# MIT AI2 204
# IoT with MIT App Inventor
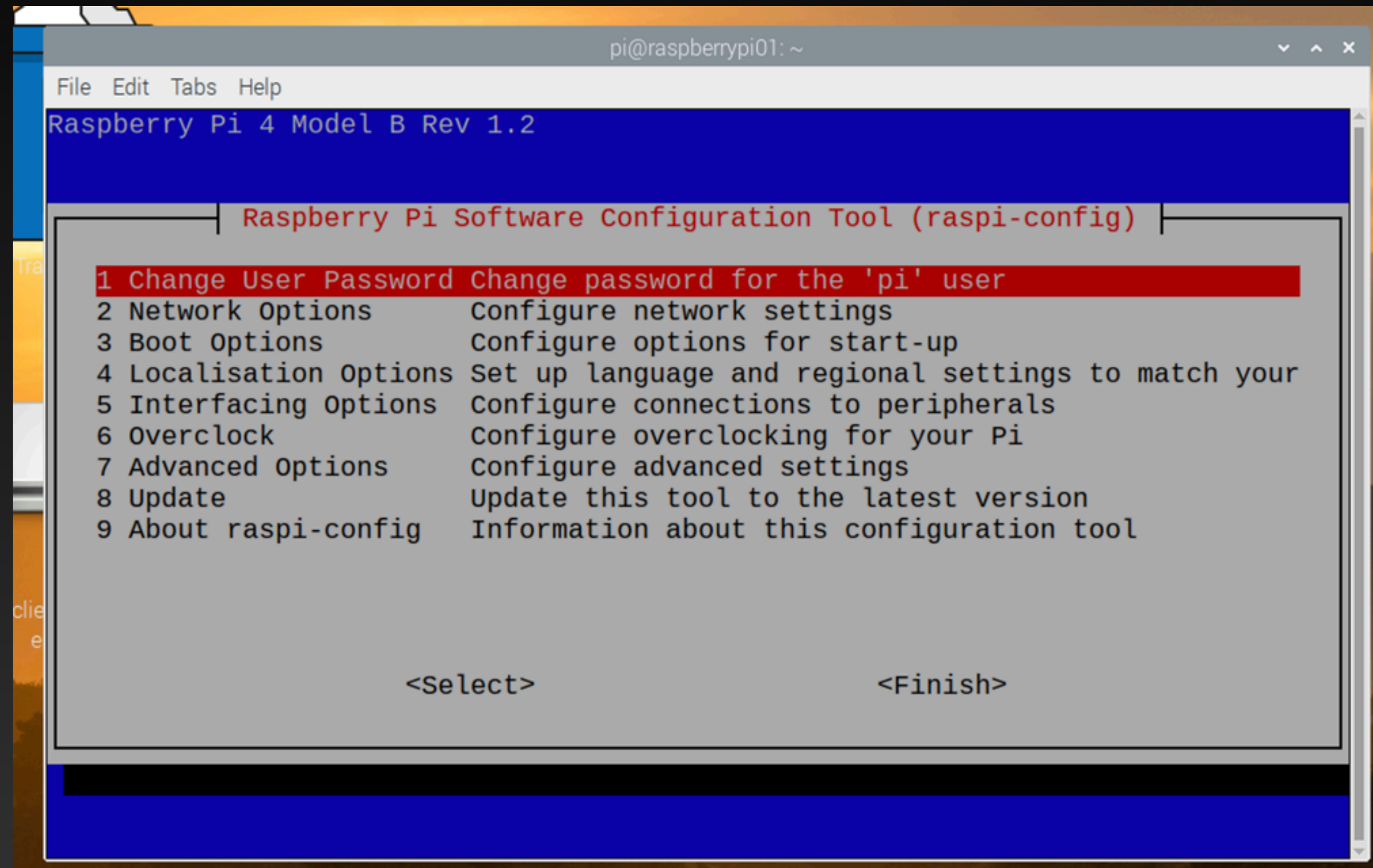
## Fundamental

Xincheng Tang

# Remote Access -Setup

- $ sudo  raspi-config

- config P2 SSH and P3 VNC to YES under Interface Options

- Reboot

- SSH access. Windows, download Putty. Https://www.putty.org/

- MAC, SSH pi@IP

- Windows or Mac, download https://www.realvnc.com/en/connect/download/viewer/
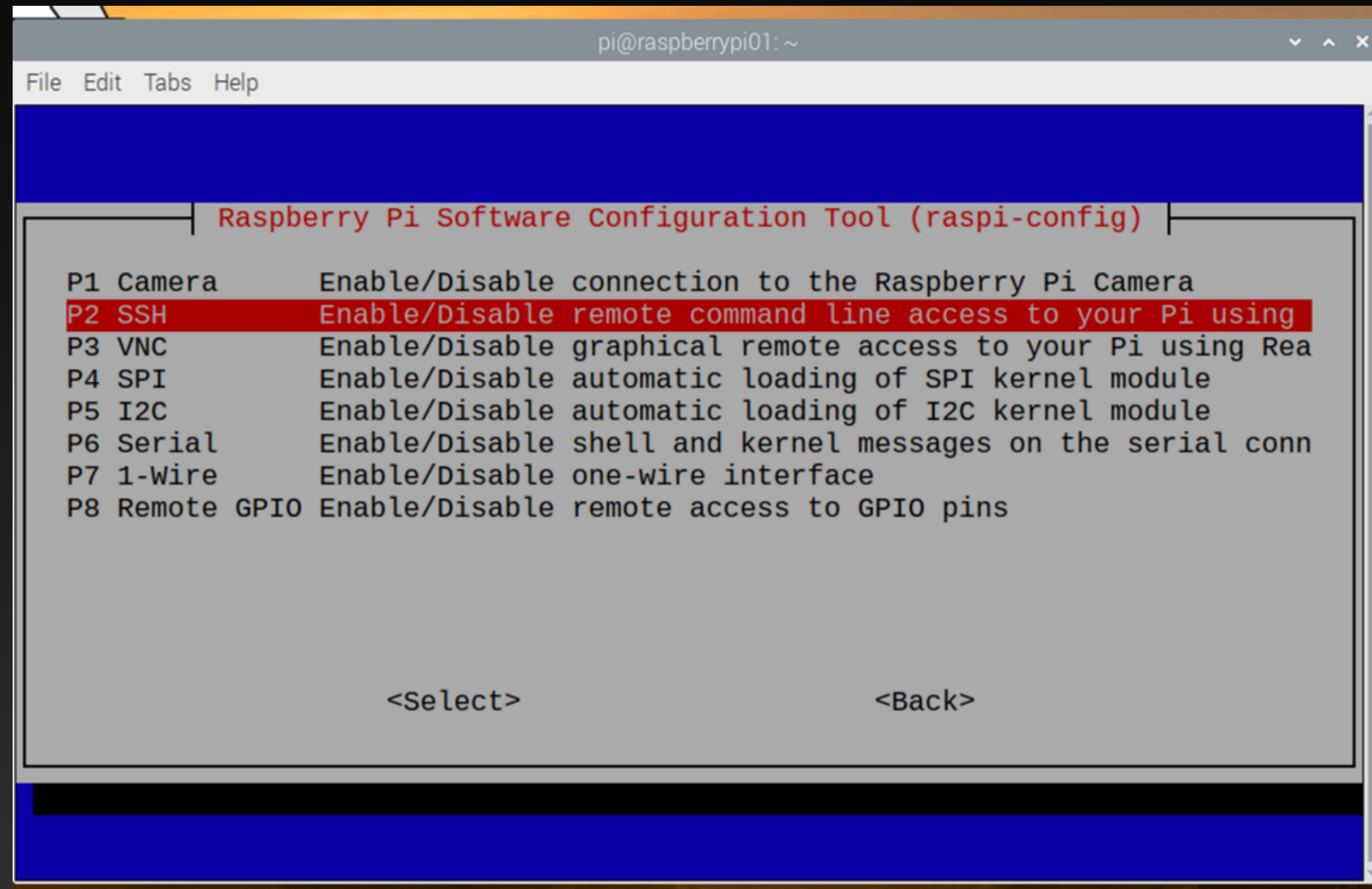
# Remote Access -Setup

