Give our old Desktop / Notebook Computers with low resources a second life with the

FREE OPEN SOURCE Linux Operating System

Basic Linux Operating System Installation Guide

2021 by Ding Teak Soon
for STEMKRAF

- Download Linux .iso file (Choose ONE of the following Ubuntu based Linux)
- Lubuntu (Light weight branch from the Ubuntu Linux)
- Xubuntu (Medium weight branch from the Ubuntu Linux)
- Kubuntu (Heavy weight branch from the Ubuntu Linux)
... there are many others to choose from, we will just one choose from these 3 (They have the same Linux "engine", difference is in the pre-installed software, user-interface and default system settings)

- Make USB Bootable Installation Disk from Windows Operating System
- Make USB Bootable Installation Disk from Ubuntu based Linux Opeating System
- Install Linux Operating System from USB Bootable Installation Disk

Most old desktop computer does not have wireless internet connection hardware in it, we can get an inexpensive USB WIFI ADAPTOR to enable the Desktop Computer to access to the WIFI

DESKTOP COMPUTER

USB WIFI ADAPTOR

USB DRIVE

Note:

The user interface layout in these Linux Operating System is highly customizable, you may customize it to suit your own preference.

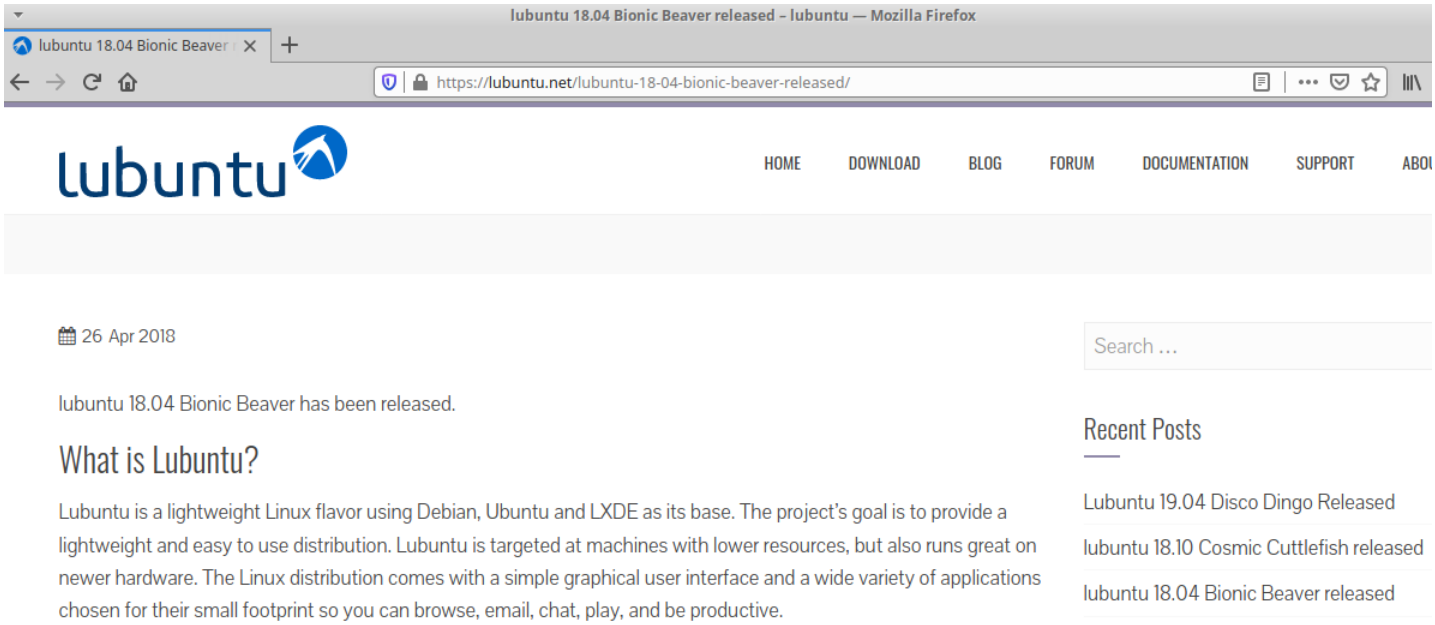
*Ubuntu LTS (Long Term Support) is released every 2 years and supported for 5 years.

