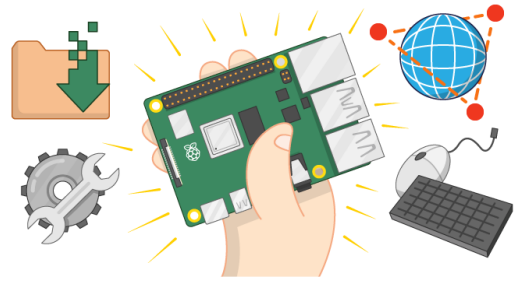




Projects

Using your Raspberry Pi

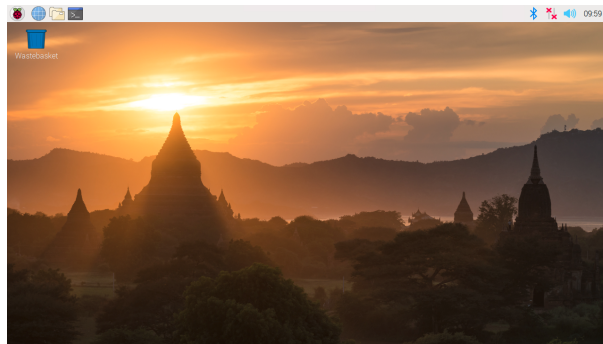
How to configure, update, and navigate your Pi once it's set up



Step 1 Introduction

Here you'll learn how to use the Raspberry Pi operating system Raspbian and some of its software, and how to adjust some key settings to your needs.

If you don't have your Raspberry Pi up and running yet, check out our **Setting up your Raspberry Pi** (<https://projects.raspberrypi.org/en/projects/raspberry-pi-setting-up>) guide.



Step 2 Raspberry Pi Desktop

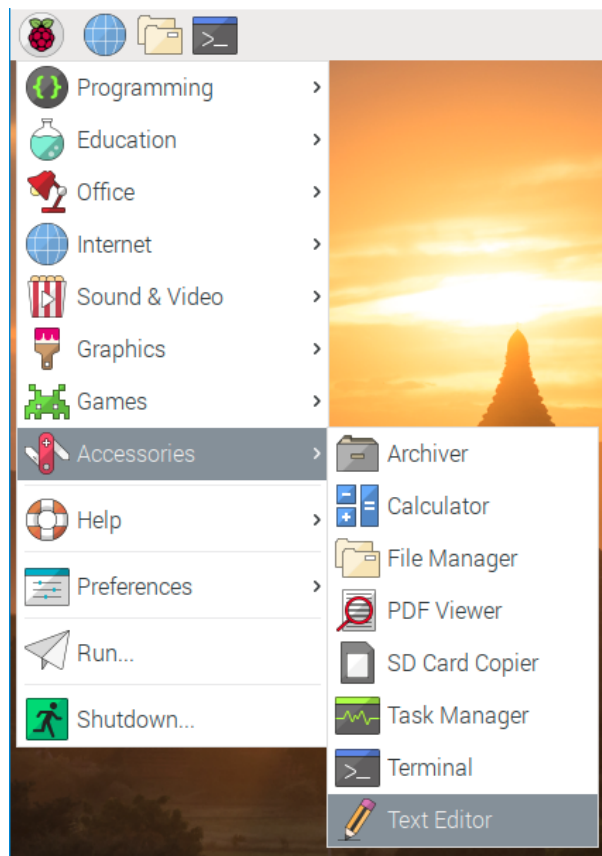
Your Raspberry Pi runs Raspbian, a version of an operating system (OS) called Linux. (Windows and macOS are other operating systems).

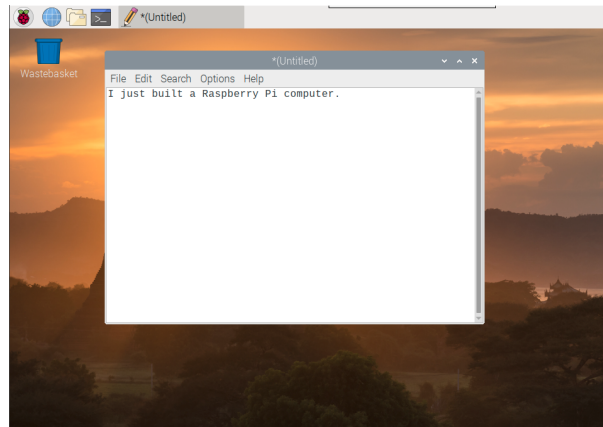
After Raspbian starts up, you will see the Desktop appear.



The Raspberry Pi icon in the top left-hand corner is where you access the menu.

- Click on it to find lots of applications, including **Programming** and **Office** applications.
- To open a text editor, click on **Accessories** and choose **Text Editor**.

