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Reg.No	19BEC0358		
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Course Code	ECE3502	**Slot & Semester**	L37+L38 WINTER -- 2021-22
Course Name	Iot Domain Analyst		
Program Title	Exercise 5		
Faculty	Dr. Karthikeyan B		

School of Electronics Engineering ,VIT, Vellore

AIM →

To perform the following operation –

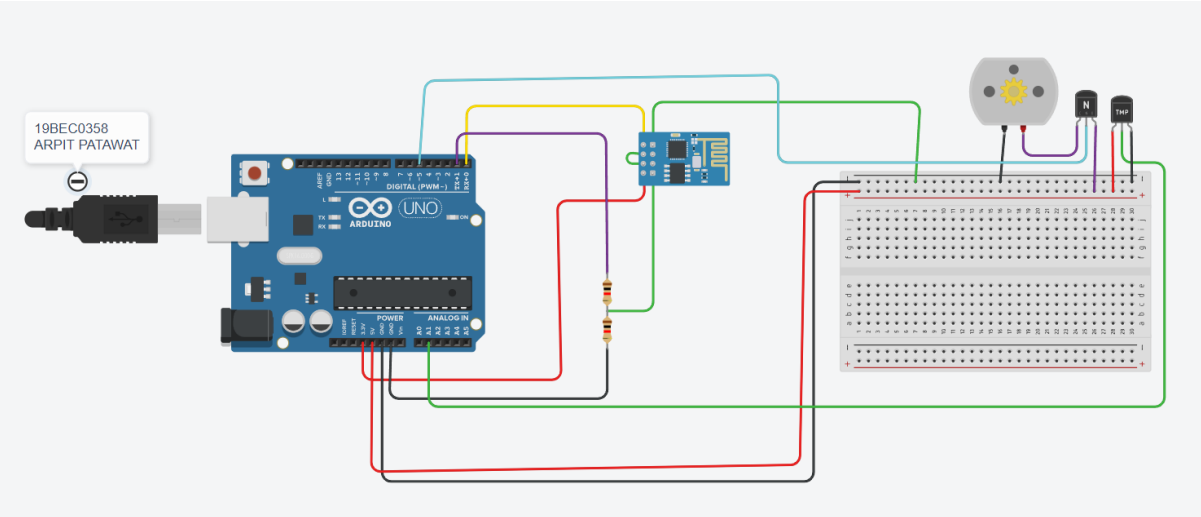
There is an dc motor is attached with the temperature sensor. There are 3 temperature range between 20’C to 30’C, 31’c to 40’c and greater than 40’c.

We need to create 3 fields in the thingspeak tab and whenever the temperature falls in the above 3 temperature ranges then we need to keep a count of these ranges and then we need to send the data to particular field about the count also the speed of dc motor will depend on these 3 regions.

COMPONENT LIST→

Name	Quantity	Component
U1	1	Arduino Uno R3
U3	1	Wifi Module (ESP8266)
R1 R2	2	1 kΩ Resistor
M1	1	DC Motor
U2	1	Temperature Sensor [TMP36]
T1	1	NPN Transistor (BJT)

CIRCUIT DIAGRAM →



CODE →

```
//19BEC0358
String ssid     = "Simulator Wifi";  // SSID to connect to
String password = ""; // Our virtual wifi has no password
String host     = "api.thingspeak.com"; // Open Weather Map API
const int httpPort   = 80;
String url     = "/update?api_key=J9N71ZN8230QCGEA&field";
```