- $ sudo  raspi-config
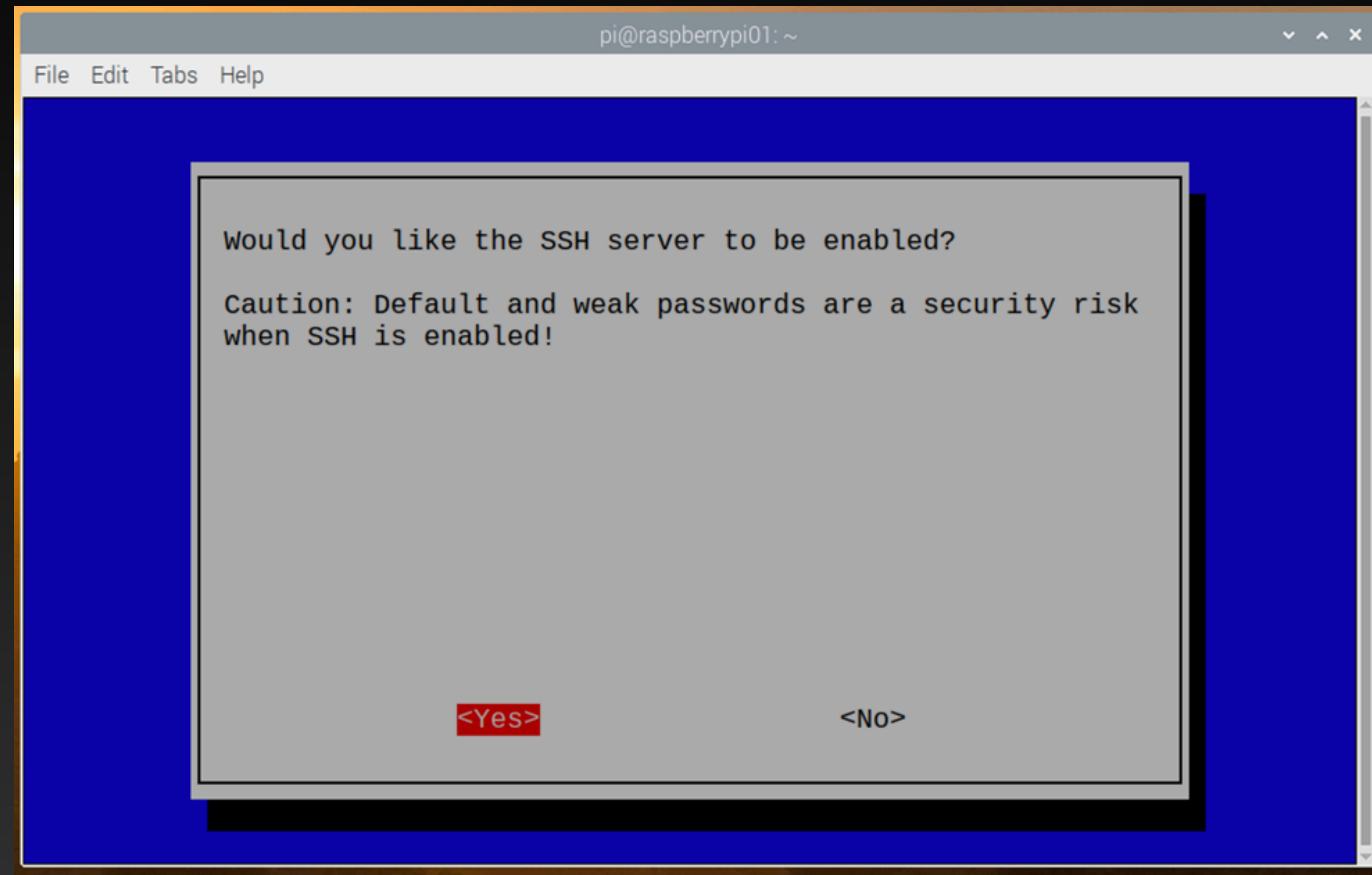
- Go to Interfacing Options

# Remote Access -Setup
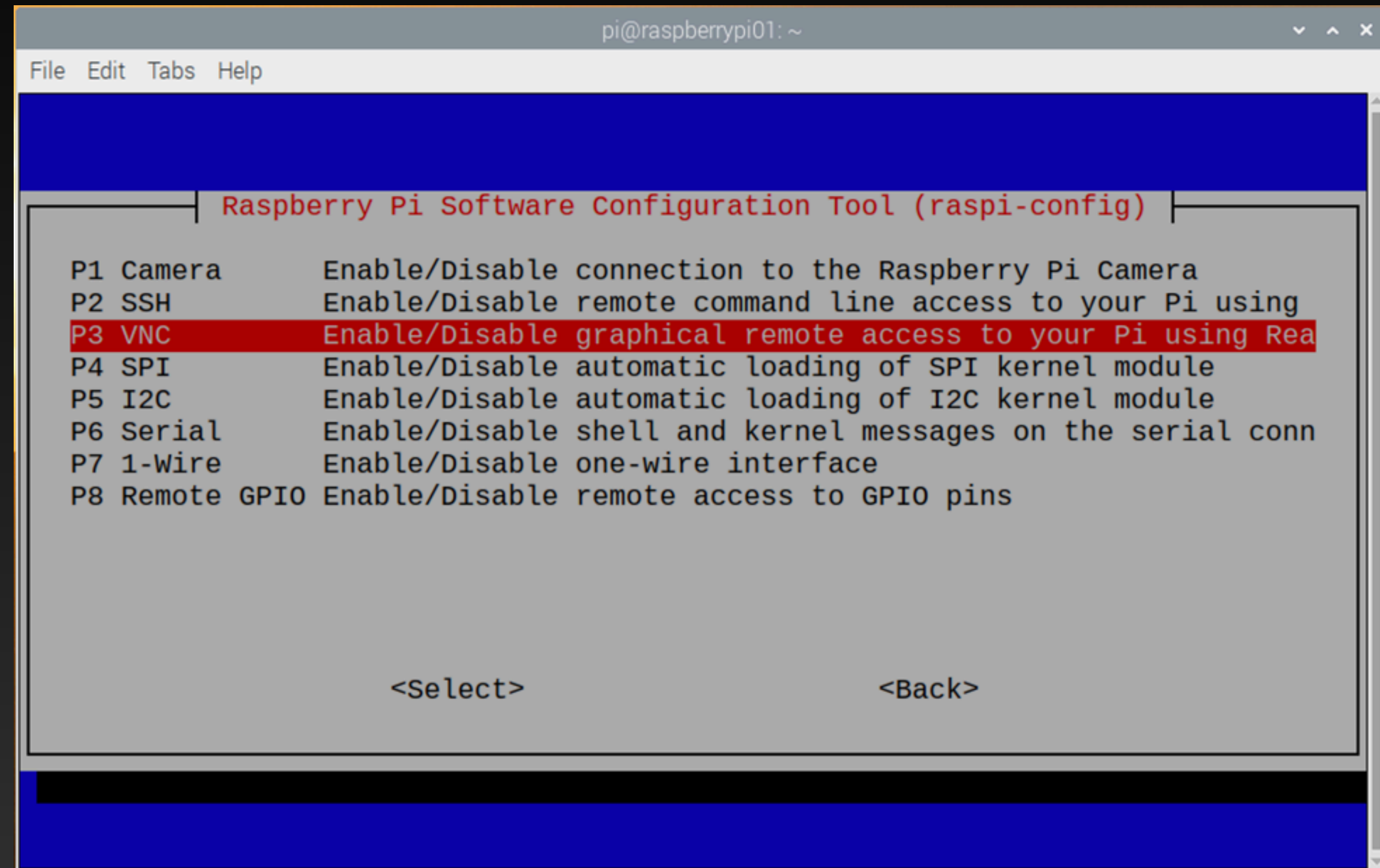
- Choose P2 SSH, hit enter
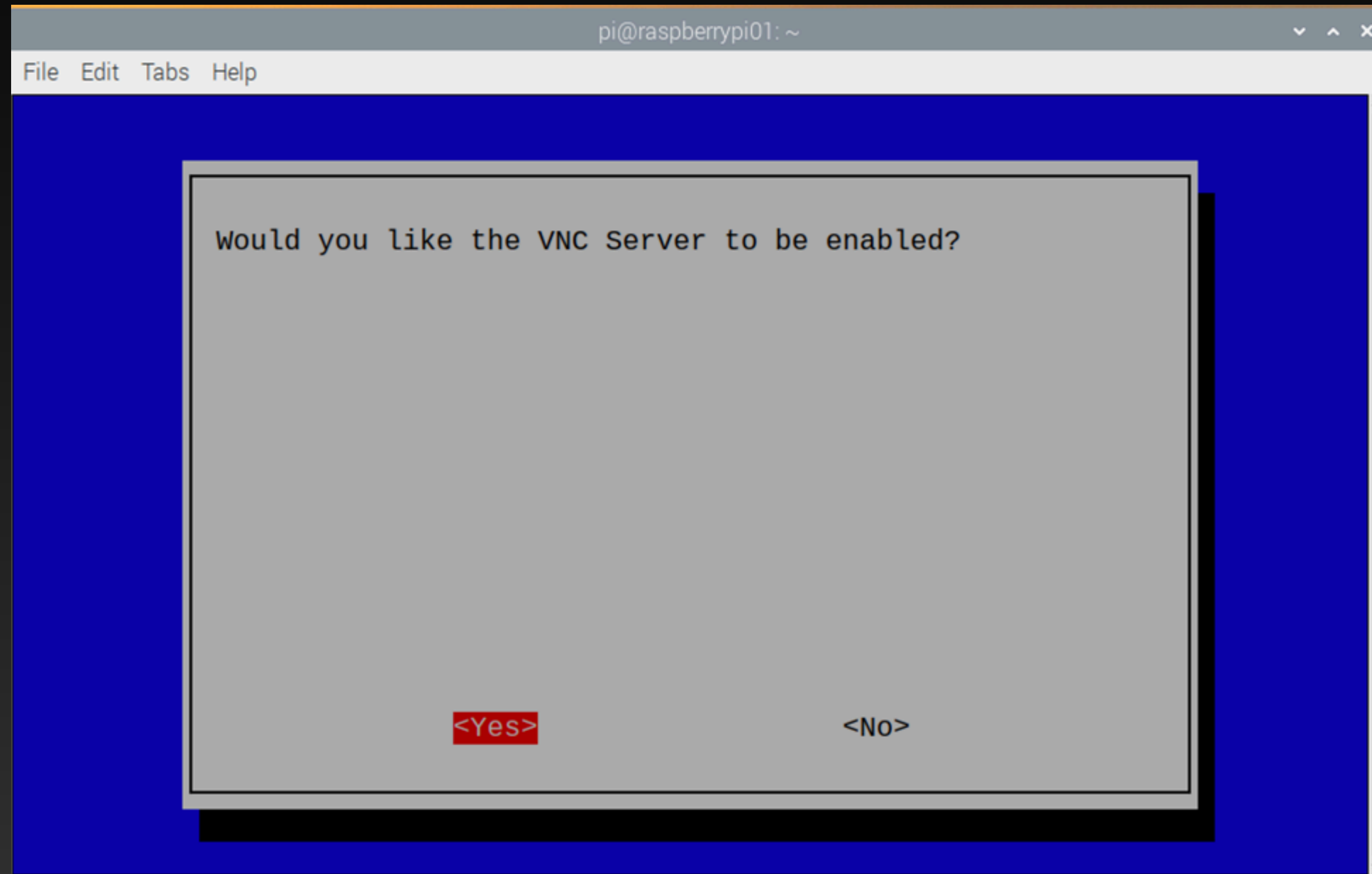
# Remote Access -Setup

