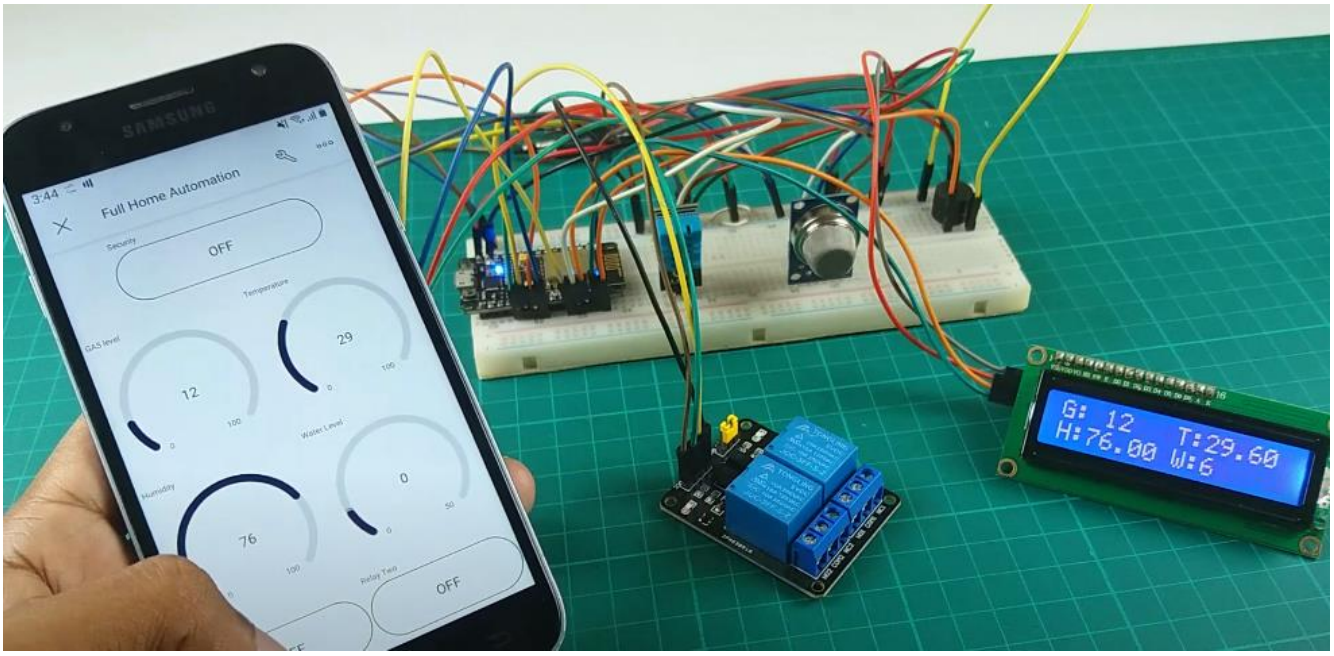
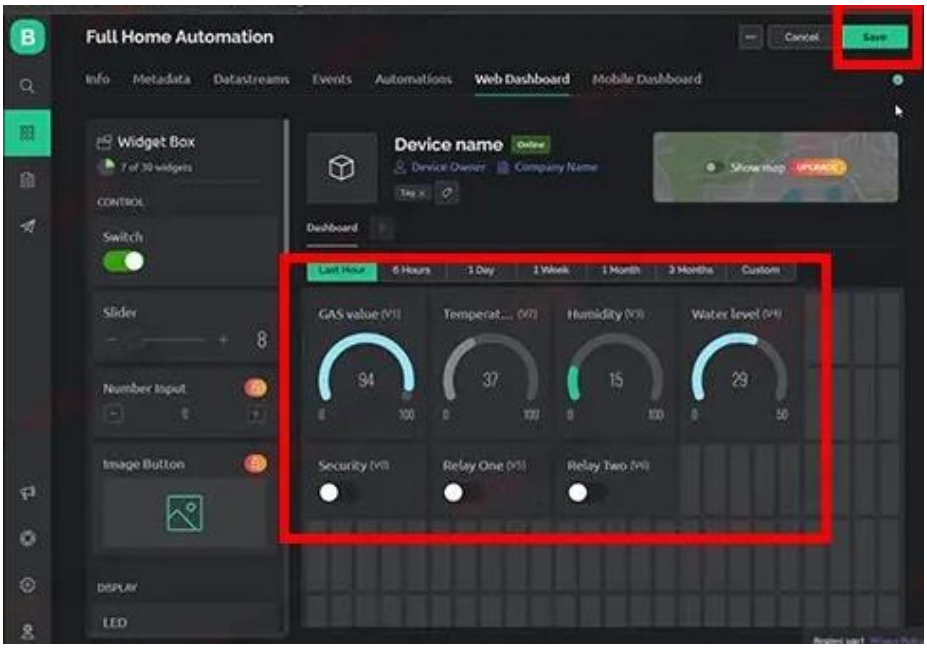
Full Home Automation System with the Nodemcu ESP8266 board and the New Blynk app





It provides a complete home automation system that includes many important

monitoring and control functions. The system caters to temperature and humidity monitoring, gas level detection, security surveillance, water level monitoring, and home appliance control. In regard to gathering data about temperature and humidity, you employed the DHT11 sensor, which effectively calculates those very two parameters. PIR sensors have been used for security and can trace the movement within a certain area for triggering an alert. You then used the MQ2 sensor, which should monitor gas levels-smoke or any other hazardous vapors-to make the environment much safer.

