Ex 1   **ADVANCED LINUX COMMANDS**
Date: 18.08.20

Aim:

To study and implement the Linux commands

Description:

Sl. No.	Command Name	Meaning	options
1.	**ls**	List files and/or directories.	-a, --all do not ignore entries starting with. -A, --almost-all do not list implied. and. --author with -l, print the author of each file -b, --escape print C-style escapes for nongraphic characters --block-size=SIZE
2.	**Who am i**	This command reveals the user who is currently logged in.	-a, --all =same as -b -d --login -p -r -t -T -u -b, --boot time of last system boot -d, --dead print dead processes -H, --heading print line of column headings -l, --login print system login processes --lookup attempt to canonicalize hostnames via DNS
3.	**pwd**	prints the absolute path to the current working directory	-L, --logical use PWD from the environment, even if it contains symlinks -P, --physical

			avoid all symlinks

4.	**cal**	Displays the calendar of the current month	-1, --one
			      Display single month output. (This is the default.)
			
			    -3, --three
			      Display prev/current/next month output.
			
			    -s, --Sunday
			      Display Sunday as the first day of the week.
			
			    -m, --Monday
			      Display Monday as the first day of the week.
			
			    -j, --Julian
			      Display Julian dates (days one-based, numbered from January 1).
			
			    -y, --year

5.	**echo**	This command will echo whatever you provide it.	-n do not output the trailing newline -e enable interpretation of backslash escapes -E disable the interpretation of backslash escapes (default)

6.	**date**	Displays current time and date.	-d, --date=STRING
			      display time described by STRING, not 'now'
			
			    -f, --file=DATEFILE
			      like --date once for each line of DATAFILE

7.	**tty**	Displays the current terminal.	

8.	**id**	This command prints user and groups (UID and GID) of the current user.	-a ignore, for compatibility with other versions
			
			-Z, --context
			      print only the security context of the current user
			
			-g, --troup
			      print only the effective group ID
			
			-G, --groups
			      print all group IDs
			
			-n, --name
			      print a name instead of a number, for -ugG

9.	**clear**	This command clears the screen.	
10.	**man**	To show manual page	
11.	**cd**	Change the current working directory to the directory provided as an argument.	
12.	**mkdir**	To create a directory, the 'mkdir' command is used.	
13.	**touch**	For creating an empty file, use the touch command.	
14.	**cp**	Copy files and directories	
15.	**mv**	Move files or directories. The 'mv' command works like 'cp' command, except that the original file is removed. But, the mv command can be used	

		to rename the files (or directories).	
16.	**rmdir**	the command removes any empty directories, but cannot delete a directory if a file is present in it.	
17.	**file**	The file command determines the file type of a given file.	
18.	**cat**	The 'cat' command is actually a concatenator but can be used to view the contents of a file.	
19.	**head**	Displays the first few lines of a file. By default, the 'head' command displays the first 10 lines of a file.	
20.	**tail**	the 'tail' command shows the last 10 lines by default	-c, --bytes=[-]K print the first K bytes of each file -n, --lines=[-]K print the first K lines instead of the first 10 -q, --quiet, --silent never print headers giving file names
21.	**wc**	This command counts lines, words, and letters of the input given to it.	
22.	**grep**	The 'grep' command searches for a pattern in a file (or standard input).	
23.	**vi**	Visual editor	
24.	**alias**	The 'alias' is another name for a command.	
25.	**history**	shows the commands you have entered on your terminal so far.	
26.	**passwd**	To change your password	

27.	**help**	With almost every command, '--help' option shows usage summary for that command.	
28.	**chmod**	The *chmod* command lets you change access permissions for a file.	
29.	**stat**	To check the status of a file. This provides more detailed information about a file than 'ls -l' output.	-L, --dereference follow links -f, --file-system display file system status instead of file status -c --format=FORMAT use the specified FORMAT instead of the default; output a newline after each use of FORMAT --printf=FORMAT
30.	**ln**	The ln command is used in Linux to create links.	

