Question-1

1.

- use a command to show the current working directory

```
root@NSPL-LAPTOP:/# mkdir que1
root@NSPL-LAPTOP:/# cd que1
root@NSPL-LAPTOP:/que1# pwd
/que1

root@NSPL-LAPTOP:/# mkdir ques1
root@NSPL-LAPTOP:/# cd ques1
root@NSPL-LAPTOP:/ques1# echo $PWD
/ques1
```

- list the directory contents in the short and long format (with file permissions,owner,size etc,.).

Explore attributes given in long format e.g. file type, file permissions, file size, file owner etc.

```
root@NSPL-LAPTOP:/que1# ls
root@NSPL-LAPTOP:/que1# cd /
root@NSPL-LAPTOP:/# ls
abc.txt  boot  dev      home  lib32  media  pqr.txt  roo1  root1  s2.txt  srv  today.txt     var
assign1  cdac  etc      init  lib64  mnt    proc     roo2  run    sbin    sys  umaskdemo.txt
xyz.txt
bin      data  file.txt  lib   libx32  opt    que1     root  s1.txt  snap    tmp  usr
root@NSPL-LAPTOP:/# ls -l
total 620
-rwx--x-wx  1 root root      0 Mar 10 15:05 abc.txt
drwxr-xr-x  1 root root   4096 Mar 10 17:56 assign1
lrwxrwxrwx  1 root root      7 Feb 16 06:02 bin -> usr/bin
drwxr-xr-x  1 root root   4096 Feb 16 06:16 boot
drwxr-xr-x  1 root root   4096 Mar 10 16:39 cdac
drwxr-xr-x  1 root root   4096 Mar 10 11:47 data
drwxr-xr-x  1 root root   4096 Mar 10 09:25 dev
drwxr-xr-x  1 root root   4096 Mar 10 11:04 etc
-rw-r--r--  1 root root      0 Mar 10 10:55 file.txt
drwxr-xr-x  1 root root   4096 Mar 10 17:02 home
-rwxr-xr-x  1 root root 632096 Feb 19 13:18 init
lrwxrwxrwx  1 root root      7 Feb 16 06:02 lib -> usr/lib
lrwxrwxrwx  1 root root      9 Feb 16 06:02 lib32 -> usr/lib32
lrwxrwxrwx  1 root root      9 Feb 16 06:02 lib64 -> usr/lib64
```

```
lrwxrwxrwx  1 root root     10 Feb 16 06:02 libx32 -> usr/libx32
drwxr-xr-x  1 root root   4096 Feb 16 06:02 media
drwxr-xr-x  1 root root   4096 Mar  8 16:42 mnt
drwxr-xr-x  1 root root   4096 Feb 16 06:02 opt
-rw-r--r--  1 root root      0 Mar 10 15:28 pqr.txt
dr-xr-xr-x 21 root root      0 Mar 10 09:25 proc
drwxr-xr-x  1 root root   4096 Mar 10 19:44 que1
drwxr-xr-x  1 root root   4096 Mar 10 18:08 roo1
drwxr-xr-x  1 root root   4096 Mar 10 18:13 roo2
drwx------  1 root root   4096 Mar 10 12:15 root
drwxr-xr-x  1 root root   4096 Mar 10 19:34 root1
drwxr-xr-x  1 root root   4096 Mar 10 11:04 run
-rw-r--r--  1 root root     26 Mar  9 17:52 s1.txt
-rwx------  1 root root     26 Mar  9 17:56 s2.txt
lrwxrwxrwx  1 root root      8 Feb 16 06:02 sbin -> usr/sbin
drwxr-xr-x  1 root root   4096 Feb 16 06:07 snap
drwxr-xr-x  1 root root   4096 Feb 16 06:02 srv
dr-xr-xr-x 12 root root      0 Mar 10 09:25 sys
drwxrwxrwt  1 root root   4096 Mar 10 11:24 tmp
-rw-r--r--  1 root root      0 Mar 10 16:05 today.txt
-rw-r--r--  1 root root      0 Mar 10 10:34 umaskdemo.txt
drwxr-xr-x  1 root root   4096 Feb 16 06:05 usr
drwxr-xr-x  1 root root   4096 Feb 16 06:07 var
-rw-r--r--  1 root root      0 Mar 10 15:21 xyz.txt
```

- list all files along with hidden files in the current working directory.

```
root@NSPL-LAPTOP:/# ls -a
.       assign1  cdac  etc      init   lib64   mnt      proc  roo2   run     sbin  sys
umaskdemo.txt  xyz.txt
..      bin      data  file.txt  lib    libx32  opt      que1  root   s1.txt  snap  tmp       usr
abc.txt  boot    dev   home     lib32  media   pqr.txt  roo1  root1  s2.txt  srv   today.txt  var
```

- list only hidden files in the directory

```
root@NSPL-LAPTOP:/# ls -ld .?*
drwxr-xr-x 1 root root 4096 Mar 10 19:44 ..
```

(Hint : use pwd, ls, echo commands)

2. Make a directory and name it as cdac-dir and change the current working directory to the new directory.(Hint : use mkdir,cd commands).

```
root@NSPL-LAPTOP:/# mkdir cdac-dir
root@NSPL-LAPTOP:/# cd cdac-dir
root@NSPL-LAPTOP:/cdac-dir# ls
```

3. Create following nested directories inside the current directory by invoking a single command for only one time.

Note : here root_dir is the current directory.

