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## Lab 1: Setting up your Raspberry Pi (RPi)

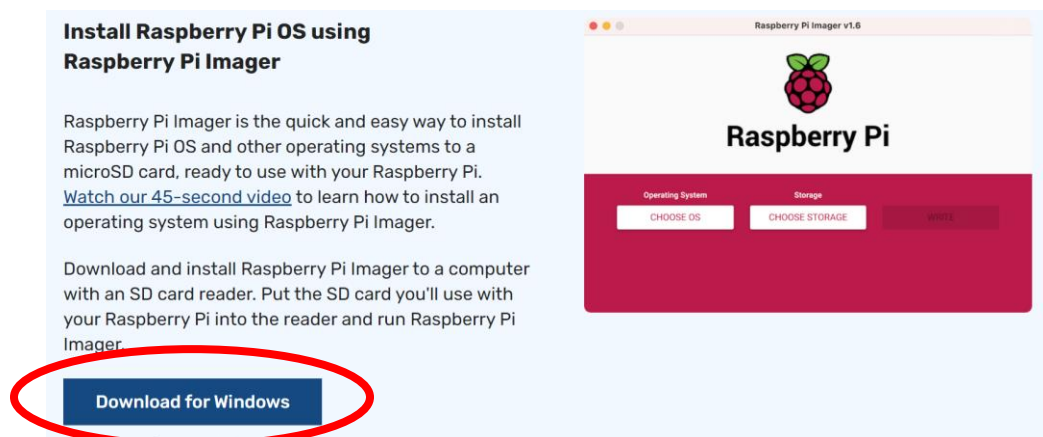
### 1. Unbox and Assembly

- a. The following video shows you how to unbox and assembly your Raspberry Pi 4 (you can start at minute 4):

<https://www.youtube.com/watch?v=ELznPFK1JJE>

### 2. Download Raspberry Imager (v1.8.5)

- a. Go to the <https://www.raspberrypi.com/software/> website and navigate to **Install Raspberry Pi OS using Raspberry Pi Imager** then click on **Download for Windows**



- b. Once downloaded, install the RPi Imager as per the default settings.

### 3. Configure the OS Settings and write the SD Card

- a. Introduce the SD card on the corresponding laptop slot
- b. Run the Imager, once open select the following options:
  - I. Raspberry Pi Device: **Raspberry Pi 4**
  - II. Operating System: **Raspberry Pi OS (64 bits)**
  - III. Storage: Your SD Card location
- c. Click on NEXT
- d. Click on the EDIT SETTINGS button
- e. Now, configure the options on the GENERAL tab:

OS Customisation

GENERAL SERVICES OPTIONS

☒ Set hostname: gastudillo.local

☒ Set username and password

Username: gastudillo

Password: ●●●●●●●●●●●●●●●●

☒ Configure wireless LAN

SSID: CSTIOT

Password: winter2024

☒ Show password ☐ Hidden SSID

Wireless LAN country: CA

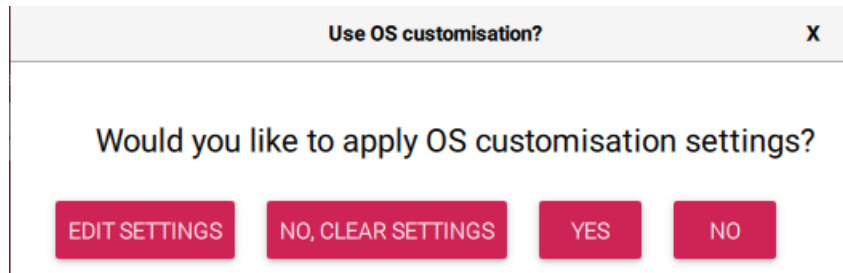
☒ Set locale settings

Time zone: America/New\_York

Keyboard layout: us

SAVE

- Check Set hostname and set it as: **YOURNAME.local (Use your First/Last Name)**
  - Check on Set username and password and write them both
  - Check Configure wireless LAN with the following values:
    - i. SSID CSTIOT
    - ii. Password: winter2024
  - Select Wireless country: CA
  - Check set locale settings and set it with appropriate values
- f. Now, configure the options on the SERVICES tab:
- a. Check enable SSH
  - b. Check Use password authentication
- g. Click on the SAVE button
- h. Click on YES to the question: Would you like to apply OS customisation

