Raspberry Pi

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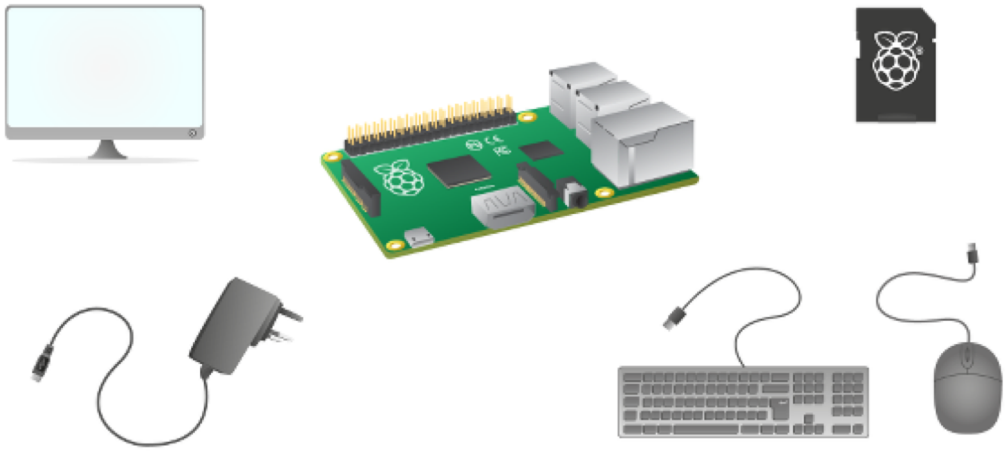
CHECK YOU HAVE THE EQUIPMENT YOU NEED



- A monitor with the correct cable and adapter
- A micro USB power supply
- A wired keyboard and mouse, or a wireless keyboard and mouse with a Bluetooth adapter
- A micro SD card
- A Raspberry Pi

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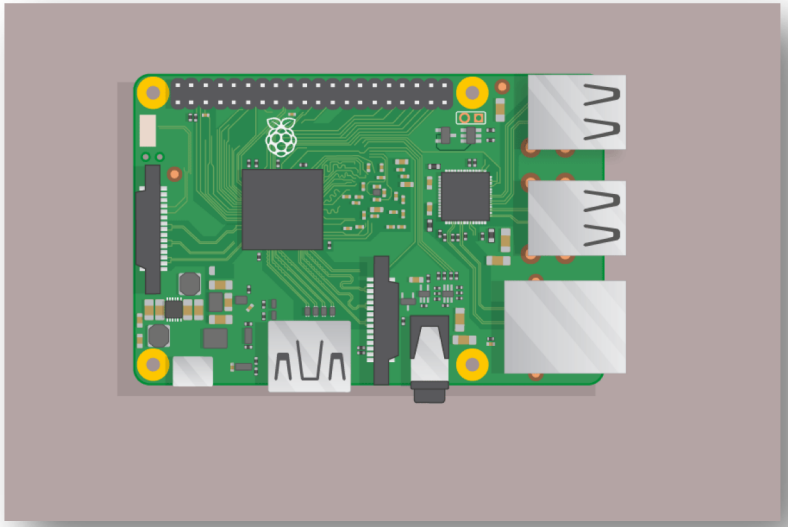
Setup your Raspberry Pi



1. Begin by placing your SD card into the SD card slot on the Raspberry Pi
2. Next, plug your keyboard and mouse into the USB ports on the Raspberry Pi.
3. Make sure that you have selected the right input (e.g. HDMI 1, DVI, etc).
4. Connect your HDMI cable from your Raspberry Pi to your monitor or TV.
5. If you intend to connect your Raspberry Pi to the internet, plug an Ethernet cable into the Ethernet port, or connect a WiFi dongle to one of the USB ports (unless you have a Raspberry Pi 3).
6. Connect the micro USB power supply. This action will turn on and boot your Raspberry Pi.

