

## BASIC LINUX COMMANDS -4

### 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.

```
ashish@ashish-VirtualBox:~/Desktop$ cat >> class1.txt
ashish
wilson
anu
joy
^Z
[2]+  Stopped                  cat >> class1.txt
ashish@ashish-VirtualBox:~/Desktop$ wc class1.txt
 4  4 22 class1.txt
```

```
ashish@ashish-VirtualBox:~/Desktop$ wc class1.txt class.txt
 6  8 50 class1.txt
 4  2 16 class.txt
10 10 66 total
```

### 2. tar(create, extract using gzip, xz, bzip2)

- 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

```
ashish@ashish-VirtualBox:~/Desktop$ tar cf all.tar class.txt class1.txt q1.txt
ashish@ashish-VirtualBox:~/Desktop$ ls
all.tar  Books  class1.txt  class.txt  q1.txt
ashish@ashish-VirtualBox:~/Desktop/allfloder$ tar xf /home/ashish/Desktop/all.t
ar
```

Create Bzip2(bz2) & gzip(gz)

```
ashish@ashish-VirtualBox:~/Desktop$ sudo tar czf mca.tar.gz /etc/
[sudo] password for ashish:
tar: Removing leading '/' from member names
ashish@ashish-VirtualBox:~/Desktop$ sudo tar cjf mcareg.tar.bzz /etc/
tar: Removing leading '/' from member names
ashish@ashish-VirtualBox:~/Desktop$ ls
allfloder  Books      class.txt      mca.tar.gz
all.tar    class1.txt  mcareg.tar.bzz q1.txt
ashish@ashish-VirtualBox:~/Desktop$ sudo tar cjf mcareg.tar.bz2 /etc/
tar: Removing leading '/' from member names
ashish@ashish-VirtualBox:~/Desktop$ ls
allfloder  Books      class.txt      mcareg.tar.bzz  q1.txt
all.tar    class1.txt  mcareg.tar.bz2 mca.tar.gz
ashish@ashish-VirtualBox:~/Desktop$
```

Extract Bzip2

```
ashish@ashish-VirtualBox:~/backup1$ sudo tar xjf ~/mcareg.tar.bz2
ashish@ashish-VirtualBox:~/backup1$ ls
etc
```

Extract gz

```
ashish@ashish-VirtualBox:~/Desktop/ash$ sudo tar xzf /home/ashish/Desktop/mca.t
ar.gz
ashish@ashish-VirtualBox:~/Desktop/ash$ ls
etc
```

Create Xz

```
ashish@ashish-VirtualBox:~/Desktop$ sudo tar cjf mca.tar.xz /etc
[sudo] password for ashish:
tar: Removing leading '/' from member names
ashish@ashish-VirtualBox:~/Desktop$ ls
etc  mca.tar.xz  root  root.pub
```

Extract Xz

```
ashish@ashish-VirtualBox:~/Desktop/backup$ sudo tar xjf ~/Desktop/mca.tar.xz
ashish@ashish-VirtualBox:~/Desktop/backup$ ls
etc
```

### 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.

```
ashish@ashish-VirtualBox:~/Desktop/ash$ expr 10 + 12
22
```

### 4.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.

```

ashish@ashish-VirtualBox:~/Desktop$ ls -l
total 4312
drwxrwxr-x  2 ashish ashish  4096 Aug  6 15:07 allfloder
-rw-rw-r--  1 ashish ashish 10240 Aug  6 14:58 all.tar
drwxrwxr-x  3 ashish ashish  4096 Aug  6 15:23 ash
drwxr-xrwx  2 ashish ashish  4096 Aug  6 09:57 books
-rw-rw-r--  1 ashish ashish   50 Aug  6 14:45 class1.txt
-rw-rw-r--  1 ashish ashish   16 Aug  6 14:44 class.txt
drwxr-xr-x 129 root    root    12288 Aug  6 09:50 etc
-rw-r--r--  1 root    root   1043016 Aug  6 15:20 mcareg1.tar.xz
-rw-r--r--  1 root    root   1043016 Aug  6 15:16 mcareg.tar.bz2
-rw-r--r--  1 root    root   1043016 Aug  6 15:16 mcareg.tar.bzz
-rw-r--r--  1 root    root  1229546 Aug  6 15:15 mca.tar.gz
-rw-rw-r--  1 ashis   ashish    7 Jun 15 15:26 q1.txt
ashish@ashish-VirtualBox:~/Desktop$ ls -l | wc -l
13
ashish@ashish-VirtualBox:~/Desktop$ cat /etc/passwd | head -5
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/bin/sync

```

## 5.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.

```

ashish@ashish-VirtualBox:~/Desktop$ ssh
usage: ssh [-46AaCfGgKkMNnqsTtVvXxYy] [-B bind_interface]
          [-b bind_address] [-c cipher_spec] [-D [bind_address:]port]
          [-E log_file] [-e escape_char] [-F configfile] [-I pkcs11]
          [-i identity_file] [-J [user@]host[:port]] [-L address]
          [-l login_name] [-m mac_spec] [-O ctl_cmd] [-o option] [-p port]
          [-Q query_option] [-R address] [-S ctl_path] [-W host:port]
          [-w local_tun[:remote_tun]] destination [command]

```

## 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.

```
ashish@ashish-VirtualBox:~/Desktop$ ssh-keygen -t rsa
Generating public/private rsa key pair.
Enter file in which to save the key (/home/ashish/.ssh/id_rsa): root
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Passphrases do not match. Try again.
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in root
Your public key has been saved in root.pub
The key fingerprint is:
SHA256:qapqan9ANaH6+epdETQrD166CrLJpB5czhAZTeD2TC8 ashish@ashish-VirtualBox
The key's randomart image is:
+---[RSA 3072]-----+
| o+. ..o          |
| . o..o. o        |
| = o.o.+          |
| . *.o * ..       |
| o.E + oS         |
| . *.o ...        |
| .= =....         |
| ==o +o.          |
| @++*+o           |
+---[SHA256]-----+
```

## 7.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.

## 8.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`