18CS2064 - Open Source technologies Lab | URK17CS023

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

```
[urk17cs023@code ~]$ ls -a
.                7.1.cpp          ex10.3.cpp          .num.cpp.swp
..               7.1.cppvi        ex103.cpp           occ.cpp
10.cpp           7.2.c            ex11.1.cpp          occu.cpp
1.2.c            7.3.c            ex11.2.cpp          op.c
1a.c             7.4.c            .ex11.2.cpp.swp     operations.c
1b.c             7.5.c            ex31.cpp            operations.c.save
1c.c             7.6.c            .ex31.cpp.swp       pal.c
1d.c             7.7.c            ex6.1.cpp           pc.c
1e.c             8.1.cpp          ex6.2.cpp           perfect.c
1f.c             8.cpp            ex7.10.cpp          pf1.c
2a.c             8ex.cpp          ex7.12.cpp          pf.c
2b.c             9.1.cpp          ex8.1.cpp           pointer.cpp
2c.c             9.c              .ex8.1.cpp.swp      .pointer.cpp.swp
2darray.c        9.cpp            ex8.2.cpp           porc.
2d.c             a1               ex9.1.cpp           porc.c
2d.c.save        a2               .ex9.1.cpp.swo      power.cpp
2dd.c            a3               .ex9.1.cpp.swp      qe.c
2dm.c            adfact.c         ex9.2.cpp           relopr.c
2f.c             a.out            ex9.3.cpp           rev.c
2g.c             arfun.c          .ex9.3.cpp.swp      sam.c
2h.c             arm.c            exp11.2.cpp         sample1.cpp
2i.c             array.c          exp9.3.cpp          sample.a
```

2. List the content of /var directory?

```
[urk17cs023@code ~]$ cd /var
[urk17cs023@code var]$ ls
adm         centrifyda   db      gopher     local   mail   preserve   tmp
cache       centrifydc   empty   kerberos   lock    nis    run        yp
centrify    crash        games   lib        log     opt    spool
[urk17cs023@code var]$
```

3. Create two directories named dir1 & dir2

```
[urk17cs023@code ~]$ mkdir dir11 diir22
[urk17cs023@code ~]$ lm
-bash: lm: command not found
[urk17cs023@code ~]$ ls
10.cpp       3a.c        6.1.cpp      82.c       ascii.c         dir1
1.2.c        3b.c        6.2.cpp      83a.c      bitwise.c       dir11
1a.c         3c.c        6.cpp        83.c       bmi.c           dir2
1b.c         3d.c        6e.cpp       8a.c       books.txt       dir22
1c.c         3e.c        7.1.c        8.cpp      borrowed.txt    dir3
1d.c         3f.c        71.c         8ex.cpp    b.out           dir4
1e.c         3g.c        7.1.cpp      91a.c      classname       dirr1
1f.c         3h.c        7.1.cppvi    9.1.cpp    co.c            dirr2
2a.c         3i.c        7.2.c        9a1.c      conoperator.c   display.txt
2b.c         40.cpp      72.c         9a2.c      coperator.c     distance.c
2c.c         4.10.c      7.3.c        9b.c       coperator.c.save el.c
2darray.c    42.1.cpp    7.4.c        9.c        cricket.cpp     enum.c
2d.c         4.2.c       7.5.c        9.cpp      currency.cpp    even.c
2d.c.save    42.cpp      7.6.c        9yacc.y    cust.c          ex
2dd.c        4.2.cy      7.7.c        a1         data.c          ex10.1.cpp
2dm.c        4.7.c       7a.c         a2         demo2.sh        ex101.cpp
2f.c         5.1.cpp     7b.c         a3         demo3.sh        ex10.2.cpp
2g.c         51.sh       81a.c        adfact.c   demo.sh         ex10.3.cpp
2h.c         5.2.2.cpp   81.c         a.out      diaplay.txt     ex103.cpp
2i.c         5.2.cpp     81c.c        arfun.c    diir1           ex11.1.cpp
2l.c         5.3.3.cpp   8.1.cpp      arm.c      diir2           ex11.2.cpp
3.4.cpp      5.3.cpp     82a.c        array.c    diir22          ex31.cpp
```
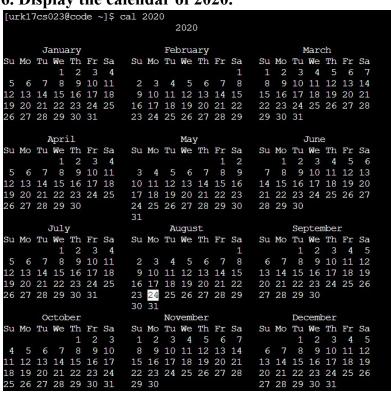
4. Create a hidden directory with your name?

```
[urk17cs023@code ~]$ mkdir sandy .sandy
[urk17cs023@code ~]$ ls -a
```

