Linux Basics

Linux Command Line Syntax

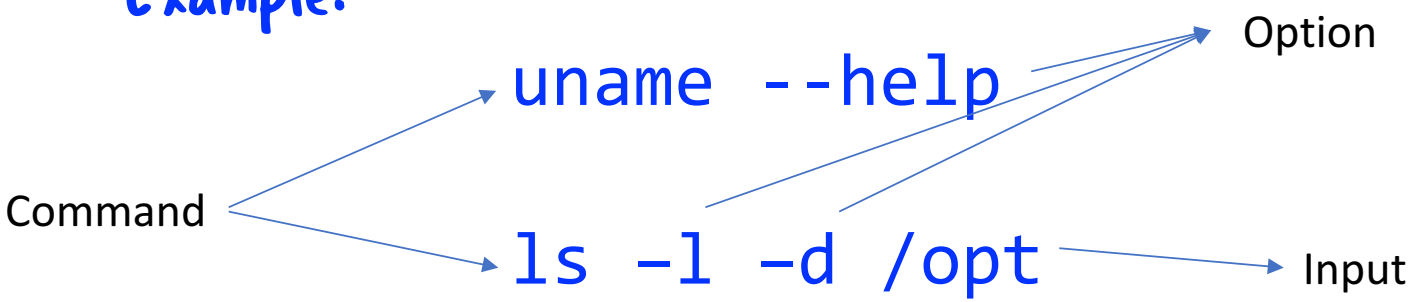
Command-Name {Options} {Inputs}

Options:

- <Single Character>
-- <Single Word>

Standard option to all the commands is `--help`

Example:



- Unlike windows Linux Commands are case-sensitive.
- You can get the help of any command by using man pages.
- Linux is more command line friendly than UI tools.

