Node-Red Telegram Bot with Temperature Logger Part-1

Will guide you to node-red integration with telegram bot to send temperature data.

Difficulté **Moyen** | Durée **1 heure(s)** | Catégories **Électronique** | Coût **40 USD ($)**

Sommaire

Introduction
Étape 1 - About the Project
Étape 2 - Get PCBs For Your Projects Manufactured
Étape 3 - Connect the DHT11 sensor to the Raspberry Pi
Étape 4 - Install the node-red-contrib-dht-sensor node
Étape 5 - Setting up the Telegram Bot
Étape 6 - Creating a user for Telegram Bot
Étape 7 - Configure the Telegram bot node
Étape 8 - Create a flow to request temperature readings
Étape 9 - Conclusion
Commentaires

Introduction

Node-RED is a powerful tool for creating and connecting IoT applications with a graphical interface. It allows you to drag and drop nodes that can perform various functions, such as reading sensors, sending messages, storing data, and more. One of the nodes that Node-RED supports is the Telegram bot node, which enables you to communicate with your IoT devices using the popular messaging platform Telegram.

Matériaux

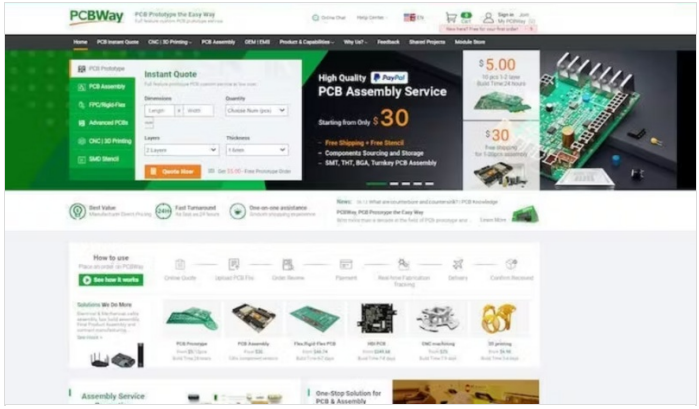
Outils

Étape 1 - About the Project

In this article, I will show you how to use Node-RED and Telegram bot to send temperature data from a DHT11 sensor connected to a Raspberry Pi. You will be able to ask your Telegram bot for the current temperature and receive a reply with the sensor reading. You will also be able to set up a notification system that will alert you when the temperature exceeds a certain threshold.
To follow this tutorial, you will need the following components:

- A Raspberry Pi with Node-RED installed (you can follow this guide to install Node-RED on your Raspberry Pi)
- A DHT11 temperature and humidity sensor
- A Telegram account and a Telegram bot token (you can follow this guide to create a Telegram bot and get its token)

Étape 2 - Get PCBs For Your Projects Manufactured



You must check out PCBWAY for ordering PCBs online for cheap! You get 10 good-quality PCBs manufactured and shipped to your doorstep for cheap. You will also get a discount on shipping on your first order. Upload your Gerber files onto PCBWAY to get them manufactured with good quality and quick turnaround time. PCBWay now could provide a complete product solution, from design to enclosure production. Check out their online Gerber viewer function. With reward points, you can get free stuff from their gift shop. Also, check out this useful blog on PCBWay Plugin for KiCad from here. Using this plugin, you can directly order PCBs in just one click after completing your design in KiCad.

Étape 3 - Connect the DHT11 sensor to the Raspberry Pi

The first step is to connect the DHT11 sensor to the Raspberry Pi using the breadboard and the jumper wires. The DHT11 sensor has four pins: VCC, Data, NC (not connected), and GND. Connect the VCC pin to the 3.3V pin of the Raspberry Pi, the GND pin to the GND pin of the Raspberry Pi, and the Data pin to the GPIO 4 of the Raspberry Pi.

