IOT LAB 49+50

22MIA1062
PRIYANSHU TEOTIA

EXPERIMENT 2

AIM : USING DHT 11 SENSOR DISPLAY THE TEMPERATURE AND HUMIDITY

PROCEDURE:

Library Installation:

1. Open the **Arduino IDE**.
2. Go to **Sketch > Include Library > Manage Libraries...**.
3. Search for **"DHT11"** and install a compatible DHT11 library (e.g., **"DHT11 by Rob Tillaart"**).

Circuit Connections:

Connect the DHT11 sensor to the Arduino Uno as follows:

1. **DHT11 Pins**:
   - **VCC** (power) → **5V** on Arduino
   - **GND** (ground) → **GND** on Arduino
   - **DATA** (signal) → **Digital Pin 2** on Arduino
2. **Optional Pull-up Resistor**:
   - Connect a **10k ohm resistor** between the **DATA pin** and **VCC** (5V) to ensure a stable signal.

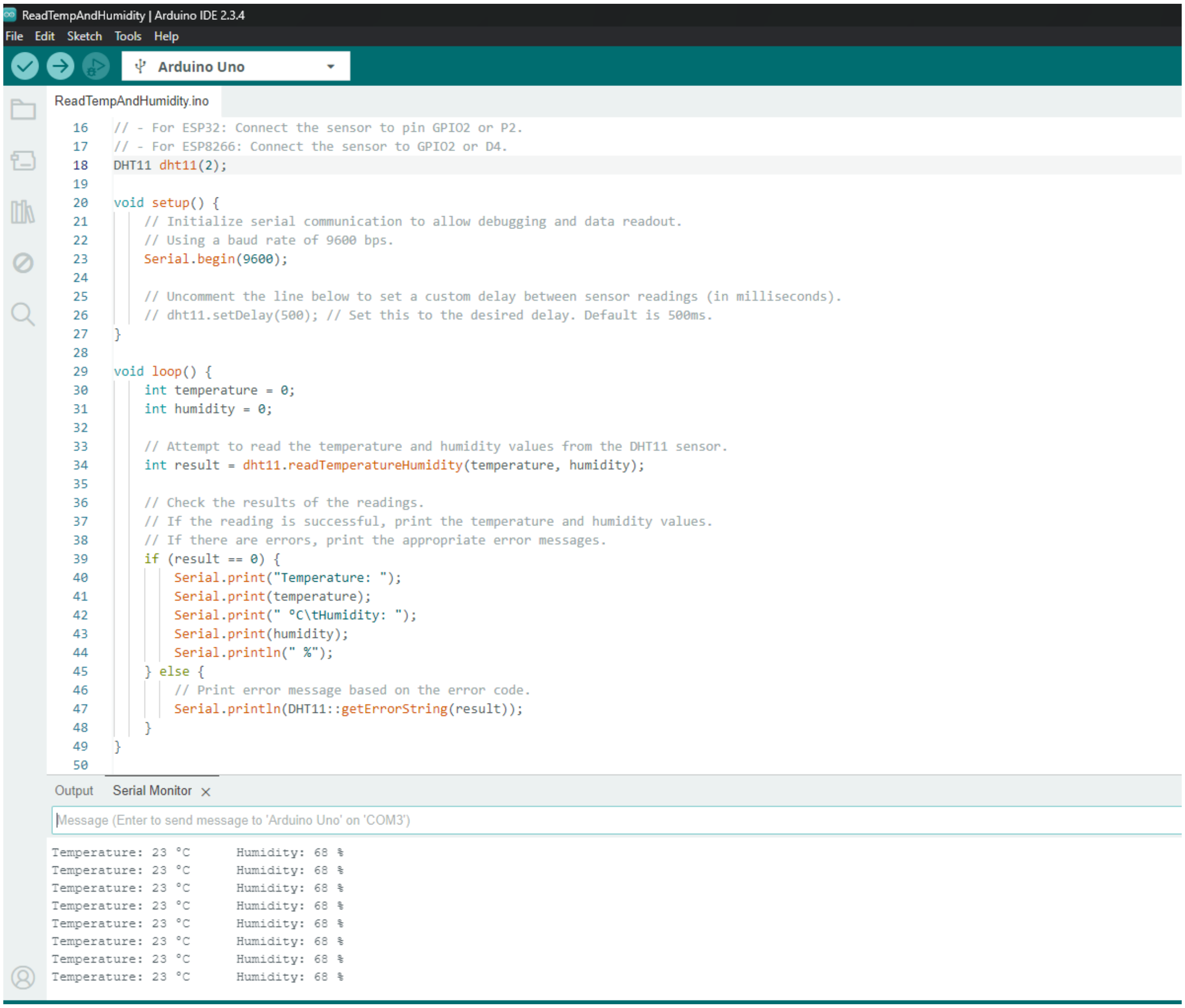
Steps to Upload the Code:

