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Task: Interfacing of DHT sensor and learn plotting the waveform using the Arduino IDE/Board.

Components:

Arduino UNO, Jumper wire, USB Cable, Breadboard

About the Project:

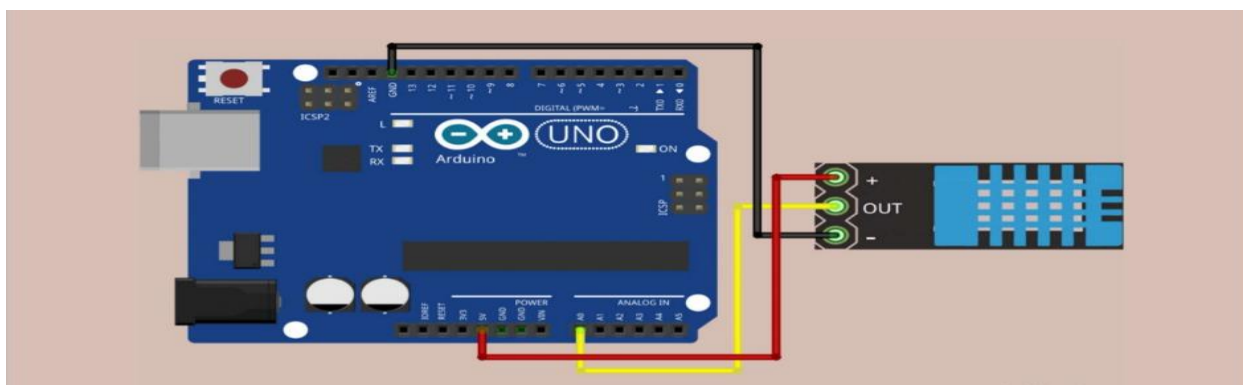
The DHT11 sensor is a basic, low cost digital temperature and humidity sensor. It uses a capacitive humidity sensor and a thermistor to measure the surrounding air, and transmits a digital signal on the data pin. This sensor calculates relative humidity by measuring the electrical resistance between two electrodes. The humidity sensing component of the DHT11 is a moisture holding substrate with the electrodes applied to the surface.

The DHT11 sensor consists of 3 main components. A resistive type humidity sensor, an NTC(negative temperature coefficient) thermistor(to measure temperature) and a 8-bit microcontroller , which converts the analog signals from both the sensors and sends out single digital signal.

The change in resistance between the two electrodes is proportional to the relative humidity. DHT11 can be interface with any microcontroller like Arduino , Raspberry pie , etc. It provides high reliability and long term stability. This sensor is used in various applications such as measuring humidity and temperature values in heating , ventilation and air conditioning systems . Weather stations also use these sensors to predict weather conditions. The humidity sensor is used as a preventive measure in homes where people are affected by humidity.

