

### Lab 3

**Q.1)** What does each of the following commands do? Print the output and attach it as part of your Lab3 document

a) **cd /** It takes us from the current directory to the root directory

```
ibab@IBAB-Workshop-Comp017:~/Downloads/Atharva$ cd /
ibab@IBAB-Workshop-Comp017:/$
```

b) **cd ~** It takes us from the current directory to the home directory

```
ibab@IBAB-Workshop-Comp017:~/Downloads$ cd ~
ibab@IBAB-Workshop-Comp017:~$
```

c) **cd** It takes you back to the home directory from the current directory

```
ibab@IBAB-Workshop-Comp017:~/Downloads/AP$ cd
ibab@IBAB-Workshop-Comp017:~$
```

d) **cd ..** It takes you back one directory

```
ibab@IBAB-Workshop-Comp017:~/Downloads/Atharva$ cd ..
ibab@IBAB-Workshop-Comp017:~/Downloads$
```

e) **cd .** It takes you to the current directory

```
ibab@IBAB-Workshop-Comp017:~/Downloads$ cd .
ibab@IBAB-Workshop-Comp017:~/Downloads$
```

f) **cd -** It returns to previously visited directory

```
ibab@IBAB-Workshop-Comp017:~/Downloads$ cd -
/home/ibab/Downloads
ibab@IBAB-Workshop-Comp017:~/Downloads$
```

**Q.2.** When using the ls command, what is the difference between -R option and -r option? Demonstrate the difference by typing the appropriate commands and printing the output to your Lab3 document.

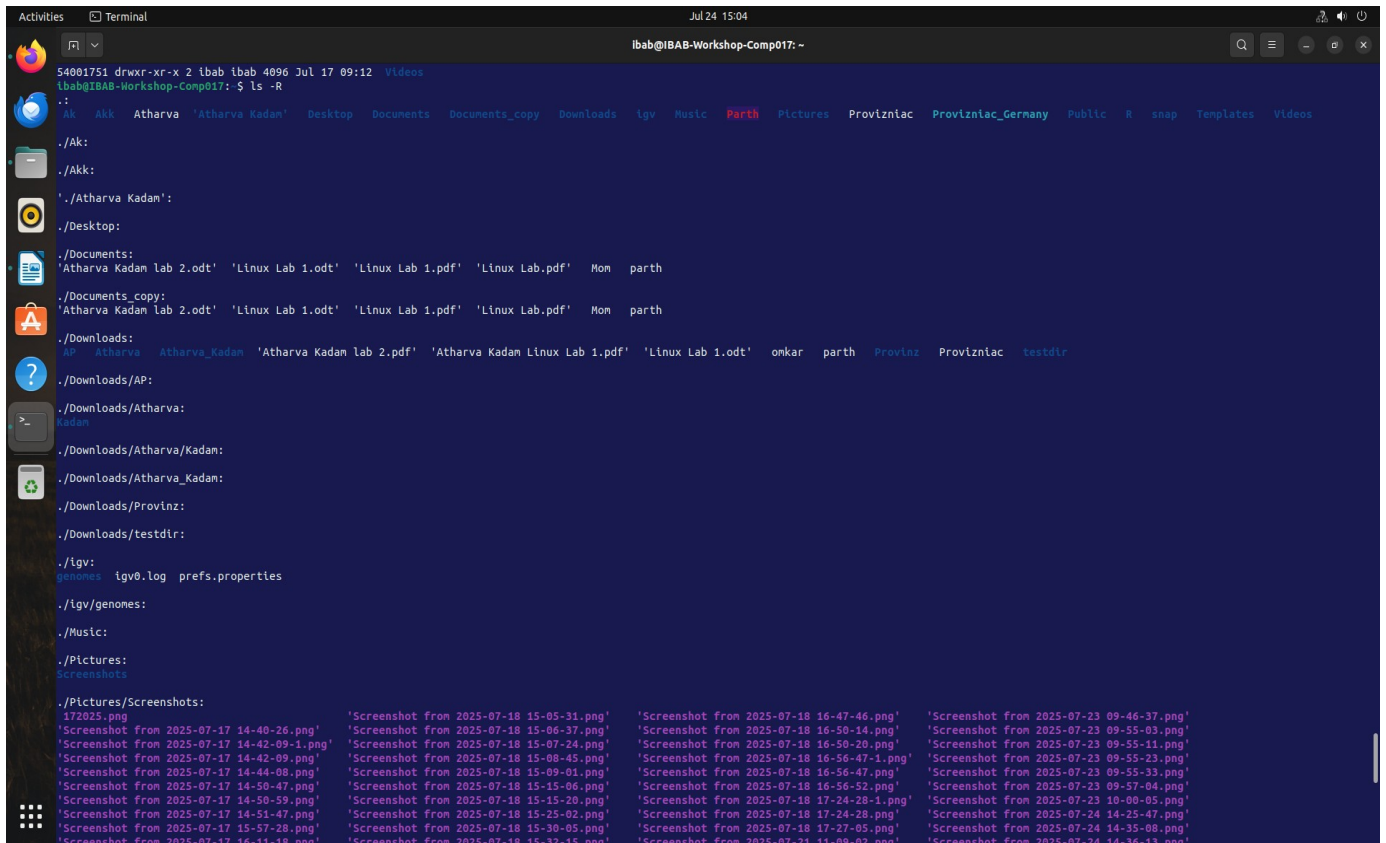
**ls command** – It lists all the directories and files in the home directory.

```
ibab@IBAB-Workshop-Comp017:~$ ls
Ak  Akk  Atharva  'Atharva Kadam'  Desktop  Documents  Documents_copy  Down
```