Lubuntu - Light Weight Ubuntu Linux
For computer with small memory size RAM (2Gb or less)

https://lubuntu.net/lubuntu-18-04-bionic-beaver-released/

Below is version 18.04 (Requires 2Gb or more USB Disk to make installation disk)

Download the 64-bit version (works for most computers)
LTS = Long Term Support (no need for regular updates)



Once downloaded, we will get a file with

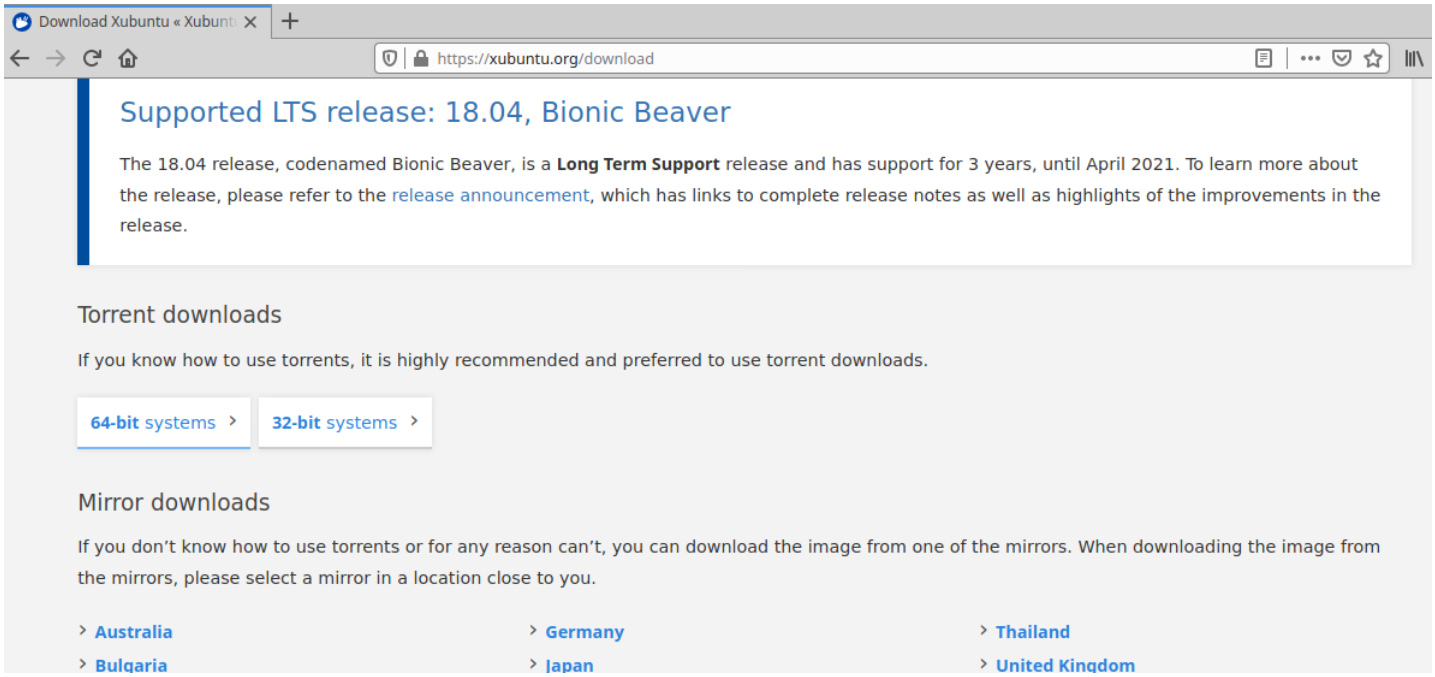
".iso" extension

We will use this file to make a bootable Linux installer disk on an USB Drive

Xubuntu - Medium Weight Ubuntu Linux
For computer with medium memory size RAM (4Gb or less)

https://xubuntu.org/download

Below is version 18.04 (Requires 2Gb or more USB Disk to make installation disk)
Download the 64-bit version (works for most computers)
LTS = Long Term Support (no need for regular updates)



