SOP: Setting Up DHT11 Sensor on Raspberry Pi with Python 3.11

# Prerequisites

- Raspberry Pi with internet access and GPIO headers  
- DHT11 sensor (3-pin version)  
- Jumper wires  
- Python 3.11 (default in recent Raspberry Pi OS)  
- Terminal access to Raspberry Pi

# Step 1: Wiring the DHT11 Sensor

Connect the DHT11 sensor as follows:  
  
| DHT11 Pin | Label | Connect To (Raspberry Pi) |  
|-----------|-------|----------------------------|  
| 1 (Left) | VCC | 5V (Pin 2) |  
| 2 (Middle)| DATA | GPIO2 (Pin 3) |  
| 3 (Right) | GND | GND (Pin 6) |  
  
**Clone the git repository:**

git clone https://github.com/adafruit/Adafruit\_Python\_DHT.git

# Step 2: Create a Python Virtual Environment

cd ~/Adafruit\_Python\_DHT  
python3 -m venv venv  
source venv/bin/activate

# Step 3: Install Required Python Libraries

pip install adafruit-circuitpython-dht adafruit-blinka lgpio

# Step 4: Create the Python Script

nano dht.py

Paste the following code:

import time  
import board  
import adafruit\_dht  
  
# Initialize DHT11 on GPIO2  
dht\_device = adafruit\_dht.DHT11(board.D2)  
  
while True:  
 try:  
 temperature = dht\_device.temperature  
 humidity = dht\_device.humidity  
 print(f"Temperature: {temperature}°C Humidity: {humidity}%")  
 except RuntimeError as e:  
 print(f"Error reading DHT11: {e}")  
 time.sleep(2)

# Step 5: Run the Script

source venv/bin/activate  
python dht.py

# Step 6: Exit and Clean Up

To stop the script: CTRL + C  
To deactivate the environment: deactivate

# Troubleshooting Tips

| Problem | Solution |  
|-------------------------------|----------|  
| DHT sensor not found | Check wiring, use 5V for VCC, verify GPIO pin |  
| No output or stuck readings | Add pull-up resistor, try another GPIO pin |  
| ModuleNotFoundError: lgpio | pip install lgpio inside virtual environment |

Before creating the virtual environment, clone the Adafruit DHT Python library repository:

cd Adafruit\_Python\_DHT