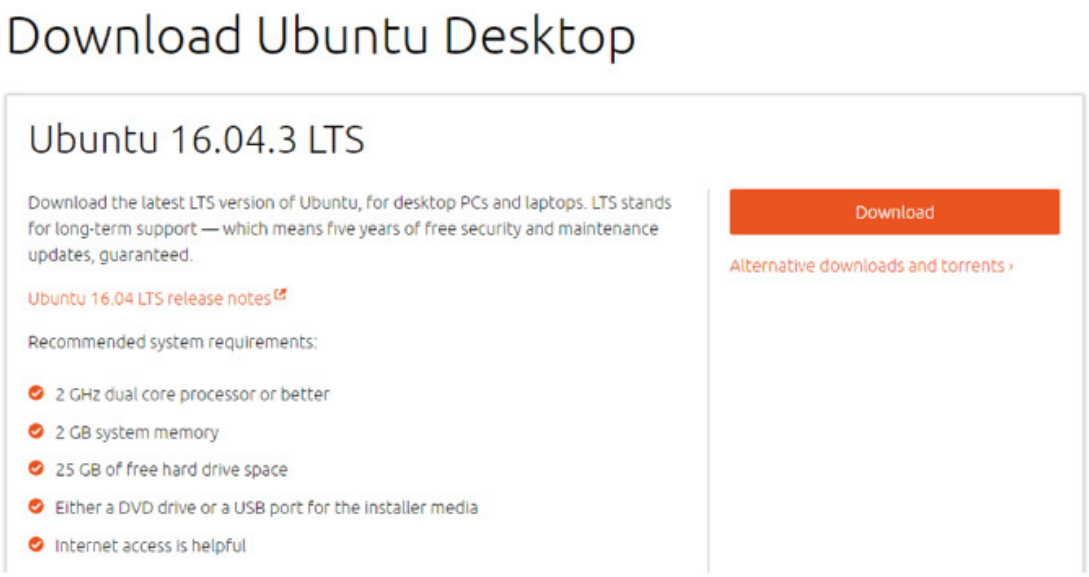
Linux Administration

How to Install Linux

Let us take an example of installation of Ubuntu Linux.

Installing it using Pen Drive

Step 1) Download the .iso or the OS files on your computer from http://www.ubuntu.com/download/desktop

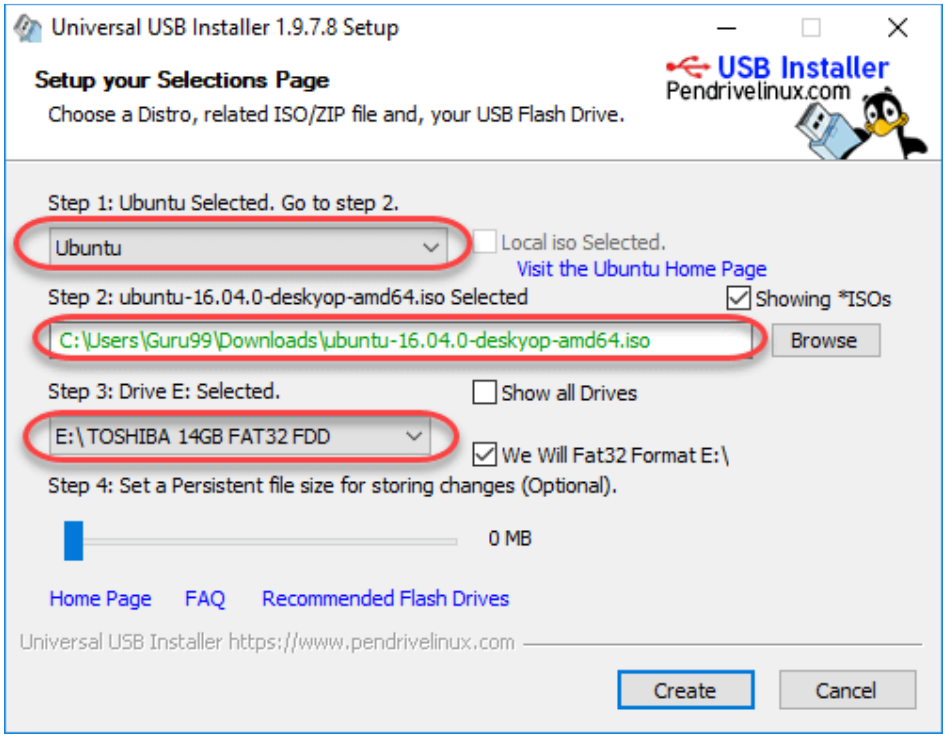


Step 2) Download free software like 'Universal USB installer (http://www.pendrivelinux.com/universal-usb-installer-easy-as-1-2-3/) to make a bootable USB stick.