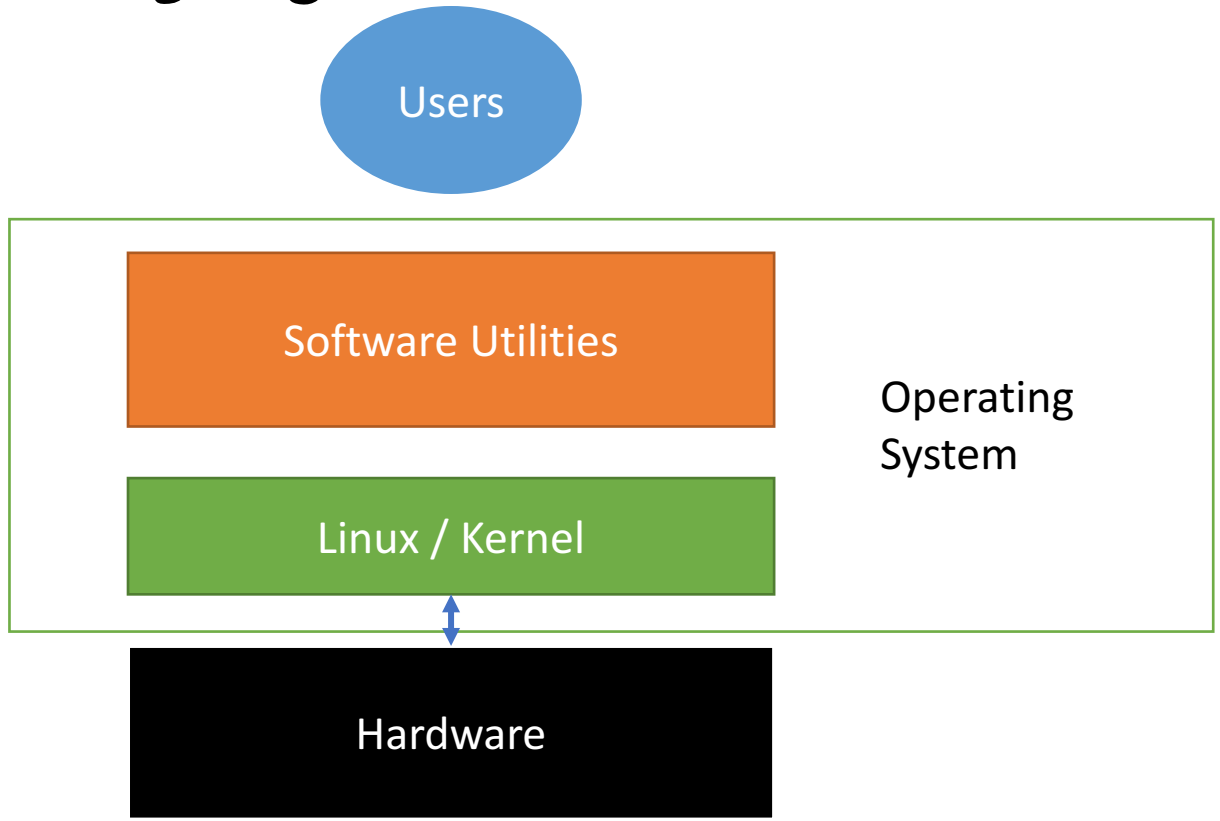
Linux Commands - System Information

- To check whether the machine is a 32bit or 64bit we can use the following command.
-

  `uname -i`

  - On the output if it shows `i386/i586/i686` then it is 32bit
  - On the output if it shows as `x86_64` then it is 64bit.

Linux Operating System - Architecture



- Linux is not an operating system and it is a code which drives the hardware.
- Vendors like RedHat pull the Linux code and embed that with software's and ships that as operating system.

Linux Commands – Operating & Hardware Info

- To check the vendor of operating system.

```
cat /etc/*release
```

- To check the CPU information.

```
cat /proc/cpuinfo
```

- To check the memory information.

```
cat /proc/meminfo
```

- To check the disk information

```
sudo fdisk -l
```

- To become more professional way of using command line you need to have lot of hands on on CLI shortcuts. Following is one of the reference link for such shortcuts.

  https://github.com/fliptheweb/bash-shortcuts-cheat-sheet

- You can pick any link of your choice in google to get shortcuts.

Command Prompts

- Going forward we may need to perform some admin activities as well. In such cases we need to understand the prompt for executing commands..
- Command prompt can help in determining whether you are a root (admin) user or a normal user.

$ - Prompt denotes you are normal user

- Prompt denotes you are root user

- In companies we usually login with our account as normal user, but we can gain the root access to the system using sudo command which we will discuss that further.

Linux Commands - Listing files and Directories

- In the linux basic commands we prefer to start with `ls` command.
- `ls` command can fetch the files and directories in the current directory.
- `ls` -> Get list of files and directories, but it may not show hidden files.
- Hidden files in linux were created with .filename.
- `ls -A` -> Get list of hidden files and directories.
- `ls -l` -> Get list of files with long format, usually shows properties of a file.
- `ls -Al` -> We can combine multiple options as well, but depends on command.

Linux Commands - Creating files.

- We can create files in Linux in multiple ways/commands. As a basic we always use touch command to create a file.
- Syntax: `touch file-name` -> Creates an empty file.
- Example: `touch sample notes.txt lambda.py`
- `touch` command can create multiple files as shown.
- In Linux we don't have any file extensions. Extensions we may use it for our understanding

Linux Commands – Remove files

- To remove files we have `rm` command, Also we can use `unlink` command which performs the same action, yet we prefer mostly to use `rm` command.
- Syntax: `rm file-name`
- Example: `rm sample`
- Some times it may ask for a prompt `(yes/no)` to remove the files which may require to parse `-f` option to not prompt it.

Linux Commands - Copy files

- To copy a file we have `cp` command. Alternatively we have `rsync` command as well but mostly we prefer to use `cp` command in general.
- Syntax: `cp source-file destination-file`
- Example: `cp file1.txt file2.txt`

- If the destination file already exists then it will overwrite the file and in few cases it may warn you to overwrite the file or not.
-

