

Quick-start guide to Linux:

Linux is a free-of-charge clone of UNIX. Nowadays, Linux has a windowing system much like Windows on your PC. And it has its own set of programs and many of those are free too. Linux is a light-weight operating system that you could likely run on that older PC that you're thinking of tipping into the e-cycle bin.

Linux will allow you to surf the web, watch YouTube videos, check your email, write a letter, edit videos, record and edit music, paint a picture, create a spreadsheet, and do 3D animation -- all for free.

Since anyone's allowed to customize Linux, there are different kinds of Linux -- each with subtle differences. So when you search for programs or help information for your Linux, be sure to type the name that matches your particular flavor of Linux operation system.

Of the versions of Linux that I've tried so far (as of 2023), one of the easiest for Windows users to get used to is Linux Lite. It's a version of Ubuntu Linux that has been configured to be similar enough to Windows.

Slashes are the same direction as in your web browser, since the internet and the web are based on UNIX (and by association, Linux). So you'll be using forward slashes instead of Windows or DOS back slashes to go from one directory or folder to another.

Ubuntu is a type of Debian Linux, so when you search the web for programs and how-to information you can usually use either name when typing into the Search field. E.g. "How to use wget for Ubuntu"

The following is a quick guide to get you started with Linux:

The first step is to download the ISO of Linux Lite (or whichever Linux you prefer).

One way is to copy the contents of the ISO to a folder on the hard drive using a free utility like DaemonTools Lite.

Then (if using Windows 7):

- Insert the blank DVD
- Click on [Burn files to disc] and click Next
- Give it a title like Linux 64 Lite
- Select the "With a CD/DVD player" option
- Click Next and drag the files to the DVD window
- At the top of the window, select [Burn to disc]

You could instead write the ISO to disc using a program like ImgBurn.

When it's done writing the to the DVD, place the disc in a PC that you want to make into a Linux machine and power it on.

It'll come up to a screen with some options. Use the arrow keys to select Install Linux and press Enter. Assuming you're willing to lose all the information on that machine's hard drive, choose the option to erase the drive as part of the Linux install.

After answering the usual questions about user name, password, etc..., the machine will eventually reboot (you can remove the disc at this point).

You'll be greeted with a screen with some options (the main two are the ability to update drivers and making a system restore point). There are two restore point types and only one of them works with this version of Linux.

At this point, you're going to want to have the internet connected to the machine.

Linux Lite already comes with a bunch of programs installed (a word processor, spreadsheet, screen capture utility, text editor, and a few other useful tidbits). Now's the time to add more stuff that you think is useful.

For example, there's the tragically-named paint program GIMP, an installer-helper called Synaptic, a heavy-hitting 3D modeling and animation program called Blender, as well as a nifty audio editing program called OcenAudio.

Note: The Linux Lite ver. 6.2 install that I'm using includes GIMP, along with an office suite pre-installed (Linux Lite {Emerald} 6.2 is based on Ubuntu 22.04.1 LTS).

Let's start by clicking the Firefox web browser icon at the bottom left corner of the screen. Next, go to Google (or whatever search page you like) and type in Blender download. Once at the Blender page, download the installer package.

Installing programs on Linux is hit and miss. By that, I mean that some are harder to install than others. If there's a part of the Linux workflow that confuses new users, this is it. Double-clicking the downloaded .TAR file will reveal the files in the archive (TAR is similar to a ZIP archive)

Right-click the Blender archive file and choose [Extract here]

When it's done unpacking the contents of the .tar file, look in the folder There you'll see Blender. If you look to the right of the file with the name Blender, you'll see the word "Executable" under the Type: column.

You can drag that Blender file to the desktop.

Then when you double-click its icon, select [Mark Executable] if that option appears.

If dragging the program's executable file to the desktop doesn't work to create a shortcut, there's another way...

The following example is for a package manager utility called Synaptic (its installation info is farther down this page).

