

## **PROJECT 7**

### **Rain Water Sensor Using Blynk**

#### **1. INTRODUCTION:-**

Recently I bought a rain sensor for hooking it up to my arduino. I have a home garden and watering it in my area is troublesome. I live in an area where we get unexpected rains. So I wanted to make a system that would check for rain on all times and alert me whenever it rains. The system notifies me on my mobile and shows the intensity of rain on my screen.

Rain sensors are used in the detection of water beyond what a humidity sensor can detect.

#### **COMPONENTS:-**

**1.WEMOS**

**2.RAIN WATER SENSOR**

## APPLICATION:-

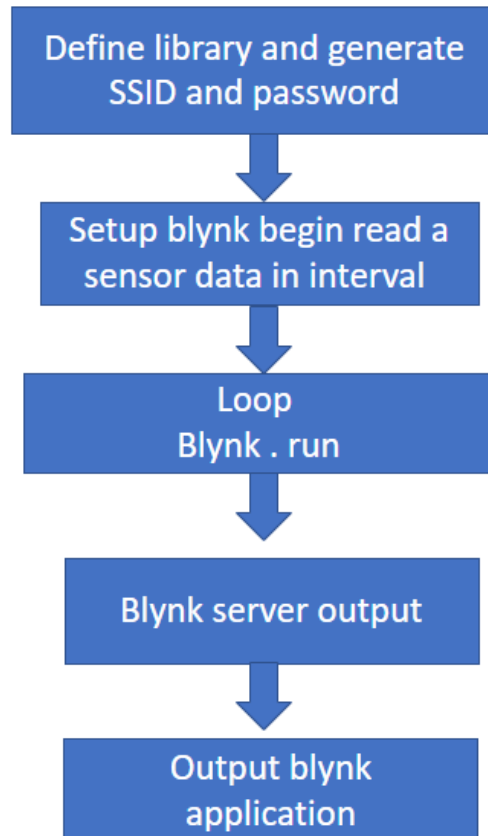
The applications of rain sensor include the following.

- This sensor is used as a water preservation device and this is connected to the [irrigation system](#) to shut down the system in the event of rainfall.
- This sensor is used to guard the internal parts of [an automobile](#) against the rainfall as well as to support the regular windscreen wiper's mode.
- This sensor is used in specialized satellite communications aerals for activating a rain blower over the opening of the aerial feed, to get rid of water droplets from the mylar wrap to keep pressurized as well as dry air within the waveguides.

## OBJECTIVES:-

Rain Alarm Project is a simple but very useful project that detects Rain (Rain Water) and automatically triggers an alarm or buzzer. ... Rain water detector will detect the rain and make an alert; rain water detector is used in the irrigation field, home automation, communication, automobiles etc.

## FLOW CHART :-



## PROGRAMMING: -

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

```
char auth[] = "HILbiRWdNjbPkPr4NZ0MD8C_e9YWF_6E";//Enter your  
Auth token
```

```
char ssid[] = "RajibPaul";//Enter your WIFI name
```

```
char pass[] = "0563780324";//Enter your WIFI password
```

```
BlynkTimer timer;
```

```
void moisture() {  
  int rainSensor = analogRead(A0);  
  rainSensor = map(rainSensor, 0, 1023, 0, 100);  
  Blynk.virtualWrite(V0, rainSensor);  
  Serial.println(rainSensor);  
}
```

```
void setup() {  
  Serial.begin(9600);  
  Blynk.begin(auth, ssid, pass);  
  timer.setInterval(100L, moisture)  
}
```

```
void loop()  
{  
  Blynk.run();  
  timer.run();  
}
```

```
#define BLYNK_PRINT Serial      // Uncomment for debugging
```

```
#include <ESP8266WiFi.h>
```

```
#include <BlynkSimpleEsp8266.h>
```

```
#include <ESP8266mDNS.h> // For OTA with ESP8266
```

```
#include <WiFiUdp.h> // For OTA
```

```
#include <ArduinoOTA.h> // For OTA
```

```
// You should get Auth Token in the Blynk App.
```

```
// Go to the Project Settings (nut icon).
```

```
char auth[] = "07DQbnsxODMhV3t0HC4QFZ5ZeHKIoFF6";
```

```
// Your WiFi credentials.
```

```
// Set password to "" for open networks.
```

```
char ssid[] = "Tshimologong-General";
```

```
char pass[] = "letsinnovate";
```

```
#define PULSE_PIN D2 //gpio4
```

```
#define FLOW_CALIBRATION 8.2
```

```
#define VPIN_TOTAL_LITERS    V1
```

```
#define VPIN_FLOW_RATE      V2
```

```
#define VPIN_FLOW_MILLI_LITERS V3
```

```
#define VPIN_RESET          V4
```

```
#define OTA_HOSTNAME "Test Flow Sensor Water Meter"
```

```
BlynkTimer timer;
```

```
volatile long pulseCount = 0;
```

```
float flowRate;
```

```
unsigned int flowMilliLitres;
```

```
unsigned long totalMilliLitres;
```

```
float totalLitres;
```

```
float totalLitresold;
```

```
unsigned long oldTime;
```

```
BLYNK_CONNECTED() { // runs once at device startup, once  
connected to server.
```

```
  Blynk.syncVirtual(VPIN_TOTAL_LITERS); //gets last know value of  
  V1 virtual pin
```

```
}
```