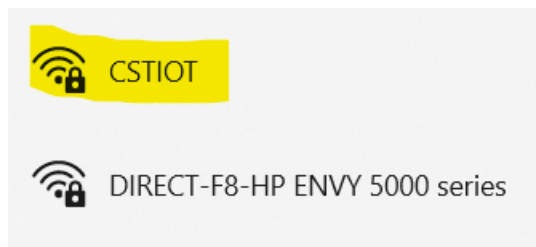


- i. Click YES again and wait until the SD card is written and verified
- j. Insert the SD card on the Raspberry PI and power it on
- k. Wait a few minutes until the OS loads and configures the RPi

#### 4. Connect your laptop to the CSTIOT network

Also connect your laptop to the wireless network CSTIOT with these credentials:

- a. SSID: CSTIOT
- b. Network security key: winter2024



- c. Test connectivity: In your laptop, open a terminal and ping YOURNAME.local

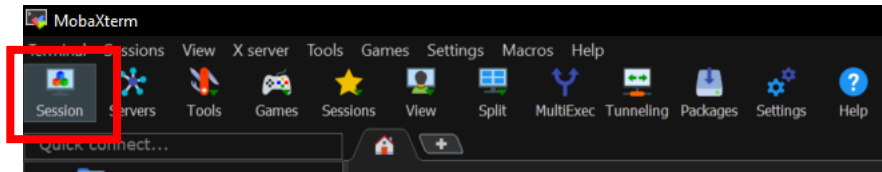
```
Pinging gastudillo.local [fe80::2e03:38ba:2d65:eef7%15] with 32 bytes of data:
Reply from fe80::2e03:38ba:2d65:eef7%15: time=4ms
Reply from fe80::2e03:38ba:2d65:eef7%15: time=2ms
Reply from fe80::2e03:38ba:2d65:eef7%15: time=2ms
Reply from fe80::2e03:38ba:2d65:eef7%15: time=3ms

Ping statistics for fe80::2e03:38ba:2d65:eef7%15:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 4ms, Average = 2ms
```

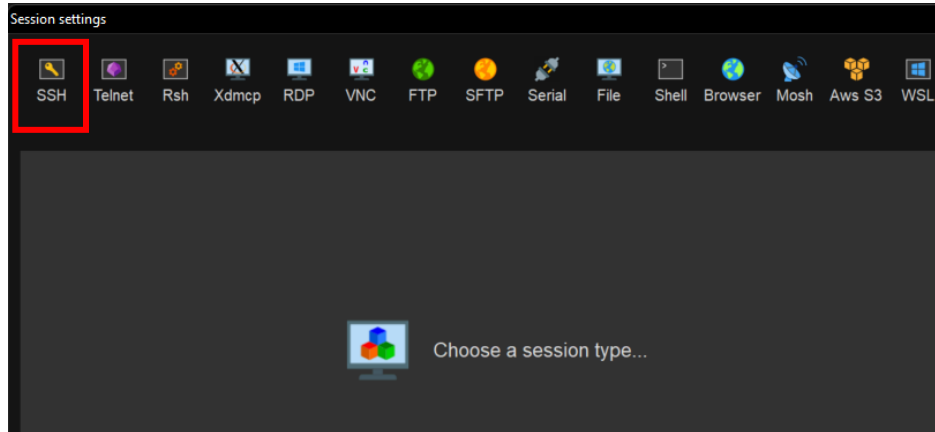
- d. If your RPi responds to the ping move to the next step otherwise ask for help

