Operating Systems Lab Assignment 1

(N Sree Dhyuti, CED19I027)
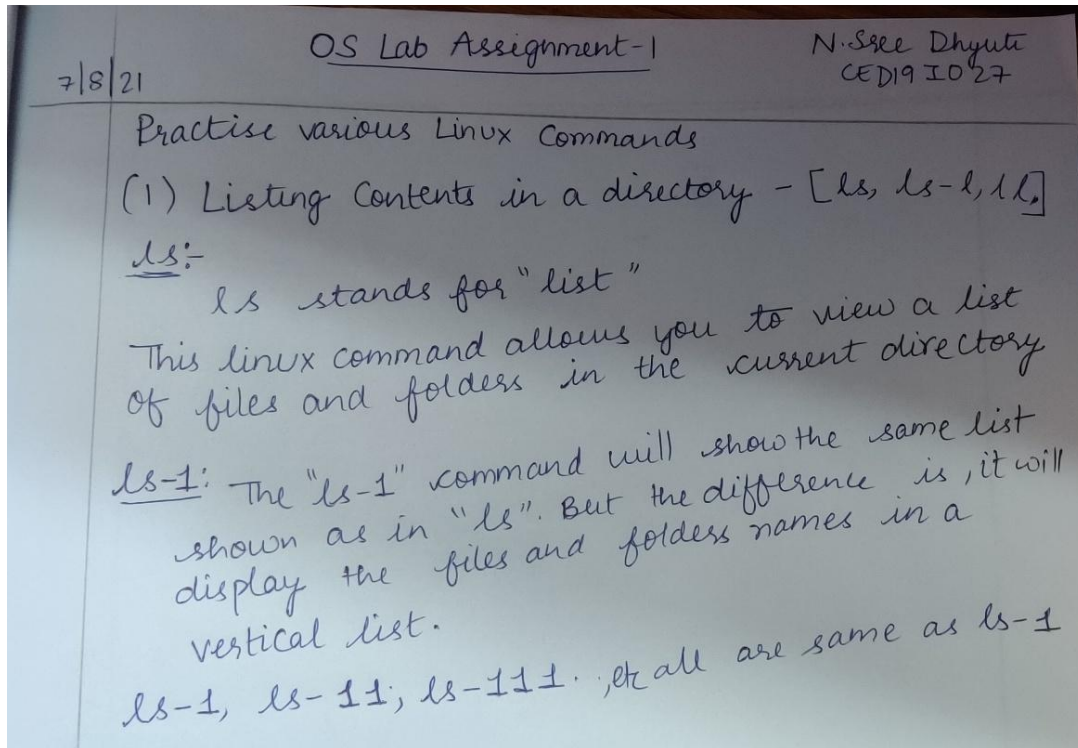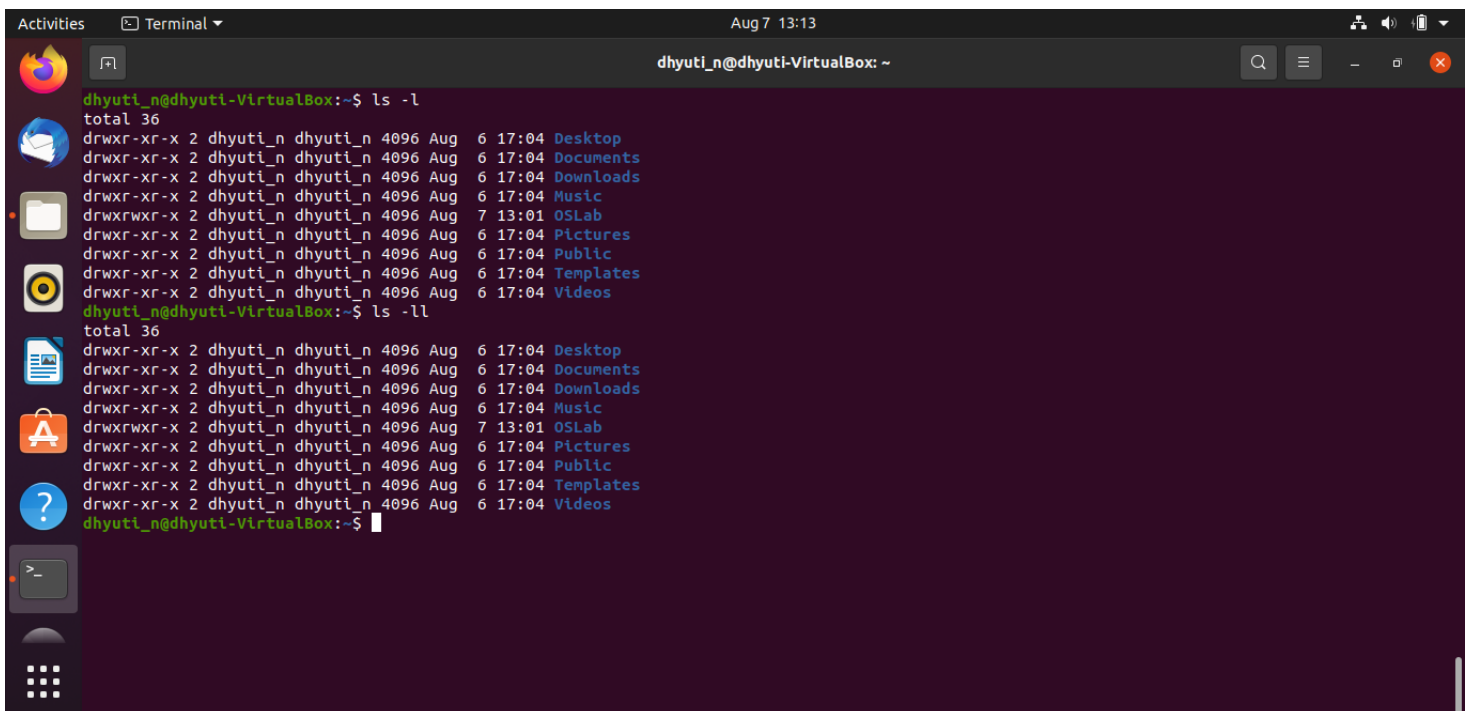

OS Lab Assignment-1

7|8|21

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Practise various Linux Commands

(1) Listing Contents in a directory – [ls, ls-l, 1l]

ls:-

ls stands for "list"

This linux command allows you to view a list of files and folders in the current directory

ls-1: The "ls-1" command will show the same list shown as in "ls". But the difference is, it will display the files and folders names in a vertical list.

ls-1, ls-11, ls-111···,etc all are same as ls-1

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ls-l :

This command is used to list all files and directories. It provides more details about the files like creation date, permission set, file/directory size etc.