Directory Structure 1

```
root@NSPL-LAPTOP:/# mkdir root1
root@NSPL-LAPTOP:/# cd root1
root@NSPL-LAPTOP:/root1# mkdir -p a1/b1 a1/b2 a2/c1 a2/c2
root@NSPL-LAPTOP:/root1# cd ..
root@NSPL-LAPTOP:/# tree root1
root1
├── a1
│   ├── b1
│   └── b2
└── a2
    ├── c1
    └── c2

6 directories, 0 files
```

Directory Structure 2

```
root@NSPL-LAPTOP:/# mkdir root2
root@NSPL-LAPTOP:/# cd root2
root@NSPL-LAPTOP:/root2# mkdir -p a1/b1/c1 a2/b2/c2
root@NSPL-LAPTOP:/root2# cd ..
root@NSPL-LAPTOP:/# tree root2
root2
├── a1
│   └── b1
│       └── c1
└── a2
    └── b2
        └── c2

6 directories, 0 files
```

4. List the directories(folders), then remove the cdac-dir directory and list the folders again to show that it is no longer present.(Hint : use rm, ls command).

```
root@NSPL-LAPTOP:/home# ls
cdac-dir  cdac_dbda  dbda
root@NSPL-LAPTOP:/home# rmdir cdac-dir
root@NSPL-LAPTOP:/home# ls
cdac_dbda  dbda
```

Question-2.

1. Display the man-page for ls, but redirect the output into temp.txt, then use the cat, less, and more commands to display the new file.

```
root@NSPL-LAPTOP:/# man ls > temp.txt
root@NSPL-LAPTOP:/# cat temp.txt
root@NSPL-LAPTOP:/# less temp.txt
root@NSPL-LAPTOP:/# more temp.txt
```

2. Display the initial 10 lines and final 5 lines of temp.txt with the obvious Linux commands.(Hint: use head and tail commands).

```
root@NSPL-LAPTOP:/# head -n 10 temp.txt
LS(1)                          User Commands                          LS(1)

NAME
       ls - list directory contents

SYNOPSIS
       ls [OPTION]... [FILE]...

DESCRIPTION
       List information about the FILEs (the current directory by default).  Sort entries
alphabetically if none of -cftu-
root@NSPL-LAPTOP:/# tail -n 5 temp.txt
SEE ALSO
       Full documentation at: <https://www.gnu.org/software/coreutils/ls>
       or available locally via: info '(coreutils) ls invocation'

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```

3. Copy temp.txt to another directory and rename it there. (Hint: use cp to copy and mv command to rename).

```
root@NSPL-LAPTOP:/# cp temp.txt /home/dbda
root@NSPL-LAPTOP:/# ls
abc.txt  boot     data  file.txt  lib    libx32  opt     que1   roo2   run    sbin  sys      today.txt
var
assign1  cdac     dev   home      lib32  media   pqr.txt  ques1  root   s1.txt  snap  temp.txt
umaskdemo.txt  xyz.txt
bin      cdac-dir  etc   init      lib64  mnt     proc    roo1   root1  s2.txt  srv   tmp      usr
root@NSPL-LAPTOP:/# cd home
root@NSPL-LAPTOP:/home# ls
cdac_dbda  dbda
root@NSPL-LAPTOP:/home# cd dbda
root@NSPL-LAPTOP:/home/dbda# ls
nava.txt  temp.txt
root@NSPL-LAPTOP:/home/dbda# mv temp.txt new.txt
root@NSPL-LAPTOP:/home/dbda# ls
nava.txt  new.txt
```

4. Display the number of lines, words and characters in the file using Linux command (Hint: use wc command).

```
root@NSPL-LAPTOP:/home/dbda# wc new.txt
 221  947 7940 new.txt
root@NSPL-LAPTOP:/home/dbda# wc -m new.txt
7927 new.txt
root@NSPL-LAPTOP:/home/dbda# wc -l new.txt
221 new.txt
root@NSPL-LAPTOP:/home/dbda# wc -w new.txt
947 new.txt
```

5. Use history command to display the last 10 commands used. (Hint: use history command).

```
root@NSPL-LAPTOP:/home/dbda# wc new.txt
 221  947 7940 new.txt
root@NSPL-LAPTOP:/home/dbda# wc -m new.txt
7927 new.txt
root@NSPL-LAPTOP:/home/dbda# wc -l new.txt
221 new.txt
root@NSPL-LAPTOP:/home/dbda# wc -w new.txt
947 new.txt
```

Question-3.

1. Create a tar archive file of any directory present in your home directory.(Hint: use tar command)

- list the contents of the archive file without extracting.

