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

```
[urk17cs037@code ~]$ ls -a
.                .8c.c.swp  ae26.c   ae76.c       dir2              exp56.cpp      mul.sh            prac55.sh        star3.c
..               9a1.c      ae27.c   ae77.c       display1.txt      exp57.cpp      new.cpp           prac5a.sh        star.cpp
10.3             9a2.c      ae28.c   ae78.c       display3.txt      exp74.txt      newfile.txt       prac7a.c         staticfunctions.cpp
10.3.cpp         9a.c       ae29.c   ae79.c       display.txt       experiment2.cpp notes.cpp        prac9a1.c        string2.c
10a.cpp          9.a.cpp    ae310.c  alphabets.cpp .emacs           exp.txt        .notes.cpp.swp    prac9a2.o        string.c
10b.cpp          9a.cpp     ae31.c   a.out        enum.c            exp.txt        octal.cpp         prac9a2.o        .sumanth
11.2.cpp         9b.c       ae32.c   armstrong.c  example1.cpp      f1.txt         .octal.cpp.swp    .project.cpp.swp sumanth1
11.3.cpp         9b.cpp     ae33.c   armstrong.cy example2.cpp      f2.txt         operator.c        recursive.c      sumanth2.c
1.1.cpp          9c.cpp     ae34.c   array.c      exap.cpp          f3.txt         overload1.cpp     relational.c     sumanth.c
2Darrays.c       a1         ae35.c   .bash_history exercise2a.sh    fact2.sh       .overload1.cpp.swp roots.c         sumofmatrices.cpp
2Darrays.c.save  a10.c      ae36.c   .bash_logout exercise2b.sh    factorial.sh   palindrome.c      sam1             swap.c
2ddarray.c       a11.c      ae37.c   .bash_profile exercise2c.sh   fact.sh        palindrome.sh     samc.txt         swap.cpp
4.sh             a12.c      ae38.c   .bashrc      exercise2d.sh     fibo.sh        palind.sh         sample10         temp.cpp
5a.sh            acen.sh    ae39.c   bitwise.c    exercise2e.sh     fifth.c        pip5              sample11         test
5b.sh            ae110.c    ae410.c  bmi.c        exp25.cpp         fifth.c.save   pipe1             sample12         test1.txt
5c.sh            ae11.c     ae411.c  books.txt    exp3a.sh          filenew2       pipe10            sample1.txt      test.txt
5d.sh            ae12.c     ae41.c   borrowed.txt exp3b.sh          first.c        pipe2             sample37.txt     third.c
5e.sh            ae13.c     ae42.c   b.out        exp3c.sh          forstar.c      pipe7             sample4.txt      todayhistory.txt
6a.cpp           ae14.c     ae43.c   classes.cpp  exp3d.sh          fourth.c       pipe77            sample7.txt      uniquearrays.cpp
6b.cpp           ae15.c     ae44.c   classname    exp3e.sh          friendfunction1.cpp pipe99       sample.txt       unix6a.sh
7a.c             ae16.c     ae45.c   classname2   .exp3e.sh.swp     friendfunction.cpp pipee         samp.txt         unix6b.sh
.7a.c.swp        ae17.c     ae46.c   classnew3    exp4.cpp          .hidden        power.cpp         sara             userdefined.c
7b.c             ae18.c     ae47.c   complex.cpp  .exp4.cpp.swp     .hidden_directory prac2a.sh      second.c         users.txt
8a.c             ae19.c     ae48.c   complexnumber.c exp4.sh        inches.cpp     prac2b.sh         .setw.cpp.swp    ux7b.c
8a.cpp           ae210.c    ae49.c   conditional.c exp51.sh         .k5login       prac2d.sh         sortby.c         .viminfo
8b.c             ae211.c    ae710.c  .config      exp51.txt         lex1.1         prac2e.sh         speed.c          welcome.cpp
8b.cpp           ae21.c     ae71.c   cust.c       exp52.sh          .lex1.1.swp    prac31.sh         SS_Hotel.txt     word2.txt
.8b.cpp.swn      ae22.c     ae72.c   demo1.sh     exp53.sh          loop.c         prac32.sh         SS_Hotel.txt     wordcount.cpp
.8b.cpp.swo      ae23.c     ae73.c   demo2.sh     exp54.cpp         loop.cy        prac33.sh         ss.txt           word.txt
.8b.cpp.swp      ae24.c     ae74.c   demo.sh      exp54.sh          marks.cpp      prac35.sh         stack.cpp
8c.c             ae25.c     ae75.c   des.cpp      exp55.sh          .mozilla       prac3a.sh         star2.cpp
[urk17cs037@code ~]$
```