5. Display the content of a hidden directory.

7

```
[urk17cs023@code ~]$ mkdir .hidden11
[urk17cs023@code ~]$ ls -a
.               3f.c            7.1.cppvi       9.cpp           .cricket.cpp.swp  ex10.3.cpp      .ex9.1.cpp.swp   expt55.sh
..              3g.c            7.2.c           9yacc.y         currency.cpp      ex103.cpp       ex9.2.cpp        f1.txt
10.cpp          3h.c            72.c            a1              cust.c            ex11.1.cpp      ex9.3.cpp        f2.txt
1.2.c           3i.c            7.3.c           a2              data.c            ex11.2.cpp      .ex9.3.cpp.swp   f3.txt
1a.c            40.cpp          7.4.c           a3              demo2.sh          .ex11.2.cpp.swp exam1.c          f4.txt
1b.c            4.10.c          7.5.c           adfact.c        demo3.sh          ex31.cpp        exam1.sh         fev.c
1c.c            42.1.cpp        7.6.c           a.out           demo.sh           .ex31.cpp.swp   exam2.sh         fib.c
1d.c            .42.1.cpp.swp   7.7.c           arfun.c         diaplay.txt       ex3.1.sh        .exam3.sh.swp    fib.c.save
1e.c            4.2.c           7a.c            arm.c           diir1             ex3.2.sh        exp11.2.cpp      filename1.c
1f.c            42.cpp          7b.c            array.c         diir2             ex3.3.sh        exp3a.sh         filename.c
2a.c            4.2.cy          81a.c           ascii.c         diir22            ex3.4.sh        exp3b.sh         filename.c.s
2b.c            4.7.c           81.c            .bash_history   dir1              ex3.5.sh        exp3c.sh         filenew2
2c.c            5.1.cpp         81c.c           .bash_logout    dir11             ex4.1.sh        exp3d.sh         for.c
2darray.c       .5.1.cpp.swo    8.1.cpp         .bash_profile   dir2              ex4.2.sh        exp3e.sh         friend1.cpp
2d.c            .5.1.cpp.swp    82a.c           .bashrc         dir22             .ex4.2.sh.swp   .exp3e.sh.swp    friend2.cpp
2d.c.save       51.sh           82.c            bitwise.c       dir3              ex4.3.sh        exp4.sh          friend8.cpp
2dd.c           5.2.2.cpp       83a.c           bmi.c           dir4              ex4.4.sh        exp51.sh         .hidden
2dm.c           .5.2.2.cpp.swp  83.c            books.txt       dirr1             .ex4.4.sh.swp   exp51.txt        .hidden1
2f.c            5.2.cpp         8a.c            borrowed.txt    dirr2             ex4.5.sh        exp52.sh         .hidden11
```

6. Display the calendar of 2020.

```
[urk17cs023@code ~]$ 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

```
[urk17cs023@code ~]$ cat /etc/passwd > sample.txt
[urk17cs023@code ~]$ cat /etc/passwd > sample1.txt
[urk17cs023@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
[urk17cs023@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

```
[urk17cs023@code ~]$ grep Grid text.txt | cut -f 1
Melvin
Binu
Arun
```

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

```
[urk17cs023@code ~]$ cut -f 1,2 text.txt
Name        RegNo
Melvin   07af501
Mithin   07af502
James    07af503
Jane     07af504
Caroline            07af505
Binu     07af506
Aaron    07af507
Selvin   07af508
Jerwin   07af509
Arun     07af510
[urk17cs023@code ~]$
```

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

```
[urk17cs023@code ~]$ grep ImageProcessing text.txt|wc -l > text
[urk17cs023@code ~]$ cat text
2
```