**ls -R** It gives a recursive listing, including the contents of all subdirectories and takes us to the last subdirectory.

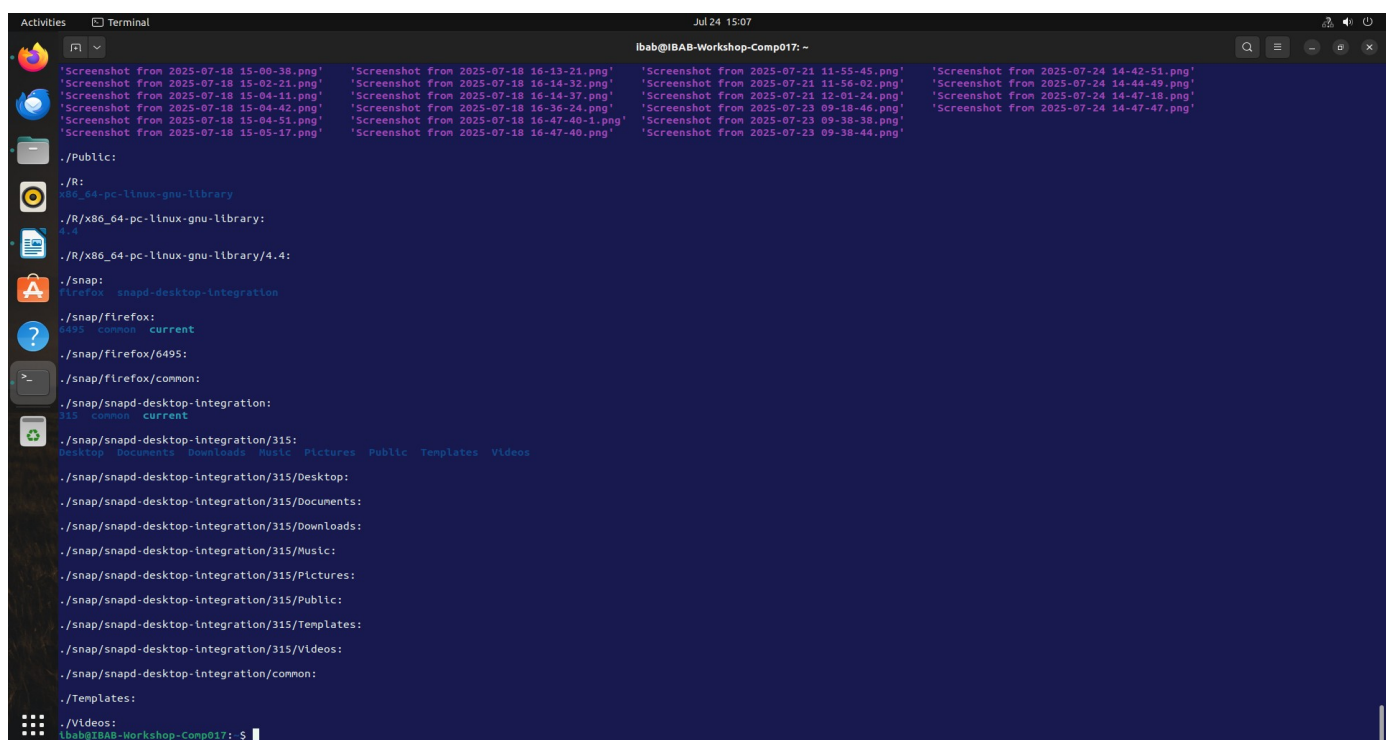
```
ibab@IBAB-Workshop-Comp017:~$ ls -R
.:
Ak  Akk  Atharva  'Atharva Kadam'  Desktop  Documents  Documents_copy  Downloads  igv  Music

./Ak:
```