2. List the content of /var directory?

```
[urk17cs037@code var]$ ls
adm      centrify    centrifydc  db       games    kerberos  local  log   nis   preserve  spool  yp
cache    centrifyda  crash       empty    gopher   lib       lock   mail  opt   run       tmp
[urk17cs037@code var]$
```

3. Create two directories named dir1 & dir2

```
mkdir dir1 dir2
```

4. Create a hidden directory with your name?

```
[urk17cs037@code ~]$ mkdir sumant .sumant
[urk17cs037@code ~]$
```

```
[urk17cs037@code ~]$ ls -a
                9a1.c     ae28.c    ae79.c          .emacs          f1.txt              .octal.cpp.swp      recursive.c         sumanth
.               9a2.c     ae29.c    alphabets.cpp   enum.c          f2.txt              operator.c          relational.c        .sumanth
10.3            9a.c      ae310.c   a.out           example1.cpp    f3.txt              overload1.cpp       roots.c             sumanth1
10.3.cpp        9.a.cpp   ae31.c    armstrong.c     example2.cpp    fact2.sh            .overload1.cpp.swp  saml                sumanth2.c
10a.cpp         9a.cpp    ae32.c    armstrong.cy    exap.cpp        factorial.sh        palindrome.c        samc.txt            sumanth.c
10b.cpp         9b.c      ae33.c    array.c         exercise2a.sh   fact.sh             palindrome.sh       sample10            sumofmatrices.cpp
11.2.cpp        9b.cpp    ae34.c    .bash_history   exercise2b.sh   fibo.sh             palind.sh           sample11            swap.c
11.3.cpp        9c.cpp    ae35.c    .bash_logout    exercise2c.sh   fifth.c             pip5                sample12            swap.cpp
1.1.cpp         a1        ae36.c    .bash_profile   exercise2d.sh   fifth.c.save        pipe1               sample1.txt         temp.cpp
2Darrays.c      a10.c     ae37.c    .bashrc         exercise2e.sh   file4.txt           pipe10              sample37.txt        test
2Darrays.c.save a11.c     ae38.c    bitwise.c       exp25.cpp       filenew2            pipe2               sample4.txt         test1.txt
2ddarray.c      a12.c     ae39.c    bmi.c           exp3a.sh        first.c             pipe7               sample7.txt         test.txt
4.sh            acen.sh   ae410.c   books.txt       exp3b.sh        forstar.c           pipe77              sample.txt          third.c
5a.sh           ae110.c   ae411.c   borrowed.txt    exp3c.sh        fourth.c            pipe99              samp.txt            todayhistory.txt
5b.sh           ae11.c    ae41.c    b.out           exp3d.sh        friendfunction1.cpp pipee               sara                uniquearrays.cpp
5c.sh           ae12.c    ae42.c    classes.cpp     exp3e.sh        friendfunction.cpp  power.cpp           .sara               unix6a.sh
5d.sh           ae13.c    ae43.c    classname       .exp3e.sh.swp   .hidden             prac2a.sh           second.c            unix6b.sh
5e.sh           ae14.c    ae44.c    classname2      exp4.cpp        .hidden_directory   prac2b.sh           .setw.cpp.swp       userdefined.c
6a.cpp          ae15.c    ae45.c    classnew3       .exp4.cpp.swp   inches.cpp          prac2d.sh           sortby.c            users.txt
6b.cpp          ae16.c    ae46.c    complex.cpp     exp4.sh         .k5login            prac2e.sh           speed.c             ux7b.c
7a.c            ae17.c    ae47.c    complexnumber.c exp51.sh        lex1.l              prac31.sh           SS Hotel.txt        .viminfo
.7a.c.swp       ae18.c    ae48.c    conditional.c   exp51.txt       .lex1.l.swp         prac32.sh           SS_Hotel.txt        welcome.cpp
7b.c            ae19.c    ae49.c    .config         exp52.sh        loop.c              prac33.sh           ss.txt              word2.txt
8a.c            ae210.c   ae710.c   cust.c          exp53.sh        loop.cy             prac35.sh           stack.cpp           wordcount.cpp
8a.cpp          ae211.c   ae71.c    demo1.sh        exp54.cpp       marks.cpp           prac3a.sh           star2.cpp           word.txt
8b.c            ae21.c    ae72.c    demo2.sh        exp54.sh        .mozilla            prac55.sh           star3.c
8b.cpp          ae22.c    ae73.c    demo.sh         exp55.sh        mul.sh              prac5a.sh           star.cpp
.8b.cpp.swn     ae23.c    ae74.c    des.cpp         exp56.cpp       new.cpp             prac7a.c            staticfunctions.cpp
.8b.cpp.swo     ae24.c    ae75.c    display1.txt    exp57.cpp       newfile.txt         prac9a1.c           string2.c
.8b.cpp.swp     ae25.c    ae76.c    display3.txt    exp74.txt       notes.cpp           prac9a2.c           string.c
8c.c            ae26.c    ae77.c    display.txt     experiment2.cpp .notes.cpp.swp      prac9a2.o           sumant
.8c.c.swp       ae27.c    ae78.c    display.txt     exp.txt         octal.cpp           .project.cpp.swp    .sumant
[urk17cs037@code ~]$
```