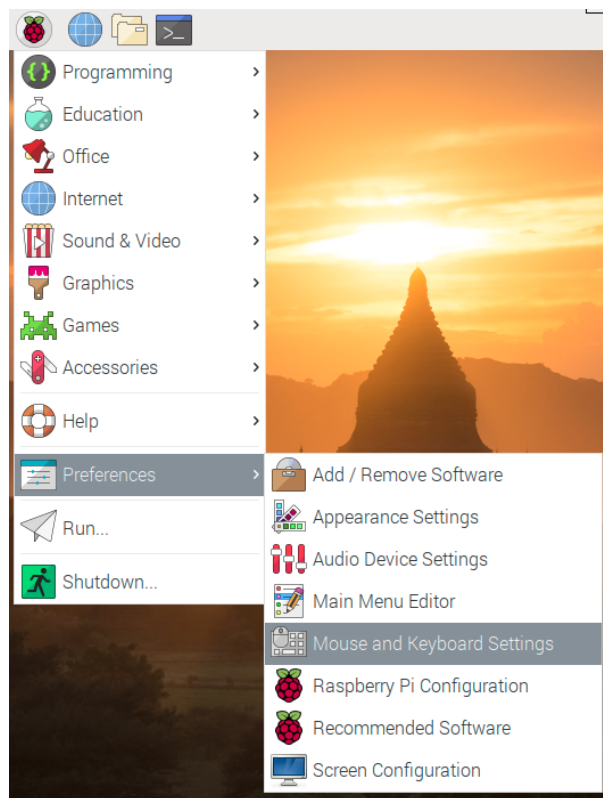




- Close the text editor by clicking the **x** in the top right-hand corner of the window.
- Explore some of the other applications in the menu, such as **Python Games**.

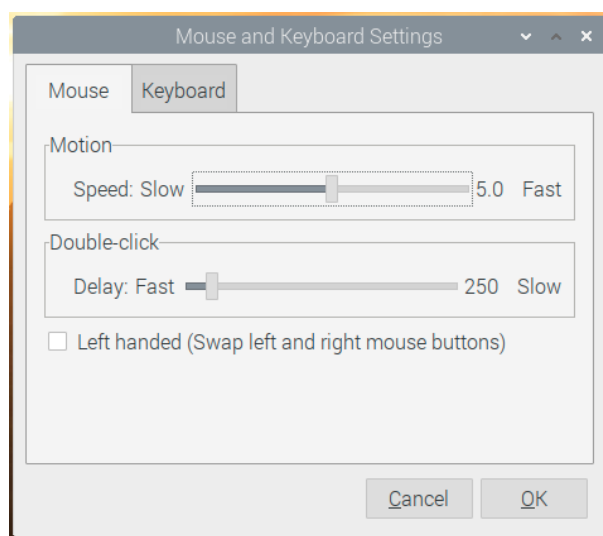
Step 3 Keyboard and mouse settings

To set up your mouse and keyboard, select **Preferences** and then **Mouse and Keyboard Settings** from the menu.



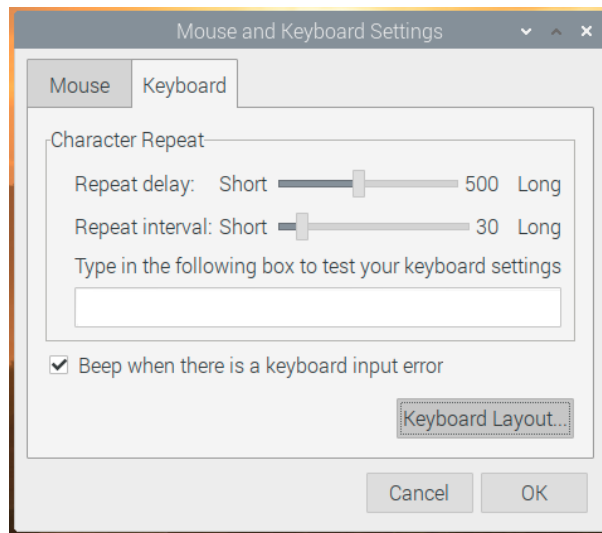
Mouse

You can change the mouse speed and double-click time here, and swap the buttons if you are left-handed.

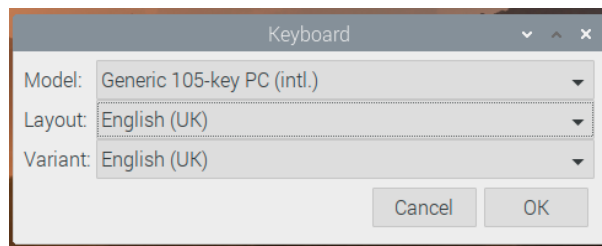


Keyboard

You can adjust the key repeat delay and interval values here.



To change the keyboard layout, click on **Keyboard Layout** and select your layout from the list of countries.



Step 4 Connecting to the internet

If you want to connect your Raspberry Pi to the internet, you can plug an Ethernet cable into it (if you have a Pi Zero, you'll need a USB-to-Ethernet adaptor as well).

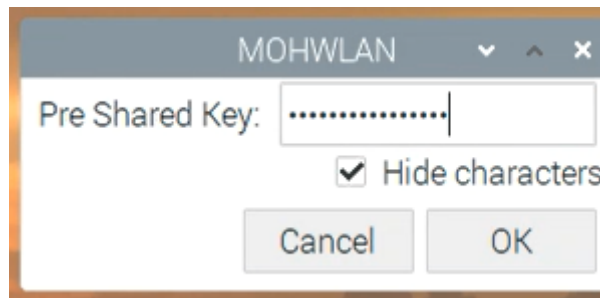
If your model is a Pi 4, 3 or a Pi Zero W, you can also connect to a wireless network.

Connecting to a wireless network

- Click on the wireless network icon in the top right-hand corner of the screen, and select your network from the drop-down menu.



- Type in the password for your wireless network, then click **OK**.



- Once your Pi is connected to the internet, you will see a wireless LAN symbol instead of the red crosses.



