

DATE:

AIM: BASIC LINUX COMMANDS ACTIVITY QUESTIONS

1.Command to display the following message as such (Use " and Newline).

"God! Bless us..

We are starting Shell Scripting"

OUTPUT

->echo -e "God! Bless us...\n We are starting shell scripting"

```
anjana@anjana-VirtualBox:~$ echo -e "God! Bless us...\n We are starting shell s
cripting"
God! Bless us...
 We are starting shell scripting
anjana@anjana-VirtualBox:~$
```

2.Get the manual page of 'ls' command. Search for the word "alphabetic". Find the next occurrence and then find the previous occurrence.

OUTPUT

->man ls

press '/' and type "alphabetic", press enter.

```
LS(1)                                User Commands                                LS(1)
NAME
  ls - list directory contents
SYNOPSIS
  ls [OPTION]... [FILE]...
DESCRIPTION
  List information about the FILES (the current directory by default).
  Sort entries alphabetically if none of -cftuvSUX nor --sort is speci-
  fied.

  Mandatory arguments to long options are mandatory for short options
  too.

  -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

Manual page ls(1) line 1 (press h for help or q to quit)
```

3.Read your name from the keyboard and display it

OUTPUT

->echo "Enter your name";read name; echo "The name entered is \$name";

```
anjana@anjana-VirtualBox:~$ echo "Enter your name"; read name; echo "The name entered is $name";  
Enter your name  
Achu  
The name entered is Achu  
anjana@anjana-VirtualBox:~$
```

4.Create the directory structure dir1/dir4 and dir1/dir2/dir3 with a single command and then change directory to dir3

OUTPUT

->mkdir -p dir1/dir2/dir3

cd dir1/dir2/dir3

```
anjana@anjana-VirtualBox:~$ mkdir -p dir1/dir2/dir3  
anjana@anjana-VirtualBox:~$ ls  
abc.txt          dir2              Pictures          state  
capital          Documents         product.class     states  
complex.class    Downloads         product.java      symmetric.class  
complex.java     file1            Public           symmetric.java  
cpmplex.java     group1          Rectangle.class   user1  
'cpu$Processor.class' leapyear.class  rectanglee.class  user1.txt  
'cpu$Ram.class'    leapyear.java   Rectanglee.class  user1:user1  
cpu.class        matrix.class     rectanglee.java   welcome.class  
cpu.java         matrix.java      Rectanglee.java   welcome.java  
dbms1            Music            rectangle.java      
Desktop          odd.class        Rectangle.java      
dir1             odd.java         snap  
anjana@anjana-VirtualBox:~$ ls -R dir1  
dir1:  
dir2  
  
dir1/dir2:  
dir3  
  
dir1/dir2/dir3:  
anjana@anjana-VirtualBox:~$ cd dir1/dir2/dir3  
anjana@anjana-VirtualBox:~/dir1/dir2/dir3$
```

5.Create some files using Vim

OUTPUT

->vimtext.txt, vim text1.txt, vim text3.txt

this will create a new text file named text

press "i" to get into insert mode, Type contents into the filepress 'Esc' key to exit insert mode, type ":wq" to save and exit.

```
lab@lab-Lenovo-IdeaPad-Z400:~/dir1/dir2/dir3$ vim a1.txt  
lab@lab-Lenovo-IdeaPad-Z400:~/dir1/dir2/dir3$ vim encrypt.py  
lab@lab-Lenovo-IdeaPad-Z400:~/dir1/dir2/dir3$ vim test
```

[illegible]

6.Display the current directory

OUTPUT

->pwd

```
anjana@anjana-VirtualBox:~$ pwd
/home/anjana
anjana@anjana-VirtualBox:~$
```

7. Listing Files and folders

- a. List the contents of dir1 (Qn. 4) and all its descendants
- b. List the contents of dir3 (Qn. 4) in
 - i. Alphabetical Order
 - ii. Sorted on Time of modification, newest first
 - iii. Sorted on Size
 - iv. Reverse of all above
 - v. Long listing of files Sorted on Size with smallest first and size
 - vi. displayed in human readable form

OUTPUT

a)ls-R

```
anjana@anjana-VirtualBox:~$ ls -R
.:
 abc.txt          dir2             Pictures         state
 capital          Documents        product.class   states
 complex.class    Downloads        product.java    symmetric.class
 complex.java     file1            Public          symmetric.java
 cpmplex.java     group1           Rectangle.class user1
 'cpu$Processor.class' leapyear.class  rectanglee.class user1.txt
 'cpu$Ram.class'  leapyear.java  Rectanglee.class user1:user1
 cpu.class        matrix.class    rectanglee.java  welcome.class
 cpu.java         matrix.java     Rectanglee.java  welcome.java
 dbms1            Music           rectanglee.java
 Desktop          odd.class       Rectanglee.java
 dir1             odd.java        snap

./abc.txt:

./Desktop:
programs

./Desktop/programs:
stack.c  sum.c

./dir1:
dir2
```

OUTPUT

b i)ls -v

```
anjana@anjana-VirtualBox:~$ ls -v
Desktop          complex.class    leapyear.class   state
Documents        complex.java     leapyear.java    states
Downloads        cpmplex.java    matrix.class      symmetric.class
Music            cpu.class        matrix.java       symmetric.java
Pictures         cpu.java         odd.class         user1
Public           'cpu$Processor.class' odd.java          user1.txt
Rectangle.class  'cpu$Ram.class'  product.class     user1:user1
Rectanglee.class dir1              product.java      welcome.class
Rectanglee.java dir2              rectanglee.java    welcome.java
 abc.txt        file1
 capital        group1
anjana@anjana-VirtualBox:~$
```