#### 5. Access RPi remotely with SSH

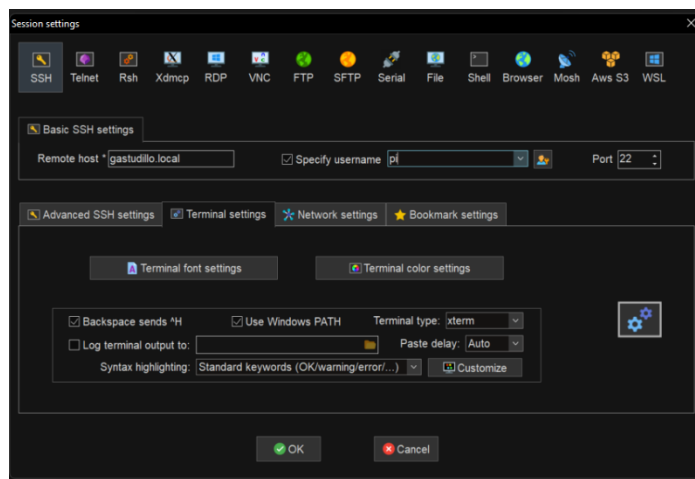
- a. Download MobXTerm for your operating system from here:  
<https://mobaxterm.mobatek.net/download-home-edition.html>
- b. Install it as per the default settings and run it for the first time
- c. To open a new session, click on Session:



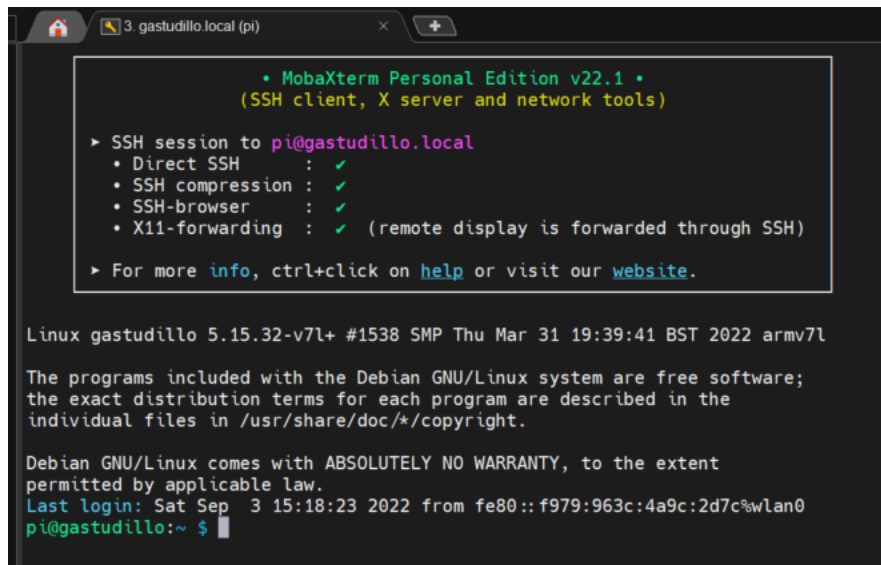
d. Choose SSH as the session type:



e. Fill remote host with your hostname (YOURNAME.local) and for the username set the username you created during the SD card writing (Ex: YOURNAME) then click on OK