5. Display the content of a hidden directory.

```
[urk17cs037@code .sumant]$ ls
file1.txt    sample.txt
[urk17cs037@code .sumant]$
```

6. Display the calendar of 2020.

```
[urk17cs037@code .sumant]$ 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
```

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

```
[urk17cs037@code ~]$ vi sample.txt
[urk17cs037@code ~]$ cat /etc/passwd >sample.txt
[urk17cs037@code ~]$ 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
[urk17cs037@code ~]$
```

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

```
[urk17cs037@code ~]$ grep grid test1.txt | cut -f 1
melvin
binu
arun
[urk17cs037@code ~]$ []
```

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

```
[urk17cs037@code ~]$ cut -f 1,2 test1.txt
Name      Regno
melvin    07af501
mithin    07af502
jane      07af503
james     07af504
caroline          07af505
binu      07af506
aaron     07af507
selvin    07af508
jerwin    07af509
arun      07af510
[urk17cs037@code ~]$ █
```

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

```
[urk17cs037@code ~]$ grep image test1.txt | wc -l > test2.txt
[urk17cs037@code ~]$ cat test2.txt
2
[urk17cs037@code ~]$ █
```

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

```
[urk17cs037@code ~]$ cat display3.txt
Name      RegNo      ResearchInterest
Melvin    07af501    GridComputing
Mithin    07af502    ClusterComputing
Jerwin    07af509    WirelessNetworks
Arun      07af510    GridComputing
```

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

```
[urk17cs037@code ~]$ grep -v '^$' test1.txt
Name      Regno    ResearchInterest
melvin    07af501 gridcomputing
mithin    07af502 clustercomputing
jane      07af503 imageprocessing
james     07af504 networking
caroline          07af505 clustercomputing
binu      07af506 gridcomputing
aaron     07af507 imageprocessing
selvin    07af508 networking
jerwin    07af509 wirelessnetworks
arun      07af510 gridcomputing
[urk17cs037@code ~]$
```