OUTPUT

b ii)ls --sort='time'

```
anjana@anjana-VirtualBox:~$ ls --sort='time'
dir1          dir2          odd.class      abc.txt
complex.class dbms1          odd.java       file1
complex.java  cpu.java       leapyear.class cpmplex.java
product.class matrix.class   leapyear.java  snap
product.java  welcome.class 'cpu$Ram.class' Documents
rectanglee.class Rectanglee.class 'cpu$Processor.class' Downloads
rectanglee.java Rectanglee.java  rectanglee.java Pictures
Desktop       Rectanglee.java matrix.java     Music
user1         Rectangle.class states           Public
user1.txt     symmetric.class capital
group1        symmetric.java state
user1:user1
anjana@anjana-VirtualBox:~$
```

OUTPUT

b iii)ls --sort='size'

```
anjana@anjana-VirtualBox:~$ ls --sort='size'
dbms1      snap      rectanglee.class  welcome.class
abc.txt    state     Rectanglee.class  Rectangle.java
Desktop    user1     'cpu$Processor.class'  Rectanglee.java
dir1       user1:user1  complex.class     rectanglee.java
dir2       matrix.java odd.class         odd.java
Documents  cpu.java    'cpu$Ram.class'   welcome.java
Downloads  matrix.class cpmplex.java      capital
file1      symmetric.java product.java       states
group1     symmetric.class leapyear.class     user1.txt
Music      product.class complex.java
Pictures   cpu.class   leapyear.java
Public     Rectangle.class rectanglee.java
```

OUTPUT

b iv)ls -r

```
anjana@anjana-VirtualBox:~$ ls -r
welcome.java      Rectanglee.java      matrix.java          cpu.java
welcome.class     rectanglee.java      matrix.class         cpu.class
user1:user1       Rectanglee.class     leapyear.java        'cpu$Ram.class'
user1.txt         rectanglee.class     leapyear.class       'cpu$Processor.class'
user1             Rectangle.class      group1               cpmplex.java
symmetric.java    Public              file1                complex.java
symmetric.class   product.java         Downloads            complex.class
states            product.class        Documents            capital
state            Pictures            dir2                 abc.txt
snap             odd.java            dir1
Rectangle.java    odd.class           Desktop
rectanglee.java   Music              dbms1
```

OUTPUT

b v)ls -ls

```
Rectanglee.java      odd.class      Desktop
rectanglee.java      Music          dbms1
anjana@anjana-VirtualBox:~$ ls -ls
total 180
4 drwxrwxr-x 2 anjana anjana 4096 Apr  2 15:20 abc.txt
4 -rw-rw-r-- 1 anjana anjana  13 Apr  4 21:51 capital
4 -rw-rw-r-- 1 anjana anjana 1131 Apr 24 22:50 complex.class
4 -rw-rw-r-- 1 anjana anjana  674 Apr 24 22:50 complex.java
4 -rw-rw-r-- 1 anjana anjana  854 Mar 25 19:16 cpmplex.java
4 -rw-rw-r-- 1 anjana anjana 1164 Apr  8 19:16 'cpu$Processor.class'
4 -rw-rw-r-- 1 anjana anjana 1105 Apr  8 19:16 'cpu$Ram.class'
4 -rw-rw-r-- 1 anjana anjana 1331 Apr  8 19:16 cpu.class
4 -rw-rw-r-- 1 anjana anjana 2246 Apr  9 14:52 cpu.java
9 -rw-rw-r-- 1 anjana anjana 5023 Apr 13 20:16 dbms1
4 drwxr-xr-x 3 anjana anjana 4096 Apr 21 20:34 Desktop
4 drwxrwxr-x 2 anjana anjana 4096 Apr 25 19:23 dir1
4 drwxrwxr-x 2 anjana anjana 4096 Apr 21 19:21 dir2
4 drwxr-xr-x 2 anjana anjana 4096 Mar 19 20:43 Documents
4 drwxr-xr-x 2 anjana anjana 4096 Feb 21 13:04 Downloads
4 drwxrwxr-x 2 anjana anjana 4096 Apr  2 15:19 file1
4 drwxrwxr-x 2 anjana anjana 4096 Apr 21 20:02 group1
4 -rw-rw-r-- 1 anjana anjana  819 Apr  8 19:21 leapyear.class
4 -rw-rw-r-- 1 anjana anjana  577 Apr  8 19:21 leapyear.java
4 -rw-rw-r-- 1 anjana anjana 2238 Apr  9 14:39 matrix.class
4 -rw-rw-r-- 1 anjana anjana 2525 Apr  8 18:50 matrix.java
4 drwxr-xr-x 2 anjana anjana 4096 Dec  4 16:44 Music
4 -rw-rw-r-- 1 anjana anjana 1123 Apr  8 19:24 odd.class
```

