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February 24, 2018 / Simple Projects

Arduino data logger using SD card and DHT11 sensor

Building a data logger using Arduino and SD card is so easy, this topic shows how to build a simple temperature and humidity data logger with DHT11 sensor.

The DHT11 sensor is used to sense the relative humidity and temperature and the SD card is used to save the values of the humidity and the temperature every 1 second. The values of the temperature and humidity are saved in .TXT file which is stored in the SD card.

Related projects:

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[Arduino interfacing with DHT11 sensor and LCD](#)

Hardware Required:

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Labels:

7-SEGMENT 74HC595

ADC BLDC MOTOR

DAC DC MOTOR

DHT11 DHT22

DS18B20 DS1307

DS3231 GPS

HC-SR04 INTERRUPT

JOYSTICK L293D LCD

LED LM35 LM335

MMC/SD CARD PWM

REMOTE CONTROL

ROTARY ENCODER

RTOS SSD1306 OLED

ST7735 TFT

STEPPER MOTOR

THYRISTOR TRIAC

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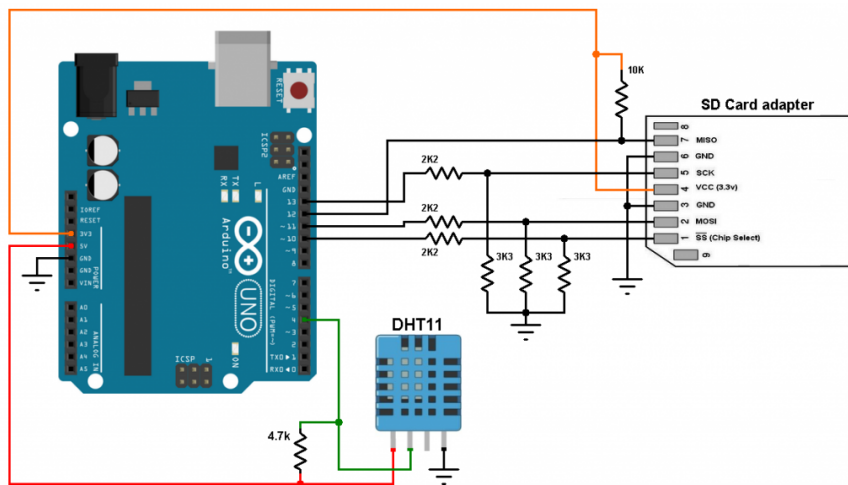
Ok

- SD card
- SD card socket (connector)
- 10K ohm resistor
- 4.7K ohm resistor
- 3 x 3.3K ohm resistor
- 3 x 2.2K ohm resistor
- Breadboard
- Jumper wires

Arduino data logger using SD card and DHT11 sensor circuit:

Arduino datalogger circuit diagrams are shown below, both circuits are well working.

The first circuit consists of three voltage dividers to step down the 5V into 3V, the voltage dividers are for: SS (chip select), MOSI (master in slave out) and SCK (serial clock) signals.



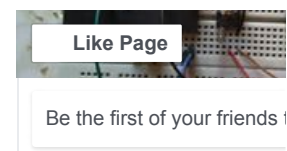
(All grounded terminals are connected together)