**// Restores last know value of V1 virtual pin which we got it from  
blynk server**

**BLYNK\_WRITE(VPIN\_TOTAL\_LITERS)**

```
{  
  totalLitresold = param.asFloat();  
  
}
```

**BLYNK\_WRITE(VPIN\_RESET) { // reset all data with button in PUSH  
mode on virtual pin V4**

```
  int resetdata = param.asInt();  
  if (resetdata == 0) {  
    Serial.println("Clearing Data");  
    Blynk.virtualWrite(VPIN_TOTAL_LITERS, 0);  
    Blynk.virtualWrite(VPIN_FLOW_RATE, 0);  
    flowRate = 0;  
    flowMilliLitres = 0;  
    totalMilliLitres = 0;  
    totalLitres = 0;  
    totalLitresold = 0;  
  }  
}
```

```
void pulseCounter()
```

```
{
```

```
    pulseCount++;
```

```
}
```

```
void flow()
```

```
{
```

```
    if ((millis() - oldTime) > 1000) // Only process counters once per second
```

```
    {
```

```
        detachInterrupt(PULSE_PIN);
```

```
        flowRate = ((1000.0 / (millis() - oldTime)) * pulseCount) /  
FLOW_CALIBRATION;
```

```
        oldTime = millis();
```

```
        flowMilliLitres = (flowRate / 60) * 1000;
```

```
        totalMilliLitres += flowMilliLitres;
```

```
        totalLitres = totalLitresold + totalMilliLitres * 0.001;
```

```
        unsigned int frac;
```

```
        // Print the flow rate for this second in liters / minute
```

```
        Serial.print("flowrate: ");
```

```
        Serial.print(int(flowRate)); // Print the integer part of the variable
```

```
        Serial.print("."); // Print the decimal point
```



**frac = (flowRate - int(flowRate)) \* 10; // Determine the fractional part. The 10 multiplier gives us 1 decimal place.**

**Serial.print(frac, DEC); // Print the fractional part of the variable**

**Serial.print("L/min");**

**Serial.print(" Current Liquid Flowing: "); // Print the number of liters flowed in this second**

**Serial.print(flowMilliLitres);**

**Serial.print("mL/Sec");**

**Serial.print(" Output Liquid Quantity: "); // Print the cumulative total of liters flowed since starting**

**Serial.print(totalLitres);**

**Serial.println("L");**

**pulseCount = 0; // Reset the pulse counter so we can start incrementing again**

**attachInterrupt(PULSE\_PIN, pulseCounter, FALLING); // Enable the interrupt again now that we've finished sending output**

**}**

**}**

**void sendtoBlynk() // In this function we are sending values to blynk server**

```
{  
  Blynk.virtualWrite(VPIN_TOTAL_LITERS, totalLitres);    // Total  
  water consumption in liters (L)  
  
  Blynk.virtualWrite(VPIN_FLOW_RATE, flowRate);        // Displays  
  the flow rate for this second in liters / minute (L/min)  
  
  // Blynk.virtualWrite(VPIN_FLOW_RATE, flowMilliLitres); // Displays  
  the number of liters flowed in second (mL/Sec)  
  
}
```

```
void setup()
```

```
{  
  Serial.begin(57600);  
  
  Blynk.begin(auth, ssid, pass);  
  
  ArduinoOTA.setHostname(OTA_HOSTNAME); // For OTA - Use your  
  own device identifying name  
  
  ArduinoOTA.begin(); // For OTA  
  
  
  pulseCount    = 0;  
  flowRate      = 0.0;  
  flowMilliLitres = 0;  
  totalMilliLitres = 0;  
  oldTime       = 0;  
  totalLitresold = 0;  
  
  
  pinMode(PULSE_PIN, INPUT); // Initialization of the variable  
  "PULSE_PIN" as INPUT (D2 pin)
```

```
attachInterrupt(PULSE_PIN, pulseCounter, FALLING);

timer.setInterval(10000L, sendtoBlynk); // send values blynk server
every 10 sec

}

void loop()
{

  Blynk.run();
  ArduinoOTA.handle(); // For OTA
  timer.run();
  flow();

}
```

## **HARDWARE CONNECTION:-**

1. Connect rain water sensor to wemos
2. Connect pin A0 to A0
3. Connect pin GND to GND
4. Connect pin 5V to 5V

## **CURCUIT DIAGRAM:-**

