Basic Linux/Unix Commands with Examples

File Management becomes easy if you know the right commands.

Sometimes, **commands are also referred as "programs" since whenever you run a command, it's the corresponding program code, written for the command, which is being executed**.

Listing files (ls)

If you want to see the list of files on your UNIX or Linux system, use the '**ls'** command.

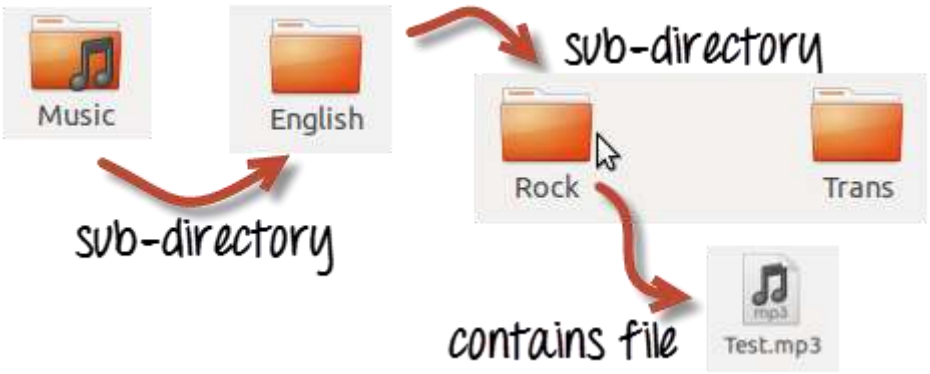
It shows the files /directories in your current directory.

```
guru99@VirtualBox:~$ ls
Desktop    Downloads          Music     Public     Videos
Documents  examples.desktop   Pictures  Templates
guru99@VirtualBox:~$
```

Note:

- Directories are denoted in blue color.
- Files are denoted in white.
- You will find similar color schemes in different flavors of Linux.

Suppose, your "Music" folder has following sub-directories and files.



You can use **'ls -R' to shows all the files not only in directories but also subdirectories**

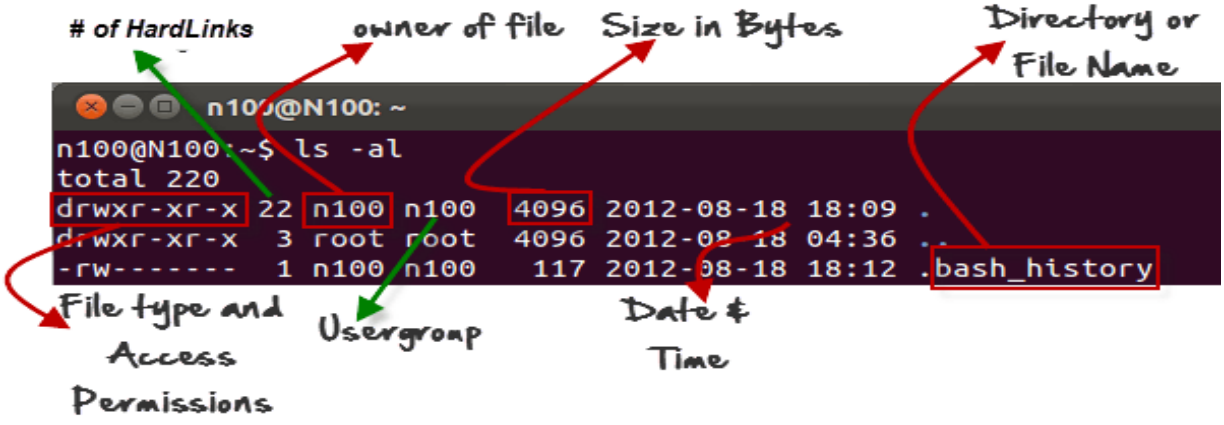
```
guru99@VirtualBox:~$ ls -R
.:
Desktop    Downloads         Music     Public     Videos
Documents  examples.desktop  Pictures  Templates

./Desktop:

./Documents:

./Downloads:

./Music:
English

./Music/English:
Rock  Trans

./Music/English/Rock:
Test.mp3

./Music/English/Trans:

./Pictures:

./Public:

./Templates:

./Videos:
guru99@VirtualBox:~$
```

NOTE: The command is case-sensitive. If you enter, "**ls - r**" you will get an error.

