

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 |

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|----|-------------|---|---|
| 3. | pwd | prints the absolute path to the current working directory | <p>-L, --logical use PWD from the environment, even if it contains symlinks</p> <p>-P, --physical avoid all symlinks</p> |
| 4. | cal | Displays the calendar of the current month | <p>-1, --one Display single month output. (This is the default.)</p> <p>-3, --three Display prev/current/next month output.</p> <p>-s, --Sunday Display Sunday as the first day of the week.</p> <p>-m, --Monday Display Monday as the first day of the week.</p> <p>-j, --Julian Display Julian dates (days one-based, numbered from January 1).</p> <p>-y, --year</p> |
| 5. | echo | This command will echo whatever you provide it. | <p>-n do not output the trailing newline</p> <p>-e enable interpretation of backslash escapes</p> <p>-E disable the interpretation of backslash escapes (default)</p> |

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| 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, --troupe 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 <i>chmod</i> 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         pfl.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          centrifryda  db          gopher      local       mail        preserve    tmp
cache        centrifrydc empty        kerberos    lock        nis         run         yp
centrifry    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   diirr1
1f.c        3h.c        7.1.cppvi  9.1.cpp     co.c        diirr2
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     diirr1      ex11.1.cpp
2l.c        5.3.3.cpp  8.1.cpp    arm.c       diirr2      ex11.2.cpp
3.4.cpp     5.3.cpp    82a.c      array.c     diirr22     ex31.cpp
```

4. Create a hidden directory with your name?

```
[urk17cs023@code ~]$ mkdir sandy .sandy
[urk17cs023@code ~]$ ls -a
.          3f.c       7.1.cppvi  9.cpp       .cricket.cpp.swp  ex10.3.cpp    .ex9.1.cpp.swp  expt55.sh  memory1.c  q1.sh
..         3g.c       7.2.c     9yacc.y     currency.cpp       ex103.cpp     ex9.2.cpp       f1.txt     memory.c   q2.sh
10.cpp     3h.c       72.c      a1          cust.c            ex11.1.cpp     ex9.3.cpp       f2.txt     merge.c    q3.sh
1.2.c      3i.c       73.c      a2          data.c           ex11.2.cpp     .ex9.3.cpp.swp  f3.txt     money.cpp  q4.sh
1a.c       40.cpp     74.c      a3          demo2.sh         .ex11.2.cpp.swp exam1.c         f4.txt     .mozilla   q51.sh
1b.c       4.10.c    75.c      adfact.c    demo3.sh        ex31.cpp       exam1.sh        fev.c      mul.c      q5.sh
1c.c       42.1.cpp  76.c      a.out       demo.sh         ex31.cpp.swp  exam2.sh       fib.c      ndo.c      qe.c
1d.c       .42.1.cpp.swp 77.c     arfun.c     diaplay.txt     ex3.1.sh      .exam3.sh.swp  fib.c.save newdir     newfile.txt rev.c
1e.c       4.2.c     7a.c      arm.c       diirr1          ex3.2.sh      exp11.2.cpp     filename1.c filename1.c.save
1f.c       42.cpp    7b.c      array.c     diirr2         ex3.3.sh      exp3a.sh       filename.c  filename.c.save
2a.c       4.2.cy    81a.c     ascii.c     diirr22        ex3.4.sh      exp3b.sh       filename.c.save 2.
2b.c       4.7.c     81c.c     .bash_history dir1            ex3.5.sh      exp3c.sh       for.c      op.c      operations.c
2c.c       5.1.cpp   81c.c     .bash_logout dir11          ex4.1.sh      exp3d.sh       friend1.c  operations.c.save sample.c
2darray.c  .5.1.cpp.swo 8.1.cpp   .bash_profile dir2           ex4.2.sh      exp3e.sh       friend2.c  operations.c.save sample.cc
2d.c       .5.1.cpp.swp 82a.c     .bashrc     dir22          ex4.3.sh      exp4.sh        friend8.c  operations.c.save sample.c
2d.c.save 51.sh      82c       bitwise.c   dir3           ex4.4.sh      exp41.sh       .hidden    pal.c     pc.c
2dd.c      5.2.2.cpp 83a.c     bmi.c       dir4           ex4.5.sh      exp51.txt      .hidden1   perfect.c  pfl.c
2dm.c      5.2.2.cpp.swp 83.c     books.txt  diirr1         ex4.6.sh      exp52.sh      .k5login  pfl.c     pf.c
2f.c       5.2.cpp   8a.c      borrowed.txt diirr2         ex4.10.cpp    exp53.sh      largest.c  pip5      pip5
2g.c       5.2.cpp   8.cpp     b.out       display.txt    ex6.1.cpp     exp54.sh      lex1       pip6      pip6
2h.c       5.3.3.cpp 8ex.cpp   .c.cpp.swp distance.c     ex6.2.cpp     exp55.sh      lex.yy.c   pointer.c  pointer.c
2i.c       5.3.cpp   91a.c     co.c        el.c           emacs         ex7.10.cpp    lib.1.cpp  pointer.c  pointer.c
2l.c       6.1.cpp   .91a.c.swo co.c        enum.c         ex7.12.cpp    exp6.2.sh     lib.1.cpp  pointer.c  pointer.c
3.4.cpp    6.2.cpp   .91a.c.swp .config      enum.c         ex7.12.cpp    exp6.2.sh     lib.1.cpp  pointer.c  pointer.c
```


5. Display the content of a hidden directory.