1. **Connect the Arduino Uno** to your computer using the USB cable.
2. Open the **Arduino IDE**.
3. **Select the correct board and port**:
   - Go to **Tools > Board > Arduino Uno**.
   - Go to **Tools > Port** and select the port corresponding to your Arduino.
4. **Copy and paste** the code into the Arduino IDE.
5. Click on the **Upload button** (right-arrow) to upload the code.

INPUT:

```
// Include the DHT11 library for interfacing with the sensor.
#include <DHT11.h>

// Create an instance of the DHT11 class.
// - For Arduino: Connect the sensor to Digital I/O Pin 2.
// - For ESP32: Connect the sensor to pin GPIO2 or P2.
// - For ESP8266: Connect the sensor to GPIO2 or D4.
DHT11 dht11(2);

void setup() {
    // Initialize serial communication to allow debugging and data
readout.
    // Using a baud rate of 9600 bps.
    Serial.begin(9600);

    // Uncomment the line below to set a custom delay between sensor
readings (in milliseconds).
    // dht11.setDelay(500); // Set this to the desired delay. Default is
500ms.
}

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

    // Attempt to read the temperature and humidity values from the DHT11
sensor.
    int result = dht11.readTemperatureHumidity(temperature, humidity);

    // Check the results of the readings.
    // If the reading is successful, print the temperature and humidity
values.
    // If there are errors, print the appropriate error messages.
    if (result == 0) {
        Serial.print("Temperature: ");
        Serial.print(temperature);
        Serial.print(" °C\tHumidity: ");
        Serial.print(humidity);
        Serial.println(" %");
    } else {
        // Print error message based on the error code.
        Serial.println(DHT11::getErrorString(result));
    }
}
```

OUTPUT:



ReadTempAndHumidity | Arduino IDE 2.3.4
File Edit Sketch Tools Help
Arduino Uno
ReadTempAndHumidity.ino

```
// - For ESP32: Connect the sensor to pin GPIO2 or P2.
// - For ESP8266: Connect the sensor to GPIO2 or D4.
DHT11 dht11(2);

void setup() {
    // Initialize serial communication to allow debugging and data readout.
    // Using a baud rate of 9600 bps.
    Serial.begin(9600);

    // Uncomment the line below to set a custom delay between sensor readings (in milliseconds).
    // dht11.setDelay(500); // Set this to the desired delay. Default is 500ms.
}

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

    // Attempt to read the temperature and humidity values from the DHT11 sensor.
    int result = dht11.readTemperatureHumidity(temperature, humidity);

    // Check the results of the readings.
    // If the reading is successful, print the temperature and humidity values.
    // If there are errors, print the appropriate error messages.
    if (result == 0) {
        Serial.print("Temperature: ");
        Serial.print(temperature);
        Serial.print(" °C\tHumidity: ");
        Serial.print(humidity);
        Serial.println(" %");
    } else {
        // Print error message based on the error code.
        Serial.println(DHT11::getErrorString(result));
    }
}
```

```
Temperature: 23 °C      Humidity: 68 %
Temperature: 23 °C      Humidity: 68 %
Temperature: 23 °C      Humidity: 68 %
Temperature: 23 °C      Humidity: 68 %
Temperature: 23 °C      Humidity: 68 %
Temperature: 23 °C      Humidity: 68 %
Temperature: 23 °C      Humidity: 68 %
Temperature: 23 °C      Humidity: 68 %
```

RESULT: hence, the led bulb will glow successfully.