'ls -al' gives detailed information of the files. The command provides information in a columnar format. The columns contain the following information:

1st Column	**File type and access permissions**
2nd Column	# of HardLinks to the File
3rd Column	Owner and the creator of the file
4th Column	Group of the owner
5th Column	File size in Bytes
6th Column	Date and Time
7th Column	Directory or File name

Let's see an example -

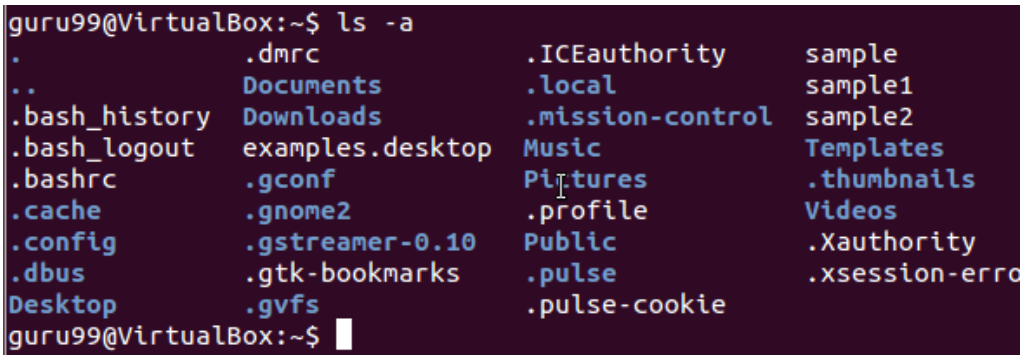


Listing Hidden Files

Hidden items in UNIX/Linux begin with • "period" symbol at the start, of the file or directory.

Any Directory/file starting with a '.' will not be seen unless you request for it. To view hidden files, use the command.

```
ls -a
```

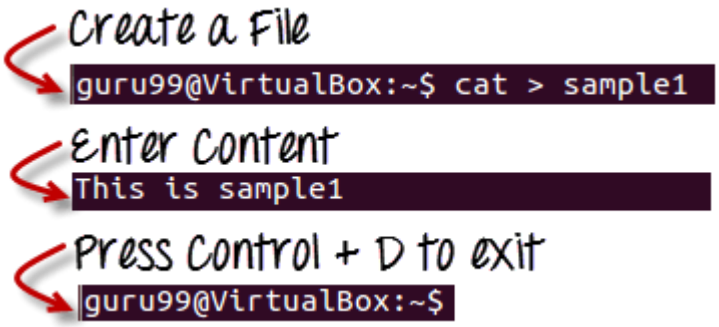


Creating & Viewing Files

The 'cat' command is used to display text files. It can also be used for copying, combining and creating new text files. Let's see how it works.

To create a new file, use the command

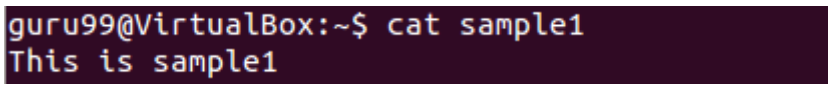
1. cat > filename
2. Add content
3. Press 'ctrl + d' to return to command prompt.



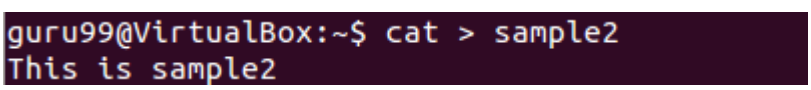
To view a file, use the command -

```
cat filename
```

Let's see the file we just created -



Let's see another file sample2



The syntax to combine 2 files is -

```
cat file1 file2 > newfilename
```

Let's combine sample 1 and sample 2.

```
guru99@VirtualBox:~$ cat sample1 sample2 > sample
```

As soon as you insert this command and hit enter, the files are concatenated, but you do not see a result. This is because **Bash Shell (Terminal) is silent type**. Shell Commands will never give you a confirmation message like "OK" or "Command Successfully Executed". It will only show a message when something goes wrong or when an error has occurred.

To view the new combo file "sample" use the command

```
cat sample
```

```
guru99@VirtualBox:~$ cat sample
This is sample1
This is sample2
```

Note: *Only text files can be displayed and combined using this command.*

Deleting Files

The 'rm' command removes files from the system without confirmation.

