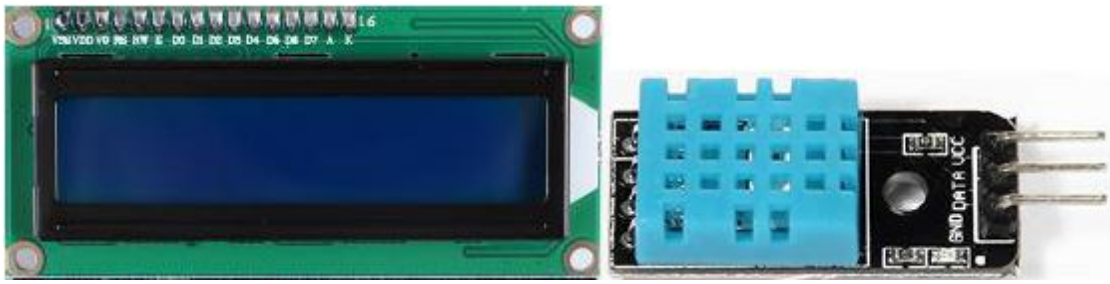
Temperature and humidity monitoring experiment

Overview



This is a more complex experiment, it can realize the monitoring of indoor temperature and humidity, and in the LCD above display value.
It’ s accurate enough for most projects that need to keep track of humidity and temperature readings.
Again we will be using a Library specifically designed for these sensors that will make our code short and easy to write.

Specification

Please view DHT11-datasheet.pdf.
Path: \Public_materials\Datasheet\ DHT11-datasheet.pdf

Pin definition

LCD1602	**Arduino**
VSS	->GND
VDD	->+5v
VO	->10K Potentiometer
RS	->D12
RW	->GND
E	->D11
D0	->null
D1	->null
D2	->null
D3	->null
D4	->D5
D5	->D4
D6	->D3
D7	->D2
A	->+220Ω
K	->GND

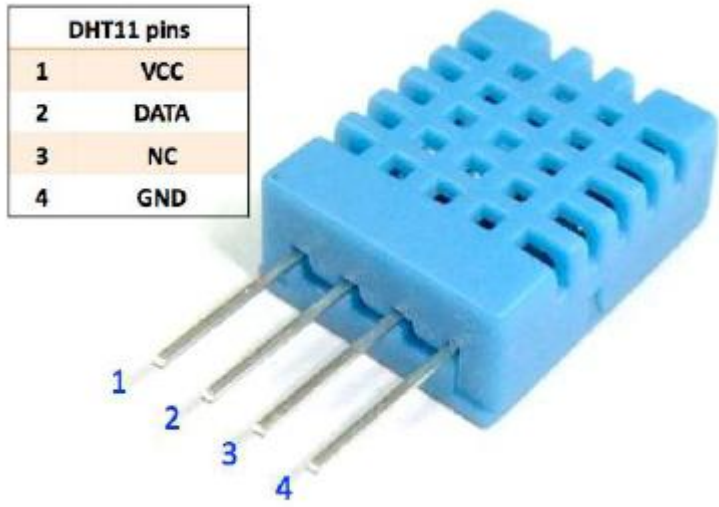
DHT11	**->Arduino**
GND	->GND
DATA	->D6
VCC	->(+5V) VCC

Hardware required

Material diagram	Material name	Number
	LCD1602	1
	DHT11	1
	UNO R3	1
	220/330Ω resistor	1
	10KΩ Potentiometer	1
	Breadboard	1
	USB Cable	1
	Male to Female Jumper wires	several

Component Introduction

Temp and humidity sensor:



DHT11 digital temperature and humidity sensor is a composite Sensor contains a calibrated digital signal output of the temperature and humidity. Application of a dedicated digital modules collection technology and the temperature and humidity sensing technology, to ensure that the product has high reliability and excellent long-term stability. The sensor includes a resistive sense of wet components and an NTC temperature measurement devices, and connected with a high-performance 8-bit microcontroller.

