



# Linux Basic Commands and VI Editor

April, 2021

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# Common Shortcuts

Shortcut	Description
<b>CTRL+ALT+T</b>	Open new terminal
<b>CTRL+SHIFT+W</b>	Close terminal
<b>CTRL+A</b>	Go to the beginning of current line
<b>CTRL+E</b>	Go to the end of current line
<b>CTRL+B</b>	Go to the one character backward
<b>CTRL+F</b>	Go to the one character forward
<b>ALT+B</b>	Go to the one word backward
<b>ALT+F</b>	Go to the one word forward
<b>CTRL+L</b>	Clear the screen except current line
<b>CTRL+S</b>	Stop display output to the screen, but doesn't stop running command
<b>CTRL+Q</b>	Resume display output to the screen after use <b>CTRL+S</b>
<b>CTRL+C</b>	End running command
<b>Tab</b>	Auto complete file/directory name

# File management commands

- ☐ List information about the files: **ls**
- ☐ Moving/rename files and directory: **mv**
- ☐ Change directory: **cd**
- ☐ Print out full path of current directory: **pwd**
- ☐ Copy files to files/ directory: **cp**
- ☐ Remove files/directory: **rm/rmdir**
- ☐ Change file permission: **chmod**
- ☐ Create a directory: **mkdir**
- ☐ Create a file: **touch**
- ☐ View the contents of a file: **cat**
- ☐ Edit a file: **vi**
- ☐ Read the system reference manual: **man**

# ls command

**ls [option]...[FILE]...**

- ❑ **ls** : list files and directories in current directory
- ❑ **ls -l** : the same with /s but give more information
- ❑ **ls -ld dir-name** : list information about files and directories in dir-name directory
- ❑ **ls -a** : list files and directories include hidden files in current directory
- ❑ **ls -1** : Display one file per line
- ❑ For more information use ***man ls*** or ***ls --help***

# cd command

## Cd [option]...[dir\_name]

- ❑ **cd** or **cd ~** : move into home directory
- ❑ **cd ..** : go to parent directory
- ❑ **cd [dir\_name]** : change current directory to dir-name directory
- ❑ For more information use **cd -help** or **help cd**

# cp command

- ❑ **cp [Option] Src Dest** : copy source (Src) file to destination(Dest) file, if dest file doesn't exist it will create Dest file and when Dest file existed, Dest file will be overwritten
- ❑ **cp [Option] Src Dir** : copy source (Src) file to directory (Dir)
- ❑ **cp [Option] Src\_1 Src\_2 Src\_n Dir**: copy Src\_1, Src\_2, ... to Dir
  
- ❑ Example:
- ❑ **cp -i a.txt b.txt** : copy a.txt to b.txt with a prompt before overwrite
- ❑ **cp a.txt b.txt /home/demo**



# mv command

## mv [Option] Src D

**[Option]:** --backup : make backup of each existing destination file

-f, --force : don't prompt before overwriting

-i, --interactive : prompt before overwriting

-n, --no-clobber : don't overwrite an existing file

- ❑ **Src** can be one or more files or directories, **D** is a single file or directory. When **Src** is multiple files or directories, the **D** must be a directory
- ❑ if **Src** is a single file and **D** exist, **Src** will be renamed to **D**

Example:

- ❑ **mv file1 file2** : rename **file1** -> **file2**
- ❑ **mv dir1 dir2** : if the **dir2** directory exists, the command will move **dir1** inside **dir2**. If **dir2** doesn't exist, **dir1** will be renamed to **dir2**
- ❑ **mv -i file1 file2 dir** : move **file1** and **file2** to **dir** with a prompt before overwrite



