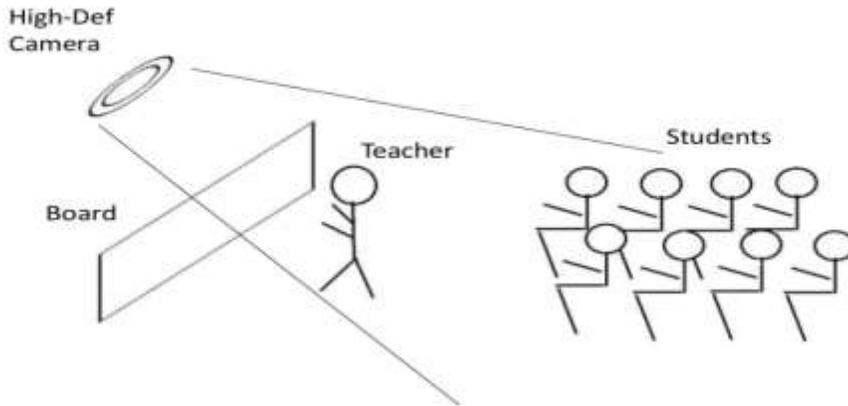
This module explains the various possibilities of connecting electronic devices and tries to solve the above problem. Electronic devices such as fans, lights are connected to the relay and NodeMCU. We have talked about the nodeMCU service interface programming model, In that nodeMCU Can access of firebase cloud using programming. Using the program Node MCU can perform the commands which we store on the cloud using the android app.

2.Objective &Scope of proposed system:

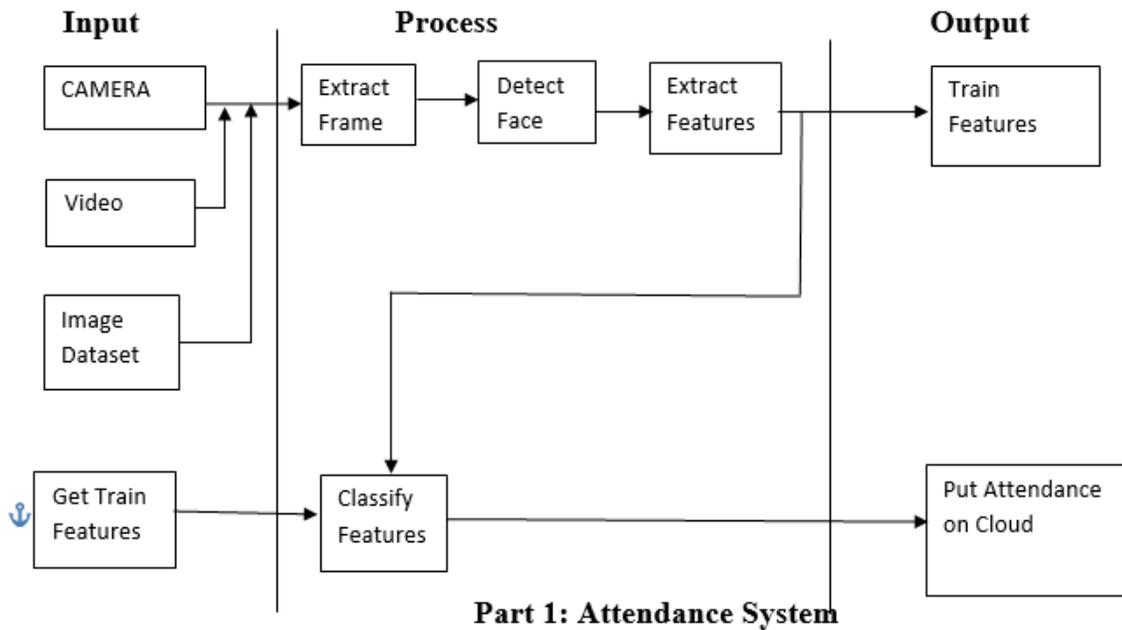
- 1) Reduce the work of teacher
- 2) Automatically generate the attendance report
- 3) Easy to use
- 4) Reduce Time
- 5) Design to save electricity and improve new lighting control system using Internet of Things (IoT).

