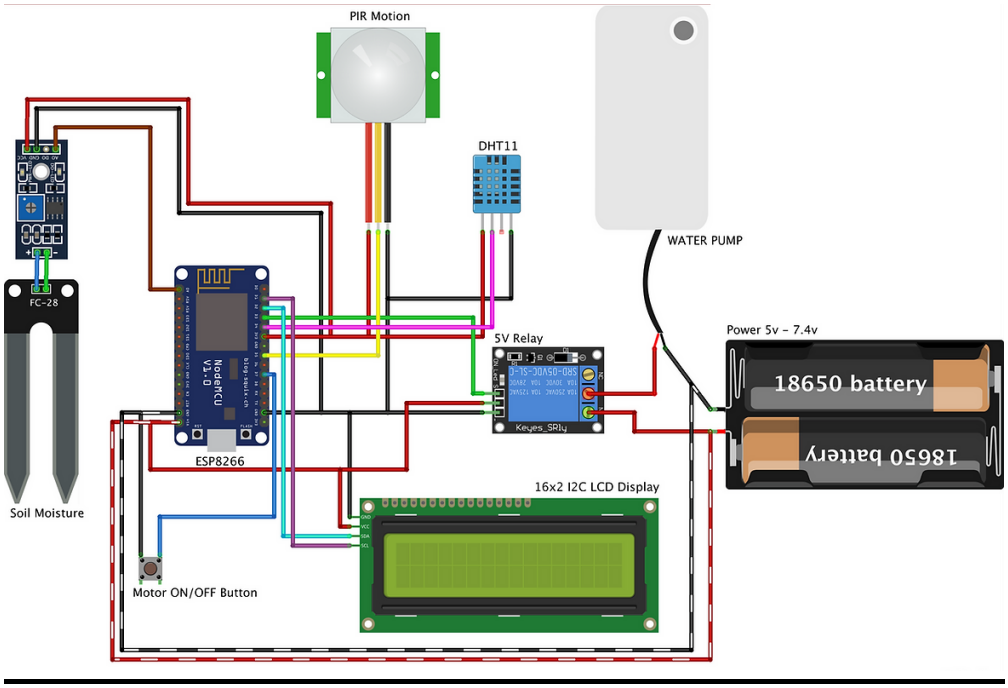
Exp-8
Mini-Project

Aim:-

Iot Based Smart Agriculture Monitoring System Using BLYNK IOT

Circuit Diagram:-



Code:-

```
// Viral Science www.viralsciencecreativity.com www.youtube.com/c/viralscience
// Blynk IOT Smart Plant Monitoring System

/* Connections
Relay. D3
Btn.   D7
Soil.  A0
PIR.   D5
SDA.   D2
SCL.   D1
Temp.  D4
*/

// Include the library files
#define BLYNK_TEMPLATE_ID "TMPL3aMxoKG55"
#define BLYNK_TEMPLATE_NAME "iot"
#define BLYNK_AUTH_TOKEN "Dv6Pwt2KDXbLwSvfrDgwqoGD1XDgAig5"
#include <LiquidCrystal_I2C.h>
```

```
#include <Wire.h>
#define BLYNK_PRINT Serial
#include <ESP8266WiFi.h>
#include <BlynkSimpleEsp8266.h>
#include <DHT.h>

char auth[] = "Dv6Pwt2KDXbLwSvfrDgwqoGD1XDgAig5";  // Enter your Blynk Auth
token
char ssid[] = "OnePlus 10R 5G";  // Enter your WIFI SSID
char pass[] = "mohil123";  // Enter your WIFI Password

DHT dht(D4, DHT11);  // D4 DHT11 Temperature Sensor
BlynkTimer timer;

// Define component pins
#define soil A0  // A0 Soil Moisture Sensor
#define PIR D5   // D5 PIR Motion Sensor
int PIR_ToggleValue;

void checkPhysicalButton();
int relay1State = LOW;
int pushButton1State = HIGH;
#define RELAY_PIN_1 D3  // D3 Relay
#define PUSH_BUTTON_1 D7  // D7 Button
#define VPIN_BUTTON_1 V12

LiquidCrystal_I2C lcd(0x27, 16, 2);

void setup() {
  Serial.begin(9600);
  Wire.begin();
  lcd.init();
  lcd.backlight();
  pinMode(PIR, INPUT);

  pinMode(RELAY_PIN_1, OUTPUT);
  digitalWrite(RELAY_PIN_1, LOW);
  pinMode(PUSH_BUTTON_1, INPUT_PULLUP);
  digitalWrite(RELAY_PIN_1, relay1State);

  Blynk.begin(auth, ssid, pass, "blynk.cloud", 80);
  dht.begin();

  lcd.setCursor(0, 0);
  lcd.print("  Initializing  ");
  for (int a = 5; a <= 10; a++) {
    lcd.setCursor(a, 1);
    lcd.print(".");
```