dhyuti_n@dhyuti-VirtualBox:~$ ls -l
total 36
drwxr-xr-x 2 dhyuti_n dhyuti_n 4096 Aug 6 17:04 Desktop
drwxr-xr-x 2 dhyuti_n dhyuti_n 4096 Aug 6 17:04 Documents
drwxr-xr-x 2 dhyuti_n dhyuti_n 4096 Aug 6 17:04 Downloads
drwxr-xr-x 2 dhyuti_n dhyuti_n 4096 Aug 6 17:04 Music
drwxrwxr-x 2 dhyuti_n dhyuti_n 4096 Aug 7 13:01 OSLab
drwxr-xr-x 2 dhyuti_n dhyuti_n 4096 Aug 6 17:04 Pictures
drwxr-xr-x 2 dhyuti_n dhyuti_n 4096 Aug 6 17:04 Public
drwxr-xr-x 2 dhyuti_n dhyuti_n 4096 Aug 6 17:04 Templates
drwxr-xr-x 2 dhyuti_n dhyuti_n 4096 Aug 6 17:04 Videos
dhyuti_n@dhyuti-VirtualBox:~$ ls -ll
total 36
drwxr-xr-x 2 dhyuti_n dhyuti_n 4096 Aug 6 17:04 Desktop
drwxr-xr-x 2 dhyuti_n dhyuti_n 4096 Aug 6 17:04 Documents
drwxr-xr-x 2 dhyuti_n dhyuti_n 4096 Aug 6 17:04 Downloads
drwxr-xr-x 2 dhyuti_n dhyuti_n 4096 Aug 6 17:04 Music
drwxrwxr-x 2 dhyuti_n dhyuti_n 4096 Aug 7 13:01 OSLab
drwxr-xr-x 2 dhyuti_n dhyuti_n 4096 Aug 6 17:04 Pictures
drwxr-xr-x 2 dhyuti_n dhyuti_n 4096 Aug 6 17:04 Public
drwxr-xr-x 2 dhyuti_n dhyuti_n 4096 Aug 6 17:04 Templates
drwxr-xr-x 2 dhyuti_n dhyuti_n 4096 Aug 6 17:04 Videos
dhyuti_n@dhyuti-VirtualBox:~$

ll: 'll' is another name for "ls-l" command and it is a part of the default .bashrc and works same as ls-l with some more files.

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```
dhyuti_n@dhyuti-VirtualBox:~$ ll
total 96
drwxr-xr-x 16 dhyuti_n dhyuti_n 4096 Aug  7 12:59 ./
drwxr-xr-x  3 root     root     4096 Aug  6 16:49 ../
-rw-------  1 dhyuti_n dhyuti_n  243 Aug  7 12:57 .bash_history
-rw-r--r--  1 dhyuti_n dhyuti_n  220 Aug  6 16:49 .bash_logout
-rw-r--r--  1 dhyuti_n dhyuti_n 3771 Aug  6 16:49 .bashrc
drwx------ 11 dhyuti_n dhyuti_n 4096 Aug  6 17:05 .cache/
drwx------ 13 dhyuti_n dhyuti_n 4096 Aug  7 13:02 .config/
drwxr-xr-x  2 dhyuti_n dhyuti_n 4096 Aug  6 17:04 Desktop/
drwxr-xr-x  2 dhyuti_n dhyuti_n 4096 Aug  6 17:04 Documents/
drwxr-xr-x  2 dhyuti_n dhyuti_n 4096 Aug  6 17:04 Downloads/
drwx------  3 dhyuti_n dhyuti_n 4096 Aug  7 12:52 .gnupg/
drwxr-xr-x  3 dhyuti_n dhyuti_n 4096 Aug  6 17:04 .local/
drwxr-xr-x  2 dhyuti_n dhyuti_n 4096 Aug  6 17:04 Music/
drwxrwxr-x  2 dhyuti_n dhyuti_n 4096 Aug  7 13:01 OSLab/
drwxr-xr-x  2 dhyuti_n dhyuti_n 4096 Aug  6 17:04 Pictures/
-rw-r--r--  1 dhyuti_n dhyuti_n  807 Aug  6 16:49 .profile
drwxr-xr-x  2 dhyuti_n dhyuti_n 4096 Aug  6 17:04 Public/
drwx------  2 dhyuti_n dhyuti_n 4096 Aug  6 17:06 .ssh/
-rw-r--r--  1 dhyuti_n dhyuti_n    0 Aug  7 12:46 .sudo_as_admin_successful
drwxr-xr-x  2 dhyuti_n dhyuti_n 4096 Aug  6 17:04 Templates/
-rw-r-----  1 dhyuti_n dhyuti_n    5 Aug  7 12:51 .vboxclient-clipboard.pid
-rw-r-----  1 dhyuti_n dhyuti_n    5 Aug  7 12:51 .vboxclient-display-svga-x11.pid
-rw-r-----  1 dhyuti_n dhyuti_n    5 Aug  7 12:51 .vboxclient-draganddrop.pid
-rw-r-----  1 dhyuti_n dhyuti_n    5 Aug  7 12:51 .vboxclient-seamless.pid
drwxr-xr-x  2 dhyuti_n dhyuti_n 4096 Aug  6 17:04 Videos/
dhyuti_n@dhyuti-VirtualBox:~$
```

(2) Reading files in LINUX : [cat, more, less]

Cat:

'Cat' stands for 'concatenate'
This command is used to read data from the files
and gives their content as output

uses of 'cat':
→ Create a new file:
           Cat > filename.txt
               ↓
            file content
               ↓
            Enter "Ctrl + D"
→ View a file:
         Cat filename.txt
→ View multiple files
         cat file1.txt file2.txt
→ view contents of a file with file no's:
         cat -n file.txt

→ and many more

dhyuti_n@dhyuti-VirtualBox: ~/OSLab/LAB1

```
dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$ cd
dhyuti_n@dhyuti-VirtualBox:~$ cd OSLab/LAB1
dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$ cat > Sample.txt
Hi. I'm Dhyuti. I am typing something to fill this file with information.
I'll be using this to experiment on for improving my Linux skills.
I need one more sentence atleast to make this file useful to me.
So here it is,
dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$ ls
Sample.txt
dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$ cat Sample.txt
Hi. I'm Dhyuti. I am typing something to fill this file with information.
I'll be using this to experiment on for improving my Linux skills.
I need one more sentence atleast to make this file useful to me.
So here it is,
dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$
```

dhyuti_n@dhyuti-VirtualBox: ~/OSLab/LAB1

```
dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$ cat -n Sample.txt
     1  Hi. I'm Dhyuti. I am typing something to fill this file with information.
     2  I'll be using this to experiment on for improving my Linux skills.
     3  I need one more sentence atleast to make this file useful to me.
     4  So here it is
     5
     6  Lorem ipsum dolor sit amet, consectetur adipiscing elit. Curabitur turpis massa, euismod in augue et, malesuada finibus sapien. Vestib
ulum placerat vestibulum augue, at dapibus mi. Cras purus risus, aliquam et risus feugiat, laoreet tincidunt ipsum. Sed aliquet ultrices nunc,
 in vestibulum arcu dictum non. Mauris porttitor felis nec leo luctus dignissim. Praesent at justo sollicitudin, rutrum sapien at, ultrices ve
lit. Aenean ut aliquam leo. Ut semper ullamcorper dui, sed consequat turpis tincidunt vel. Quisque sagittis, eros non malesuada faucibus, libe
ro risus imperdiet mi, congue congue urna lacus id ligula.
     7
     8  Fusce hendrerit orci sit amet lacus faucibus pretium. Suspendisse nec feugiat nunc. Aenean dolor libero, bibendum non nisi a, congue e
uismod diam. Vestibulum elementum cursus lacus. Duis eu sapien et nisi scelerisque sollicitudin. Donec vitae velit non sapien malesuada venena
tis. Integer tellus sapien, imperdiet a libero nec, sollicitudin faucibus neque.
     9
    10  Ut finibus ligula ut urna maximus ultrices. Pellentesque consequat augue at elit ullamcorper placerat. Nulla iaculis nibh metus, nec s
celerisque lectus gravida ac. Integer quis lorem mi. Quisque sollicitudin ullamcorper felis, vel gravida leo interdum a. Mauris nec euismod le
ctus. Aliquam dapibus enim vel magna placerat consectetur. Curabitur auctor odio at condimentum mollis. Integer volutpat elit id dolor ornare,
 aliquam sollicitudin purus cursus. Nullam congue sollicitudin purus, eu fringilla erat finibus at. Morbi congue sem non viverra volutpat. Don
ec sapien orci, efficitur a aliquet ac, lacinia vitae urna. Duis lobortis eget arcu sit amet sollicitudin. Donec urna leo, fringilla quis dict
um sed, hendrerit a libero. Etiam vitae justo ut augue dictum laoreet. Nullam porttitor justo a facilisis volutpat.
    11
    12  Maecenas a tincidunt lorem. Suspendisse potenti. Quisque pharetra justo euismod, aliquam nisi nec, malesuada tellus. Phasellus tempus
scelerisque auctor. Etiam et lacus metus. Cras venenatis mauris congue ex hendrerit scelerisque. Sed iaculis justo a urna semper, ut viverra m
i vulputate. Suspendisse vitae felis vel ipsum pellentesque lobortis. Vestibulum a cursus nulla, at efficitur mauris. In maximus erat sit amet
 nunc vehicula tempor. Nulla rhoncus scelerisque justo, convallis pharetra metus semper nec. Phasellus scelerisque justo mollis aliquam accums
an. Cras aliquet metus sit amet porta vulputate. Proin consequat consequat aliquam. Proin malesuada ante id velit faucibus, nec condimentum ri
sus vestibulum. Fusce ante urna, consequat eu maximus vel, efficitur eget tortor.
    13
    14  Vestibulum finibus dapibus arcu, nec mattis ipsum scelerisque at. Nullam hendrerit mi ac sodales venenatis. Donec enim nunc, accumsan
sit amet dignissim convallis, consectetur nec sem. Phasellus dapibus pharetra ipsum, id lacinia metus facilisis vestibulum. Nulla porta mollis
 nunc ut dignissim. Phasellus tempus ipsum ac felis placerat, a sagittis mi posuere. Class aptent taciti sociosqu ad litora torquent per conub
```

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more

Cat cannot show a file incase it's too large.
'more' can be used in those cases
This command allows the user to scroll up and
down through the page.

"more -d Sample.txt" will display the text is a user friendly
way. It allows user to press space to continue & h to use
"more -f Sample.txt" : doesn't wrap the long lines & displ
"more -p Sample.txt": clears the screen & then displays the
text

