DESIGN AND IMPLEMENTATION OF IOT BASED HOME AUTOMATION MONITORING SYSTEM USING SECURITY CONTROLLER

A Project submitted in partial fulfillment of the requirements for the Award of Degree of
Bachelor of Science in Electrical and Electronic Engineering

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September, 2024

DECLARATION

We declare that our thesis titled **"DESIGN AND IMPLEMENTATION OF IOT BASED HOME AUTOMATION MONITORING SYSTEM USING SECURITY CONTROLLER USING MICRO CONTROLLER"** is

submitted to the department of „Electrical and Electronics Engineering" of DAFFODIL INTERNATIONAL UNIVERSITY for the partial fulfilment of the degree of Bachelor of Science in Department of Electrical and Electronics Engineering. In this project the outcome of the work is done by us under the supervisor of MR. NAIMUR RAHMAN. We hereby affirm that the theoretical research and result was conducted solely by us and has not been presented previously elsewhere for assessment. Materials of the study and work found by other researchers have been properly referred and acknowledged.

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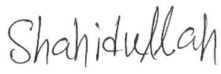

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APPROVAL

The project entitled "Analysis Of based security monitoring system using PIR sensor& IR sensor controller submitted by Md. Jahid Hasan ID:212-33-5395 & Md. Shahidullah Islam ID:212-33-5404 hasbeen done under my supervision and accepted as satisfactory in partial fulfillment of the requirements for the degree of Bachelor of Science in Electrical and Electronic Engineering in Sep 2024

Signature

Mr. Naimur Rahman

Lecturer

Department of Electrical and Electronic Engineering Faculty of Engineering Daffodil International University

Dedicated to

Our Parents

CONTENTS

LIST OF FIGURE

LIST OF SYMBOLS

□□	Wavelength
λB	Bragg wavelength *neff* Effective index
Z	Position along the grating
N	Mode index
F	Fundamental Frequency
□□	Angular frequency
M	Modulation Index
T	Fundamental Time Period

ACKNOWLEDGEMENT

First we are thankful to Allah subhanahu wa ta‟ala for providing us with the patience and strength to go on and complete this thesis.

We are really grateful to our supervisor “MR. NAIMUR RAHMAN” lecturer, Department of Electrical and Electronics Engineering, Daffodil International University for her friendly guidance and encouragement in many ways throughout her project work. We also appreciate her vision, experience, interest and support for her project which came to us with greater help writing this report paper.

We would like to express our heartiest gratitude to Dr. Md. Rezwanul Ahsan, Professor and Head of the Department of EEE for his kind help to finish our project and also to other faculty members and the staff of EEE department of Daffodil International University.

We offer our regards and gratitude towards all of those who supported me in any aspect during the completion of this thesis. Finally, we convey our heartily gratitude to our parents and family members for their moral support.

ABSTRACT

In today's cities, save and security pollution are serious concerns. Currently in our society we are suffering from many types of theft and robbery and various types of insecurity. To solve this kind of problem we can use a smart IOT device to provide security to the office court or various save zones. Here we have discussed in complete detail how the activity is done by creating a web and how we can use the object is completely discussed in more detail below. Here we use SIM 800Lto provide information to others to control how the activity is done. How to cross the line with the bin sensor calls to another person's phone and solves the other, and ensures that this device is used to prevent any kind of trouble that miscreants want to make in your security space.

CHAPTER-1
INTRODUCTION

1.1 Introduction

Save and Security today are a major problem. For a brighter future and a security life for all The security & home automation quality must be monitored and controlled. We support IoT-enabled wireless systems home automation and security monitoring systems. This allows us to monitor and test for real home automation security and in one place. PIR sensor the temperature sensor in this model is stored outside and transmits the collected data to the microcontroller ESP32. It is used as a microcontroller and has Wi-Fi function installed. As a result, ESP32 will be linked to the router, and the obtained data will be relayed to the internet server via esp32. The Blynk program was used to keep track of everything. SIM800L detect the networking of frequency substances in the pir sensor and continuously relay this information to the microcontroller. In addition, the device continuously monitors sound levels, temperature, and humidity and sends data to an online server via Iot. The sensor is connected to the microcontroller and sends the data through the internet. These legal authorities keep track of security at various places and take necessary measures. Authorities can monitor safety conservation around homes, offices, shops, hospitals and private zones and take action if the system detects air quality and noise problems. This alerts the authorities so that they can take steps to control the problem.

1.2 Motivation

Security& Automation is essential for all living things. The most vital component for survival is Security. With the device we not only develop the country but it is a device to reach the world humanity in a big way a device is a device if it is used properly. So we use it to the fullest a country a store is a very important device to provide various types of office security through which we can get rid of all types of theft and robbery.

1.3 Objectives

The research work is carried out to attain the following key objectives

i. Arranging for maximum safety and participating in safety.
ii. Alerting another person with a call and automation
iii. Fully secure the user with the call and take action
iv. To ensure security and automation environment.

1.4 Application

- Shop
- Office
- Schools
- Campus
- Apartment
- Bank
- Industries
- Malls
- home

1.5 Project Organization

The report is organized as follows: Chapter- 1 covers the introduction, motivation, and objectives. Chapter- 2 represents the theory, Introduction, 2 Pin Plug, Cable, Adapter (12V/2A), Diode 1N4007, Capacitor, Voltage Regulator (7805), Resistor, Diode 1N4148, Connecting Wire, Variable Resistor, Transistor BC547, Crystal Oscillator, IC Base (14 Pin), Esp-32, PIR sensor,SIM800L, Buck converter, Boost converter, Printed Circuit Board (PCB), Buzzer, Transistor BC548, Touch Sensor, Plastic Board, Resin/Soldering Lead, Screw, Glue & Wood Piece.

CHAPTER- 2
LITERATURE REVIEWS

2.1 Introduction

Automation and security are two examples of man-made environmental system that occur throughout the planet. It is currently the world's fourth most deadly usually. Automation and security.

2.2

Sensor sensors are used in the security monitoring system to analyze the security of interest in the environment. They caused three security to pollute the save in the atmosphere. Carbon monoxide, with carbon dioxide and sulfur dioxide as these gases determine the level of pollution. They also use this system in situations such as in our home security. a warning to workersin the oil and security, etc. [1]

An intelligent community is defined as a community with at least one strategy related to at least six features listed above: Smart Government, Smart People, Smart Life. smart movement smart economy and intelligent environment These three gases have been thoroughly tested in four different locations in this simulation. The simulation results on the web will then be updated [2].

The recommended embedded device monitors noise and atmospheric air levels. Make environments intelligent or interact with objects. to monitor environmental sensor. The recommended approach is adaptation and distribution. The architecture was built to monitor noise and pollution [3].

These days, automation and security are increasingly dangerous problems. It is important for everyone to monitor and control automation quality for a better future and life. Here, we recommend air conditioning and noise pollution monitoring systems, which allows IoT to measure direct air quality as well as automation and security in certain areas [4].
Various tactics and procedures that have been employed in the past to monitor security in a particular area of interest in order to make the environment smart in that area are addressed in this section [5].

2.2 Summary

We have discussed automation monitoring system in detail in this chapter-2. We have mentioned the history of automation monitoring systems including new features, advantages, disadvantages and advantages. We think this automation and security monitoring system control is very important for our environment.

CHAPTER- 3
ANALYSIS OF THE SYSTEM COMPONENT

3.1 Introduction

In this chapter we mainly discuss hardware equipment and how we connect them to our software. We are giving details about each component used to make this project. So every hardware setup is mentioned in this chapter.