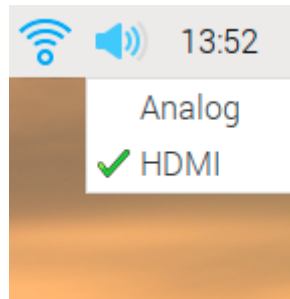
- Test your connection by clicking on the web browser icon and searching the web for **raspberry pi**.



Step 5 Setting up the sound

Your Raspberry Pi can either send sound to the screen's built-in speakers through the **HDMI** connection (if your screen has speakers), or to the **analog** headphone jack.

- Right-click on the speaker icon in the top right-hand corner to choose whether your Pi should use the **HDMI** or **Analog** connection for sound.



- Click on the speaker icon to adjust the volume by moving the slider up or down.

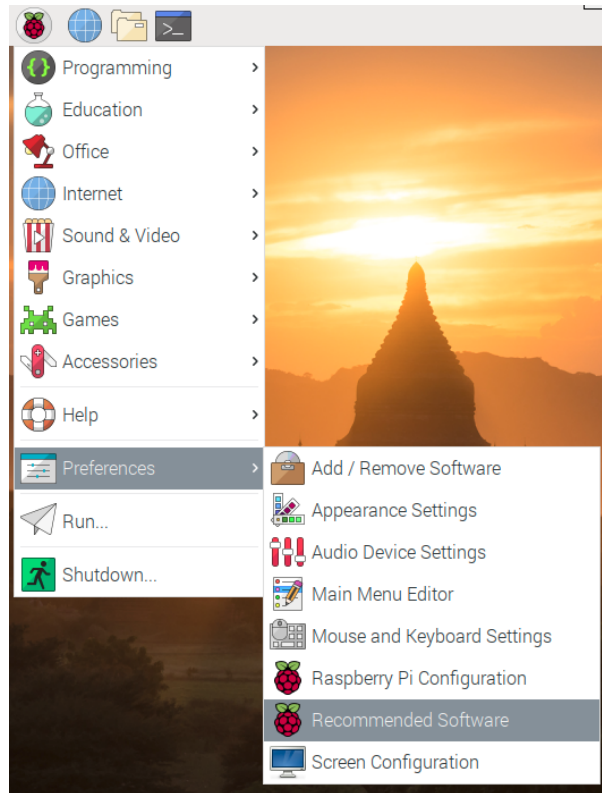


Step 6 Installing software

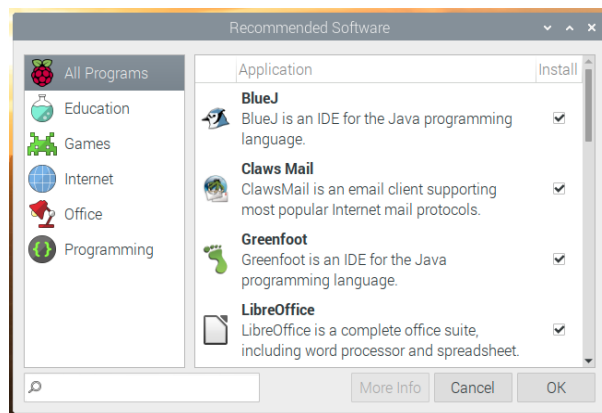
There are many, many software programmes and applications you can download and install on the Raspberry Pi.

Note: your Pi has to be **connected to the internet** (4) before you can install software.

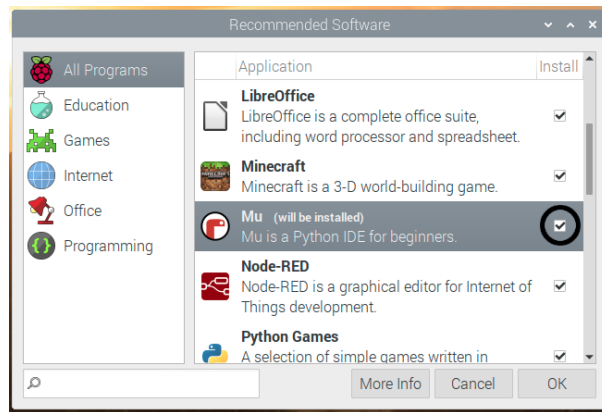
- In the menu, click **Preferences** and then **Recommended Software**.



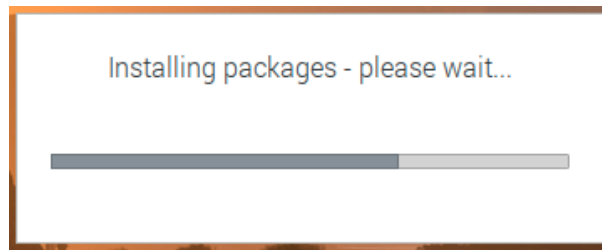
You can browse all the recommended software, or filter it by category.



- To install an piece of software, click to mark the check box to its right.