```
[urk17cs023@code ~]$ mkdir .hidden11
[urk17cs023@code ~]$ ls -la
drwxr-xr-x 3f.c 7.1.cppvi 9.cpp .cricket.cpp.swp ex10.3.cpp .ex9.1.cpp.swp expt55.sh
drwxr-xr-x 3g.c 7.2.c 9yacc.y currency.cpp ex103.cpp ex9.2.cpp f1.txt
-rw-r--r-- 10.cpp 3h.c 72.c a1 cust.c ex11.1.cpp ex9.3.cpp f2.txt
-rw-r--r-- 1.2.c 3i.c 7.3.c a2 data.c ex11.2.cpp .ex9.3.cpp.swp f3.txt
-rw-r--r-- 1a.c 40.cpp 7.4.c a3 demo2.sh .ex11.2.cpp.swp exam1.c f4.txt
-rw-r--r-- 1b.c 4.10.c 7.5.c adfact.c demo3.sh ex31.cpp exam1.sh fev.c
-rw-r--r-- 1c.c 42.1.cpp 7.6.c a.out demo.sh .ex31.cpp.swp exam2.sh fib.c
-rw-r--r-- 1d.c .42.1.cpp.swp 7.7.c arfun.c diaplay.txt ex3.1.sh .exam3.sh.swp fib.c.save
-rw-r--r-- 1e.c 4.2.c 7a.c arm.c diir1 ex3.2.sh exp11.2.cpp filename1.c
-rw-r--r-- 1f.c 42.cpp 7b.c array.c diir2 ex3.3.sh exp3a.sh filename.c
-rw-r--r-- 2a.c 4.2.cy 81a.c ascii.c diir22 ex3.4.sh exp3b.sh filename.c.s
-rw-r--r-- 2b.c 4.7.c 81.c .bash_history dir1 ex3.5.sh exp3c.sh filenew2
-rw-r--r-- 2c.c 5.1.cpp 81c.c .bash_logout dir11 ex4.1.sh exp3d.sh for.c
-rw-r--r-- 2darray.c .5.1.cpp.swo 8.1.cpp .bash_profile dir2 ex4.2.sh exp3e.sh friend1.cpp
-rw-r--r-- 2d.c .5.1.cpp.swp 82a.c .bashrc dir22 .ex4.2.sh.swp .exp3e.sh.swp friend2.cpp
-rw-r--r-- 2d.c.save 51.sh 82.c bitwise.c dir3 ex4.3.sh exp4.sh friend8.cpp
-rw-r--r-- 2dd.c 5.2.2.cpp 83a.c bmi.c dir4 ex4.4.sh exp51.sh .hidden
-rw-r--r-- 2dm.c .5.2.2.cpp.swp 83.c books.txt dir11 .ex4.4.sh.swp exp51.txt .hidden1
-rw-r--r-- 2f.c 5.2.cpp 8a.c borrowed.txt diirr2 ex4.5.sh exp52.sh .hidden11
-rw-r--r-- 2g.c 5.2.cpp.swp 8b.c .cricket.cpp.swp ex4.6.sh exp53.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  2  3  4  5  6  7  8  9 10 11 12 13 14
  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  3  4  5  6  7  8  9 10 11 12 13
  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  2  3  4  5  6  7  8  9 10 11 12
  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  4                   1  2  3  4  5  6  7  8  9 10 11 12
  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 >> display.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:hbc_i  TIME_WAIT
tcp        0      0 code.karunya.edu:58262  code.karunya.edu:hbc_i  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:hbc_i  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:hbc_i  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:hbc_i  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:hbc_i  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:hbc_i  ESTABLISHED
tcp        0      0 code.karunya.edu:58290  code.karunya.edu:hbc_i  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:hbc_i  TIME_WAIT
tcp        0      0 code.karunya.edu:58366  code.karunya.edu:hbc_i  TIME_WAIT
tcp        0      0 code.karunya.edu:58324  code.karunya.edu:hbc_i  TIME_WAIT
tcp        0      0 code.karunya.edu:58278  code.karunya.edu:hbc_i  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


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

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:hbc1              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/sdal              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
```

Results:

The Linux commands are studied and executed.

Video: <https://drive.google.com/file/d/17ckiETOsfdmXvv8hJpwl3BMSWkcgbj7n/view>