To manually create a shortcut for an executable,

- right-click the Desktop and choose [Create Launcher]
- Give it a name (e.g. Synaptic)
- Set the working directory to /usr/share/applications
- Set the Command directory to /usr/bin/synaptic-pkexec
- Optionally, click on "No Icon" and select an icon image to use.
- Click [Create]

Note: If you can't find the usr folder when browsing, click the little back arrow in the path and then on the magnifying glass. That'll take you to the root directory.

If a shortcut asks you if you'd like to mark it as executable, say yes.

And if you just want to create a desktop shortcut for a folder,

- right-click the folder
- select [Send To] -> [Desktop (Create Link)]

The [Menu] icon at bottom left is like the [Start] icon in Windows.

You'll find most programs under the [Menu] -> [All Applications] list of programs. For example, GIMP is pre-installed there and listed as Image Editor.

Some programs require that you issue command line instructions in order to download and install them.

You can right-click Copy from a browser and right-click Paste into the command line shell.

e.g. `sudo apt-get update`

`sudo` is a security override command. It's similar to "Run as administrator" in Windows.

`apt-get` tells the computer to go look for an installer package file. It can also download install files.

update tells it to look for the newest version of the program install file.

The usr folder is located under the [This PC] -> File System icon.

This is main folder in which all other folders reside.

The user save folder is in the desktop folder. It's called User Files

I created a folder of my own on the desktop called My Files

/home/username/Desktop/My Files/

For the machine I'm using, the user name is max for a path of /home/max/Desktop/My Files

When you go to run a program, it might ask you to enter a password. That's the same password as your login password.

For information on your computer and its drives, memory, drivers, etc...,

- click [Menu] -> [System] -> [System Information]

The Memory section also gives you a readout of current memory usage like Task Manager.

Display, mouse settings, and desktop background customization is available through Control Panel.

Want to make the borders of your windows thicker for easier re-sizing?

Click [Menu] -> [Settings] -> [Window Manager]

Pick the theme called Default-xhdp

A simple text editor is included called Mousepad (similar to Windows Notepad).

It can be run from [Menu] -> [Accessories] -> [Text Editor]

Line numbers can be switched off from the View menu.

And you can set the Line Endings to behave like Windows Notepad.

If you prefer, there's a program more like Word under the [Menu] -> [Office] icon.

Alt Tab and Shift Alt Tab are supported for task switching.

The command line shell or command line interpreter:

ls -l (LS -L) This pulls up a directory listing with privileges information.

The Linux command line is case-sensitive, so you have to type it with lowercase letters.

The first character of
d means directory (i.e a folder)
- means link

The next nine characters are one of the following: r, w, x, or -
r = readable
w = writable
x = executable
- = not enabled

The first set of three are YOUR permissions as a super user (similar to administrator in Windows).
The next three are the permissions for anyone in your group.
The last three spots are the permissions of everyone else.

So, on my machine, my folders are listed as
drwxr-xr-x

If I put a space between each triad, I get
rwx r-x r-x

That's all permissions for me (rwx)

Readable, not writeable, and executable for both my group (r-x) and everyone else (r-x).

That means that I'm the only person who can actually over-write files (edit and save existing documents).

Names that have spaces have to go into quotes.

So, I'd type:

`cd "My files"` to go to the My Files folder.

To go up one directory, type

`cd ..`

And to go to the root (main) directory, type:

`cd /`

If you're buried in your user folder's structure and want to quickly jump to another branch off of root:

```
pushd /foldername  
pushd /media
```

To get back to where you were before the `pushd` command, type:

`popd`

And you can jump back and forth between those two locations with

`cd -`

If you're in the root directory and you're trying to find your personal folder that you made on the desktop, try going to the home directory. You should be able to see your username there.

In my case, I'm max.

So when I type `cd home` I see max as one of the folders.

And if I type `cd max` I see the Desktop folder. I know my personal folder's in that directory.

To go to a directory beyond a directory use a forward slash (like on the web):

```
cd usr/share
```

The share folder is where a lot of installed apps are stored. Look for the applications directory.

