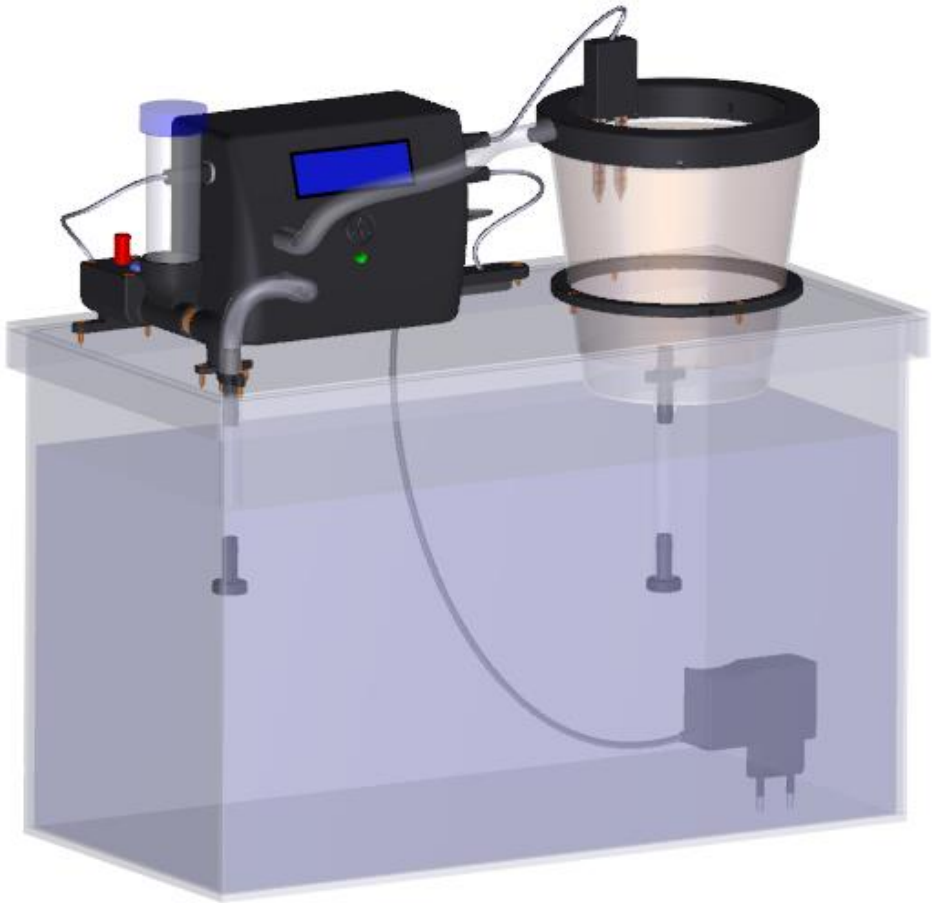
MINI AQUAPONIC SYSTEM

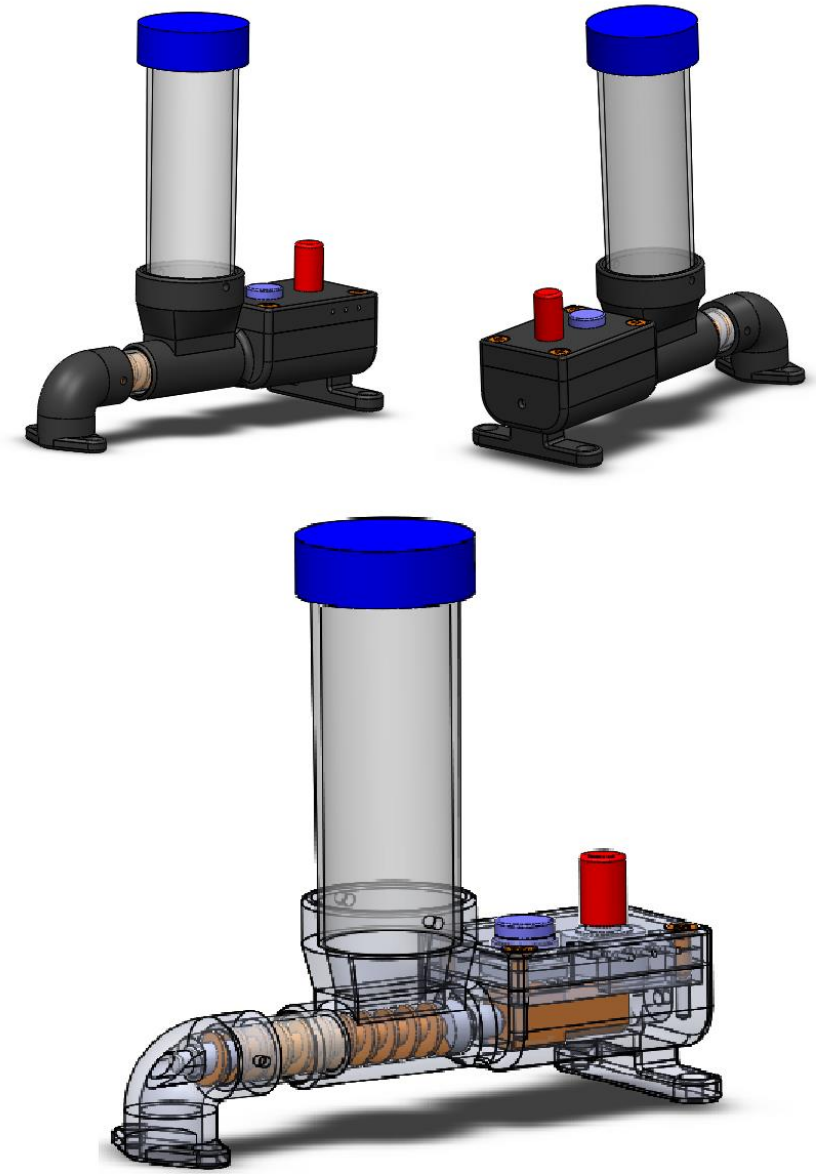


Automatic device

- LCD I2C 1602.
- Switch button.
- LED.
- DC pump.
- 2 channel relay module .
- 1 channel relay module.
- DHT11 temp. and humidity sensor.
- Resistor 330 Ω.
- IR tracker sensor module.
- ESP 32.
- MCU PCB.

