

IOT CLOUD PROJECT



PROJECTS :

1.CONTROL LED USING CLOUD (BLYNK)

2.THEFT ALERT NOTIFICATION

3.IRRIGATION SYSTEM WITH CLOUD (BLYNK)

Project Overview

Blynk is a platform that enables the creation of Internet of Things (IoT) applications for various devices. It provides a cloud-based service that allows users to connect and control different hardware components using a mobile app and web.

Blynk Cloud serves as the central hub where data is exchanged between the Blynk mobile app and the connected hardware devices. Blynk supports various communication protocols such as HTTP. This allows devices to communicate with the Blynk Cloud and exchange data.

Blynk provides a user-friendly drag-and-drop interface for creating custom dashboards and user interfaces for IoT projects. Users can design their own control panels within the Blynk app to interact with connected devices.

Project Goals

- Remote Monitoring and Control
- Data Logging and Visualization:
- Smart Agriculture
- Automation and Alerts

Application

a. CONTROL LED USING CLOUD (BLYNK):

- **Home Automation:** Control the lighting in your home remotely. For example, you could turn on or off the lights in your living room or bedroom using the Blynk app on your smartphone.
- **Security Systems:** Use the LED control as a part of a larger security system. For instance, remotely turn on outdoor lights equipped with LEDs to deter intruders or illuminate an area when motion is detected.

b. THEFT ALERT NOTIFICATION:

- **Home Security:** Set up a motion sensor at the entrance of your home. Receive instant notifications on your smartphone when motion is detected, enhancing the security of your premises.

c. IRRIGATION SYSTEM WITH CLOUD (BLYNK):

- **Smart Agriculture:** Implement an intelligent irrigation system for agricultural fields. Monitor soil moisture levels and control irrigation remotely, ensuring optimal water usage for crops.
- **Gardening:** Set up an automated watering system for your garden. Use soil moisture sensors to determine when plants need watering, and trigger irrigation cycles through the Blynk app.
- **Water Conservation:** Integrate weather data into the system to make informed decisions about irrigation. For example, the system could adjust watering schedules based on forecasted rainfall, contributing to water conservation efforts.

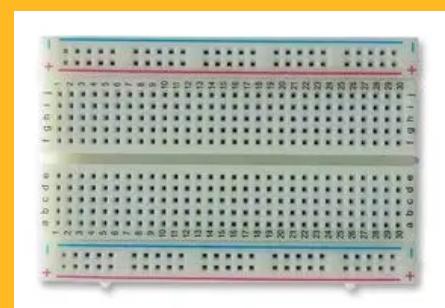
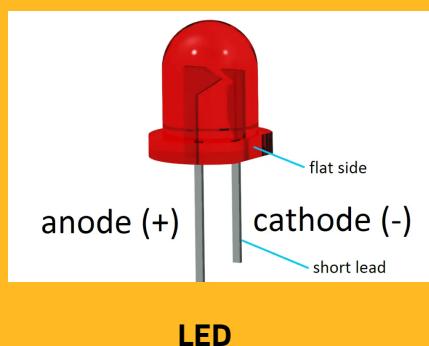
These applications highlight the versatility of IoT projects using Blynk and related technologies. Whether it's enhancing home automation, improving security, or optimizing resource usage in agriculture, these projects showcase the practicality and real-world impact of IoT solutions. Additionally, they provide users with the flexibility to monitor and control devices remotely, leading to greater convenience and efficiency in various domains.

I. CONTROL LED USING BLYNK

HARDWARE COMPONENTS :



ESP8266



BREADBOARD



JUMPER WIRES



USB B-TYPE CABLE

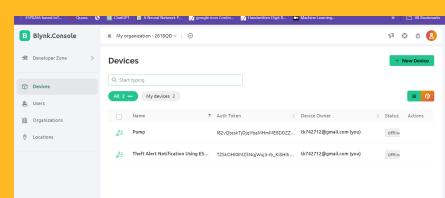
SOFTWARE COMPONENTS :