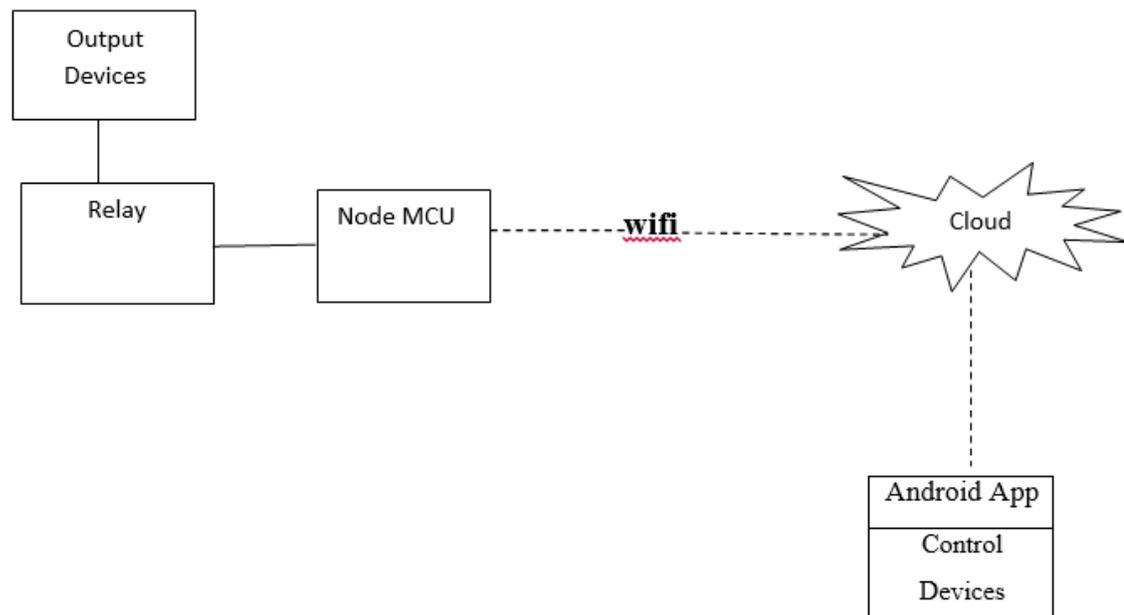
System Architecture:

Basic Structure



System Flow:





Part 2: Automation classroom

3. Advantages:

1. Time Saving Compare to Manual attendance.
2. More accuracy in attendance report.
3. Easy attendance Recording.
4. Automatic Calculation.
5. Decrease Human Efforts.
6. Reduce paperwork and Save paper.
7. Increase Security.
8. Save electricity.
9. Best solution with minimum budget