A terminal window titled 'ibab@IBAB-Workshop-Comp017: ~' showing the output of the 'ls -R' command. The command is executed at the root of the home directory. The output lists the contents of the current directory and then recursively lists the contents of each subdirectory. The subdirectories listed are Ak, Akk, Atharva, 'Atharva Kadam', Desktop, Documents, Documents\_copy, Downloads, igv, and Music. The output for each subdirectory is indented. The output for 'Atharva Kadam' shows a file 'Atharva Kadam Lab 2.odt' and a directory 'Linux Lab'. The output for 'Linux Lab' shows a file 'Linux Lab 1.pdf' and a directory 'Mon'. The output for 'Mon' shows a file 'parth'. The output for 'Downloads' shows a file 'Atharva Kadam Lab 2.pdf' and a directory 'Atharva Kadam'. The output for 'Atharva Kadam' shows a file 'Atharva Kadam Linux Lab 1.pdf' and a directory 'Linux Lab'. The output for 'Linux Lab' shows a file 'Linux Lab 1.odt' and a directory 'onkar'. The output for 'onkar' shows a file 'parth'. The output for 'Downloads/Atharva' shows a file 'Kadam'. The output for 'Downloads/Atharva/Kadam' shows a file 'Kadam'. The output for 'Downloads/Atharva/Kadam' shows a file 'Kadam'. The output for 'Downloads/Provlnz' shows a file 'Provlnz'. The output for 'Downloads/testdir' shows a file 'testdir'. The output for 'igv' shows a file 'igv0.log' and a directory 'prefs.properties'. The output for 'genomes' shows a file 'genomes'. The output for 'Music' shows a file 'Music'. The output for 'Pictures' shows a file 'Screenshots'. The output for 'Pictures/Screenshots' shows a list of screenshot files with timestamps.

All subdirectories till the last one.



A terminal window titled 'ibab@IBAB-Workshop-Comp017: ~' showing the output of the 'ls -R' command. The command is executed at the root of the home directory. The output lists the contents of the current directory and then recursively lists the contents of each subdirectory. The subdirectories listed are Ak, Akk, Atharva, 'Atharva Kadam', Desktop, Documents, Documents\_copy, Downloads, igv, and Music. The output for each subdirectory is indented. The output for 'Atharva Kadam' shows a file 'Atharva Kadam Lab 2.odt' and a directory 'Linux Lab'. The output for 'Linux Lab' shows a file 'Linux Lab 1.pdf' and a directory 'Mon'. The output for 'Mon' shows a file 'parth'. The output for 'Downloads' shows a file 'Atharva Kadam Lab 2.pdf' and a directory 'Atharva Kadam'. The output for 'Atharva Kadam' shows a file 'Atharva Kadam Linux Lab 1.pdf' and a directory 'Linux Lab'. The output for 'Linux Lab' shows a file 'Linux Lab 1.odt' and a directory 'onkar'. The output for 'onkar' shows a file 'parth'. The output for 'Downloads/Atharva' shows a file 'Kadam'. The output for 'Downloads/Atharva/Kadam' shows a file 'Kadam'. The output for 'Downloads/Atharva/Kadam' shows a file 'Kadam'. The output for 'Downloads/Provlnz' shows a file 'Provlnz'. The output for 'Downloads/testdir' shows a file 'testdir'. The output for 'igv' shows a file 'igv0.log' and a directory 'prefs.properties'. The output for 'genomes' shows a file 'genomes'. The output for 'Music' shows a file 'Music'. The output for 'Pictures' shows a file 'Screenshots'. The output for 'Pictures/Screenshots' shows a list of screenshot files with timestamps.