You can scroll up through the list of stuff that's gone by in the command line shell by using your mouse wheel.

And you can go back to a previous command using the up arrow on your keyboard and edit the command using the left and right arrow keys.

To download a graphical installer utility (Linux calls these Package Managers)

```
sudo apt-get update
```

When it's done looking for the newest version, type

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

This will install the Synaptic Package Manager app.

To find out where it installed to, type

```
dpkg -L synaptic
```

You'll see that it installed here:

```
/usr/share/applications/
```

Synaptic includes a Search bar. Just type in the name of the app that you'd like to download and install and it will ask you to check the boxes for the program and any dependencies.

This is how I downloaded the audio app, Audacity.

To clean up the command line, type clear

Note: Linux doesn't need file extensions. They're entirely optional.

Find out which folders an app's files exist in:

e.g.

whereis audacity

To pull up a list of all running processes on your computer:

ps -ef

To force a process to close, type kill followed by its process number.

For example, I had two text files open. I was reading one and typing these notes into another.

The process number for the one that I was reading was 2611.

I typed the following and it actually closed BOTH text files, so save your work before trying this:

kill 2611

To delete a text file called myfile.txt:

rm myfile.txt

To find out where the "rm" command resides on the computer, type:

which rm

Installing programs can be a bit of a chore in Linux. Quite a few need to be installed from the command line. Here's an example to help you understand what's going on:

```
sudo apt-get update
```

```
wget http://www.ocenaudio.com/downloads/index.php/ocenaudio_debian64.deb
```

```
sudo apt-get install -f
```

```
sudo dpkg -i ocenaudio_debian64.deb
```

The first of the four lines makes sure that it's looking at the latest updates.

The second line grabs the program's installer from the web and downloads it to your computer (it uses an app called wget).

The third line downloads and installs any additional stuff that the program might require in order to run.

The last line actually installs the program. In this case, it's an audio editor -- similar to Sound Forge.

To create a folder called Amiga, type:

```
mkdir Amiga
```

Normally, you can't copy stuff to some of the usr folders. For example, the themes folder.

A way around this is to use the command line:

If I downloaded an SGI theme to make the desktop look like IRIX, I could go to the folder containing the SGI theme folder and type

```
sudo cp -Rv SGI /usr/share/themes
```

So that's sudo to force the system to do the copy.

cp to do the actual copy operation.

-Rv to copy all sub-folders and show what it's doing while copying.

SGI is the file or folder name.

/usr/share/themes is where it will copy to.

Or if you need to move a file or folder that's in a secured area, use:

```
sudo mv -v ~/theme_folder /usr/share/themes
```

(The above moves the folder "theme_folder" to "usr/share/themes").

```
sudo mv -v gravitar /usr/games
```

(The above moves the file named "gravitar" to the /usr/games directory).

-v is verbose so it shows what's going on

-R is recursive so it includes sub-folders
sudo gives temporary root access

To move a folder and its contents up one directory:

```
mv foldername ..
```

or to force it when you're dealing with a folder in a secured directory:

```
sudo mv foldername ..
```

If sudo rm foldername won't delete a folder, try

```
sudo rm -rf foldername
```

Moving files up one directory:

E.g. If you want home/myuser/myfolder to be /home/myfolder/

make sure you're in the myuser folder and type

```
mv myfolder/* .
```

or force it with `sudo mv myfolder/* .` <-- There's a space before the period.

Navigating the command line shell:

CTRL A - go to beginning of line

CTRL E - move cursor to end of line.

CTRL F - cursor forward one character (or use right arrow key)

CTRL B - cursor back one character (or use left arrow key)

ESC F - forward one word

ESC B - back one word

CTRL D - delete character to right of the cursor

ESC D - delete the word to the right of the cursor

CTRL K - kill entire line (usually from cursor; some editors do the whole line even if cursor is in the middle of a line).