```
root@NSPL-LAPTOP:/home/dbda# ls
nava.txt  new.txt
root@NSPL-LAPTOP:/home/dbda# cat >filetar.txt
Hi
Navnath
India
Cricket
Module
Nava Bhoskar
cdac dbda mumbai
ipl
root@NSPL-LAPTOP:/home/dbda# ls
filetar.txt  nava.txt  new.txt
root@NSPL-LAPTOP:/home/dbda# tar cf filetar.tar filetar.txt
root@NSPL-LAPTOP:/home/dbda# ls
filetar.tar  filetar.txt  nava.txt  new.txt
root@NSPL-LAPTOP:/home/dbda# tar tf filetar.tar
filetar.txt
```

2. Create a zip file of another directory. (Hint: use zip command)

-list the contents of the zip file without extracting.

```
root@NSPL-LAPTOP:/home/dbda# gzip filetar.txt
root@NSPL-LAPTOP:/home/dbda# ls
filetar.tar  filetar.txt.gz  nava.txt  new.txt
root@NSPL-LAPTOP:/home/dbda# zcat filetar.txt
Hi
Navnath
India
Cricket
Module
Nava Bhoskar
cdac dbda mumbai
ipl
```

3. Give read, write & execute permissions to your file. (Hint: use chmod command)

```
root@NSPL-LAPTOP:/home# touch permissions.txt
root@NSPL-LAPTOP:/home# ls
cdac_dbda  dbda  file1  permissions.txt
root@NSPL-LAPTOP:/home# chmod 777 permissions.txt
root@NSPL-LAPTOP:/home# ls
cdac_dbda  dbda  file1  permissions.txt
root@NSPL-LAPTOP:/home# ls -l
total 0
drwxr-xr-x 1 cdac_dbda cdac_dbda 4096 Mar 10 15:03 cdac_dbda
d----w-r-x 1 root      root      4096 Mar 10 23:25 dbda
-rw-r--r-- 1 root      root        36 Mar 10 22:55 file1
-rwxrwxrwx 1 root      root         0 Mar 10 23:36 permissions.txt
```

4. Change ownership of that file.(Hint: use chown command)

```
root@NSPL-LAPTOP:/home# ls
cdac_dbda  dbda  file1  permissions.txt
root@NSPL-LAPTOP:/home# chown cdac_dbda permissions.txt
root@NSPL-LAPTOP:/home# ls -l
total 0
drwxr-xr-x 1 cdac_dbda cdac_dbda 4096 Mar 10 15:03 cdac_dbda
d----w-r-x 1 root      root      4096 Mar 10 23:25 dbda
-rw-r--r-- 1 root      root        36 Mar 10 22:55 file1
-rwxrwxrwx 1 cdac_dbda root         0 Mar 10 23:36 permissions.txt
```

5. List processes running in shell, all running processes(Hint: use man page of ps command) and show top processes in decreasing order of their resource utilization.(Hint: use top command).

```
root@NSPL-LAPTOP:/home# ps
  PID TTY          TIME CMD
  342 tty1     00:00:00 init
  440 tty1     00:00:00 sudo
  441 tty1     00:00:00 su
  442 tty1     00:00:00 bash
  499 tty1     00:00:06 find
  500 tty1     00:00:00 sudo
  501 tty1     00:00:12 find
  506 tty1     00:00:00 sudo
  507 tty1     00:00:00 su
  508 tty1     00:00:00 bash
  555 tty1     00:00:00 sudo
  556 tty1     00:00:00 su
  557 tty1     00:00:00 bash
  758 tty1     00:00:00 cat
  784 tty1     00:00:00 top
  785 tty1     00:00:00 ps
```

Question-4.

1. Display current time and calendar (Hint: use date, cal commands)

```
root@NSPL-LAPTOP:/# date
Thu Mar 10 23:50:59 IST 2022

root@NSPL-LAPTOP:/# cal
     March 2022
Su Mo Tu We Th Fr Sa
       1  2  3  4  5
 6    7  8  9 10 11 12
13   14 15 16 17 18 19
20   21 22 23 24 25 26
27   28 29 30 31
```

2. Change the current date and time of the system to following 14th March 2017, 10:10 AM

```
cdac_dbda@NSPL-LAPTOP:~$ date -s"14 MARCH 2017 10:10:00"
Tue Mar 14 10:10:00 IST 2017
cdac_dbda@NSPL-LAPTOP:~$ date
Tue Mar 14 10:10:00 IST 2017
```

3. Explore following commands who, whoami, whatis, whereis, (Hint: use man pages).

```
cdac_dbda@NSPL-LAPTOP:~$ whoami
cdac_dbda
cdac_dbda@NSPL-LAPTOP:~$ whatis ls
ls (1)               - list directory contents
cdac_dbda@NSPL-LAPTOP:~$ ls
file.text  file.txt  file.txt~
cdac_dbda@NSPL-LAPTOP:~$ whereis file.txt
file: /usr/bin/file /usr/lib/file /usr/share/file /usr/share/man/man1/file.1.gz
```