ARDUINO IDE



BLYNK IOT CLOUD

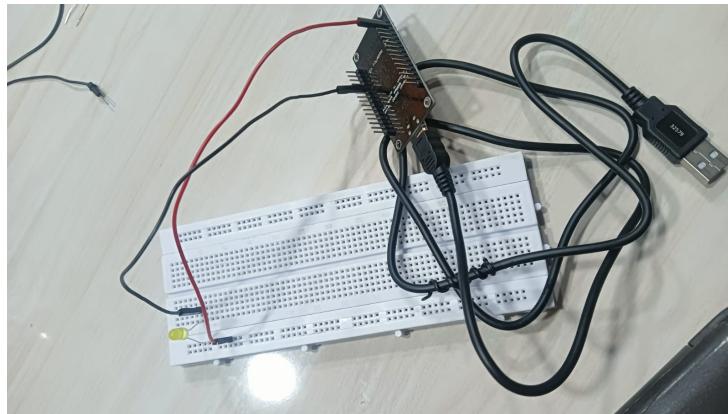


BLYNK DASHBOARD

Connection

BREADBOARD - ESP8266

- Long LED(+ve) at the Centre Side.
- -VE Pin of LED - GND
- +VE Pin of LED - D4



a. SET UP WEB DASHBOARD

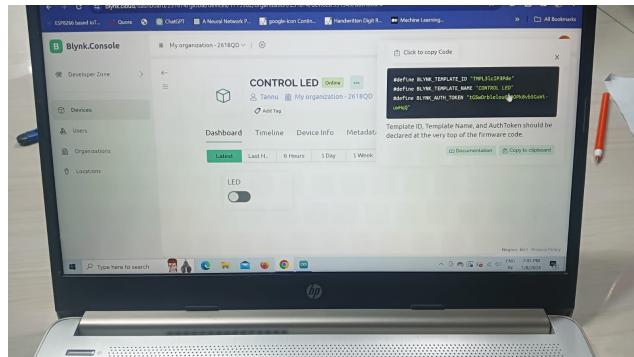
- LOG IN to the BLYNK.CONSOLE WEBSITE
- CREATE NEW TEMPLATE
 - Go to DEVELOPER ZONE from sidebar.
 - ENTER ANY Name related to Project.
 - Select HARDWARE “ESP8266”
 - Connection type is WIFI
 - Click DONE.
- Go to DATASTREAMS
 - Click New Datastream.
 - Select Digital.
 - Enter any Name i.e.(LED).
 - Select Pin =2, 2 means we need to connect the Digital pin = 4.
 - Click CREATE.
- Go to Web Dashboard
 - Drag and drop the “SWITCH” WIDGET.
 - After Dragging the Switch Widget . Go to its SETTING.
 - Select the Datastream which has already created for rthat i.e. LED(2).
 - Click Save.
- Go to DEVICES from Sidebar
 - Click NEW DEVICE.
 - Select “From TEMPLATE”.
 - Choose the specific template.
 - Select Create
- After these all we get BLYNK_TEMPLATE_NAME, BLYNK_DEVICE_NAME, BLYNK_AUTH_TOKEN.
 - Copy it and paste it to the Code.
- After connecting Circuit and Uploading Code Blynk Cloud should be online.

b. SET UP MOBILE DASHBOARD

- Install BLYNK IOT
- Select the Created Device i.e. LED
- Create WIDGETS like BUTTON.
- Select the Widget and Select Datastream which is pre-created from web. i.e. D2 .
- Choose Switch from Push
- Control Button is now created.

c. ARDUINO IDE SETUP

- Install ESP8266(NODEMCU).
- Write this below Code and edit the template id, name and token as per your information.
- Select File → Preferences → Additional board Managers URL .
- Paste this link on that “ http://arduino.esp8266.com/stable/package_esp8266com_index.json”
- And Select Ok.
- Install or Download this Folder : CH34x_Install_Windows_v3_4.rar and add it into Arduino IDE, SKETCH → INCLUDE LIBRARY → ADD .ZIP LIBRARY.
- Choose esp8266 → NODEMCU1.0 (ESP-12E MODULE) board from Tools
- Select appropriate PORT for Arduino.
- Install the required Library.
- Connection of WIFI of Laptop, Phone and in this Code should be same .