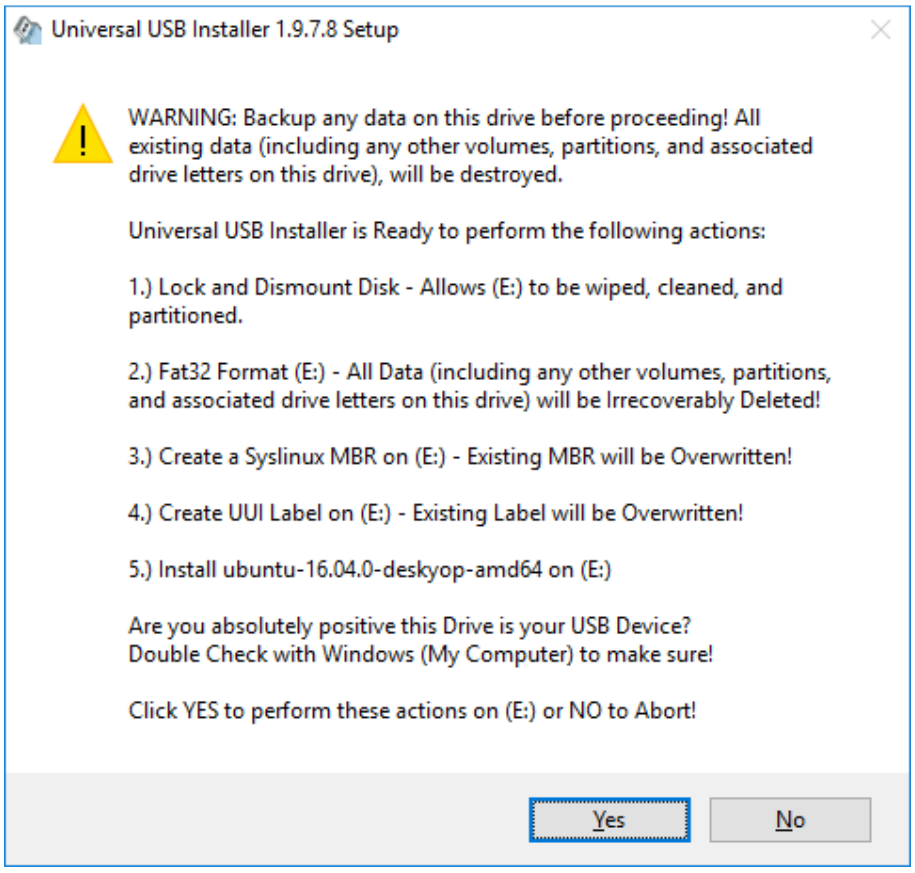
Step 3) Select an Ubuntu Distribution form the dropdown to put on your USB

Select your Ubuntu iso file download in step 1.

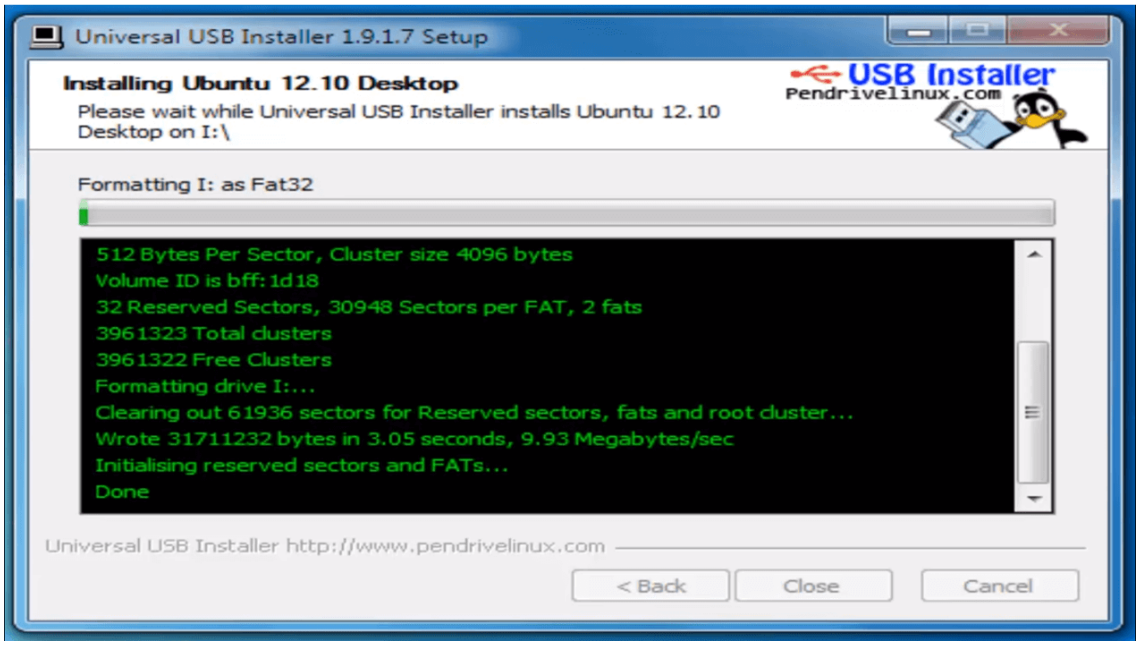
Select the drive letter of USB to install Ubuntu and Press create button.