Once downloaded, we will get a file with

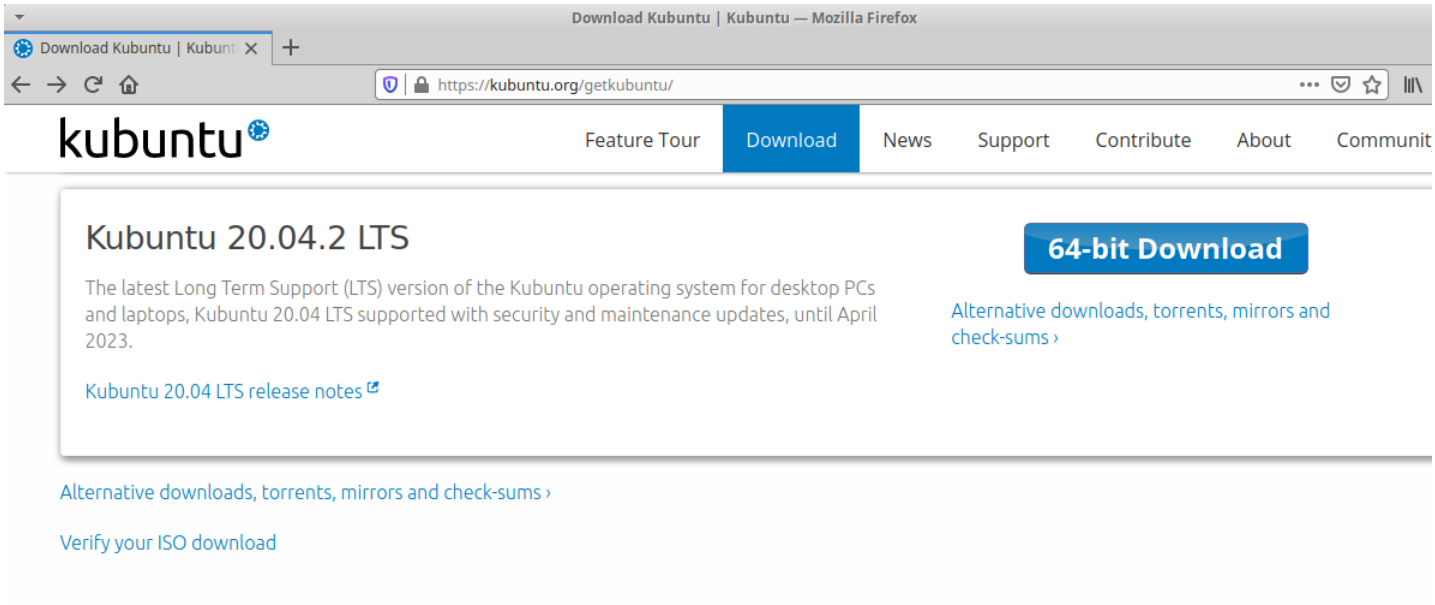
"**.iso**" extension

We will use this file to make a bootable Linux installer disk on an USB Drive

Kubuntu - Heavy Weight Ubuntu Linux (with advanced modern user interface)
For computer with larger memory size RAM (4Gb or more)

https://kubuntu.org/getkubuntu/

Below is version 20.04 (Requires 4Gb or more USB Disk to make installation disk)
Download the 64-bit version (works for most computers)
LTS = Long Term Support (no need for regular updates)