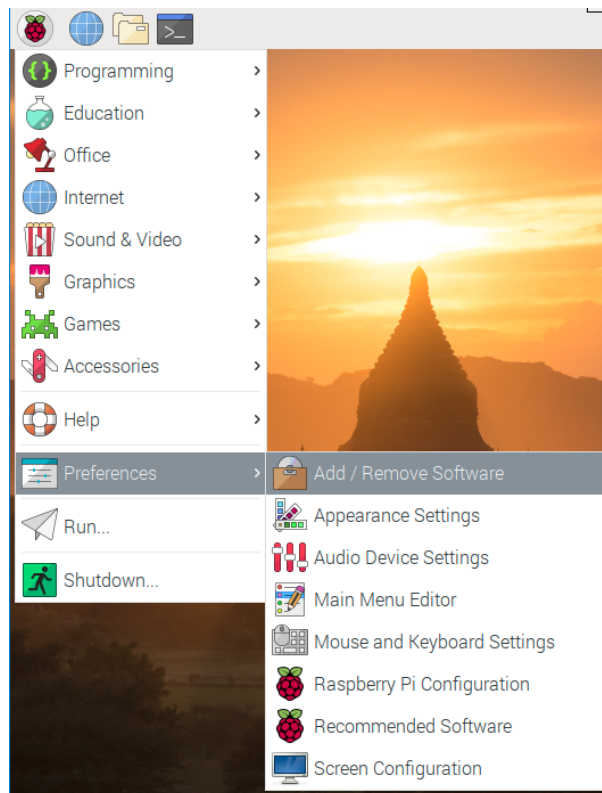


- Then click **OK** to install the selected software.

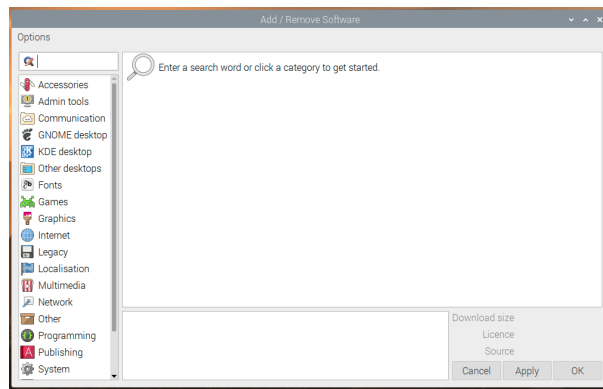


In addition to the Raspberry Pi's recommended software, there's a huge library of other available programs and applications.

- Click **Preferences** and then **Add / Remove Software** in the menu.

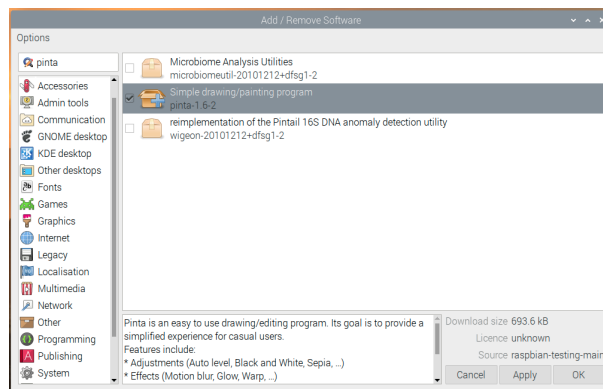


You can search for software, or browse by selecting a category from the menu on the left.

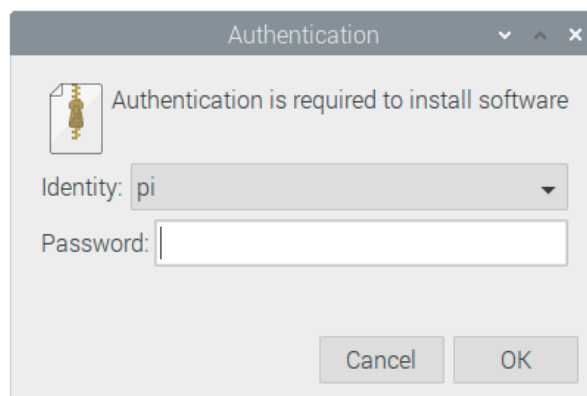


Let's try installing a drawing application called **Pinta**.

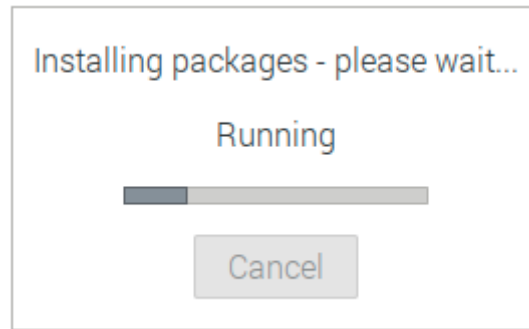
- Type 'pinta' into the search box and press **Enter**.
- Select **Simple drawing/paint program** in the list that appears.



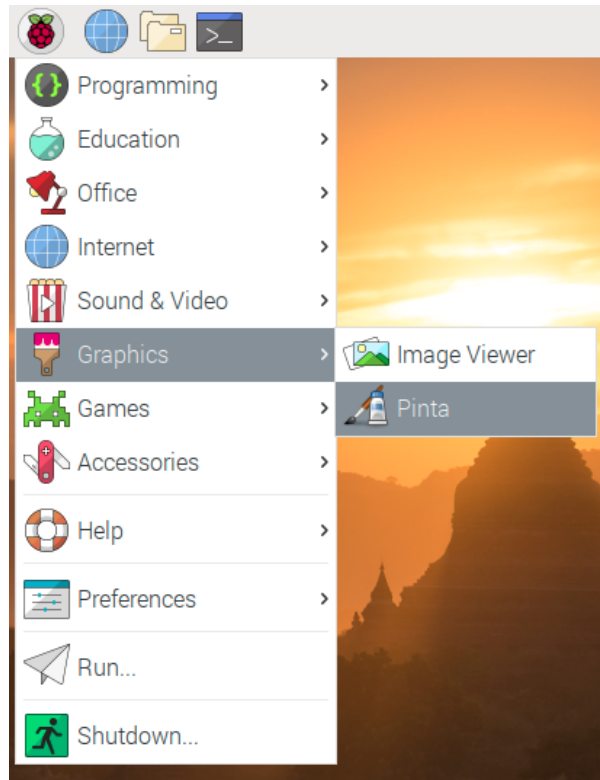
- Click **OK** to start the installation process.
- When prompted, enter your password; if you haven't changed the password, it will be 'raspberry'.