Applications: HVAC, dehumidifier, testing and inspection equipment, consumer goods, automotive, automatic control, data loggers, weather stations, home appliances, humidity regulator, medical and other humidity measurement and control.

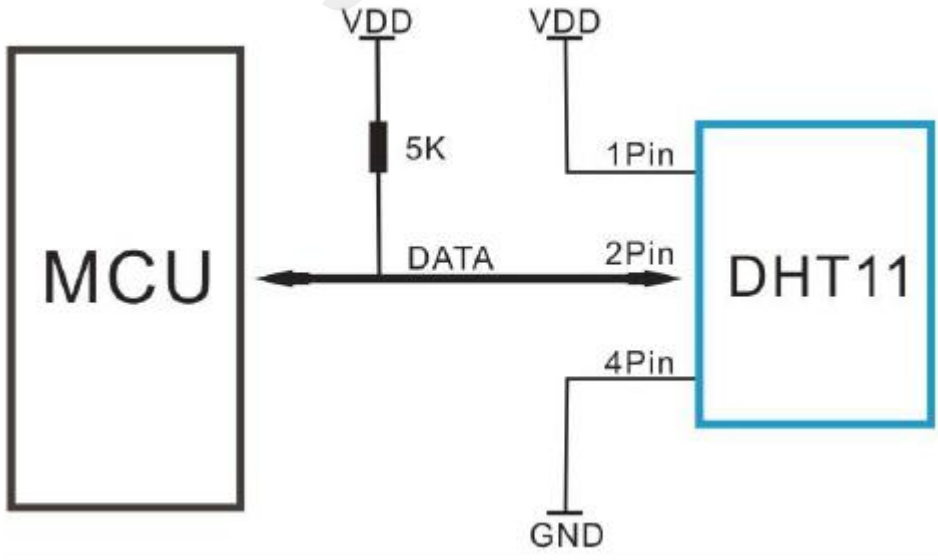
Product parameters

Relative humidity:
Resolution: 16Bit
Repeatability: ±1% RH
Accuracy: At 25℃ ±5% RH
Interchangeability: fully interchangeable
Response time: 1 / e (63%) of 25℃ 6s
1m / s air 6s
Hysteresis: <± 0.3% RH
Long-term stability: <± 0.5% RH / yr in

Temperature:
Resolution: 16Bit
Repeatability: ±0.2℃
Range: At 25℃ ±2℃
Response time: 1 / e (63%) 10S
Electrical Characteristics
Power supply: DC 3.5 ~ 5.5V
Supply Current: measurement 0.3mA standby 60μA
Sampling period: more than 2 seconds