4. Disadvantages:

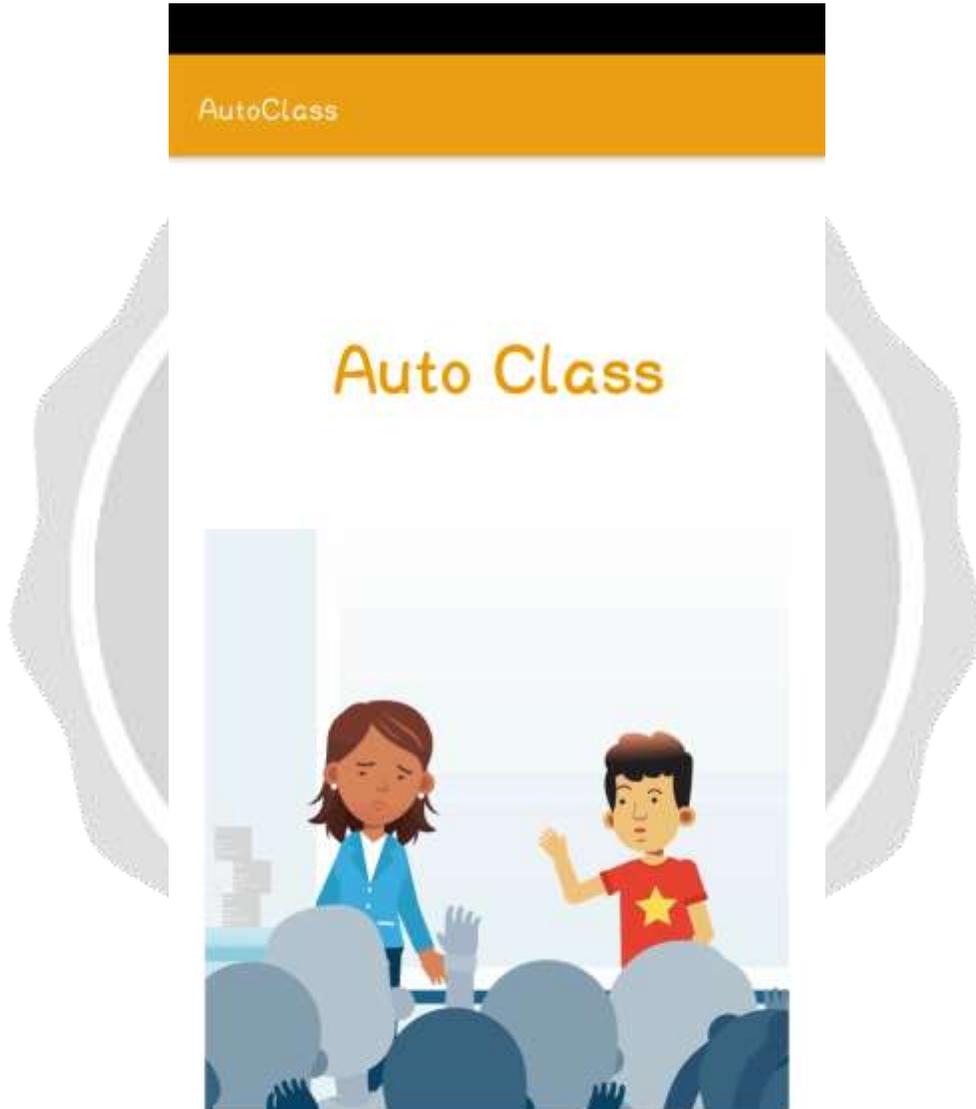
Always need strong internet connections.

5.Applications:

1. In School / College.
2. Organizations.
3. Office.

6. RESULT:

6.1 Android Application:





Select Login





Student
Login

Hello there, Welcome Back

Sign In to continue

Contact

Password 

LOGIN



Student
Login

Hello there, Welcome Back

Sign In to continue

Contact

Password

LOGIN



Poonam
Chavan

RollNo	20
Date	27/4/2022
Attendance	P
RollNo	20
Date	27/4/2022
Attendance	P
RollNo	20
Date	27/4/2022
Attendance	P
RollNo	20
Date	2/5/2022
Attendance	P
RollNo	20