Pinta will now be downloaded and installed.



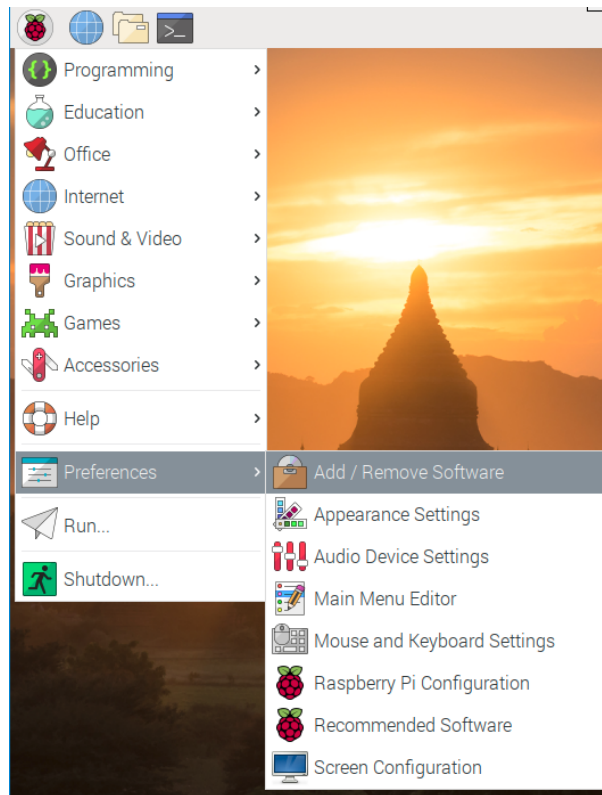
- When the process is complete, open Pinta by selecting **Graphics** and then **Pinta** from the menu.



Step 7 Updating your Pi

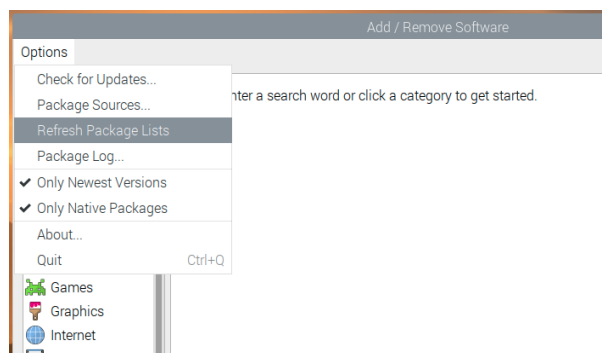
It's a good idea to regularly update the software on your Pi with the latest features and fixes.

- You can update your Pi using the **Add / Remove Software** application: open it by selecting it from the **Preferences** section of the menu.

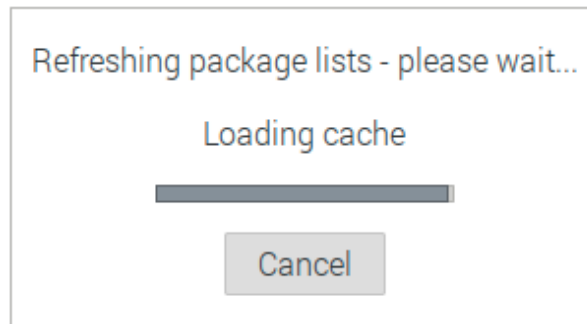


Before you check and install any updates, you should refresh the software package lists on your Pi.

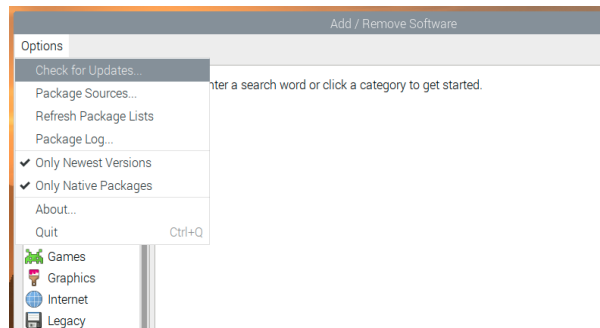
- Click **Options** in the top left-hand corner, and select **Refresh Package Lists**.



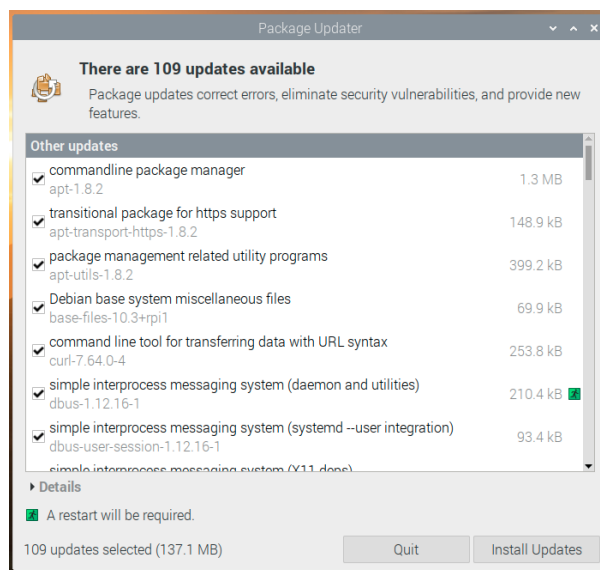
Your Pi will then update all lists of packages.