Étape 4 - Install the node-red-contrib-dht-sensor node

To read data from the DHT11 sensor, we will use a Node-RED node called node-red-contrib-dht-sensor. To install this node, open a terminal on your Raspberry Pi and run the following command:

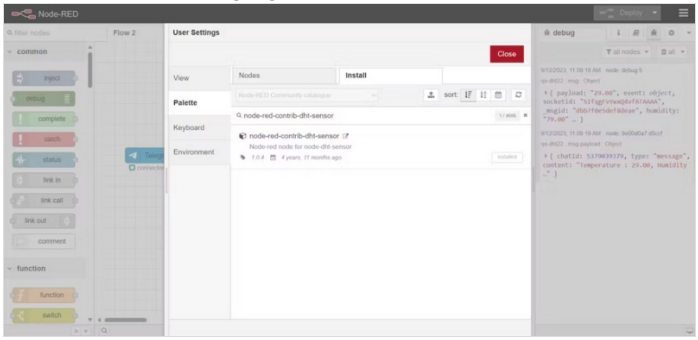
```
npm install node-red-contrib-dht-sensor
```

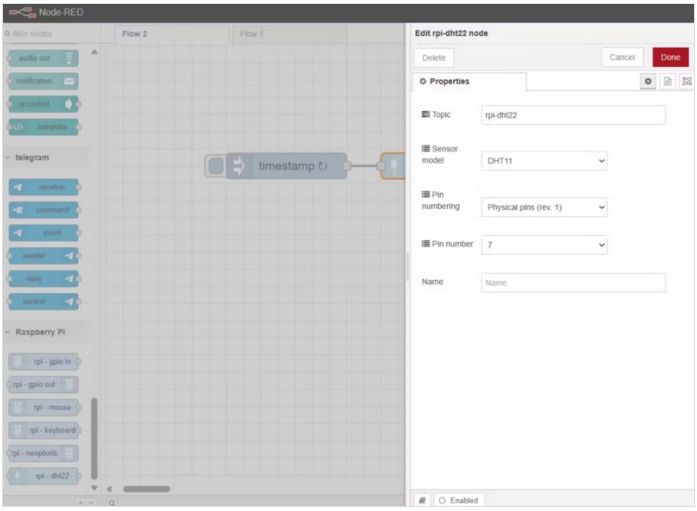
Then restart Node-RED by running:

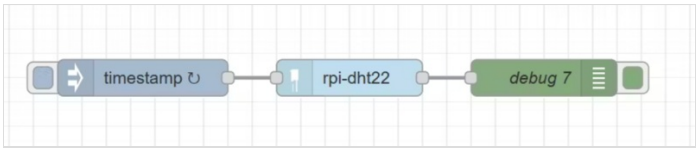
```
node-red-stop
```

```
node-red-start
```

Then add the DHT11 node and open the properties then choose your DHT11 pin.
Here is the simple flow to get the DHT11 temperature and humidity data.
And here are the debug log results.