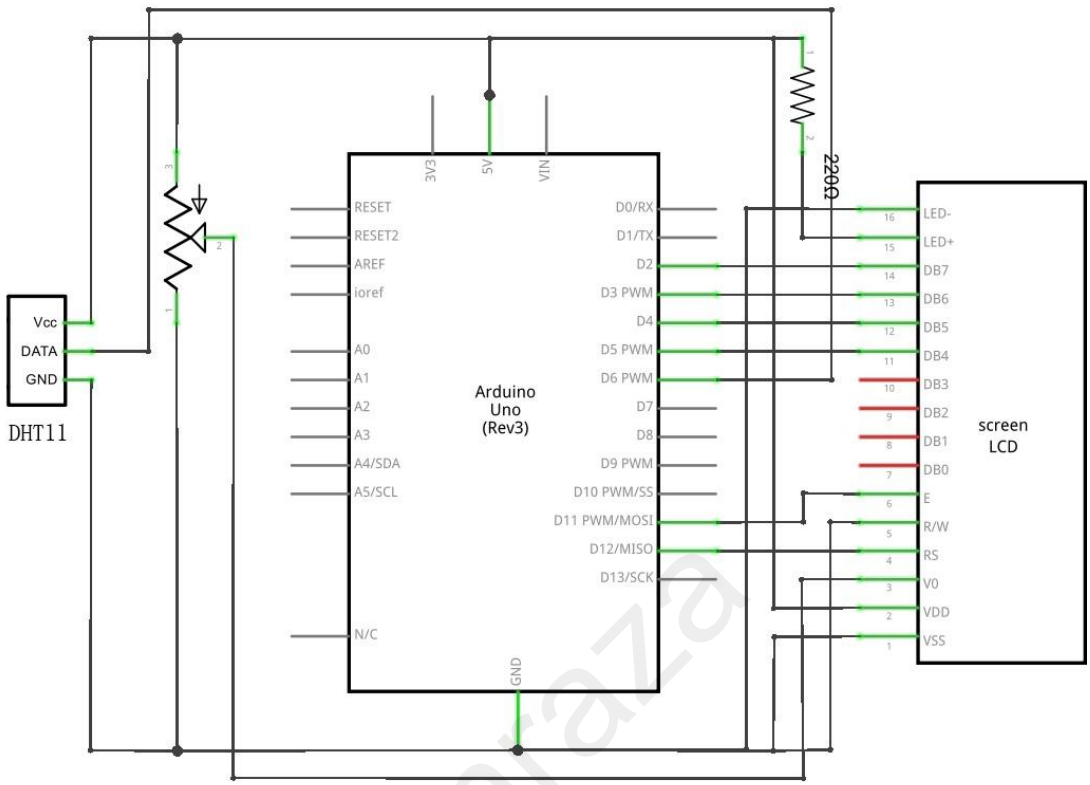
Pin Description:
1, the VDD power supply 3.5 ~ 5.5V DC
2 DATA serial data, a single bus
3, NC, empty pin
4, GND ground, the negative power

Typical Application

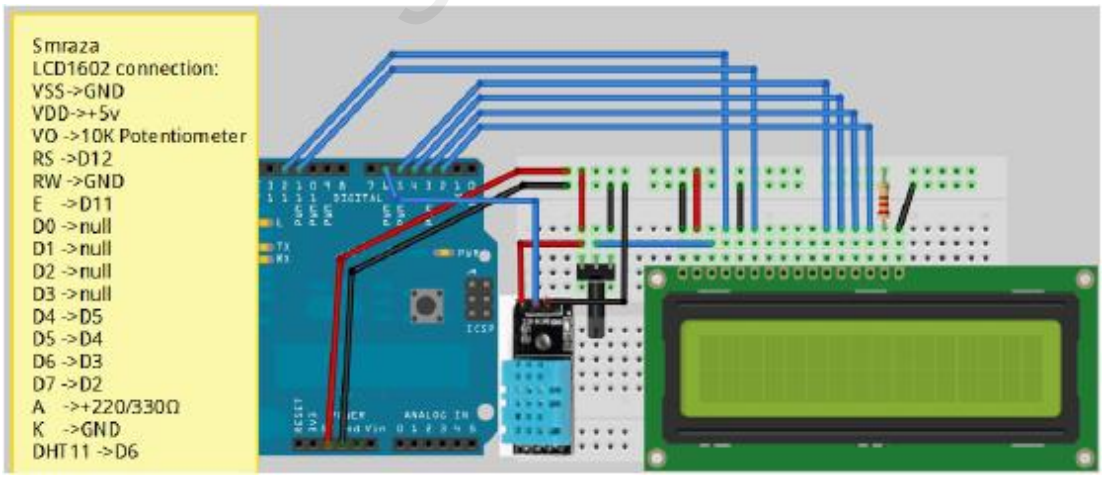


Connection

Schematic



Connection diagram



Note： The middle pin of the potentiometer is connected to the LCD1602 port VO.

Sample code

Note: sample code under the **Sample code** folder.