- Select Yes, hit enter

# Remote Access -Setup
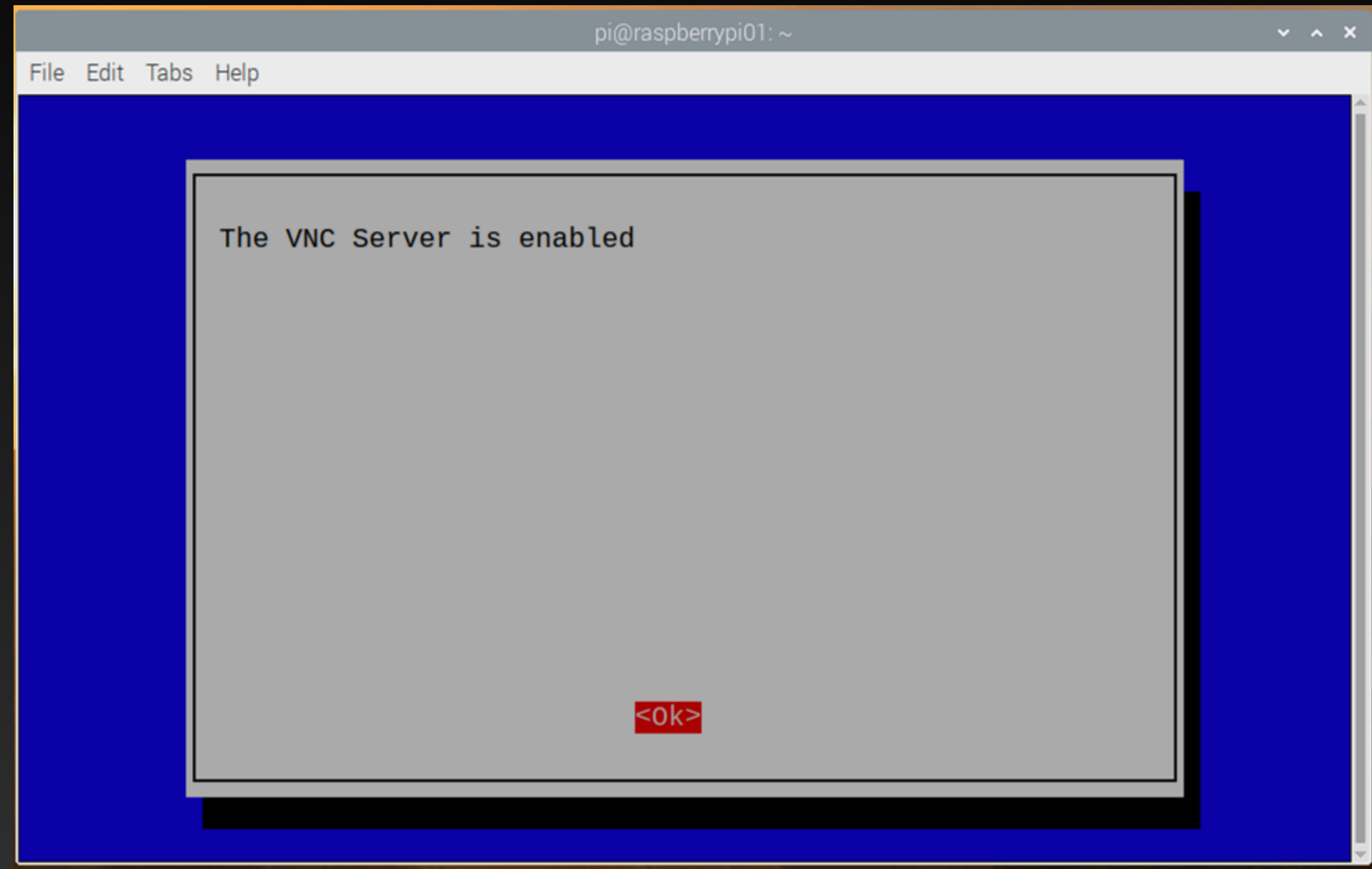
- Choose P3 VNC, hit enter
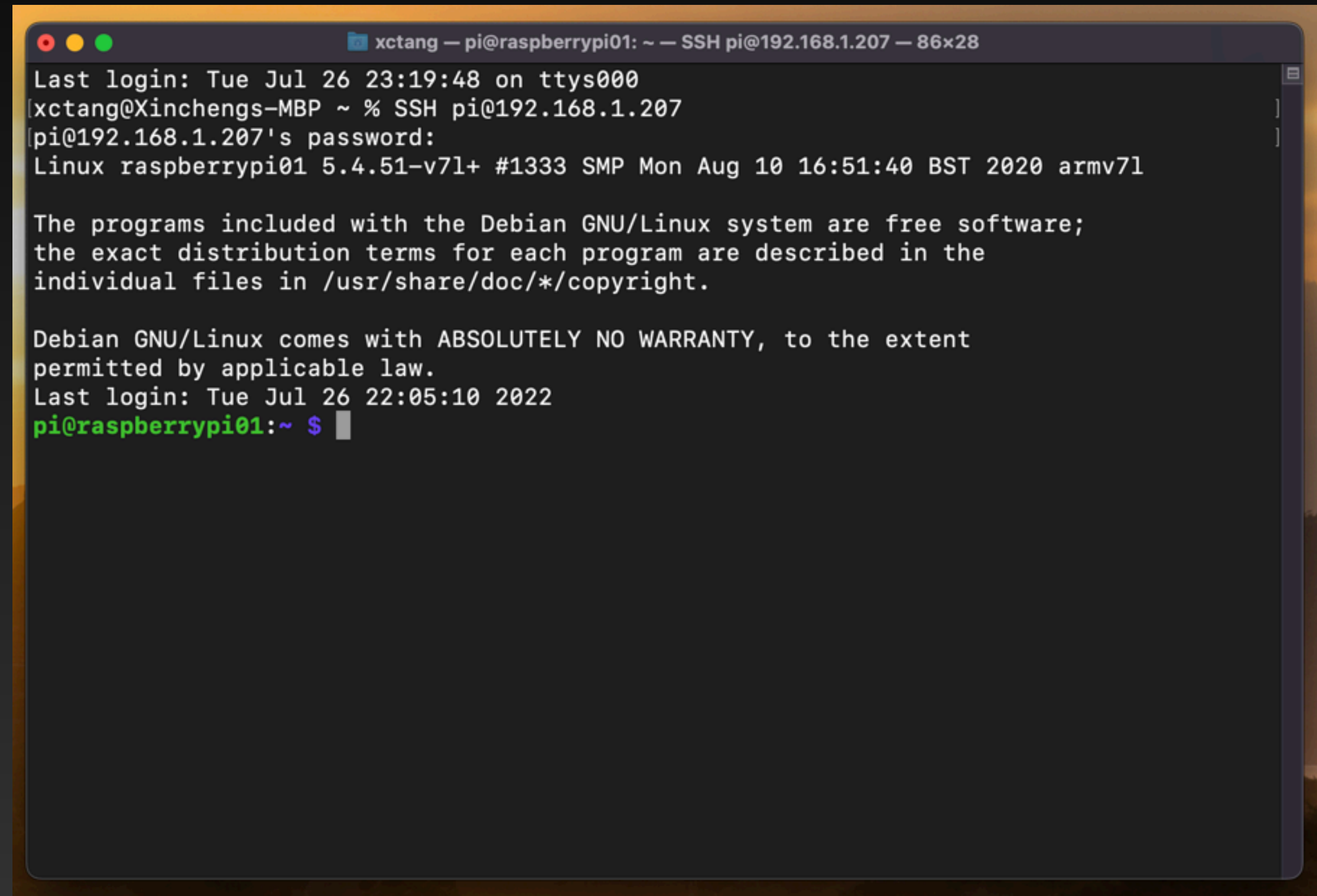
# Remote Access -Setup