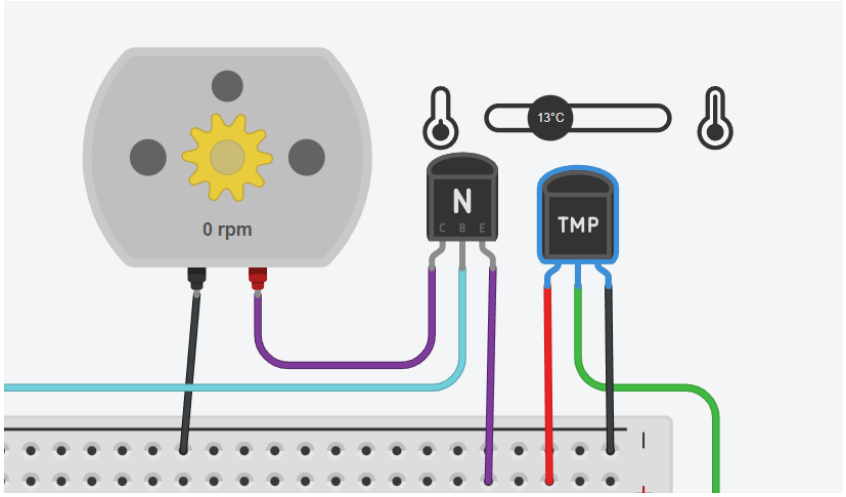
```
int count1;
int count2;
int count3;
int final;
int motorvalue;


int celsius;
int setupESP8266(void) {
  // Start our ESP8266 Serial Communication
  Serial.begin(115200);   // Serial connection over USB to computer
  Serial.println("AT");   // Serial connection on Tx / Rx port to ESP8266
  delay(10);        // Wait a little for the ESP to respond
  if (!Serial.find("OK")) return 1;

  // Connect to 123D Circuits Simulator Wifi
  Serial.println("AT+CWJAP=\"" + ssid + "\",\"" + password + "\"");
  delay(10);        // Wait a little for the ESP to respond
  if (!Serial.find("OK")) return 2;

  // Open TCP connection to the host:
  Serial.println("AT+CIPSTART=\"TCP\",\"" + host + "\"," + httpPort);
  delay(50);        // Wait a little for the ESP to respond
  if (!Serial.find("OK")) return 3;

  return 0;
}


void temp(){
celsius = map(((analogRead(A1) - 20) * 3.04), 0, 1023, -40, 125);
}

void setup() {
  pinMode(A1,INPUT);
  pinMode(4,OUTPUT);
  Serial.begin(9600);
  setupESP8266();
}

void loop() {
 int temperature = analogRead(A1);
temperature = map(temperature, 20, 358, -40, 125);
  speed_decider(temperature);
  analogWrite(5, motorvalue);
  //delay(1000);

}
```

```
void speed_decider(int temp)
{
  if(temp<20)
    motorvalue = 0;
  else if(temp>20 && temp <31)
    {
    if(final!= 1){
    count1 +=1;
    Serial.print("range 1 count -");
    Serial.println(count1);
    anydata(count1,1);
    final = 1;
    motorvalue = 75;}
  }
  else if(temp>30 && temp <41){
    if(final!=2){
    count2 +=1;
    Serial.print("range 2 count -");
    Serial.println(count2);
    anydata(count2,2);
    final = 2;
    motorvalue = 150;}
  }
  else if(temp > 40){
    if(final!=3){
    count3 +=1;
    Serial.print("range 3 count -");
    Serial.println(count3);
    anydata(count3,3);
    final = 3;
    motorvalue = 255;
    }
  }
//return map(temp, 35, 40, 0, 255);
}



void anydata(int value, int field ) {
  // Construct our HTTP call
  String httpPacket = "GET " + url + String(field)+ "=" + String(value) + "
HTTP/1.1\r\nHost: " + host + "\r\n\r\n";
  int length = httpPacket.length();

  // Send our message length
  Serial.print("AT+CIPSEND=");
  Serial.println(length);
  delay(10); // Wait a little for the ESP to respond if (!Serial.find(">")) return -1;
```

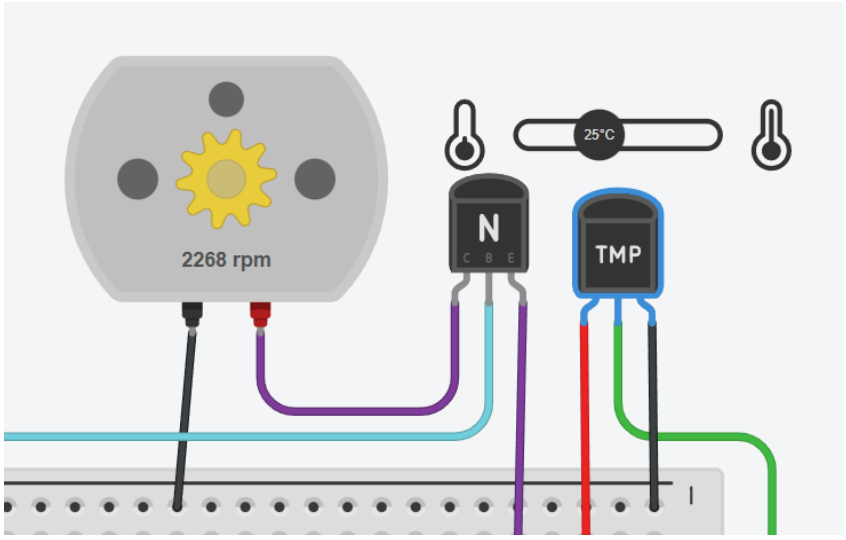
```
  // Send our http request
  Serial.print(httpPacket);
  delay(10); // Wait a little for the ESP to respond
  if (!Serial.find("SEND OK\r\n")) return;
  delay(10000);

}
```

