**Word Count: 1167**

Section 2, Setting up the Software

In this section, we will cover the following topics

* Installing and Setting up the OS
* Remote Communication with the Raspberry Pi 4
* Overview of the Buster OS
* How to backup & restore in the Raspberry Pi 4
* Raspberry Pi Troubleshooting

Video, Installing and Setting up the OS

In this video, we will first prepare the microSD card for the first boot; then, we will learn how to install the Raspbian Buster, and then we will configure and update the Raspbian Buster. Finally, we will learn about the headless installation method.

In the last video, we have learned the hardware setup of Raspberry Pi 4 B. Before you can work with the Raspberry Pi, you will need to set up its software. If you go to the raspberry pi official operating system downloads page you can see two options, One option is named NOOBS, and the other option is named Raspbian. NOOBS, also known as New Out Of The Box Software, is designed to make the OS installation easy as possible, especially for beginners. It allows you to choose from different operating systems with just a few clicks of the mouse.

First, let's download the NOOBS installer from the site. When you click this icon, you will be

Redirected to a page with 2 options of NOOBS to download. Please download the “offline and network install” variant of NOOBS. The simplest option is to download the zip archive of the files. Make sure to pay attention to where you save the archive so that you can find it again quickly.

Now we will prepare the micro SD card for the OS installation. We need to format the micro SD Card first. Please download and install the SD Card Formatter Software to your PC from the link provided in the resources. They have both Mac and Windows versions. For linux users, please install an application called GParted for formatting the SD Card. Insert your micro SD card into the computer or laptop’s SD card slot. You might have to use an adapter to interface the micro SD card to SD Card slot. Open the SD Card Formatter application, then select your micro SD card under the select card option. Anything that’s stored on the micro SD card will be overwritten during formatting. So don’t forget to backup if you have any files on the micro SD Card. Leaving other options as default, click format.

The next step is to extract the NOOBS zip archive file downloaded earlier to a folder. After that, copy and paste all the contents of the NOOBS folder to the SD Card. Now your micro SD card is ready for first boot up. First, make sure that you have connected a mouse, keyboard, and a monitor to the Raspberry Pi 4 B., For now, we will use only one display port of the Raspberry Pi to connect to the monitor. If your monitor has an inbuilt speaker, the display port also will output audio signals. You can connect a speaker to the 3.5 mm audio jack on the Pi, if your monitor does not have an inbuilt speaker. Now insert the micro SD Card into the Raspberry Pi 4 and connect the power cable. You will be first greeted with a Raspberry Pi logo after the first splash screen. This is the NOOBS menu, a system that lets you choose the operating system to run on your Pi. Two operating systems are included with NOOBS as standard. They are Raspbian and LibreELEC. The Raspbian is a version of Debian linux custom made for the Raspberry Pi. The LibreELEC is a version of Kodi Entertainment Center Software. If we connect the Pi to a network using the ‘WiFi networks w” option from the top bar - you can also download and install other operating systems. We will install the Raspbian version of the operating system.

Check the "Raspbian Full Option" then just hit “Install” and sit back. Let the installation finish. It will take around 10 to 30 minutes, depending on the speed of your MicroSD Card. The installation mustn't be interrupted as it might cause data corruption. Do not remove the microSD card or unplug the power cable while the installation is in progress. If something does happen to interrupt the installation, like maybe a power outage, don’t panic. Unplug the Pi from its power supply, then hold down the SHIFT key on the keyboard as you connect the Raspberry Pi backup to its power supply to bring NOOBS menu back up again. This is known as recovery mode and is a great way to restore a Pi whose software has been corrupted. Once the installation is finished, you will see a pop up that shows that the installation was successful. Click OK, and the Pi will restart into its freshly installed operating system. On bootup, you will see a lot of text scrolling up the screen. These are known as boot messages, and the first time you boot into Raspbian, it will be slow, but from the second boot onwards, it will be much quicker.

From now on, your Pi will boot directly to that operating system. Easy, right? And if you’re not happy with the operating system you pick, you’re not stuck. Just hold down the SHIFT key while booting up, and you’ll be back in the NOOBS menu ready to try out a different option.

We are now seeing the Raspbian Buster Operating System’s Desktop. First, we have to set up the Operating system before we start to work with it. Now click next and now set your country's language and time zone and press next. Your default account name is Pi, and the password is raspberry. Throughout the course, we will use the default credentials. Thus you don’t need to change the password. Next comes the WiFi Connection configuration. Please select a reliable WiFi access point in your home or office and enter the credentials. This is a very important step, as we need to update the software. After making sure that your Pi is connected to the WiFi, by clicking the Network icon on the top right corner, click next to update the software

Downloading and installing of updates may take from 5 to 40 minutes, depending on the speed of your WiFi and the size of the new update. You will see a “system is up to date” pop up once its finished. Click ok, and the setup is complete. Now Click restart and wait for it to boot again to the Raspbian Buster Desktop. You can see the WiFi icon blinking on the top right corner. It means that the Pi is trying to connect to the WiFi save during configuration. Once connected, it will stop blinking. You have now successfully installed and set up the Raspberry Buster OS on the Raspberry Pi 4 Model B.

There are many other methods to install and configure the Raspbian Buster in the Pi 4. One other useful method we would like to touch up on is a method called headless installation. This is really useful to people who don’t have access to a keyboard, a mouse, and a display. Basically, in this installation procedure, we flash micro SD card with the Raspbian Buster image directly rather than using the NOOBS installer. But you might ask, how will I access or see the Raspbian Buster Desktop, if I don’t have a display? The next lecture will answer this question. Please download the step by step procedure from the resources section to do a headless installation.

Summary

In this video, we have covered the following topics

* Preparing the MicroSD Card for the first boot
* Installing Rapsbian Buster OS
* Configuring and Updating the Raspbian Buster OS
* Headless installation

In the next video, we will look at how to establish remote communication with Raspberry Pi.