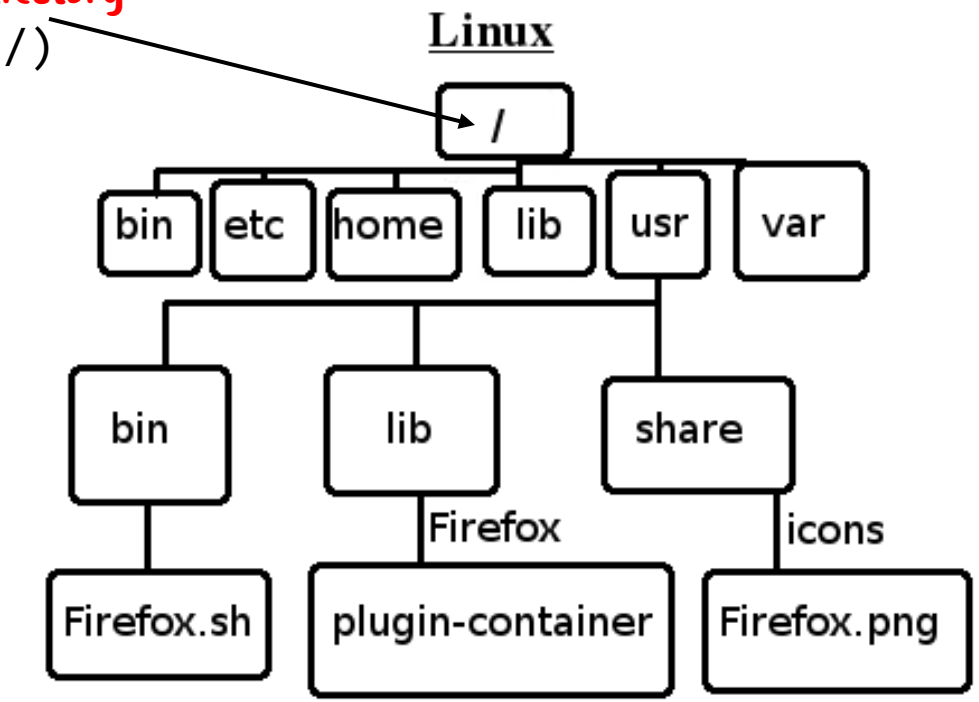
Linux Commands - Renaming files

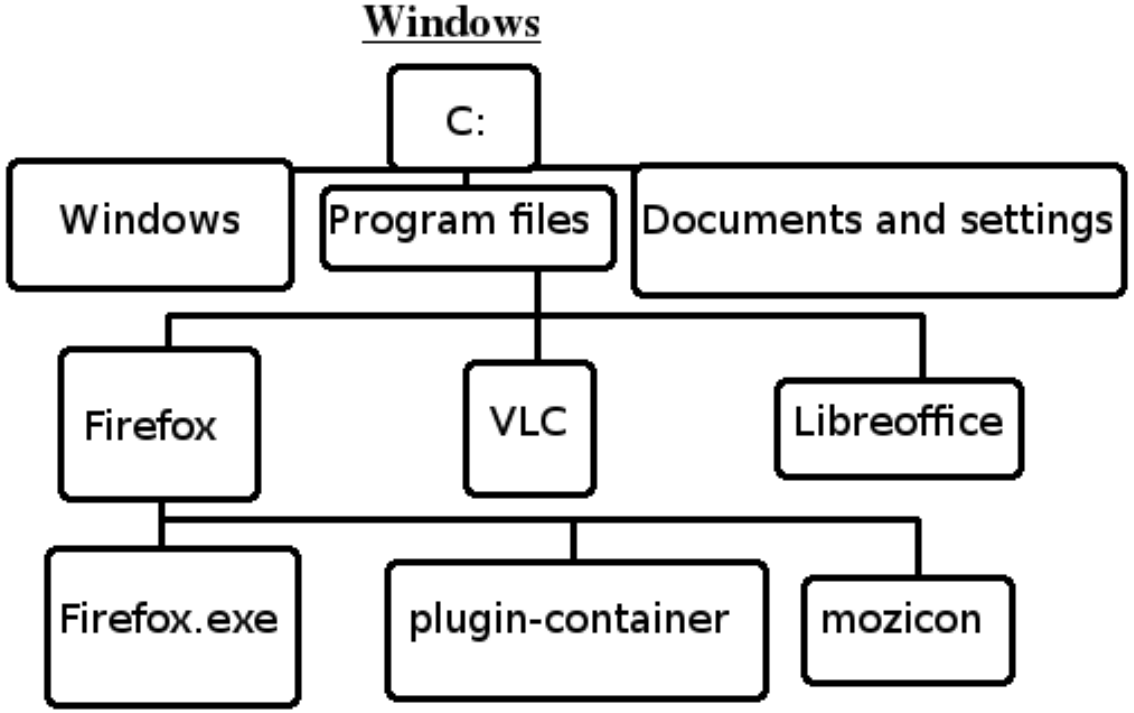
- To rename a file we use `mv` command
- Syntax: `mv source-file destination-file`
- Example: `mv file1.txt file2.txt`

- If the destination file already exists then it will overwrite the file and in few cases it may warn you to overwrite the file or not.
- mv command intention is to move the file from one location to another location and yet it is also mainly used to rename the files.

Linux Basics :: Directory Structure

Root Directory
(/)





This path can be denoted as

/usr/bin

Linux Commands – Present Working Directory

- To Check in which directory you are in then pwd command can help you on that.
- It is always important to observe the directory you are in before executing the command, because in some cases if you try to execute some command and which you lead to loss of data if you execute commands in wrong location.