- Select Yes, hit enter

# Remote Access -Setup

- You will see screen which confirm VNC is enabled

# Remote Access-SSH

- SSH on MAC

# Remote Access-SSH

- SSH on Window Machine

- download Putty

Https://www.putty.org/
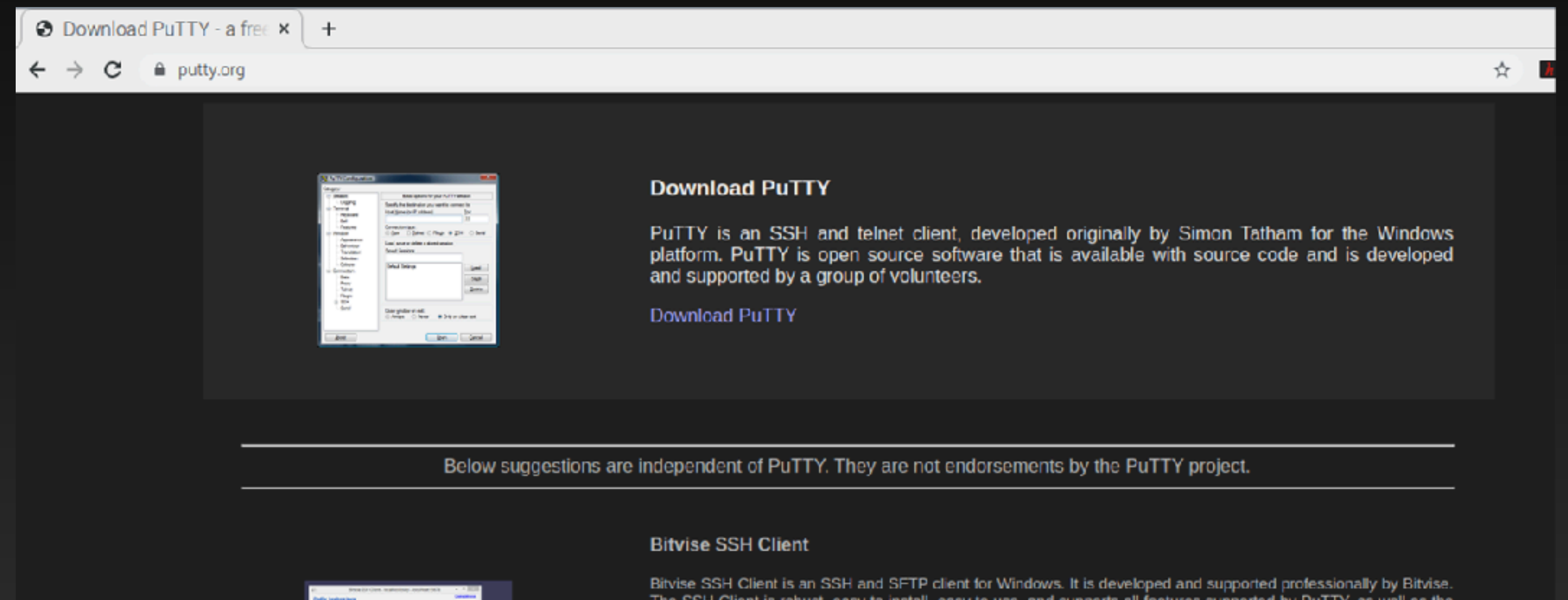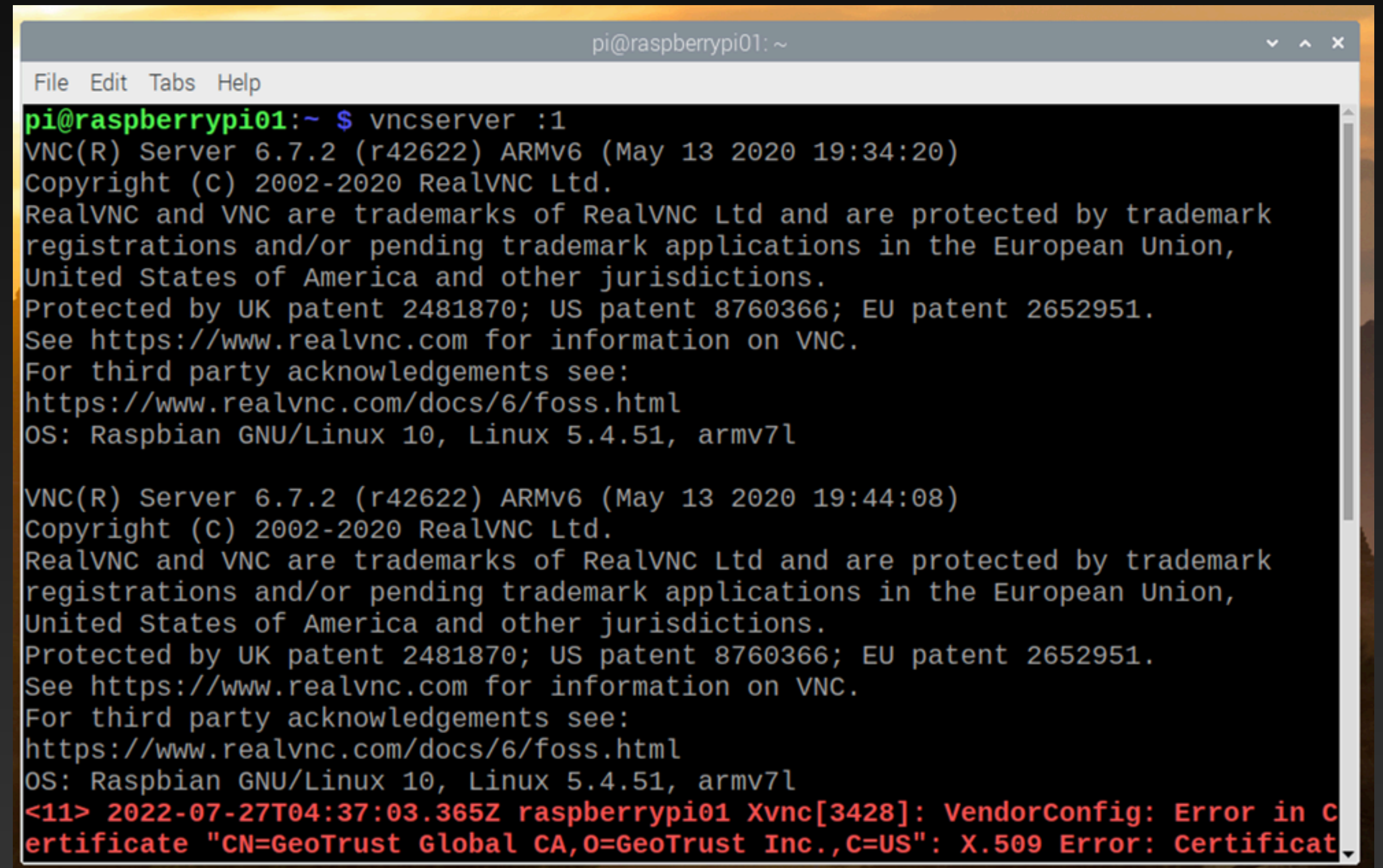
# Remote Access-SSH