The ultrasonic sensor takes care of water level detection by calculating the distance to the water surface, hence ideal in monitoring a tank or reservoir. The system also comprises a 2-channel relay module that enables the user to remotely control two home appliances. It is such advanced automation systems that only don't gather data but also provide live feedback to its user through various interfaces.

All the sensor data can be viewed on an LCD display for easy on-site viewing. Further, the system is set up to deliver all the updates on a smartphone or computer, from where remote monitoring and control could be done through an app or web interface for flexibility, ensuring that you may view the status of your home from anywhere. It incorporates different sensors to make the system adaptable to varied home automation requirements within a single setup. Efficient and easy to use, it presents the modern method of managing a house by combining convenience and safety with access to real-time data from anywhere.

```
/*Full home automation with the New Blynk app
  Home Page
*/
//Include the library files
#include <LiquidCrystal_I2C.h>
#define BLYNK_PRINT Serial
#include <ESP8266WiFi.h>
#include <BlynkSimpleEsp8266.h>
#include <DHT.h>

//Initialize the LCD display
LiquidCrystal_I2C lcd(0x27, 16, 2);

char auth[] = "";//Enter your Auth token
char ssid[] = "";//Enter your WIFI name
char pass[] = "";//Enter your WIFI password
```

```
DHT dht(D3, DHT11); //(sensor pin,sensor type)
BlynkTimer timer;
bool pirbutton = 0;

// Define component pins
#define Buzzer D0
#define MQ2 A0
#define trig D4
#define echo D5
#define PIR D6
#define relay1 D7
#define relay2 D8

//Get buttons values
BLYNK_WRITE(V0) {
  pirbutton = param.asInt();
}

void setup() {
  Serial.begin(9600);
  lcd.init();
  lcd.backlight();
  pinMode(Buzzer, OUTPUT);
  pinMode(PIR, INPUT);
  pinMode(trig, OUTPUT);
  pinMode(echo, INPUT);
  pinMode(relay1, OUTPUT);
  pinMode(relay2, OUTPUT);
  digitalWrite(relay1, HIGH);
  digitalWrite(relay2, HIGH);
  Blynk.begin(auth, ssid, pass, "blynk.cloud", 80);
  dht.begin();

  lcd.setCursor(0, 0);
  lcd.print("Home Automation");
  lcd.setCursor(4, 1);
  lcd.print("System");
  delay(4000);
  lcd.clear();

//Call the functions
```

```
  timer.setInterval(100L, gassensor);
  timer.setInterval(100L, DHT11sensor);
  timer.setInterval(100L, pirsensor);
  timer.setInterval(100L, ultrasonic);
}

//Get the MQ2 sensor values
void gassensor() {
  int value = analogRead(MQ2);
  Serial.println(value);
  value = map(value, 0, 1024, 0, 100);
  if (value <= 55) {
    digitalWrite(Buzzer, LOW);
  } else if (value > 55) {
    Blynk.notify("Warning! Gas leak detected");
    digitalWrite(Buzzer, HIGH);
  }
  Blynk.virtualWrite(V1, value);
  lcd.setCursor(0, 0);
  lcd.print("G:");
  lcd.print(" ");
  lcd.print(value);

}

//Get the DHT11 sensor values
void DHT11sensor() {
  float h = dht.readHumidity();
  float t = dht.readTemperature();

  if (isnan(h) || isnan(t)) {
    Serial.println("Failed to read from DHT sensor!");
    return;
  }
  Blynk.virtualWrite(V2, t);
  Blynk.virtualWrite(V3, h);

  lcd.setCursor(8, 0);
  lcd.print("T:");
  lcd.print(t);
```

```
  lcd.setCursor(0, 1);
  lcd.print("H:");
  lcd.print(h);

}

//Get the PIR sensor values
void pirsensor() {
  bool value = digitalRead(PIR);
  if (pirbutton == 1) {
    if (value == 0) {
      digitalWrite(Buzzer, LOW);
    } else if (value == 1) {
      Blynk.notify("Warning! Please check your security system");
      digitalWrite(Buzzer, HIGH);
    }
  }
}

//Get the ultrasonic sensor values
void ultrasonic() {
  digitalWrite(trig, LOW);
  delayMicroseconds(4);
  digitalWrite(trig, HIGH);
  delayMicroseconds(10);
  digitalWrite(trig, LOW);
  long t = pulseIn(echo, HIGH);
  long cm = t / 29 / 2;
  Blynk.virtualWrite(V4, cm);

  lcd.setCursor(8, 1);
  lcd.print("W:");
  lcd.print(cm);
  lcd.print("  ");
}

//Get buttons values
BLYNK_WRITE(V5) {
 bool RelayOne = param.asInt();
  if (RelayOne == 1) {
    digitalWrite(relay1, LOW);
```

```
  } else {
    digitalWrite(relay1, HIGH);
  }
}

//Get buttons values
BLYNK_WRITE(V6) {
 bool RelayTwo = param.asInt();
  if (RelayTwo == 1) {
    digitalWrite(relay2, LOW);
  } else {
    digitalWrite(relay2, HIGH);
  }
}

void loop() {
  Blynk.run();//Run the Blynk library
  timer.run();//Run the Blynk timer
}
```