**ls -r** lists the files in the reverse alphabetical order according to their names.

```
ibab@IBAB-Workshop-Comp017:~$ ls -r
Videos  Templates  snap  R  Public  Provizniac_Germany  Provizniac  Pictures  Parth  Mus
ibab@IBAB-Workshop-Comp017:~$
```

**Q.3.** How do i found out what directory i am currently in?

**pwd** gives the name of the directory we are in

```
ibab@IBAB-Workshop-Comp017:~/Downloads/Atharva$ pwd
/home/ibab/Downloads/Atharva
ibab@IBAB-Workshop-Comp017:~/Downloads/Atharva$
```

**Q.4.** How do I list files sorted by modification time, but with oldest first? Find the correct combination of options to do this task. Print the output of your command with appropriate screenshots to demonstrate this in your Lab3 document.

**ls -ltr** is the command which sorts the files according to their modification time with the oldest file first

```
ibab@IBAB-Workshop-Comp017:~$ ls -ltr
total 60
drwxr-xr-x 2 ibab ibab 4096 Jul 17 09:12 Videos
drwxr-xr-x 2 ibab ibab 4096 Jul 17 09:12 Templates
drwxr-xr-x 2 ibab ibab 4096 Jul 17 09:12 Public
drwxr-xr-x 2 ibab ibab 4096 Jul 17 09:12 Music
drwxr-xr-x 2 ibab ibab 4096 Jul 17 09:12 Desktop
drwx----- 4 ibab ibab 4096 Jul 17 13:57 snap
drwxr-xr-x 3 ibab ibab 4096 Jul 17 14:38 Pictures
drwxrwxr-x 3 ibab ibab 4096 Jul 17 14:58 igv
drwxrwxr-x 3 ibab ibab 4096 Jul 17 15:03 R
drwxrwxr-x 2 ibab ibab 4096 Jul 21 11:34 'Atharva Kadam'
drwxrwxr-x 2 ibab ibab 4096 Jul 22 10:10 Ak
drwxrwxr-x 2 ibab ibab 4096 Jul 22 10:12 Akk
-rw-rw-r-- 2 ibab ibab 0 Jul 23 09:10 Provizniac
-rw-rw-r-- 1 ibab ibab 0 Jul 23 09:17 Atharva
lrwxrwxrwx 1 ibab ibab 10 Jul 23 09:31 Provizniac_Germany -> Provizniac
lrwxrwxrwx 1 ibab ibab 5 Jul 23 09:46 Parth -> parth
drwxr-xr-x 2 ibab ibab 4096 Jul 23 09:56 Documents
drwxr-xr-x 2 ibab ibab 4096 Jul 23 09:59 Documents_copy
drwxr-xr-x 7 ibab ibab 4096 Jul 23 16:26 Downloads
ibab@IBAB-Workshop-Comp017:~$ ls -ltr
```