OUTPUT

b vi)ls -hs

```
4 -rw-rw-r-- 1 anjana anjana 12 Apr 4 21:52 states
4 -rw-rw-r-- 1 anjana anjana 1784 Apr 8 19:30 symmetric.class
4 -rw-rw-r-- 1 anjana anjana 1903 Apr 8 19:29 symmetric.java
4 drwxrwxr-x 2 anjana anjana 4096 Apr 21 20:23 user1
0 -rw-rw-r-- 1 anjana anjana 0 Apr 21 20:23 user1.txt
4 drwxrwxr-x 2 anjana anjana 4096 Apr 21 19:24 user1:user1
4 -rw-rw-r-- 1 anjana anjana 420 Apr 8 21:34 welcome.class
4 -rw-rw-r-- 1 anjana anjana 105 Apr 8 21:34 welcome.java
anjana@anjana-VirtualBox:~$ ls -hs
total 180K
4.0K abc.txt          4.0K file1          4.0K Rectanglee.class
4.0K capital          4.0K group1         4.0K rectanglee.java
4.0K complex.class    4.0K leapyear.class 4.0K Rectanglee.java
4.0K complex.java     4.0K leapyear.java  4.0K rectangle.java
4.0K cpmplex.java     4.0K matrix.class   4.0K Rectangle.java
4.0K 'cpu$Processor.class' 4.0K matrix.java    4.0K snap
4.0K 'cpu$Ram.class'     4.0K Music          4.0K state
4.0K cpu.class          4.0K odd.class      4.0K states
4.0K cpu.java           4.0K odd.java       4.0K symmetric.class
8.0K dbms1             4.0K Pictures       4.0K symmetric.java
4.0K Desktop            4.0K product.class  4.0K user1
4.0K dir1               4.0K product.java   0 user1.txt
4.0K dir2               4.0K Public         4.0K user1:user1
4.0K Documents           4.0K Rectangle.class 4.0K welcome.class
4.0K Downloads           4.0K rectanglee.class 4.0K welcome.java
anjana@anjana-VirtualBox:~$
```

8.Execute ls and store the output to a file lsoutput

OUTPUT

-> ls > lsoutput.txt

```
anjana@anjana-VirtualBox:~$ ls > lsoutput.txt
anjana@anjana-VirtualBox:~$ cat lsoutput.txt
abc.txt
capital
complex.class
complex.java
cpmplex.java
cpu$Processor.class
cpu$Ram.class
cpu.class
cpu.java
dbms1
Desktop
dir1
dir2
Documents
Downloads
file1
group1
leapyear.class
leapyear.java
lsoutput.txt
```

9.Display the file

- a.starting with the first 10 lines and
- b.starting with the 10th line with provision for
 - i.Scrolling Up
 - ii.Scrolling Up and Down

OUTPUT

a) head labexperiment.txt

```
anjana@anjana-VirtualBox:~$ head labexperiment.txt
anjana@anjana-VirtualBox:~$ head labexperiment.txt
welcome
test file
checking files
hello
network
```

OUTPUT

b i) more -10 labexperiment.txt

ii) less +10 labexperiment.txt

```
anjana@anjana-VirtualBox:~$ more -10 labexperiment.txt
welcome
test file
checking files
hello
network

anjana@anjana-VirtualBox:~$
```

```
welcome
test file
checking files
hello
network
```

labexperiment.txt (END)

10. Execute `ls -l` and add the output to `ls` output, at the end.

OUTPUT

`ls -l`

```
anjana@anjana-VirtualBox:~$ ls -l
total 184
drwxrwxr-x 2 anjana anjana 4096 Apr  2 15:20 abc.txt
-rw-rw-r-- 1 anjana anjana   13 Apr  4 21:51 capital
-rw-rw-r-- 1 anjana anjana 1131 Apr 24 22:50 complex.class
-rw-rw-r-- 1 anjana anjana  674 Apr 24 22:50 complex.java
-rw-rw-r-- 1 anjana anjana  854 Mar 25 19:16 cpmplex.java
-rw-rw-r-- 1 anjana anjana 1164 Apr  8 19:16 'cpu$Processor.class'
-rw-rw-r-- 1 anjana anjana 1105 Apr  8 19:16 'cpu$Ram.class'
-rw-rw-r-- 1 anjana anjana 1331 Apr  8 19:16 cpu.class
-rw-rw-r-- 1 anjana anjana 2246 Apr  9 14:52 cpu.java
-rw-rw-r-- 1 anjana anjana 5023 Apr 13 20:16 dbms1
drwxr-xr-x 3 anjana anjana 4096 Apr 21 20:34 Desktop
drwxrwxr-x 3 anjana anjana 4096 Apr 25 19:23 dir1
drwxrwxr-x 2 anjana anjana 4096 Apr 21 19:21 dir2
drwxr-xr-x 2 anjana anjana 4096 Mar 19 20:43 Documents
drwxr-xr-x 2 anjana anjana 4096 Feb 21 13:04 Downloads
drwxrwxr-x 2 anjana anjana 4096 Apr  2 15:19 file1
drwxrwxr-x 2 anjana anjana 4096 Apr 21 20:02 group1
-rw-rw-r-- 1 anjana anjana  819 Apr  8 19:21 leapyear.class
-rw-rw-r-- 1 anjana anjana  577 Apr  8 19:21 leapyear.java
-rw-rw-r-- 1 anjana anjana  517 Apr 25 19:30 lsoutput.txt
-rw-rw-r-- 1 anjana anjana 2238 Apr  9 14:39 matrix.class
-rw-rw-r-- 1 anjana anjana 2525 Apr  8 18:50 matrix.java
```

11. Execute `ls -l` and feed the result to `less` command, to scroll through the directory listing.

`->ls -l | less`

OUTPUT

`->ls -l | less`

```
ls-l: command not found
(END)
```



```

drwxrwxr-x 2 anjana anjana 4096 Apr 21 19:24 user1:user1
-rw-rw-r-- 1 anjana anjana 420 Apr 8 21:34 welcome.class
-rw-rw-r-- 1 anjana anjana 105 Apr 8 21:34 welcome.java
anjana@anjana-VirtualBox:~$ ls -l >> lsoutput.txt
anjana@anjana-VirtualBox:~$ cat lsoutput.txt
abc.txt
capital
complex.class
complex.java
cpmplex.java
cpu$Processor.class
cpu$Ram.class
cpu.class
cpu.java
dbms1
Desktop
dir1
dir2
Documents
Downloads
file1
group1
leapyear.class
leapyear.java
lsoutput.txt
matrix.class
matrix.java

```

12. Copy the file file1 to newfile.

- If newfile already exists, it should be replaced.
- If newfile already exists, it should not be replaced.
- If newfile already exists, it should be replaced, but only with the consent of the user.
- If newfile already exists, it should be replaced only if its contents is older than that of file1
- Even if newfile is read only.
- Create a link instead of copying.
- Copy the entire directory tree from dir1 of Qn.4 to a new directory dir5.