- Putty config screen

- Enter your IP, click open

- You will see security alert, Click Yes to accept
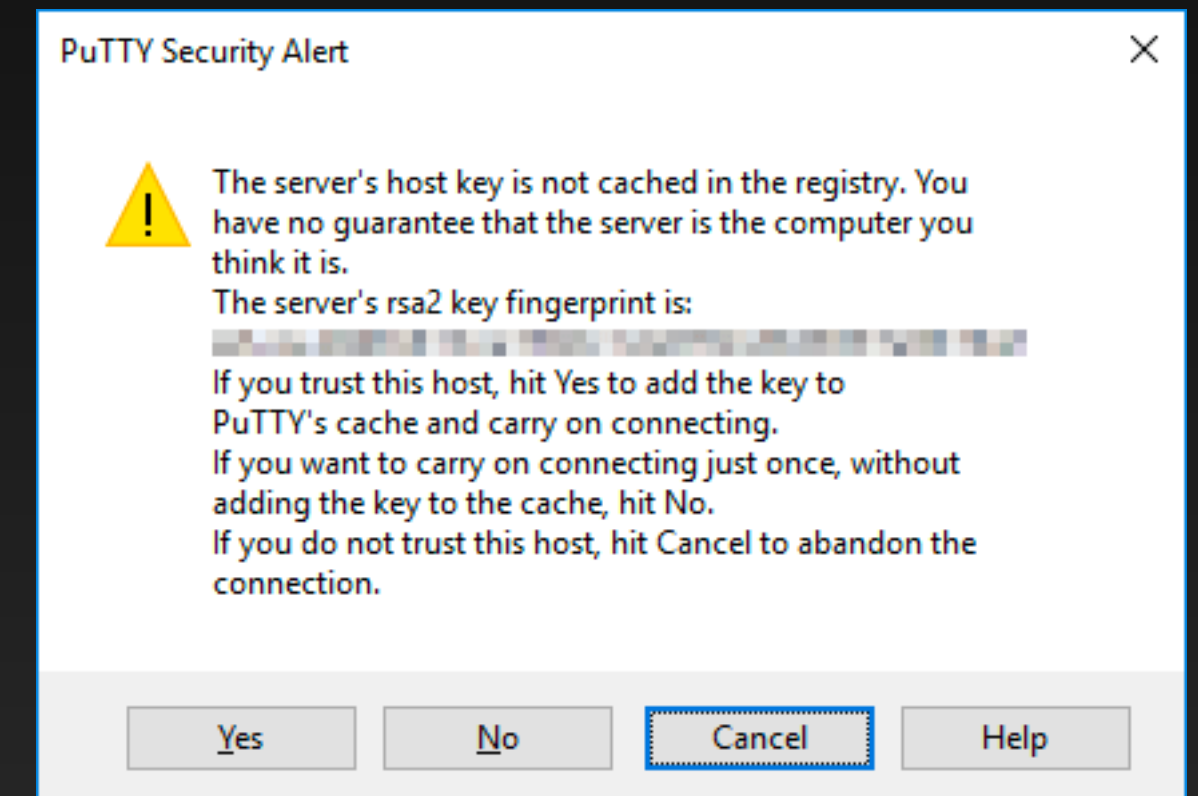
- You will prompt to enter your Pi username and password
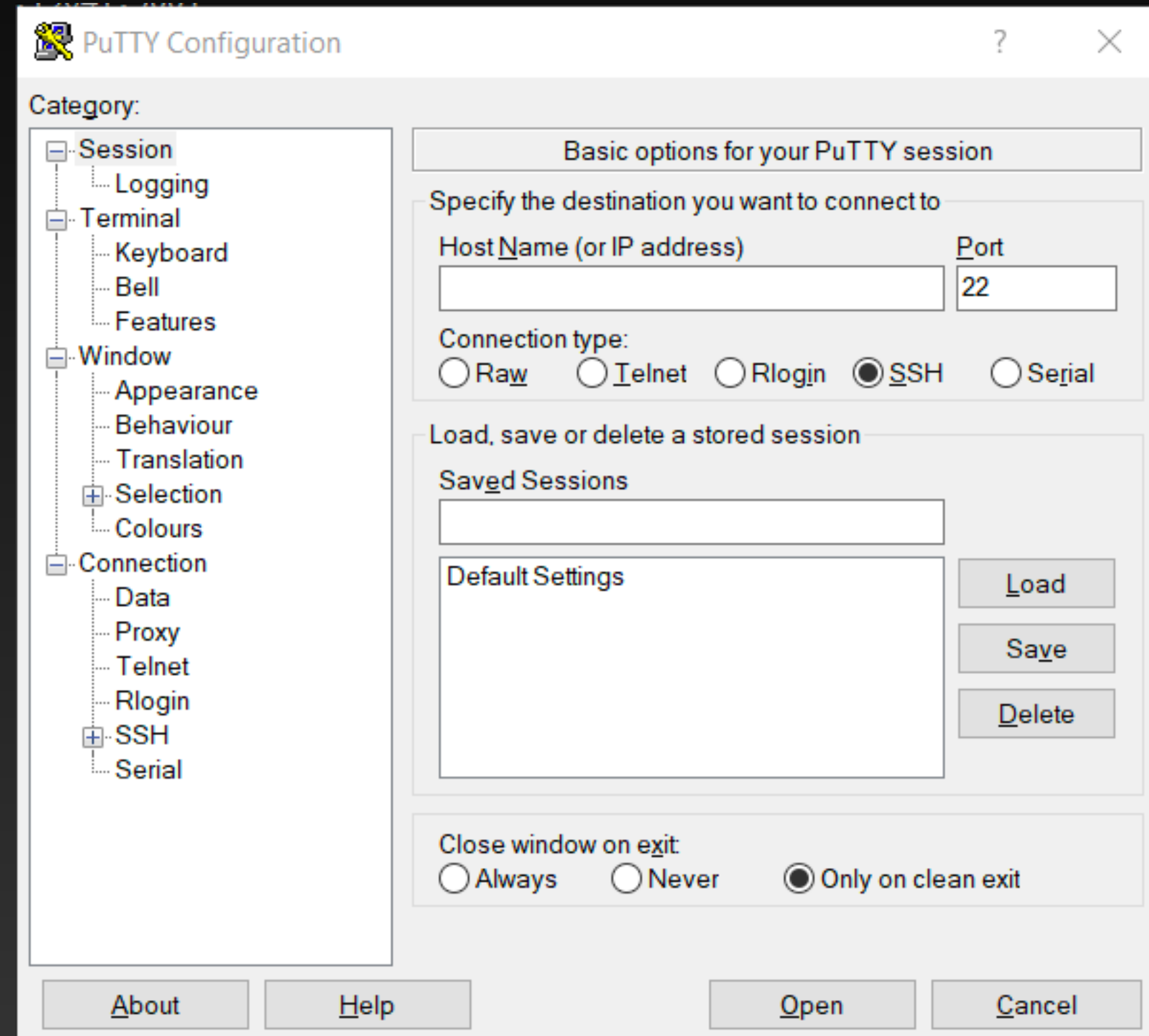
# Remote Access-VNC

- VNC consists of two part, VNC server and the VNC Viewer.

- VNC server run on RaspberryPi and VNC viewer run on your Window PC

# Remote Access-VNC

- https://www.realvnc.com/en/connect/download/viewer/

# Remote Access-VNC

- Put your Pi IP address in the installed VNC viewer
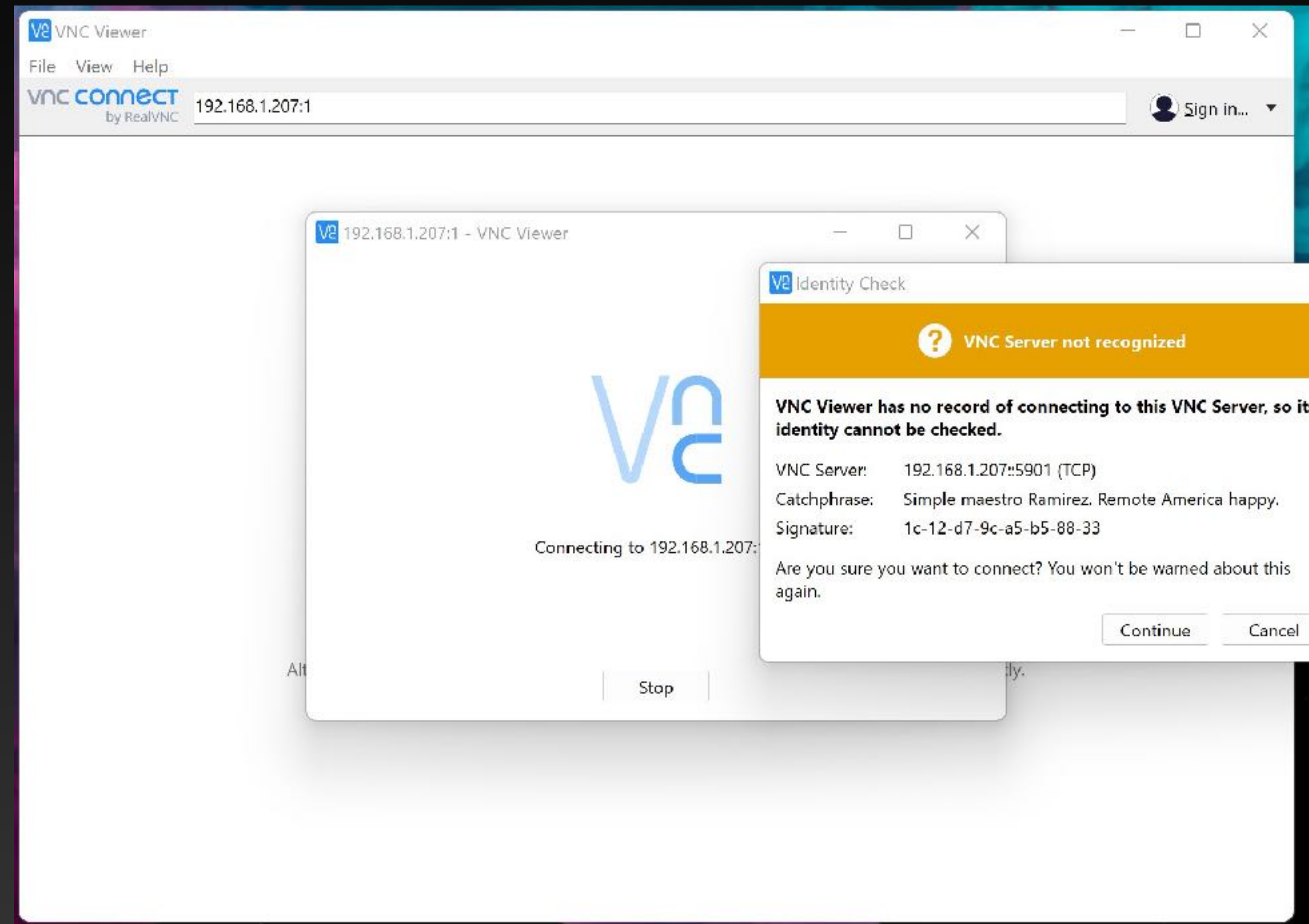
# Remote Access-VNC

