

Creating the microSD card with Raspbian operating system (currently Stretch)

If you purchased your Raspberry Pi with the microSD card with Raspbian operating system already installed or received it with the robotics kit, you don't need to perform the steps outlined in these pages. Skip everything. Insert the microSD card into the Raspberry Pi slot and start programming.

The SD card that comes with the robotics kit includes a few sample files for lighting up an LED and running a servo motor using Python and Scratch. These folders are under /home/pi directory. The SD card uses the following configuration:

Country: US

Language: American English

Keyboard: US Keyboard

Time zone: Los Angeles

Default user: pi

Default password: raspberry

You can always make changes to these default settings from Raspberry Pi configuration menu options.

Follow this procedure to create your own card. You may need to do this if you your SD card got corrupt, or didn't get the card when you purchased Raspberry Pi.

Please note you will need admin rights to perform the installations.

Hardware

Raspberry Pi 3 Model B or B+

microSD Card with adapter

Desktop/Laptop computer (PC or Mac)

Software – Download and Install to your computer

Raspbian Stretch

<https://www.raspberrypi.org/downloads/raspbian/>

balenaEtcher

<https://www.balena.io/etcher/>

VNC Viewer

<https://www.realvnc.com/en/connect/download/viewer/>

Notepad++

<https://notepad-plus-plus.org/download/v7.5.4.html>

What is Raspbian?

Raspbian is the official operating system from the Raspberry Pi foundation. Raspbian is based on Debian. Debian is a free operating system that includes the basic set of programs and utilities. Debian has a reputation within the Linux community for being very high-quality, stable, and scalable. This makes Debian an ideal operating system for the Raspberry Pi. Debian is a distribution of Linux.

You can also install Raspbian using NOOBS. NOOBS gives options to choose various operating systems. We will not use this NOOBS.

We will install the most recent version of Raspbian Stretch. Instructions are given in the RaspberryPi.org website. Below is the step-by-step process to install Raspbian Stretch:

STEP 1 – Download Raspbian

Download **Raspbian Stretch with desktop and recommended software**. Download the zip file.

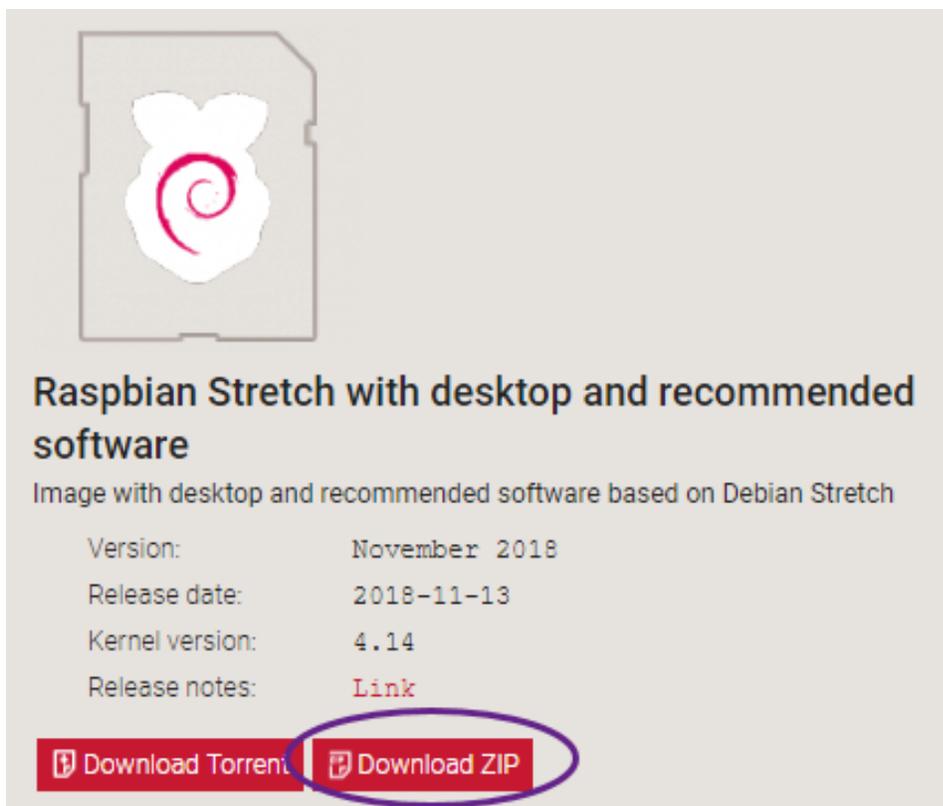
<https://www.raspberrypi.org/downloads/raspbian/>