even **ls -ltri** sorts the files according to their modification time with the oldest file first along with the **i node number**

```
ibab@IBAB-Workshop-Comp017:~$ ls -ltri
total 60
54001751 drwxr-xr-x 2 ibab ibab 4096 Jul 17 09:12 Videos
54001746 drwxr-xr-x 2 ibab ibab 4096 Jul 17 09:12 Templates
54001747 drwxr-xr-x 2 ibab ibab 4096 Jul 17 09:12 Public
54001749 drwxr-xr-x 2 ibab ibab 4096 Jul 17 09:12 Music
54001684 drwxr-xr-x 2 ibab ibab 4096 Jul 17 09:12 Desktop
54001669 drwx----- 4 ibab ibab 4096 Jul 17 13:57 snap
54001750 drwxr-xr-x 3 ibab ibab 4096 Jul 17 14:38 Pictures
54004604 drwxrwxr-x 3 ibab ibab 4096 Jul 17 14:58 igv
54004785 drwxrwxr-x 3 ibab ibab 4096 Jul 17 15:03 R
54008935 drwxrwxr-x 2 ibab ibab 4096 Jul 21 11:34 'Atharva Kadam'
54008931 drwxrwxr-x 2 ibab ibab 4096 Jul 22 10:10 Ak
54008954 drwxrwxr-x 2 ibab ibab 4096 Jul 22 10:12 Akk
```

**Q.5.**What is the difference between (explain in your own words) **ls -ltr** and **ls -l**? Demonstrate the difference with appropriate screenshot and explanations.

**ls -ltr** is used to arrange the files according to their modification time with the oldest to the newest file . Here the oldest file is listed first while the newest file is listed last.

```
ibab@IBAB-Workshop-Comp017:~$ ls -ltr
total 60
drwxr-xr-x 2 ibab ibab 4096 Jul 17 09:12 Videos
drwxr-xr-x 2 ibab ibab 4096 Jul 17 09:12 Templates
drwxr-xr-x 2 ibab ibab 4096 Jul 17 09:12 Public
drwxr-xr-x 2 ibab ibab 4096 Jul 17 09:12 Music
drwxr-xr-x 2 ibab ibab 4096 Jul 17 09:12 Desktop
drwx----- 4 ibab ibab 4096 Jul 17 13:57 snap
drwxr-xr-x 3 ibab ibab 4096 Jul 17 14:38 Pictures
drwxrwxr-x 3 ibab ibab 4096 Jul 17 14:58 igv
drwxrwxr-x 3 ibab ibab 4096 Jul 17 15:03 R
drwxrwxr-x 2 ibab ibab 4096 Jul 21 11:34 'Atharva Kadam'
drwxrwxr-x 2 ibab ibab 4096 Jul 22 10:10 Ak
drwxrwxr-x 2 ibab ibab 4096 Jul 22 10:12 Akk
-rw-rw-r-- 2 ibab ibab 0 Jul 23 09:10 Provizniac
-rw-rw-r-- 1 ibab ibab 0 Jul 23 09:17 Atharva
lrwxrwxrwx 1 ibab ibab 10 Jul 23 09:31 Provizniac_Germany -> Provizniac
lrwxrwxrwx 1 ibab ibab 5 Jul 23 09:46 Parth -> parth
drwxr-xr-x 2 ibab ibab 4096 Jul 23 09:56 Documents
drwxr-xr-x 2 ibab ibab 4096 Jul 23 09:59 Documents_copy
drwxr-xr-x 7 ibab ibab 4096 Jul 23 16:26 Downloads
ibab@IBAB-Workshop-Comp017:~$ ls -lt
```