```
dhyuti_n@dhyuti-VirtualBox: ~/OSLab/LAB1

dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$ more -d Sample.txt
Hi. I'm Dhyuti. I am typing something to fill this file with information.
I'll be using this to experiment on for improving my Linux skills.
I need one more sentence atleast to make this file useful to me.
So here it is

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Curabitur turpis massa, euismod in augue et, malesuada finibus sapien. Vestibulum pla
cerat vestibulum augue, at dapibus mi. Cras purus risus, aliquam et risus feugiat, laoreet tincidunt ipsum. Sed aliquet ultrices nunc, in vest
ibulum arcu dictum non. Mauris porttitor felis nec leo luctus dignissim. Praesent at justo sollicitudin, rutrum sapien at, ultrices velit. Aen
ean ut aliquam leo. Ut semper ullamcorper dui, sed consequat turpis tincidunt vel. Quisque sagittis, eros non malesuada faucibus, libero risus
 imperdiet mi, congue congue urna lacus id ligula.

Fusce hendrerit orci sit amet lacus faucibus pretium. Suspendisse nec feugiat nunc. Aenean dolor libero, bibendum non nisi a, congue euismod d
iam. Vestibulum elementum cursus lacus. Duis eu sapien et nisi scelerisque sollicitudin. Donec vitae velit non sapien malesuada venenatis. Int
eger tellus sapien, imperdiet a libero nec, sollicitudin faucibus neque.

Ut finibus ligula ut urna maximus ultrices. Pellentesque consequat augue at elit ullamcorper placerat. Nulla iaculis nibh metus, nec scelerisq
ue lectus gravida ac. Integer quis lorem mi. Quisque sollicitudin ullamcorper felis, vel gravida leo interdum a. Mauris nec euismod lectus. Al
iquam dapibus enim vel magna placerat consectetur. Curabitur auctor odio at condimentum mollis. Integer volutpat elit id dolor ornare, aliquam
 sollicitudin purus cursus. Nullam congue sollicitudin purus, eu fringilla erat finibus at. Morbi congue sem non viverra volutpat. Donec sapie
n orci, efficitur a aliquet ac, lacinia vitae urna. Duis lobortis eget arcu sit amet sollicitudin. Donec urna leo, fringilla quis dictum sed,
hendrerit a libero. Etiam vitae justo ut augue dictum laoreet. Nullam porttitor justo a facilisis volutpat.

Maecenas a tincidunt lorem. Suspendisse potenti. Quisque pharetra justo euismod, aliquam nisi nec, malesuada tellus. Phasellus tempus sceleris
que auctor. Etiam et lacus metus. Cras venenatis mauris congue ex hendrerit scelerisque. Sed iaculis justo a urna semper, ut viverra mi vulput
ate. Suspendisse vitae felis vel ipsum pellentesque lobortis. Vestibulum a cursus nulla, at efficitur mauris. In maximus erat sit amet nunc ve
hicula tempor. Nulla rhoncus scelerisque justo, convallis pharetra metus semper nec. Phasellus scelerisque justo mollis aliquam accumsan. Cras
 aliquet metus sit amet porta vulputate. Proin consequat consequat aliquam. Proin malesuada ante id velit faucibus, nec condimentum risus vest
ibulum. Fusce ante urna, consequat eu maximus vel, efficitur eget tortor.