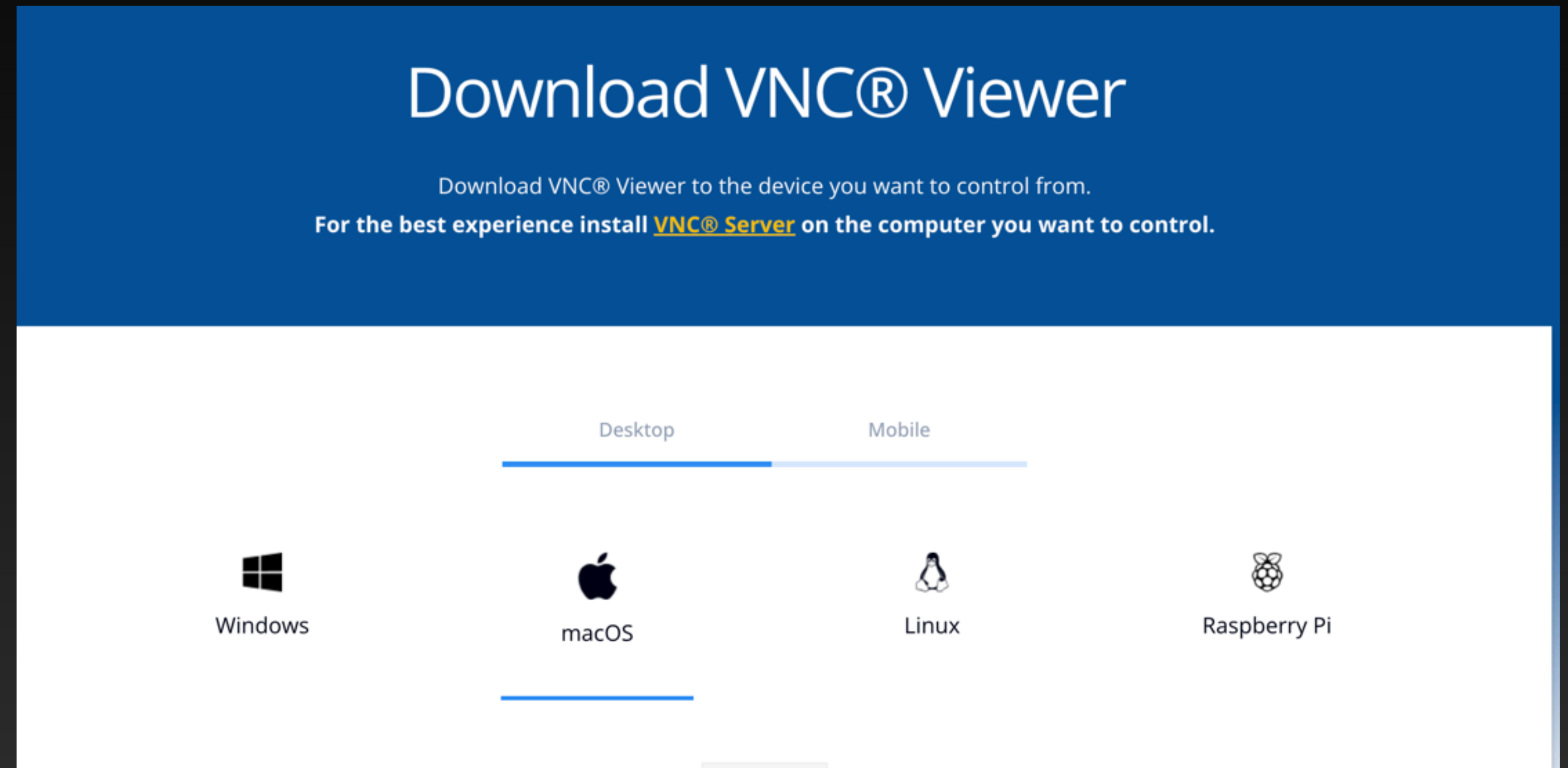- Enter your username and password
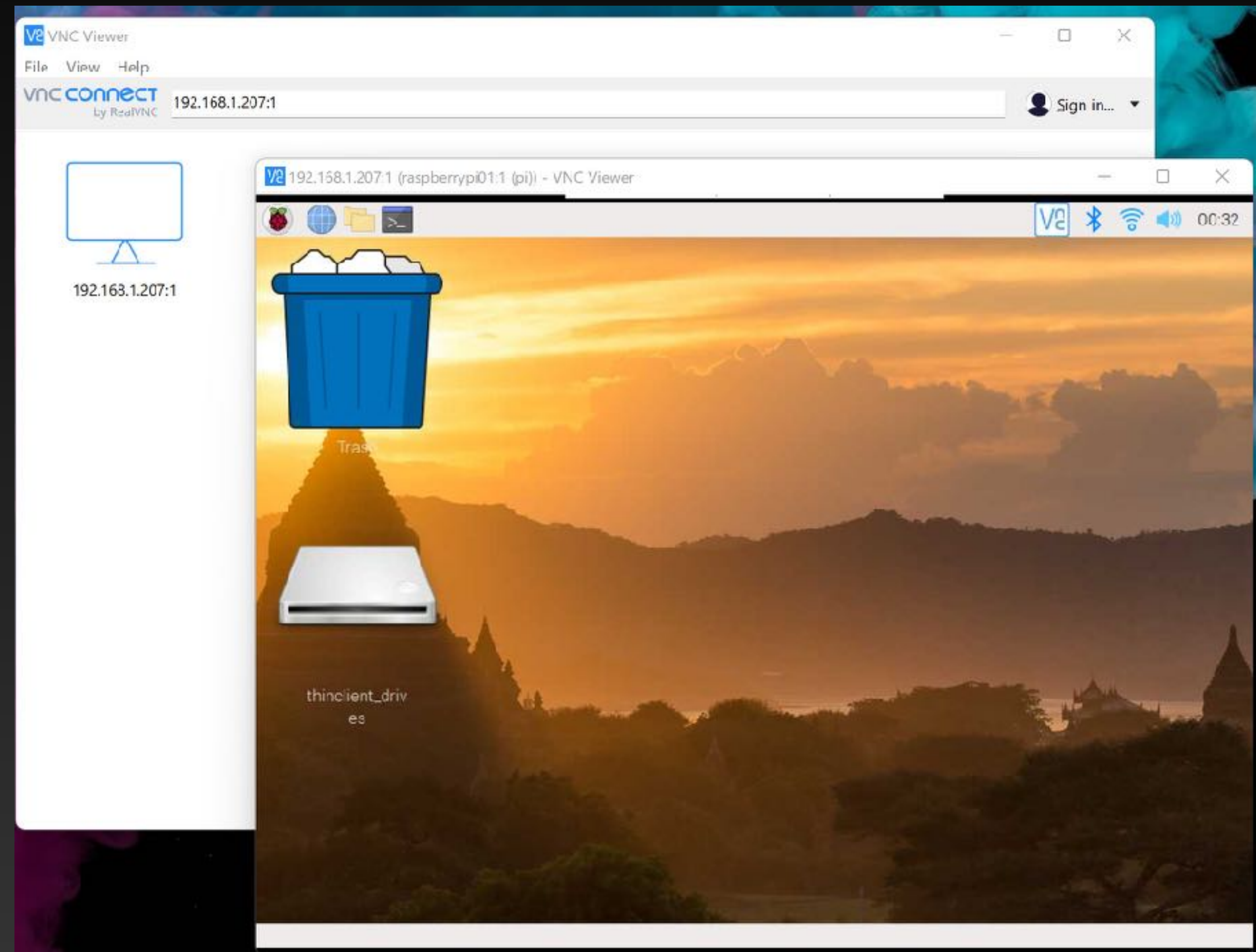
# Sending Temperature and Humidity
# To your android device

Description: In this project, a temperature and humidity sensor module is connected to your Raspberry Pi. The Raspberry Pi sends the ambient temperature and humidity measurements every 10 seconds to the Android mobile phone where they are displayed on the screen.