OUTPUT

- cp -f file1.txt newfile
- cp -n file1.txt newfile
- cp -i file1.txt newfile
- cp -u file1.txt newfile
- cp -f file1.txt newfile

```

anjana@anjana-VirtualBox:~$ cp -n file1.txt newfile
anjana@anjana-VirtualBox:~$ cp -i file1.txt newfile
cp: overwrite 'newfile'?
anjana@anjana-VirtualBox:~$ cp -u file1.txt newfile
anjana@anjana-VirtualBox:~$ cat newfile
hello
test file
anjana@anjana-VirtualBox:~$ cp -f file1.txt newfile
anjana@anjana-VirtualBox:~$ cat newfile
hello
test file
checking files
anjana@anjana-VirtualBox:~$

```

OUTPUT

- ln file1.txt newfile.txt
- cp -r dir1 dir5

```

anjana@anjana-VirtualBox:~$ cp -u file1.txt newfile
anjana@anjana-VirtualBox:~$ cat newfile
hello
test file
checking files
anjana@anjana-VirtualBox:~$ cp -f file1.txt newfile
anjana@anjana-VirtualBox:~$ ln file1.txt newfile
ln: failed to create hard link 'newfile': File exists
anjana@anjana-VirtualBox:~$ ln file1.txt newfile.txt
anjana@anjana-VirtualBox:~$ cp -r dir1 dir5
anjana@anjana-VirtualBox:~$ ls
abc.txt          Documents        odd.class        rectangle.java
capital          Downloads        odd.java         Rectangle.java
complex.class    file1           overload.class   snap
complex.java    file1.txt       Overload.class  state
cplex.java      file1.txt       overload.java    states
'cpu$Processor.class' group1         Pictures        symmetric.class
'cpu$Ram.class'  leapyear.class product.class    symmetric.java
cpu.class        leapyear.java  product.java     user1
cpu.java         lsoutput.txt   Public          user1.txt
dbms1           matrix.class   Rectangle.class  user1:user1

```

13. Create a new directory, dir6 inside dir1

- Move all files in dir5 into it.
- Delete all files where the name starts with a vowel character, upper or lower case.
- Delete all files where the name is at least 3 characters long.
- Delete all hidden folders, and files.

OUTPUT

- mkdir dir1/dir6
mv dir1/dir5/* dir1/dir6/
- cd dir1/dir6
rm[aeiouAEIOU]*
- find dir1/dir6 -type f -name "??*" -exec rm {} +
- find dir1/dir6 -type d -name ".*" -exec rm -r {} +
find dir1/dir6 -type f -name ".*" -exec rm {} +

```

anjana@anjana-VirtualBox:~$ mkdir dir1/dir6
anjana@anjana-VirtualBox:~$ ls -R dir1
dir1:
dir2  dir6

dir1/dir2:
dir3

dir1/dir2/dir3:

dir1/dir6:
anjana@anjana-VirtualBox:~$ mv dir1/dir5/*dir1/dir6/
mv: missing destination file operand after 'dir1/dir5/*dir1/dir6/'
Try 'mv --help' for more information.
anjana@anjana-VirtualBox:~$ ls dir1/dir6
anjana@anjana-VirtualBox:~$ cd dir1/dir6
anjana@anjana-VirtualBox:~/dir1/dir6$ rm[aeiouAEIOU]*
rm[aeiouAEIOU]*: command not found
anjana@anjana-VirtualBox:~/dir1/dir6$

```

14. Create a file testfile1 using Vim

- Set line number
- Type your name and address with district and pincode
- Copy paste the contents 10 times
- Replace all occurrence of your district with a neighbouring district.

OUTPUT

-> vim testfile1

a) In Vim command mode type “:set number”

b) Jeevan , 12B Skyline, Vazhuthakkadu, Trivandrum

c) Move the cursor to the end of the line, in command mode type ‘yy’
type ‘10p’

```
Jeevan, 12B Skyline Vazhuthakkadu, Trivndrum 68004
Jeevan, 12B Skyline Vazhuthakkadu, Trivndrum 68004
Jeevan, 12B Skyline Vazhuthakkadu, Trivndrum 68004
Jeevan, 12B Skyline Vazhuthakkadu, Trivndrum 68004
Jeevan, 12B Skyline Vazhuthakkadu, Trivndrum 68004
Jeevan, 12B Skyline Vazhuthakkadu, Trivndrum 68004
Jeevan, 12B Skyline Vazhuthakkadu, Trivndrum 68004
Jeevan, 12B Skyline Vazhuthakkadu, Trivndrum 68004
Jeevan, 12B Skyline Vazhuthakkadu, Trivndrum 68004
Jeevan, 12B Skyline Vazhuthakkadu, Trivndrum 68004
~
~
~
9 more lines                                     3,1      All
```

OUTPUT

d) In command mode “:%s/Trivandrum/Kollam/g”

```
Jeevan, 12B Skyline Vazhuthakkadu, Kollam 68004
jeevan, 12B Skyline Vazhuthakkadu, Kollam 68004
Jeevan, 12B Skyline Vazhuthakkadu, Kollam 68004
Jeevan, 12B Skyline Vazhuthakkadu, Kollam 68004
Jeevan, 12B Skyline Vazhuthakkadu, Kollam 68004
Jeevan, 12B Skyline Vazhuthakkadu, Kollam 68004
Jeevan, 12B Skyline Vazhuthakkadu, Kollam 68004
Jeevan, 12B Skyline Vazhuthakkadu, Kollam 68004
Jeevan, 12B Skyline Vazhuthakkadu, Kollam 68004
Jeevan, 12B Skyline Vazhuthakkadu, Kollam 68004
~
~
~
10 substitutions on 10 lines                       11,1      All
```

15. Create 2 files testfile2 and testfile3 using **Vim**.

a. Modify the permissions of testfile2 using symbolic mode.

i. Add read permission to others

ii. revoke write from owner

iii. set only execute to Group.

iv. add write to owner, revoke read from others and set read only to group.