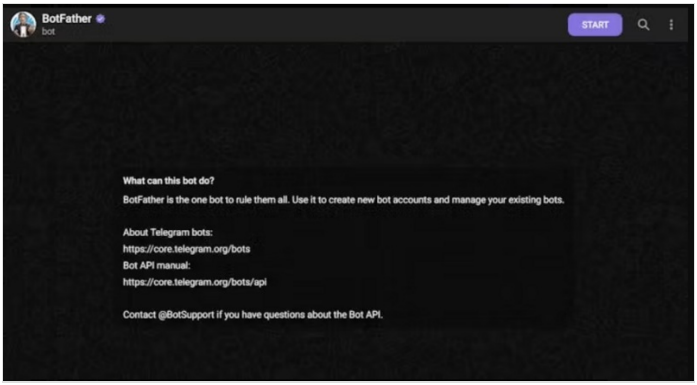


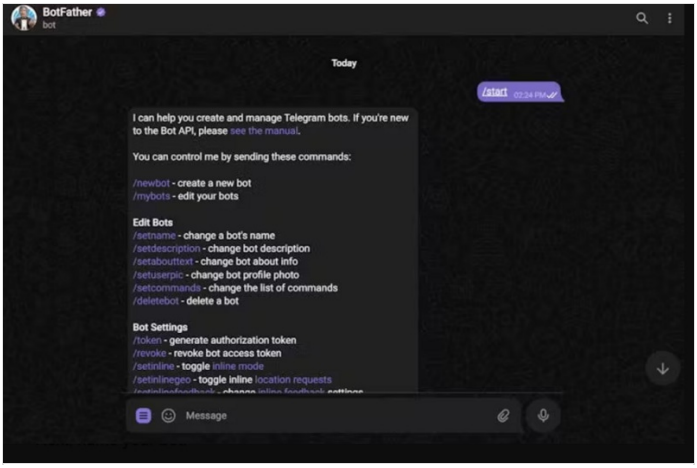


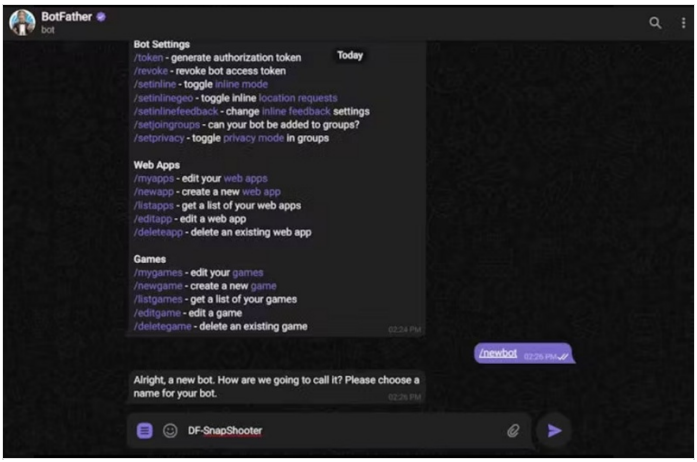


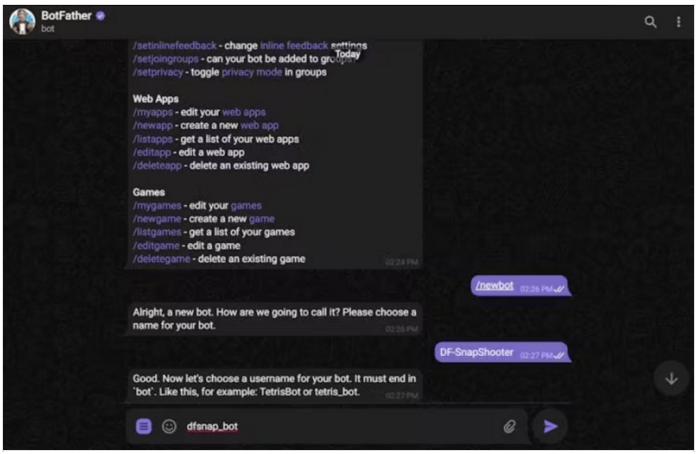
Étape 5 - Setting up the Telegram Bot

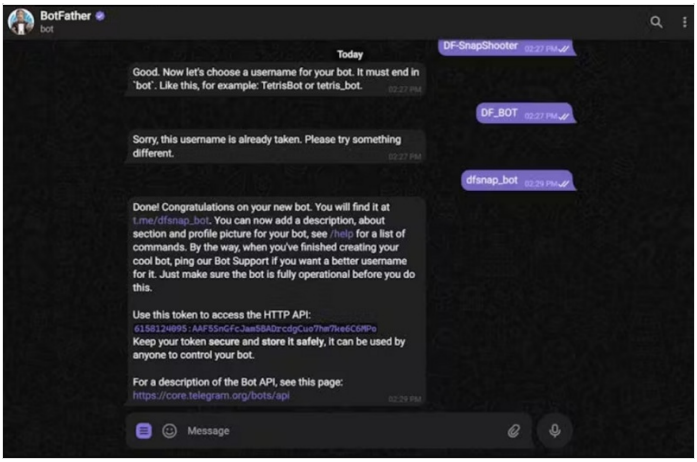
Go to Google Play or App Store, download, and install **Telegram**. In my case, I'm using telegram web. First, search for "**botfather**" and click the BotFather as shown below.
Next, start the BotFather, and use /newbot to create a new bot.
Next, name your bot.
Then, mention the username.
Finally, it will show you the api key.


BotFather
bot
START
What can this bot do?
BotFather is the one bot to rule them all. Use it to create new bot accounts and manage your existing bots.
About Telegram bots:
https://core.telegram.org/bots
Bot API manual:
https://core.telegram.org/bots/api
Contact @BotSupport if you have questions about the Bot API.