3.2 Components

Below is a list of all the components and accessories commonly used with an ESP-32 to develop project.

i. ESP-32
ii. PIR sensor
iii. SIM800l
iv. Adapter
v. IR sensor
vi. Diode
vii. LM2596 Buck Converter
viii. ON OFF Switch
ix. Jumper Wire
x. Resistors
x Bread Board

3.2.1 ESP32

New development board is added as ESP32. ESP32-WROOM-32D and ESP32- WROOM-32U are Wi-Fi, Bluetooth and BLE MCU module. It is possible to extend many of these applications from low-impact social networks to complex services such as voice encryption, instant conversion of streaming

MP3, Bluetooth LE and connection to Wi-Fi. This module can be used in a variety of ways: Basically, Wi-Fi enables you to access the internet through physical contacts from a

Wi-Fi router, where Bluetooth enables the user to connect to a phone. The sleep current in ESP32 explorer is less than 5 seconds which makes it extremely suitable for battery and wearable related boards. For optimal bandwidth the functional module can accommodate data rates up to 150 Mbps and antenna output up to 20 dBm. Thus, according to the data in the industry, this module possesses the required characteristics and exhibited a high level of efficiency for electrical system installation and integration. Updating of the automation system improving the esp-32 better performance.

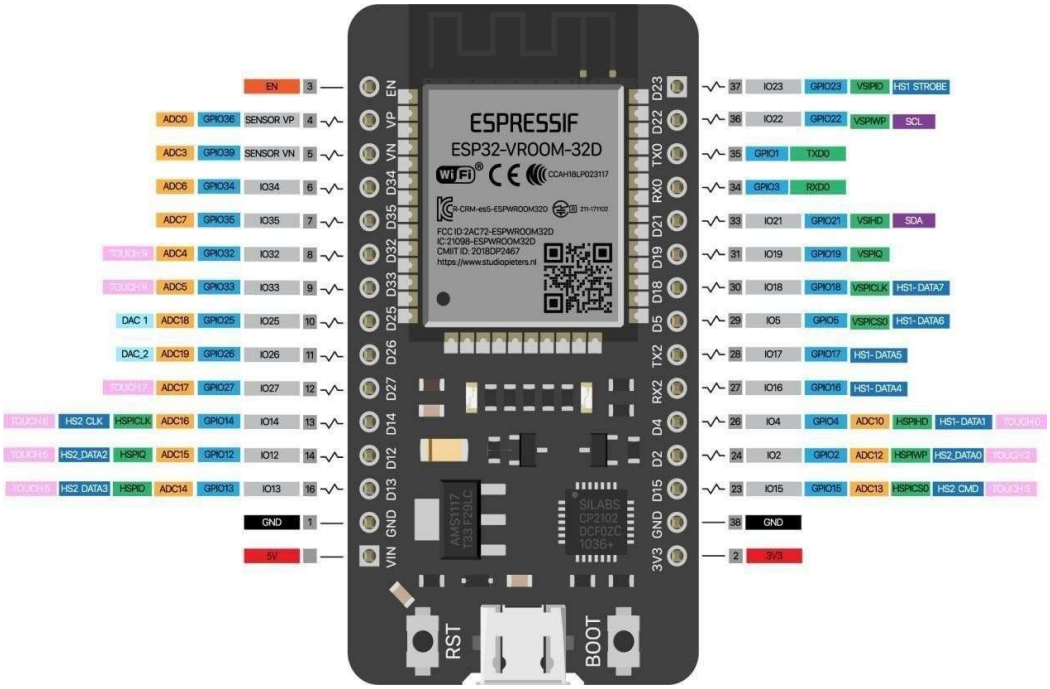

Fig.3.1 ESP32

3.2.2 SIM800L

Message such as On network: notify you when the SIM800L module shows the network status through the network state indicator LED that blinks at each rate. A fast blink once in a second means that the module is up and running but hasn't connected to the cellular network. A GPRS data connection is active if the blink is slower, once every two seconds. There are 4 band GSM/GPRS network support for SIM800L module that can do remote transmitting of GPRS and SMS message data. As this SIM800L is a good power hungry module, we will supply it with 5.20v as it can be operated at this voltage, not heating and not losing it.

Fig: 3.2 SIM800L

3.2.3 PIR SENSOR

Finally, for a through beam sensor to function, the emitter and receiver have to 'see' each other and so the emitter is pointed at the receiver directly, for a PIR sensor to produce a change of strength in the signal it measures. The sensor 's output will turn on when its components are align and nothing blocking the light. By blocking the light, putting some thing between the emitter and the receiver, the sensor's output will stop.

The optical PIR detectors work on light obscuration principle and their operation is based on the fact that the light sense receptor from the PIR sensor is blocked by the presence of human.

These work with emitter which send human invisible IR light to a PIR sensor and receiver that is sensitive to the same light. If something goes between the two, and the two aren't transparent to IR, they'll tell you with 'PIR broken', and the receiver will let you know.
Planned intervention human detectors may be considered for high ceiling areas such as lobbies, gymnasiums, sports arenas, museums, church sanctuaries, factories and warehouses.

Fig: 3.2 PIR-SENSOR

3.2.4 REALY SWITCH

An electrically operated switch is called a relay. The set of input terminals and running communication terminals of a single or several control signals comprise it. The contacts of the switch may be in any form, or contact, or disconnect, or a combination of these. The main job of a relay is to protect an electrical system from too much voltage or too much current so that the system can safely operate the equipment fed by it. Applications where they are commonly found include from commercial and industrial, to home and consumer products. An electrically operated switch is called a relay. They (usually) use an electromagnet (coil) to actuate their internal mechanical switching (contact). A relay contact is open, when a relay is energized it provides power to a circuit. Below is the example relay diagram which shows how a relay works.

Fig ; 3.3 Relay Switch

3.2.5 Adapter 12v

12V secondary power supply 5.5mm DC plug adapter 2 pin EU plug type adapter 1.1m long connecting cable. These adapters are able to meet any kind of power requirements of note books and other electronic gadgets. So 12V DC means that it will output 12 volts direct current to a project. The 2 means that it will only have a Maximum Output of 2 Amps of electrical current to a project. In many cases, as above, the manufacturer only supplies 2 of the 3 key pieces of information (Watts, Voltage and Current) Can you use a 12V, 2a charger on a 12V, 1.5 device, or a 12v, 1a device? For DC, you can use a higher current rating, 12V, with no lower. The supply will be able to draw as much current as the device wants, but the device will only flow as much current as it wants.

Fig : adapter12/2

3.2.6 Capacitor

Capacitors are used in most common energy storage, power conditioning, electronic noise filtering, remote sensing, and signal coupling/decoupling applications. Since capacitors are used in the service of industry in a plethora of ways, the use of capacitors has a wide range. In DC circuit the capacitor stores charge and polarity reverses during the AC circuit.

Circuit Complete Solution: Two metal plates with dielectric between plates are called a capacitor.

Specifications:

- Operating voltage (3.3V-5V)
- Output model: Digital switch output (0 and 1, high or low level)
- With a mounting screw hole
- PCB size: (3.4cm * 1.6cm)

Fig: 3.6 Capacitor

3.2.7 LM2596 Buck Converter

A well known IC adapter is LM2596. This converter has an input voltage range from 4.5 to 40 volts and produces up to 3 amps of alternating voltage. Due to its high current capability it is often used in power modules and heavy load management. The LM2596 is known for the high current levels of 3A. Available in Output voltage of 3.3V, 5V or 12V. The best known is the LM2596-ADJ: it has a variable output voltage. The input voltage is taken in to the main converter which operates at a frequency of 150 kHz, and the necessary output voltage is adjusted by an internal switching circuit. It has a high performance level as well as maximum

performance off heat and current. If you're looking for a low cost, easy to use IC converter, then you're done.

Fig.3.12. LM2596 Converter

3.2.8 ON OFF Switch

To activate on, turn off, the project's power supply, we are doing this. On top of that, it helps us protect the project. This actually gives our devices extra protection. What we can switch, is called "Positive ON OFF Switch". This type of switch is turned on or off to light lights or other electrical devices also.

Fig. 3.13: On/Off Switch.

3.2.9 IR SENSOR

The IR transmitter keeps the IR light running all the time and the IR receiver looks for light reflected back from it. The IR receiver also receives this light when the reflected light hits an object in front. If IR sensor then object will be detected. IR sensors take advantage of the fact that objects emit or at least can detect the infrared radiation that surrounds them. These sensors have a crucial feature - they can detect and measure heat as all objects with temperature above absolute zero emit heat energy in form of radiation. The main application of infrared spectroscopy is to establish the functional groups of molecules important in organic, inorganic and many other chemistry.