You need to add the DHT11 to the Arduino library file directory, otherwise the compiler does not pass. **Please refer to 'How to add library files.docx'.**

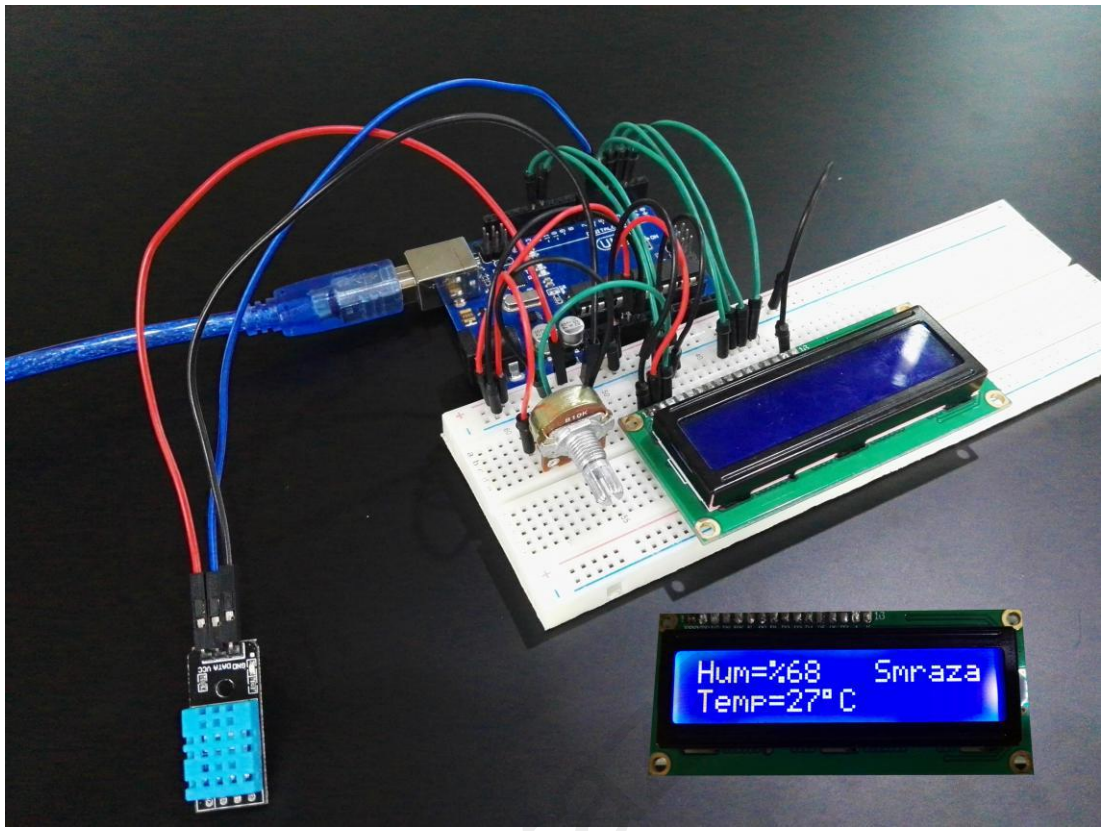
```
#include <LiquidCrystal.h>
#include <dht11.h>
dht11 DHT;                    //Note:DHT on behalf of the temperature and humidity sensor
const int dht11_data = 6;
int temp=0;
int hum=0;
LiquidCrystal lcd(12, 11, 5, 4, 3, 2);

void setup()
{
    lcd.begin(16,2);
    lcd.print(" Welcome to ");
    lcd.setCursor(0,1);
    lcd.print("      Smraza");
    delay(2000);
    lcd.clear();
}

void loop()
{
    DHT.read(dht11_data);
    temp=DHT.temperature;
    hum=DHT.humidity;
    cd.clear();
    lcd.print("Hum=%");
    lcd.print(hum);
    lcd.setCursor(10,0) ;
    lcd.print("Smraza");
    lcd.setCursor(0,1) ;
    lcd.print("Temp=");
    lcd.print(temp);
    lcd.write(0xDF);
    lcd.print("C");
    delay(500);
}

/*NOTE:If the LCD does not display or brightness is not enough, please adjust the potentiometer.*/
```

Example picture



Language reference

Tips：Click on the following name to jump to the web page.
If you fail to open, use the Adobe reader to open this document.
Serial

Application effect

Open the serial port monitor, you will see some different value return by DHT11.

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