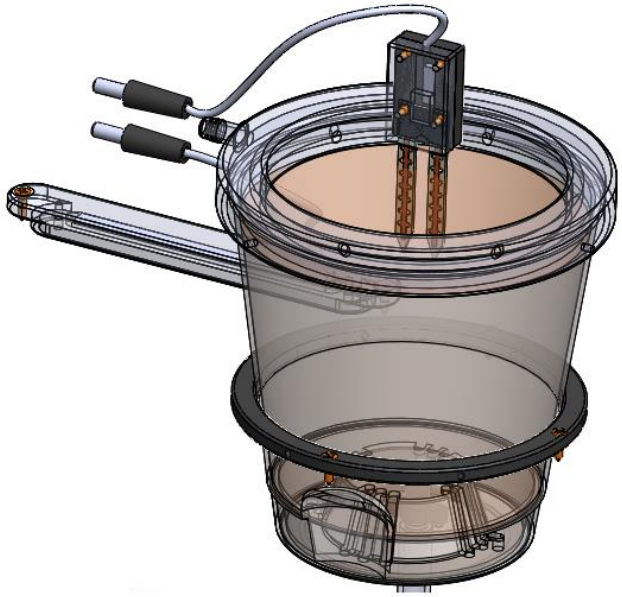
Fish feeder

- *DC motor with gear box.*
- *Push button.*
- *Potentiometer.*

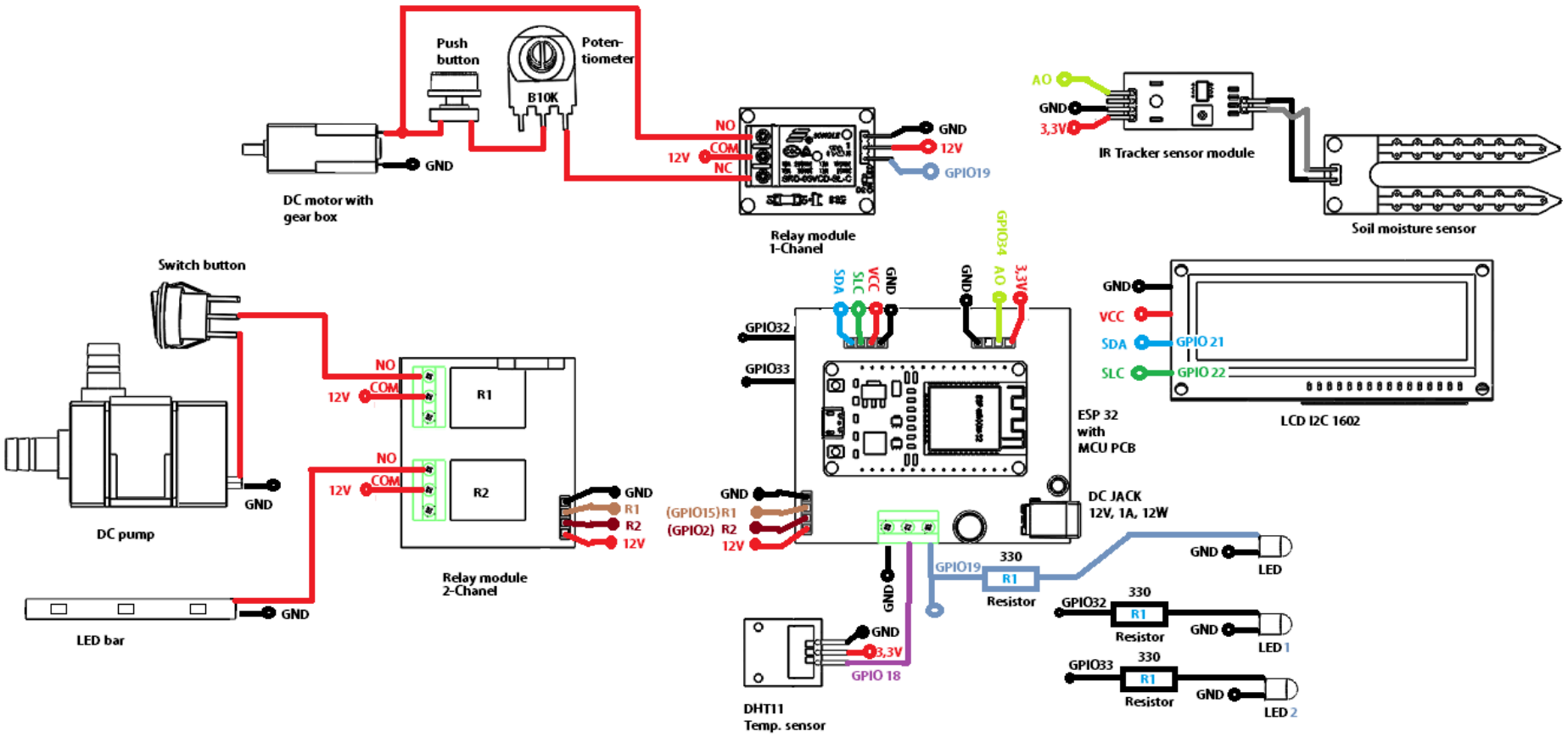


Peripheral devices and sensor

- *Soil moisture sensor.*
- *LED bar.*



Circuit Diagram



Source code

DIY

```
#include <Wire.h>
#include <LiquidCrystal_I2C.h>
#include <DHT.h>
int i;
int lcdColumns = 16;
int lcdRows = 2;
LiquidCrystal_I2C lcd(0x27, lcdColumns, lcdRows);

#define DHTPIN 18
#define DHTTYPE DHT11
DHT dht(DHTPIN, DHTTYPE);

void setup() {
  // put your setup code here, to run once:
pinMode (15, OUTPUT);
digitalWrite(15, LOW);
pinMode (2, OUTPUT);
digitalWrite(2, LOW);
pinMode (19, OUTPUT);
digitalWrite(19, LOW);
pinMode (32, OUTPUT);
digitalWrite(32, HIGH);
```