# Sending Temperature and Humidity
# To your android device

Hygrothermograph is an important tool in our lives to give us data on the temperature and humidity in our environment. In this project, we will use the RPi to read Temperature and Humidity data of the DHT11 Module.



Component List

| Raspberry Pi (with 40 GPIO) x1<br>GPIO Expansion Board & Ribbon Cable x1<br>Breadboard x1 | DHT11 x1 | Resistor 10kΩ x1 |
|---|---|---|
| Jumper Wire x4 | | |

# Sending Temperature and Humidity
## To your android device

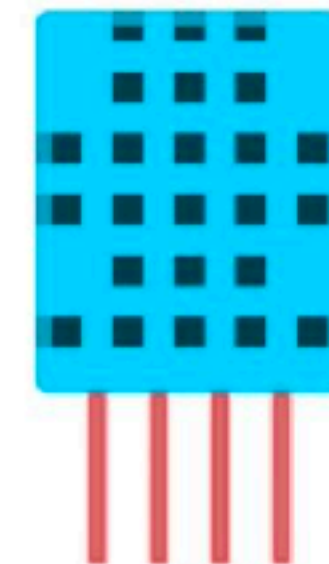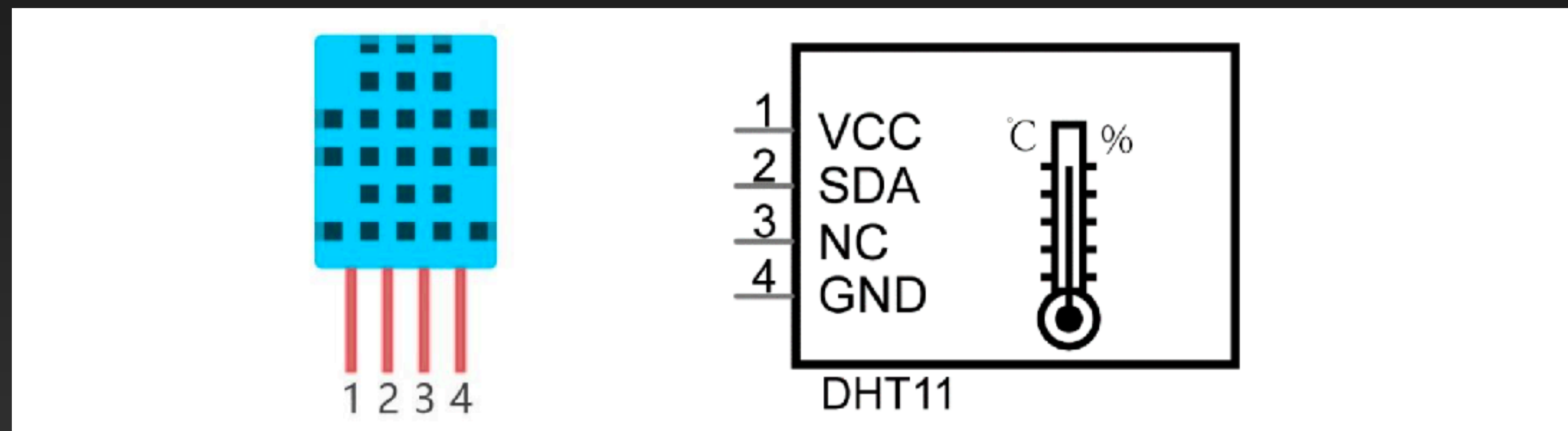The Temperature & Humidity Sensor DHT11 is a compound temperature & humidity sensor, and the output digital signal has been calibrated by its manufacturer.

# Sending Temperature and Humidity
## To your android device

After being powered up, it will initialize in 1 second. Its operating voltage is within the range of 3.3V-5.5V. The SDA pin is a data pin, which is used to communicate with other devices. The NC pin (Not Connected Pin) are a type of pin found on various integrated circuit packages. Those pins have no functional purpose to the outside circuit (but may have an unknown functionality during manufacture and test). Those pins **should not be connected** to any of the circuit connections.
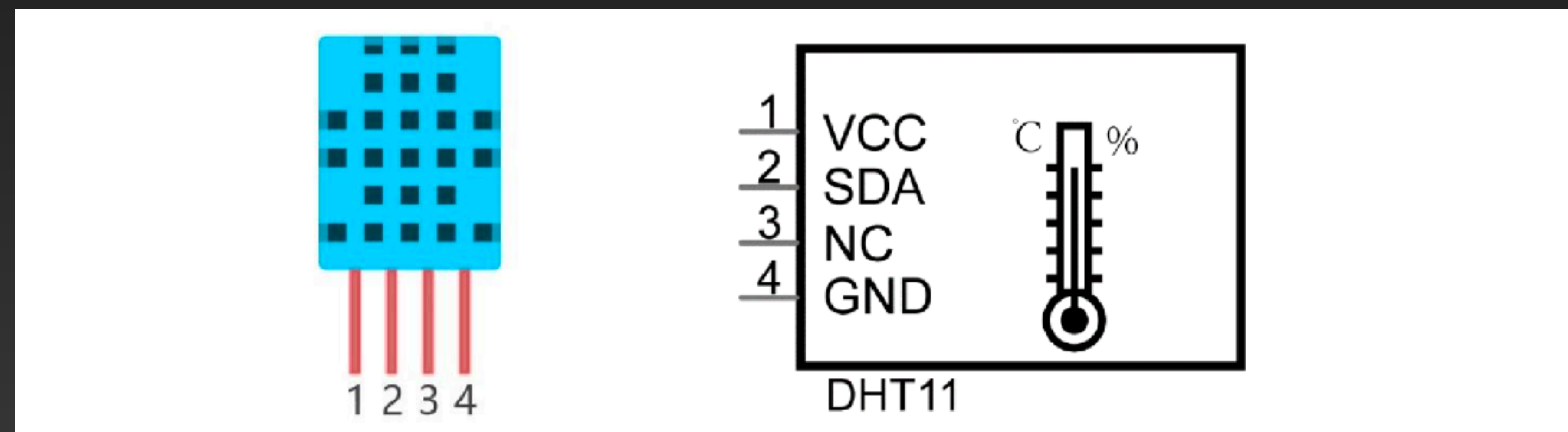
# Sending Temperature and Humidity
# To your android device