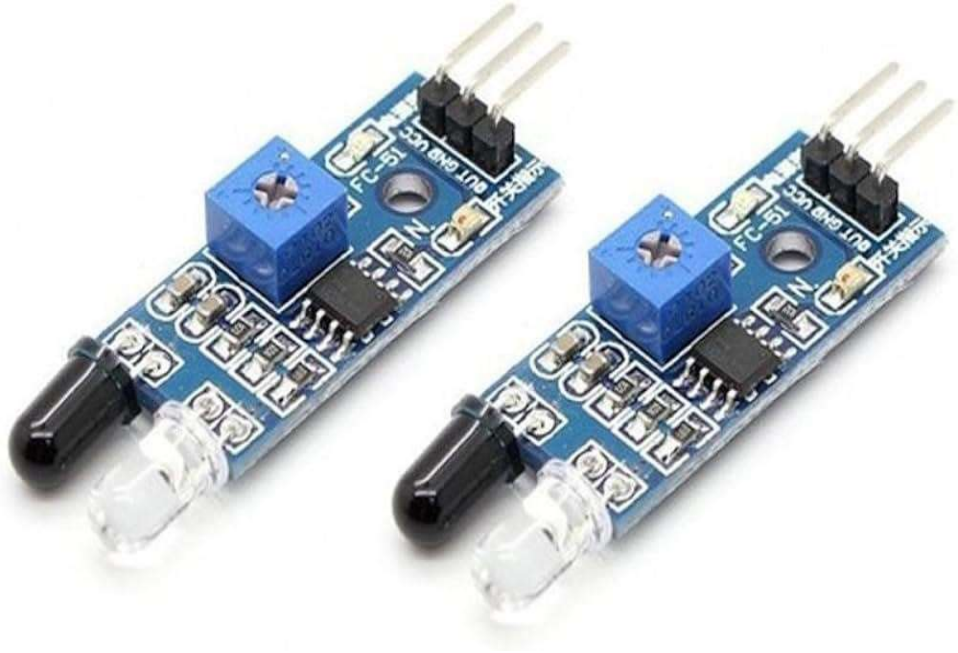

Fig: 3.14 IR SENSOR

3.2.10 Jumper Wire

Randomly connecting two conductors using jumper wires are wires with a point of connection at each end. Various boards use commonly used cables for circuit switching business. [1].

Fig.3.14. Jumper Wire

Individual jumping wires are installed by inserting your "end connector" into an intro slot on the baking sheet, inserting the head connector into the circuit board, or with a piece of test equipment.

3.2.11 Resistors

Electrical resistance is used as a circuit breaker. Resistance inhibitors are used to reduce current, change signal levels, and split electrical circuits into two transient electrical circuits that act on voltages, disrupting operating devices and close the electronic circuit.
Resistors are used in the transmission line, among other things.

3.2.12 Bread board

Hardware specifications and test circuits for temporary models are provided by the low end breadboards. Many electronic circuits can be connected to other, electronic applications via a socket or sockets. And fasten where possible. They are used to make temporary circuits. For designers, this trains me to move the components and replace them. Above 10MHz most breadboard circuits cannot take the frequency.

Fig: 3.16. Bread board

3.2.13 PVC board

PVC foam board is a feather light, extended unbending PVC foam sheet used for a variety of uses including signs and shows, display corners, photograph mounting, interior planning, thermoforming, models, model making and more. It may very well be sawn, stepped, punched, cut, sanded, bored, screwed, nailed or bolted. It tends to be secured using PVC cement. It features contrast to the bright effect.

Fig:3.17. PVC Foam board

3.3 Summary

This chapter covers the basics of these air and pollution systems. And all these materials for this project are high quality and dependable. In this chapter, we try to discuss as much as we can of the functional aspects and to what extent each piece of hardware contributes to the whole.

CHAPTER- 4
DESCRIPTION OF THE PROJECT

4.1 Introduction

In this chapter, I have completely explored this project's design and fabrication. In this we mainly discuss about the developed block diagram and also briefly describe the description of the circuit and know about working principle. This chapter contains the total project flow chart.