DIY

```
digitalWrite(32, HIGH);
pinMode (33, OUTPUT);
digitalWrite(33, HIGH);
adcAttachPin (34);
Serial.begin(9600);
lcd.init();
lcd.backlight();
Serial.println(("DIY Home Automation-Yoto Yotov!"));
Serial.print(("LED 1= "));
Serial.println(digitalRead(32));
Serial.print(("LED 2= "));
Serial.println(digitalRead(33));
dht.begin();
}

void loop() {
  // put your main code here, to run repeatedly:

  delay(500);
  float h = dht.readHumidity();
  float t = dht.readTemperature();
  float f = dht.readTemperature(true);
```

Source code

DIY

```
float f = dht.readTemperature(true);
if (isnan(h) || isnan(t) || isnan(f)) {
  lcd.setCursor(0, 0);
  lcd.println (F("Failed sensor!"));
  Serial.println (F("Failed sensor!"));
  delay(10000);
  lcd.clear();
  return;
  }
lcd.setCursor(0, 0);
lcd.print(F("Humidity: "));
Serial.print(F("Humidity: "));
lcd.print(h);
Serial.print(h);
lcd.print(F("%"));
Serial.print(F(" %"));
lcd.setCursor(0,1);
lcd.print (F("Temp.: "));
Serial.print(F(" Temp.: "));
lcd.print(t);
Serial.print(t);
lcd.print(F(" C "));
```

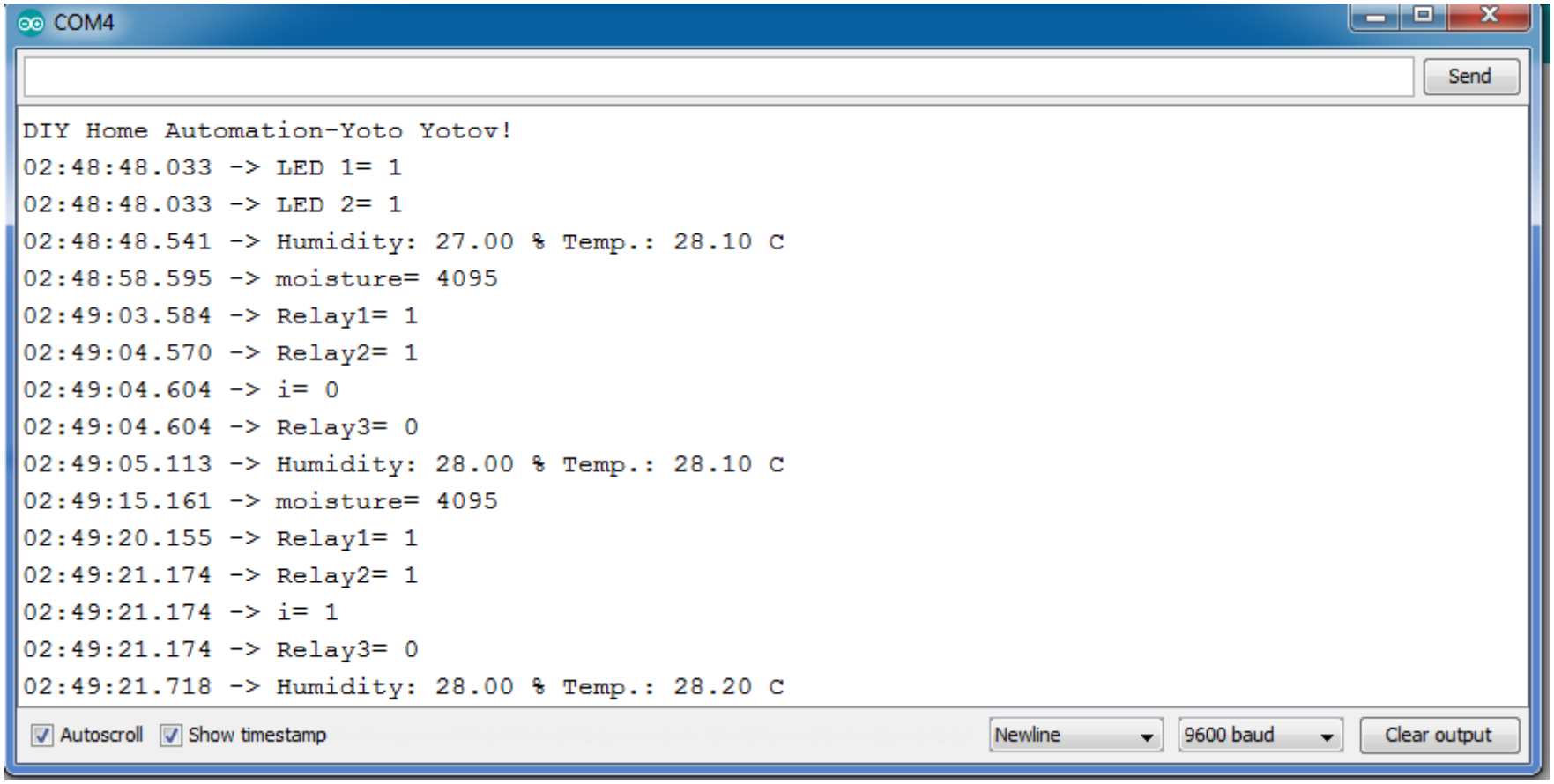
DIY

```
  lcd.print(F(" C "));
  Serial.print(F(" C "));
  delay(10000);
  lcd.clear();
  Serial.println();
int moisture = analogRead(34);
Serial.print(("moisture= "));
Serial.println(moisture);
delay(5000);
if(moisture>3800 && moisture <=4095)
digitalWrite(15,HIGH);
else
digitalWrite(15,LOW);
Serial.print(("Relay1= "));
Serial.println(digitalRead(15));
delay(1000);
if(moisture>3800 && moisture <=4095)
digitalWrite(2,HIGH);
else
digitalWrite(2,LOW);
Serial.print(("Relay2= "));
Serial.println(digitalRead(2));
```

