



# Adafruit's Raspberry Pi Lesson 1. Preparing an SD Card for your Raspberry Pi

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## Overview

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When you buy a Raspberry Pi, it may or may not be sold with an SD card. The SD card is important because this is where the Raspberry Pi keeps its operating system and is also where you will store your documents and programs.



Even if your Pi came with an SD card with the operating system on, it is a good idea to update it to the latest version, as improvements and bug fixes are going in all the time. Since putting the operating system onto an SD card wipes everything else off the card, it is worth considering using a USB flash drive for your documents, so that when you install a new version of the operating system, you don't have the complication of copying them off somewhere safe before reformatting the SD card.

If your Pi did not come with an SD card then the minimum size you should get is 4GB, but buy a bigger SD card if you think you will need the space.

This lesson shows you how to create an SD card for your Raspberry Pi.

## You Will Need

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To prepare an SD card for your computer, you will need:

A 'regular' computer with a built-in SD card reader, or an add-on USB SD card reader. The instructions here are for Windows and Mac. [You can pick up a tiny microSD card reader/writer that is nice and fast and works with all USB-ports at the Adafruit shop \(http://adafru.it/939\)](http://adafru.it/939)



An SD card at least 4GB in capacity. [You can pick one up that is tested guaranteed to work with the Raspberry Pi at the Adafruit shop \(http://adafru.it/102\)](http://adafru.it/102)





## Downloading an Image

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The operating system that will be installed onto the SD card must be downloaded from the Internet. This will usually be a zip file that then extracts to a file of type .img an image file. Whatever image file you download, the actual installation process is the same.

## Choose your Operating System

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There are a bewildering number of operating systems that you can install on your Raspberry Pi, if you are a beginner, then do not consider anything except one of the Linux distributions, and if you are an advanced user, then you probably won't be reading this anyway.

## Choose your Distribution

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Having decided you want to install Linux, that is not the end of the story. You now have to decide which distribution or 'distro' of Linux you want to install. Being an Open Source operating system, anyone can take one of the existing distributions and add things to it or configure it in a certain way before packaging it up as another distribution option for anyone to use. This is how the most common Raspberry Pi distribution 'Raspbian' came into existence. The 'Debian' distribution was configured and kitted out with useful things like IDLE (a python-programming language development editor) and Scratch (a learn-to-program gaming system) to make it suitable for the Pi. Adafruit have then taken Raspbian and configured it to make it as easy as possible to use the GPIO connector to attach DIY electronics to the Pi.

All of the Adafruit tutorials (and nearly every other tutorial online) will work with either so we suggest picking one of the two:

- Raspbian – the Raspberry Pi recommended distribution, best for those that want the 'default standard' - nearly every Pi out there runs Raspbian <http://www.raspberrypi.org/downloads> (<http://adafru.it/aMY>)
- Occidentalis – Adafruit's version of Raspbian configured for hardware support. Best used by people who know they want to connect sensors, LEDs, buttons, servos, etc to their Pi <http://learn.adafruit.com/adafruit-raspberry-pi-educational-linux-distro/> (<http://adafru.it/aTc>)

In fact, if like me, you decide to keep your documents on a separate USB Flash drive, it is no bad thing to buy two SD cards and try both.

In appearance, there is very little to choose from between the two. When it comes to how it behaves, then 'Raspbian' is the more 'standard' distribution, but then Occidentalis is more electronics-hardware ready.

Having said that, both distributions are regularly updated and each will no doubt incorporate features found in the other.

Incidentally, the name Occidentalis come from the latin name for the raspberry (Rubus Occidentalis).

So, having made your choice, download the zip or img file and if it is in a zip file unzip it onto the Desktop.

## Making an SD Card – Using a Windows Vista / 7

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There is a very useful utility that we can use to write a SD card available for Windows 7 and Vista. It is not unfortunately available for Windows XP.

### Step 1.

Download Fedora ARM Installer from:

[http://fedoraproject.org/wiki/Fedora\\_ARM\\_Installer#Windows\\_Vista\\_.26\\_.7](http://fedoraproject.org/wiki/Fedora_ARM_Installer#Windows_Vista_.26_.7) (<http://adafru.it/aTd>)

### Step 2.

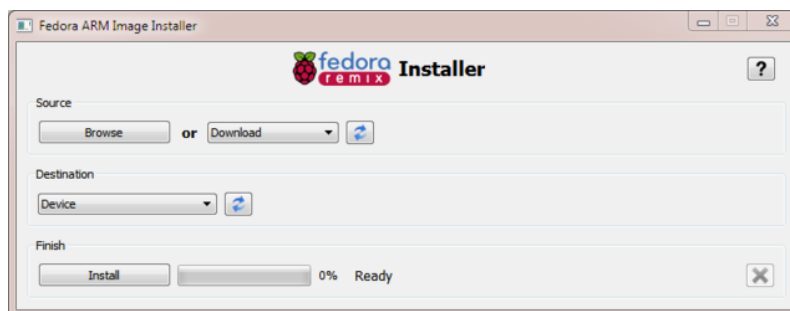
This will download a zip file that you must extract. The result will be a folder called 'faii-1.0.2-3-x32'. If you keep this outside of the Program Files area then you will be able to run it without changing its privileges. You can just leave it on your Desktop.