4.2 Block diagram

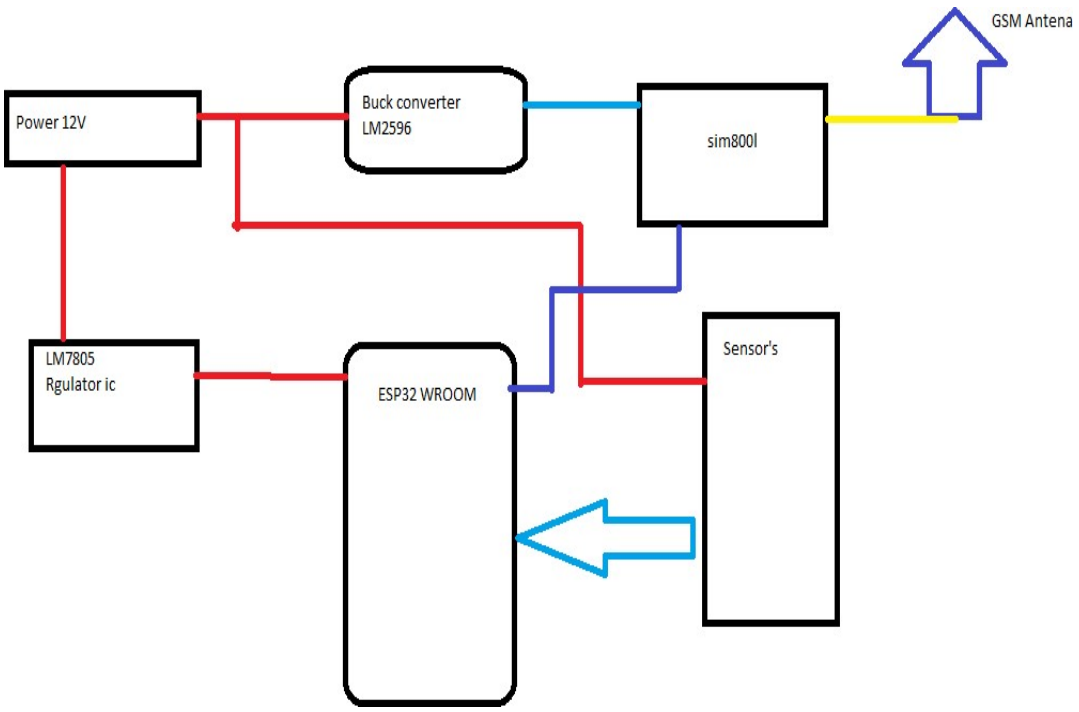

Fig.4.1 Block diagram

4.3 Flow Chart

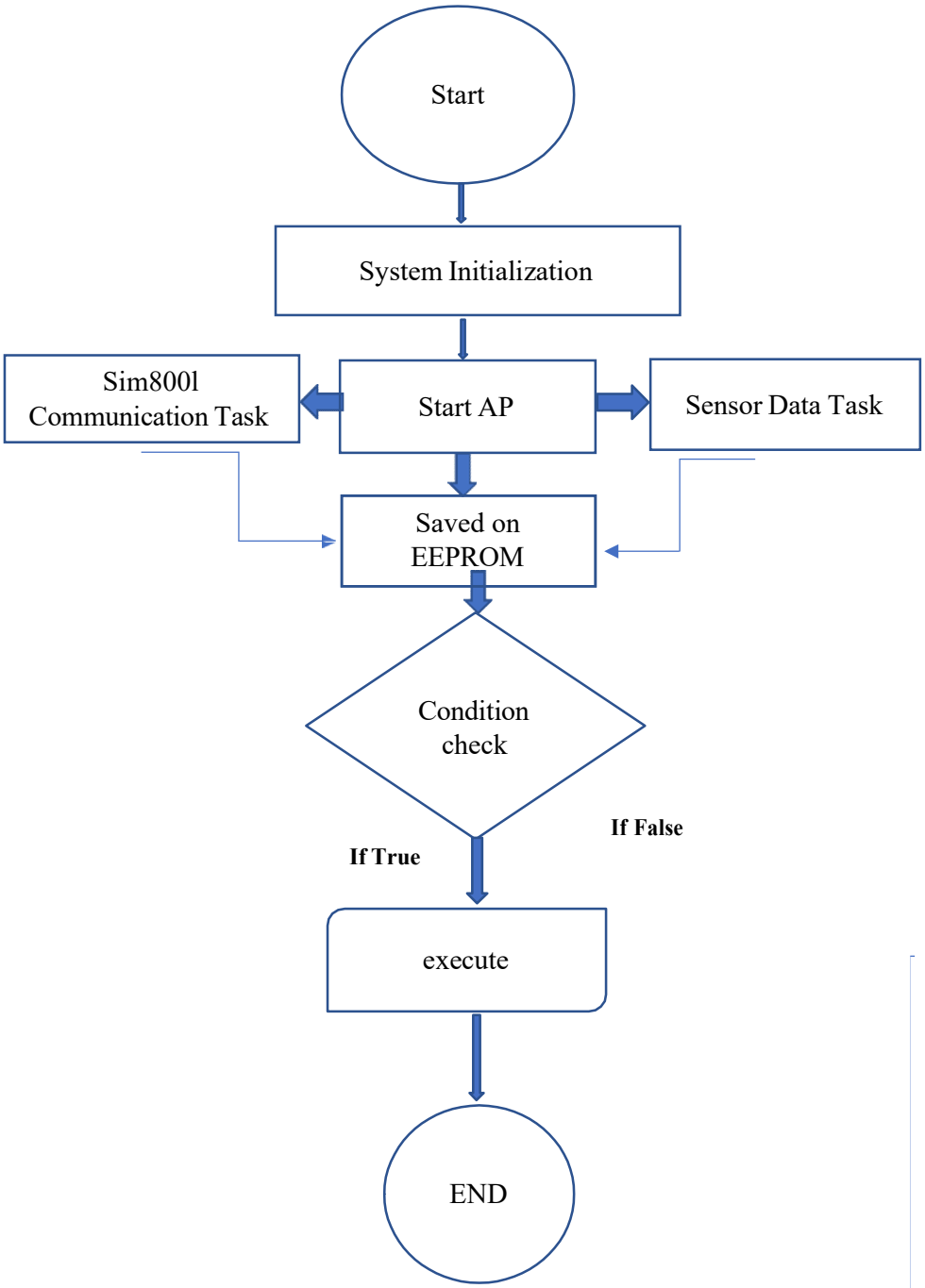

Fig.4.2 Flow Chart of IOT monitoring system

4.4 Circuit Diagram

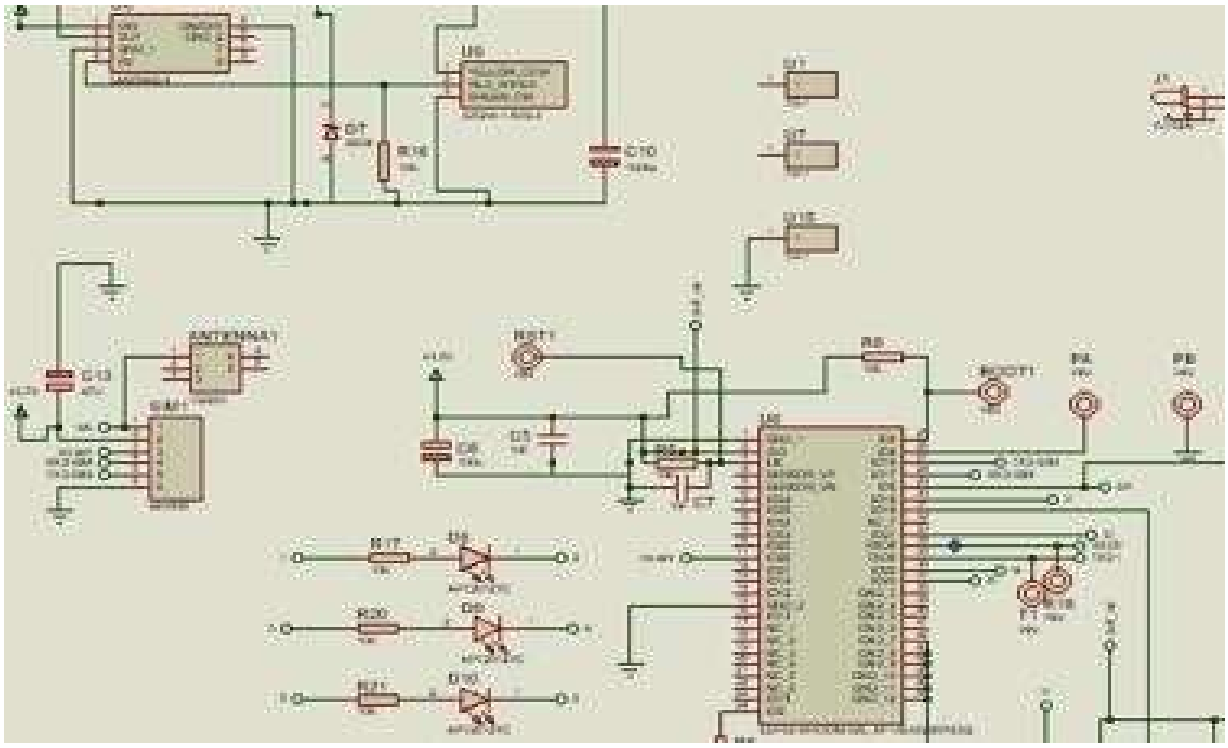

Figure: 4.2 Circuit diagram

4.4 Working Principle

We are using this device mainly as a security device in our project or we are proposing to use it. In this device we are using beam sensor as sensor. Beam sensor is basically an infrared sensor which has a transmitter and another receiver and they are connected to each other through an infrared link. When this link is disconnected, we get a signal from the device which is later processed through the processing unit to call various events related to our security. Here as the main CPU we have used esp32 which is a dual core 32 bit microcontroller and also Wi-Fi compatible.

The advantage of the device is that multiple beam sensors can be connected and each. It is possible to configure the beam sensor separately. It is also possible to connect numbers separately for each security event or for each different sensor. For each of these configurations we have tried to make the device a user-friendly operation. We have assigned two cores of the device for two different tasks to determine which number the

device will call and how many times it will call and what to do when an event is called. The first core task is to provide the user with a manageable hotspot and host a web page. The other core's job is to collect sensor data and maintain communication with the GSM

module. A hotspot will be available from the device when the device is turned on by providing power. By providing a specific password, connect to the hotspot and go to the browser and enter the gateway IP, then a sign up page will appear in front of us.

And the device will take us to the login page, then we have to login to the device by providing that specific username and password, after the login is completed, a dashboard will appear in front of us, fill in the number and what will be written in the SMS on the dashboard and click on the save button to save it. This saved data will be saved in a permanent memory. On the dashboard we will see more things like log out and system restore button.

By pressing the system restore button we can bring the device into clean mode then we can delete all configured data from the permanent memory. Other advantages of the device are: It can be turned off and on online, first we need to call the device, the device will immediately receive our phone call and we can turn the device off and on by pressing a specific key. Another advantage of online is that we can check the status of all sensors by pressing a certain button through a phone call, it will be sent to us in the form of a report via SMS from the device to our number. module. A hotspot will be available from the device when the device is turned on by providing power. By providing a specific password, connect to the hotspot and go to the browser and enter the gateway IP, then a sign up page will appear in front of us.

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via SMS from the device to our number

4.5 Summary

. Consequently, the main goal of this project is to learn how to read and understand block diagrams and connection diagrams and operations.

CHAPTER- 5
RESULTS AND DISCUSSIONS

5.1 Introduction

All results and calculations and relevant discussion will be present in this chapter. After completing the project we run the test. This device run properly as we expected.