OUTPUT →

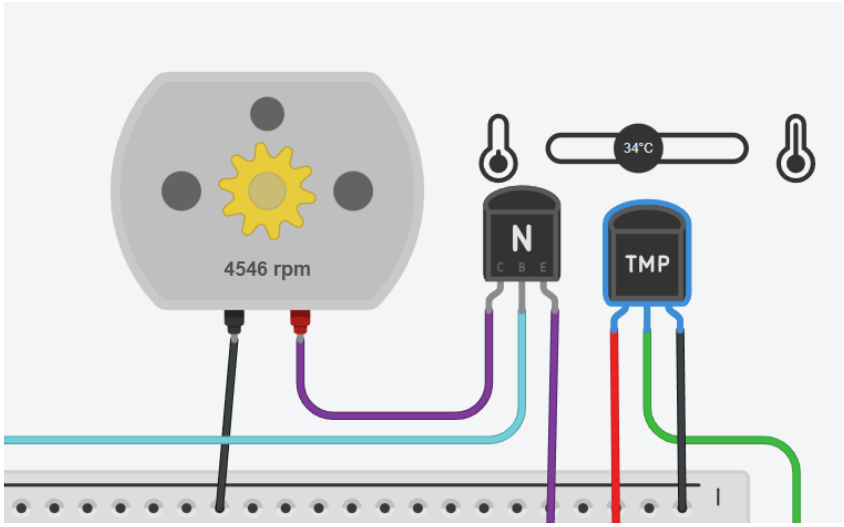
1.when temperature is less than 20’C, then motor will remain off



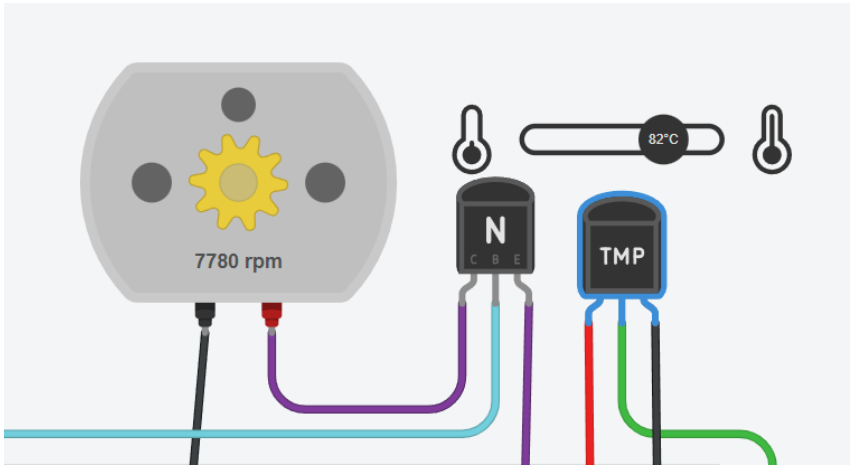
2. when temperature falls in the range 1 (20 to 30’C), then motor will start rotating at slow speed (2260 rpm).



3. when temperature falls in the range 2 (30 to 40’C), then motor will start rotating at medium speed (4500 rpm).

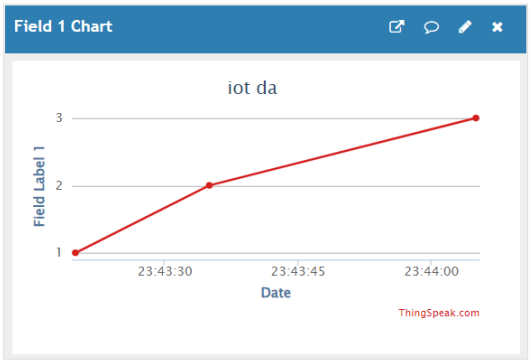


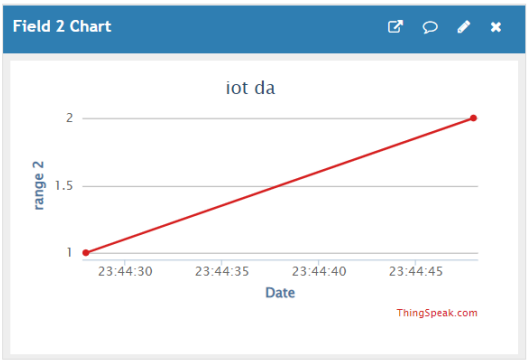
4. when temperature falls in the range 3 (greater than 40’C), then motor will start rotating at Highest speed (7700 rpm).

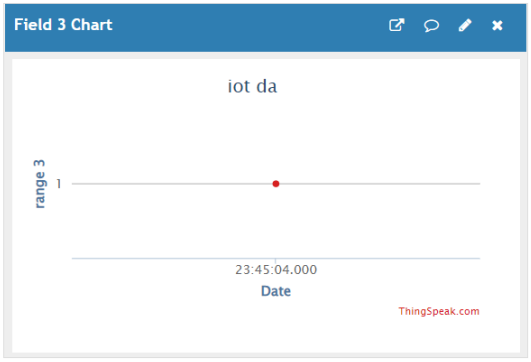


And similarly for all the region, the count variable of each will keep a track of each region and push all the data to respective filed in the tinker cad.

5.SENDING ALL DATA TO THINGSPEAK







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