To remove a file use syntax -

```
rm filename
```

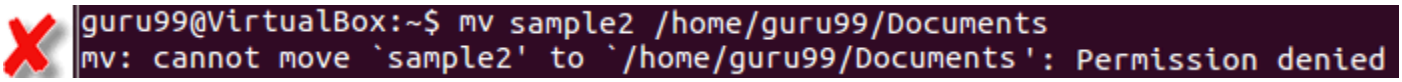
Moving and Re-naming files

To move a file, use the command.

```
mv filename new_file_location
```

Suppose we want to move the file "sample2" to location /home/guru99/Documents. Executing the command

```
mv sample2 /home/guru99/Documents
```



mv command needs super user permission. Currently, we are executing the command as a standard user. Hence we get the above error. To overcome the error use command.

```
sudo command_you_want_to_execute
```

Sudo program allows regular users to run programs with the security privileges of the superuser or root.

Sudo command will ask for password authentication. Though, you do not need to know the root password. You can supply your own password. After authentication, the system will invoke the requested command.

Sudo maintains a log of each command run. System administrators can trackback the person responsible for undesirable changes in the system.

```
guru99@VirtualBox:~$ sudo mv sample2 /home/quru99/Documents
[sudo] password for guru99: ****
guru99@VirtualBox:~$
```

Re-naming files

```
mv filename newfilename
```

NOTE: By default, the password you entered for sudo is retained for 15 minutes per terminal. This eliminates the need of entering the password time and again.

You only need root/sudo privileges, only if the command involves files or directories not owned by the user or group running the commands

Directory Manipulations

Enough with File manipulations! Let's learn some directory commands.

Creating Directories

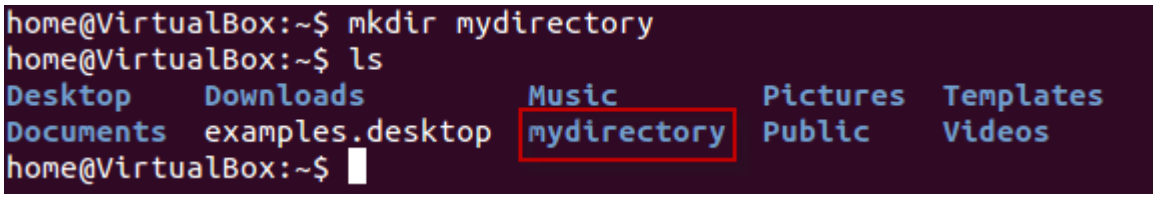
Directories can be created on a Linux operating system using the following command

```
mkdir directoryname
```

This command will create a subdirectory in your present working directory, which is usually your "Home Directory".

For example,

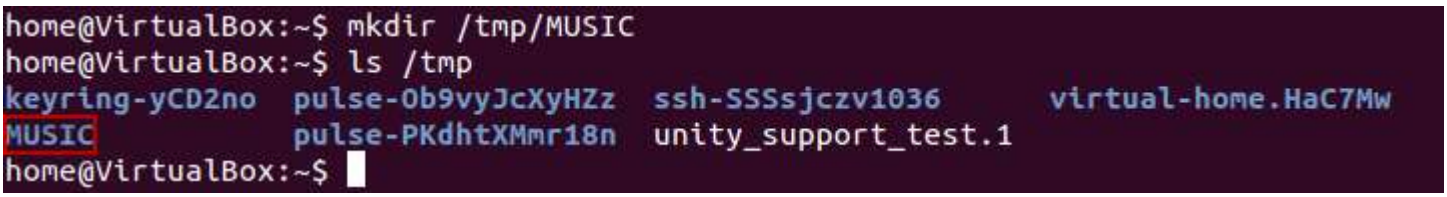
```
mkdir mydirectory
```



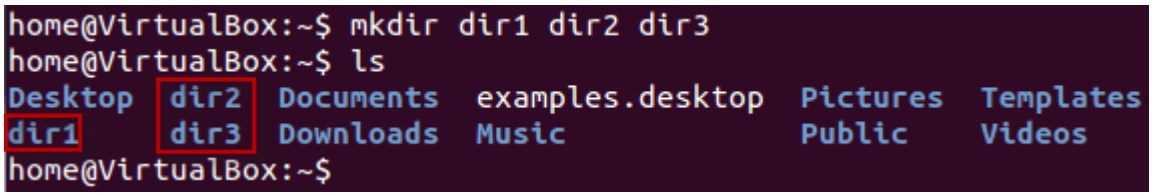
If you want to create a directory in a different location other than 'Home directory', you could use the following command

```
mkdir /tmp/MUSIC
```

will create a directory 'Music' under '/tmp' directory



You can also create more than one directory at a time.