Note: Esc codes act differently from Ctrl codes. Esc codes require that you take your finger off of the Esc key after each use and then press the Esc key again whereas with Ctrl, you can just keep your finger on Ctrl and press the letter again.

Note: You can highlight text from a text editor and paste it into the command line shell using the right mouse button.

Let's say you're all done with the command line interpreter.

Just type exit and press enter.

If you format a USB stick using Windows' FAT32 option, you can use it in Linux too.

To eject a USB stick,

- double-click [File System] to open File Manager
- Under the Devices heading on the left side of the window,
- click the little Eject icon next to the USB stick's icon.

Note: some characters like ? and | aren't understood by Windows. File names that include those will first need to be changed before you can copy them to a Windows PC.

More Linux commands:

List the contents of a directory one page at a time using the Spacebar (similar to dir/p in DOS):
To advance one line at a time, press Enter

```
ls -a |more
```

(Ctrl C will quit the list and go back to the shell prompt).

A short way to tell the computer that you're referring to the current folder is to type a single period.

So if you're in your home folder and you type the following, it'll copy the file called blitter from the Amiga folder and it'll put it into your home folder:

```
cp /'home/username/Desktop/My files/Amiga/blitter' .
```

Copying the files named Max and Carter to a folder called Network23 and the Network23 folder is in the My files folder (under Desktop), type:

```
cp Max Carter /home/username/Desktop/My files/Network23'
```

To copy a file named BaseStar.jpg from your current directory into a sub-folder called Cylons

```
cp BaseStar.jpg Cylons
```

To copy everything in your current folder into the /Desktop/My Files/jpg folder, type:

```
cp -R * /home/username/Desktop/My files/jpg'
```

Note: -R means Recursive (or copy sub directories along with it).

To copy the contents of pics1 and pics2 to a folder called photos that's located inside your My files folder

```
cp -avr pics{1,2} /home/username/Desktop/My files'
```

The above copies folders within folders to the My files folder. So if there are any subdirectories inside pics1 or pics2, those subfolders and their files will be copied over as well.

To make a copy of a file called recognizer1 and call the copy recognizer2

```
cp recognizer1 recognizer2
```

To get a listing of the various switches available for the cp command, type:

```
cp --help
```

Folders and files with spaces in their names can be surrounded by either double or single quotes.

Typing `cd` by itself takes you to your home folder.

Folders with names starting with a `.` are usually very important system folders and many of them are read on startup.

So if you see a period in front of a folder name, it's probably a good idea not to mess with that folder.

To noodle around in the file structure, starting at your home folder, put a tilde at the front of the path. E.g.)

```
ls ~/Downloads
```

To list all files in a folder (including the hidden ones):

```
ls -a
```

To sort files in the listing based on the time that they were modified and show as a list with date shown for each file and folder:

```
ls -lt
```

To rename a file called `egon1` to `egonspengler` type:

```
mv egon1 egonspengler
```

To see what's in a text file without using an editor:

```
less file.txt
```

(Press the space bar to continue a page at a time).

Type q to exit the reader.

To search for the word slim-bot in a file called phat.txt, type:

```
less phat.txt
```

Once the file is open, type:

```
/slim-bot
```

Type stuff into a new text file called movie-list.txt without a word processor or text editor:

```
cat > movie-list.txt
```

Now type in the movies that you'd like in your document:

```
Blade Runner  
Star Trek II  
TRON
```

Pressing Control D will exit text entry mode and auto-save the text file.

If you decided that you wanted to add another movie to the list, type:

```
cat >> movie-list.txt
```

```
The Dark Crystal
```

Press CTRL D like before when done.

To show what's in the text file, use either cat or less. E.g.)

```
cat movie-list.txt
```

```
less movie-list.txt
```

To sort the list of movies alphabetically and send that to a new text file called movies_A-Z.txt

```
sort < movie-list.txt > movies_A-Z.txt
```

* matches any character and any number of characters.

? matches only one character.