Step 4) Click YES to Install Ubuntu in USB.



Step 5) After everything has been installed and configured, a small window will appear Congratulations! You now have Ubuntu on a USB stick, bootable and ready to go.



Installing using a CD/DVD

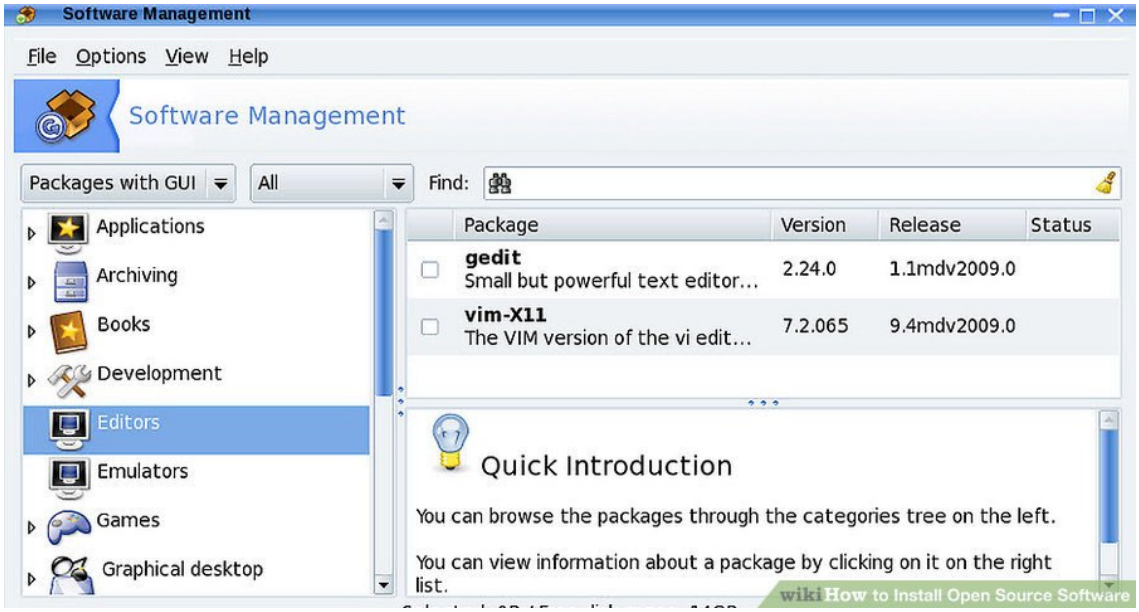
Step 1) Download the .iso or the OS files onto your computer from this link http://www.ubuntu.com/download/desktop.

Step 2) Burn the files to a CD.

Step 3) Boot your computer from the optical drive and follow the instructions as they come.

Installation of Open Source Software

For most such systems, you can probably use the OSs package manager to install a pre-built binary package. This is always the recommended method.



Alternatively, you could follow these steps:

- Download and uncompress the source code.
- In the terminal, move into the extracted directory.
- Run "`./configure`" to configure the software.
- Run "`make`" to compile the software.
- Run "`make install`" to install the software.

Maintenance of user accounts in Linux

There are three types of accounts on a Linux system –

Root account

This is also called **superuser** and would have complete and unfettered control of the system. A superuser can run any commands without any restriction. This user should be assumed as a system administrator.