**ls -l** it lists all the files in a long format giving detailed information about files and directories. **ls -ltr** is on the other hand gives the long format of files and directories but it arranges them according to their modification time with the oldest file first.

```
drwxr-xr-x 2 ibab ibab 4096 Jul 17 09:12 Videos
ibab@IBAB-Workshop-Comp017:~$ ls -l
total 60
drwxrwxr-x 2 ibab ibab 4096 Jul 22 10:10 Ak
drwxrwxr-x 2 ibab ibab 4096 Jul 22 10:12 Akk
-rw-rw-r-- 1 ibab ibab 0 Jul 23 09:17 Atharva
drwxrwxr-x 2 ibab ibab 4096 Jul 21 11:34 'Atharva Kadam'
drwxr-xr-x 2 ibab ibab 4096 Jul 17 09:12 Desktop
drwxr-xr-x 2 ibab ibab 4096 Jul 23 09:56 Documents
drwxr-xr-x 2 ibab ibab 4096 Jul 23 09:59 Documents_copy
drwxr-xr-x 7 ibab ibab 4096 Jul 23 16:26 Downloads
drwxrwxr-x 3 ibab ibab 4096 Jul 17 14:58 igv
drwxr-xr-x 2 ibab ibab 4096 Jul 17 09:12 Music
lrwxrwxrwx 1 ibab ibab 5 Jul 23 09:46 Parth -> parth
drwxr-xr-x 3 ibab ibab 4096 Jul 17 14:38 Pictures
-rw-rw-r-- 2 ibab ibab 0 Jul 23 09:10 Provizniac
lrwxrwxrwx 1 ibab ibab 10 Jul 23 09:31 Provizniac_Germany -> Provizniac
drwxr-xr-x 2 ibab ibab 4096 Jul 17 09:12 Public
drwxrwxr-x 3 ibab ibab 4096 Jul 17 15:03 R
drwx----- 4 ibab ibab 4096 Jul 17 13:57 snap
drwxr-xr-x 2 ibab ibab 4096 Jul 17 09:12 Templates
drwxr-xr-x 2 ibab ibab 4096 Jul 17 09:12 Videos
ibab@IBAB-Workshop-Comp017:~$
```

**Q.6.** What is the difference between `ls -alF`, `ls -A` and `ls -CF`. Demonstrate the differences with appropriate examples as screenshot and explanations.

**`ls -alF`** It combines 3 parameters together : **`a`** displays the hidden files and directories, **`l`** produces a long listing format , providing information regarding each files in the directories and **`F`** distinguishes files from directories (files are coloured white and don't have an escape character while directories have an escape character at their end )

```
ibab@IBAB-Workshop-Comp017:~$ ls -alF
total 132
drwxr-x--- 26 ibab ibab 4096 Jul 23 16:26 ./
drwxr-xr-x  6 root root 4096 Jul 15 16:54 ../
drwxrwxr-x  2 ibab ibab 4096 Jul 22 10:10 Ak/
drwxrwxr-x  2 ibab ibab 4096 Jul 22 10:12 Akk/
-rw-rw-r--  1 ibab ibab   0 Jul 23 09:17 Atharva
drwxrwxr-x  2 ibab ibab 4096 Jul 21 11:34 'Atharva Kadam'/
-rw-----  1 ibab ibab 4766 Jul 24 15:40 .bash_history
-rw-r--r--  1 ibab ibab  220 Jul 15 16:54 .bash_logout
-rw-r--r--  1 ibab ibab 3771 Jul 15 16:54 .bashrc
drwx----- 15 ibab ibab 4096 Jul 17 15:27 .cache/
drwx----- 20 ibab ibab 4096 Jul 17 16:24 .config/
drwxr-xr-x  2 ibab ibab 4096 Jul 17 09:12 Desktop/
drwxr-xr-x  2 ibab ibab 4096 Jul 23 09:56 Documents/
drwxr-xr-x  2 ibab ibab 4096 Jul 23 09:59 Documents_copy/
drwxr-xr-x  7 ibab ibab 4096 Jul 23 16:26 Downloads/
drwx-----  2 ibab ibab 4096 Jul 17 16:06 .gnupg/
drwxrwxr-x  2 ibab ibab 4096 Jul 17 14:57 .igv/
drwxrwxr-x  3 ibab ibab 4096 Jul 17 14:58 igv/
drwxrwxr-x  4 ibab ibab 4096 Jul 17 14:57 .java/
-rw-----  1 ibab ibab   20 Jul 22 10:29 .lessht
drwx-----  3 ibab ibab 4096 Jul 17 09:12 .local/
drwxr-xr-x  2 ibab ibab 4096 Jul 17 09:12 Music/
lrwxrwxrwx  1 ibab ibab    5 Jul 23 09:46 Parth -> parth
```

**`ls -A`** it displays all the directories and files within them except the hidden files.

```
ibab@IBAB-Workshop-Comp017:~$ ls -A
Ak      'Atharva Kadam'  .bashrc  Desktop      Downloads  igv      .local  Pictur
Akk     .bash_history    .cache   Documents    .gnupg     .java    Music   .pki
Atharva .bash_logout     .config  Documents_copy .igv        .lessht  Parth   .proft
```