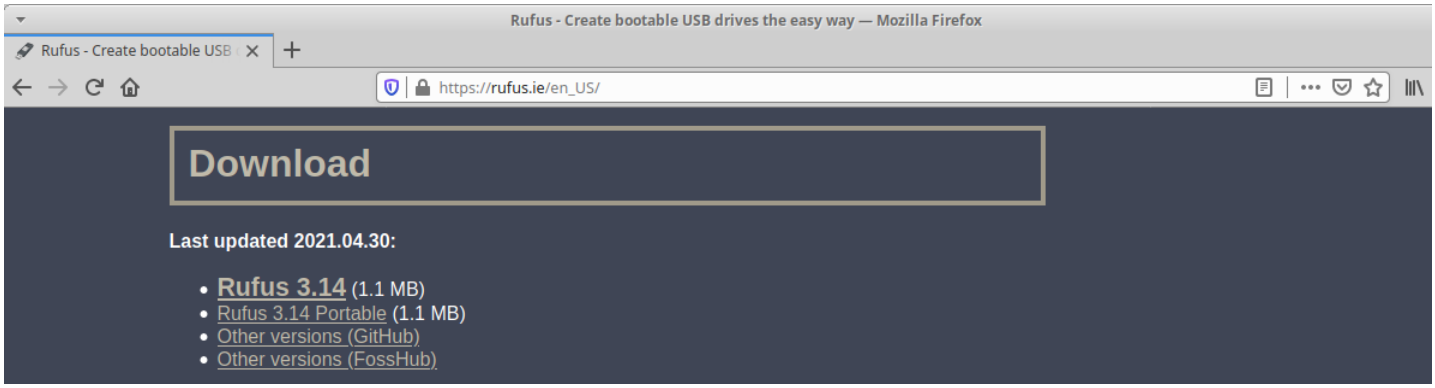
Once downloaded, we will get a file with

“.iso” extension

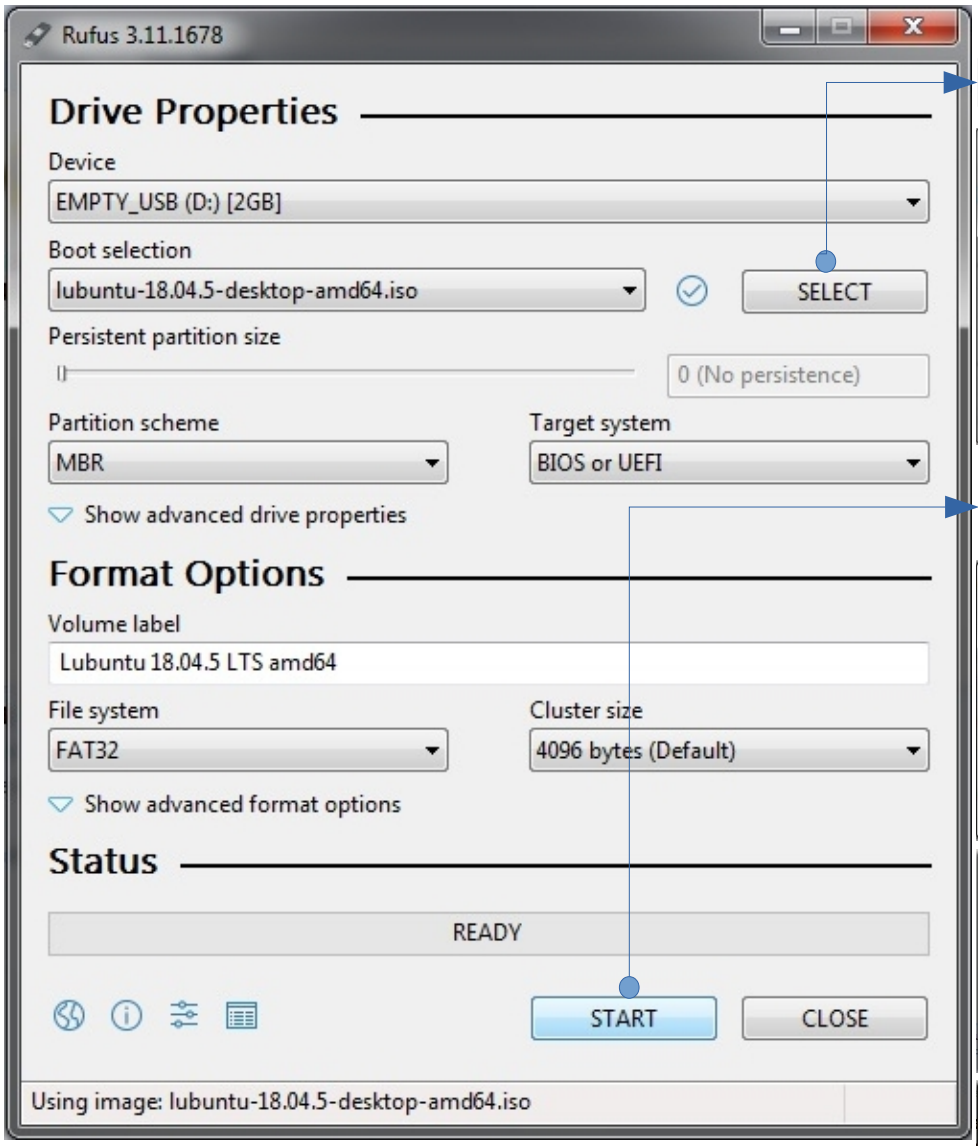
We will use this file to make a bootable Linux installer disk on an USB Drive