- ## OUTPUT

```
ii)chmod u-w testfile2
```

```
anjana@anjana-VirtualBox:~$ chmod o+r testfile2
anjana@anjana-VirtualBox:~$ ls -l testfile2
-rw-rw-r-- 1 anjana anjana 0 May 12 20:24 testfile2
anjana@anjana-VirtualBox:~$ sudo chmod o+r testfile2
[sudo] password for anjana:
anjana@anjana-VirtualBox:~$ ls -l testfile2
-rw-rw-r-- 1 anjana anjana 0 May 12 20:24 testfile2
anjana@anjana-VirtualBox:~$ chmod u-w testfile2
anjana@anjana-VirtualBox:~$ ls -l testfile2
-r--rw-r-- 1 anjana anjana 0 May 12 20:24 testfile2
```

OUTPUT

- iii) `chmod g+x testfile2`
- iv) `chmod u+w testfile2`
- v) `chmod o-r testfile2`
- vi) `chmod g+r testfile2`
- vii) `chmod a+rw testfile2`

```

anjana@anjana-VirtualBox:~$ chmod g+x testfile2
anjana@anjana-VirtualBox:~$ ls -l testfile2
-r--rwxr-- 1 anjana anjana 0 May 12 20:24 testfile2
anjana@anjana-VirtualBox:~$ chmod u+w testfile2
anjana@anjana-VirtualBox:~$ ls -l testfile2
-rw-rwxr-- 1 anjana anjana 0 May 12 20:24 testfile2
anjana@anjana-VirtualBox:~$ chmod o-r testfile2
anjana@anjana-VirtualBox:~$ ls -l testfile2
-rw-rwx--- 1 anjana anjana 0 May 12 20:24 testfile2
anjana@anjana-VirtualBox:~$ chmod g+r testfile2
anjana@anjana-VirtualBox:~$ ls -l testfile2
-rw-rwx--- 1 anjana anjana 0 May 12 20:24 testfile2
anjana@anjana-VirtualBox:~$ chmod a+rw testfile2
anjana@anjana-VirtualBox:~$ ls -l testfile2
-rw-rwxrw- 1 anjana anjana 0 May 12 20:24 testfile2
anjana@anjana-VirtualBox:~$

```

OUTPUT

- b)
- chmod 666 testfile3
 - chmod 754 testfile3

```

anjana@anjana-VirtualBox:~$ chmod 666 testfile3
anjana@anjana-VirtualBox:~$ ls -l testfile3
-rw-rw-rw- 1 anjana anjana 0 May 12 20:32 testfile3
anjana@anjana-VirtualBox:~$ chmod 754 testfile3
anjana@anjana-VirtualBox:~$ ls -l testfile3
-rwxr-xr-- 1 anjana anjana 0 May 12 20:32 testfile3
anjana@anjana-VirtualBox:~$

```

OUTPUT

- c) chmod --reference=testfile3 testfile2

```

anjana@anjana-VirtualBox:~$ chmod --reference=testfile3 testfile2
anjana@anjana-VirtualBox:~$ ls -l testfile3
-rwxr-xr-- 1 anjana anjana 0 May 12 20:32 testfile3
anjana@anjana-VirtualBox:~$ ls -l testfile2
-rwxr-xr-- 1 anjana anjana 0 May 12 20:24 testfile2
anjana@anjana-VirtualBox:~$

```

16. Use **head** and **tail** piped with cat /etc/passwd to display the details of
- The first 12 users in the system.
 - The last 7 users in the system.
 - All but the first 3.
 - All but the last 5.
 - Only the 9 th.

OUTPUT

a) cat /etc/passwd | head -n 12

```
anjana@anjana-VirtualBox:~$ cat /etc/passwd | head -n 12
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/bin/sync
games:x:5:60:games:/usr/games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
anjana@anjana-VirtualBox:~$
```

OUTPUT

b) cat /etc/passwd | tail -n 7

```
anjana@anjana-VirtualBox:~$ cat /etc/passwd | tail -n 7
geoclue:x:123:130::/var/lib/geoclue:/usr/sbin/nologin
pulse:x:124:131:PulseAudio daemon,,,:/run/pulse:/usr/sbin/nologin
gnome-initial-setup:x:125:65534::/run/gnome-initial-setup:/bin/false
hplip:x:126:7:HPLIP system user,,,:/run/hplip:/bin/false
gdm:x:127:133:Gnome Display Manager:/var/lib/gdm3:/bin/false
anjana:x:1000:1000:Anjana M B,,,:/home/anjana:/bin/bash
mysql:x:128:136:MySQL Server,,,:/nonexistent:/bin/false
anjana@anjana-VirtualBox:~$
```

OUTPUT

c)cat /etc/passwd | tail -n +4

```
anjana@anjana-VirtualBox:~$ cat /etc/passwd | tail -n+4
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/bin/sync
games:x:5:60:games:/usr/games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin
irc:x:39:39:ircd:/run/ircd:/usr/sbin/nologin
gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologin
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
systemd-network:x:100:102:systemd Network Management,,,:/run/systemd:/usr/sbin/nologin
```