- f. You will be asked for the RPi password and if you want to save it to avoid typing it on the future



```
• MobaXterm Personal Edition v22.1 •
(SSH client, X server and network tools)

> SSH session to pi@gastudillo.local
• Direct SSH : ✓
• SSH compression : ✓
• SSH-browser : ✓
• X11-forwarding : ✓ (remote display is forwarded through SSH)

> For more info, ctrl+click on help or visit our website.

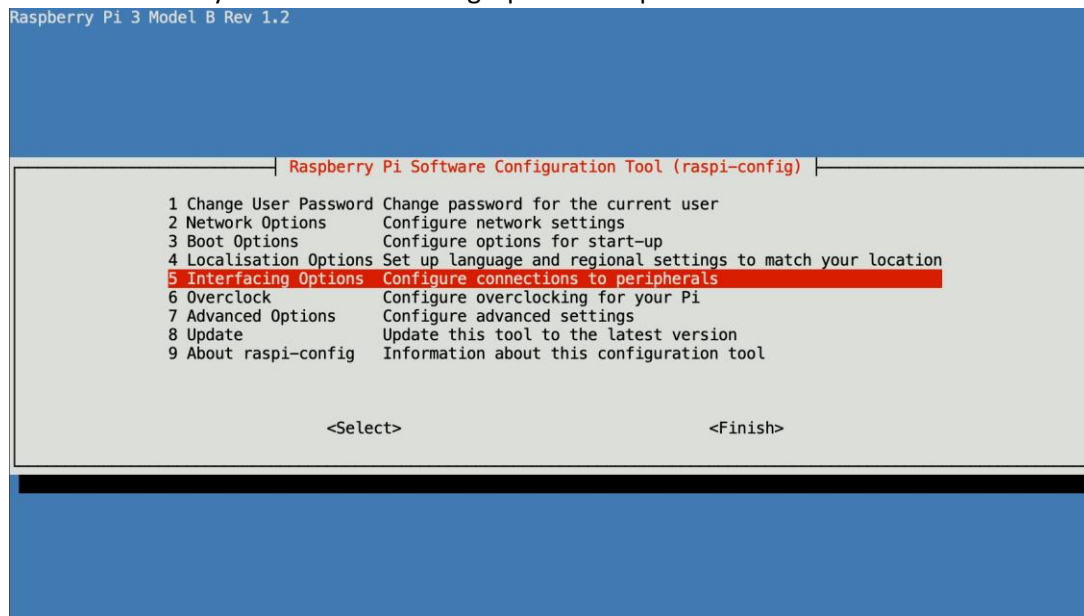
Linux gastudillo 5.15.32-v7l+ #1538 SMP Thu Mar 31 19:39:41 BST 2022 armv7l

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Sat Sep 3 15:18:23 2022 from fe80::f979:963c:4a9c:2d7c%wlan0
pi@gastudillo:~ $
```

## 6. Access RPi remotely with VNC

1. The first step is to enable VNC server on your device. The easiest way to do this is as follows:
  - a. Open a terminal on your Raspberry Pi (MobaXterm).
  - b. Enter the command `sudo raspi-config`
  - c. Use the arrow keys to select Interfacing Options and press Enter



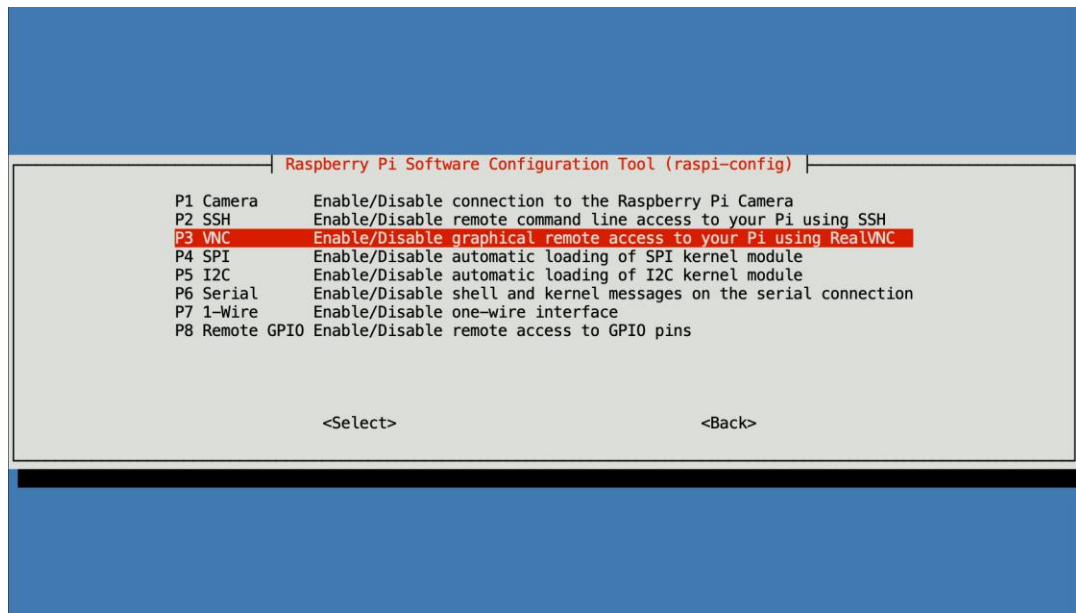
```
Raspberry Pi 3 Model B Rev 1.2

Raspberry Pi Software Configuration Tool (raspi-config)

1 Change User Password Change password for the current user
2 Network Options       Configure network settings
3 Boot Options          Configure options for start-up
4 Localisation Options  Set up language and regional settings to match your location
5 Interfacing Options   Configure connections to peripherals
6 Overclock             Configure overclocking for your Pi
7 Advanced Options      Configure advanced settings
8 Update                Update this tool to the latest version
9 About raspi-config    Information about this configuration tool

<Select> <Finish>
```