Removing Directories

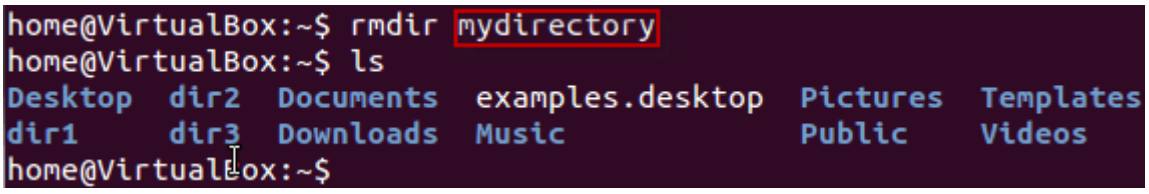
To remove a directory, use the command -

```
rmdir directoryname
```

Example

```
rmdir mydirectory
```

will delete the directory mydirectory



Tip: Ensure that there is no file / sub-directory under the directory that you want to delete. Delete the files/sub-directory first before deleting the parent directory.

```
home@VirtualBox:~$ rmdir Documents
rmdir: failed to remove `Documents': Directory not empty
home@VirtualBox:~$
```

Renaming Directory

The 'mv' (move) command (covered earlier) can also be used for renaming directories. Use the below-given format:

```
mv directoryname newdirectoryname
```

Let us try it:

```
home@VirtualBox:~$ mv mydirectory newdirectory
home@VirtualBox:~$ ls
Desktop    Downloads         Music        Pictures  Templates
Documents  examples.desktop  newdirectory Public    Videos
home@VirtualBox:~$
```

Other Important Commands

The 'Man' command

Man stands for manual which is a reference book of a Linux operating system. It is similar to HELP file found in popular software.

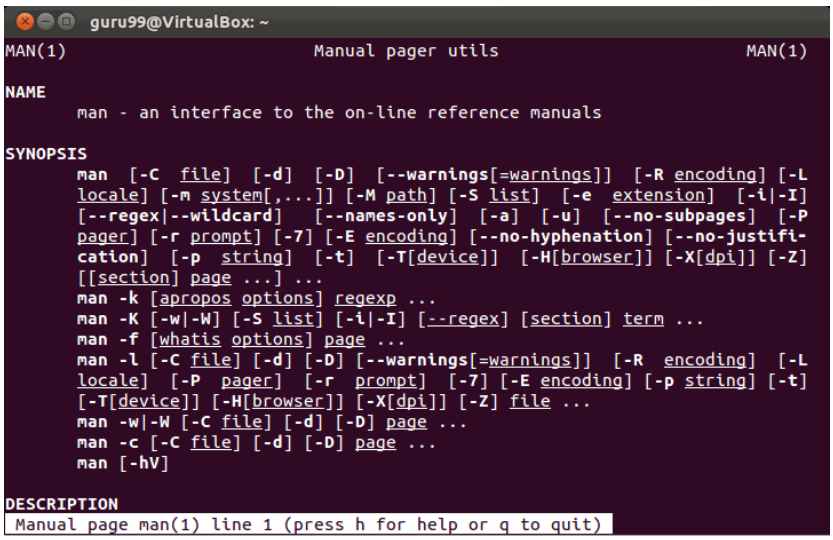
To get help on any command that you do not understand, you can type

```
man
```

The terminal would open the manual page for that command.

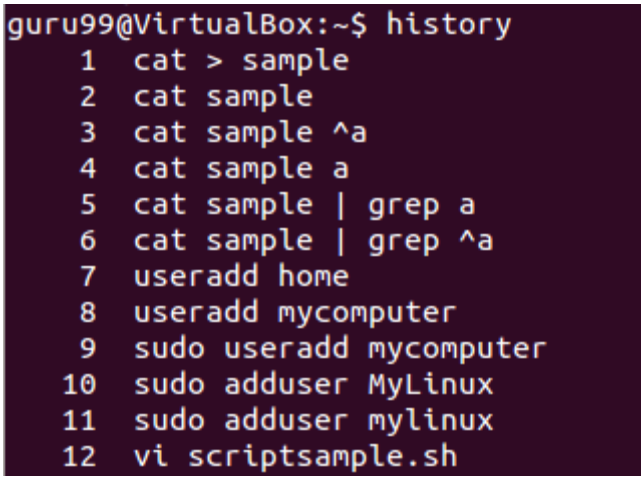
For an example, if we type *man man* and hit enter; terminal would give us information on man command

```
guru99@VirtualBox:~$ man man
```



The History Command

History command shows all the commands that you have used in the past for the current terminal session. This can help you refer to the old commands you have entered and re-used them in your operations again.