OUTPUT

d)cat /etc/passwd | head -n -5

```
r:/usr/sbin/nologin
rtkit:x:116:123:RealtimeKit,,,:/proc:/usr/sbin/nologin
whoopsie:x:117:124::/nonexistent:/bin/false
sssd:x:118:125:SSSD system user,,,:/var/lib/sss:/usr/sbin/nologin
speech-dispatcher:x:119:29:Speech Dispatcher,,,:/run/speech-dispatcher:/bin/false
nm-openvpn:x:120:126:NetworkManager OpenVPN,,,:/var/lib/openvpn/chroot:/usr/sbin/nologin
saned:x:121:128::/var/lib/saned:/usr/sbin/nologin
colord:x:122:129:colord colour management daemon,,,:/var/lib/colord:/usr/sbin/nologin
geoclue:x:123:130::/var/lib/geoclue:/usr/sbin/nologin
pulse:x:124:131:PulseAudio daemon,,,:/run/pulse:/usr/sbin/nologin
gnome-initial-setup:x:125:65534::/run/gnome-initial-setup:/bin/false
hplip:x:126:7:HPLIP system user,,,:/run/hplip:/bin/false
gdm:x:127:133:Gnome Display Manager:/var/lib/gdm3:/bin/false
anjana:x:1000:1000:Anjana M B,,,:/home/anjana:/bin/bash
mysql:x:128:136:MySQL Server,,,:/nonexistent:/bin/false
```

OUTPUT

e)cat /etc/passwd | head -n 9 | tail -n 1

```
anjana@anjana-VirtualBox:~$ cat /etc/passwd | head -n 9|tail -n 1
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
anjana@anjana-VirtualBox:~$
```

17.Use grep to

a.Display all lines in a file that contains the string “abc”

b.Display all lines in a file that does not contain the string “abc”

OUTPUT

a) grep “abc” /home/anjana/new.txt

b) grep -v “abc” /home/anjana/new.txt

```
anjana@anjana-VirtualBox:~$ grep "abc" /home/anjana/new.txt
abc
anjana@anjana-VirtualBox:~$ grep -v "abc" /home/anjana/new.txt
HELLO
WORLD
WELCOME
HI
hello
anjana@anjana-VirtualBox:~$
```

18. Using **expr**

a.Read two integers X and Y. Display the sum, difference, product, quotient and remainder of these variables.

b.Read a string, S, a position, p and a length l. Display the substring of length l starting at position p from the string S

OUTPUT

a)echo “Enter the value of X:”

read X

echo “Enter the value of Y:”

read Y

sum=`expr \$X + \$Y`

Echo “Sum : \$sum”

diff=`expr \$X - \$y`

Echo “Difference : \$diff”


```
prod='expr $X \* $Y'
echo "Product : $prod"
```

```
quot='expr $X / $Y'
echo "Quotient: $quot"
```

```
rem='expr $X % $Y'
echo "Remainder: $rem"
```

```
lab@lab-Lenovo-IdeaPad-Z400:~/dir1/dir6/dir5/dir2$ read -p "enter two numbers: " x y
enter two numbers: 12 5
lab@lab-Lenovo-IdeaPad-Z400:~/dir1/dir6/dir5/dir2$ echo "sum is : `expr $x + $y`"
sum is : 17
lab@lab-Lenovo-IdeaPad-Z400:~/dir1/dir6/dir5/dir2$ echo "Difference is : `expr $x - $y`"
Difference is : 7
lab@lab-Lenovo-IdeaPad-Z400:~/dir1/dir6/dir5/dir2$ echo "Product is : `expr $x \* $y`"
Product is : 60
lab@lab-Lenovo-IdeaPad-Z400:~/dir1/dir6/dir5/dir2$ echo "Quotient is : `expr $x / $y`"
Quotient is : 2
lab@lab-Lenovo-IdeaPad-Z400:~/dir1/dir6/dir5/dir2$ echo "Reminder is : `expr $x % $y`"
Reminder is : 2
```

OUTPUT

```
b) echo "Enter a string:"
read s
echo "Enter the starting position:"
read p
```

```
echo "Enter the length of substring:"
read l
substr='expr substr "$s" $p $l'
echo "Substring: $substr"
```

```
lab@lab-Lenovo-IdeaPad-Z400:~/dir1/dir6/dir5/dir2$ read -p "enter a string: " s
enter a string: notebook
lab@lab-Lenovo-IdeaPad-Z400:~/dir1/dir6/dir5/dir2$ read -p "enter the position: " p
enter the position: 5
lab@lab-Lenovo-IdeaPad-Z400:~/dir1/dir6/dir5/dir2$ read -p "enter the length: " l
enter the length: 4
lab@lab-Lenovo-IdeaPad-Z400:~/dir1/dir6/dir5/dir2$ echo "Substring: `expr substr $s $p $l`"
Substring: book
```

19.