Linux Commands - Change Directory

- To change your working directory from one location to another we use `cd` command.
- Syntax: `cd <directory>`
- Example : `cd /bin` <- You will switch to `/bin` directory.
- `cd` <- Simple cd command will take you to user home directory.
- `cd -` <- A hyphen symbol after `cd` command can take you to previous working directory.
- `cd ..` <- Double dot denotes parent directory and it can take you to parent directory of existing directory.

Linux Basics- Single dot(.) and double dot(..)

- Dots in Linux denote the present working directory. You can use that in the commands which we have used so far.
- `cp /opt/file1.txt .`
- Here dot denotes to copy the file in this location without specifying any filename or path.
- Double dot denotes the parent directory which we can understand that after discussing about directories and their management.

Linux Commands - Create Directory

- To create a directory you can use `mkdir` command.
- Syntax: `mkdir <directory>`
- Example : `mkdir demo` <- It will create an directory.
- `mkdir -p demo/new/item1` <- -p Option will be used to create a directory recursively even if the parent directory is missing.
- `mkdir dir1 dir2 -` <- Command `mkdir` can create multiple directories also at the same time.

Linux Commands – Remove Directory

- Removing directory commands needed to be picked based on requirement.
- To remove empty directories we use rmdir command.
- To remove directories recursively we use rm command
- Syntax: `rmdir <empty-directory>` or `rm -r <directory>`
- `rmdir demo` <- It removes the directory only if demo directory is empty
- `rm -r dir1 dir2 -` <- Command `rm -r` can delete multiple directories also at the same time and it will remove all the files recursively.

Linux Commands - Copy Directory

- Copying directories can be done with `cp` command.
- While copying the directories we need to mention `-r` option to enable that we are copying directories.
- Syntax: `copy -r dir1 dir2` <- It copies dir1 to dir2 and all the contents of `dir1` will be copied to `dir2` as well.

- If `dir2` already exists then `dir1` will be copied inside `dir2`

Linux Commands – Moving Directory

- Moving directories or renaming directories can be done with mv command.
- Syntax: `mv source destination` <- Depends on the situation it will rename or move.
- If `destination` does not exists then it renames the directory.
- If `destination` exists:
  - `Destination` is a file - Then that is a invalid operation.
  - `Destination` is a directory – Then the source will be moved into destination directory.

Linux Commands – Concatenate a file

- In view the complete content of a file then we will concatenate (cat) the file.
- Syntax: `cat <file-name>` -> It shows complete content of a file
- For demo purpose I would copy one system file and demonstrate using it.
- `$ cp /etc/passwd .`
- `$ cat passwd` <- Shows the complete content of a file
- `$ cat -n passed` <- Shows the content with line numbers added on output.
- `$ tac passwd` <- It will print the lines in reverse order mean last line in first and first line at last.
- In most cases you don't need the complete content, Hence we need filters.

Linux Commands - head command filter

- In most cases we may not the complete file content, So in those cases we need some filters to get only content which is needed.
- Command `head` will get the top 10 lines and it can be changed as per our need.
- Syntax: `head <file-name>` <- Prints top 10 lines by default
- `head -n 5 passwd` <- Print top 5 lines

Linux Commands – tail command filter

- Head command can give the top lines however `tail` command will print lines of a file from ending
- Command `tail` will get the last 10 lines and it can be changed as per our need.
- Syntax: `tail<file-name>` <- Prints last 10 lines by default
- `tail -n 5 passwd` <- Print last 5 lines
- `tail -f file-name` <- `-f` option is used to follow the file and all the contents which are getting added to the file will be displayed on the screen.
- To come out of tail `-f` you can press `CTRL +C` on terminal.

Linux Commands - grep command filter

- In case if we need only the lines which are having a particular word or a string then `grep` command is the right command. It searches a word and prints only those lines.
- Syntax: `grep word file-name`
- Example : `grep root passwd` <- It fethes all the lines having a word root in passwd file.