The clear command

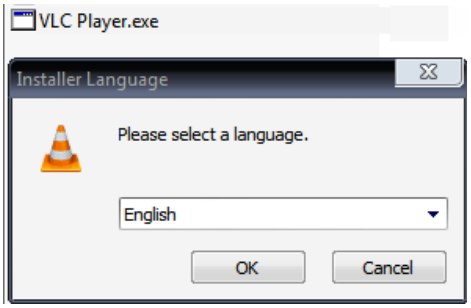
This command clears all the clutter on the terminal and gives you a clean window to work on, just like when you launch the terminal.

Keyboard Shortcuts

Arrow Up / Down	Previously used command.
TAB	Auto Complete (type at least 1 character then press TAB)

Installing Software

In windows, the installation of a program is done by running the setup.exe file. The installation bundle contains the program as well various dependent components required to run the program correctly.



In Linux/UNIX, installation files are distributed as packages. But the package contains only the program itself. Any dependent components will have to be installed separately which are usually available as packages themselves.

You can use the **apt** commands to install or remove a package. Let's update all the installed packages in our system using command -

```
sudo apt-get update
```

To install a software from the repository. The command syntax is -

```
sudo apt-get install packagename

sudo apt-get install firefox (installs firefox)
```

```
guru99@VirtualBox:~$ sudo apt-get update
Ign http://extras.ubuntu.com precise InRelease
Ign http://security.ubuntu.com precise-security InRelease
Ign http://in.archive.ubuntu.com precise InRelease
Ign http://in.archive.ubuntu.com precise-updates InRelease
Get:1 http://security.ubuntu.com precise-security Release.gpg [198 B]
Get:2 http://extras.ubuntu.com precise Release.gpg [72 B]
Ign http://in.archive.ubuntu.com precise-backports InRelease
Hit http://extras.ubuntu.com precise Release
Hit http://in.archive.ubuntu.com precise Release.gpg
Hit http://extras.ubuntu.com precise/main Sources
Get:3 http://in.archive.ubuntu.com precise-updates Release.gpg [198 B]
```

updates all installed packages

```
Hit http://in.archive.ubuntu.com precise-updates/univers
Hit http://in.archive.ubuntu.com precise-backports/main
Hit http://in.archive.ubuntu.com precise-backports/multi
Hit http://in.archive.ubuntu.com precise-backports/restr
Hit http://in.archive.ubuntu.com precise-backports/unive
Fetched 1,293 kB in 27s (47.4 kB/s)
Reading package lists... Done
guru99@VirtualBox:~$
```

The easy and popular way to install programs on Ubuntu is by using the Software center as most of the software packages are available on it and it is far more secure than the files downloaded from the internet.

Linux Mail Command

For sending mails through a terminal, **you will need to install packages 'mailutils'.**

Once done, you can then use the following syntax for sending an email.

```
mail -s 'subject' -c 'cc-address' -b 'bcc-address' 'to-address'
```

This will look like:

```
home@VirtualBox:~$ mail -s "News Today" abc@ymail.com
Hi,

The news for today follows.

1. Abs named as the biggest company.
2. ....
.
```

Press Cntrl+D you are finished writing the mail. The mail will be sent to the mentioned address.

Linux Command List

Below is a Cheat Sheet of Linux commands we have learned in this tutorial

Command	Description
ls	Lists all files and directories in the present working directory
ls - R	Lists files in sub-directories as well
ls - a	Lists hidden files as well
ls - al	Lists files and directories with detailed information like permissions, size, owner, etc.
cat > filename	Creates a new file
cat filename	Displays the file content
cat file1 file2 > file3	Joins two files (file1, file2) and stores the output in a new file (file3)
mv file "new file path"	Moves the files to the new location
mv filename new_file_name	Renames the file to a new filename
sudo	Allows regular users to run programs with the security privileges of the superuser or root
rm filename	Deletes a file
man	Gives help information on a command
history	Gives a list of all past commands typed in the current terminal session
clear	Clears the terminal
mkdir directoryname	Creates a new directory in the present working directory or a at the specified path
rmdir	Deletes a directory
mv	Renames a directory
apt-get	Command used to install and update packages
mail -s 'subject' -c 'cc-address' -b 'bcc-address' 'to-address'	Command to send email
mail -s "Subject" to-address < Filename	Command to send email with attachment