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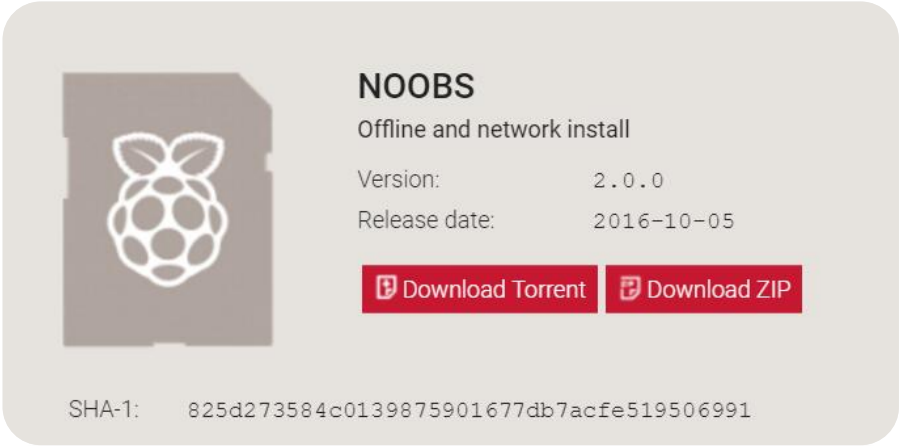
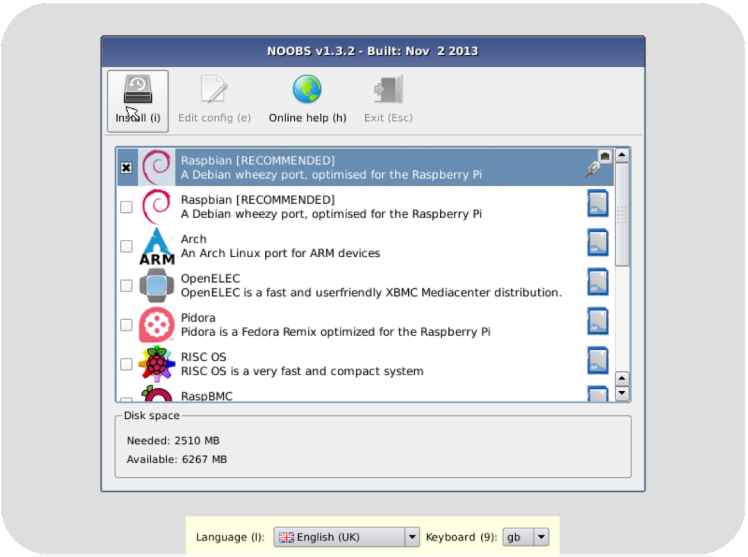
Installation

New Out Of Box Software (NOOBS) is an easy operating system installation manager for the Raspberry Pi. It contains Raspbian. It also provides a selection of alternative operating systems which are then downloaded from the internet and installed.