**`ls -CF`** it displays the directories and files vertically in columns and gives an escape character to the directories and no escape character to the files.

```
ibab@IBAB-Workshop-Comp017:~$ ls -CF
Ak/      Atharva      Desktop/    Documents_copy/  igv/      Parth@    Provizniac
Akk/     'Atharva Kadam' Documents/  Downloads/      Music/    Pictures/  Provizniac_Germ
```

**Q.7)** Describe how you would use a combination of color codes in the command prompt appearance. Demonstrate this using an example where you managed to combine the colors blue and green?

```
ibab@IBAB-Workshop-Comp017:~$ export PS1="\e[0;34m\u@\e[0;32m\h\e[0m:\W\$"
ibab@IBAB-Workshop-Comp017:~$
```



**Q.8.** Find the option of `ls` that lists the contents of a directory in the long format, but without the primary group information. (Note: `ls -l` lists files in the long format with the primary group information)

**`ls -ol`** lists the files in the long format without displaying the primary group information

```
ibab@IBAB-Workshop-Comp017:~$ ls -ol
total 60
drwxrwxr-x 2 ibab 4096 Jul 22 10:10 Ak
drwxrwxr-x 2 ibab 4096 Jul 22 10:12 Akk
-rw-rw-r-- 1 ibab 0 Jul 23 09:17 Atharva
drwxrwxr-x 2 ibab 4096 Jul 21 11:34 'Atharva Kadam'
drwxr-xr-x 2 ibab 4096 Jul 17 09:12 Desktop
drwxr-xr-x 2 ibab 4096 Jul 23 09:56 Documents
drwxr-xr-x 2 ibab 4096 Jul 23 09:59 Documents_copy
drwxr-xr-x 8 ibab 4096 Jul 24 17:29 Downloads
drwxrwxr-x 3 ibab 4096 Jul 17 14:58 igv
drwxr-xr-x 2 ibab 4096 Jul 17 09:12 Music
lrwxrwxrwx 1 ibab 5 Jul 23 09:46 Parth -> parth
drwxr-xr-x 3 ibab 4096 Jul 17 14:38 Pictures
-rw-rw-r-- 2 ibab 0 Jul 23 09:10 Provizniac
lrwxrwxrwx 1 ibab 10 Jul 23 09:31 Provizniac_Germany -> Provizniac
drwxr-xr-x 2 ibab 4096 Jul 17 09:12 Public
drwxrwxr-x 3 ibab 4096 Jul 17 15:03 R
drwx----- 4 ibab 4096 Jul 17 13:57 snap
drwxr-xr-x 2 ibab 4096 Jul 17 09:12 Templates
drwxr-xr-x 2 ibab 4096 Jul 17 09:12 Videos
ibab@IBAB-Workshop-Comp017:~$
```

**Q.9.** Find the option of `ls` that lists the contents of a directory in the long format, but without the primary group information. (Note: `ls -l` lists files in the long format with the primary group information)

a) list the files or directories starting with 'b'

The command used was **`ls b*`**

```
ls: cannot access 'b': No such file or directory
ibab@IBAB-Workshop-Comp017:~/Downloads/etc_learn$ ls b*
bash.bashrc  bash_completion  bindresvport.blacklist  brlapi.key  brltty.conf

bash_completion.d:

binfmt.d:

bluetooth:

brltty:

byobu:
ibab@IBAB-Workshop-Comp017:~/Downloads/etc_learn$
```

b) list the files or directories starting with any of the letters from a-k

the command used was *ls [a-k]\**

```
ibab@IBAB-Workshop-Comp017:~/Downloads/etc_learn$ ls [a-k]*
adduser.conf  bash.bashrc      brlapi.key      crontab         debian_v
anacrontab    bash_completion  brltty.conf     crypttab        deluser.
apg.conf      bindresvport.blacklist  ca-certificates.conf  debconf.conf    dhcpcd.c

alsa:
alternatives:
apm:
apparmor:
apparmor.d:
appport:
apt:
avahi:
bash_completion.d:
binfmt.d:

gtk-3.0:
hp:
ifplugd:
init:
init.d:
initramfs-tools:
insserv.conf.d:
ipp-usb:
iproute2:
iscsi:
kernel:
krb5.conf.d:
ibab@IBAB-Workshop-Comp017:~/Downloads/etc_learn$
```