Any Computer running Windows Operating System
- Internet Connection
- 2Gb or more USB Drive (everything will be over-written)

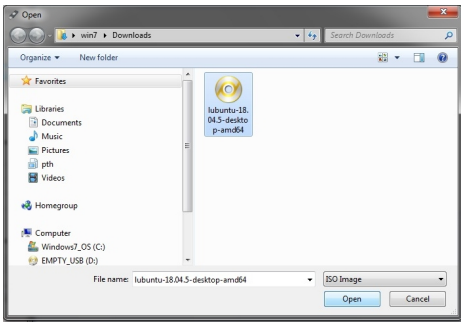
Software to make bootable disk from .iso file
(if does not exist, install rufus https://www.rufus.ie)



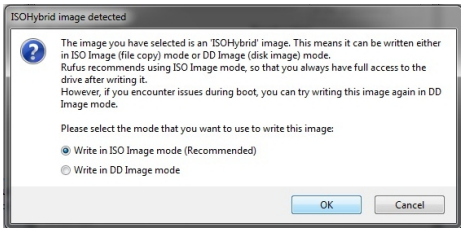
Download, install and run



Select linux .iso file



Select Default Options and Create Disk



Any Computer running **Ubuntu based Linux Operating System**
- Internet Connection
- 2Gb or more USB Drive (everything will be over-written)

"Startup Disk Creator" (if does not exist, install it)

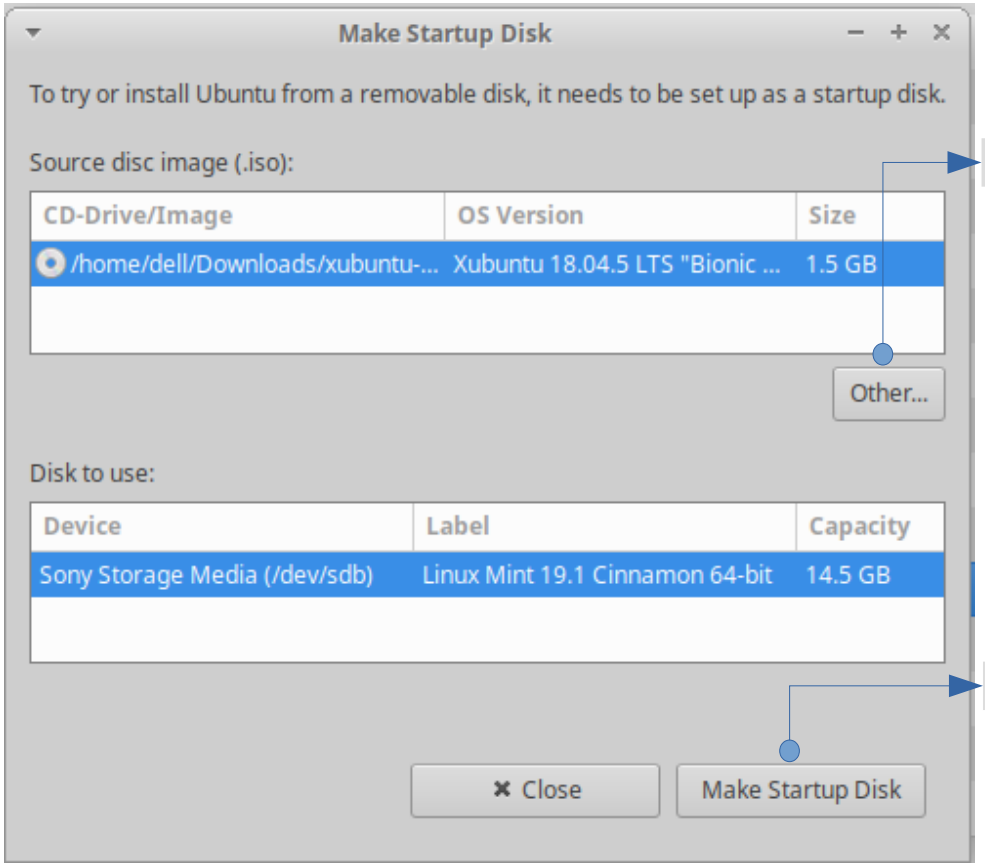
Depending on the Linux Operating system, you can either use Terminal Screen Command Line or Graphical Software Installer to Install the "Startup Disk Creator"