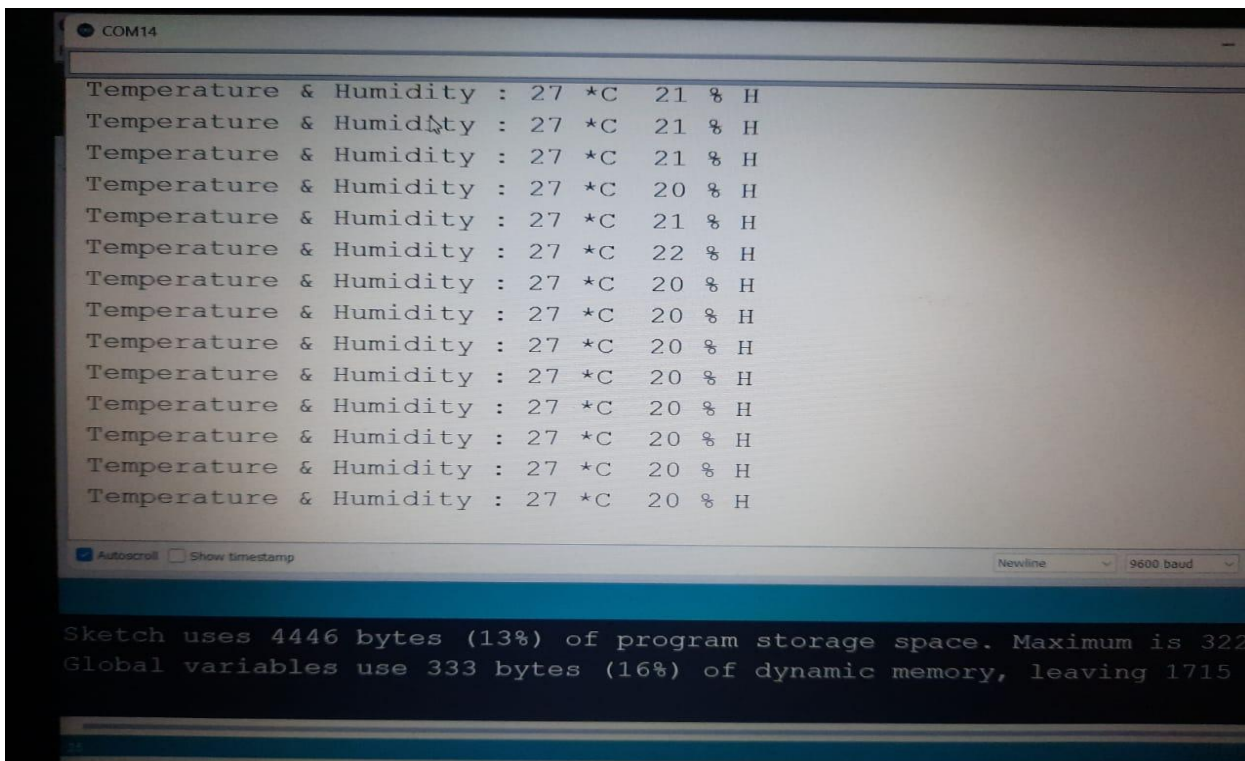
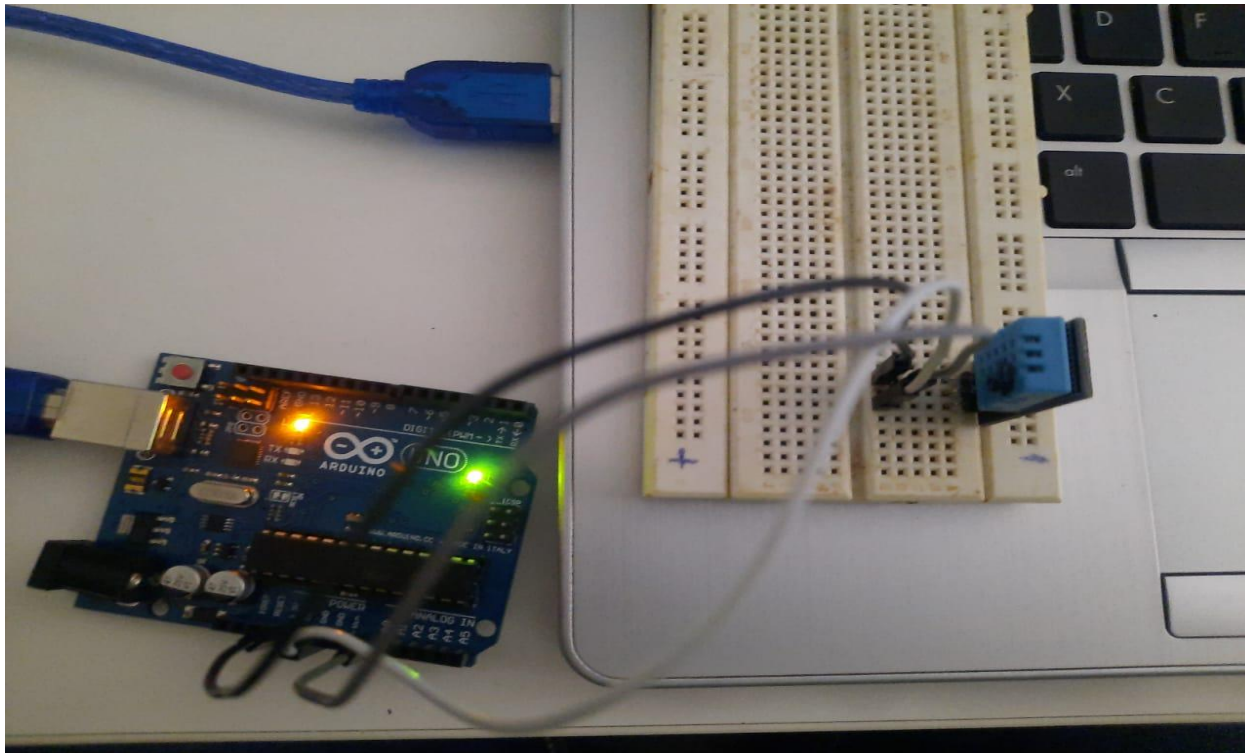
It is simple to use , but requires careful timing to detect data . The only limitation on this sensor is one can only get new data from it once every 2 seconds.

Schematic:



Output:





Code:

```
#include <SimpleDHT.h>
```

```
int pinDHT11 = A0;
SimpleDHT11 dht11(pinDHT11);

void setup()
{
  Serial.begin(9600);
  delay(500);
  Serial.println("DHT11 Humidity & Temperature Sensor\n\n");
  delay(1000);
}

void loop()
{
  byte temperature = 0;
  byte humidity = 0;

  dht11.read(pinDHT11, &temperature, &humidity, NULL);
  Serial.print(" Temperature & Humidity : ");
  Serial.print((int)temperature);
  Serial.print(" *C ");
  Serial.print((int)humidity);
  Serial.println(" % H");

  delay(2000);
}
```

Application:

The humidity sensor is used as preventive measure in homes, offices, cars, museums, industries.

Conclusion:

This sensor can easily be interfaced with Arduino, Raspberry pie, etc. In this task we are using the SimpleDHT library. It is useful for humidity readings between 20% to 80% with +-5% Relative Humidity. It is useful for temperature readings between 0-50 degree C. with +-2 degree C. In this task SimpleDHT library is used. This DHT11 Temperature and Humidity sensor features a digital signal output with the temperature and humidity sensor complex.