Raspberry Pi | 1

We recommend you start with the Raspberry Pi Model B, which includes wired Ethernet and enough USB ports for a mouse and keyboard. This makes it much easier to get started.
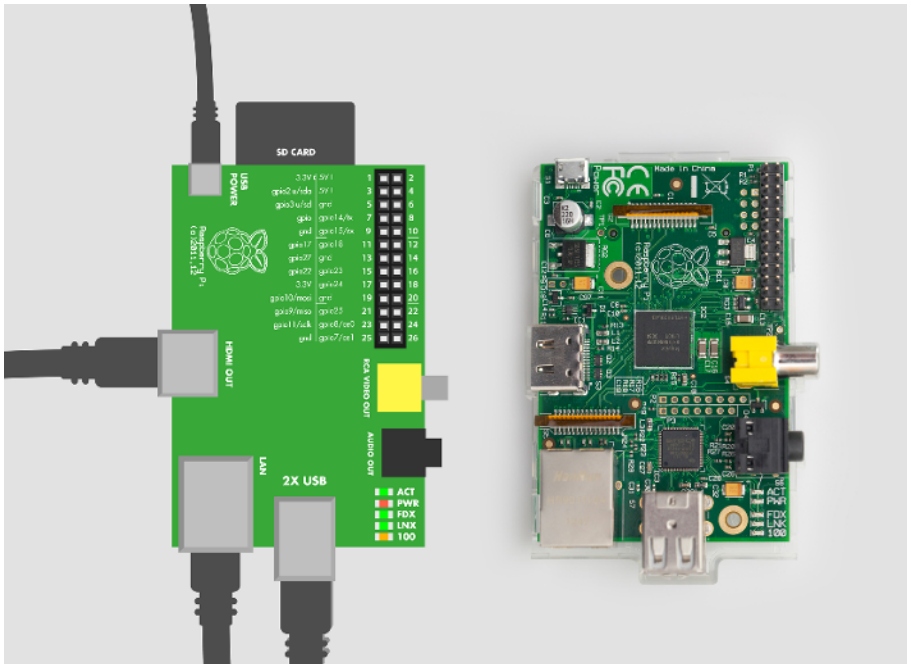

Figure 1-1. *Raspberry Pi peripheral connections*

Unless you buy your Raspberry Pi as part of a kit, it probably didn't come with an enclosure, but you can just put the bare board on your table for extra geek credibility. Or, if you have access

to a 3D printer, CNC, or laser cutter, you can find many enclosures to fabricate on *http://www.thingiverse.com*.

A 4 GB SD memory card is big enough to fit the operating system. A bigger card may be less susceptible to wearing out over time (more storage to allocate to wear-leveling), so if you have an 8 GB or bigger card, even better.

The Raspberry Pi can drive a full high-def display, and can even send sound over HDMI. Most likely, an HD television will work nicely as a display for your Pi.

Having a keyboard and a mouse will make it easy to get started. Raspberry Pi Model B has exactly two USB ports, just enough for the mouse and the keyboard.

If you want to add a USB WLAN adapter, you need a powered USB hub. See http://elinux.org/RPi_USB_Wi-Fi_Adapters for a list of WiFi adapters that are known to work with the Raspberry Pi. You'll be able to configure WiFi on your Pi by double-clicking the WiFi Config icon on the desktop after you install the operating system and boot to the graphical desktop environment.

The Most Expensive $35 (USD) Computer?

Buying all the cables, keyboard, mouse, and display can cost more than a couple of Raspberry Pis. If you don't already have all those parts gathering dust somewhere, it can be quite a lot for a tiny computer. Even so, it saves time (== money) to establish a comfortable development environment. Later, when your project is working, you can easily trim down the system to just the needed parts. As they say, Raspberry Pi is the only $35 computer that costs a hundred bucks.

If you decide to interact with your Raspberry Pi through SSH or VNC over the network, you only need to connect network and power and won't need the keyboard, mouse, or monitor except during the initial setup.

