

Industrial IoT Minor

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Experiment - 3

AIM: To interface DHT11/DHT22, pressure, voltage and current sensor data input to ESP8266.

OBJECTIVE: To write a code in Arduino IDE and find out reading for DHT 11.

THEORY: DHT11/22: The DHT11 detects water vapor by measuring the electrical resistance between two electrodes. The humidity sensing component is a moisture holding substrate with electrodes applied to the surface. When water vapor is absorbed by the substrate, ions are released by the substrate which increases the conductivity between the electrodes.

SIMULATION CODE:

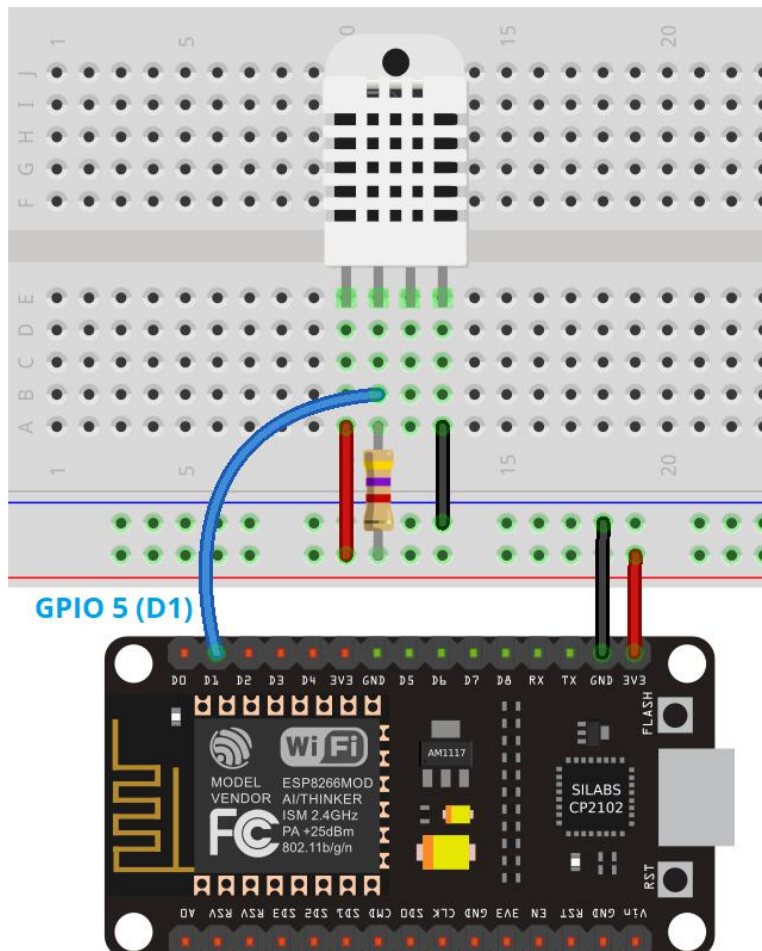
```
#include "DHT.h"
#define DHTPIN 5 // what pin we're connected to
#define DHTTYPE DHT11 // DHT 11
DHT dht(DHTPIN, DHTTYPE);

void setup() {
  Serial.begin(9600);
  Serial.println("DHTxx test!");
  dht.begin();
}

void loop() {
  delay(2000);
  float h = dht.readHumidity();
  float t = dht.readTemperature();
  float f = dht.readTemperature(true);
  if (isnan(h) || isnan(t) || isnan(f)) {
    Serial.println("Failed to read from DHT sensor!");
    return;
  }
  float hi = dht.computeHeatIndex(f, h);
  Serial.print("Humidity: ");
  Serial.print(h);
  Serial.print(" %\n");
  Serial.print("Temperature: ");
  Serial.print(t);
  Serial.print(" *C ");
  Serial.print(f);
  Serial.print(" *F\n");
  Serial.print("Heat index: ");
```

```
Serial.print(hi);
Serial.println(" *F");
}
```

SIMULATION RESULT:



```
File Edit Sketch Tools Help
NodeMCU 1.0 (ESP-12E Mod...)

sketch_newBread
1 #include "DHT.h"
2 #define DHTPIN 5 // what pin we're connected to
3 #define DHTTYPE DHT11 // DHT 11
4 DHT dht(DHTPIN, DHTTYPE);
5
6 void setup() {
7   Serial.begin(9600);
8   Serial.println("DHTxx test!");
9   dht.begin();
10 }
11
12 void loop() {
13   delay(2000);
14   float h = dht.readHumidity();
15   float t = dht.readTemperature();
16   float f = dht.readTemperature(true);
17   if (isnan(h) || isnan(t) || isnan(f)) {
18     Serial.println("Failed to read from DHT sensor!");
19     return;
20   }
21   float hi = dht.computeHeatIndex(f, h);
22   Serial.print("Humidity: ");
23   Serial.print(h);
24   Serial.print(" %\n");
25   Serial.print("Temperature: ");
26   Serial.print(t);
27   Serial.print(" C\n");
28   Serial.print(f);
29   Serial.print(" F\n");
30   Serial.print("Heat index: ");
31   Serial.print(hi);
32   Serial.println(" F");
33 }
34

Output
Executable segment sizes:
ICACHE : 32768 - Flash instruction cache
IRAM : 246156 - code in flash (default or ICACHE_FLASH_ATTR)
IRAM : 28173 / 32768 - code in IRAM (IRAM_ATTR, ISR...)
DATA : 1496 - initialized variables (global, static) in RAM/HEAP
RODATA : 1156 - constants (global, static) in RAM/HEAP
BSS : 25704 - zeroed variables (global, static) in RAM/HEAP
Sketch uses 276981 bytes (26%) of program storage space. Maximum is 1044464 bytes.
Global variables use 28356 bytes (34%) of dynamic memory, leaving 33504 bytes for local variables. Maximum is 81920 bytes.
```

CONCLUSION: After performing this experiment we were able to find Temperature and Humidity using DTH11 and ESP8266.

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