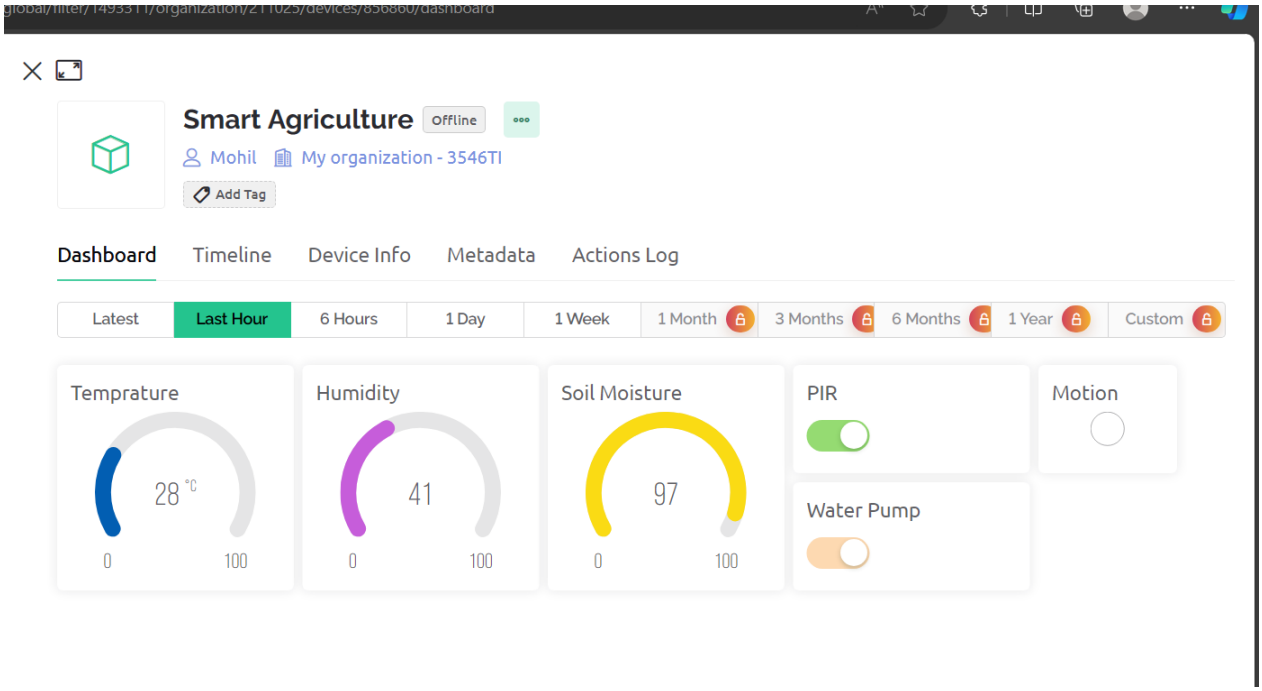
```
    delay(500);
  }
  lcd.clear();
  lcd.setCursor(11, 1);
  lcd.print("W:OFF");
  // Call the function
  timer.setInterval(100L, soilMoistureSensor);
  timer.setInterval(100L, DHT11sensor);
  timer.setInterval(500L, checkPhysicalButton);
}

// 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(V0, t);
  Blynk.virtualWrite(V1, h);

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

  lcd.setCursor(8, 0);
  lcd.print("H:");
  lcd.print(h);
}

// Get the soil moisture values
void soilMoistureSensor() {
  int value = analogRead(soil);
  value = map(value, 0, 1024, 0, 100);
  value = (value - 100) * -1;

  Blynk.virtualWrite(V3, value);
  lcd.setCursor(0, 1);
  lcd.print("S:");
  lcd.print(value);
  lcd.print(" ");
}

// Get the PIR sensor values
void PIRsensor() {
  bool value = digitalRead(PIR);
```

```
  if (value) {
    Blynk.logEvent("pirmotion", "WARNNG! Motion Detected!");  // Enter your
Event Name
    WidgetLED LED(V5);
    LED.on();
  } else {
    WidgetLED LED(V5);
    LED.off();
  }
}

BLYNK_WRITE(V6) {
  PIR_ToggleValue = param.asInt();
}

BLYNK_CONNECTED() {
  // Request the latest state from the server
  Blynk.syncVirtual(VPIN_BUTTON_1);
}

BLYNK_WRITE(VPIN_BUTTON_1) {
  relay1State = param.asInt();
  digitalWrite(RELAY_PIN_1, relay1State);
}

void checkPhysicalButton() {
  if (digitalRead(PUSH_BUTTON_1) == LOW) {
    // pushButton1State is used to avoid sequential toggles
    if (pushButton1State != LOW) {
      // Toggle Relay state
      relay1State = !relay1State;
      digitalWrite(RELAY_PIN_1, relay1State);
      // Update Button Widget
      Blynk.virtualWrite(VPIN_BUTTON_1, relay1State);
    }
    pushButton1State = LOW;
  } else {
    pushButton1State = HIGH;
  }
}

void loop() {
  if (PIR_ToggleValue == 1) {
    lcd.setCursor(5, 1);
    lcd.print("M:ON ");
    PIRsensor();
  } else {
    lcd.setCursor(5, 1);
```