5.2 Result

After providing electrical power and all necessary requirements then turn on the main switch . After system initialization , device provide us a Wi-Fi hotspot. Frist we have to connect this WiFi to our smart phone or computer then hit the gateway ip .

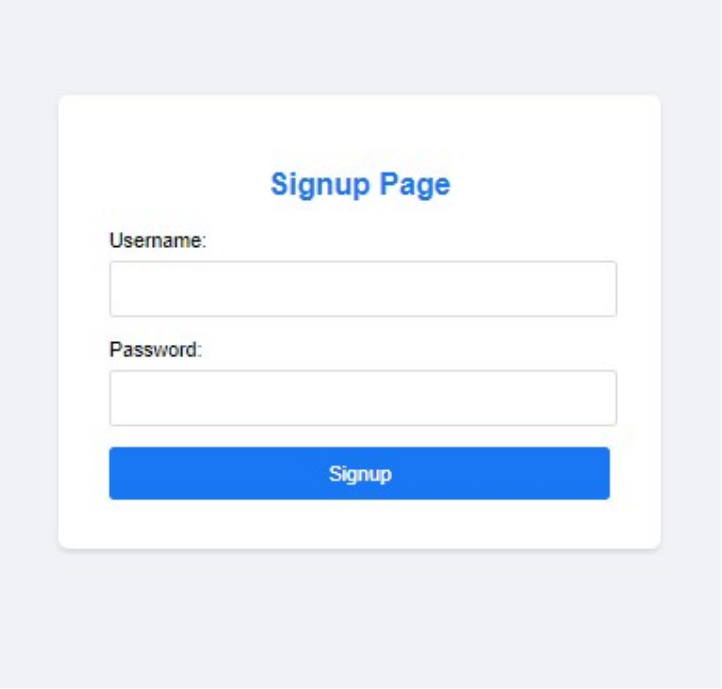

Fig.5.1 sign up

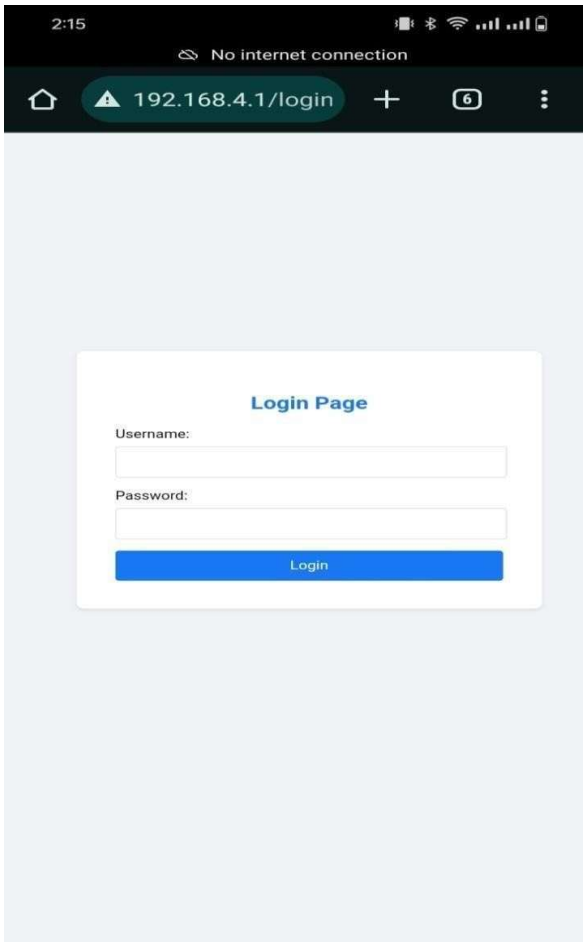

Fig.5.1 login page

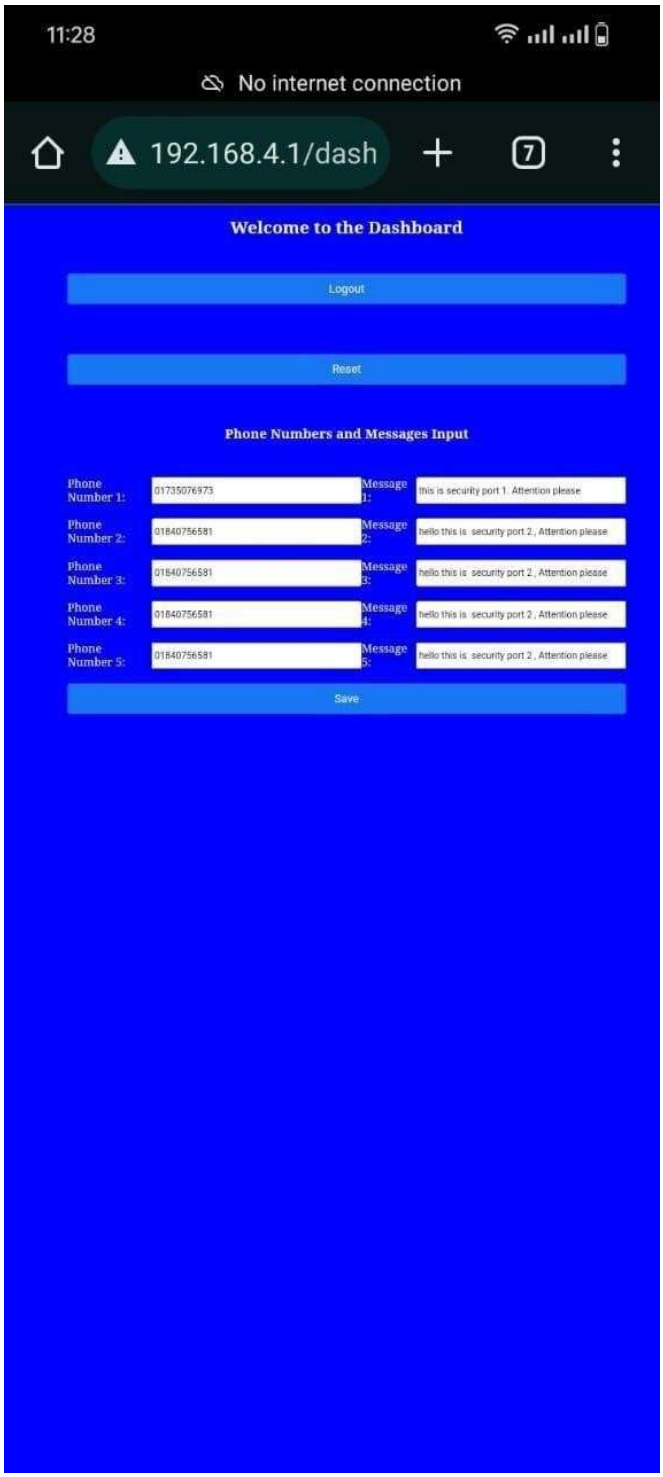

Fig.5.2 Data Dashboard

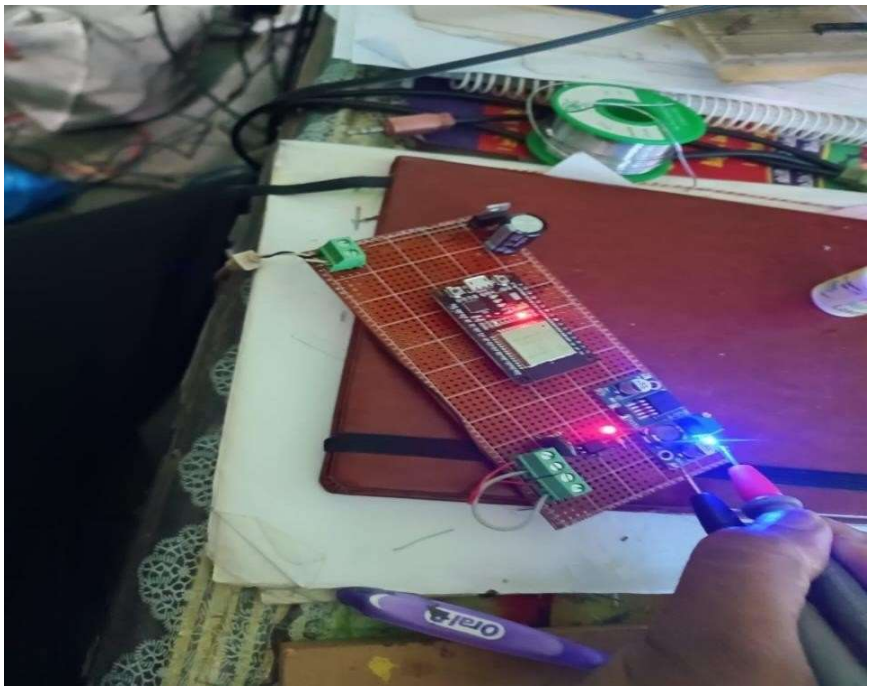

Fig.5.4 security system monitoring system

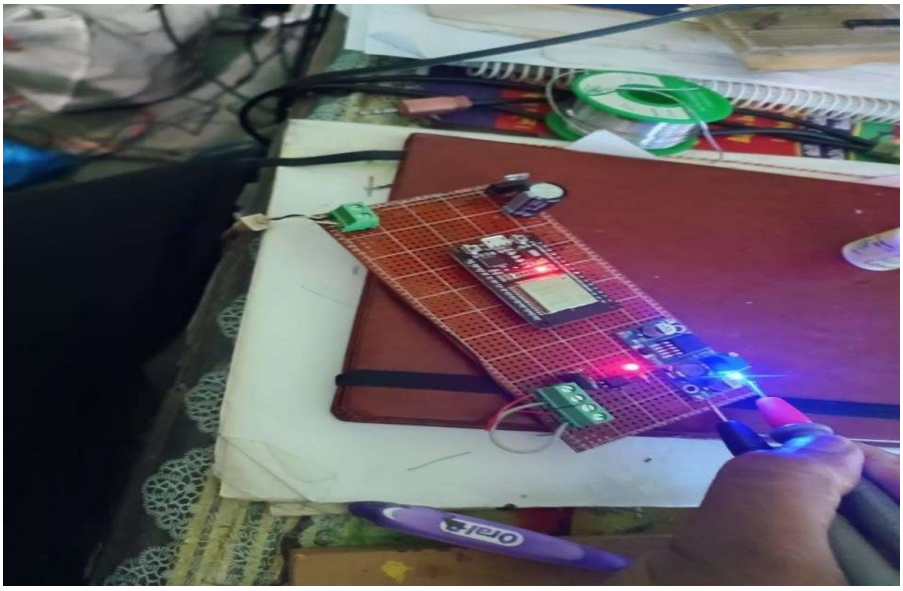

Fig.5.5 Back view of climate monitoring syste

5.3 Cost Estimation

Table: 5.1 Cost estimation of climate monitoring system

SL No.	Name of apparatus	Quantity	Total Price (BDT)
1.	ESP32	1	750
2.	SIM800l	1	450
3.	PIR sensor	1	1180
4.	Adapter	1	250
5.	Capacitor	1	15
12.	LM2596 Buck Converter	1	250
13.	ON OFF Switch	1	10
14.	Jumper Wire male to female	As required	180
15.	Resistors	As required	10
16	Relay	1	65
17	IR sensor	1	120
17.	Bread Board	2	300
18.	PVC Board	As required	100
19.	Glue stick + White Channel + Resin/Soldering Lead	As required	250
		Total	3955

5.4 Summary

This chapter has covered the conclusion and reasoning. We have been able to successfully demonstrate the project objective for our efforts. Finally, you are ready to use the task after completing this chapter. The find ings of our experiment are briefly discussed and demonstrated.

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CHAPTER 6
CONCLUSION

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6.1 Advantage

The advantages encountered in this project are listed below

- Sensors are cheap and plentiful.
- It's easy to use, simple, and compact.
- Sensors are inexpensive and have a lengthy life span.

6.2 Conclusion

The application of save-security and security materials is an excellent first step for environment life. This technology allows not only local workers but also the public to participate in security management and environmental protection systems. Once installed, this automated system can constantly monitor security levels and monitor the data it collects. The device is also environmentally friendly and has no negative impact on the environment. Also, it depends on the technology is expensive, it is cheap compared to other technologies currently in development and can be applied anywhere.

6.3 limitations

The limitations encountered in this project are listed below:

- Decrease the monitoring system's overall cost.
- Decrease the amount of time it takes to create a monitoring system.
- The monitoring system's size should be reduced.
- Make the monitoring system's components smaller.
- Because sensors are so delicate, they must be treated with care.
- The sensors determine how accurate the system values are.

6.4 Future Work

In future the project can be upgraded in more ways than one.

- Connect a larger number of sensors to get a more detailed picture of the security in the environment.
- Create a website and add data to it, including the date and time.
- Data is stored on an SD card.
- Use a SIM module to track security at a specific spot and post the results on a website for the public to see.