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

```
[urk17cs037@code ~]$ mv sample.txt dir2
```

11. Change directory into dir2 directory

```
[urk17cs037@code ~]$ cd dir2
[urk17cs037@code dir2]$ ls
new.txt   sample.txt
```

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

```
[urk17cs037@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
[urk17cs037@code dir2]$
```

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

```
[urk17cs037@code dir2]$ mv sample.txt new.txt
[urk17cs037@code dir2]$ ls
new.txt
[urk17cs037@code dir2]$
```

14. Remove the directory dir1

```
[urk17cs037@code ~]$ rm -r dir1
[urk17cs037@code ~]$
```

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

```
[urk17cs037@code ~]$ tail -3 test1.txt
selvin   07af508 networking
jerwin   07af509 wirelessnetworks
arun     07af510 gridcomputing[urk17cs037@code ~]$
```

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

```
1030   ls
1031   cd
1032   cd dir1
1033   mkdir dir1
1034   cd dir2
1035   rm sample.txt
1036   ls
1037   cd
1038   mv sample.txt dir2
1039   cat /etc/passwd>sample.txt
1040   mv sample.txt dir2
1041   cd dir2
1042   cat sample.txt
1043   mv sample.txt new.txt
1044   ls
1045   rm -r dir1
1046   cd
1047   rm dir1
1048   rm -r dir1
1049   tail -4 test1.txt
1050   tail -3 test1.txt
1051   cat todayhistory.txt
1052   rm todayhistory.txt
1053   history > cat history.txt
1054   history > cat todayhistory.txt
1055   history >  todayhistory.txt
[urk17cs037@code ~]$
```

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

```
[urk17cs037@code ~]$ ls -A | wc -l
280
[urk17cs037@code ~]$
```

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

```
[urk17cs037@code ~]$ sort file1.txt file2.txt file3.txt > file4.txt
[urk17cs037@code ~]$ cat file4.txt
this is file1
this is file2
this is file3
[urk17cs037@code ~]$
```

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

```
[urk17cs037@code ~]$ chmod 700 file5.txt
[urk17cs037@code ~]$ ls -l file5.txt
-rwx------ 1 urk17cs037 urk17cs037 6 Aug 22 12:13 file5.txt
[urk17cs037@code ~]$
```

20. Display the network status on the shell.

```
[urk17cs037@code ~]$ 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:58124  192.168.2.27:msft-gc    ESTABLISHED
tcp        0      0 code.karunya.edu:nfs    192.168.0.34:790        ESTABLISHED
tcp        0      0 code.karunya.edu:39984  192.168.2.27:ldap       ESTABLISHED
tcp        0      0 code.karunya.edu:52066  code.karunya.edu:hbci   ESTABLISHED
tcp        0      0 code.karunya.edu:https  162.158.165.48:57772    ESTABLISHED
tcp        0      0 code.karunya.edu:hbci   code.karunya.edu:52196  ESTABLISHED
tcp        0      0 code.karunya.edu:hbci   code.karunya.edu:52212  ESTABLISHED
tcp        0      0 code.karunya.edu:https  162.158.50.196:46918    ESTABLISHED
tcp        0      0 code.karunya.edu:https  162.158.166.87:22784    ESTABLISHED
tcp        0      0 code.karunya.edu:52308  code.karunya.edu:hbci   ESTABLISHED
tcp        0     48 code.karunya.edu:https  162.158.31.133:37022    ESTABLISHED
tcp        0      0 code.karunya.edu:https  162.158.50.221:49642    ESTABLISHED
tcp        0      0 code.karunya.edu:52212  code.karunya.edu:hbci   ESTABLISHED
tcp        0      0 code.karunya.edu:52048  code.karunya.edu:hbci   ESTABLISHED
tcp        0      0 code.karunya.edu:hbci   code.karunya.edu:52066  ESTABLISHED
tcp        0      0 code.karunya.edu:hbci   code.karunya.edu:52048  ESTABLISHED
tcp        0      0 code.karunya.edu:hbci   code.karunya.edu:52428  ESTABLISHED
tcp        0      0 code.karunya.edu:nfs    192.168.0.33:814        ESTABLISHED
tcp        0      0 code.karunya.edu:52428  code.karunya.edu:hbci   ESTABLISHED
tcp        0      0 code.karunya.edu:hbci   code.karunya.edu:52308  ESTABLISHED
tcp        0      0 code.karunya.edu:nfs    192.168.0:owamp-control ESTABLISHED
tcp        0      0 code.karunya.edu:52196  code.karunya.edu:hbci   ESTABLISHED
tcp        0      0 code.karunya.edu:https  162.158.31.162:32884    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
```