Note:
Graphical Software Installer can vary from one Linux to another. Terminal Sreen Command Line is available in all Linux Versions (we will just use the Terminal Screen Command Line)

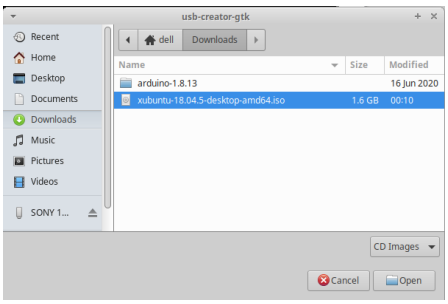
```
$sudo apt update
$sudo apt upgrade
$sudo apt install usb-creator-gtk
```

To run "Startup Disk Creator"

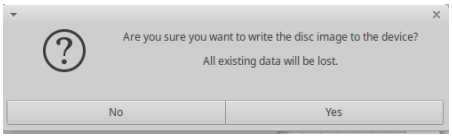
```
$usb-creator-gtk
```



Select linux .iso file



Create Disk



Note:
The "Startup Disk Creator" software can only work with Ubuntu based Linux, for other Linux variant, we have to use other software

Any Computer with or without any Operating System
- Free USB Port
- Internet Connection (wifi or wired)
- USB Drive with USB Bootable Installation Disk (Linux)

Insert the USB Bootable Installation Disk (Linux) into the Target Computer USB port (any port)

1. Enter the Desktop Computer to BIOS screen
- Needs to press a specific key from the keyboard when switched-on (this key differs from one BIOS to another, sometimes it can be F2, F12, Del or something else, sometimes it is shown on the screeen when booting up)

2. When in Desktop Computer BIOS screen, Set “First Boot Device” to “USB Drive”. Insert our Linux USB Bootable Installation Disk and restart Computer

The Linux Installer connected to USB drive will run automatically

If you have an internet connection (wired or wifi), you will be asked to connect to the internet, please have your internet user id and password ready

Each version of Linux installation can be different. In general all of them should have the following setting to choose. We will use the easiest and most common settings.

1. Language
Choose – English
Click Continue

2. Install or Run from USB
Choose – Install
Click Continue

3. Keyboard Type
Choose – English (US)
Click Continue

4. Updates and Other Software
Select – Download updates...
Select – Install third-party software...
Click Continue

5. Installation type
Select – Erase disk and install...
(Leave other options unselected, those are for advanced installation)
Click Continue

6. Where are you?
Choose – Your location (time zone)
Click Continue

7. Who are you? (enter whatever you wish, use something simple. Example ‘pc’)
Your Name = pc
Your computer’s Name = pc-home
Pick a user name = pc
Choose a password = pc123
Confirm password = pc123

Select – Log in automatically
Click Continue

8. Wait for installation to complete.

Lubuntu, Xubuntu or Kubuntu when installed, will run in graphical user interface very similar to Windows Operating System.

All of them are pre-installed with basic software such as,

1. Internet Browser Software. (Mozilla FireFox). Looks and feels similar to the Microsoft Internet Explorer.

2. A Microsoft Windows "File Manager" like facility for us to navigate through the entire file system. Lubuntu, Xubuntu and Kubuntu uses different software for this.