The one that we downloaded is dated:

November 2018

Kernel Version: 4.14

Release date: 2018-11-13



STEP 2 – Create Raspbian Image

Download balena Etcher utility and install.

<https://www.balena.io/etcher/>

Insert your SD card into the computer.

Run the Etcher from the desktop. You will need admin rights to do this. Please note, **you don't need to unzip the file. Leave the zip file as it is. Etcher will use the zip file.**

Select the **zip** file, select correct drive for the SD card, and select Flash. You have to enter admin password to proceed. Be patient as this process will take some time. When the writing process is completed, you will get a message. Eject the SD card.

STEP 3 - Configure HDMI monitor

Download notepad++

<https://notepad-plus-plus.org/download/v7.5.4.html>

To configure you 5" HDMI monitor, insert the SD card into your PC

Open config.txt file using notepad++

Scroll all the down to the end and type the following

```
# Added by Pi Cruiser – This is a comment line
```

```
max_usb_current=1
```

```
hdmi_group=2
```

```
hdmi_mode=1
```

```
hdmi_mode=87
```

```
hdmi_cvt 800 480 60 6 0 0 0
```

Save the file.

Exit

Eject SD card

Installing Driver for LCD Touch Screen

Connect Raspberry Pi to WIFI

Open a terminal window and execute the following command.

```
git clone https://github.com/goodtft/LCD-show.git
```

```
chmod -R 755 LCD-show
```

```
cd LCD-show/
```

```
sudo ./LCD5-show
```

Calibrate the touch screen.

Execute the following command.

```
cd LCD-show
```

```
sudo dpkg -i -B xinput-calibrator_0.7.5-1_armhf.deb
```

```
DISPLAY=:0.0 xinput_calibrator
```

During this step, you will be asked to select points from your screen using your stylus. Select the points and the screen is calibrated. To store this setting permanently copy your touch screen settings displayed on your terminal window and copy.

Open the file, 99-calibration.conf as a superuser using the following command

```
Sudo nano /etc/X11/xorg.conf.d/99-calibration.conf
```

Paste the copied information and replace the current settings. Save the file and exit.

Viewing Raspberry Pi desktop from another computer

Get your Raspberry Pi up and running

- **Download VNC** Connect on your computer where you want to access Raspberry Pi from, and install <https://www.realvnc.com/en/connect/download/viewer/>. Please note that the Raspberry Pi comes with VNC viewer preinstalled. You only need to download VNC viewer onto your computer from where you want to control Raspberry Pi.
- **Determine the IP Address.** To do this, open a terminal window and type the command, `ifconfig`. Read the output. Next to the `wlan0` entry you will see `inet addr`. It will read something like `192.168.1.17` which is the IP address of the Raspberry Pi. Write this number down.
- **Enable VNC and SSH:** From the Raspberry Pi configuration menu-->Interfaces option, select the SSH and VNC option. At this point, you can also enable camera as we will be using the camera later.
- **Run VNC** from your computer. Add a new connection and enter the IP address you obtained in the previous step. You will be prompted for a password. This is the password that you might have changed at the beginning when you started Raspberry Pi. If you didn't change the password, it is "raspberrypi." That's it. You will see the Raspberry Pi desktop screen on your computer. This will work only if your Raspberry Pi is connected to the Wi-Fi network of the computer.

