

SMART WATER FOUNTAIN

Aim:

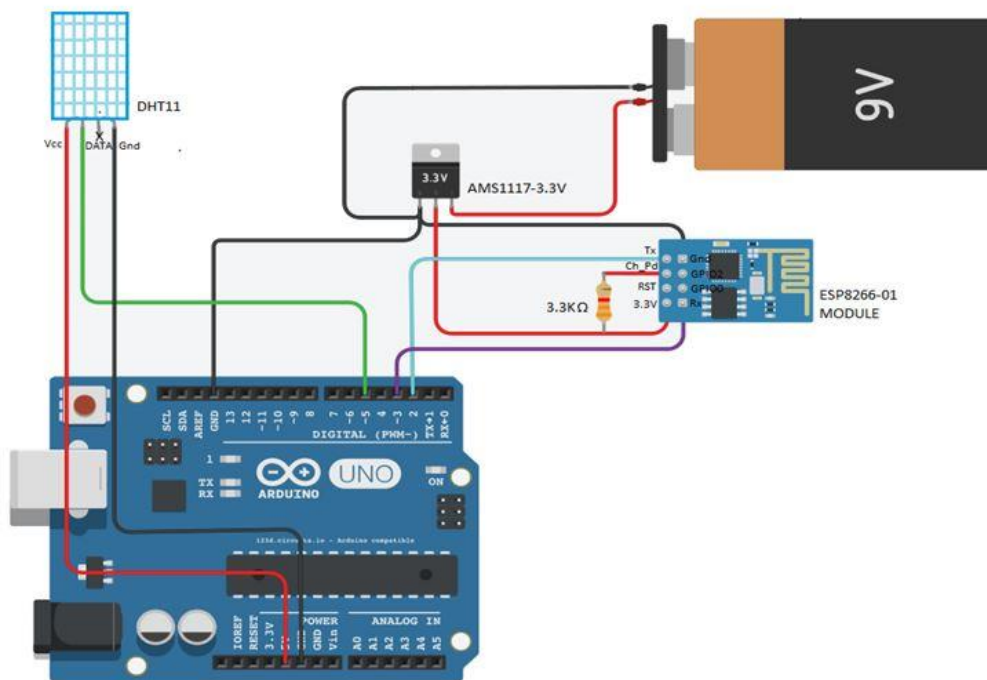
Write the Arduino code to read temperature and humidity from the DHT22 sensor.

Introduction :

A temperature and humidity sensor are low cost-sensitive electronic devices that detects, measures and reports both dampness and air temperature. The proportion of moisture noticeable all around to the highest amount of moisture at a specific air temperature.

In most industries, temperature and humidity measurement is important because it played a role for a safety of all crucial equipment that may affect the whole operation.

Smart technology has now made it possible to combine these elements seamlessly, resulting in innovations like the "Smart Water Fountain for Humidity and Temperature Sensor." This cutting-edge device is designed to provide individuals with a convenient and intelligent way to monitor and enhance their hydration experience.



from serial import Serial

Python Script :

```
import time

'''set the serial to connect to the arduino (you should change the port)'''

ser =Serial(

    port='COM8',

    baudrate = 115200,

    timeout=None)

def adddata(data):

    '''a function to add the data to the text file'''

    date=time.time()

    h=str(data)+' '+str(date)+'\n'

    fh = open('example.txt', 'a')

    fh.write(h)

    fh.close

while 1:

    ''' infinit loop'''

    while(ser.inWaiting()==0):

        '''wait for the data from serial'''

        pass

    a=float(ser.readline().decode('utf-8'))

    '''read and decode the data'''

    adddata(a)

    '''add the data to the txt file'''
```

Python Script :

```
#include <DHT.h>

#define DHTPIN 4           // Define the GPIO pin to which the DHT22 is connected

#define DHTTYPE DHT22      // Define the sensor type (DHT11 or DHT22)

DHT dht(DHTPIN, DHTTYPE);

void setup()

{
```

```

Serial.begin(115200);
dht.begin();
}
void loop()
{
  delay(2000); // Delay between readings
  float temperature = dht.readTemperature(); // Read temperature in Celsius
  float humidity = dht.readHumidity(); // Read humidity
  if (isnan(temperature) || isnan(humidity))
  {
    Serial.println("Failed to read from DHT sensor!");
  }
  else
  {
    Serial.print("Temperature: ");
    Serial.print(temperature);
    Serial.println(" °C");
    Serial.print("Humidity: ");
    Serial.print(humidity);
    Serial.println(" %");
  }
}

```

Temperature Sensor :

A water-proof temperature sensor is going to be used. Part number from sparkfun is: DS18B20 [6]. This temperature sensor is compatible with a relatively wide range of power supply from 3.0V to 5.5V. The measured temperature ranges from -55 to +125 celsius degrees. Between -10 to + 85 degrees, the accuracy is up to +-0.5 degrees. This sensor can fulfill all requirements needed for this project.

Conductivity sensor:

Conductivity sensor is also part of the water quality assessment. The input voltage is from 3.0 to 5.0V. The error is small, $\pm 5\%$ F.S. The measurement value ranges from 0 to 20ms/cm which is enough for water quality monitoring.

Liquid Level Sensor:

This sensor is responsible for reflecting how much freshwater is left in the water tank. When the water level is low, fresh water will be pumped to the water tank to ensure the water fountain keeps running with freshwater. This sensor is 0.5 Watts. For water level from 0 to 9 inches, the corresponding sensor outputs readings from 0 to 1.6. From that, the quantity of freshwater left can be determined.

Sensor DHT22 :

The DHT22 is a basic, low-cost digital temperature and humidity sensor. It uses a capacitive humidity sensor and a thermistor to measure the surrounding air, and spits out a digital signal on the data pin (no analog input pins needed).