BotFather
bot
Today
/start
I can help you create and manage Telegram bots. If you're new to the Bot API, please see the manual.
You can control me by sending these commands:
/newbot - create a new bot
/mybots - edit your bots
Edit Bots
/setname - change a bot's name
/setdescription - change bot description
/setabouttext - change bot about info
/setuserpic - change bot profile photo
/setcommands - change the list of commands
/deletebot - delete a bot
Bot Settings
/token - generate authorization token
/revoke - revoke bot access token
/setinline - toggle inline mode
/setinlinegeo - toggle inline location requests
Message

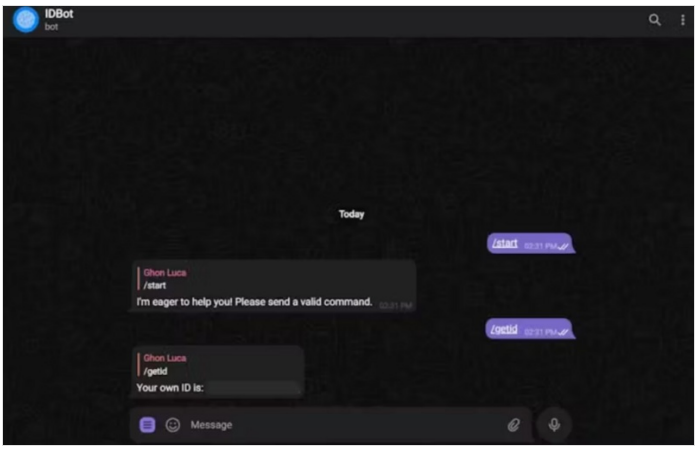

BotFather
bot
Bot Settings
/token - generate authorization token
Today
/revoke - revoke bot access token
/setinline - toggle inline mode
/setinlinegeo - toggle inline location requests
/setinlinefeedback - change inline feedback settings
/setjoingroups - can your bot be added to groups?
/setprivacy - toggle privacy mode in groups
Web Apps
/myapps - edit your web apps
/newapp - create a new web app
/listapps - get a list of your web apps
/editapp - edit a web app
/deleteapp - delete an existing web app
Games
/mygames - edit your games
/newgame - create a new game
/listgames - get a list of your games
/editgame - edit a game
/deletegame - delete an existing game
/newbot
Alright, a new bot. How are we going to call it? Please choose a name for your bot.
DF-SnapShooter


BotFather
bot
/setinlinefeedback - change inline feedback settings
Today
/setjoingroups - can your bot be added to groups?
/setprivacy - toggle privacy mode in groups
Web Apps
/myapps - edit your web apps
/newapp - create a new web app
/listapps - get a list of your web apps
/editapp - edit a web app
/deleteapp - delete an existing web app
Games
/mygames - edit your games
/newgame - create a new game
/listgames - get a list of your games
/editgame - edit a game
/deletegame - delete an existing game
/newbot
Alright, a new bot. How are we going to call it? Please choose a name for your bot.
DF-SnapShooter
Good. Now let's choose a username for your bot. It must end in `bot`. Like this, for example: TetrisBot or tetris_bot.
dfsnap_bot


BotFather
bot
DF-SnapShooter
Today
Good. Now let's choose a username for your bot. It must end in `bot`. Like this, for example: TetrisBot or tetris_bot.
DF_BOT
Sorry, this username is already taken. Please try something different.
dfsnap_bot
Done! Congratulations on your new bot. You will find it at t.me/dfsnap_bot. You can now add a description, about section and profile picture for your bot, see /help for a list of commands. By the way, when you've finished creating your cool bot, ping our Bot Support if you want a better username for it. Just make sure the bot is fully operational before you do this.
Use this token to access the HTTP API:
6158124095:AAF5SnGFcJam58ADzcdgCuo7hm7ke6C6MPo
Keep your token secure and store it safely, it can be used by anyone to control your bot.
For a description of the Bot API, see this page:
https://core.telegram.org/bots/api
Message

Étape 6 - Creating a user for Telegram Bot

Anyone that knows your bot username can interact with it. To make sure that we ignore messages that are not from our Telegram account (or any authorized users), you can get your Telegram User ID.
In your Telegram account, search for "**IDBot**"
Start a conversation with that bot and type **/getid**. You will get a reply with your user ID. Save that **user ID** because you'll need it later in this tutorial.