Source Code :

```
//Control LED Using Blynk 2.0/Blynk IOT
```

```
#define BLYNK_TEMPLATE_ID "TMPL3lcIP3Pde"  
  
#define BLYNK_TEMPLATE_NAME "CONTROL LED"  
  
#define BLYNK_AUTH_TOKEN "tGSwOrblelou6UDOPk8vbSGuWi-uwHqQ"
```

```

#define BLYNK_PRINT Serial

#include <ESP8266WiFi.h>

#include <BlynkSimpleEsp8266.h>

char auth[] = BLYNK_AUTH_TOKEN;

char ssid[] = "Tannu"; // Enter your Wifi Username

char pass[] = ""; // Enter your Wifi password

int ledpin = D4;

void setup()

{

    Serial.begin(115200);

    Blynk.begin(auth, ssid, pass);

    pinMode(ledpin,OUTPUT);

}

void loop()

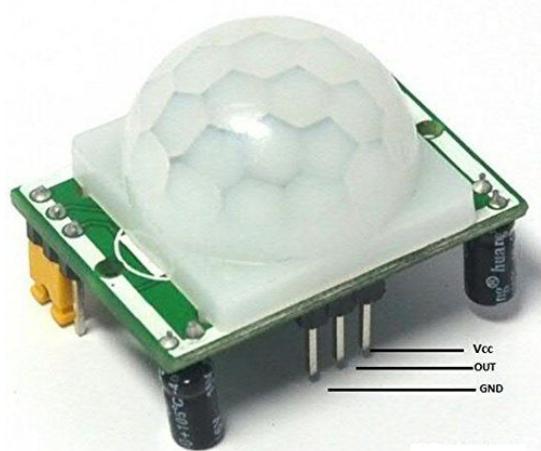
{
    Blynk.run();
}

```

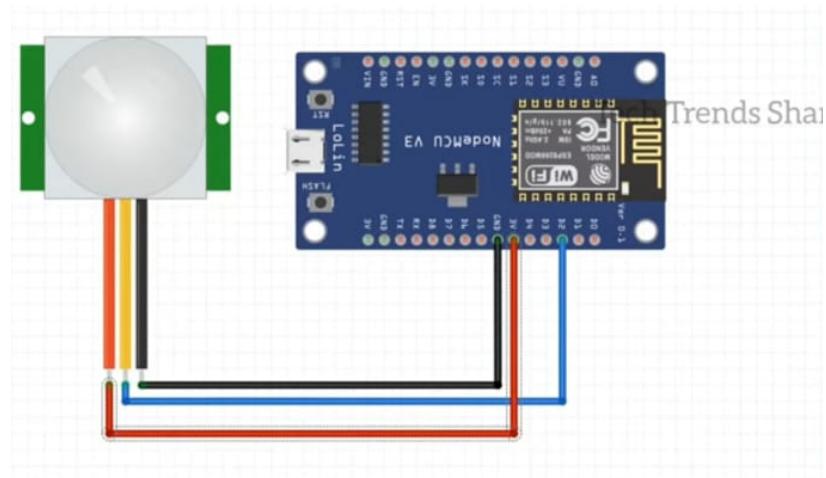
2.THEFT ALERT NOTIFICATION

HARDWARE COMPONENTS :

- ESP8266 NODEMCU
- MOTION SENSOR
- USB B-TYPE CABLE
- 2-Female TO Female JUMPER WIRE



CIRCUIT DIAGRAM :



CONNECTION :

- VCC-3V
- GND-GND
- OUT-D2

SET UP WEB DASHBOARD OF BLYNK

- LOG IN
- GO TO DEVELOPER ZONE.
- Create NEW TEMPLATE.
 - Name it - Theft Alert Notification Using ESP8266.
 - Select Hardware ESP866.
 - Click On DONE Button.
- Now Go to EVENTS Steps from DASHBOARD.
 - Add NEW EVENT
 - Name the Event Name as `theft_alert`.
 - IN Description write any Message which should be in code also , like here “`theft_alert in home`” would be writed in description as I had `taken theft_alert_in_home` in code so that's why.
 - Change the time to “1 second” at Event will be sent to user only once per space.
 - Enable “ Show event in notification section of Mobile App.
 - Enable “ Send Event to TimeLine”.
 - Go To NOTIFICATION Step from the Menu Bar
 - Select “Enable Notification”.
 - Choose Device owner on Email and in Push NOTIFICATIONS TO.
 - Enable the “ Enable notifications Management” from the notification bar.
 - Choose Create.
 - And Save the Template.
- Go to the DEVICES
 - Choose “NEW DEVICE”.
 - Select “FROM TEMPLATE”.
 - Select the template which had created.
 - Select CREATE button.
- Paste the `Template_name`,`Template_id` and `Template_token` on code .