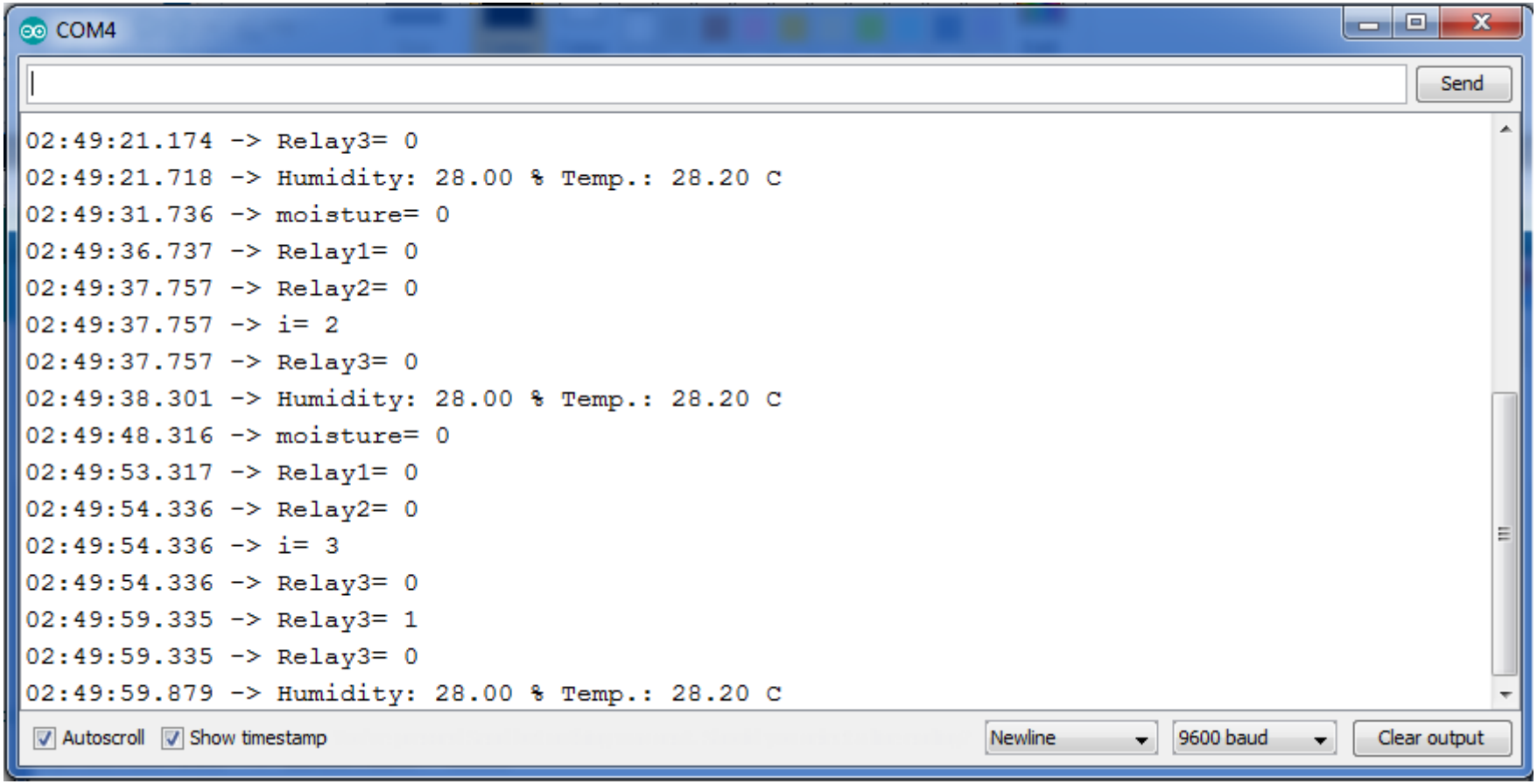
DIY

```
int pinState=i;

i++;
Serial.print(("i= "));
Serial.println(pinState);
Serial.print(("Relay3= "));
Serial.println(digitalRead(19));
if (i>3) {
digitalWrite(19,HIGH);
delay(5000);
Serial.print(("Relay3= "));
Serial.println(digitalRead(19));

i=0;
digitalWrite(19,LOW);
Serial.print(("Relay3= "));
Serial.println(digitalRead(19));
}


}
```