Exercise

1. List the contents of user's home directory including the hidden files

```
              8.cpp      a41.c      distance.cpp       .prog.cpp.swp
. .          .8.cpp.swo  a42.c      e.cpp              q.cpp
10.c          9.c        a43.c      .emacs             s8.cpp
11.c          a1         a44.c      emplolyee.dat      sample
12.c          a10.c      a45.c      employee.dat       sample1
13.c          a11.c      a46.c      ex2                sample10
14.c          a12.c      a47.c      .ex2.swo           sample11
15.c          a13.c      a49.c      .ex5.swp           sample4
16.c          a14.c      a4.c       exception1.cpp     sample5
17.c          a16.c      a5.c       .exception1.cpp.swp sample.c
18.c          a17.c      a6.c       exception2.cpp     sample.y
18.cy         a18.c      a7.c       exeption2.cpp      s.cpp
19.c          a19.c      a8.c       exponent.cpp       .s.cpp.swp
1.c           a1.c       a9.c       f.cpp              si.c
1.cpp         a2         aa12.c     filenew            stac.cpp
.1.cpp.swo    a20.c      aa4.c      friend2.cpp        stack
20.c          a21.c      add        friend7.cpp        stack.cpp
20.c.save     a22.c      add.c      .friend7.cpp.swp   star1.cpp
21.c          a23.c      adding.c   friend8.cpp        star2.cpp
21.c.save     a24.c      amt.cpp    height.cpp         star.cpp
22.c          a25.c      a.out      in3.cpp            string.
23.c          a26.c      area.c     in5.cpp            string4.cpp
24.c          a27.c      assi.cpp   .k5login           string6.cpp
25.c          a28.c      assig.cpp  marks.cpp          string7.cpp
26.c          a29.c      .assig.cpp.swp .marks.cpp.swp string8.cpp
27.c          a2.c       bank1.cpp  mat1.c             struct.cpp
2.c           a3         .bank1.cpp.swp mat1.cpp       swap.cpp
3.c           a30.c      bank.cpp   mat2.cpp           temp.dat
4.c           a31.c      .bank.cpp.swp mat2.cppclear   trash.dat
500.cpp       a32.c      .bash_history mat3.cpp        .viminfo
5.c           a33.c      .bash_logout m.cpp            virtual1.cpp
5.cpp         a34.c      .bash_profile .mozilla        virtual1.cpp.cpp
6.c           a35.c      .bashrc    notes.cpp          virtual2.cpp
```

2. List the content of /var directory?

```
adm         centrifyda  db       gopher     local  mail  preserve  tmp
cache       centrifydc  empty    kerberos   lock   nis   run       yp
centrify    crash       games    lib        log    opt   spool
```

3. Create two directories named dir1 & dir2

```
10.c       5.cpp      a28.c  a8.c           f.cpp            sample.c
11.c       6.c        a29.c  a9.c           filenew          sample.y
12.c       6.c.save   a2.c   aa12.c         friend2.cpp      s.cpp
13.c       7.c        a3     aa4.c          friend7.cpp      si.c
14.c       7.cpp      a30.c  add            friend8.cpp      stac.cpp
15.c       8.c        a31.c  add.c          height.cpp       stack
16.c       8.cpp      a32.c  adding.c       in3.cpp          stack.cpp
17.c       9.c        a33.c  amt.cpp        in5.cpp          star1.cpp
18.c       a1         a34.c  a.out          marks.cpp        star2.cpp
18.cy      a10.c      a35.c  area.c         mat1.c           star.cpp
19.c       a11.c      a36.c  assi.cpp       mat1.cpp         string.
1.c        a12.c      a37.c  assig.cpp      mat2.cpp         string4.cpp
1.cpp      a13.c      a38.c  bank1.cpp      mat2.cppclear    string6.cpp
20.c       a14.c      a39.c  bank.cpp       mat3.cpp         string7.cpp
20.c.save  a16.c      a3.c   c.cpp          m.cpp            string8.cpp
21.c       a17.c      a40.c  days.cpp       notes.cpp        struct.cpp
21.c.save  a18.c      a41.c  dir1           over1.cpp        swap.cpp
22.c       a19.c      a42.c  dir2           over2.cpp        temp.dat
23.c       a1.c       a43.c  dis.c          power.cpp        trash.dat
24.c       a2         a44.c  distance.cpp   prog.cpp         virtual1.cpp
25.c       a20.c      a45.c  e.cpp          q.cpp            virtual1.cpp.cpp
26.c       a21.c      a46.c  emplolyee.dat  s8.cpp           virtual2.cpp
27.c       a22.c      a47.c  employee.dat   sample           virtual3.cpp
2.c        a23.c      a49.c  ex2            sample1          virtual.cpp
3.c        a24.c      a4.c   exception1.cpp sample10         vowel.cpp
4.c        a25.c      a5.c   exception2.cpp sample11
500.cpp    a26.c      a6.c   exeption2.cpp  sample4
5.c        a27.c      a7.c   exponent.cpp   sample5
```