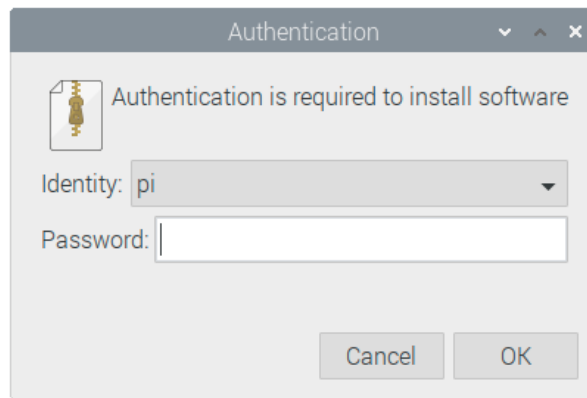
- When this is done, click **Options** and select **Check For Updates**.



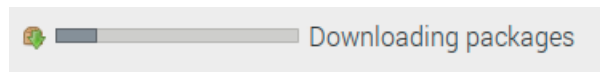
The **Package Updater** will open and automatically check whether updates are available. It will display anything it finds in a list.



- Click **Install Updates** to install all the available updates.
- When prompted, enter your password; if you haven't changed the password, it will be 'raspberrypi'.



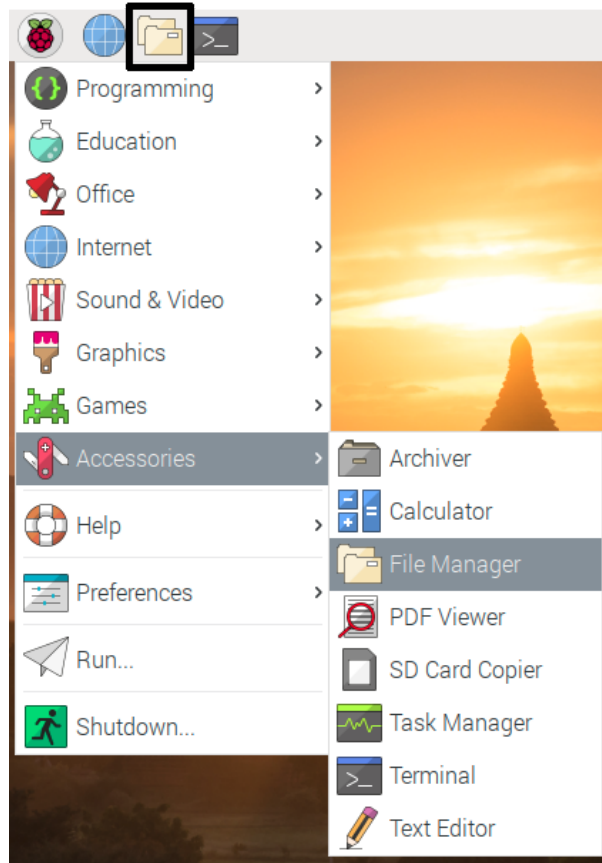
- The updates will then be downloaded and installed. You can see the installation by checking the progress bar in the bottom left-hand corner.



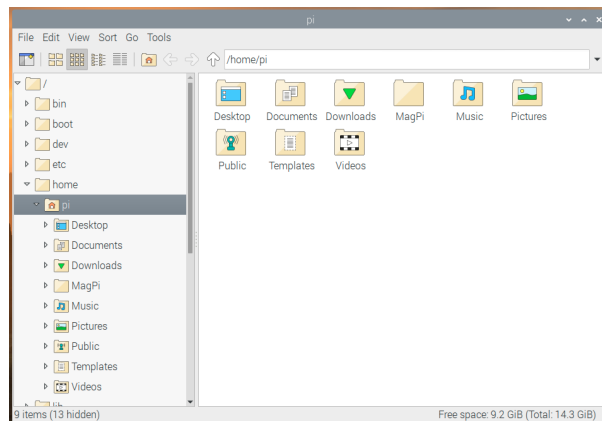
Step 8 Accessing your files

All the files on your Raspberry Pi, including the ones you create yourself, are stored on the SD Card. You can access your files using the **File Manager** application.

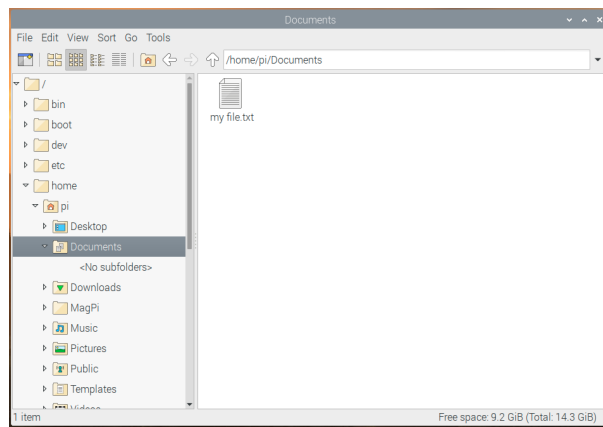
- Click **Accessories** and then **File Manager** in the menu, or select the **File Manager** icon on the menu bar.