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APPENDIX

```
 #include <EEPROM.h>
#include <WiFi.h>
#include <ESPAsyncWebServer.h>
#include  <ArduinoJson.h>
#include <freertos/FreeRTOS.h>
#include <freertos/task.h>
#define RXp2 316
#define TXp2 17 5
/////////**********************/////////////

const int inputPin1 = 18; // Digital input pin 1
const int inputPin2 = 19; // Digital input pin 2
const int inputPin3 = 21; // Digital input pin 3
const int inputPin4 = 22; // Digital input pin 4
const int inputPin5 = 23; // Digital input pin 5
const int input Pin7 = 24//

int previousState1 = HIGH;
int previousState2 = HIGH;
int previousState3 = HIGH;
int previousState4 = HIGH;
int previousState5 = HIGH;

///////*************************/////////////////



// EPROM storage structure
struct Data {
  char username[20]; // index 0
  char password[20]; // index 1
  char token[20]; // index 2
  char num1[21]; // index 3
  char num2[20]; // index 4
  char num3[20]; // index 5
  char num4[20]; // index 6
  char num5[24]; // index 7
  char evnt1[20] ;// index 8
  char evnt2[20] ;// index 9
  char evnt3[20] ;// index 10
  char evnt4[20] ;// index 11
  char evnt5[20] ;// index 12
```

```
  bool signupDone;
  bool loggedIn;
};

// Initialize storage
Data storedData;

const char* ssid = "Security System";
const char* password = "12364678";

AsyncWebServer server(80);



int sentButton = 2;
int sentPinState = 0;

int reciveButton = 5;
int recivePinState = 0;

String jsonString;

// HTML pages
// Signup page
const char* signupPage = R"(
<!DOCTYPE html>
<html>
  <body>
    <h2>Signup Page</h2>
    <form action="/signugp" method="post">
      <label for="username">Username:</label><br>
      <input type="text" id="username" name="username"><br><br>
      <label for="password">Password:</label><br>
      <input type="password" id="password" name="password"><br><br>
      <input type="submit" value="Signup">
    </form>
  </body>
</html>
)";

// Login page
const char* loginPage = R"(
<!DOCTYPE html>
<html>
  <body>
    <h2>Login Page</h2>
```

```
    <form action="/login" method="post">
      <label for="username">Username:</label><br>
      <input type="text" id="username" name="username"><br><br>
      <label for="password">Password:</label><br>
      <input type="password" id="password" name="password"><br><br>
      <input type="submit" value="Login">
    </form>
  </body>
</html>
)";

// page for token verification
const char* tokenDashboardPage = R"(
<!DOCTYPE html>
<html>
  <body>
    <h1>Loading ...</h1>

    <script>
      if(document.cookie){
          const token = getCookie("token");
          window.location.href = "/?u="+token+"&l=0";
      }else{
          window.location.href = "/login";
      }

      function getCookie(cname) {
        let name = cname + "=";
        let ca = document.cookie.split(';');
        for(let i = 0; i < ca.length; i++) {
        let c = ca[i];
          while (c.charAt(0) == ' ') {
            c = c.substring(1);
          }
          if (c.indexOf(name) == 0) {
            return c.substring(name.length, c.length);
          }
        }
        return "";
      }
    </script>
  </body>
</html>
)";

// another page
```

```
// Dashboard page initialized with numbers and events
String dashboardPage;
// Success page
String successPage;

void webServerTask(void* pvParameters);
void softwareSerialTask(void* pvParameters);
void AnotherTask(void* pvParameters);
void reciveData();

void setup()


{
 ////*****************/////////
 pinMode(inputPin1, INPUT_PULLUP);
 pinMode(inputPin2, INPUT_PULLUP);
 pinMode(inputPin3, INPUT_PULLUP);
 pinMode(inputPin4, INPUT_PULLUP);
 pinMode(inputPin5, INPUT_PULLUP);
 /////*************///////




 Serial.begin(115200);
 Serial2.begin(115200, SERIAL_8N1, RXp2, TXp2);


 WiFi.softAP(ssid, password);

 xTaskCreatePinnedToCore(webServerTask, "WebServerTask", 10000, NULL, 1, NULL,
1);
 xTaskCreatePinnedToCore(softwareSerialTask, "SoftwareSerialTask", 10000, NULL, 1,
NULL, 1);
 xTaskCreatePinnedToCore(AnotherTask, "AnotherTask", 10000, NULL,1,NULL,1);
 Serial2.println("AT+DDET=1");

}

void loop() {
 vTaskDelay(1000 / portTICK_PERIOD_MS);
}

void webServerTask(void* pvParameters) {
```

```
server.on("/", HTTP_GET, [](AsyncWebServerRequest *request){
  String parameterValue = request->arg("u");
  Serial.println("U parameter: ");
  Serial.println(parameterValue);

  if (parameterValue == "") {
    Serial.println("token check page e dhuktese");
    request->send(200, "text/html", tokenDashboardPage);
  }

  EEPROM.get(2, storedData);
  String token = (storedData.token);

  if (parameterValue == token) {
    Serial.println("token shoho page e dhuktese");
    EEPROM.get(3, storedData);
    String num1 = (storedData.num1);
    EEPROM.get(4, storedData);
    String num2 = (storedData.num2);
    EEPROM.get(5, storedData);
    String num3 = (storedData.num3);
    EEPROM.get(6, storedData);
    String num4 = (storedData.num4);
    EEPROM.get(7, storedData);
    String num5 = (storedData.num5);
    EEPROM.get(8, storedData);
    String evnt1 = (storedData.evnt1);
    EEPROM.get(9, storedData);
    String evnt2 = (storedData.evnt2);
    EEPROM.get(10, storedData);
    String evnt3 = (storedData.evnt3);
    EEPROM.get(11, storedData);
    String evnt4 = (storedData.evnt4);
    EEPROM.get(12, storedData);
    String evnt5 = (storedData.evnt5);

     // Dashboard main page with numbers and events
    dashboardPage = R"(
     <!DOCTYPE html>
     <html>
       <body>
         <div>
           <h2 style="text-align: center;">Welcome to  Planet X Security System</h2>
         </div>
```

```
<div style="display: flex; width: 100%; justify-content: center; align-items: center; margin-top: 10px;">
 <form action="/number" method="post" style="display: flex; flex-direction: column; width: 100%; border: 1px solid black; gap: 8px; padding: 20px 20px 20px 20px; border-radius: 10px;">
  <span style="font-weight: bold; font-size: 18px; margin-bottom: 10px;">Your Numbers</span>
  <label for="number1">Number 1:</label>
  <input style="padding: 5px; border-radius: 5px;" type="text" id="number1" name="number1" value=")" + String(num1) + R"(">
  <label for="number2">Number 2:</label>
  <input style="padding: 5px; border-radius: 5px;" type="text" id="number2" name="number2" value=")" + String(num2) + R"(">
  <label for="number3">Number 3:</label>
  <input style="padding: 5px; border-radius: 5px;" type="text" id="number3" name="number3" value=")" + String(num3) + R"(">
  <label for="number4">Number 4:</label>
  <input style="padding: 5px; border-radius: 5px;" type="text" id="number4" name="number4" value=")" + String(num4) + R"(">
  <label for="number5">Number 5:</label>
  <input style="padding: 5px; border-radius: 5px;" type="text" id="number5" name="number5" value=")" + String(num5) + R"(">
  <input type="submit" value="Save" style="background-color: #2b2baf; color: white; align-self: center; padding: 10px 30px; border: none; border-radius: 5px; width: fit-content;">
 </form>
</div>


<div style="display: flex; width: 100%; justify-content: center; align-items: center; margin-top: 20px;">
 <form action="/event" method="post" style="display: flex; flex-direction: column; width: 100%; border: 1px solid black; gap: 8px; padding: 20px 20px 20px 20px; border-radius: 10px;">
  <span style="font-weight: bold; font-size: 18px; margin-bottom: 10px;">Your Events</span>
  <label for="event1">Event 1:</label>
  <input style="padding: 5px; border-radius: 5px;" type="text" id="event1" name="event1" value=")" + String(evnt1) + R"(">
  <label for="event2">Event 2:</label>
  <input style="padding: 5px; border-radius: 5px;" type="text" id="event2" name="event2" value=")" + String(evnt2) + R"(">
  <label for="event3">Event 3:</label>
  <input style="padding: 5px; border-radius: 5px;" type="text" id="event3" name="event3" value=")" + String(evnt3) + R"(">
  <label for="event4">Event 4:</label>
```

```
            <input style="padding: 5px; border-radius: 5px;" type="text" id="event4" name="event4" value=")" + String(evnt4) + R"(">
            <label for="event5">Event 5:</label>
            <input style="padding: 5px; border-radius: 5px;" type="text" id="event5" name="event5" value=")" + String(evnt5) + R"(">
            <input type="submit" value="Save" style="background-color: #2b2baf; color: white; align-self: center; padding: 10px 30px; border: none; border-radius: 5px; width: fit-content;">
          </form>
        </div>


        <div style="position: fixed; bottom: 0; left: 0; width: 100%; padding: 20px; background-color: rgb(208, 208, 208); display: flex; flex-wrap: wrap; justify-content: center; align-items: center;">
          <span style="text-align: center; transform: translateX(-10px);">Developed and desinged by <br> <a href="https://planetxinc.xyz">Planet X Inc LTD</a> </span>
          <br>
          <form action="/logout" method="post" style="margin-top: 10px;">
            <input type="submit" value="Logout" style="background-color: #ff4500; color: white; padding: 5px 10px; border: none; border-radius: 5px; cursor: pointer;">
          </form>
        </div>

        <script>
          const urlParams = new URLSearchParams(window.location.search);
          const token = urlParams.get('u');
          const login = urlParams.get('l');
          console.log("token",token)