Vestibulum finibus dapibus arcu, nec mattis ipsum scelerisque at. Nullam hendrerit mi ac sodales venenatis. Donec enim nunc, accumsan sit amet
 dignissim convallis, consectetur nec sem. Phasellus dapibus pharetra ipsum, id lacinia metus facilisis vestibulum. Nulla porta mollis nunc ut
--More--(85%)[Press space to continue, 'q' to quit.]
```

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"more +10 Sample.txt":
    displays the contexts after 10 lines

"Cat Sample.txt | more":
    To use Cat to display contents using
                    more

dhyuti_n@dhyuti-VirtualBox: ~/OSLab/LAB1

dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$ cat Sample.txt | more
Hi. I'm Dhyuti. I am typing something to fill this file with information.
I'll be using this to experiment on for improving my Linux skills.
I need one more sentence atleast to make this file useful to me.
So here it is

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Curabitur turpis massa, euismod in augue et, malesuada finibus sapien. Vestibulum pla
cerat vestibulum augue, at dapibus mi. Cras purus risus, aliquam et risus feugiat, laoreet tincidunt ipsum. Sed aliquet ultrices nunc, in vest
ibulum arcu dictum non. Mauris porttitor felis nec leo luctus dignissim. Praesent at justo sollicitudin, rutrum sapien at, ultrices velit. Aen
ean ut aliquam leo. Ut semper ullamcorper dui, sed consequat turpis tincidunt vel. Quisque sagittis, eros non malesuada faucibus, libero risus
 imperdiet mi, congue congue urna lacus id ligula.

Fusce hendrerit orci sit amet lacus faucibus pretium. Suspendisse nec feugiat nunc. Aenean dolor libero, bibendum non nisi a, congue euismod d
iam. Vestibulum elementum cursus lacus. Duis eu sapien et nisi scelerisque sollicitudin. Donec vitae velit non sapien malesuada venenatis. Int
eger tellus sapien, imperdiet a libero nec, sollicitudin faucibus neque.

Ut finibus ligula ut urna maximus ultrices. Pellentesque consequat augue at elit ullamcorper placerat. Nulla iaculis nibh metus, nec scelerisq
ue lectus gravida ac. Integer quis lorem mi. Quisque sollicitudin ullamcorper felis, vel gravida leo interdum a. Mauris nec euismod lectus. Al
iquam dapibus enim vel magna placerat consectetur. Curabitur auctor odio at condimentum mollis. Integer volutpat elit id dolor ornare, aliquam
 sollicitudin purus cursus. Nullam congue sollicitudin purus, eu fringilla erat finibus at. Morbi congue sem non viverra volutpat. Donec sapie
n orci, efficitur a aliquet ac, lacinia vitae urna. Duis lobortis eget arcu sit amet sollicitudin. Donec urna leo, fringilla quis dictum sed,
hendrerit a libero. Etiam vitae justo ut augue dictum laoreet. Nullam porttitor justo a facilisis volutpat.

Maecenas a tincidunt lorem. Suspendisse potenti. Quisque pharetra justo euismod, aliquam nisi nec, malesuada tellus. Phasellus tempus sceleris
que auctor. Etiam et lacus metus. Cras venenatis mauris congue ex hendrerit scelerisque. Sed iaculis justo a urna semper, ut viverra mi vulput
ate. Suspendisse vitae felis vel ipsum pellentesque lobortis. Vestibulum a cursus nulla, at efficitur mauris. In maximus erat sit amet nunc ve
hicula tempor. Nulla rhoncus scelerisque justo, convallis pharetra metus semper nec. Phasellus scelerisque justo mollis aliquam accumsan. Cras
 aliquet metus sit amet porta vulputate. Proin consequat consequat aliquam. Proin malesuada ante id velit faucibus, nec condimentum risus vest
ibulum. Fusce ante urna, consequat eu maximus vel, efficitur eget tortor.

Vestibulum finibus dapibus arcu, nec mattis ipsum scelerisque at. Nullam hendrerit mi ac sodales venenatis. Donec enim nunc, accumsan sit amet
 dignissim convallis, consectetur nec sem. Phasellus dapibus pharetra ipsum, id lacinia metus facilisis vestibulum. Nulla porta mollis nunc ut
--More--

---

dhyuti_n@dhyuti-VirtualBox: ~/OSLab/LAB1

dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$ more +10 Sample.txt
Ut finibus ligula ut urna maximus ultrices. Pellentesque consequat augue at elit ullamcorper placerat. Nulla iaculis nibh metus, nec scelerisq
ue lectus gravida ac. Integer quis lorem mi. Quisque sollicitudin ullamcorper felis, vel gravida leo interdum a. Mauris nec euismod lectus. Al
iquam dapibus enim vel magna placerat consectetur. Curabitur auctor odio at condimentum mollis. Integer volutpat elit id dolor ornare, aliquam
 sollicitudin purus cursus. Nullam congue sollicitudin purus, eu fringilla erat finibus at. Morbi congue sem non viverra volutpat. Donec sapie
n orci, efficitur a aliquet ac, lacinia vitae urna. Duis lobortis eget arcu sit amet sollicitudin. Donec urna leo, fringilla quis dictum sed,
hendrerit a libero. Etiam vitae justo ut augue dictum laoreet. Nullam porttitor justo a facilisis volutpat.

Maecenas a tincidunt lorem. Suspendisse potenti. Quisque pharetra justo euismod, aliquam nisi nec, malesuada tellus. Phasellus tempus sceleris
que auctor. Etiam et lacus metus. Cras venenatis mauris congue ex hendrerit scelerisque. Sed iaculis justo a urna semper, ut viverra mi vulput
ate. Suspendisse vitae felis vel ipsum pellentesque lobortis. Vestibulum a cursus nulla, at efficitur mauris. In maximus erat sit amet nunc ve
hicula tempor. Nulla rhoncus scelerisque justo, convallis pharetra metus semper nec. Phasellus scelerisque justo mollis aliquam accumsan. Cras
 aliquet metus sit amet porta vulputate. Proin consequat consequat aliquam. Proin malesuada ante id velit faucibus, nec condimentum risus vest
ibulum. Fusce ante urna, consequat eu maximus vel, efficitur eget tortor.

Vestibulum finibus dapibus arcu, nec mattis ipsum scelerisque at. Nullam hendrerit mi ac sodales venenatis. Donec enim nunc, accumsan sit amet
 dignissim convallis, consectetur nec sem. Phasellus dapibus pharetra ipsum, id lacinia metus facilisis vestibulum. Nulla porta mollis nunc ut
 dignissim. Phasellus tempus ipsum ac felis placerat, a sagittis mi posuere. Class aptent taciti sociosqu ad litora torquent per conubia nostr
a, per inceptos himenaeos. Donec a luctus tellus, et cursus sapien. Sed eget nisl ante. Morbi a viverra ex. Pellentesque habitant morbi tristi
que senectus et netus et malesuada fames ac turpis egestas. Sed ut ipsum justo. Integer pellentesque vehicula odio sed consequat. Vestibulum a
nte ipsum primis in faucibus orci luctus et ultrices posuere cubilia curae; Nulla sed ligula in purus egestas ornare.
dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$

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less:

`less` command is a bit similar to more
It has faster access as if the file is large, it
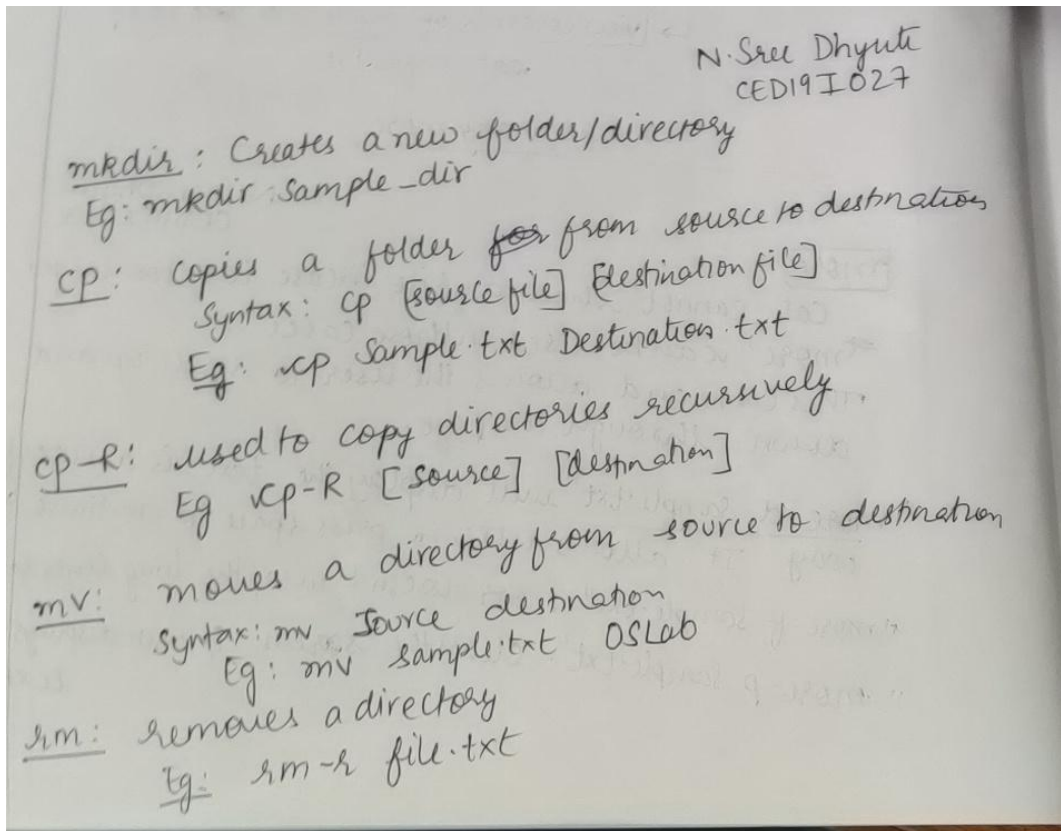doesn't access the whole file but accesses it page by page