### Step 3.

Eject any external storage devices such as USB flash drives and backup hard disks. This makes it easier to identify the SD card. Then insert the SD card into the slot on your computer or into the reader.

### Step 4.

Right click to run the file **fedora-arm-installer.exe** as an administrator. This will launch the following application.

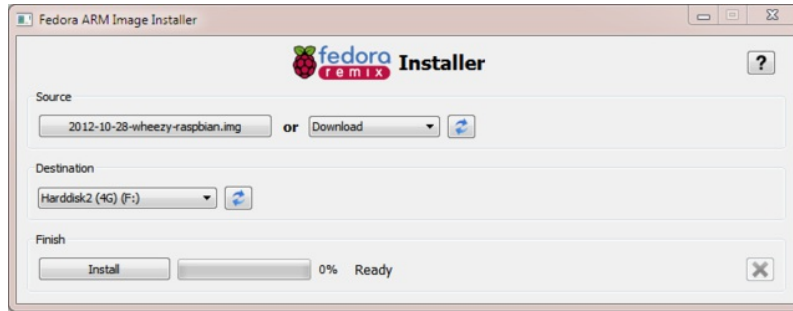


### Step 5.

Select the image file and device.

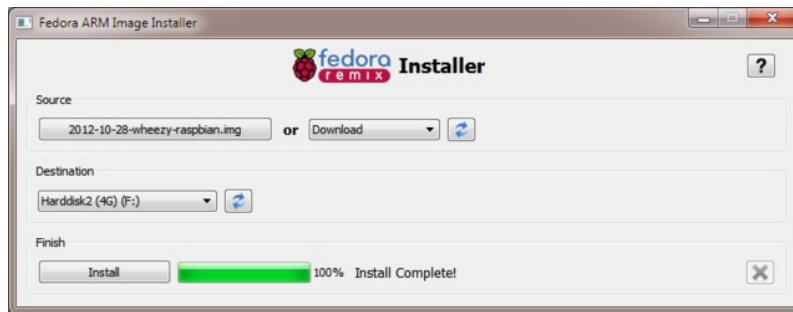
To do this, click the Browse button and navigate to the .img file for the distribution that you want to install and then select the device from the drop-down.





Check that you have the right device, as it will be reformatted, and then click Install.

It will take a few minutes to install, but once the SD card is ready, you will see the following.



That's all there is to it. Your SD card is ready for use in your Raspberry Pi.

## Making an SD Card – Using a Mac

Ray Vijoan has created a useful script that makes it really easy to make an SD card using a Mac. It is a shell script that takes all the necessary steps to create the SD card, including formatting it. You still have to run it from the command line.

### Step 1.

Download Raspberry-Pi-SD-Installer-OS-X from <https://github.com/RayViljoen/Raspberry-Pi-SD-Installer-OS-X> (<http://adafru.it/aTe>)

Look for the 'zip' button at the top and download it as a single zip file.

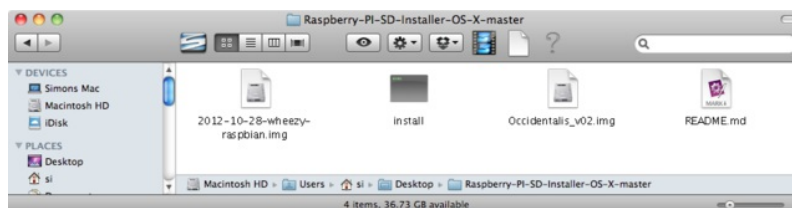
### Step 2.

Extract the zip file. It will expand into a folder called 'Raspberry-Pi-SD-Installer-OS-X-master'.

### Step 3.

Use Finder to move the img file that you downloaded earlier into the Raspberry-Pi-SD-Installer-OS-X-master folder.

You can see here that I have both the Occidentalis and Raspbian images in the folder. That is fine, you can have as many images as you like in the folder.



### Step4.

Open the Terminal app – you will find this in the Utilities folder of your Applications folder on your Mac.

Then type the command 'cd' followed by the path of your Raspberry-Pi-SD-Installer-OS-X-master folder.

```
Terminal — bash — 132x35
Simons-Mac:~ si$ cd /Users/si/Desktop/Raspberry-PI-SD-Installer-05-X-master
Simons-Mac:Raspberry-PI-SD-Installer-05-X-master si$
```

## Step 5.

Eject any external drives that you have connected to your computer. This just makes it easier to identify the correct drive that corresponds to your SD card.