- a. Add a normal user, user1. Create (if it does not exist) the folder /user1 and set /user1 as the home directory of user1. Also set /bin/bash as the login shell (Use a single command).
- b. Modify the user account of user1, to expire it after a specific date.
- c. Change the owner and group of the directory tree from dir2 and all its contents to user1
- d. Delete the user account user1
 - i. By retaining the home folder
 - ii. By deleting the home folder

OUTPUT

a.sudo useradd -m -d /user1 -s /bin/bash user1

```
lab@lab-Lenovo-IdeaPad-Z400:/home$ sudo useradd -s /bin/bash -m -d /home/u_ser1 u_ser1
lab@lab-Lenovo-IdeaPad-Z400:/home$ sudo chage -l u_ser1
Last password change                : May 08, 2022
Password expires                    : never
Password inactive                   : never
Account expires                     : never
Minimum number of days between password change : 0
Maximum number of days between password change : 99999
Number of days of warning before password expires : 7
lab@lab-Lenovo-IdeaPad-Z400:/home$ chage -E 2022-05-10 u_ser1
chage: Permission denied.
lab@lab-Lenovo-IdeaPad-Z400:/home$ sudo chage -E 2022-05-10 u_ser1
lab@lab-Lenovo-IdeaPad-Z400:/home$ sudo chage -l u_ser1
Last password change                : May 08, 2022
Password expires                    : never
Password inactive                   : never
Account expires                     : May 10, 2022
Minimum number of days between password change : 0
Maximum number of days between password change : 99999
Number of days of warning before password expires : 7
lab@lab-Lenovo-IdeaPad-Z400:/home$ sudo chown -R u_ser1:u_ser1 dir2
chown: cannot access 'dir2': No such file or directory
lab@lab-Lenovo-IdeaPad-Z400:/home$ sudo chown -R u_ser1:u_ser1 /home/lab/dir1/dir2
```

OUTPUT

b.sudo chage -E YYYY-MM-DD user1

```
lab@lab-Lenovo-IdeaPad-Z400:~/dir1/dir2$ cd ..
lab@lab-Lenovo-IdeaPad-Z400:~/dir1$ ls -l
total 32
-rw-rw-r-- 1 lab    lab      9 Apr 25 21:46 a1.txt
drwxrwxrwx 3 u_ser1 u_ser1 4096 May  7 20:10 dir2
drwxrwxr-x 2 lab    lab     4096 Apr 21 20:25 dir4
drwxrwxr-x 4 lab    lab     4096 May  7 23:41 dir6
-rw-rw-r-- 1 lab    lab      24 Apr 25 21:03 F1
-rw-rw-r-- 1 lab    lab      15 Apr 25 21:04 F2
-rw-rw-r-- 1 lab    lab      15 Apr 25 21:05 F3
-rw-rw-r-- 1 lab    lab     242 Apr 25 22:25 palindrome.py
-rw-rw-r-- 1 lab    lab       0 Apr 25 20:08 sample
lab@lab-Lenovo-IdeaPad-Z400:~/dir1$ cd dir2
lab@lab-Lenovo-IdeaPad-Z400:~/dir1/dir2$ ls -l
total 24
drwxrwxr-x 2 u_ser1 u_ser1 4096 May  7 20:10 dir3
-rw-rw-r-- 1 u_ser1 u_ser1 3165 May  6 20:02 out2.txt
-rw-rw-r-- 1 u_ser1 u_ser1  470 May  7 19:20 result
-rw-rw-r-- 1 u_ser1 u_ser1 3521 Mar 12 13:03 set.c
-rw-rw-r-- 1 u_ser1 u_ser1   89 Apr 25 23:14 testfile
-rw-rw-r-- 1 u_ser1 u_ser1   13 Apr 25 23:02 testfile1
```

OUTPUT

c. sudo chown -R user1:user1 /path/to/dir2

d i.sudo userdel -r user1

```
lab@lab-Lenovo-IdeaPad-Z400:~$ sudo userdel u_ser1
```

OUTPUT

ii.sudo userdel -r -f user1.

```
lab@lab-Lenovo-IdeaPad-Z400:~$ sudo userdel -r u_ser1
```

20. Miscellaneous

a.Using **tar** create a tar.gz file of the folder dir1 of Qn.4 with the name *mydir.tar.gz*

i.Extract the contents of *mydir.tar.gz* to dir6 of Qn.14

ii.Use **top** to display processes sorted on

a.ProcessId

b.CPU%

b.Use **ps** to display

i.Processes associated with the current terminal

ii.All processes in the system

c.Use **df**to display the storage available in each partition in human readable form.

OUTPUT

a i) tar -czvf mydir.tar.gz dir1

tar -xzvf mydir.tar.gz -C dir1/dir6

```
anjana@anjana-VirtualBox:~$ tar -czvf mydir.tar.gz dir1
dir1/
dir1/dir6/
dir1/dir2/
dir1/dir2/dir3/
anjana@anjana-VirtualBox:~$ tar -xzvf mydir.tar.gz -C dir1/dir6
tar (child): mydir.tar.gz-C: Cannot open: No such file or directory
tar (child): Error is not recoverable: exiting now
tar: Child returned status 2
tar: Error is not recoverable: exiting now
anjana@anjana-VirtualBox:~$ tar -xzvf mydir.tar.gz -C dir1/dir6
dir1/
dir1/dir6/
dir1/dir2/
dir1/dir2/dir3/
anjana@anjana-VirtualBox:~$
```