Schematic diagram
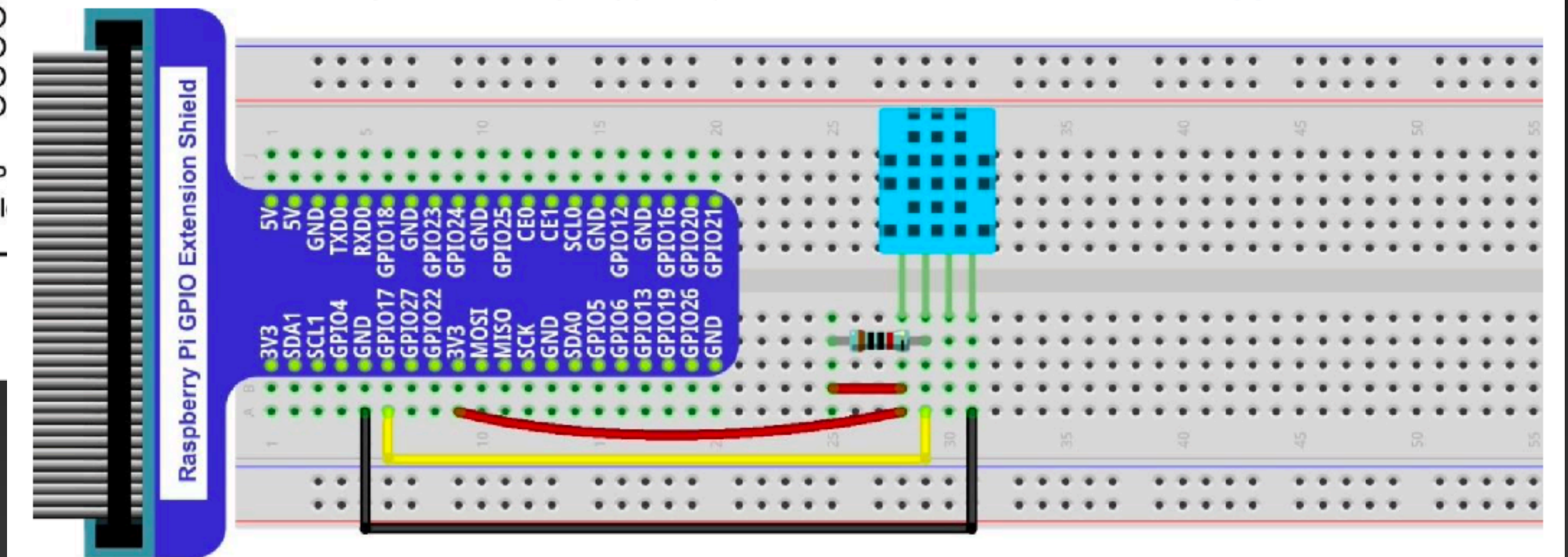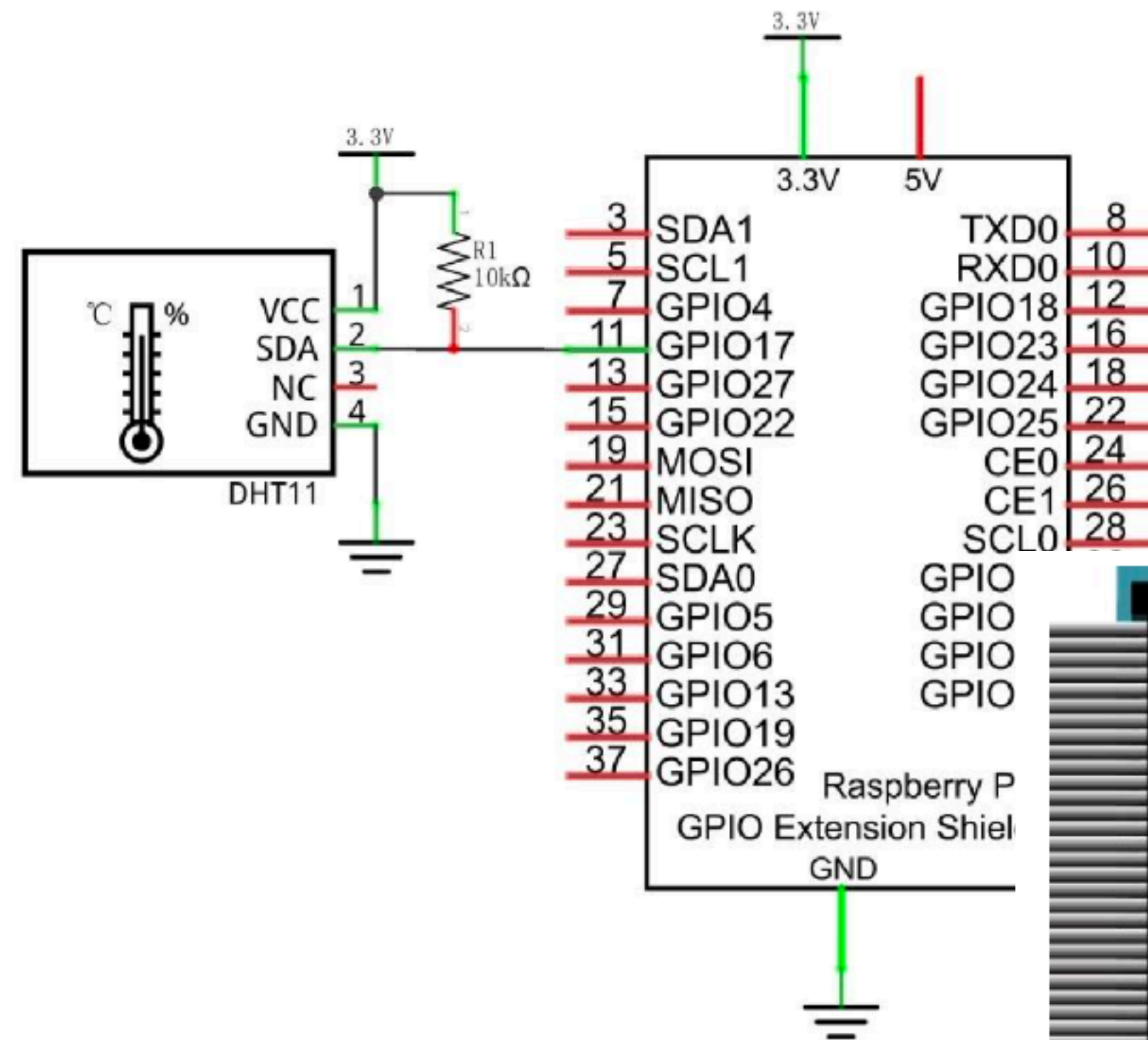
# Sending Temperature and Humidity
# To your android device

Build your MIT App

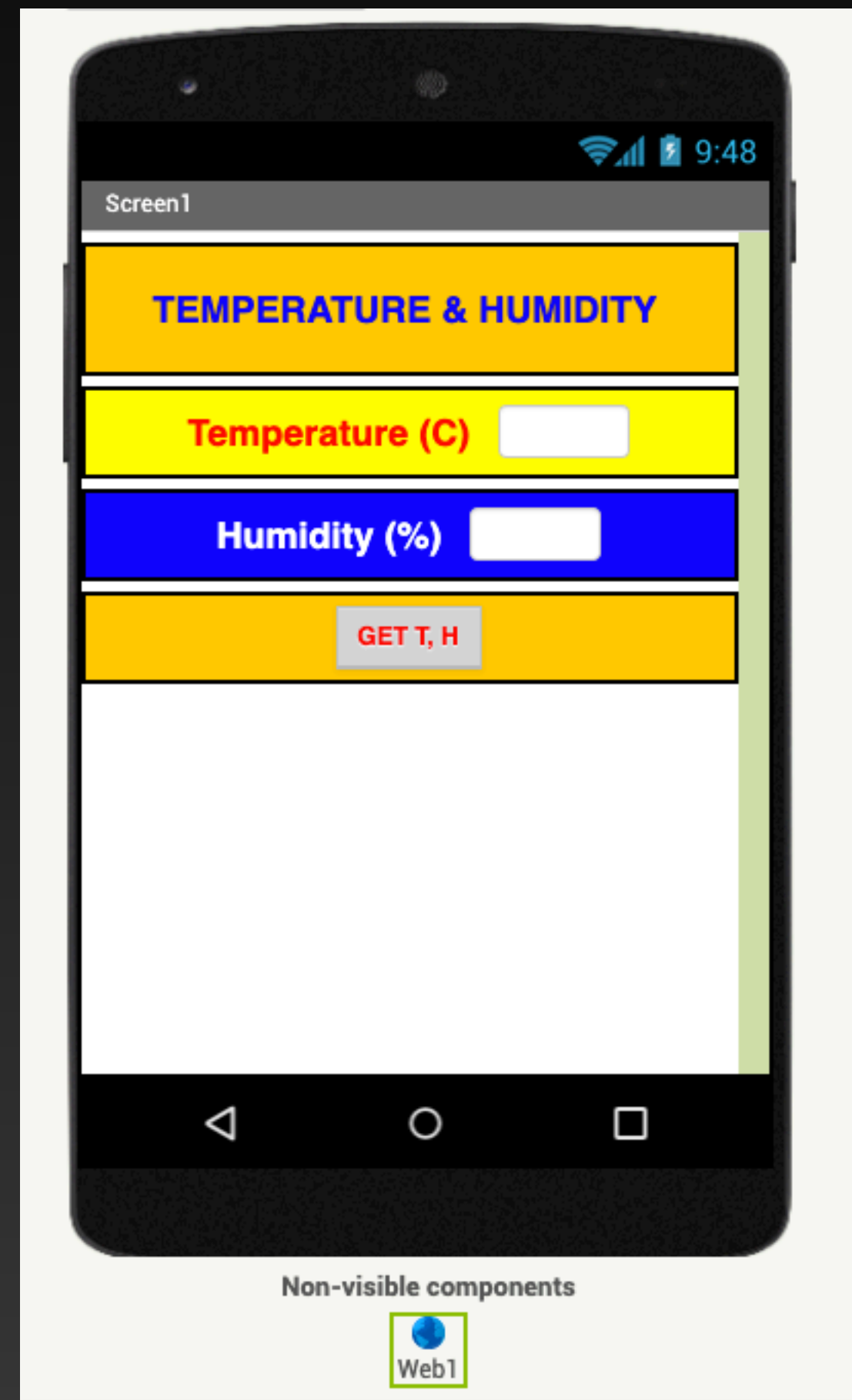# Sending Temperature and Humidity
# To your android device

Prepare the environment:

sudo pip3 install adafruit-circuitpython-dht

There is new updates to the library:

https://github.com/adafruit/Adafruit_CircuitPython_DHT

# Sending Temperature and Humidity
## To your android device

Write the pythons
control program

```python
import time
from flask import Flask, render_template
import RPi.GPIO as GPIO
import adafruit_dht
from board import *

# GPIO17
SENSOR_PIN = D17

app = Flask(__name__)

@app.route('/', methods=['GET','POST'])
def get_data():

    dht11 = adafruit_dht.DHT11(SENSOR_PIN, use_pulseio=False)
    temp = dht11.temperature
    hum = dht11.humidity
    tempint = int(temp)
    humint = int(hum)
    if tempint < 10:
        datat = "0" + str(tempint)
    else:
        datat = str(tempint)
    datath = datat + "," + str(humint)
    return(datath)

if __name__ == '__main__':
    app.run(debug=True, port=80, host='0.0.0.0',use_reloader=False)
```

# Homework

Finish class project to setup Temperature and Humidity sensor, and post questions you have encounter