

# Tutorial 1: IoT lessons UNAL

## How to get the module weather sensors working with a Raspberry

Install the new raspberry:

1. Download latest image of raspberry pi:  
<https://www.raspberrypi.org/downloads/raspbian/>  
You have to download the version Raspbian Stretch Lite from June 2018
2. On the boot partition of the sd card create a file ssh  
\$touch ssh
3. Configure the WiFi access by modifying the file  
/etc/wpa\_supplicant/wpa\_supplicant.conf  
# add these lines to the file

```
network={
    ssid="Unal-Invitados"
    key_mgmt=NONE
}
```

Or

```
ctrl_interface=DIR=/var/run/wpa_supplicant GROUP=netdev
update_config=1
network={
    ssid="4irc-aiot-1"
    scan_ssid=1
    psk="4irc-aiot-pwd"
    mode=0
    proto=WPA2
    key_mgmt=WPA-PSK
}
```

4. Don't forget to give a name to your Raspberry (/etc/hostname) and registered as a host in /etc/hosts, it will be useful to later find the IP address.

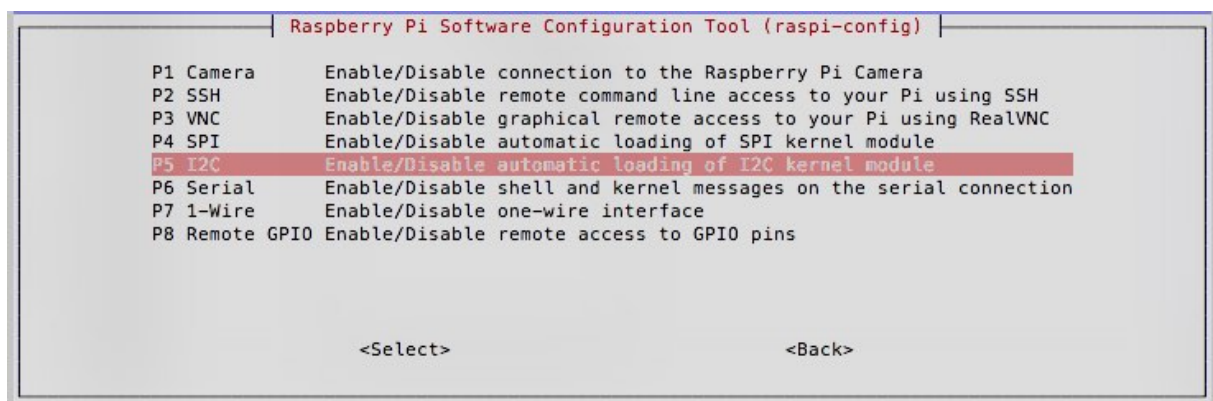
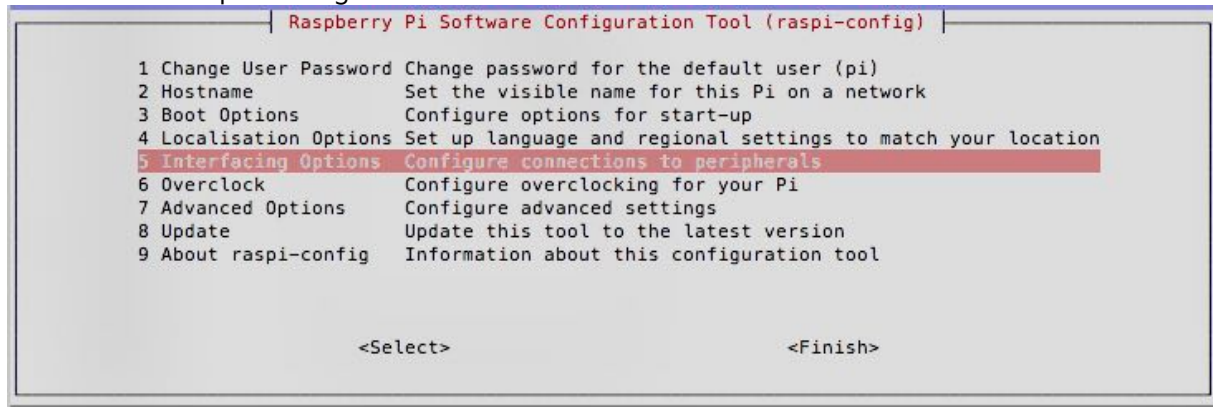
<https://www.raspberrypi.org/documentation/remote-access/ip-address.md>