Raspberry Pi from Zero to First Boot

This chapter will get you up and running with the Raspberry Pi quickly. The first thing you need to do is to install Linux on the Raspberry Pi. It involves the following steps:

- Download and extract the installer to a formatted SD card.
- Insert the card into the Raspberry Pi and connect it to a keyboard, mouse, and monitor.
- Turn it on, choose what to install, and wait.

Once that's done, you are ready to boot the Pi into a graphical Linux desktop.

You'll need the following parts:

- Raspberry Pi Model B
- Micro USB cable and USB charger (or computer)
- 4 GB SD card
- Display with HDMI port
- HDMI cable
- USB mouse
- USB keyboard

Extract NOOBS*.zip

Download *NOOBS_vX_Y_Z.zip* (as of this writing, it was *NOOBS_v1_3_4.zip* but the filename may be different by the time you read this) from *http://raspberrypi.org/downloads*.

You can also find all the important links mentioned in this book on http:// botbook.com, along with mirrored copies of some files.

Insert the SD card into your computer. Most SD cards are FAT32 formatted at the factory, so unless you're using an SD card that you've formatted yourself, extracting the NOOBS zip to the SD card is enough. After you unzip the file, make sure that the *bootcode.bin* file is in the root (top-level) directory of the SD card.

If you need to format the SD card, use the formatting tool from the SD Card Association.

In modern versions of Linux, Windows, and Mac you can just double-click or right-click the NOOBS zip file to extract it. For older versions of Windows, you can install 7zip to let you extract zip files.

Connect Cables

Connecting the cables is easy, because each cable will fit only its correct socket. Plug the mouse and the keyboard into the Raspberry Pi's USB ports. If you're using an HDMI monitor, connect an HDMI cable between the monitor and Raspberry Pi. If you're using an NTSC or PAL monitor, use a composite video cable to connect the yellow plug on the Raspberry Pi to the monitor.

Next, connect the micro USB cable to Raspberry to supply power. Plug that cable into either a computer's USB port or a 5 volt USB charger that provides at least 700 mA.

Boot and Install Raspbian

As soon as you connect power to the Raspberry Pi, it boots. No power switch is needed.

If nothing appears on the screen, you may need to select the right output mode for the Raspberry Pi. The default output mode is HDMI, but if you are connected via HDMI and see nothing, try pressing 2 on the keyboard connected to your Raspberry Pi to select HDMI Safe Mode. If you are connected via the composite (yellow) connector, press 3 for a PAL monitor or television, or 4 for an NTSC monitor or television.

You are greeted with a graphical menu of different operating systems as well as language and keyboard type. Choose "Raspbian [RECOMMENDED]" (Figure 1-2) and select your language and type of keyboard you'll be using.
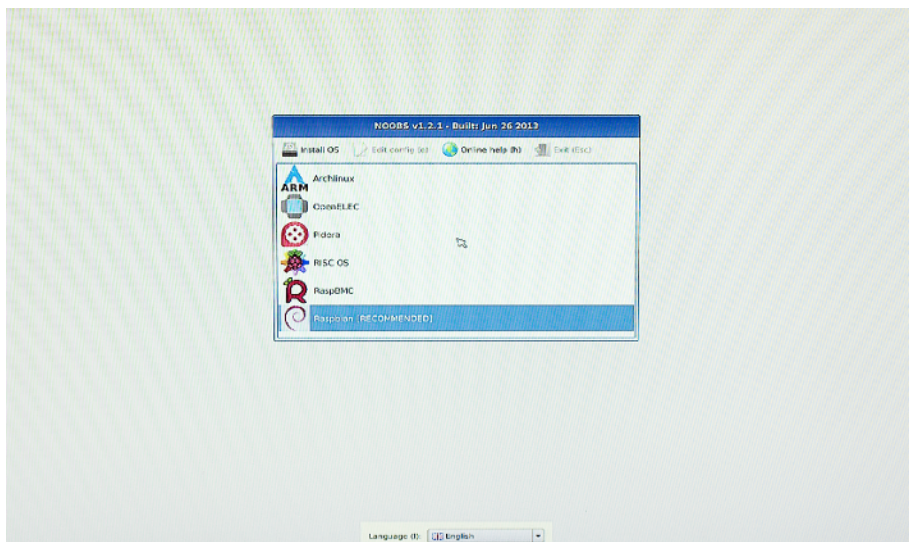