Teaching Staff Register

Name

Email

Contact No

Password 

Authentication key 

REGISTER



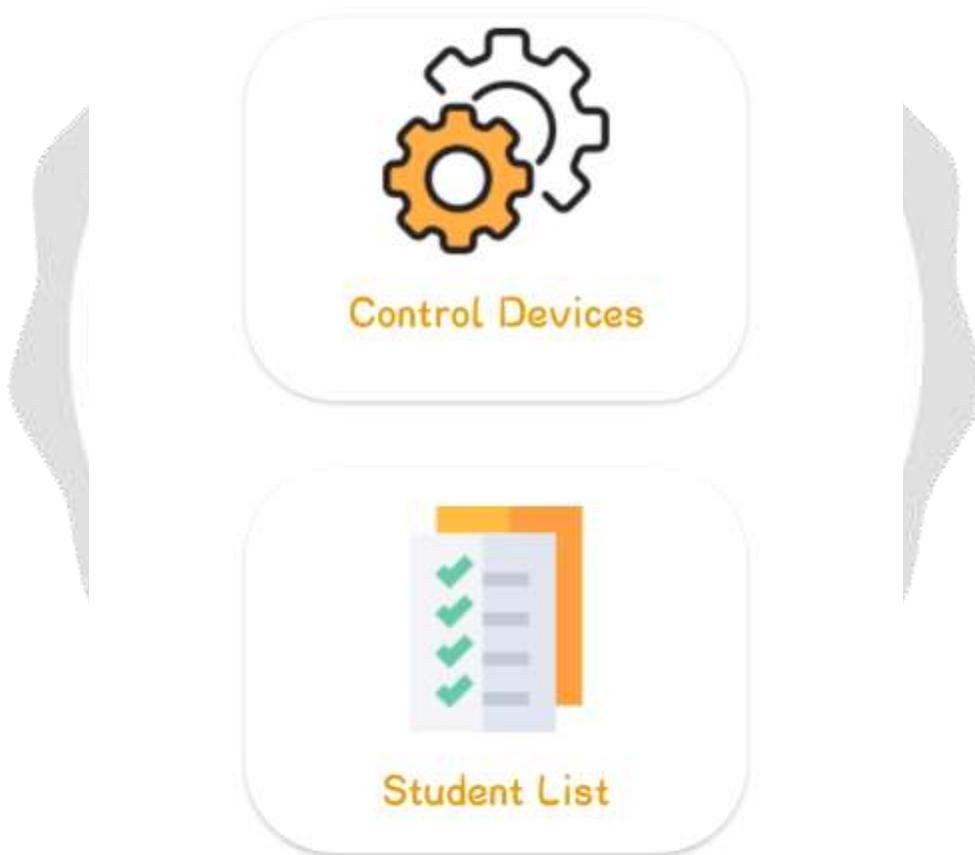
Hello there, Welcome Back
Sign In to continue