# Other useful command

- ❑ Display hostname of the system: **hostname**
- ❑ Change password of current user: **passwd**
- ❑ Display user name of current user : **whoami**
- ❑ Display information about all users : **who**
- ❑ Display current system status, time, duration, list of users currently logged in on system,... : **w**
- ❑ Display information about the last login sessions of the system users : **last**
- ❑ Search for files/directories with name: **find**
- ❑ Search for files/directories with containing text: **grep**
- ❑ Change the file/directory permissions: **chmod**
- ❑ Create link to file/directory: **ln**

# find command

## **find [dir] [type] [option] [name]**

- ❑ **[dir]** : directory that will be searched
- ❑ **[type]** : expression determines what to find (-name, -path, -readable,...)
- ❑ **[option]** : -exec, -ok, -print,...
- ❑ **[name]** : what to find

Example:

- ❑ **find /home/demo -name '\*.txt'** : show all files which have **'\*.txt'** at the end under **./demo** directory
- ❑ **find /home/demo -type f -name '\*.txt' > find.txt** : show all files which is regular file (**f**) have **'\*.txt'** at the end under **./demo** and save the output in **find.txt** file
- ❑ **find /home/demo -type f -executable** : find only executable files under **/home/demo**
- ❑ For more information use **man find** or **find --help**

# grep command

## grep [Option] Pattern [File]

### [Option]:

- r : search recursively, ie. Read all files under directory
- i : search for a string case insensitively
- w : search for a word case insensitively
- c : number of times that pattern has been matched

...

### Example

- ❑ **grep test /home/demo/test.txt** : print all lines containing the pattern **test** in the specified file
- ❑ **grep -r test /home/** : print all lines containing **test** in all files under **/home/** directory
- ❑ **grep -i test /home/demo/test.txt** : print all lines containing the patten **test, Test, TEST, TeST...** in **test.txt**
- ❑ **grep -w test /home/demo/test.txt** : print all lines containing the *whole word* **test** in **test.txt**

# chmod command

- ❑ The permissions are in format of **drwxrwxrwx**, The first character '**d**' if it's a directory, '**l**' if it's a symbolic link, '-' otherwise. The next three **rwX** are the permissions *the user* has over the file, the next three are the permissions *the group*, and the last three are the permissions *everyone else*

# chmod command

## Chmod [Option] Mode [File]

**Mode** : [ugoa...][-+=][rwx...]

- ❑ **u** : The file owner.
- ❑ **g** : The users who are members of the group.
- ❑ **o** : All other users.
- ❑ **a** : All users, identical to ugo
- ❑ **-** : Removes the specified permissions.
- ❑ **+** : Adds specified permissions.
- ❑ **=** : Changes the current permissions to the specified permissions
- ❑ **r** -> file can be read, represented by a value of 4
- ❑ **w** -> file can be modified, represented by a value of 2
- ❑ **x** -> file can be executed, represented by a value of 1
- ❑ No permission = 0

# chmod command

## Example

- ❑ **Chmod g=r filename** : Give the members of the group permission to read the file
- ❑ **Chmod a-x filename** : Remove the execute permission for all users
- ❑ **chmod u=rwx,g=r,o=filename** : Give read, write and execute permission to the file's owner, read permissions to the file's group and no permissions to all other users
- ❑ **chmod 755 filename** : Owner **rwx**=4+2+1=7, Group **r-x**=4+0+1=5, Other **r-x**=4+0+1=5

# In command

- ❑ Hard link allow more than one filename to refer to the same file
- ❑ Symbolic link (symlink, soft link) is a special type of file that points (act as pointer) to another file or directory