To list only the files starting with sci, type

```
ls sci*
```

To list just the files that end with iction, type

```
ls *iction
```

And to list only three-letter files that end with the letters ad

```
ls ?ad
```

If you have the access rights, you can change a file's permissions.

To make it so that you can't overwrite the file called Design.txt

```
chmod u-w Design.txt
```

(a means all, g means group, and u means user)

And to give both execute and write permissions to everyone for the Design.txt file

```
chmod a+wx Design.txt
```

To get a list of files by type:

```
file *
```

Search the entire drive for a file named Alpha:

```
sudo find / -type f -iname "Alpha"
```

Search entire drive for directory named Omega:

```
sudo find / -type d -iname "Omega"
```

(f stands for file and d stands for directory). Press Ctrl C to cancel search.

If Linux won't let you eject a USB stick or USB drive, there might be programs still claiming that drive.

To find out what's keeping the drive from being software ejected,

- Type lsblk
- Take a look at the connected devices. Typically, a USB drive will have a name like sdc1
- If yours shows up under the path /media/username/03C9-5FA0, you'd type
fuser -v /media/username/03C9-5FA0
- It'll show you which program or process is holding up the USB drive.

Closing that program or killing that process should make it possible to eject the USB drive.

Environment variables (shown in uppercase letters):

These are things that can be changed that affect the entire environment or system.
Here are some examples:

USER <-- Your username can be whatever you want it to be.

HOME <-- The location of your home folder. You could change this if you wanted to.

HOST <-- The name of the computer you're using. That could be changed too.

ARCH <-- If you swapped out your CPU, then you'd be changing this environment variable.

To see what your environment variables are currently, type:

```
printenv | less
```

(Press q to exit the listing)

Shell variables (shown in lower-case):

You can customize the particular command line shell without affecting any other shell windows.

`cwd` <-- This is your working directory. Again, changeable.

`home` <-- If you choose another home folder location, it will only apply to this shell instance.

`prompt` <-- You could make your prompt read, "By your command:" for just this shell, if you wanted to.

Tip: In general, it's best not to mess with environment and shell variables unless you need to.

Note: You probably won't need a lot of the above commands, unless you're using a command-line-only version of Linux like the one that Micro\$oft reportedly uses to maintain their web servers.

Avoid using the following characters in your file names (some of them have other meanings to Linux and characters like the following can make file transfers to other operating systems difficult or impossible):

`/ * & % | ?`

How to change your user name and password in Linux Lite v 5.8:

- Menu -> Settings > Lite User Manager

Note: It's just [User Manager] in regular Linux.

- Click [New User]
- Create a new user called temp
- Give it the same password as the existing user account
- On the right side of the User Manager, scroll down and check sudo.
- Click [Apply] and [Quit]
- Menu -> Settings -> Lite User Manager

Make sure that sudo really is checked.

If it is,

- Click Menu -> Turn Off Computer
- Choose [Log Out]
- Now log in using the temp user account.

- Open a shell and type
sudo su

- Type your root password and press Enter.

Note: newaccount should be the name of the new account that you're creating.
oldaccount should be the name of the old account that you're transferring settings from.
NewAccountLabel is the tag you want to label the new account with. It can be whatever you like.

In the terminal shell, type the following:

```
killall -u newaccount oldaccount
id oldaccount
usermod -l newaccount oldaccount
groupmod -n /home/newaccount -m newaccount
usermod -c "New Account Label" newaccount
id newaccount
```

You should see a bunch of categories with the new account name in brackets after them, showing that the new account is now a member of the groups that the old account belongs to.

Reboot and log in using the new account.

Delete the temp account that you made:
- [Menu] -> [Settings] -> [Lite User Manager]
- Set the top right drop-down to [temp]
- Click [Remove selected user]

To change the password for the new account, open a command line shell and type:

```
sudo passwd
```

Or go to the User Manager and click [Change password]

Note: You might have to reboot before you'll be able to remove the other accounts using the User Manager.

Also, you can't (and shouldn't) delete the account named root.