- d. Use the arrow keys to select VNC and press Enter

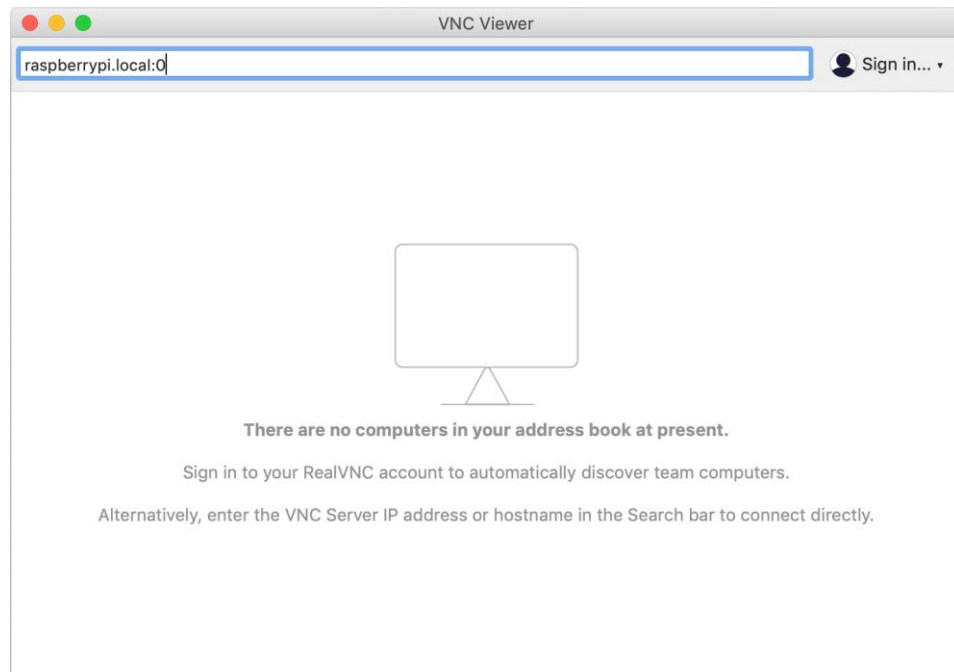


- e. You will be prompted to enable VNC Server. Select Yes and press Enter
- f. Use the arrow keys to select Ok and then Finish, to return to the terminal.

## 2. Installing a VNC Viewer

After you have installed a VNC Viewer, you should test that you can connect to your Raspberry Pi on your local network

- a. Open Real VNC Viewer
- b. Enter the address "raspberrypi.local", where "raspberrypi" is the **hostname of your device**, and press Enter.
- c.



- d. Enter the username and password for the raspberry pi login. For example, username "YOURNAME" and password "MYPASSWORD", and press OK
- e. The VNC session should start, and you should see your Raspberry Pi desktop