Étape 7 - Configure the Telegram bot node

To communicate with the Telegram bot, we will use a Node-RED node called node-red-contrib-telegrambot. To install this node, open a terminal on your Raspberry Pi and run the following command:

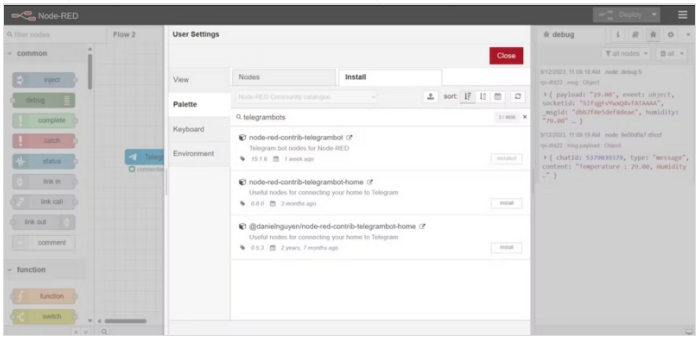
```
npm install node-red-contrib-telegrambot
```

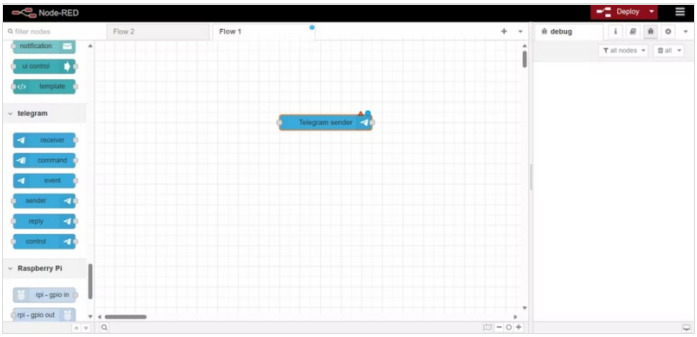
Then restart Node-RED by running:

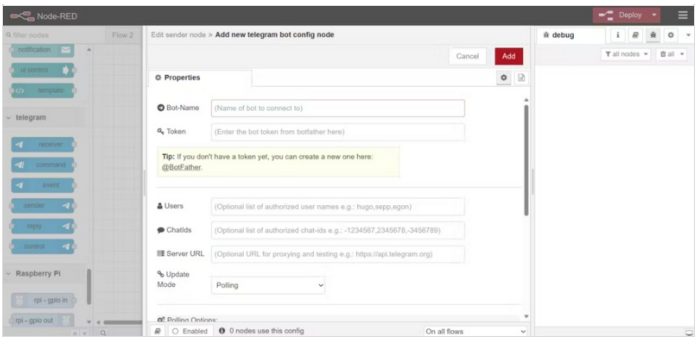
```
node-red-stop
```

```
node-red-start
```

Then open your Node-RED editor in your browser (usually http://raspberrypi:1880) and drag a Telegram receiver node and a Telegram sender node from the palette to the workspace. Double-click on the Telegram receiver node and click on the pencil icon next to Bot configuration.
Enter your bot name and token that you obtained from BotFather in step 1. Then click on Add and Done.







Étape 8 - Create a flow to request temperature readings

To request temperature readings from the DHT11 sensor, we will create a simple flow that consists of three nodes: a Telegram receiver node, a DHT11 sensor node, and a Telegram sender node.
In this flow, if you trigger the node, it will send you the temp and humi data to the Telegram bot.

Here is the function that transfers the sensor data to the Telegram bot.

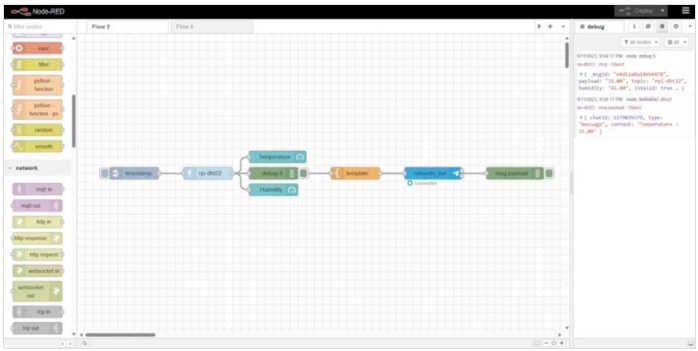
> Note: In the chatID add your telegram chat ID.

