**How to set up the Raspberry Pi**

Mac specific instructions in orange. PC specific in blue. Linux – please let us know if you need these.

These instructions assume you don’t have easy access to a monitor, USB keyboard and USB mouse. It is called a ‘headless’ set up.

**\*\* remember, google is your friend.** While we have tried to include helpful information based on our own experiences this will not be exhaustive so do google if you find a problem we have not included here. But be aware there is a whole load of information out there – not all useful.

**General information**

IF YOU ARE MAKING THE SOLO THEN SKIP STRAIGHT TO THE INSTRUCTIONS FOR THE SOLO. THE BELOW INSTRUCTIONS ARE FOR THOSE MAKING THE CAMERA TRAP.

While Raspberry Pi recommend NOOBS for beginners because the interface is easier, it can mean that you can change less so going straight to Raspbian is more flexible but both should be possible for our needs.

This document should help you boot the Raspberry Pi for the first time, change the default username and password, and connect to WiFi.

We recommend going for the USB connection to the computer to begin rather than doing the automatic WiFi connection (we found this was difficult to get working). Then set up WiFi from the commandline.

Programs you will need to download:

Etcher

SD card formatter

PuTTY

Notepad++

**Step 1: Format your micro-SD card**

For more info go to <https://projects.raspberrypi.org/en/projects/raspberry-pi-setting-up/3> or <https://www.raspberrypi.org/documentation/installation/sdxc_formatting.md>

We will need either a clean ready to go mirco-SD card OR one with NOOBS or Raspbian pre-installed.

If you have NOOBS pre-installed go to **Step 2A**. If you have Raspbian pre-installed go to **Step 3**.

Even a brand-new micro-SD card will need preparing before using with your Pi. To do this we need to **download a SD card formatting program** found here: <https://www.sdcard.org/downloads/formatter_4/index.html> .

Now you can open the SD card formatter and select your micro-SD card. You will need to note which drive the micro-SD card is plugged into so you can specify this. You will only be given one option. Select ‘Quick format’ and run.

You will need to ensure that the micro-SD card is in FAT32 format **not** exFAT, as we need partitions. You can check this by looking at information on the micro-SD card. If not already as FAT32 format, will need to **download** <http://www.ridgecrop.demon.co.uk/guiformat.htm> which gives a single file and needs no installation. Can use built-in Desk Utility application.

Once you have a correctly formatted micro-SD card you can **download NOOBS** from the raspberry Pi site <https://www.raspberrypi.org/downloads/>. Download the zip file and open. Copy all of the files inside the folder and drag onto your micro-SD card. Then go to **Step 2A.**

If you want to go straight to Raspbian you will need to download Etcher which allows you to write the image to the card. <https://www.balena.io/etcher/>

**Step 2: Install the operating system (OS)**

**A. From NOOBS**

If we are installing headless (no screen) from NOOBS there are a few edits we need to make to the files on the SD card before booting up our Pi.

First we need to go to the \os folder and delete all OSes **except Raspbian**.

Next we need to go into the Raspbian folder and see if there is a file called flavours.json. If so we should check there is only one flavour in there and delete those we don’t need.

We then go back into the main folder of the SD card (root directory) and open the recovery.cmdline file. Here we add silentinstall to the arguments list, literally just copy and paste it to the end of the file with a space in between e.g.

Runinstaller quiet vt.cur\_default=1 coherent\_pool=6M elevator=deadline silentinstall

**Now go to Step 2B.**

**B. From Raspbian image**

If we have Raspbian installed already, we can skip the steps in 2A and begin with connections (WiFi, USB, and ssh).

To flash the Raspian image, run Etcher, selecting the zipped Raspian folder to flash to the SD card. Then make the below changes in the “boot” partition of the SD card

***SSH***

We need to enable SSH so we can access the Pi remotely from a laptop. It is switched off by default.

To do this we create a plain text document called ssh and put it into our root drive. **Make sure to save this without any extension i.e. without .txt.** Make sure you make this document in Notepad++

***USB - Recommended***

We need to do some tweaking so we can connect to the laptop via USB.