System accounts

System accounts are those needed for the operation of system-specific components for example mail accounts and the **sshd** (Secure Shell Daemon) accounts. These accounts are usually needed for some specific function on your system, and any modifications to them could adversely affect the system.

User accounts

User accounts provide interactive access to the system for users and groups of users. General users are typically assigned to these accounts and usually have limited access to critical system files and directories.

Linux supports a concept of *Group Account* which logically groups a number of accounts. Every account would be a part of another group account. A Unix group plays important role in handling file permissions and process management.

Managing Users and Groups

There are four main user administration files –

- **/etc/passwd** – Keeps the user account and password information. This file holds the majority of information about accounts on the Unix system.
- **/etc/shadow** – Holds the encrypted password of the corresponding account. Not all the systems support this file.
- **/etc/group** – This file contains the group information for each account.
- **/etc/gshadow** – This file contains secure group account information.

The following table lists out commands that are available on majority of Unix systems to create and manage accounts and groups –

S.No.	Command & Description
1	**useradd** Adds accounts to the system
2	**usermod** Modifies account attributes
3	**userdel** Deletes accounts from the system
4	**groupadd** Adds groups to the system
5	**groupmod** Modifies group attributes
6	**groupdel** Removes groups from the system

Following example creates a *developers* group with default values, which is very much acceptable for most of the administrators.

```
$ groupadd developers
```

Modify a Group

To modify a group, use the **groupmod** syntax –

```
$ groupmod -n new_modified_group_nameold_group_name
```

Delete a Group

We will now understand how to delete a group. To delete an existing group, all you need is the **groupdel command** and the **group name**. To delete the financial group, the command is –

```
$ groupdel developer
```

Create an Account

Let us see how to create a new account on your Unix system. Following is the syntax to create a user's account –

```
$ useradd -d homedir -g groupname -m -s shell -u useridaccountname
```

The following table lists out the parameters –

S.No.	Option & Description
1	**-d homedir** Specifies home directory for the account
2	**-g groupname** Specifies a group account for this account
3	**-m** Creates the home directory if it doesn't exist
4	**-s shell** Specifies the default shell for this account
5	**-u userid** You can specify a user id for this account
6	**accountname**

	Actual account name to be created

Following is the example that creates an account ***mcmohd***, setting its home directory to ***/home/mcmohd*** and the group as ***developers***. This user would have Korn Shell assigned to it.

```
$ useradd -d /home/mcmohd -g developers -s /bin/ksh
mcmohd
$useradd mcmohd
```

Delete an Account

The **userdel** command can be used to delete an existing user. This is a very dangerous command if not used with caution.

For example, to remove account *mcmohd20*, issue the following command –

```
$ userdel -r mcmohd20
```

If you want to keep the home directory for backup purposes, omit the **–r** option. You can remove the home directory as needed at a later time.

Linux Package Manager

Open A Terminal

To open a terminal within Ubuntu press CTRL, Alt and T at the same time. Alternatively, press the super key (Windows key) and type "term" into the search bar. Click the icon that appears at the terminal.

Update The Repositories

The software is made available to users via repositories. Using the **apt-get** command you can access the repositories to list the packages that are available

Before you start searching for packages however you will want to update them so that you get the latest available list of programs and applications.

The repository is a snapshot in time and so as days pass new software versions become available which are not reflected in your repositories.

To keep your repositories up to date run this command before installing any software.

```
$ sudo apt-get update
```

Sudo stands for “super user do!” Pronounced like “sue dough”.

If you prefix “sudo” with any linux command, it will run that command with elevated privileges. Elevated privileges are required to perform certain administrative tasks.

Keep Installed Software Up To Date

It is highly likely that you will use the update manager to keep your software up to date but you can also use apt-get to do the same thing.

To do so run the following command:

```
$ sudo apt-get upgrade
```

How To Search For Packages

Before installing packages you will need to know which packages are available. apt-get is not used for this task. Instead, apt-cache is used as follows:

```
$ sudo apt-cache search <package name | keyword>
```

For example to search for a web browser type the following:

```
sudo apt-cache search "web browser"
```

To get more information about a package type the following:

```
sudo apt-cache show <package name>
```

How To Install A Package

To install a package using apt-get use the following command:

```
sudo apt-get install <package name>
```

How To Remove A Package

Removing packages is as straight forward as installing packages. Simply replace the word install with remove as follows:

```
sudo apt-get remove <package name>
```

Removing a package merely removes the package. It does not remove any configuration files used with that piece of software.

