

# ADvAnced CoMPuter NetwORK AssiGnMent 4

**Topic:** - Take screenshots of basic Linux commands IV

**Submitted By:**

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Roll no: 07

MCA A BATCH

SEM-2

# BASIC LINUX COMMANDS

## 1. wc

- wc stands for word count.
- Used for counting purpose.
- It is used to find out number of lines, word count, byte and characters count in the files specified in the file arguments.
  - #wc state.txt
  - #wc state.txt capital.txt
  - wc -l state.txt
  - wc -w state.txt capital.txt
  - wc -c state.txt
  - wc -m state.txt

```
akshay07@akshay07-VirtualBox: ~/Documents$ wc akshay.txt
4 13 58 akshay.txt
akshay07@akshay07-VirtualBox: ~/Documents$ wc -l akshay.txt
4 akshay.txt
akshay07@akshay07-VirtualBox: ~/Documents$ wc -w akshay.txt
13 akshay.txt
akshay07@akshay07-VirtualBox: ~/Documents$ wc -c akshay.txt
58 akshay.txt
akshay07@akshay07-VirtualBox: ~/Documents$ wc -m akshay.txt
58 akshay.txt
```

## 2. tar

The Linux 'tar' stands for tape archive, is used to create Archive and extract the Archive files

- Linux tar command to create compressed or uncompressed Archive files

- Options:

- c : Creates Archive
- x : Extract the archive
- f : creates archive with given filename
- t : displays or lists files in archived file
- u : archives and adds to an existing archive file
- v : Displays Verbose Information
- A : Concatenates the archive files
- z : zip, tells tar command that creates tar file using gzip
- j : filter archive tar file using tbzip
- W : Verify a archive file
- r : update or add file or directory in already existed .tar file

#tar cf archive.tar state.txt capital.txt //create archive file

#ls archive.tar

#tar tf /archive.tar // list contents of tar archive file

- Extract an archive created with tar

#mkdir backup

#cd backup

#tar xf /home/kaj/Documents/Kaj\_Linux/archive.tar

- Compression Types

gzip(z), bzip2(j), xz(J)

#tar czf /abc.tar.gz /etc

#tar cjf /abcd.tar.bz2 /etc

#tar cJf /abcde.tar.xz /etc

- Extract an archive

#mkdir backup1

```
#cd backup1

#tar xzf /abc.tar.gz

#mkdir backup2

#cd backup2

#tar xjf /abcd.tar.bz2

#mkdir backup3

#cd backup3

#tar xJf /abcde.tar.xz
```

- tar commands

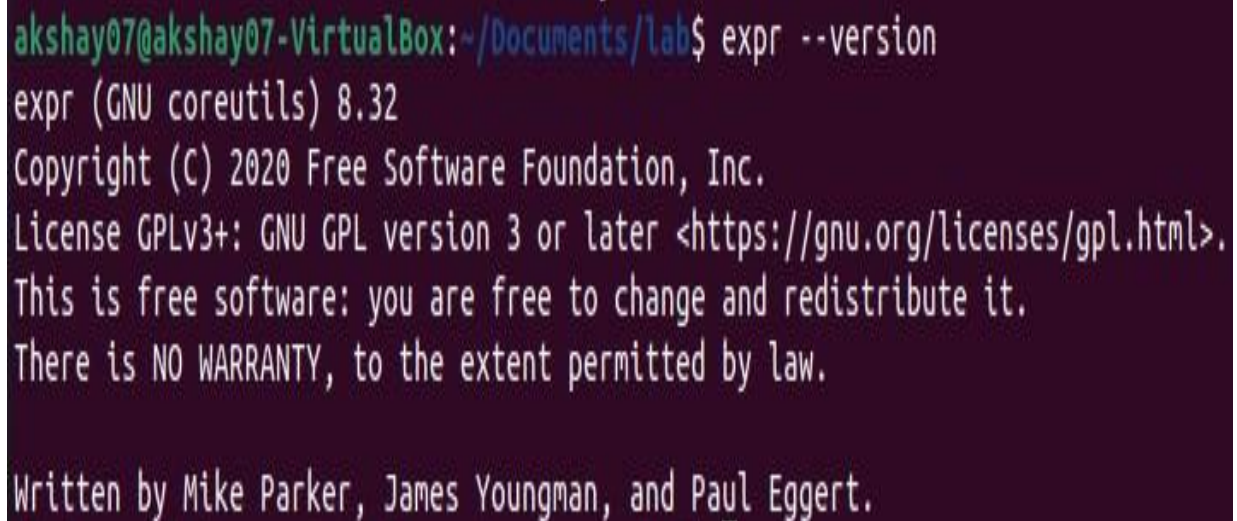
```
akshay07@akshay07-VirtualBox:~/Documents$ tar czf archive.tar.gz akshay.txt
akshay07@akshay07-VirtualBox:~/Documents$ ls
akshay.txt  archive.tar.gz
akshay07@akshay07-VirtualBox:~/Documents$ sudo tar cJf mca.tar.dz2 /etc
[sudo] password for akshay07:
Sorry, try again.
[sudo] password for akshay07:
tar: Removing leading '/' from member names
akshay07@akshay07-VirtualBox:~/Documents$ ls
akshay.txt  archive.tar.gz  mca.tar.dz2
akshay07@akshay07-VirtualBox:~/Documents$ sudo tar cJf mca.tar.xz /etc
tar: Removing leading '/' from member names
akshay07@akshay07-VirtualBox:~/Documents$ ls
akshay.txt  archive.tar.gz  mca.tar.dz2  mca.tar.xz
akshay07@akshay07-VirtualBox:~/Documents$ mkdir lab
akshay07@akshay07-VirtualBox:~/Documents$ cd lab
akshay07@akshay07-VirtualBox:~/Documents/lab$ tar xzf /home/akshay07/Doc
```