```
less filename.txt
```

```
6 ulum placerat vestibulum augue, at dapibus mi. Cras purus risus, aliquam et risus feugiat, laoreet tincidunt ipsum. Sed aliquet ultric
6 es nunc, in vestibulum arcu dictum non. Mauris porttitor felis nec leo luctus dignissim. Praesent at justo sollicitudin, rutrum sapien
6  at, ultrices velit. Aenean ut aliquam leo. Ut semper ullamcorper dui, sed consequat turpis tincidunt vel. Quisque sagittis, eros non
6 malesuada faucibus, libero risus imperdiet mi, congue congue urna lacus id ligula.
7
8 Fusce hendrerit orci sit amet lacus faucibus pretium. Suspendisse nec feugiat nunc. Aenean dolor libero, bibendum non nisi a, congue e
8 uismod diam. Vestibulum elementum cursus lacus. Duis eu sapien et nisi scelerisque sollicitudin. Donec vitae velit non sapien malesuad
8 a venenatis. Integer tellus sapien, imperdiet a libero nec, sollicitudin faucibus neque.
9
10 Ut finibus ligula ut urna maximus ultrices. Pellentesque consequat augue at elit ullamcorper placerat. Nulla iaculis nibh metus, nec s
10 celerisque lectus gravida ac. Integer quis lorem mi. Quisque sollicitudin ullamcorper felis, vel gravida leo interdum a. Mauris nec eu
10 ismod lectus. Aliquam dapibus enim vel magna placerat consectetur. Curabitur auctor odio at condimentum mollis. Integer volutpat elit
10 id dolor ornare, aliquam sollicitudin purus cursus. Nullam congue sollicitudin purus, eu fringilla erat finibus at. Morbi congue sem n
10 on viverra volutpat. Donec sapien orci, efficitur a aliquet ac, lacinia vitae urna. Duis lobortis eget arcu sit amet sollicitudin. Don
10 ec urna leo, fringilla quis dictum sed, hendrerit a libero. Etiam vitae justo ut augue dictum laoreet. Nullam porttitor justo a facili
10 sis volutpat.
11
12 Maecenas a tincidunt lorem. Suspendisse potenti. Quisque pharetra justo euismod, aliquam nisi nec, malesuada tellus. Phasellus tempus
12 scelerisque auctor. Etiam et lacus metus. Cras venenatis mauris congue ex hendrerit scelerisque. Sed iaculis justo a urna semper, ut v
12 iverra mi vulputate. Suspendisse vitae felis vel ipsum pellentesque lobortis. Vestibulum a cursus nulla, at efficitur mauris. In maxim
12 us erat sit amet nunc vehicula tempor. Nulla rhoncus scelerisque justo, convallis pharetra metus semper nec. Phasellus scelerisque jus
12 to mollis aliquam accumsan. Cras aliquet metus sit amet porta vulputate. Proin consequat consequat aliquam. Proin malesuada ante id ve
12 lit faucibus, nec condimentum risus vestibulum. Fusce ante urna, consequat eu maximus vel, efficitur eget tortor.
13
14 Vestibulum finibus dapibus arcu, nec mattis ipsum scelerisque at. Nullam hendrerit mi ac sodales venenatis. Donec enim nunc, accumsan
14 sit amet dignissim convallis, consectetur nec sem. Phasellus dapibus pharetra ipsum, id lacinia metus facilisis vestibulum. Nulla port
14 a mollis nunc ut dignissim. Phasellus tempus ipsum ac felis placerat, a sagittis mi posuere. Class aptent taciti sociosqu ad litora to
14 rquent per conubia nostra, per inceptos himenaeos. Donec a luctus tellus, et cursus sapien. Sed eget nisl ante. Morbi a viverra ex. Pe
14 llentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Sed ut ipsum justo. Integer pellentesque v
14 ehicula odio sed consequat. Vestibulum ante ipsum primis in faucibus orci luctus et ultrices posuere cubilia curae; Nulla sed ligula i
14 n purus egestas ornare.
(END)
```
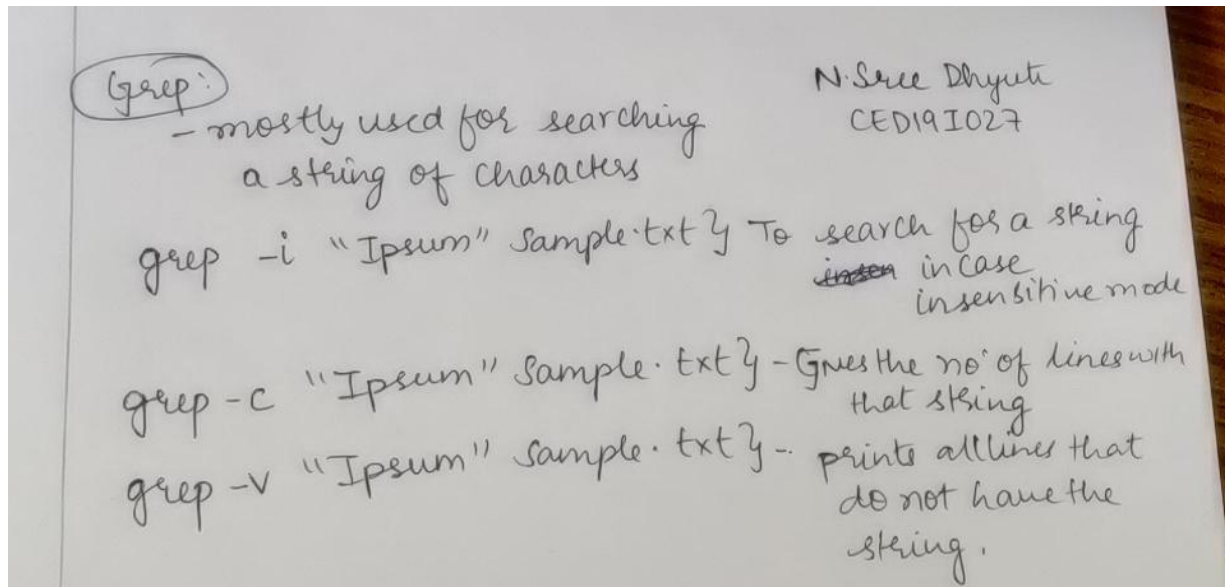
(3) Manipulating files

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mkdir : Creates a new folder/directory
Eg: mkdir sample_dir

cp : copies a folder for from source to destination
Syntax : cp [source file] [destination file]
Eg : cp Sample.txt Destination.txt

cp-R : used to copy directories recursively
Eg cp-R [source] [destination]

mv : moves a directory from source to destination
Syntax: mv source destination
Eg : mv sample.txt OSLab

rm : removes a directory
Eg: rm-r file.txt

---

dhyuti_n@dhyuti-VirtualBox: ~