          console.log("login",login)
          if(login=="1"){
            console.log("jehetu 1 tai jonne l shammne 0")
            setCookie("token",token,102);
            window.location.replace("/?u=" + token + "&l=0");
          }else{
            console.log("jehetu 0")
            if(document.cookie){
              const ctoken = getCookie("token");
              if(token != ctoken){
              window.location.href = "/login";
              }
            }else{
              window.location.href = "/login";
            }
          }
```

```
          function setCookie(cname, cvalue, expmin) {
            const d = new Date();
            d.setTime(d.getTime() + (expmin * 1000));
            let expires = "expires="+d.toUTCString();
            document.cookie = cname + "=" + cvalue + ";" + expires + ";path=/";
          }

          function getCookie(cname) {
            let name = cname + "=";
            let ca = document.cookie.split(';');
            for(let i = 0; ca && i < ca.length; i++) {
            let c = ca[i];
              while (c.charAt(0) == ' ') {
                c = c.substring(1);
              }
              if (c.indexOf(name) == 0) {
                return c.substring(name.length, c.length);
              }
            }
            return "";
          }
        </script>
      </body>
    </html>
  )";
  request->send(200, "text/html", dashboardPage);
 } else {
  request->redirect("/login");
 }
});

server.on("/login", HTTP_GET, [](AsyncWebServerRequest *request){
 Serial.println("test: ");
 if (!storedData.signupDone) {
  request->send(200, "text/html", signupPage);
 } else {
  request->send(200, "text/html", loginPage);
 }
});

server.on("/signup", HTTP_GET, [](AsyncWebServerRequest *request){
 request->redirect("/login");
});

server.on("/signup", HTTP_POST, [](AsyncWebServerRequest *request){
 String username = request->arg("username");
```

```
  String password = request->arg("password");

  if (!storedData.signupDone && username != "" && password != "") {
    username.toCharArray(storedData.username, sizeof(storedData.username));
    EEPROM.put(0, storedData);

    password.toCharArray(storedData.password, sizeof(storedData.password));
    EEPROM.put(1, storedData);

    storedData.signupDone = true;
    EEPROM.put(7, storedData);

    request->redirect("/login");
    request->send(200);
  } else {
    request->redirect("/login");
  }
});

server.on("/login", HTTP_POST, [](AsyncWebServerRequest *request){
  String username = request->arg("username");
  String password = request->arg("password");

  if (username != "" && password != "") {
    EEPROM.get(0, storedData);
    String storedUsername = (storedData.username);

    EEPROM.get(1, storedData);
    String storedPassword = (storedData.password);

    if (storedUsername == username && storedPassword == password) {
      String genToken = "";
      for (int i = 0; i < 8; i++) {
        genToken = genToken + char(random('a', 'z' + 1));
      }

      genToken.toCharArray(storedData.token, sizeof(storedData.token));
      storedData.loggedIn = true;
      EEPROM.put(2, storedData);

      String redirectURL = "/?u=" + genToken + "&l=1";
      request->redirect(redirectURL);
      Serial.println("shob milse");
    } else {
      Serial.println("username naile password mile nai!");
      request->redirect("/login");
```

```
    }
  } else {
    request->send(400);  // Bad Request
  }
});

server.on("/number", HTTP_POST, [](AsyncWebServerRequest *request){
  String num1 = request->arg("number1");
  String num2 = request->arg("number2");
  String num3 = request->arg("number3");
  String num4 = request->arg("number4");
  String num5 = request->arg("number5");

  num1.toCharArray(storedData.num1, sizeof(storedData.num1));
  EEPROM.put(3, storedData);
    EEPROM.get(3, storedData);
    String num1forPrint = (storedData.num1);
   // Serial.println(num1forPrint);
  num2.toCharArray(storedData.num2, sizeof(storedData.num2));
  EEPROM.put(4, storedData);
       EEPROM.get(4, storedData);
       String num2forPrint = (storedData.num2);
      // Serial.println(num2forPrint);

  num3.toCharArray(storedData.num3, sizeof(storedData.num3));
  EEPROM.put(5, storedData);
           EEPROM.get(5, storedData);
       String num3forPrint = (storedData.num3);
      // Serial.println(num3forPrint);

  num4.toCharArray(storedData.num4, sizeof(storedData.num4));
  EEPROM.put(6, storedData);
           EEPROM.get(6, storedData);
           String num4forPrint = (storedData.num4);
         // Serial.println(num4forPrint);

  num5.toCharArray(storedData.num5, sizeof(storedData.num5));
  EEPROM.put(7, storedData);
           EEPROM.get(7, storedData);
           String num5forPrint = (storedData.num5);

  successPage = R"(
        <!DOCTYPE html>
  <html lang="en">
  <head>
     <meta charset="UTF-8">
```

```
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Document</title>
  </head>
  <body>
    <h1>Update done</h1>
    <a href="/">Back to home</a>
  </body>
  </html>
    )";

  request->send(200, "text/html", successPage);
});


server.on("/event", HTTP_POST, [](AsyncWebServerRequest *request){
  String event1 = request->arg("event1");
  String event2 = request->arg("event2");
  String event3 = request->arg("event3");
  String event4 = request->arg("event4");
  String event5 = request->arg("event5");

  event1.toCharArray(storedData.evnt1, sizeof(storedData.evnt1));
  EEPROM.put(8, storedData);

  event2.toCharArray(storedData.evnt2, sizeof(storedData.evnt2));
  EEPROM.put(9, storedData);

  event3.toCharArray(storedData.evnt3, sizeof(storedData.evnt3));
  EEPROM.put(10, storedData);

  event4.toCharArray(storedData.evnt4, sizeof(storedData.evnt4));
  EEPROM.put(11, storedData);

  event5.toCharArray(storedData.evnt5, sizeof(storedData.evnt5));
  EEPROM.put(12, storedData);


  successPage = R"(
        <!DOCTYPE html>
  <html lang="en">
  <head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Document</title>
  </head>
  <body>
```

```
      <h1>Update done</h1>
      <a href="/">Back to home</a>
    </body>
    </html>
      )";

    request->send(200, "text/html", successPage);
  });


  server.on("/logout", HTTP_POST, [](AsyncWebServerRequest *request){
    storedData.loggedIn = false;
    EEPROM.put(2, storedData);
    request->redirect("/login");
  });

// Start server
  server.begin();

  for (;;) {
    // Check if there is data available on Serial
    vTaskDelay(100 / portTICK_PERIOD_MS);
    //Serial.println("inside of web server Page");
  }
}

void softwareSerialTask(void* pvParameters)
 {
  for (;;) {
  // Check if there is data available on Serial2
  if (Serial2.available()) {
    // Read and print the received message from SIM800L
        String receivedMessage = Serial2.readString();
        Serial.println(Serial2.readString());
        Serial.print("Message Received: ");

        Serial.println(receivedMessage);

        if (receivedMessage.indexOf("+DTMF: 1") != -1)
        {
       // If the desired string is found, perform some action
        Serial.println("Desired string found!");
        }


        if (receivedMessage.indexOf("+DTMF: 2") != -1)
```

```
 {
// If the desired string is found, perform some action
 Serial.println("Desired string found!");
 }
 if (receivedMessage.indexOf("+DTMF: 3") != -1)
 {
// If the desired string is found, perform some action
 Serial.println("Desired string found!");
 }
 if (receivedMessage.indexOf("+DTMF: 4") != -1)
 {
// If the desired string is found, perform some action
 Serial.println("Desired string found!");
 }
 if (receivedMessage.indexOf("+DTMF: 5") != -1)
 {
// If the desired string is found, perform some action
 Serial.println("Desired string found!");
 }
 if (receivedMessage.indexOf("+DTMF: 6") != -1)
 {
// If the desired string is found, perform some action
 Serial.println("Desired string found!");
 }
 if (receivedMessage.indexOf("+DTMF: 7") != -1)
 {
// If the desired string is found, perform some action
 Serial.println("Desired string found!");
 }

 if (receivedMessage.indexOf("+DTMF: 8") != -1)
 {
// If the desired string is found, perform some action
 Serial.println("Desired string found!");
 }
 if (receivedMessage.indexOf("+DTMF: 9") != -1)
 {
// If the desired string is found, perform some action
 Serial.println("Desired string found!");
 }
 if (receivedMessage.indexOf("+DTMF: 0") != -1)
 {
// If the desired string is found, perform some action
 Serial.println("Desired string found!");
 }
```

```
    }

  // Check if there is data available on Serial (Arduino IDE Serial Monitor)
  if (Serial.available()) {
    // Read and send the command to SIM800L
    String command = Serial.readString();
    Serial2.println(command);
  }

    vTaskDelay(10 / portTICK_PERIOD_MS);
  }
}

void AnotherTask(void* pvParameters)
{

   for(;;)
   {

      int currentState1 = digitalRead(inputPin1);
      int currentState2 = digitalRead(inputPin2);
      int currentState3 = digitalRead(inputPin3);
      int currentState4 = digitalRead(inputPin4);
      int currentState5 = digitalRead(inputPin5);

      if (currentState1 == LOW && previousState1 == HIGH)
      {
      // Condition for input 1 being HIGH for the first time
      // Execute your code here
      Serial.println("Input 1 is HIGH for the first time");


      }




   }

}
```

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