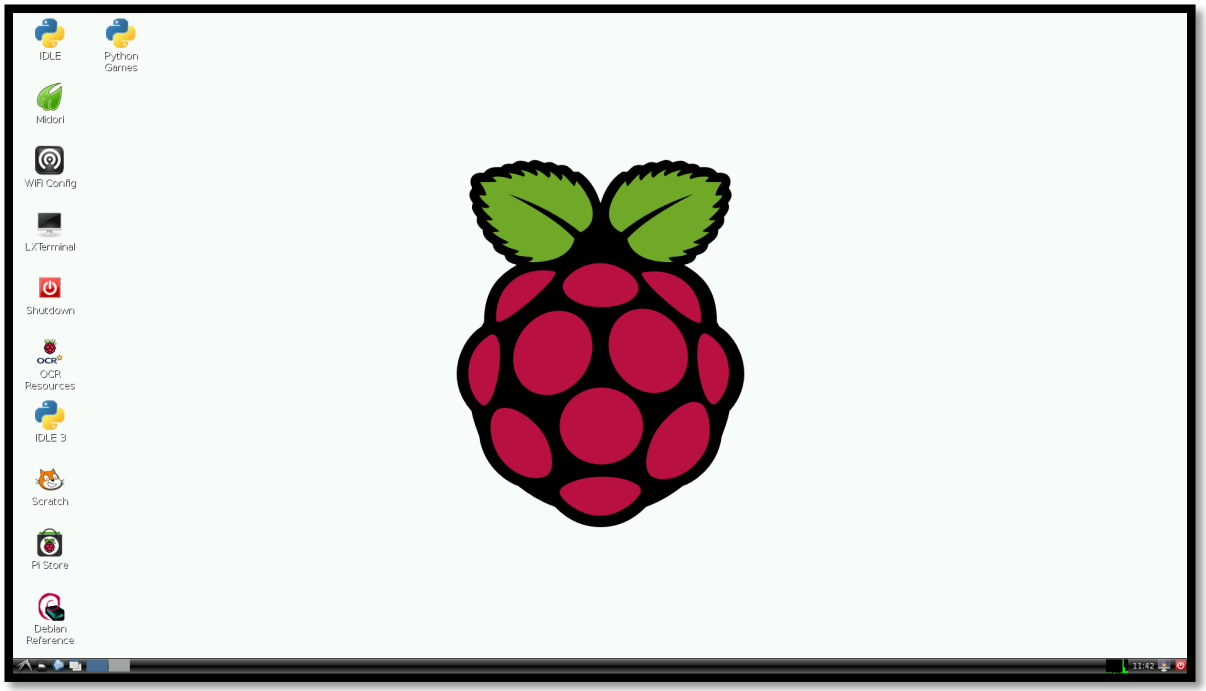




Configuring your Raspberry Pi with Raspi Config – First Boot

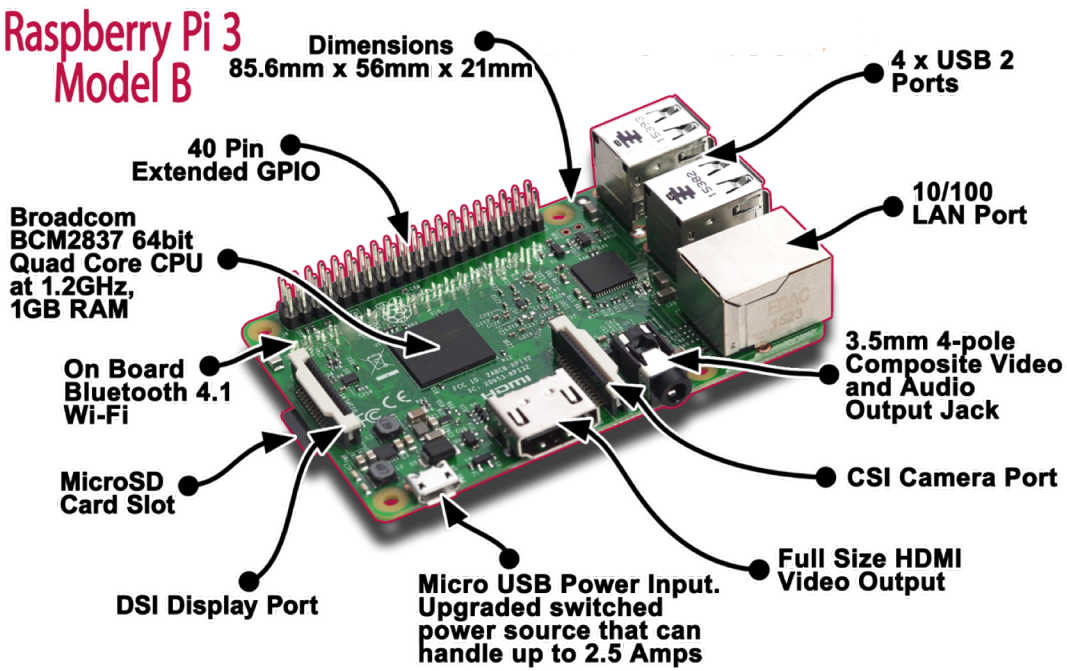
- The first time you boot up into your new Raspbian distro you'll be greeted with the Raspberry Pi Config Tool (aka raspi-config). This tool allows you to easily change the most common configuration settings. Let's start with the ones you'll want to change right away.
- **1 Expand File System**: This will expand the file system to the full size of your SD card; allowing you to use the full capacity for programs etc (note if you used NOOBS as I did, your file system will already be set to the full size of the SD card, NOOBS handles all that for you during install)
- **2 Change User Password**: Change the default password!
- **3 Enable Boot to Desktop/Scratch**: The default setting for Raspbian is to book to the Terminal (command prompt). Select ***Desktop Log in as user 'pi' at the graphical desktop*** to enable booting to desktop as the default
- When you've finished select ***Finish***. You'll be asked to reboot now, select ***Yes***. You will now be rebooted into the desktop. If you're not asked to reboot, checkout the useful commands section below for rebooting from the command prompt.