```
dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$ mkdir sample_dir
dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$ cp Sample.txt Destination.txt
dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$ ls
Destination.txt  sample_dir  Sample.txt
dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$ cd
dhyuti_n@dhyuti-VirtualBox:~$ mkdir copy_sample_dir
dhyuti_n@dhyuti-VirtualBox:~$ cp -R OSLab/LAB1/sample_dir copy_sample_dir
dhyuti_n@dhyuti-VirtualBox:~$ ls
copy_sample_dir  Desktop  Documents  Downloads  Music  OSLab  Pictures  Public  snap  Templates  Videos
dhyuti_n@dhyuti-VirtualBox:~$ cd OSLab/LAB1
dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$ ls
Destination.txt  sample_dir  Sample.txt
dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$ mv copy_sample_dir OSLab
mv: cannot stat 'copy_sample_dir': No such file or directory
dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$ cd
dhyuti_n@dhyuti-VirtualBox:~$ mv copy_sample_dir OSLab
dhyuti_n@dhyuti-VirtualBox:~$ rm -r OSLab/copy_sample_dir
dhyuti_n@dhyuti-VirtualBox:~$ 
```

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(4)

"Tar"

→ Tar stands for tape archive

→ useful to create zip files and compress and extract them with 'tar' extension

tar -cvf Lab1zip.tar Lab1
  ↓ Zipfile   ↓ filetobezipped   } — Compression of folders "Lab1"

tar -xvf Lab1zip.tar
  ↓ zipfile   } — Extraction of tar file

tar tf Lab1zip.tar — view the contents of .tar file

tar rvf Lab1zip.tar add.txt
  ↓ zip file   filetobe added to zip   } — add a file to .tar without any complex process

---

dhyuti_n@dhyuti-VirtualBox: ~/OSLab

```
dhyuti_n@dhyuti-VirtualBox:~/OSLab$ tar -cvf Lab1zip.tar LAB1
LAB1/
LAB1/sample_dir/
LAB1/Sample.txt
LAB1/Destination.txt
dhyuti_n@dhyuti-VirtualBox:~/OSLab$ ls
LAB1   Lab1zip.tar
dhyuti_n@dhyuti-VirtualBox:~/OSLab$ rm -r LAB1
dhyuti_n@dhyuti-VirtualBox:~/OSLab$ ls
Lab1zip.tar
dhyuti_n@dhyuti-VirtualBox:~/OSLab$ tar -xvf Lab1zip.tar
LAB1/
LAB1/sample_dir/
LAB1/Sample.txt
LAB1/Destination.txt
dhyuti_n@dhyuti-VirtualBox:~/OSLab$ ls
LAB1   Lab1zip.tar
dhyuti_n@dhyuti-VirtualBox:~/OSLab$ tar tf Lab1zip.tar
LAB1/
LAB1/sample_dir/
LAB1/Sample.txt
LAB1/Destination.txt
dhyuti_n@dhyuti-VirtualBox:~/OSLab$ tar rvf Lab1zip.tar addzip.txt
tar: addzip.txt: Cannot stat: No such file or directory
tar: Exiting with failure status due to previous errors
dhyuti_n@dhyuti-VirtualBox:~/OSLab$ cat > addtozip.txt
something
dhyuti_n@dhyuti-VirtualBox:~/OSLab$ tar rvf Lab1zip.tar addtozip.txt
addtozip.txt
dhyuti_n@dhyuti-VirtualBox:~/OSLab$ tar tf Lab1zip.tar
LAB1/
LAB1/sample_dir/
```

grep :

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- mostly used for searching a string of characters

grep -i "Ipsum" sample.txt → To search for a string in case insensitive mode

grep -c "Ipsum" sample.txt → - Gives the no. of lines with that string

grep -v "Ipsum" sample.txt → - prints all lines that do not have the string.

---

dhyuti_n@dhyuti-VirtualBox: ~/OSLab/LAB1

```
dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$ grep -i "ipsum" Sample.txt
Lorem ipsum dolor sit amet, consectetur adipiscing elit. Curabitur turpis massa, euismod in augue et, malesuada finibus sapien. Vestibulum pla
cerat vestibulum augue, at dapibus mi. Cras purus risus, aliquam et risus feugiat, laoreet tincidunt ipsum. Sed aliquet ultrices nunc, in vest
ibulum arcu dictum non. Mauris porttitor felis nec leo luctus dignissim. Praesent at justo sollicitudin, rutrum sapien at, ultrices velit. Aen
ean ut aliquam leo. Ut semper ullamcorper dui, sed consequat turpis tincidunt vel. Quisque sagittis, eros non malesuada faucibus, libero risus
 imperdiet mi, congue congue urna lacus id ligula.
Maecenas a tincidunt lorem. Suspendisse potenti. Quisque pharetra justo euismod, aliquam nisi nec, malesuada tellus. Phasellus tempus sceleris
que auctor. Etiam et lacus metus. Cras venenatis mauris congue ex hendrerit scelerisque. Sed iaculis justo a urna semper, ut viverra mi vulput
ate. Suspendisse vitae felis vel ipsum pellentesque lobortis. Vestibulum a cursus nulla, at efficitur mauris. In maximus erat sit amet nunc ve
hicula tempor. Nulla rhoncus scelerisque justo, convallis pharetra metus semper nec. Phasellus scelerisque justo mollis aliquam accumsan. Cras
 aliquet metus sit amet porta vulputate. Proin consequat consequat aliquam. Proin malesuada ante id velit faucibus, nec condimentum risus vest
ibulum. Fusce ante urna, consequat eu maximus vel, efficitur eget tortor.
Vestibulum finibus dapibus arcu, nec mattis ipsum scelerisque at. Nullam hendrerit mi ac sodales venenatis. Donec enim nunc, accumsan sit amet
 dignissim convallis, consectetur nec sem. Phasellus dapibus pharetra ipsum, id lacinia metus facilisis vestibulum. Nulla porta mollis nunc ut
 dignissim. Phasellus tempus ipsum ac felis placerat, a sagittis mi posuere. Class aptent taciti sociosqu ad litora torquent per conubia nostr
a, per inceptos himenaeos. Donec a luctus tellus, et cursus sapien. Sed eget nisl ante. Morbi a viverra ex. Pellentesque habitant morbi tristi
que senectus et netus et malesuada fames ac turpis egestas. Sed ut ipsum justo. Integer pellentesque vehicula odio sed consequat. Vestibulum a
nte ipsum primis in faucibus orci luctus et ultrices posuere cubilia curae; Nulla sed ligula in purus egestas ornare.
dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$ grep -c "ipsum" Sample.txt
3
dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$
```

```
dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$ grep -v "ipsum" Sample.txt
Hi. I'm Dhyuti. I am typing something to fill this file with information.
I'll be using this to experiment on for improving my Linux skills.
I need one more sentence atleast to make this file useful to me.
So here it is


Fusce hendrerit orci sit amet lacus faucibus pretium. Suspendisse nec feugiat nunc. Aenean dolor libero, bibendum non nisi a, congue euismod d
iam. Vestibulum elementum cursus lacus. Duis eu sapien et nisi scelerisque sollicitudin. Donec vitae velit non sapien malesuada venenatis. Int
eger tellus sapien, imperdiet a libero nec, sollicitudin faucibus neque.

Ut finibus ligula ut urna maximus ultrices. Pellentesque consequat augue at elit ullamcorper placerat. Nulla iaculis nibh metus, nec scelerisq
ue lectus gravida ac. Integer quis lorem mi. Quisque sollicitudin ullamcorper felis, vel gravida leo interdum a. Mauris nec euismod lectus. Al
iquam dapibus enim vel magna placerat consectetur. Curabitur auctor odio at condimentum mollis. Integer volutpat elit id dolor ornare, aliquam
 sollicitudin purus cursus. Nullam congue sollicitudin purus, eu fringilla erat finibus at. Morbi congue sem non viverra volutpat. Donec sapie
n orci, efficitur a aliquet ac, lacinia vitae urna. Duis lobortis eget arcu sit amet sollicitudin. Donec urna leo, fringilla quis dictum sed,
hendrerit a libero. Etiam vitae justo ut augue dictum laoreet. Nullam porttitor justo a facilisis volutpat.


dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$
```

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Find

This Command helps in finding the proper address of a file based on the given clues.

find . -name Sample.txt} - Searches & gives the address of the file with name exactly as mentioned

find . -iname Sample.txt} - Same like previous Command but it searches case insensitively

find . -type f -name "*e.txt"} - searches & display address of files with the string ".e.txt".