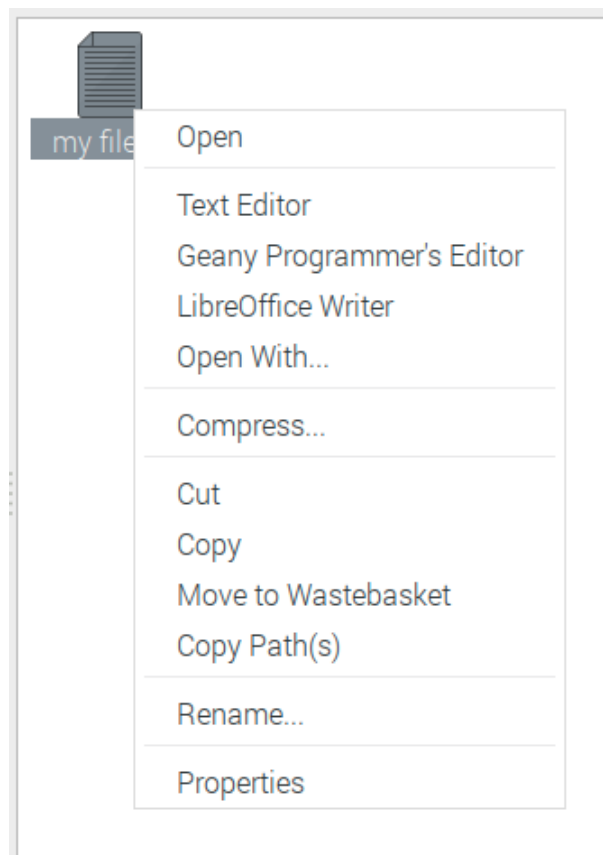
When the file manager opens, you will be shown the **pi** directory – this is where you can store your files and create new subfolders.



- Double-click on the **Documents** icon to open the directory and view the files inside.

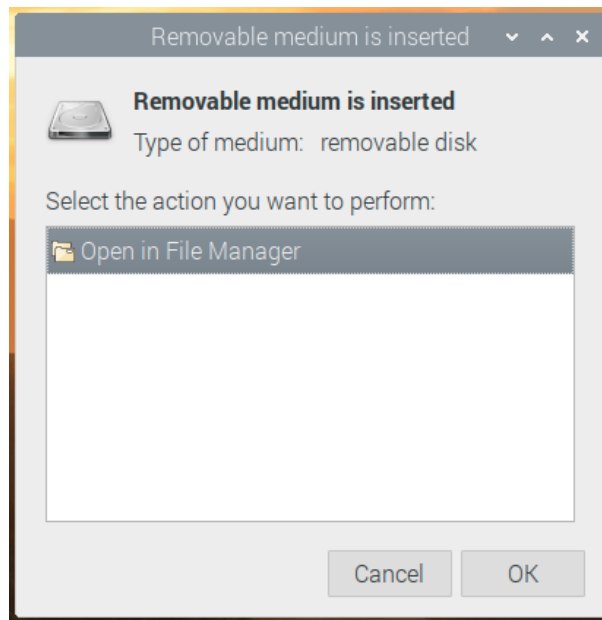


To open a file, double-click its name, or right-click it to open the file menu for more option.



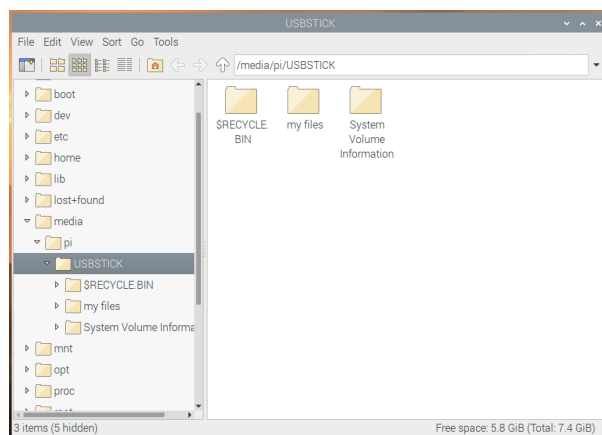
You can use USB drives and sticks with your Raspberry Pi. This is a convenient way of backing up your files and copying them to other computers.

- Insert a USB stick into your Raspberry Pi. A window will pop up, asking what action you want to perform.



- Click **OK** to **Open in File Manager**.

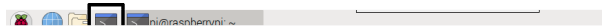
The File Manager will open and show you the files on your USB stick.



Step 9 Using the terminal

The **terminal** is a really useful application: it allows you to navigate file directories and control your Pi using typed commands instead of clicking on menu options. It's often in many tutorials and project guides, including the ones on our website.

- To open a terminal window, click on the **Terminal** icon at the top of the screen, or select **Accessories** and then **Terminal** in the menu.