**In [Option] Target Link : create Hard links**

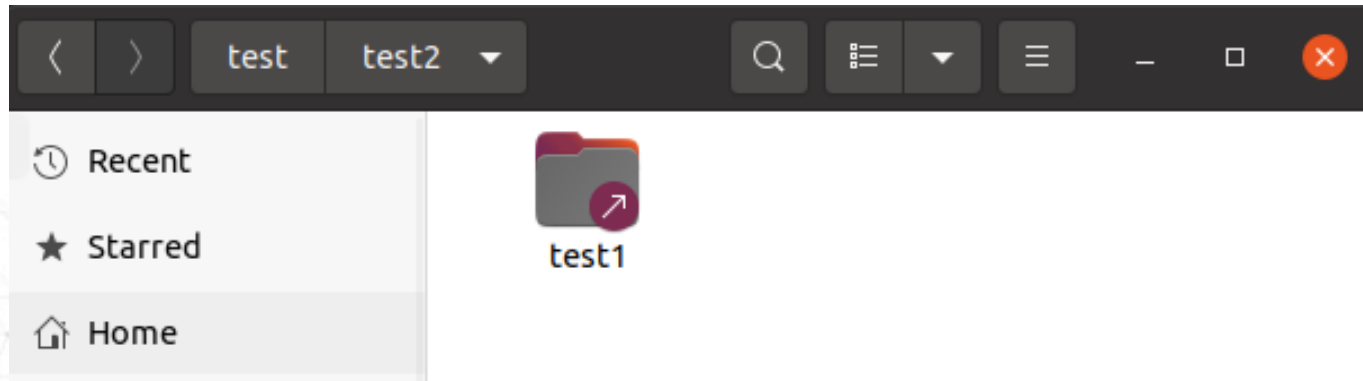
**In -s [Option] Target Link : create Soft links (Symbolic links)**



# In command

## Example

- ❑ **ls -s file.txt link.txt** : create a symlink (**link.txt**) point to **file.txt**.
- ❑ **ln -sf file2.txt link.txt** : overwrite the destination path of symlink (**link.txt**)
- ❑ **ln -s /home/test/test1 /home/test/test2** : create a symlink point to **/home/test/test1**. Under **/home/test/test2**, we find “**test1**” folder contain all the same file as main **test1** folder. “**test1**” in **test2** is symlink points to **test1**



# VI editor

Command	Description
<b>vi &lt;filename&gt;</b>	Create a new file if it doesn't exist, otherwise opens an existing file
<b>vi -R &lt;filename&gt;</b>	Open an existing file in the read-only mode
<b>view &lt;filename&gt;</b>	Open an existing file in the read-only mode

- ❑ The vi editor has two modes: **command mode** and **insert mode**
- ❑ By default, the vi editor starts in command mode. To enter insert mode just type 'i' and press **Esc** key to enter command mode. To make sure enter command mode, press **Esc** key twice

# VI Editor command mode

Command	Description
<b>:w</b>	Save
<b>:q</b>	Quit
<b>:wq</b>	Save and quit
<b>ZZ</b>	Save and quit
<b>:w filename</b>	Save as filename
<b>:q!</b>	Quit discarding changes made
<b>:w!</b>	Save (and write to non-writable file)
<b>Esc</b>	Terminate insert mode, enter command mode

# VI Editor command mode

Command	Description
<b>i</b>	Insert at cursor and go into insert mode
<b>I</b>	Move the cursor to the beginning of the line and go into insert mode
<b>a</b>	Write after cursor and go into insert mode
<b>A</b>	Write at the end of line and go into insert mode
<b>u</b>	Undo last change
<b>o</b>	Create a new line below the cursor and go into insert mode
<b>O</b>	Create a new line above the cursor and go into insert mode
<b>r</b>	Overwrite one character
<b>R</b>	Overwrite characters from cursor onward (press Esc to return command mode)
<b>~</b>	Change case of individual character

# VI Editor command mode

Command	Description
<b>H</b>	Go to the first line of the file
<b>&lt;n&gt;H</b>	Go to <i>nth</i> line from the first line of the file. E.g. <b>3H</b>
<b>G</b> or <b>L</b>	Go to the last line of the file
<b>&lt;n&gt;L</b>	Go to <i>nth</i> line from the last line of the file. E.g. <b>3L</b>
<b>M</b>	Go to the middle line of the file