To fully remove a package use the purge command:

```
sudo apt-get purge <package name>
```

How To Get The Source Code For A Package

In order to view the source code for a package you can use the following command:

```
sudo apt-get source <package name>
```

The source code is placed into the folder where you ran the apt-get command from.

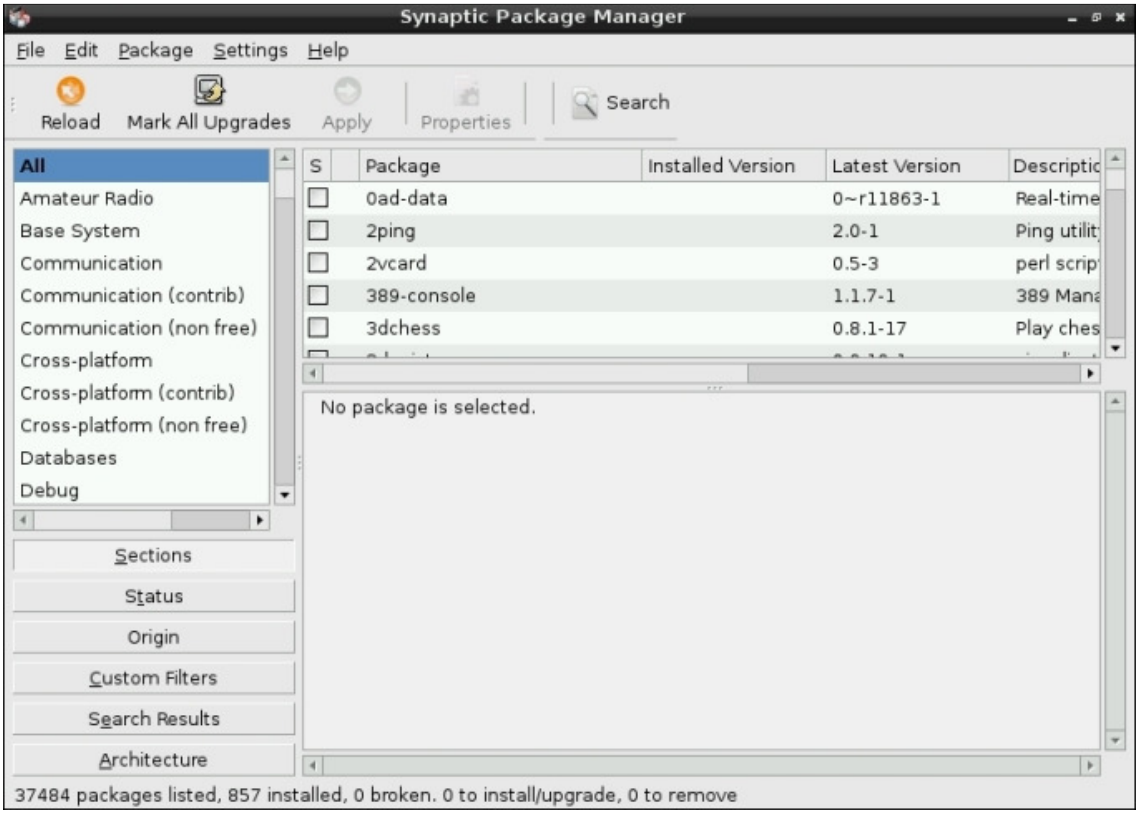
Synaptic GUI Package Manager

There are many different ways in which you can install software in Linux. Using apt-get is one way. Another way is by using a GUI tool such as the Synaptic Package Manager.

If its not installed on your Linux by default, following is the method using which you can install it on your Linux

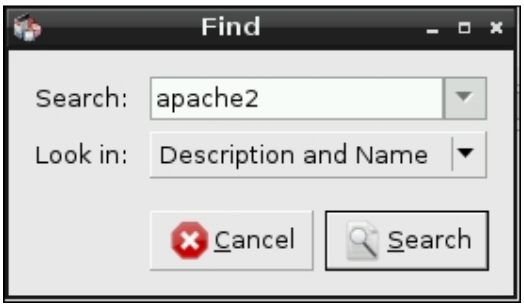
```
sudo apt-get install synaptic
```

Synaptic will take a few minutes to install on your Raspberry Pi as it is a reasonably large application. You will find the **Synaptic Package Manager** in the **Other** submenu in the main menu.



Searching and installing packages in Synaptic

You can search for packages in Synaptic using the search button:



Simply click on the **Search** button and enter the package that you are looking for.

The list of packages will be displayed based on your search criteria. Select one or more package you want to install. (mark for installation)

And install the packages.