4. Create a hidden directory with your name?

```
[urk17cs034@code ~]$ mkdir .openlab
[urk17cs034@code ~]$ ▮
```

5. Display the content of a hidden directory.

```
[urk17cs034@code ~]$ cd .openlab
[urk17cs034@code .openlab]$ ls
file6.txt   file7.txt
[urk17cs034@code .openlab]$ ▮
```

6. Display the calendar of 2020.

```
[urk17cs034@code .open]$ cal 2020
                        2020
       January               February               March
Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa
          1  2  3  4                      1     1  2  3  4  5  6  7
 5  6  7  8  9 10 11     2  3  4  5  6  7  8     8  9 10 11 12 13 14
12 13 14 15 16 17 18     9 10 11 12 13 14 15    15 16 17 18 19 20 21
19 20 21 22 23 24 25    16 17 18 19 20 21 22    22 23 24 25 26 27 28
26 27 28 29 30 31       23 24 25 26 27 28 29    29 30 31

        April                  May                   June
Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa
          1  2  3  4                   1  2        1  2  3  4  5  6
 5  6  7  8  9 10 11     3  4  5  6  7  8  9     7  8  9 10 11 12 13
12 13 14 15 16 17 18    10 11 12 13 14 15 16    14 15 16 17 18 19 20
19 20 21 22 23 24 25    17 18 19 20 21 22 23    21 22 23 24 25 26 27
26 27 28 29 30          24 25 26 27 28 29 30    28 29 30
                        31
        July                 August               September
Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa
          1  2  3  4                      1        1  2  3  4  5
 5  6  7  8  9 10 11     2  3  4  5  6  7  8     6  7  8  9 10 11 12
12 13 14 15 16 17 18     9 10 11 12 13 14 15    13 14 15 16 17 18 19
19 20 21 22 23 24 25    16 17 18 19 20 21 22    20 21 22 23 24 25 26
26 27 28 29 30 31       23 24 25 26 27 28 29    27 28 29 30
                        30 31
       October               November               December
Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa
          1  2  3     1  2  3  4  5  6  7        1  2  3  4  5
 4  5  6  7  8  9 10     8  9 10 11 12 13 14     6  7  8  9 10 11 12
11 12 13 14 15 16 17    15 16 17 18 19 20 21    13 14 15 16 17 18 19
18 19 20 21 22 23 24    22 23 24 25 26 27 28    20 21 22 23 24 25 26
25 26 27 28 29 30 31    29 30                   27 28 29 30 31


[urk17cs034@code .open]$ []
```

7. Copy the file /etc/passwd file to current directory with sample.txt as the filename

```
[urk17cs034@code ~]$ cd dir1
[urk17cs034@code dir1]$ cat /etc/passwd > sample.txt
[urk17cs034@code dir1]$ cat sample.txt
root:x:0:0:root:/root:/bin/bash
bin:x:1:1:bin:/bin:/sbin/nologin
daemon:x:2:2:daemon:/sbin:/sbin/nologin
adm:x:3:4:adm:/var/adm:/sbin/nologin
lp:x:4:7:lp:/var/spool/lpd:/sbin/nologin
sync:x:5:0:sync:/sbin:/bin/sync
shutdown:x:6:0:shutdown:/sbin:/sbin/shutdown
halt:x:7:0:halt:/sbin:/sbin/halt
mail:x:8:12:mail:/var/spool/mail:/sbin/nologin
operator:x:11:0:operator:/root:/sbin/nologin
games:x:12:100:games:/usr/games:/sbin/nologin
ftp:x:14:50:FTP User:/var/ftp:/sbin/nologin
nobody:x:99:99:Nobody:/:/sbin/nologin
systemd-network:x:192:192:systemd Network Management:/:/sbin/nologin
dbus:x:81:81:System message bus:/:/sbin/nologin
polkitd:x:999:998:User for polkitd:/:/sbin/nologin
sshd:x:74:74:Privilege-separated SSH:/var/empty/sshd:/sbin/nologin
postfix:x:89:89::/var/spool/postfix:/sbin/nologin
chrony:x:998:996::/var/lib/chrony:/sbin/nologin
ntp:x:38:38::/etc/ntp:/sbin/nologin
tss:x:59:59:Account used by the trousers package to sandbox the tcsd daemon:/dev
/null:/sbin/nologin
nginx:x:997:995:Nginx web server:/var/lib/nginx:/sbin/nologin
rpc:x:32:32:Rpcbind Daemon:/var/lib/rpcbind:/sbin/nologin
rpcuser:x:29:29:RPC Service User:/var/lib/nfs:/sbin/nologin
nfsnobody:x:65534:65534:Anonymous NFS User:/var/lib/nfs:/sbin/nologin
```