Figure 1-2. *Choosing an operating system*

If you know any Debian, Mint or Ubuntu, you will feel at home with this choice; if you don't, read on and you'll still feel at home! Raspbian takes a few minutes to finish installing (Figure 1-3). After the installer completes, it will indicate that it installed the operating system successfully. Press Enter or click OK to reboot.
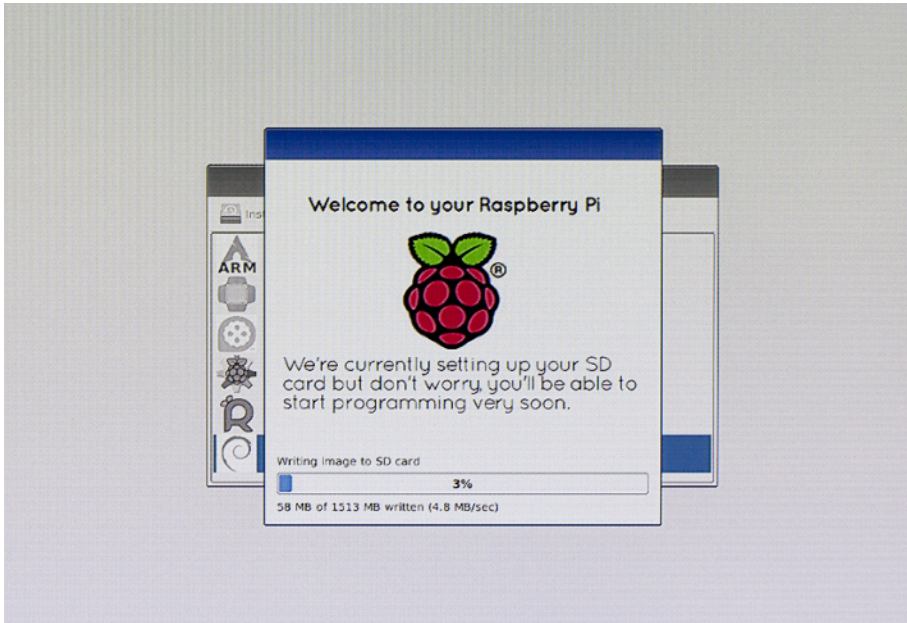
Figure 1-3. *Raspbian installs*

The Raspberry Pi configuration utility opens. Use arrow keys and Tab to navigate, and press Enter/Return to select an option, as shown in Figure 1-4.
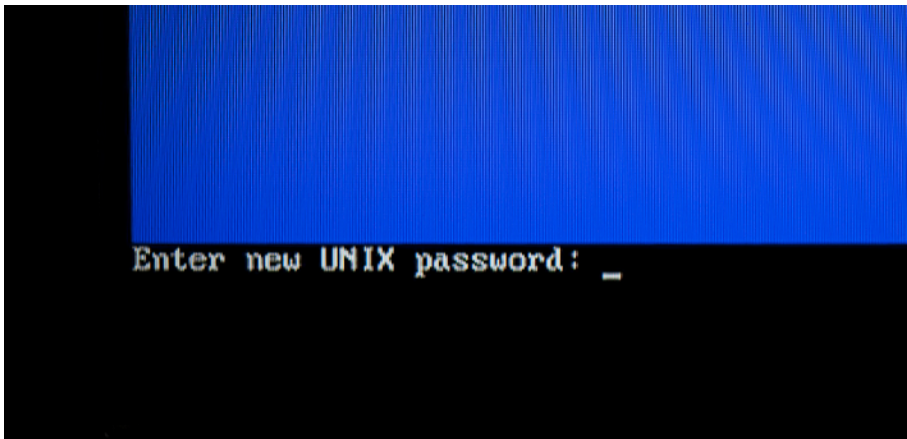

Figure 1-4. *Changing your password*

You'll want to enable the Boot to Desktop option. When you have finished changing settings, use Tab to select Finish and reboot when asked.