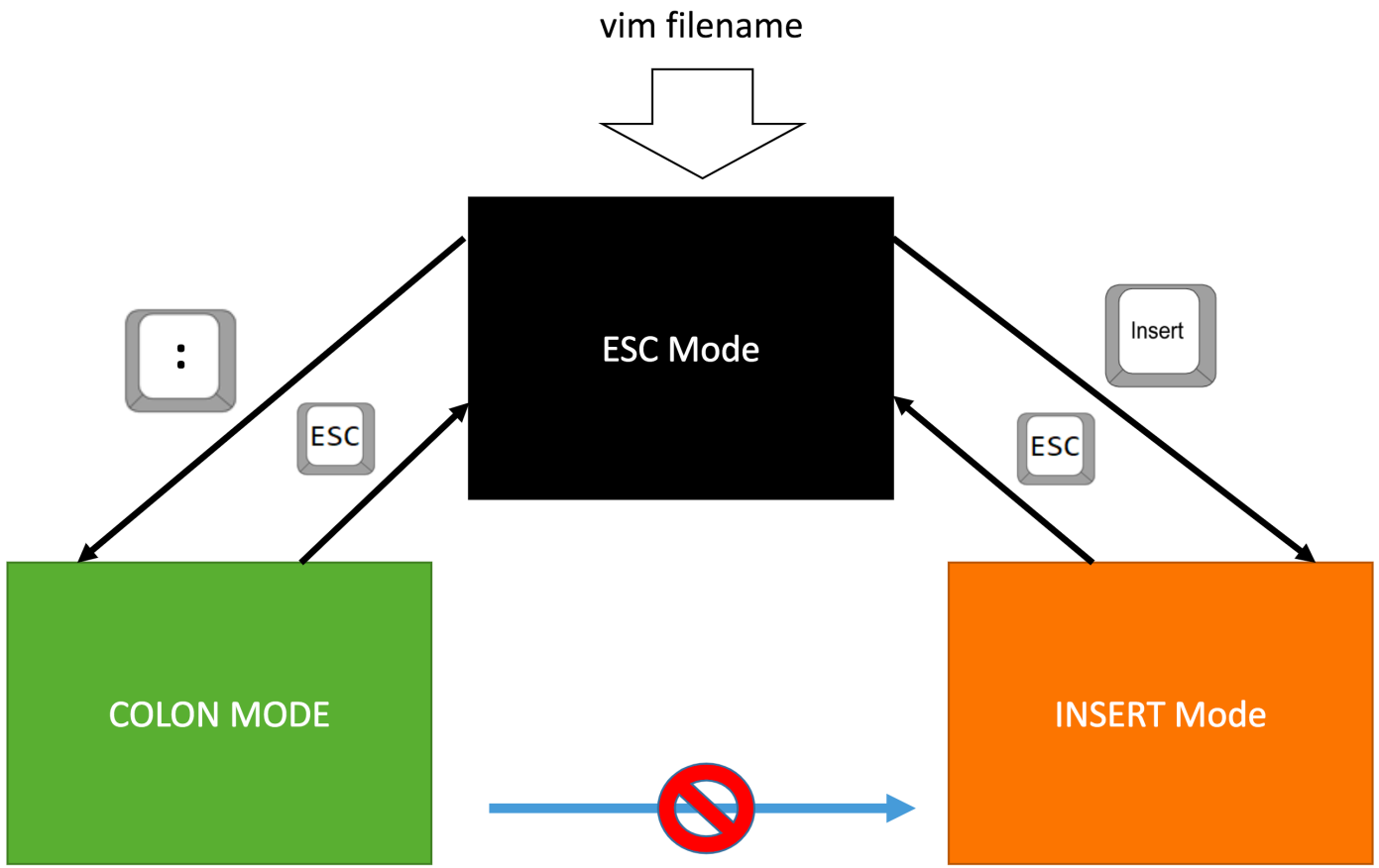
Linux Commands – awk command filter

- Some cases the content need to be filtered based on columns. Such cases we can approach either cut command or awk command. I would prefer to use awk command over cut command.
- Syntax: `awk –F ‘Delimiter’ ‘{print $Column-Number}’ file`
- Example:
- `awk –F : ‘{print $1}’ passwd`
- `awk -F : ‘{print $1,$2}’ passwd`
- $NF is used to print nth field which is last one in case if you don’t know how many number of fields exist in that file.

Linux Commands – File Editors

- RedHat Linux has so many utilities that edits the file and its content. Utilities like `vi, vim, gedit, nano` are widely used and that depends on user choice. But `vi` is widely used and `vim` is a enhanced version of `vi`. So will discuss about vim in our sessions.
- Editor `vim` is not available by default in CentOS 7 operating system, So lets install it before using it.
- `$ sudo yum install vim -y`

Linux Commands - vim Editor



Directly going from Colon Mode to Insert Mode is not possible