Source Code :

```
#define BLYNK_TEMPLATE_ID "TMPL3iTOf2zqq"

#define BLYNK_TEMPLATE_NAME "Theft Alert Notification Using ESP8266"

#define BLYNK_AUTH_TOKEN "TZSkOHIOIMZ5NqjWuj3-rb_KiSHIhqHj"
```

```
#define BLYNK_PRINT Serial

#include <ESP8266WiFi.h>

#include <BlynkSimpleEsp8266.h>

char auth[] = BLYNK_AUTH_TOKEN;

char ssid[] = "Tannu"; // type your wifi name

char pass[] = "bhikharihoo"; // type your wifi password

#define PIR_SENSOR 4

BlynkTimer timer;

//int flag=0;

void notifyOnTheft()

{

    int isTheftAlert = digitalRead(PIR_SENSOR);

    Serial.println(isTheftAlert);

    if (isTheftAlert==1) {

        Serial.println("Theft Alert in Home");

        // Blynk.email("tk742712@gmail.com", "Alert", "Theft Alert in Home");

        //Blynk.notify("Alert : Theft Alert in Home");

        Blynk.logEvent("theft_alert","Theft Alert in Home");

        // flag=1;

    }

    else if (isTheftAlert==0)

    {

        // flag=0;

    }

}
```

```

}

}

void setup(){
pinMode(PIR_SENSOR, INPUT);

Serial.begin(115200);

Blynk.begin(auth, ssid, pass);

//dht.begin();

timer.setInterval(5000L, notifyOnTheft);

}

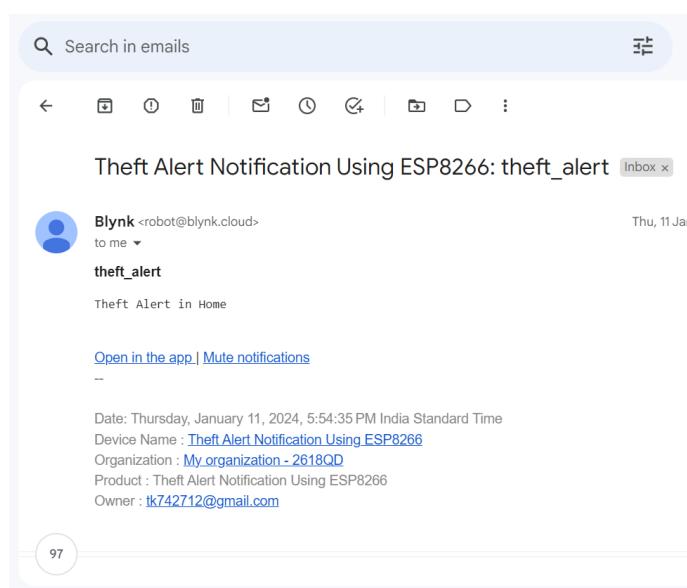
void loop(){
Blynk.run();

timer.run();

}

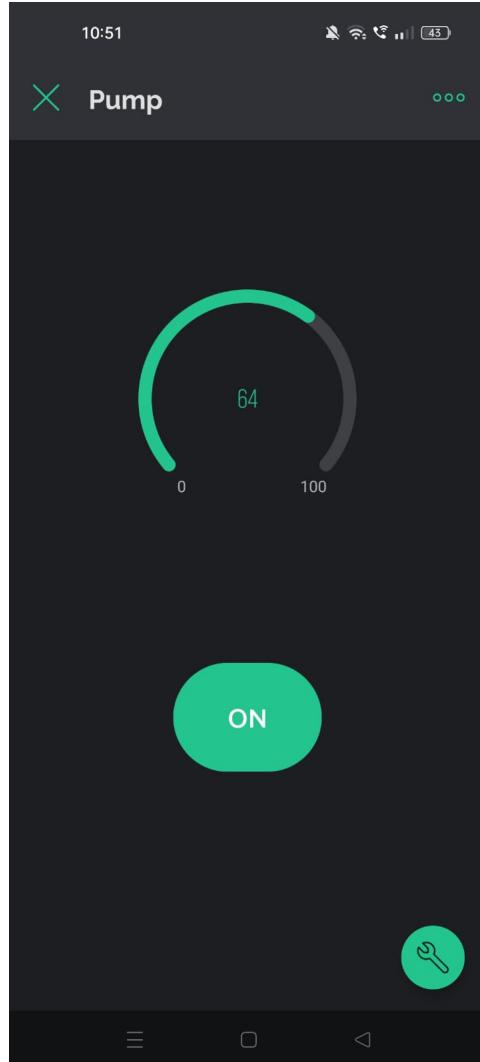
```