8. Create a file test1.txt using Vim editor with the following contents to it

Name	RegNo	ResearchInterest
Melvin	07af501	GridComputing
Mithin	07af502	ClusterComputing
James	07af503	ImageProcessing
Jane	07af504	Networking
Caroline	07af505	ClusterComputing
Binu	07af506	GridComputing
Aaron	07af507	ImageProcessing
Selvin	07af508	Networking
Jerwin	07af509	WirelessNetworks

Arun   07af510   GridComputing

Answer the following questions

a) Display the student names who are having Research Interest as GridComputing

```
Melvin
Binu
Arun
```

b) List all the student names & RegNo in the class

```
Name    RegNo
Melvin  07af501
Mithin  07af502
James   07af503
Jane    07af504
Caroline        07af505
Binu    07af506
Aaron   07af507
Selvin  07af508
Jerwin  07af509
Arun    07af510
```

c) List the count of students who have an interest as ImageProcessing and store the result in another file.

```
[urk17cs030@code ~]$ grep ImageProcessing test1.txt|wc -l > test
[urk17cs030@code ~]$ cat test
2
```

d) Display the first two rows and last two and store them into another file.

```
[urk17cs030@code ~]$ head -3 test1.txt >> display.txt | tail -2 test1.txt >> display.txt
[urk17cs030@code ~]$ vi display.txt
```

9. Display the contents of the file test1.txt without any blank lines

```
Name      RegNo    ResearchInterest
Melvin   07af501 GridComputing
Mithin   07af502 ClusterComputing
James    07af503 ImageProcessing
Jane     07af504 Networking
Caroline         07af505 ClusterComputing
Binu     07af506 GridComputing
Aaron    07af507 ImageProcessing
Selvin   07af508 Networking
Jerwin   07af509 WirelessNetworks
```

10. Move the file sample.txt from dir1 directory to dir2 directory

```
[urk17cs062@code ~]$ mv sample.txt dir2
[urk17cs062@code ~]$ cd dir2
[urk17cs062@code dir2]$ ls
sample.txt
[urk17cs062@code dir2]$
```