Here is the complete JSON flow:


```
[
    {
        "id": "eb8f9c0d054be30c",
        "type": "tab",
        "label": "Flow 2",
        "disabled": false,
        "info": "",
        "env": []
    },
    {
        "id": "f2f9819ae972ae60",
        "type": "rpi-dht22",
        "z": "eb8f9c0d054be30c",
        "name": "",
        "topic": "rpi-dht22",
        "dht": "11",
        "pintype": 1,
        "pin": "7",
        "x": 640,
        "y": 240,
        "wires": [
            [
                "9113d1cb21f22ab6",
                "ea63aa67.c972f"
            ]
        ]
    },
    {
        "id": "9113d1cb21f22ab6",
        "type": "debug",
        "z": "eb8f9c0d054be30c",
        "name": "debug 5",
        "active": true,
        "tosidebar": true,
        "console": false,
        "tostatus": false,
        "complete": "true",
        "targetType": "full",
        "statusVal": "",
        "statusType": "auto",
        "x": 800,
        "y": 200,
        "wires": []
    },
    {
        "id": "ea63aa67.c972f",
        "type": "template",
        "z": "eb8f9c0d054be30c",
        "name": "",
        "field": "payload",
        "fieldType": "msg",
        "format": "handlebars",
        "syntax": "mustache",
        "template": "{\"chatId\": XXXXXXXXXXXXXXX,\n\"type\":\"message\",\n\"content\":\"Temperature : {{payload}}, Humidity : {{humidity}}\"}",
        "output": "json",
        "x": 820,
        "y": 260,
        "wires": [
            [
                "9e00d0a7.d5ccf",
                "600063bd96d765e6"
            ]
        ]
    },
    {
        "id": "9e00d0a7.d5ccf",
        "type": "debug",
```

```
    "z": "eb8f9c0d054be30c",
    "name": "",
    "active": true,
    "tosidebar": true,
    "console": false,
    "tostatus": false,
    "complete": "payload",
    "targetType": "msg",
    "statusVal": "",
    "statusType": "auto",
    "x": 990,
    "y": 200,
    "wires": []
  },
  {
    "id": "600063bd96d765e6",
    "type": "telegram sender",
    "z": "eb8f9c0d054be30c",
    "name": "roboerto_bot",
    "bot": "ae1a60539b8e5308",
    "haserroroutput": true,
    "outputs": 2,
    "x": 1030,
    "y": 260,
    "wires": [
      [],
      []
    ]
  },
  {
    "id": "b6d651f1ea520a5a",
    "type": "inject",
    "z": "eb8f9c0d054be30c",
    "name": "",
    "props": [
      {
        "p": "payload"
      },
      {
        "p": "topic",
        "vt": "str"
      }
    ],
    "repeat": "",
    "crontab": "",
    "once": false,
    "onceDelay": 0.1,
    "topic": "",
    "payload": "",
    "payloadType": "date",
    "x": 420,
    "y": 240,
    "wires": [
      [
        "f2f9819ae972ae60"
      ]
    ]
  },
  {
    "id": "ae1a60539b8e5308",
    "type": "telegram bot",
    "botname": "roboerto_bot",
    "usernames": "",
    "chatids": "",
    "baseapiurl": "",
    "updatemode": "polling",
    "pollinterval": "300",
    "usesocks": false,
    "sockshost": "",
    "socksprotocol": "socks5",
    "socksport": "6667",
    "socksusername": "anonymous",
    "sockspassword": "",
    "bothost": "",
```

```
        "botpath": "",
        "localbotport": "8443",
        "publicbotport": "8443",
        "privatekey": "",
        "certificate": "",
        "useselfsignedcertificate": false,
        "sslterminated": false,
        "verboselogging": false
    }
]
```



Étape 9 - Conclusion

In this article, you learned how to use Node-RED and Telegram bot to send temperature data from a DHT11 sensor connected to a Raspberry Pi. You also learned how to request sensor readings and receive alerts using Telegram commands and messages. You can use this project as a starting point for your own IoT applications that involve Node-RED, Telegram bot, and Raspberry Pi. You can also extend this project by adding more sensors, nodes, and functions to create more complex and interactive flows. Have fun!