OUTPUT :

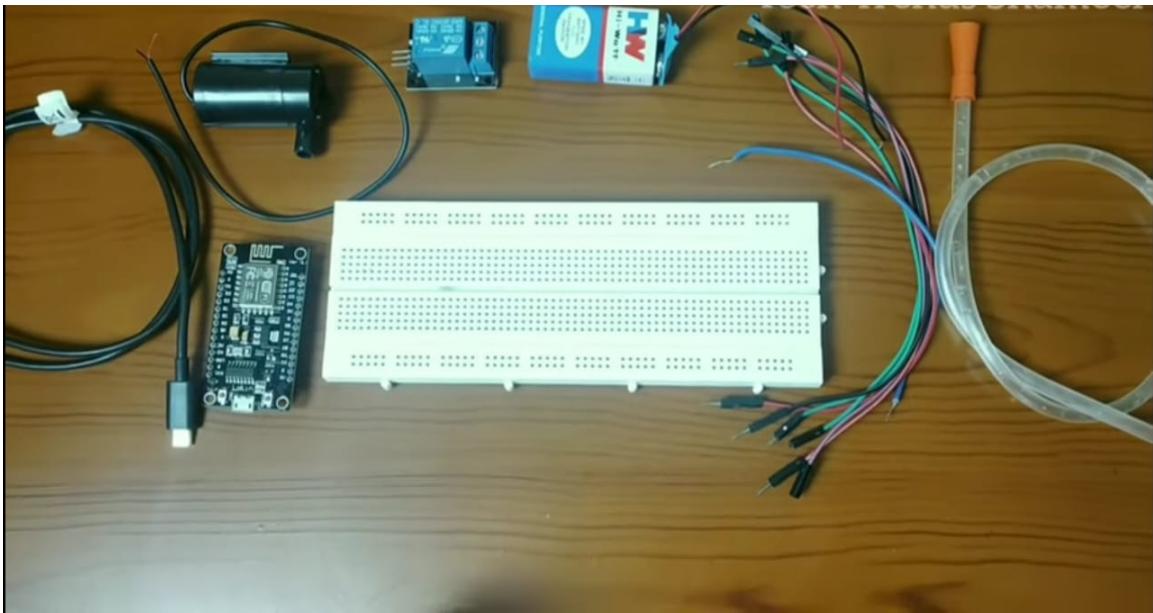


3.IRRIGATION SYSTEM WITH CLOUD

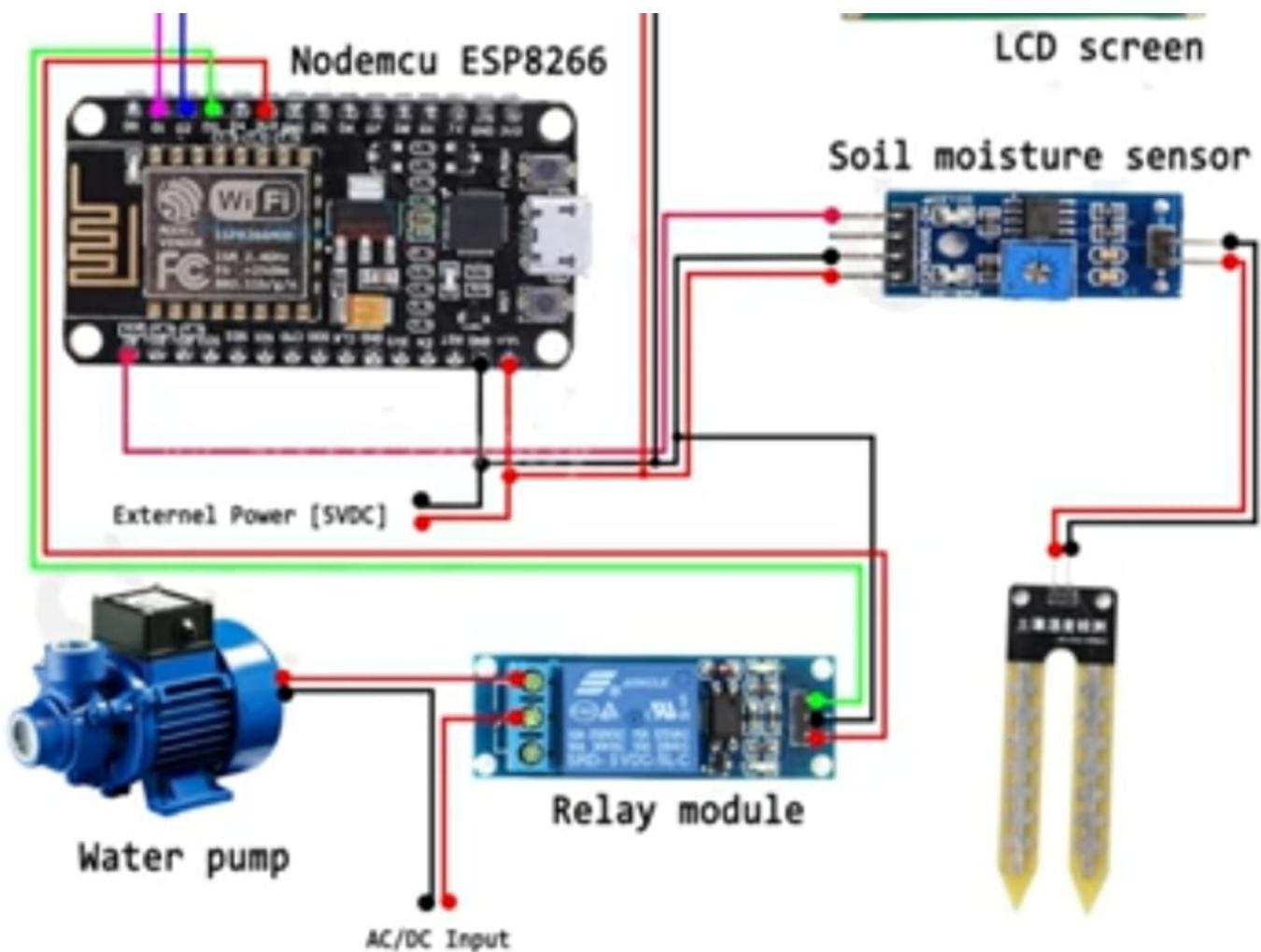
1. Control water pump using BLYNK IOT:



HARDWARE COMPONENTS :



CONNECTION :



ESP8266 - BREADBOARD

- VIN → (+)
- GND → (-)