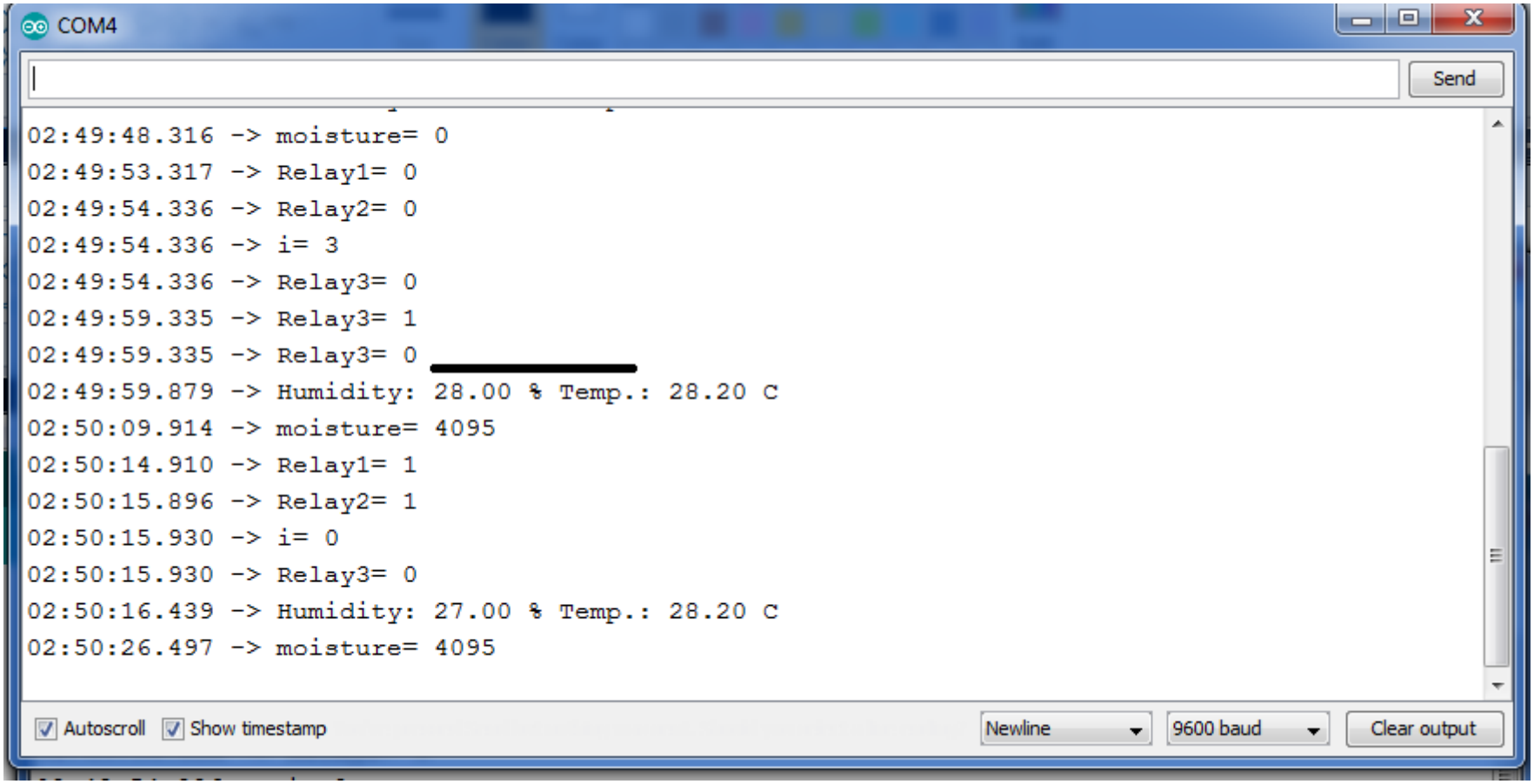
Result


COM4
Send
DIY Home Automation-Yoto Yotov!
02:48:48.033 -> LED 1= 1
02:48:48.033 -> LED 2= 1
02:48:48.541 -> Humidity: 27.00 % Temp.: 28.10 C
02:48:58.595 -> moisture= 4095
02:49:03.584 -> Relay1= 1
02:49:04.570 -> Relay2= 1
02:49:04.604 -> i= 0
02:49:04.604 -> Relay3= 0
02:49:05.113 -> Humidity: 28.00 % Temp.: 28.10 C
02:49:15.161 -> moisture= 4095
02:49:20.155 -> Relay1= 1
02:49:21.174 -> Relay2= 1
02:49:21.174 -> i= 1
02:49:21.174 -> Relay3= 0
02:49:21.718 -> Humidity: 28.00 % Temp.: 28.20 C
Autoscroll
Show timestamp
Newline
9600 baud
Clear output

Result


COM4
Send
02:49:21.174 -> Relay3= 0
02:49:21.718 -> Humidity: 28.00 % Temp.: 28.20 C
02:49:31.736 -> moisture= 0
02:49:36.737 -> Relay1= 0
02:49:37.757 -> Relay2= 0
02:49:37.757 -> i= 2
02:49:37.757 -> Relay3= 0
02:49:38.301 -> Humidity: 28.00 % Temp.: 28.20 C
02:49:48.316 -> moisture= 0
02:49:53.317 -> Relay1= 0