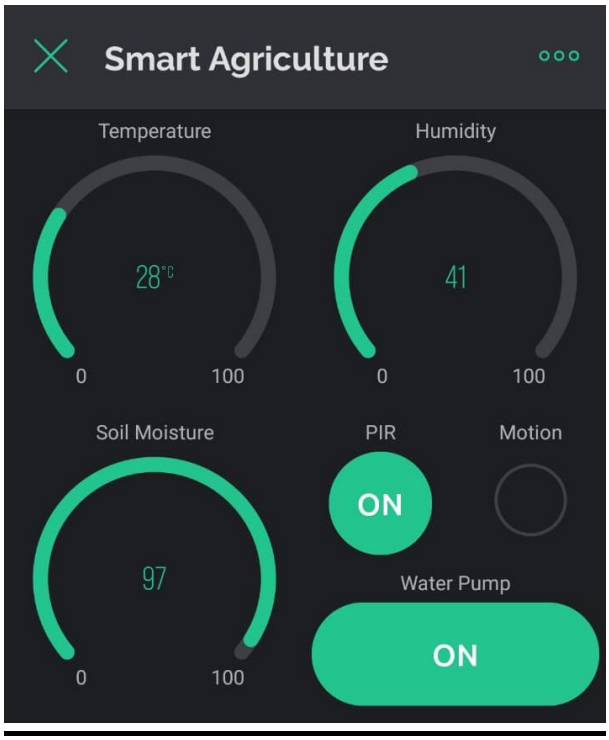
```
    lcd.print("M:OFF");
    WidgetLED LED(V5);
    LED.off();
  }

  if (relay1State == HIGH) {
    lcd.setCursor(11, 1);
    lcd.print("W:ON ");
  } else if (relay1State == LOW) {
    lcd.setCursor(11, 1);
    lcd.print("W:OFF");
  }

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

Output:-

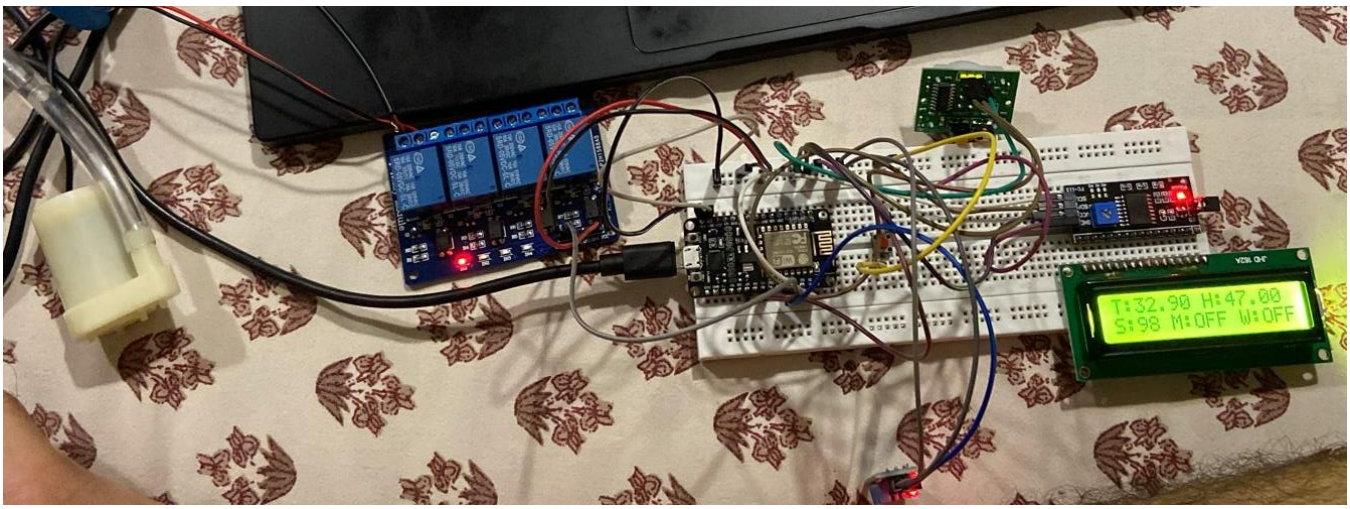
Blynk Web Dashboard:-



Mobile Dashboard:-



Circuit:-



Conclusion:-

In this project we created a iot based smart agriculture monitoring system which consist of DHT 11 sensor to monitor Temperature & Humdity a PIR sensor to monitor movement a Water pump to water the plant a Relay ,Switch and a Battery to Control the Pump and a LCD to Display all the Reading and also display result on Blynk iot.