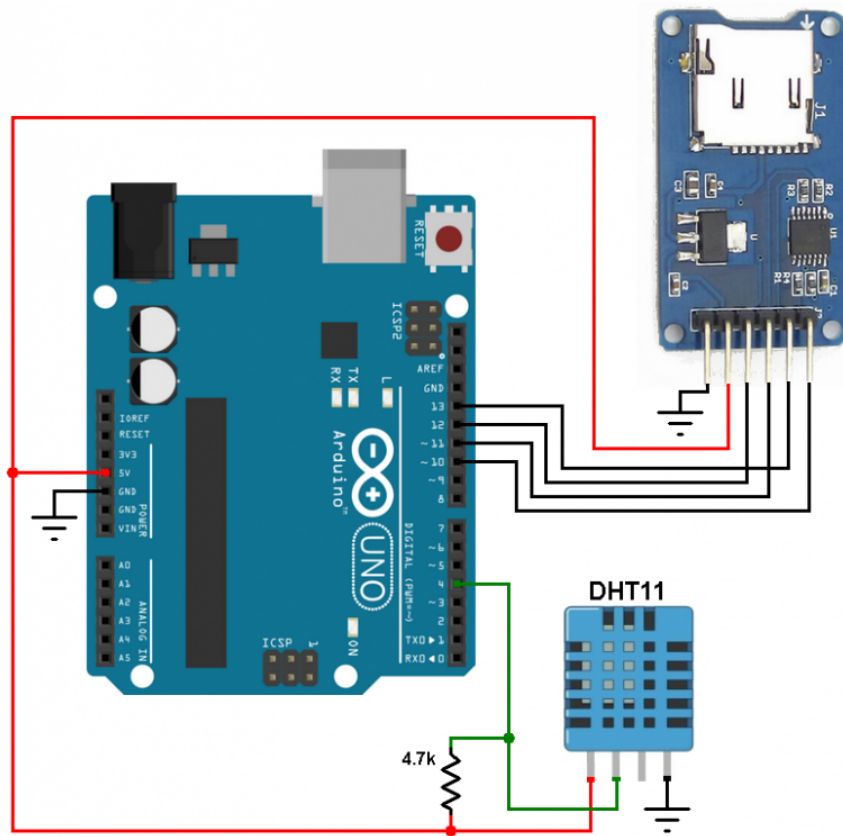
and the second circuit uses micro SD card module, this module is powered with 5V (comes from the Arduino board), it has AMS1117 voltage regulator and a voltage level converter (74LVC125A) which converts the 5V signals into 3.3V for lines: SS, MOSI and SCK:

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(All grounded terminals are connected together)

With the micro SD card module the connections are more simpler, the sd card module is supplied with 5V which comes from the Arduino board.

The SD card module has 6 pins which are (from left to right): GND, VCC, MISO, MOSI, SCK and CS (chip select).

Arduino data logger code:

The code below reads temperature and humidity from the DHT11 sensor, then it saves the data into the SD card within a file named DHT11Log.txt and finally it sends the same data serially to PC. The reading and storing of data is done every 1 second.

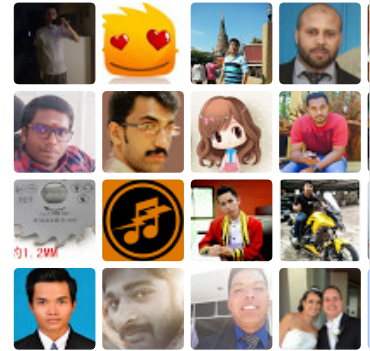
```

1 // Arduino data logger with SD card and DHT11 humidity d
2
3 #include <SPI.h>           // Include SPI library (needed f
4 #include <SD.h>            // Include SD library
5 #include <DHT.h>          // Include DHT sensor library

```

Electron Note

Add to circles



420 have me in circles

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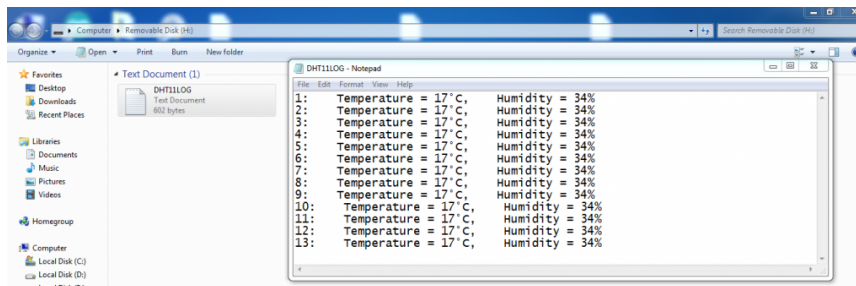
- [Interfacing PIC18F4550 with DS3231 RTC and SSD1306 display](#)
- [PIC18F4550 Real time clock with DS1307 and SSD1306 display](#)
- [Interfacing PIC18F4550 with DHT22 and SSD1306 display](#)
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```