All the files starting from **a-k**



c) list files or directories ending with d

The command used was **ls \*d**

```
ibab@IBAB-Workshop-Comp017:~/Downloads/etc_learn$ ls *d
machine-id

apparmor.d:
bash_completion.d:
binfmt.d:
cloud:
colord:
credstore.encrypted:
cron.d:
debuginfod:
depmod.d:
environment.d:
fwupd:
```

d) list the files or directories containing the pattern with conf. How many are there?

The command used was **ls \*conf.\***

```
ibab@IBAB-Workshop-Comp017:~/Downloads/etc_learn$ ls *conf.*
debconf.conf

insserv.conf.d:
krb5.conf.d:
ld.so.conf.d:
```

e) Output the last three lines of the file /etc/resolv.conf

```
ibab@IBAB-Workshop-Comp017:~/Downloads/etc_learn$ tail -n 3 /etc/resolv.conf
nameserver 127.0.0.53
options edns0 trust-ad
search ibab.ac.in
ibab@IBAB-Workshop-Comp017:~/Downloads/etc_learn$
```

f) list files that begin with g or l

The command used was `ls [g,l]*`

```
ibab@IBAB-Workshop-Comp017:~/Downloads/etc_learn$ ls [g,l]*
gai.conf  gprofng.rc  group  group-  gshadow  gshadow-  ld.so.cache  ld.so.c
gdb:
gdm3:
geoclue:
ghostscript:
glvnd:
gnome:
gnome-remote-desktop:
gnutls:
groff:
grub.d:
gss:
gtk-2.0:
gtk-3.0:
landscape:
ldap:
```

Q.10) Create the following directories: /home/ibab/lab3/Q10/q1 and /home/ibab/lab3/Q10/q2 using one command. Attach a screenshot of the commands and the outputs of this and below exercises in your document.

```
ibab@IBAB-Workshop-Comp017:~$ mkdir -p /home/ibab/lab3/Q10/q1 /home/ibab/lab3/Q10/q2
ibab@IBAB-Workshop-Comp017:~$ ls
Ak      Atharva      Desktop      Documents_copy  home  lab3  Parth  Provizniac
Akk     'Atharva Kadam'  Documents    Downloads      igv   Music  Pictures  Provizniac
ibab@IBAB-Workshop-Comp017:~$ ls lab3/Q10
q1  q2
ibab@IBAB-Workshop-Comp017:~$
```

i) Enter the q1 directory using one command

```
ibab@IBAB-Workshop-Comp017:~$ cd lab3/Q10/q1
ibab@IBAB-Workshop-Comp017:~/lab3/Q10/q1$
```

ii) Change directories from q1 to q2 using one command

```
ibab@IBAB-Workshop-Comp017:~$ cd lab3/Q10/q1
ibab@IBAB-Workshop-Comp017:~/lab3/Q10/q1$ cd ../q2
ibab@IBAB-Workshop-Comp017:~/lab3/Q10/q2$
```

(iii) copy the q1 directory to q1\_copy

```
ibab@IBAB-Workshop-Comp017:~/lab3/Q10$ cp -r q1 q1_copy
ibab@IBAB-Workshop-Comp017:~/lab3/Q10$ ls
q1  q1_copy  q2
ibab@IBAB-Workshop-Comp017:~/lab3/Q10$
```

(iv) delete the q1\_copy interactively

```
rm: cannot remove 'q1_copy': Is a directory
ibab@IBAB-Workshop-Comp017:~/lab3/Q10$ rm -id q1_copy
rm: remove directory 'q1_copy'? y
ibab@IBAB-Workshop-Comp017:~/lab3/Q10$ ls
q1  q2
ibab@IBAB-Workshop-Comp017:~/lab3/Q10$
```