02:49:54.336 -> Relay2= 0
02:49:54.336 -> i= 3
02:49:54.336 -> Relay3= 0
02:49:59.335 -> Relay3= 1
02:49:59.335 -> Relay3= 0
02:49:59.879 -> Humidity: 28.00 % Temp.: 28.20 C
Autoscroll
Show timestamp
Newline
9600 baud
Clear output

Result


COM4
Send
02:49:48.316 -> moisture= 0
02:49:53.317 -> Relay1= 0
02:49:54.336 -> Relay2= 0
02:49:54.336 -> i= 3
02:49:54.336 -> Relay3= 0
02:49:59.335 -> Relay3= 1
02:49:59.335 -> Relay3= 0
02:49:59.879 -> Humidity: 28.00 % Temp.: 28.20 C
02:50:09.914 -> moisture= 4095
02:50:14.910 -> Relay1= 1
02:50:15.896 -> Relay2= 1
02:50:15.930 -> i= 0
02:50:15.930 -> Relay3= 0
02:50:16.439 -> Humidity: 27.00 % Temp.: 28.20 C
02:50:26.497 -> moisture= 4095
Autoscroll
Show timestamp
Newline
9600 baud
Clear output

Thank you for your attention!

- 3D Models
- https://grabcad.com/library/mini-aquaponic-system-and-fish-feeder-1
- Source code

https://github.com/Yoto7/MiniAquaponicSystem