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

```
[urk17cs023@code ~]$ head -3 text.txt >> display.txt | tail -2 text.txt >> diapl
ay.txt
[urk17cs023@code ~]$ cat text
2
[urk17cs023@code ~]$ vi display.txt
```

```
Jerwin   07af509 WirelessNetworks
Arun     07af510 GridComputing
Name     RegNo   ResearchInterest
Melvin   07af501 GridComputing
Mithin   07af502 ClusterComputing
~
```

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

```
[urk17cs023@code ~]$ grep -v '^$' text.txt
Name       RegNo   ResearchIntrest
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
```

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

```
[urk17cs023@code ~]$ mv sample.txt dirr2
[urk17cs023@code ~]$ cd dirr2
[urk17cs023@code dirr2]$ ls
sample.txt
[urk17cs023@code dirr2]$
```

11. Change directory into dir2 directory

```
[urk17cs023@code dirr2]$ cd ..
[urk17cs023@code ~]$ cd dirr2
```

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

```
[urk17cs023@code ~]$ cd dirr2
[urk17cs023@code dirr2]$ 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?

```
[urk17cs023@code dirr2]$ touch new.txt
[urk17cs023@code dirr2]$ mv sample.txt new.txt
[urk17cs023@code dirr2]$ cat sample.txt
cat: sample.txt: No such file or directory
```

14. Remove the directory dir1

```
[urk17cs023@code ~]$ rm -r dir1
[urk17cs023@code ~]$ cd dir1
```

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

```
[urk17cs023@code ~]$ tail -3 text.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

```
1151  cd ..
1152  cd dirr2
1153  cat sample.txt
1154  touch new.txt
1155  mv sample.txt new.txt
1156  cat sample.txt
1157  cd ..
1158  cal 12 2020
1159  rm -r dir1
1160  cd dir1
1161  tail -3 text.txt
1162  history
[urk17cs023@code ~]$ history > todayhistory.txt
[urk17cs023@code ~]$
```

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

```
[urk17cs023@code ~]$ ls -a |  wc -l
226
```

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

```
[urk17cs023@code ~]$ cat  > f1.txt
First[urk17cs023@code ~]$ cat  > f2.txt
Second[urk17cs023@code ~]$
[urk17cs023@code ~]$ cat  > f3.txt
Third[urk17cs023@code ~]$
[urk17cs023@code ~]$ sort f1.txt f2.txt f3.txt > f4.txt
[urk17cs023@code ~]$ cat f4.txt
First
Second
Third
```

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

```
[urk17cs023@code ~]$ chmod 700 f4.txt
[urk17cs023@code ~]$ ls -l f4.txt
-rwx------ 1 urk17cs023 urk17cs023 19 Dec 15 23:59 f4.txt
[urk17cs023@code ~]$
```

20. Display the network status on the shell.

```
[urk17cs023@code ~]$ netstat
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address          Foreign Address         State
tcp        0      0 code.karunya.edu:58340 code.karunya.edu:hbci   TIME_WAIT
tcp        0      0 code.karunya.edu:58262 code.karunya.edu:hbci   TIME_WAIT
tcp        0      0 code.karunya.edu:https 162.158.167.74:16612    ESTABLISHED
tcp        0      0 code.karunya.edu:nfs   192.168.0.32:ftps-data  ESTABLISHED
tcp        0      0 code.karunya.edu:58390 code.karunya.edu:hbci   TIME_WAIT
tcp        0      0 code.karunya.edu:https 162.158.198.185:38434   ESTABLISHED
tcp        0      0 code.karunya.edu:57732 code.karunya.edu:hbci   ESTABLISHED
tcp        0      0 code.karunya.edu:https 162.158.198.181:27398   ESTABLISHED
tcp        0      0 code.karunya.edu:https 162.158.166.55:57302    ESTABLISHED
tcp        0      0 code.karunya.edu:hbci  code.karunya.edu:57796  ESTABLISHED
tcp        0      0 code.karunya.edu:https 162.158.198.159:29536   ESTABLISHED
tcp        0      0 code.karunya.edu:https 162.158.50.213:37802    ESTABLISHED
tcp        0      0 code.karunya.edu:58394 code.karunya.edu:hbci   ESTABLISHED
tcp        0      0 code.karunya.edu:https 162.158.198.159:29860   ESTABLISHED
tcp        0      0 code.karunya.edu:https 162.158.50.215:34996    ESTABLISHED
tcp        0      0 code.karunya.edu:nfs   192.168.0.34:790        ESTABLISHED
tcp        0      0 code.karunya.edu:58120 code.karunya.edu:hbci   ESTABLISHED
tcp        0      0 code.karunya.edu:58290 code.karunya.edu:hbci   TIME_WAIT
tcp        0      0 code.karunya.edu:https 172.69.134.127:43822    ESTABLISHED
tcp        0      0 code.karunya.edu:58280 code.karunya.edu:hbci   TIME_WAIT
tcp        0      0 code.karunya.edu:58366 code.karunya.edu:hbci   TIME_WAIT
tcp        0      0 code.karunya.edu:58324 code.karunya.edu:hbci   TIME_WAIT
tcp        0      0 code.karunya.edu:58278 code.karunya.edu:hbci   TIME_WAIT
tcp        0      0 code.karunya.edu:https 162.158.50.249:30884    ESTABLISHED
tcp        0    383 code.karunya.edu:https 162.158.50.228:61028    ESTABLISHED
```