SOIL SENSOR - BREADBOARD

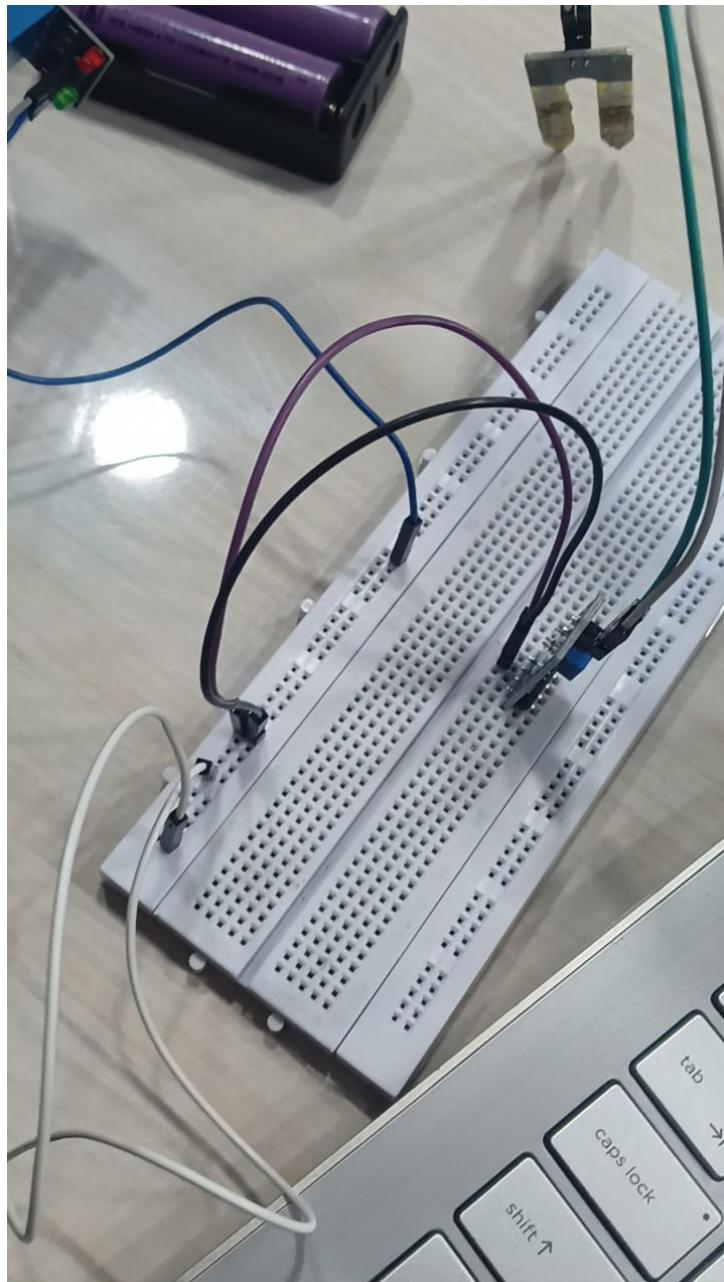
- VCC → VIN/(+)
- GND → GND / (-)
- A0 → A0

ESP8266 - RELAY

- VCC → 3V
- GND → GND / (-)
- IN → D4

- 9V(+) Red Wire OR Li-ion battery → COM
- Water pump Red Wire → ON
- Water Pump (-) → 9V(-) Black wire





Source Code :

```
#define BLYNK_TEMPLATE_ID "TMPL3170yIC2Q"

#define BLYNK_TEMPLATE_NAME "Pump"

#define BLYNK_AUTH_TOKEN "I82vQteskTjDjqYbaMHmME8DDZZIkF_x"

#define BLYNK_PRINT Serial

#include <ESP8266WiFi.h>

#include <BlynkSimpleEsp8266.h>
```

```
char auth[] = BLYNK_AUTH_TOKEN;

char ssid[] = "Tannu"; // Enter your wifi name

char pass[] = ""; // Enter your wifi password

int soilMoisturePin = A0; // Assuming soil moisture sensor is connected to A0

int relaypin = D4;

void setup()

{

    Serial.begin(115200);

    Blynk.begin(auth, ssid, pass);

    pinMode(relaypin,OUTPUT);

}

void loop()

{

    Blynk.run();

    // Read soil moisture value

    int soilMoistureValue = analogRead(soilMoisturePin);

    // Map the soil moisture value to a range (you may need to adjust the values)

    int mappedMoisture = map(soilMoistureValue, 0, 1023, 0, 100);

    // Send the soil moisture value to Blynk

    Blynk.virtualWrite(V1, mappedMoisture); // Assuming V1 is a gauge widget in your Blynk app

    delay(1000); // Adjust the delay based on your requirements

}
```

WITHOUT SOIL MOISTURE SENSOR CODE :

```
//Tech Trends Shameer
```

```
//Control Water Pump Using Blynk 2.0
```

```
#define BLYNK_TEMPLATE_ID "TMPL3170yIC2Q"
```

```
#define BLYNK_TEMPLATE_NAME "Pump"
```

```
#define BLYNK_AUTH_TOKEN "I82vQteskTjDjqYbaMHmME8DDZZIkF_x"
```

```
#define BLYNK_PRINT Serial
```

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

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

```
char auth[] = BLYNK_AUTH_TOKEN;
```

```
char ssid[] = "Tannu"; // Enter your wifi name
```

```
char pass[] = "bhikharihoo"; // Enter your wifi password
```

```
int relaypin = D4;
```

```
void setup()
```

```
{
```

```
Serial.begin(115200);
```

```
Blynk.begin(auth, ssid, pass);
```

```
pinMode(relaypin,OUTPUT);
```

```
}
```

```
void loop()
```

```
{
```

```
    Blynk.run();
```

```
}
```

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