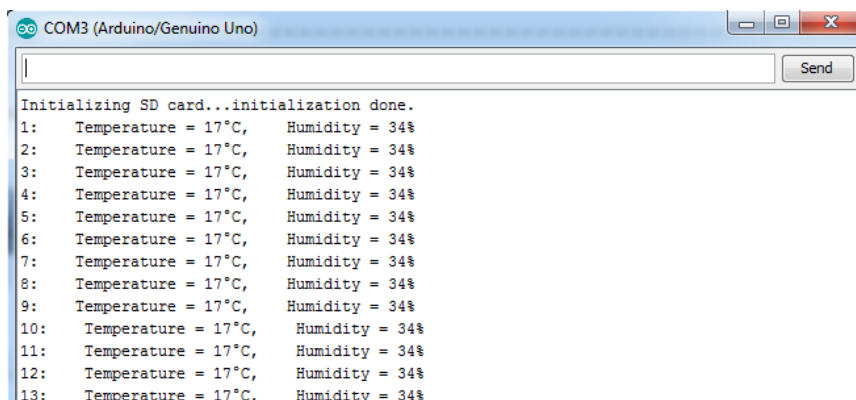
8
9 #define DHTPIN 4           // DHT11 data pin is connect
10 #define DHTTYPE DHT11     // DHT11 sensor is used
11 DHT dht(DHTPIN, DHTTYPE); // Initialize DHT library
12
13 void setup() {
14     // Open serial communications and wait for port to open
15     Serial.begin(9600);
16     while (!Serial)
17         ; // wait for serial port to connect. Needed for native USB
18     Serial.print("Initializing SD card...");
19     if (!SD.begin()) {
20         Serial.println("initialization failed!");
21         while (1);
22     }
23     Serial.println("initialization done.");
24     delay(2000);
25 }
26

```

As a result, I powered my circuit and after few seconds I turned it OFF, I removed my 2 GB FAT16 SD card from the circuit and placed it in the PC, I opened my SD card with windows and I got the file shown below:



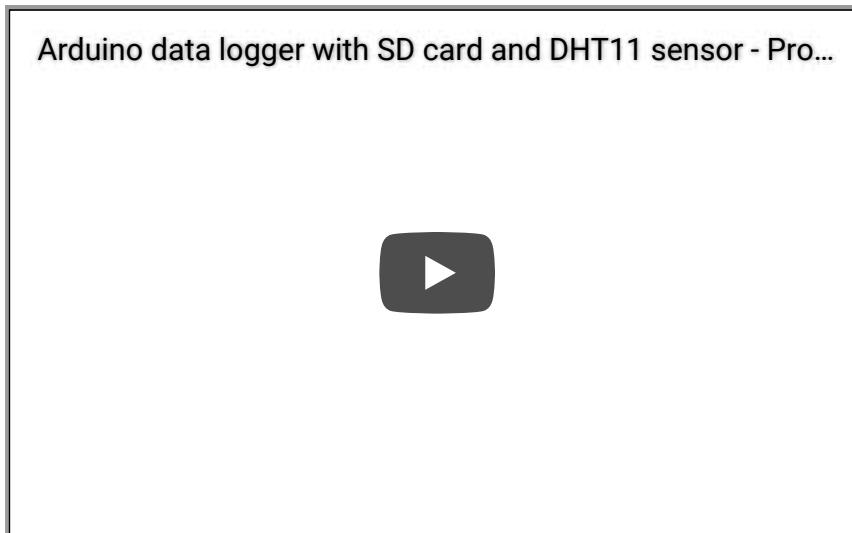
Arduino IDE serial monitor gave me the window shown below:



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The video below shows a simulation of the Arduino datalogger using Proteus, I got the same result as the real hardware circuit:



Downloads:

Adafruit library for DHT series (after extracting put the folder named *DHT* in the library folder of Arduino):

[Download](#)

Proteus simulation file download:

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SD card image file download:

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DHT11 MMC/SD CARD

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