# VI Editor command mode

Command	Description
<b>dd</b>	Delete/cut one line the cursor is on
<b>&lt;n&gt;dd</b>	Delete/cut <b>n</b> lines from cursor, E.g. <b>3dd</b> , <b>4dd</b> ,...
<b>d^</b>	Delete from the cursor position to the beginning of the line
<b>D</b>	Delete from the cursor position to the end of the current line
<b>d\$</b>	Delete from the cursor position to the end of the current line
<b>d0</b> (0 is zero)	Delete from the cursor position to the start of the current line
<b>dG</b>	Delete from the cursor position to the end of file

# VI Editor command mode

Command	Description
<b>C</b>	Delete contents of a line after the cursor and go into insert mode
<b>dw</b>	Delete one word
<b>&lt;n&gt;dw</b>	Delete <b>n</b> words. E.g. <b>3dw</b> , <b>4dw</b>
<b>cw</b>	Delete word from cursor and go into insert mode
<b>x</b>	Delete one character under the cursor location
<b>X</b>	Delete one character before the cursor location
<b>s</b>	Delete one character at the cursor and go into insert mode
<b>S</b>	Delete entire line and begin to insert at the beginning of the line



# VI Editor command mode

Command	Description
<b>yy</b>	copy a line
<b>&lt;n&gt;yy</b>	copy <b>n</b> lines. E.g. <b>3yy</b> , <b>4yy</b> , ...
<b>yw</b>	Copy a word
<b>&lt;n&gt;yw</b>	Copy <b>n</b> words. E.g. <b>3yw</b> , <b>4yw</b> , ...
<b>p</b>	Paste after the current line
<b>P</b>	Paste before the current line
<b>0</b> (zero)	Move cursor to the start of the current line
<b>^</b>	Move cursor to the start of the current line
<b>\$</b>	Move cursor to the end of the current line
<b>J</b>	Join two lines

# VI Editor command mode

Command	Description
<b>/string</b>	Forward search for string. E.g. <b>/test</b> , <b>/abc</b>
<b>?string</b>	Backward search for string. E.g. <b>?test</b> , <b>?abc</b>
<b>^&lt;word&gt;</b>	Search for whole words. E.g. <b>^&lt;test&gt;</b> , <b>^&lt;abc&gt;</b>
<b>n</b>	Jump to next result in the same direction (press Enter before)
<b>N</b>	Jump to next result in the opposite direction (press Enter before)
<b>Ctrl+t</b>	Jump to next result (backward) without leaving the search mode
<b>Ctrl+g</b>	Jump to next result (forward) without leaving the search mode

Browse through previously used commands by typing **?** or **/** and using the **up** and **down** keys

# VI Editor command mode

Command	Description
<b>:set ic</b>	Ignores the case when searching
<b>:set noic</b>	Disable <b>:set ic</b>
<b>:set nu</b>	Displays lines with line numbers on the left side
<b>:set nonu</b>	Disable <b>:set nu</b>
<b>:set hlsearch</b>	Highlight search results
<b>:set nohlsearch</b>	Disable <b>:set hlsearch</b>

# VI Editor command mode

Command	Description
<b>:ab &lt;str1&gt; &lt;str2&gt;</b>	Create abbreviation, “str1” will be expanded to “str2”. E.g. <b>:ab t test</b>
<b>:una &lt;str&gt;</b>	Remove “str” from the list of abbreviations, E.g. <b>:una t</b>
<b>:ab</b>	List all abbreviations
<b>:abc</b>	Remove all abbreviations
<b>:s/oldStr/newStr</b>	Replace one string “oldStr” to “newStr” in current line E.g. <b>:s/test/TEST</b>
<b>:s/oldStr/newStr/g</b>	Replace “oldStr” to “newStr” in current line E.g. <b>:s/test/TEST/g</b>
<b>:&lt;start,end&gt; s/oldStr/newStr/g</b>	Replace “oldStr” to “newStr” from start line to the end line E.g. <b>:3,5 s/test/TEST/g</b>



**Thank You!!**