## Boot your raspberry

1. Login to your raspberry using SSH and continue the configuration
2. Enable Proxy settings to access UNAL network:
  - a. To update the system on /etc/apt/apt.conf  
Acquire::http::Proxy "http://proxy4.unal.edu.co:8080";
  - b. For docker: <https://docs.docker.com/config/daemon/systemd/#httphttps-proxy>
  - c. System wide proxy /etc/environment  
http\_proxy="http://proxy4.unal.edu.co:8080/"  
https\_proxy="http://proxy4.unal.edu.co:8080/"  
no\_proxy="localhost,127.0.0.1,localaddress,localdomain.com"  
HTTP\_PROXY="http://proxy4.unal.edu.co:8080/"  
HTTPS\_PROXY="http://proxy4.unal.edu.co:8080/"

3. Enable i2c access on the raspberry:

`sudo raspi-config`



And then reboot

`sudo reboot`

4. Install the python libraries for i2c

`sudo apt update`

`sudo apt upgrade -y`

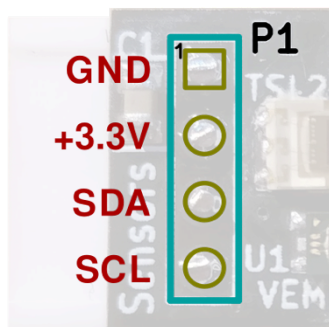
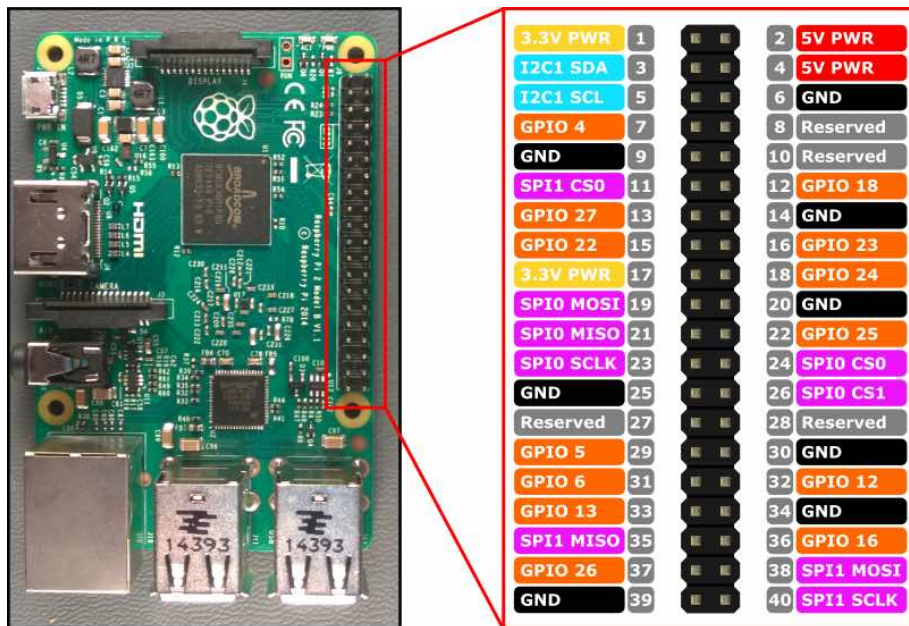
`sudo apt-get install -y python-smbus i2c-tools`

5. Verify that the modules for i2c bus are loaded

`lsmod | grep i2c_`

You should see the modules `i2c_bcm2835` and `i2c_dev`

6. Connect your device to the corresponding pins: Vcc, GND, SDA, SCL



7. To list the connected devices to the i2c bus:  
`sudo i2cdetect -y 1`
8. To configure the weather module using python use the libraries on:  
<https://github.com/ocrozo/iot-unal>  
 You can clone this repository in your Raspberry but first you need to install git.  
`apt-get install git`  
`git clone https://github.com/ocrozo/iot-unal`

### Install Docker on Raspberry

1. Follow the instruction on the official website  
<https://docs.docker.com/install/linux/docker-ce/debian/#install-using-the-convenience-script>