11. Change directory into dir2 directory

```
[urkl7cs034@code ~]$ cd dir2
[urkl7cs034@code dir2]$
```

12. Check whether the file sample.txt is present their

```
[urkl7cs034@code dir2]$ cat sample.txt
root:x:0:0:root:/root:/bin/bash
bin:x:1:1:bin:/bin:/sbin/nologin
daemon:x:2:2:daemon:/sbin:/sbin/nologin
adm:x:3:4:adm:/var/adm:/sbin/nologin
lp:x:4:7:lp:/var/spool/lpd:/sbin/nologin
sync:x:5:0:sync:/sbin:/bin/sync
shutdown:x:6:0:shutdown:/sbin:/sbin/shutdown
halt:x:7:0:halt:/sbin:/sbin/halt
mail:x:8:12:mail:/var/spool/mail:/sbin/nologin
operator:x:11:0:operator:/root:/sbin/nologin
games:x:12:100:games:/usr/games:/sbin/nologin
ftp:x:14:50:FTP User:/var/ftp:/sbin/nologin
nobody:x:99:99:Nobody:/:/sbin/nologin
systemd-network:x:192:192:systemd Network Management:/:/sbin/nologin
dbus:x:81:81:System message bus:/:/sbin/nologin
polkitd:x:999:998:User for polkitd:/:/sbin/nologin
sshd:x:74:74:Privilege-separated SSH:/var/empty/sshd:/sbin/nologin
postfix:x:89:89::/var/spool/postfix:/sbin/nologin
chrony:x:998:996::/var/lib/chrony:/sbin/nologin
ntp:x:38:38::/etc/ntp:/sbin/nologin
tss:x:59:59:Account used by the trousers package to sandbox the tcsd daemon:/dev
/null:/sbin/nologin
nginx:x:997:995:Nginx web server:/var/lib/nginx:/sbin/nologin
rpc:x:32:32:Rpcbind Daemon:/var/lib/rpcbind:/sbin/nologin
rpcuser:x:29:29:RPC Service User:/var/lib/nfs:/sbin/nologin
nfsnobody:x:65534:65534:Anonymous NFS User:/var/lib/nfs:/sbin/nologin
```

13. Rename the file sample.txt to new.txt and check whether sample.txt is there or not?

```
[urkl7cs034@code dir2]$ touch new.txt
[urkl7cs034@code dir2]$ mv sample.txt new.txt
```

14. Remove the directory dir1

```
[urkl7cs034@code dir2]$ rm -r dir1
rm: cannot remove âdirlâ: No such file or directory
[urkl7cs034@code dir2]$ cd
[urkl7cs034@code ~]$ cd dir1
```

15. Display last 3 lines of the file test1.txt

```
Selvin   07af508 Networking
Jerwin   07af509 WirelessNetworks
Arun     07af510 GridComputing
```

16. Display all the commands you have executed so far and save the list into a file named todayshistory.txt

```
1026  cd dir1
1027  tail -4 test1.txt
1028  vi tet1.txt
1029  vi test1.txt
1030  tail -4 test1.txt
1031  tail -3 test1.txt
1032  history
```

17. How many files are present under your home directory?

```
[urk17cs034@code dir1]$ ls -a | wc -l
3
```

18. Perform the sorting of three files and store the sorted file in the fourth file.

```
[urk17cs034@code dir1]$ cat > f1.txt
first file
^Z
[2]+  Stopped                 cat > f1.txt
[urk17cs034@code dir1]$ cat > f2.txt
second file^Z
[3]+  Stopped                 cat > f2.txt
[urk17cs034@code dir1]$ cat > f3.txt
third file
^Z
[4]+  Stopped                 cat > f3.txt
[urk17cs034@code dir1]$ sort f1.txt f2.txt f3.txt > file4.txt
[urk17cs034@code dir1]$ cat file4.txt
first file
third file
```

19. Change the permission of your newly created file such that the group users and others don't access any type of access.

```
[urk17cs034@code dir1]$ chmod 700 file4.txt
[urk17cs034@code dir1]$ ls -l file4.txt
-rwx------ 1 urk17cs034 urk17cs034 22 Mar 15 16:07 file4.txt
```