Open a file in boot called config.txt and add the following to a new line at the bottom of the file:

dtoverlay=dwc2

Save and close. Then open cmdline.txt and find the bit where the parameter rootwait is written. Add one space then insert the following:

modules-load=dwc2,g\_ether

Save and close.

**EJECT THE MICRO-SD CARD – NEVER JUST PULL IT OUT.**

***Optional! WiFi***

***pre-boot but can also be done from Raspberry Pi command line (see step 5)***

We can also try to get our Pi to connect to the WiFi on booting. We do this by creating a file called wpa\_supplicant.conf and adding it to the root directory. This is created as a text file in text edit, or in Notepad++. If using Notepad++ make sure to set as UNIX/OSX Format under Edit/EOL Conversion. In the text file type (obviously replace ssid and psk to your own WiFi details):

ctrl\_interface=DIR=/var/run/wpa\_supplicant GROUP=netdev

update\_config=1

country=GB

network={

ssid="Your network name/SSID"

psk="Your WPA/WPA2 security key"

key\_mgmt=WPA-PSK

}

**Once saved as a text file remove the .txt so the extension is .conf.** In Notepad++ save as “.” all files as type. Make sure to set as UNIX/OSC format again

**Step 3: Booting + SSH**

Now it is time to try and use our Raspberry Pi. So, take your carefully removed and properly ejected micro-SD card and place into the micro-SD card slot of your Raspberry Pi.

Add power input to the PWR micro-USB input and you should see a green light come on.

If you are using NOOBS give the Raspberry Pi a good half hour or even a couple of hours to boot as this can take a while. For Raspbian, it should only take a couple of minutes.

Now you can try and connect via USB. Plug in the USB (or micro-USB) end to the Raspberry Pi – USB socket - and the other to your laptop.

Open the command line Terminal in Mac and type in

ssh pi@raspberrypi.local

For a Windows machine you will need to download an SSH software such as Putty <https://www.putty.org/>

Run PuTTY, typing [pi@raspberrypi.local](mailto:pi@raspberrypi.local) as the host name. This should connect to your raspberry pi.

Notice these are the default settings. The default password is raspberry. It is highly recommended you change these straight away if not before (some tutorials can be found online).

You are now on your Pi!

**Step 4A: Change password**

Type in the command line

sudo raspi-config

Choose option 1 – change password and change it to something memorable. Make sure to save it somewhere.

**Step 4B: Change name**

Type in the command line of the raspberry pi:

sudo raspi-config

Select option 2 – network options

Select option N1 – change host name

When asked to reboot select “Yes”

Re enter your pi, but this time using

Open the command line Terminal in Mac and type in

ssh pi@yourpiname.local

or

Run PuTTY, typing [pi@yourpiname.local](mailto:pi@yourpiname.local) as the host name

using the new password you set as well.

**Step 5: Set up WiFi connection after boot**

Type into the command line

sudo nano /etc/wpa\_supplicant/wpa\_supplicant.conf

Then we provide the WiFi details we need in a similar way to Step 2B but here we just add the following to a new line at the bottom of the file displayed:

network={

ssid=”MyNetworkName”

psk=”Password”

}

Again, be sure to replace “MyNetworkName” and “Password” with your WiFi details.

Press **CTRL X**, type **y**, then press **ENTER**.

Then reboot the Pi by typing.

sudo reboot

**Step 6: Shut down the Pi correctly and get excited for the workshop**

Unless you have other projects to work on now you can shut down the Pi and get ready for the workshop.

It is important to always shut down the Pi correctly rather than just pull out the plug.

Type the following in to the commandline and wait for the green LED to turn off before unplugging:

sudo halt or

sudo shutdown -h now

**If you are constructing the audio detector:**

Beforehand you only need to flash the SOLO operating system to your SD card. We will assemble in the workshop.

Follow the instructions here: <https://solo-system.github.io/documentation/flashing.html>

Please note the part where they advise caution!

There is also a very good video tutorial.

**Common problems (stuff we encountered) + extras**

**I can’t find my Raspberry Pi with ssh**

**My Raspberry Pi doesn’t seem to be turning on**

**I can’t connect to my WiFi**

**I want to see my Raspberry Pi not use commandline**

**Video for windows**

<https://www.youtube.com/watch?v=LlCr09B2HZI>