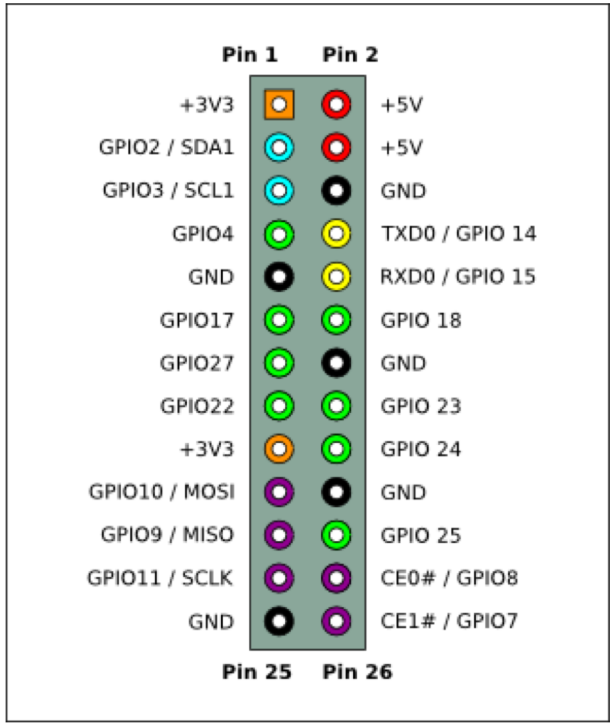
Operating system - Raspbian



- Raspbian is a free operating system based on Debian optimized for the Raspberry Pi hardware. An operating system is the set of basic programs and utilities that make your Raspberry Pi run. However, Raspbian provides more than a pure OS: it comes with over 35,000 packages, pre-compiled software bundled in a nice format for easy installation on your Raspberry Pi.
- The initial build of over 35,000 Raspbian packages, optimized for best performance on the Raspberry Pi, was completed in June of 2012.

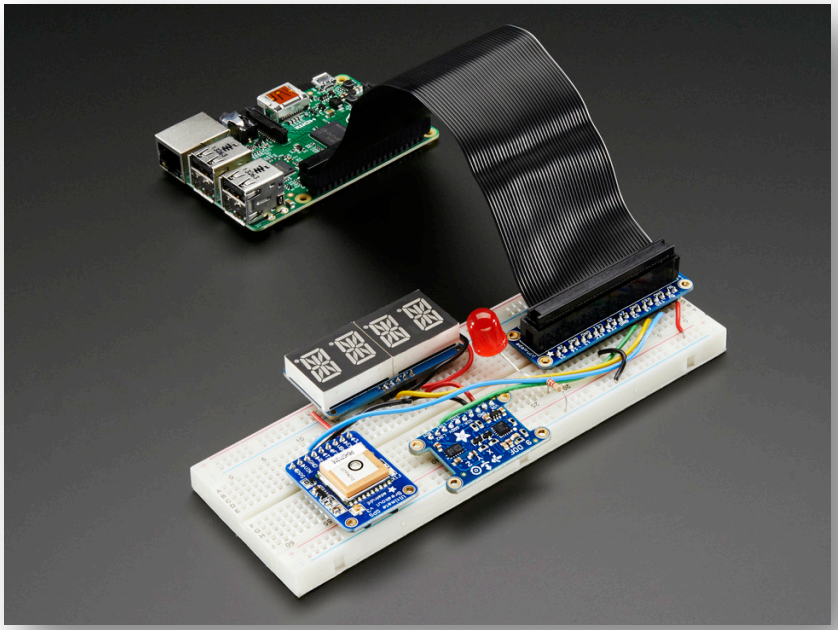
Raspberry Pi 3





You can program the pins to interact in amazing ways with the real world. Inputs don't have to come from a physical switch. It could be input from a sensor or a signal from another computer or device, for example. The output can also do anything, from turning on an LED to sending a signal or data to another device. If the Raspberry Pi is on a network, you can control devices that are attached to it from anywhere and those devices can send data back.

Connect with different sensors



We can use the Adafruit Assembled Pi Cobbler Plus - Breakout and Cable for Raspberry Pi. It's an add on prototyping Pi Cobbler from Adafruit specifically designed for the Pi that you can break out all those tasty power, GPIO, I2C and SPI pins from the 40-pin header onto a solderless breadboard. This will make "cobbling together" prototypes with the Pi super easy.

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Programming language

- The Raspberry Pi was designed to encourage young people to learn to how to code — the Pi in Raspberry Pi even comes from the Python programming language, so the very idea of programming is written into the name of the computer itself.
- In the short time that the Raspberry Pi has been around, a considerable number of programming languages have been adapted for the Raspberry Pi
- SCRATCH
- PYTHON
- HTML5
- JAVASCRIPT
- JAVA
- C PROGRAMMING LANGUAGE
- C++
- …

Projects

- Using smartphone to control the Pi camera.
- Taking a picture by motion detection.
- Automatically turning on the light by light sensor detection.
- Monitoring temperature and solar power.
- Led strip decoration.

Example