Insert the SD card that you want to use. Note that all data on this card will be erased.

## Step 6.

Run the Pi Installer by typing the following command into the Terminal:

```
> sudo ./install Occidentalis_v02.img
```

'Occidentalis\_v02.img' is the name of the img file for the distribution that you want to install.

You will be prompted for your Mac password and then should see this:

```
Terminal — sudo — 132x35
Simons-Mac:~ si$ cd /Users/si/Desktop/Raspberry-PI-SD-Installer-05-X-master
Simons-Mac:Raspberry-PI-SD-Installer-05-X-master si$ sudo ./install Occidentalis_v02.img

  Occidentalis

-----
Filesystem      Size  Used Avail Capacity  Mounted on
-----
1) /dev/disk2s2  233Gi 198Gi  34Gi    86%      /
2) devfs         111Ki  111Ki   0Bi   100%    /dev
3) map -hosts    0Bi    0Bi    0Bi   100%    /net
4) map auto_home 0Bi    0Bi    0Bi   100%    /home
5) /dev/disk1s1  50Mi   37Mi  19Mi    66%    /Volumes/Untitled

Select the disk to use by entering the disk number.
*** MAKE SURE YOU SELECT THE CORRECT DISK ***
*** Refer to the Readme if uncertain ***

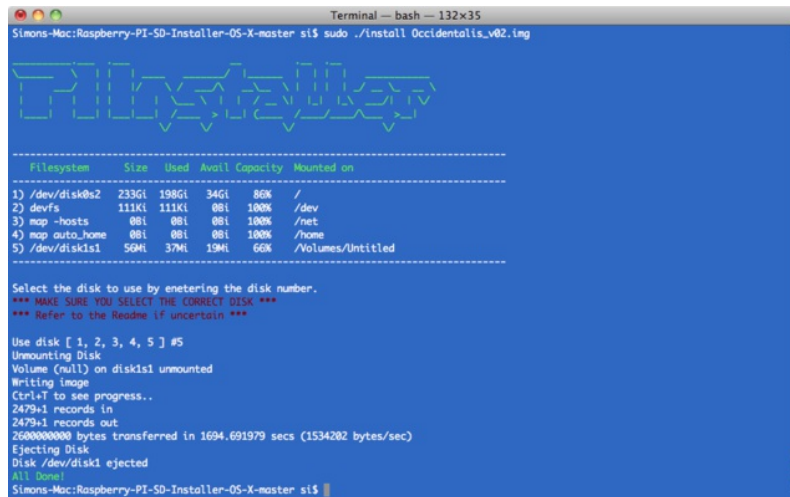
Use disk [ 1, 2, 3, 4, 5 ] #
```

## Step 7.

Enter the number next to the SD card drive. Make sure you get this right, because whichever drive you select will be erased.

It is then just a matter of waiting until all the image file is installed. This will take a few minutes. You can check on the progress by pressing ctrl-T

When everything is complete, you should see this:



```
Terminal — bash — 132x35
Simons-Mac:Raspberry-PI-SD-Installer-OS-X-master si$ sudo ./install Occidentalis_v02.img

-----
Filesystem      Size  Used Avail Capacity  Mounted on
-----
1) /dev/disk2s2  233Gi 198Gi  34Gi    86%    /
2) devfs         111Ki  111Ki   0Bi   100%   /dev
3) map -hosts    0Bi    0Bi    0Bi   100%  /net
4) map auto_home 0Bi    0Bi    0Bi   100%  /home
5) /dev/disk1s1  50Mi   37Mi  19Mi    60%  /Volumes/Untitled
-----

Select the disk to use by entering the disk number.
*** MAKE SURE YOU SELECT THE CORRECT DISK ***
*** Refer to the README if uncertain ***

Use disk [ 1, 2, 3, 4, 5 ] #5
Unmounting Disk
Volume (null) on disk1s1 unmounted
Writing image
Ctrl+T to see progress..
2479+1 records in
2479+1 records out
2600000000 bytes transferred in 1694.691979 secs (1534282 bytes/sec)
Ejecting Disk
Disk /dev/disk1 ejected
All Done!
Simons-Mac:Raspberry-PI-SD-Installer-OS-X-master si$
```

That's all there is to it, the SD card is now ready to use with your Raspberry Pi.

## Test & Configure

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If you plan to use multiple SD cards, it is not a bad idea to label them. Put the label on the side that shows when the SD card is inserted into the Pi.

Testing the card is easy - insert it into your Pi, then connect a keyboard to the USB port and a NTSC/PAL TV to the composite port or an HDMI monitor to the HDMI Port. Then power it by connecting a Micro USB cable to the Pi and powering it via a computer or a USB wall charger

You should see something like the following, an Adafruit/Raspberry logo in the top left, and a ton of text filling up the screen



In the next tutorial, you will find out how to configure your Raspberry Pi the first time you boot it up.