20. Display the network status on the shell.

```
[urk17cs034@code .open]$ netstat
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address          Foreign Address          State
tcp        0      0 code.karunya.edu:nfs   192.168.0.32:ftps-data   ESTABLISHED
tcp        0      0 code.karunya.edu:nfs   192.168.0.34:790         ESTABLISHED
tcp        0      0 code.karunya.edu:48422 code.karunya.edu:hbci    ESTABLISHED
tcp        0      0 code.karunya.edu:https 162.158.166.214:60078    ESTABLISHED
tcp        0      0 code.karunya.edu:hbci  code.karunya.edu:48308    ESTABLISHED
tcp        0      0 code.karunya.edu:https 192.168.11.208:51151     ESTABLISHED
tcp        0      0 code.karunya.edu:https 162.158.31.163:28248     ESTABLISHED
tcp        0      0 code.karunya.edu:hbci  code.karunya.edu:36546    ESTABLISHED
tcp        0      0 code.karunya.edu:hbci  code.karunya.edu:47760    ESTABLISHED
tcp        0      0 code.karunya.edu:https 108.162.229.224:62552    ESTABLISHED
tcp        0      0 code.karunya.edu:48374 code.karunya.edu:hbci    ESTABLISHED
tcp        0     48 code.karunya.edu:https 162.158.50.215:31940     ESTABLISHED
tcp        0      0 code.karunya.edu:36546 code.karunya.edu:hbci    ESTABLISHED
tcp        0      0 code.karunya.edu:47760 code.karunya.edu:hbci    ESTABLISHED
tcp        0      0 code.karunya.edu:36128 192.168.2.27:ldap        ESTABLISHED
tcp        0      0 code.karunya.edu:hbci  code.karunya.edu:48374    ESTABLISHED
tcp        0      0 code.karunya.edu:https 162.158.167.81:62476     ESTABLISHED
tcp        0      0 code.karunya.edu:48308 code.karunya.edu:hbci    ESTABLISHED
tcp        0      0 code.karunya.edu:48294 code.karunya.edu:hbci    ESTABLISHED
tcp        0      0 code.karunya.edu:nfs   192.168.0.33:814         ESTABLISHED
tcp        0      0 code.karunya.edu:hbci  code.karunya.edu:48422    ESTABLISHED
tcp        0      0 code.karunya.edu:hbci  code.karunya.edu:48294    ESTABLISHED
tcp        0      0 code.karunya.edu:nfs   192.168.0:owamp-control ESTABLISHED
Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags       Type       State       I-Node   Path
unix  3      [ ]         DGRAM                  36       /run/systemd/notify
unix  2      [ ]         DGRAM                  38       /run/systemd/cgroups-agent
unix  5      [ ]         DGRAM                  52       /run/systemd/journal/socket
unix  19     [ ]         DGRAM                  54       /dev/log
unix  2      [ ]         DGRAM                  16183    /var/run/chrony/chronyd.sock
unix  2      [ ]         DGRAM                  678      /run/systemd/shutdownd
unix  3      [ ]         STREAM     CONNECTED   38945
unix  3      [ ]         STREAM     CONNECTED   18183    /run/systemd/journal/stdout
unix  3      [ ]         STREAM     CONNECTED   18119    /run/systemd/journal/stdout
unix  2      [ ]         DGRAM                  17743
unix  3      [ ]         STREAM     CONNECTED   22162
```

21. Compares any two files and search for both common and exclusive features

```
[urk17cs034@code .open]$ diff com.txt com1.txt
[urk17cs034@code .open]$
```

22. Display the user ID, process ID, and parent process ID.

```
[urk17cs034@code .open]$ ps -f
UID          PID  PPID  C STIME TTY          TIME CMD
urk17cs+ 12797 12788  0 Aug24 pts/1     00:00:00 -bash
urk17cs+ 15978 12797  0 00:18 pts/1     00:00:00 ps -f
[urk17cs034@code .open]$
```