3. Software installer, This software allow us to easily install/remove software on our Graphical Linux Operating system. Similar to how we install Apps in our SmartPhone. We have a list of software to choose from.

4. Terminal Software, This is for us to key in Linux Operating System Commands. We can totally ignore this fow now but as time passes, we will eventually find it very useful. It can also be used to install software and configure the Linux Operating System

You may want to install the following very common software if they do not come pre-installed (depending on the version of Linux).

1. Libre Office Impress - for us to do presentations. Similar to Microsoft PowerPoint software

2. Libre Office Writer - for us to type documents. Similar to Microsoft Words

3. Libre Office Calc - for us to do spreadsheet. Similar to Microsoft Excel

4. Kolour Paint - for us to edit pictures. Similar to Microsoft Paint

Notes:
Although Linux Operting System is FREE and most of the Linux Software are FREE, it does not mean that they are inferior to any other Operating Systems.

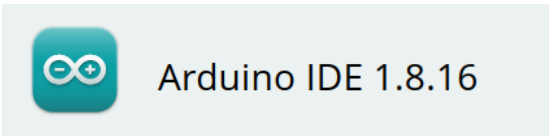
The Android Operating System that we use in our Smartphone, originates from the Linux Operating System.

Many Internet Servers are running Linux Operating System and Software.

They are also being used to make Computer Games, 3D Graphics Rendering, Movies and etc...

With all that, we can imagine what the Linux Operating System is capable of.

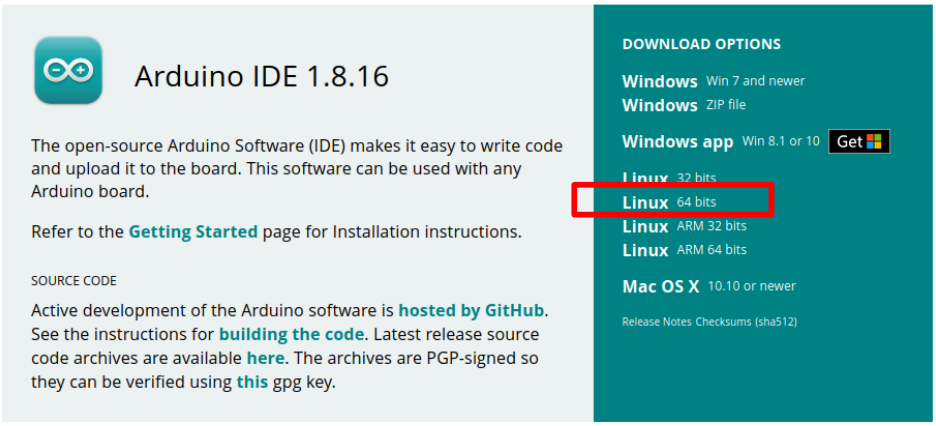
LATEST: The Linux Operating System is currently runing on planet MARS on MARS Rover Perseverance.



Go to Arduino Software Download webpage

https://www.arduino.cc/en/software

Downloads



1. Download the Linux 64 bits version (this should work for most Linux installation)
We will get this file in our Download folder: arduino-1.8.16-linux64.tar.xz

2. Unpack this file into any folder, in my case I just unpack it into the same Download folder.
We will get a sub-folder named "arduino-1.8.16" inside there are alot of files.

3. Open up Linux Terminal Software

1. At first $ prompt, key in "cd Downloads/arduino-1.8.16"
(this is the folder from your unpacking of downloaded file)

2. Next $ prompt, key in "sudo ./install.sh"
(it will ask for Linux password, then it will do the setting up for your Arduino IDE Software)

3. Next $ prompt, key in "sh ./arduino-linux-setup.sh $USER"
(this will allow the Arduino IDE Software to access to the USB port of your Linux Computer)

4. DONE!!!
You can now use your Arduino IDE Software just like when you installed it on your Windows Operating System.

```
$cd Downloads/arduino-1.8.16

$sudo ./install.sh
[sudo] password for xxx:
...
 done!

$sh ./arduino-linux-setup.sh $USER
```