```
Activities          Terminal ▾                        Aug 7 17:22

                            dhyuti_n@dhyuti-VirtualBox: ~

dhyuti_n@dhyuti-VirtualBox:~$ find . -name Sample.txt
./.local/share/Trash/files/LAB1/Sample.txt
./OSLab/LAB1/Sample.txt
dhyuti_n@dhyuti-VirtualBox:~$ find ./OSLab -name Sample.txt
./OSLab/LAB1/Sample.txt
dhyuti_n@dhyuti-VirtualBox:~$ find . -iname sample.txt
./.local/share/Trash/files/LAB1/Sample.txt
./OSLab/LAB1/Sample.txt
dhyuti_n@dhyuti-VirtualBox:~$ find . -type f -name "*e.txt"
./.local/share/Trash/files/file.txt
./.local/share/Trash/files/LAB1/Sample.txt
./OSLab/LAB1/Sample.txt
./.cache/tracker/db-locale.txt
dhyuti_n@dhyuti-VirtualBox:~$
```


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(ssh)

- ssh stands fo "Secure Shell"
- It is a protocol used to securely connect to a remote server.
- It transfers all data in encrypted form

ssh-keygen + rsa y- creates/generates a private
Key ~~to see~~ to secure &
it will be hidden.

dhyuti_n@dhyuti-VirtualBox: ~

```
dhyuti_n@dhyuti-VirtualBox:~$ ssh-keygen -t rsa
Generating public/private rsa key pair.
Enter file in which to save the key (/home/dhyuti_n/.ssh/id_rsa): OSLab/LAB1/Destination.txt
OSLab/LAB1/Destination.txt already exists.
Overwrite (y/n)? n
dhyuti_n@dhyuti-VirtualBox:~$ ssh-keygen -t rsa
Generating public/private rsa key pair.
Enter file in which to save the key (/home/dhyuti_n/.ssh/id_rsa): ssh_trial.txt
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in ssh_trial.txt
Your public key has been saved in ssh_trial.txt.pub
The key fingerprint is:
SHA256:EUcsEamOGfmkRfg+jB4BRphAhW46qBAbE238E0QdmtY dhyuti_n@dhyuti-VirtualBox
The key's randomart image is:
+---[RSA 3072]----+
|+B++oo..+*o      |
|+.* o+o oo.      |
|.+ o+=E...       |
|+o .* =  .       |
|+=   /  S        |
|*    * *         |
|o. . . .         |
|.    .           |
|                 |
+----[SHA256]-----+
dhyuti_n@dhyuti-VirtualBox:~$
```

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CED19 I027

(diff):

Command used to point the differences between two files

diff a.text b.text 3— syntax

-special symbols:

     — a: add
     — c: change
     — d: delete

dhyuti_n@dhyuti-VirtualBox: ~/OSLab/LAB1

```
dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$ diff a.txt b.txt
1c1
< Hi. I'm Dhyuti. I am typing something to fill this file with information.
---
> Hi. I'm dhyuti. I am typing something to fill this file with information.
4,5c4,6
< So here it is
<
---
> So here it is.
> DHyuti
> operating systems
dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$ diff -a a.txt b.txt
1c1
< Hi. I'm Dhyuti. I am typing something to fill this file with information.
---
> Hi. I'm dhyuti. I am typing something to fill this file with information.
4,5c4,6
< So here it is
<
---
> So here it is.
> DHyuti
> operating systems
dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$ diff -c a.txt b.txt
*** a.txt        2021-08-07 17:59:40.623121505 +0530
--- b.txt        2021-08-07 18:00:20.632860060 +0530
***************
*** 1,5 ****
! Hi. I'm Dhyuti. I am typing something to fill this file with information.
  I'll be using this to experiment on for improving my Linux skills.
  I need one more sentence atleast to make this file useful to me.
! So here it is
```

dhyuti_n@dhyuti-VirtualBox: ~/OSLab/LAB1

```
> DHyuti
> operating systems
dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$ diff -c a.txt b.txt
*** a.txt        2021-08-07 17:59:40.623121505 +0530
--- b.txt        2021-08-07 18:00:20.632860060 +0530
***************
*** 1,5 ****
! Hi. I'm Dhyuti. I am typing something to fill this file with information.
  I'll be using this to experiment on for improving my Linux skills.
  I need one more sentence atleast to make this file useful to me.
! So here it is
!
--- 1,6 ----
! Hi. I'm dhyuti. I am typing something to fill this file with information.
  I'll be using this to experiment on for improving my Linux skills.
  I need one more sentence atleast to make this file useful to me.
! So here it is.
! DHyuti
! operating systems
dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$ diff -d a.txt b.txt
1c1
< Hi. I'm Dhyuti. I am typing something to fill this file with information.
---
> Hi. I'm dhyuti. I am typing something to fill this file with information.
4,5c4,6
< So here it is
<
---
> So here it is.
> DHyuti
> operating systems
dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$
```

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(sort)

command to sort the lines of a file in alphabetical or ~~num~~ numerical order

sort a.txt } — sorts in alphabetical order & displays the output (a.txt is uninterrupted)

sort a.txt > sorted.txt }
sort -o sorted.txt a.txt } — creates a new file called sorted.txt
cat sorted.txt   and saves the output there

sort -n c.txt } — numerical sorting.

```
dhyuti_n@dhyuti-VirtualBox: ~/OSLab/LAB1

dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$ sort a.txt

dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$ sort a.txt
BARUNI
DHYUTI
KASAB
PRANAYA
PRIYA
PUSHPA
SANTOSH
SISIRA
dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$ sort a.txt > sorted.txt
dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$ sort -o sorted.txt a.txt
dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$ cat sorted.txt
BARUNI
DHYUTI
KASAB
PRANAYA
PRIYA
PUSHPA
SANTOSH
SISIRA
dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$ sort -n c.txt
12
30
43
65
77
88
92
333
dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$
```

sort -n ~~like~~

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(pwd)

- stands for 'Print Working Directory'
- prints the path of working directory starting from root

pwd } prints symbolic path

pwd -L } prints symbolic path

pwd -P } prints actual path

---

dhyuti_n@dhyuti-VirtualBox: ~/OSLab/LAB1

```
dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$ pwd
/home/dhyuti_n/OSLab/LAB1
dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$ pwd -L
/home/dhyuti_n/OSLab/LAB1
dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$ pwd -P
/home/dhyuti_n/OSLab/LAB1
dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$
```

pwa -p g p...

gzip:
— command to compress files

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gzip file.txt ~~executes~~ compresses file in .txt.gz format & deletes the original

☞ special symbols:
   -f : deletes original
   -k : keeps original
   -L : shows the specifications of a particular .gz file.

(ps)

— command for viewing process status
— gives info about :

PID : Process ID
TTY : Terminal type of user
TIME : amt of CPU in minutes & seconds that
the process is running
CMD : name of the command that launched the
process

(free)

shows the total amt of free space available

— b : in bytes
— m : in megabytes
— k : in kilobytes
— g : in gigabytes

---

dhyuti_n@dhyuti-VirtualBox: ~