### 3.expr

The expr command evaluates a given expression and displays its corresponding output. It is used for:

- Basic operations like addition, subtraction, multiplication, division, and modulus on integers.
- Evaluating regular expressions, string operations like substring, length of strings etc.
- Performing operations on variables inside a shell script

```
#expr 10 + 2
```

A terminal window with a dark purple background and light green text. The prompt is 'akshay07@akshay07-VirtualBox: ~/Documents/lab\$'. The command 'expr --version' has been entered. The output is: 'expr (GNU coreutils) 8.32', 'Copyright (C) 2020 Free Software Foundation, Inc.', 'License GPLv3+: GNU GPL version 3 or later <https://gnu.org/licenses/gpl.html>.', 'This is free software: you are free to change and redistribute it.', 'There is NO WARRANTY, to the extent permitted by law.', and 'Written by Mike Parker, James Youngman, and Paul Eggert.'

```
akshay07@akshay07-VirtualBox: ~/Documents/lab$ expr --version
expr (GNU coreutils) 8.32
Copyright (C) 2020 Free Software Foundation, Inc.
License GPLv3+: GNU GPL version 3 or later <https://gnu.org/licenses/gpl.html>.
This is free software: you are free to change and redistribute it.
There is NO WARRANTY, to the extent permitted by law.

Written by Mike Parker, James Youngman, and Paul Eggert.
```

### 3. Redirections & Piping

A pipe is a form of redirection to send the output of one command/program/process to another command/program/process for further processing.

- Pipe is used to combine two or more commands, the output of one command acts as input to another command, and this command's output may act as input to the next command and so on.

```
#ls -l | wc -l
```

```
#cat /etc.passwd.txt | head -7 | tail -5
```

```
akshay07@akshay07-VirtualBox:~/Documents/lab$ ls -l
total 12
-rw-rw-r-- 1 akshay07 new_group  45 Aug 12 18:25 archive.tar.gz
-rw----- 1 akshay07 new_group 2675 Aug 12 19:35 key1
-rw-r--r-- 1 akshay07 new_group  582 Aug 12 19:35 key1.pub
akshay07@akshay07-VirtualBox:~/Documents/lab$ ls -l | wc -m -w
    29    188
```

## 4. ssh

ssh stands for “**Secure Shell**”.

- It is a protocol used to securely connect to a remote server/system.
- ssh is secure in the sense that it transfers the data in encrypted form between the host and the client.
- It transfers inputs from the client to the host and relays back the output. ssh runs at TCP/IP port 22.

#ssh user\_name@host(IP/Domain\_name)

#ssh -X root@server1.example.com

```
akshay07@akshay07-VirtualBox:~/Documents/lab$ ssh localhost
ssh: connect to host localhost port 22: Connection refused
akshay07@akshay07-VirtualBox:~/Documents/lab$ sudo apt install openssh-client
[sudo] password for akshay07:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
openssh-client is already the newest version (1:8.4p1-5ubuntu1).
openssh-client set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 147 not upgraded.
```

## 5. scp

SCP (secure copy) is a command-line utility that allows you to securely

- copy files and directories between two locations.
- With scp, you can copy a file or directory:
- From your local system to a remote system.
- From a remote system to your local system.
- Between two remote systems from your local system.
- Remote file system locations are specified in format [user@]host:/path

Syntax:

```
scp [OPTION] [user@]SRC_HOST:]file1 [user@]DEST_HOST:]file2
```

```
$scp /etc/yum.config /etc/hosts ServerX:/home/student
```

```
$scp ServerX:/etc/hostname /home/student
```

## 6. ssh-keygen

ssh-keygen command to generate a public/private authentication key pair. Authentication keys allow a user to connect to a remote system without supplying a password. Keys must be generated for each user separately. If you generate key pairs as the root user, only the root can use the keys.

```
$ssh-keygen -t rsa
```

```
akshay07@akshay07-VirtualBox:~/Documents/lab$ ssh-keygen -t rsa
Generating public/private rsa key pair.
Enter file in which to save the key (/home/akshay07/.ssh/id_rsa): key1
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in key1
Your public key has been saved in key1.pub
The key fingerprint is:
SHA256:hxgWYTK8gdj/W+4qp1lajD/wthpvcUQp1UYXhjcCslw akshay07@akshay07-VirtualBox
The key's randomart image is:
+----[RSA 3072]-----+
| o oo =oE=..+. |
| . o o=.=o =oo |
| . o=o . o . |
| o. o.. |
| ...S . |
| .oo o. |
| oo+* |
| .OB . |
| =B==. |
+----[SHA256]-----+
```



## 7. ssh-copy-id

The ssh-copy-id command allows you to install an SSH key on a remote server's authorized keys.

- This command facilitates SSH key login, which removes the need for a password for each login, thus ensuring a password-less, automatic login process.

```
$ssh-copy-id username@remote_host
```