23. Report disk usages of the file system.

```
[urk17cs034@code .open]$ du -h
4.0K     .
[urk17cs034@code .open]$
```

24. Display the statistics of all ports connected to a network.

```
[urk17cs034@code .open]$ netstat -l
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address          Foreign Address         State
tcp        0      0 0.0.0.0:nfs            0.0.0.0:*               LISTEN
tcp        0      0 0.0.0.0:46053          0.0.0.0:*               LISTEN
tcp        0      0 0.0.0.0:sunrpc         0.0.0.0:*               LISTEN
tcp        0      0 0.0.0.0:http           0.0.0.0:*               LISTEN
tcp        0      0 0.0.0.0:mountd         0.0.0.0:*               LISTEN
tcp        0      0 0.0.0.0:34067          0.0.0.0:*               LISTEN
tcp        0      0 0.0.0.0:ssh            0.0.0.0:*               LISTEN
tcp        0      0 0.0.0.0:hbci           0.0.0.0:*               LISTEN
tcp        0      0 localhost:smtp         0.0.0.0:*               LISTEN
tcp        0      0 0.0.0.0:https          0.0.0.0:*               LISTEN
tcp6       0      0 [::]:nfs               [::]:*                  LISTEN
tcp6       0      0 [::]:sunrpc            [::]:*                  LISTEN
tcp6       0      0 [::]:http              [::]:*                  LISTEN
tcp6       0      0 [::]:mountd            [::]:*                  LISTEN
tcp6       0      0 [::]:ssh               [::]:*                  LISTEN
tcp6       0      0 [::]:57431             [::]:*                  LISTEN
tcp6       0      0 localhost:smtp         [::]:*                  LISTEN
tcp6       0      0 [::]:https             [::]:*                  LISTEN
tcp6       0      0 [::]:39228             [::]:*                  LISTEN
udp        0      0 0.0.0.0:39547          0.0.0.0:*
udp        0      0 0.0.0.0:mountd         0.0.0.0:*
udp        0      0 0.0.0.0:sunrpc         0.0.0.0:*
udp        0      0 0.0.0.0:49440          0.0.0.0:*
udp        0      0 localhost:323          0.0.0.0:*
udp        0      0 localhost:863          0.0.0.0:*
udp        0      0 0.0.0.0:xact-backup    0.0.0.0:*
udp        0      0 0.0.0.0:nfs            0.0.0.0:*
udp6       0      0 [::]:mountd            [::]:*
udp6       0      0 [::]:sunrpc            [::]:*
udp6       0      0 localhost:323          [::]:*
udp6       0      0 [::]:xact-backup       [::]:*
udp6       0      0 [::]:46023             [::]:*
udp6       0      0 [::]:42560             [::]:*
udp6       0      0 [::]:nfs               [::]:*
raw6       0      0 [::]:ipv6-icmp         [::]:*                  7
Active UNIX domain sockets (only servers)
```

25. Display the uptime of the system.

```
urk17cs034@code .open]$ uptime
 00:19:24 up 12 days, 12:39, 142 users,  load average: 0.00, 0.01, 0.05
urk17cs034@code .open]$
```

26. Julian day.

```
[urk17cs034@code .open]$ date
Tue Aug 25 00:19:37 IST 2020
[urk17cs034@code .open]$ date +%j
238
[urk17cs034@code .open]$
```

27. IP information.

```
[urk17cs034@code .open]$ ip addr
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
       valid_lft forever preferred_lft forever
2: ens32: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000
    link/ether 00:50:56:93:66:93 brd ff:ff:ff:ff:ff:ff
    inet 192.168.0.29/24 brd 192.168.0.255 scope global noprefixroute ens32
       valid_lft forever preferred_lft forever
    inet6 fe80::1450:18ba:187f:1f02/64 scope link noprefixroute
       valid_lft forever preferred_lft forever
[urk17cs034@code .open]$
```

28. Display only the free space in the system.

```
[urk17cs034@code .open]$ df -k
Filesystem                      1K-blocks      Used Available Use% Mounted on
devtmpfs                          3992636         0   3992636   0% /dev
tmpfs                             4004520         0   4004520   0% /dev/shm
tmpfs                             4004520    410840   3593680  11% /run
tmpfs                             4004520         0   4004520   0% /sys/fs/cgroup
/dev/mapper/centos_kitscode-root 68066844   3014188  65052656   5% /
/dev/sda1                         1942528    334256   1608272  18% /boot
/dev/mapper/centos_kitscode-home 24404336     32992  24371344   1% /home
/dev/mapper/centos_kitscode-data 97609148  26185468  71423680  27% /data
/dev/mapper/centos_kitscode-var  10004480   9315764    688716  94% /var
tmpfs                              800908         0    800908   0% /run/user/1010883193
tmpfs                              800908         0    800908   0% /run/user/1010883087
tmpfs                              800908         0    800908   0% /run/user/1010875237
tmpfs                              800908         0    800908   0% /run/user/1010883076
tmpfs                              800908         0    800908   0% /run/user/1010875247
tmpfs                              800908         0    800908   0% /run/user/1010883208
[urk17cs034@code .open]$
```

29. Display the configuration information of your network.

```
[urk17cs034@code .open]$ netstat -nr
Kernel IP routing table
Destination     Gateway         Genmask         Flags   MSS Window  irtt Iface
0.0.0.0         192.168.0.254   0.0.0.0         UG        0 0          0 ens32
192.168.0.0     0.0.0.0         255.255.255.0   U         0 0          0 ens32
[urk17cs034@code .open]$
```

Video link : https://youtu.be/gMrw7wPSAM8

Result: The Linux commands are studied and executed.