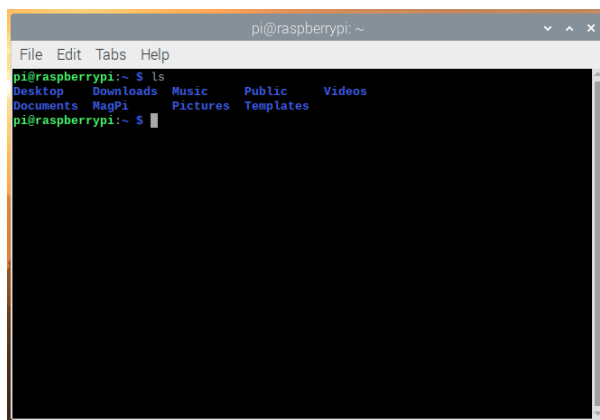
You can type commands into the terminal window and run them by pressing **Enter** on your keyboard.

- In the terminal window, type:

```
ls
```

- Then press **Enter** on the keyboard.

The command **ls** lists all the files and subdirectory in the current file directory. By default, the file directory that the terminal accesses when you open it is the one called **pi**.



- Now type in this command to **change directory** to the Desktop.

```
cd Desktop
```

You have to press the Enter key after every command.

- Use the command `ls` to list the files in the Desktop directory.

```
ls
```



The terminal can do a lot more than list files — it's a very powerful way of interacting with your Raspberry Pi!

- As just one small example, try the command `pinout`:

```
pinout
```

This will show you a labelled diagram of the GPIO pins, and some other information about your Pi.



- Close the terminal window by clicking on the **x** or using the command `exit`.

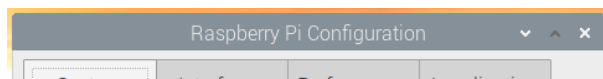
Step 10 Configuring your Pi

You can control most of your Raspberry Pi's settings, such as the password, through the **Raspberry Pi Configuration** application found in **Preferences** on the menu.



System

In this tab you can change basic system settings of your Pi.



- **Password** – set the password of the **pi** user (it is a good idea to change the password from the factory default 'raspberrypi')
- **Boot** – select to show the **Desktop** or **CLI** (command line interface) when your Raspberry Pi starts
- **Auto Login** – enabling this option will make the Raspberry Pi automatically log in whenever it starts
- **Network at Boot** – selecting this option will cause your Raspberry Pi to wait until a network connection is available before starting
- **Splash Screen** – choose whether or not to show the splash (startup) screen when your Raspberry Pi boots

Interfaces

You can link devices and components to the Raspberry Pi using a lot of different types of connections. The Interfaces tab is where you turn these different connections on or off, so that the Pi recognizes that you've linked something to it via a particular type of connection.

- **Camera** – enable the **Raspberry Pi Camera Module** (<https://www.raspberrypi.org/products/camera-module-v2/>)
- **SSH** – allow remote access to your Raspberry Pi from another computer using SSH
- **VNC** – allow remote access to the Raspberry Pi Desktop from another computer using VNC
- **SPI** – enable the SPI GPIO pins
- **I2C** – enable the I2C GPIO pins
- **Serial** – enable the Serial (Rx, Tx) GPIO pins
- **1-Wire** – enable the 1-Wire GPIO pin
- **Remote GPIO** – allow access your Raspberry Pi's GPIO pins from another computer

Performance

If you need to do so for a particular project you want to work on, you can change the performance settings of your Pi in this tab.

Warning: changing your Pi's performance settings may result in it behaving erratically or not working.

- **Overclock** – change the CPU speed and voltage to increase performance
- **GPU Memory** – change the allocation of memory given to the GPU

Localisation

This tab allows you to change your Raspberry Pi settings to be specific to a country or location.

- **Locale** – set the language, country, and character set used by your Raspberry Pi
- **Timezone** – set the time zone
- **Keyboard** – change your keyboard layout
- **WiFi Country** – set the WiFi country code

Step 11 How to get help

If you are experiencing problems, there are lots of ways you can get help and advice, check out the **help section** (<https://www.raspberrypi.org/help/>) and the **troubleshooting guide** (<https://www.raspberrypi.org/learning/troubleshooting-guide/>) on **raspberrypi.org** (<https://www.raspberrypi.org>).

The **Raspberry Pi forum** (<https://www.raspberrypi.org/forums>) is a great place to ask questions, including a **Beginners** (<https://www.raspberrypi.org/forums/viewforum.php?f=91>) section where you will be able to get support from the Raspberry Pi community.

Call out on **twitter** (<https://twitter.com>) using the hashtag #rpilearn or submit a question on the **Raspberry Pi Stack Exchange** (<https://raspberrypi.stackexchange.com/>)

You could also attend a **Raspberry Jam** (<https://rpf.io/jam>) and talk to people about their experiences and get some first hand help.

Step 12 What next?

Explore what you can do with your Raspberry Pi by creating some of our **digital making projects** (<https://projects.raspberrypi.org>), for example:

- **Robot antenna** (<https://projects.raspberrypi.org/en/projects/robot-antenna>) – control a robot's antenna light with a Raspberry Pi and code blocks
 - **Rock band** (<https://projects.raspberrypi.org/en/projects/rock-band>) – learn how to code your own musical instruments
 - **Turtle race** (<https://projects.raspberrypi.org/en/projects/turtle-race>) – race digital turtles against each other
 - **Push button stop-motion** (<https://projects.raspberrypi.org/en/projects/push-button-stop-motion>) – make your own stop-motion animation rig with a button and a **Raspberry Pi Camera Module** (<https://www.raspberrypi.org/products/camera-module-v2/>)
-

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View project & license on GitHub (<https://github.com/RaspberryPiLearning/raspberry-pi-using>)