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

```
[urk17cs037@code ~]$ diff file1.txt file2.txt
1c1
< this is file1
---
> this is file2
[urk17cs037@code ~]$
```

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

```
[urk17cs037@code ~]$ ps -f
UID         PID  PPID  C STIME TTY         TIME CMD
urk17cs+  3736  3703  0 11:08 pts/2    00:00:00 -bash
urk17cs+  8729  3736  0 12:18 pts/2    00:00:00 ps -f
[urk17cs037@code ~]$
```

23. Report disk usages of the file system.

```
[urk17cs037@code ~]$ ps -f
UID         PID  PPID  C STIME TTY         TIME CMD
urk17cs+  3736  3703  0 11:08 pts/2    00:00:00 -bash
urk17cs+  8729  3736  0 12:18 pts/2    00:00:00 ps -f
[urk17cs037@code ~]$ du -h
0       ./.mozilla/plugins
0       ./.mozilla/extensions
0       ./.mozilla
16K     ./.config/neofetch
16K     ./.config
4.0K    ./.sumanth
4.0K    ./dir2
0       ./.hidden_directory
0       ./.hidden
0       ./sumanth
0       ./.sara
0       ./sumant
8.0K    ./.sumant
66M     .
[urk17cs037@code ~]$
```

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

```
[urk17cs037@code ~]$ 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:*
```

25. Display the uptime of the system.

```
[urk17cs037@code ~]$ uptime
 12:22:03 up 10 days, 41 min, 140 users,  load average: 0.00, 0.01, 0.05
[urk17cs037@code ~]$
```

26. Julian day.

```
[urk17cs037@code ~]$ date
Sat Aug 22 12:23:00 IST 2020
[urk17cs037@code ~]$ date +%j
235
[urk17cs037@code ~]$
```

27. IP information.

```
[urk17cs037@code ~]$ 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
[urk17cs037@code ~]$
```

28. Display only the free space in the system.

```
[urk17cs037@code ~]$ 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   402528   3601992  11% /run
tmpfs                           4004520        0   4004520   0% /sys/fs/cgroup
/dev/mapper/centos_kitscode-root 68066844 3014184  65052660   5% /
/dev/sda1                       1942528   334256   1608272  18% /boot
/dev/mapper/centos_kitscode-home 24404336    32992  24371344   1% /home
/dev/mapper/centos_kitscode-data 97609148 26097344  71511804  27% /data
/dev/mapper/centos_kitscode-var 10004480  9316192    688288  94% /var
tmpfs                            800908        0    800908   0% /run/user/1010875317
tmpfs                            800908        0    800908   0% /run/user/1010875240
tmpfs                            800908        0    800908   0% /run/user/1010883183
tmpfs                            800908        0    800908   0% /run/user/1010883450
[urk17cs037@code ~]$
```

29. Linux platform is infected over the network.

30. Display the configuration information of your network.

```
[urk17cs037@code ~]$ 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
[urk17cs037@code ~]$
```

Video link: https://drive.google.com/file/d/1Y-1WtuCot_SZYr3uA0IOWAy3Qyo7poWX/view?usp=drivesdk

Results:

The Linux commands are studied and executed.