Contact

Password 

LOGIN

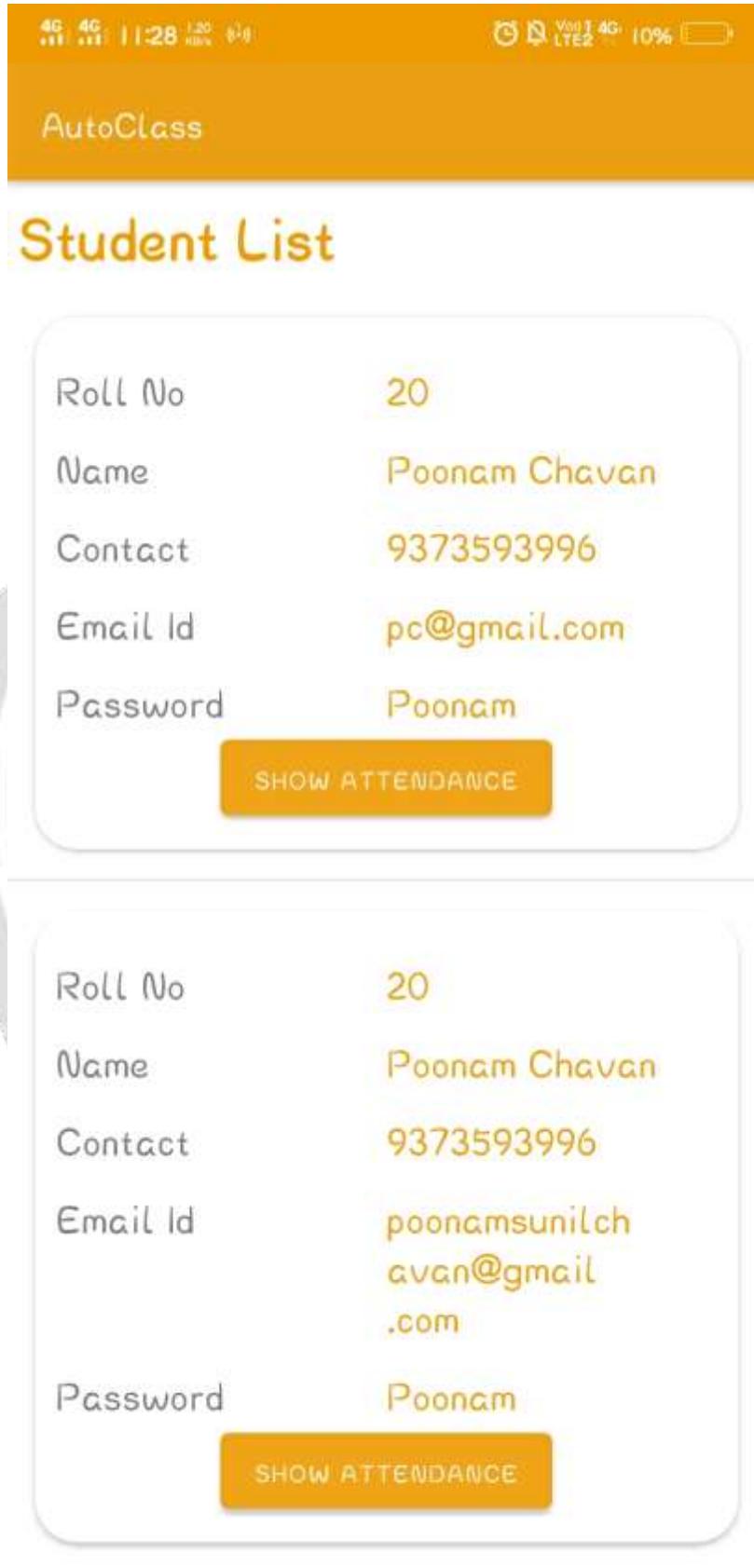
New User? SIGN UP





Poonam Chavan







Non Teaching Staff Register

Name

Email

Contact No

Password

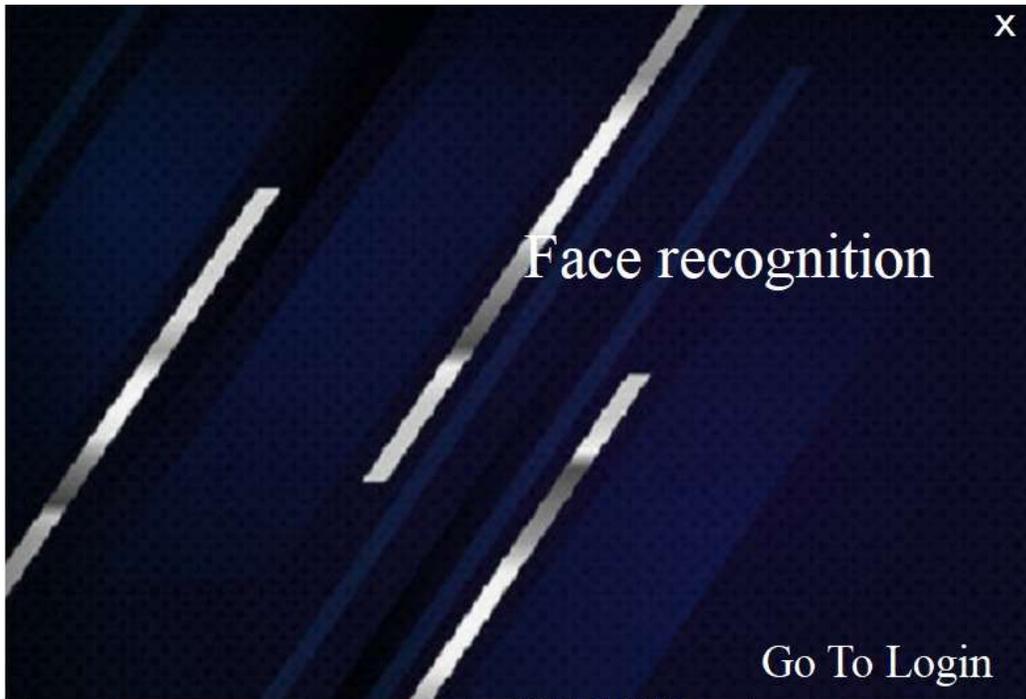
Authentication key

REGISTER



6.2 Face Recognition Module:



User Type



User Name