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

```
[2]+  Stopped                      cat > sand1.txt
[urk17cs023@code ~]$ diff sand.txt sand1.txt
1c1
< sand snkqkfwnq fenjkfnfn efkjfkjqf
---
> sand snkqkfwnq fbkjbfkqbfqq
```

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

```
[urk17cs023@code ~]$ ps -f
UID         PID   PPID  C STIME TTY          TIME CMD
urk17cs+   8453   8443  0 10:28 pts/4    00:00:00 -bash
urk17cs+  10451   8453  0 10:43 pts/4    00:00:00 cat
urk17cs+  10638   8453  0 10:44 pts/4    00:00:00 cat
urk17cs+  10835   8453  0 10:45 pts/4    00:00:00 ps -f
[urk17cs023@code ~]$
```

23. Report disk usages of the file system.

```
[urk17cs023@code ~]$ du -h
0       ./.mozilla/plugins
0       ./.mozilla/extensions
0       ./.mozilla
8.0K    ./.local/share/jupyter/runtime
8.0K    ./.local/share/jupyter
8.0K    ./.local/share
8.0K    ./.local
16K     ./.config/neofetch
16K     ./.config
0       ./newdir
0       ./.sandeep
4.0K    ./diir1
4.0K    ./diir2
0       ./.hidden
0       ./dirr1
4.0K    ./dirr2
0       ./.hidden1
0       ./dir1
0       ./dir3
0       ./dir4
4.0K    ./sandy.sandy
1.4M    .
```

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

```
[urk17cs023@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:*
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:*
```

25. Display the uptime of the system.

```
[urk17cs023@code ~]$ uptime
 10:47:16 up 11 days, 23:07, 140 users,  load average: 0.02, 0.04, 0.05
[urk17cs023@code ~]$
```

26. Julian day.

```
[urk17cs023@code ~]$ date
Mon Aug 24 10:47:48 IST 2020
[urk17cs023@code ~]$ date +%j
237
```

27. IP information.

```
[urk17cs023@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
```

28. Display only the free space in the system.

```
[urk17cs023@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   427272   3577248  11% /run
tmpfs                              4004520        0   4004520   0% /sys/fs/cgroup
/dev/mapper/centos_kitscode-root  68066844  3014196  65052648   5% /
/dev/sda1                          1942528   334256   1608272  18% /boot
/dev/mapper/centos_kitscode-home  24404336    32992  24371344   1% /home
/dev/mapper/centos_kitscode-data  97609148 26097684  71511464  27% /data
/dev/mapper/centos_kitscode-var   10004480  9313116    691364  94% /var
tmpfs                               800908        0    800908   0% /run/user/1010875228
tmpfs                               800908        0    800908   0% /run/user/1010875226
tmpfs                               800908        0    800908   0% /run/user/1010883088
tmpfs                               800908        0    800908   0% /run/user/1010875242
tmpfs                               800908        0    800908   0% /run/user/1010875247
tmpfs                               800908        0    800908   0% /run/user/1010875234
tmpfs                               800908        0    800908   0% /run/user/1010883450
```

29. Display the configuration information of your network.

```
[urk17cs023@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
[urk17cs023@code ~]$
```

Results:

The Linux commands are studied and executed.