```
dhyuti_n@dhyuti-VirtualBox:~$ ps
    PID TTY          TIME CMD
   2544 pts/0    00:00:00 bash
   2629 pts/0    00:00:00 ps
dhyuti_n@dhyuti-VirtualBox:~$ free
              total        used        free      shared  buff/cache   available
Mem:        4027644      951720     1720828       11576     1355096     2825564
Swap:       2097148           0     2097148
dhyuti_n@dhyuti-VirtualBox:~$ free -b
              total        used        free      shared  buff/cache   available
Mem:     4124307456   962383872  1774313472    11845632  1387610112  2905587712
Swap:    2147479552           0  2147479552
dhyuti_n@dhyuti-VirtualBox:~$ free -m
              total        used        free      shared  buff/cache   available
Mem:           3933         884        1721          11        1327        2803
Swap:          2047           0        2047
dhyuti_n@dhyuti-VirtualBox:~$ free -k
              total        used        free      shared  buff/cache   available
Mem:        4027644      905948     1762504       11568     1359192     2870676
Swap:       2097148           0     2097148
dhyuti_n@dhyuti-VirtualBox:~$ free -g
              total        used        free      shared  buff/cache   available
Mem:              3           0           1           0           1           2
Swap:             1           0           1
dhyuti_n@dhyuti-VirtualBox:~$
```

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Kill:

— an inbuilt command used to terminate a process manually

kill -l } shows a list of processes that can be terminated

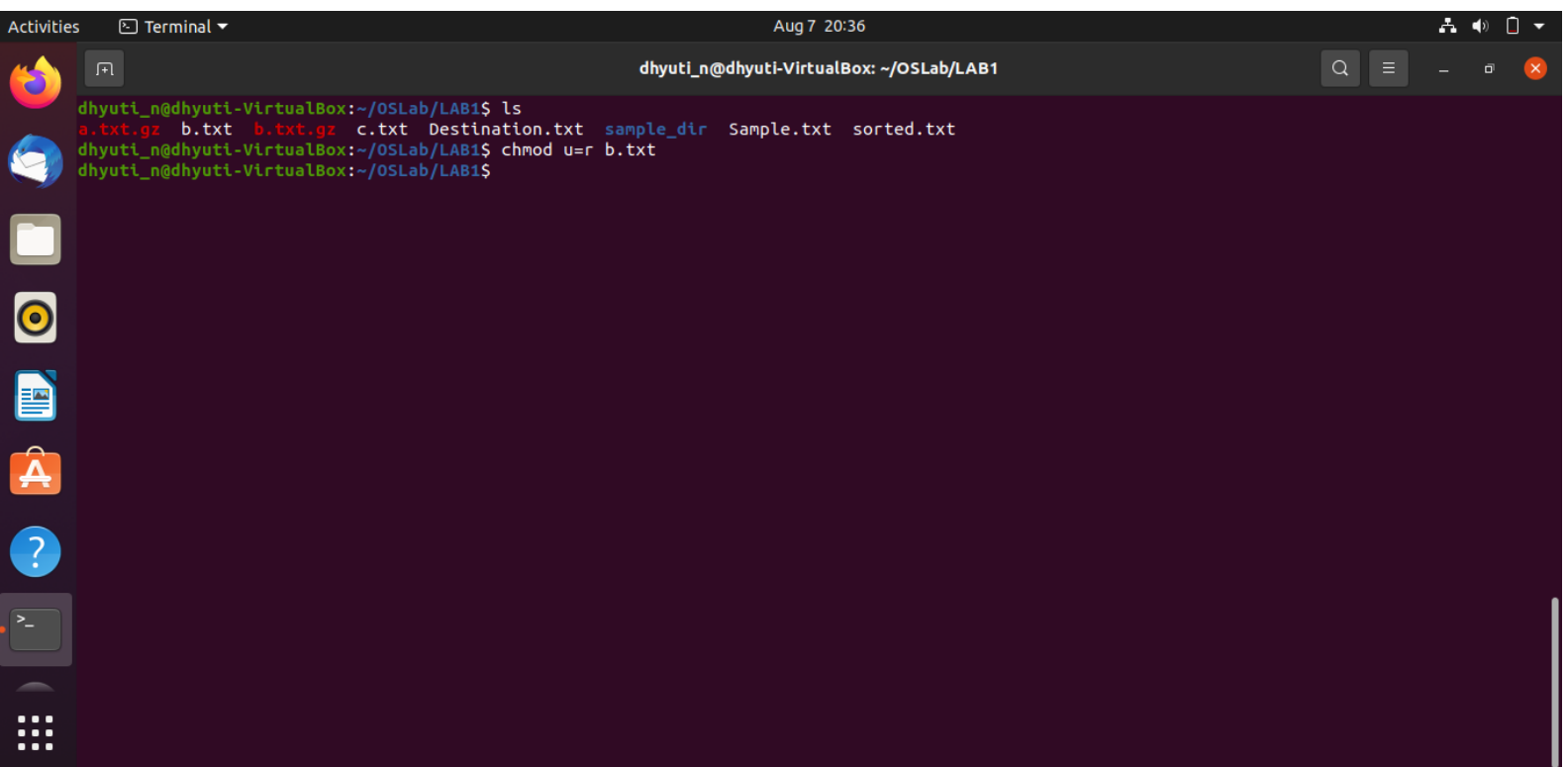kill 6045 } kills the process ~~ID ID~~ with ID 6045 if it exists

---

```
dhyuti_n@dhyuti-VirtualBox:~$ kill -l
 1) SIGHUP       2) SIGINT       3) SIGQUIT      4) SIGILL       5) SIGTRAP
 6) SIGABRT      7) SIGBUS       8) SIGFPE       9) SIGKILL     10) SIGUSR1
11) SIGSEGV     12) SIGUSR2     13) SIGPIPE     14) SIGALRM     15) SIGTERM
16) SIGSTKFLT   17) SIGCHLD     18) SIGCONT     19) SIGSTOP     20) SIGTSTP
21) SIGTTIN     22) SIGTTOU     23) SIGURG      24) SIGXCPU     25) SIGXFSZ
26) SIGVTALRM   27) SIGPROF     28) SIGWINCH    29) SIGIO       30) SIGPWR
31) SIGSYS      34) SIGRTMIN    35) SIGRTMIN+1  36) SIGRTMIN+2  37) SIGRTMIN+3
38) SIGRTMIN+4  39) SIGRTMIN+5  40) SIGRTMIN+6  41) SIGRTMIN+7  42) SIGRTMIN+8
43) SIGRTMIN+9  44) SIGRTMIN+10 45) SIGRTMIN+11 46) SIGRTMIN+12 47) SIGRTMIN+13
48) SIGRTMIN+14 49) SIGRTMIN+15 50) SIGRTMAX-14 51) SIGRTMAX-13 52) SIGRTMAX-12
53) SIGRTMAX-11 54) SIGRTMAX-10 55) SIGRTMAX-9  56) SIGRTMAX-8  57) SIGRTMAX-7
58) SIGRTMAX-6  59) SIGRTMAX-5  60) SIGRTMAX-4  61) SIGRTMAX-3  62) SIGRTMAX-2
63) SIGRTMAX-1  64) SIGRTMAX
dhyuti_n@dhyuti-VirtualBox:~$ kill 6054
bash: kill: (6054) - No such process
dhyuti_n@dhyuti-VirtualBox:~$
```

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CE D19 I 027

(5) Chmod :

used to change permissions for a file
(of user, group and others)

+ - to add permission
- - to remoues permission
= - assigns the indicated permissions

```
dhyuti_n@dhyuti-VirtualBox: ~/OSLab/LAB1

dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$ ls
a.txt.gz  b.txt  b.txt.gz  c.txt  Destination.txt  sample_dir  Sample.txt  sorted.txt
dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$ chmod u=r b.txt
dhyuti_n@dhyuti-VirtualBox:~/OSLab/LAB1$
```

THE END