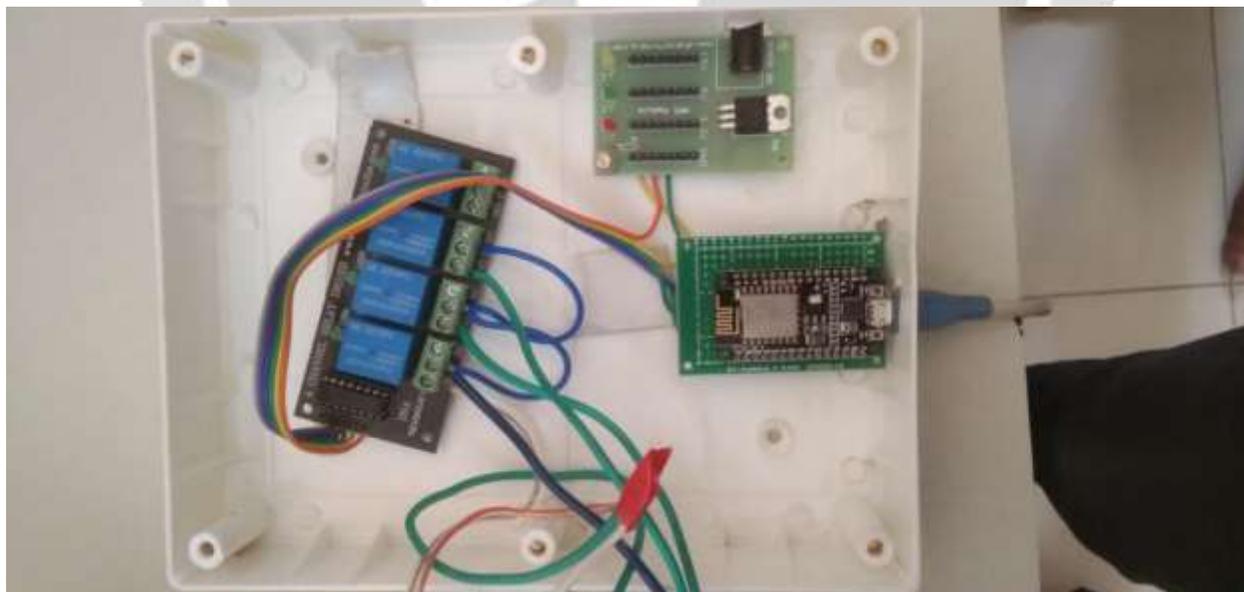


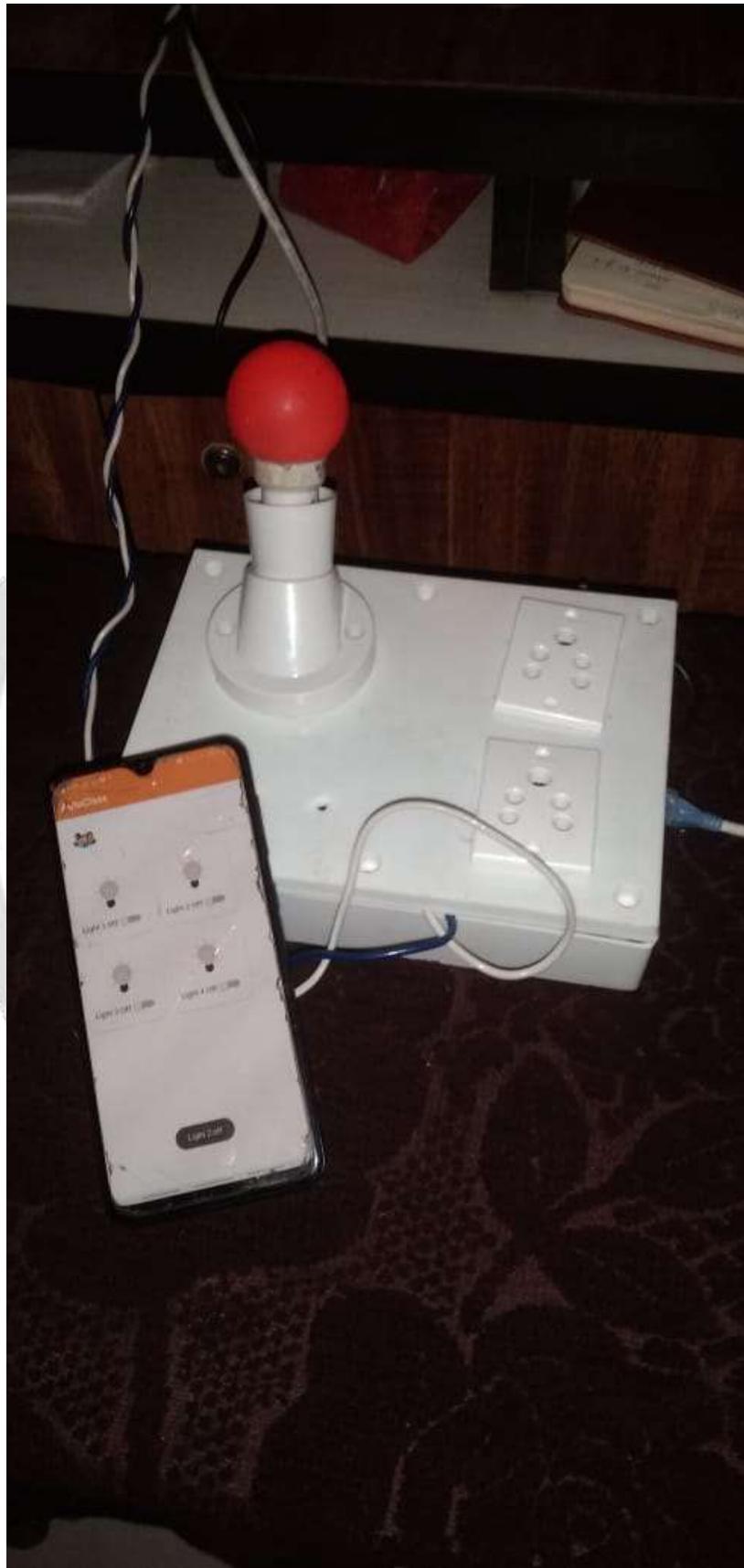
Pasword

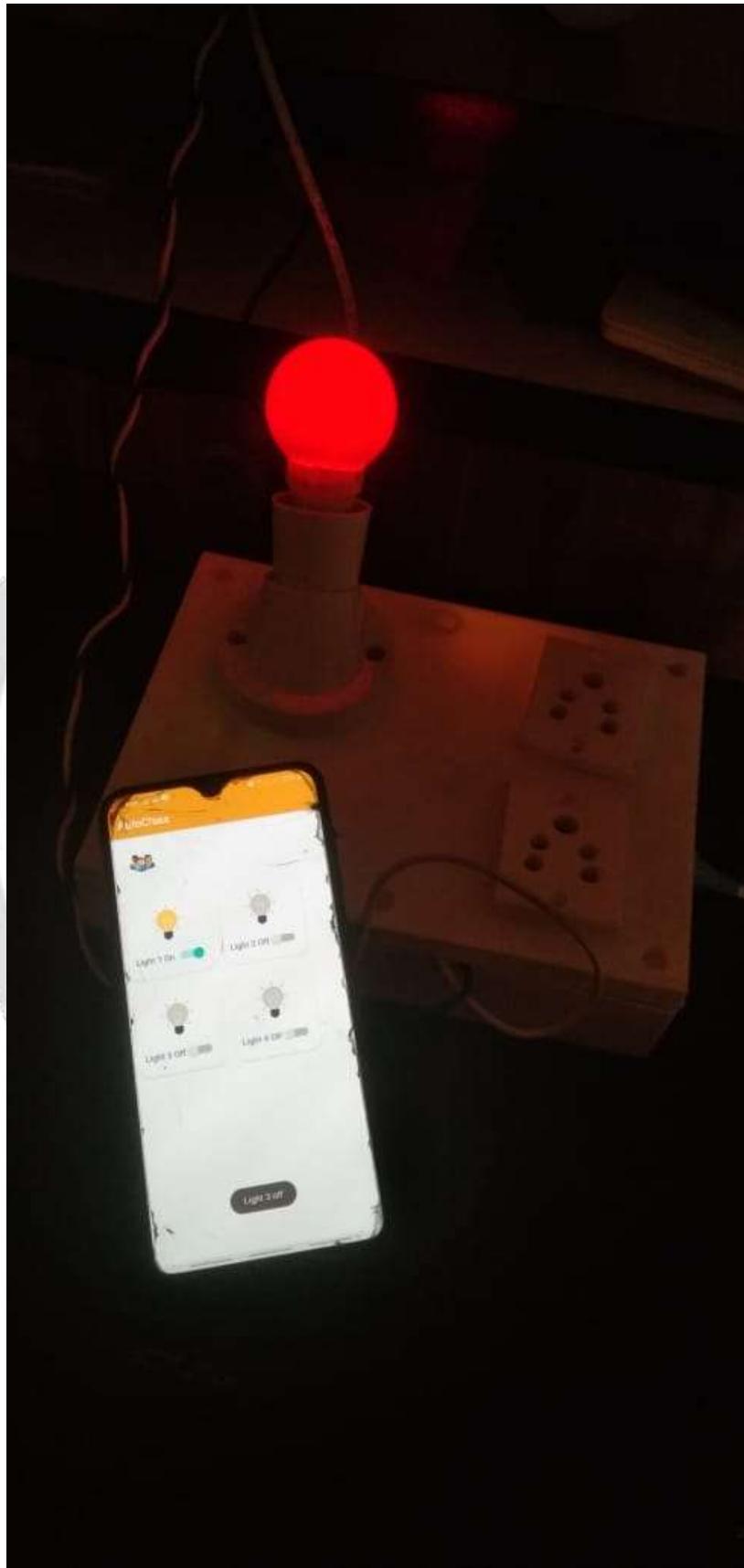
Show Password



6.3 Electronic Device Control Module:







7. CONCLUSIONS

Hence our system is giving a new trend to the educational system, It will be beneficial for the staff & students.

Installing complex hardware is not necessary to take attendance in the classroom; we need only a camera and a laptop.

In providing the user with more control over how it is used, the project has successfully optimized light automation. The results showed that the IoT technology can be used to bring improvements to a household appliance also classroom with minimal amount of hardware.

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MISS.CHAVAN POONAM SUNIL
MISS.KURHADE DIPALI RAMNATH
MISS.MUTHAL DIPALI PUNJAJI
MISS.MUTHAL RUPALI PUNJAJI
SVIT, NASHIK.

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