ii a)top -o PID

```
top - 21:47:30 up 31 min, 1 user, load average: 0.44, 0.52, 0.44
Tasks: 204 total, 1 running, 202 sleeping, 1 stopped, 0 zombie
%Cpu(s): 0.5 us, 1.6 sy, 0.0 ni, 97.5 id, 0.1 wa, 0.0 hi, 0.3 si, 0.0 st
MiB Mem : 4927.3 total, 2985.4 free, 1086.0 used, 855.8 buff/cache
MiB Swap: 2824.0 total, 2824.0 free, 0.0 used, 3602.4 avail Mem
```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
862	mysql	20	0	2381428	393192	35488	S	2.3	7.8	0:43.05	mysqld
1517	anjana	20	0	5080752	350200	122804	S	2.0	6.9	1:02.97	gnome-+
166	root	0	-20	0	0	0	I	1.0	0.0	0:01.84	kworke+
322	root	20	0	0	0	0	I	0.3	0.0	0:02.41	kworke+
506	systemd+	20	0	14824	6144	5352	S	0.3	0.1	0:04.21	systemd
608	syslog	20	0	222400	5552	4468	S	0.3	0.1	0:01.36	rsyslo+
1361	anjana	20	0	17972	10756	8116	S	0.3	0.2	0:06.37	systemd
1666	anjana	20	0	323652	11924	7096	S	0.3	0.2	0:03.47	ibus-d+
1	root	20	0	166752	11964	8316	S	0.0	0.2	0:02.97	systemd
2	root	20	0	0	0	0	S	0.0	0.0	0:00.05	kthrea+
3	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	rcu_gp
4	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	rcu_pa+
5	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	netns
7	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworke+
10	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	mm_per+
11	root	20	0	0	0	0	S	0.0	0.0	0:00.00	rcu_ta+
12	root	20	0	0	0	0	S	0.0	0.0	0:00.00	rcu_ta+
13	root	20	0	0	0	0	S	0.0	0.0	0:00.23	ksoftl+
14	root	20	0	0	0	0	I	0.0	0.0	0:02.93	rcu_sc+

ii b) top -o %CPU

```
top - 21:47:30 up 31 min, 1 user, load average: 0.44, 0.52, 0.44
Tasks: 204 total, 1 running, 202 sleeping, 1 stopped, 0 zombie
%Cpu(s): 0.5 us, 1.6 sy, 0.0 ni, 97.5 id, 0.1 wa, 0.0 hi, 0.3 si, 0.0 st
MiB Mem : 4927.3 total, 2985.4 free, 1086.0 used, 855.8 buff/cache
MiB Swap: 2824.0 total, 2824.0 free, 0.0 used, 3602.4 avail Mem
```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
862	mysql	20	0	2381428	393192	35488	S	2.3	7.8	0:43.05	mysqld
1517	anjana	20	0	5080752	350200	122804	S	2.0	6.9	1:02.97	gnome-+
166	root	0	-20	0	0	0	I	1.0	0.0	0:01.84	kworke+
322	root	20	0	0	0	0	I	0.3	0.0	0:02.41	kworke+
506	systemd+	20	0	14824	6144	5352	S	0.3	0.1	0:04.21	systemd
608	syslog	20	0	222400	5552	4468	S	0.3	0.1	0:01.36	rsyslo+
1361	anjana	20	0	17972	10756	8116	S	0.3	0.2	0:06.37	systemd
1666	anjana	20	0	323652	11924	7096	S	0.3	0.2	0:03.47	ibus-d+
1	root	20	0	166752	11964	8316	S	0.0	0.2	0:02.97	systemd
2	root	20	0	0	0	0	S	0.0	0.0	0:00.05	kthrea+
3	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	rcu_gp
4	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	rcu_pa+
5	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	netns
7	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworke+
10	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	mm_per+
11	root	20	0	0	0	0	S	0.0	0.0	0:00.00	rcu_ta+
12	root	20	0	0	0	0	S	0.0	0.0	0:00.00	rcu_ta+
13	root	20	0	0	0	0	S	0.0	0.0	0:00.23	ksoftl+
14	root	20	0	0	0	0	I	0.0	0.0	0:02.93	rcu_sc+

b)

i)ps -t \$(tty)

```
anjana@anjana-VirtualBox:~$ ps -t $(tty)
  PID TTY          TIME CMD
 25283 pts/1        00:00:00 bash
 27845 pts/1        00:00:00 top
 29497 pts/1        00:00:00 ps
anjana@anjana-VirtualBox:~$
```

b

ii)ps aux

```
anjana 1848 0.0 0.2 351000 13772 ? SL 21:16 0:00 /usr/libexec
anjana 1854 0.0 0.1 172128 7304 ? SL 21:16 0:01 /usr/libexec
anjana 1870 0.0 0.2 632432 13728 ? Ssl 21:16 0:00 /usr/libexec
anjana 1874 0.0 0.5 384248 28448 ? Ssl 21:16 0:00 /usr/libexec
anjana 1913 0.0 0.5 2677808 28004 ? SL 21:16 0:00 /usr/bin/gjs
anjana 1963 0.0 0.4 352568 24656 ? Ssl 21:16 0:00 /usr/libexec
anjana 1978 0.0 0.1 171668 6516 ? Ssl 21:16 0:00 /usr/libexec
anjana 2102 0.3 1.0 562844 53140 ? Rsl 21:16 0:06 /usr/libexec
anjana 2120 0.0 0.1 19788 5304 pts/0 Ss+ 21:16 0:00 bash
root 2348 0.0 0.0 0 0 ? I 21:16 0:00 [kworker/2:4
anjana 2847 0.0 0.6 502760 30292 ? SL 21:17 0:00 update-notif
root 13104 0.0 0.0 0 0 ? I 21:29 0:00 [kworker/1:1
root 14408 0.0 0.0 0 0 ? I 21:30 0:00 [kworker/3:0
root 15007 0.0 0.0 0 0 ? I 21:31 0:00 [kworker/0:0
root 20085 0.1 0.0 0 0 ? I 21:37 0:00 [kworker/u8:
root 24894 0.2 0.0 0 0 ? R 21:43 0:00 [kworker/u8:
root 24995 0.0 0.0 0 0 ? I 21:43 0:00 [kworker/1:0
root 25042 0.0 0.0 0 0 ? I 21:43 0:00 [kworker/2:0
anjana 25145 0.3 1.1 2797340 58096 ? SL 21:43 0:01 gjs /usr/sha
anjana 25283 0.0 0.1 19788 5280 pts/1 Ss 21:43 0:00 bash
root 27406 0.4 0.0 0 0 ? I 21:46 0:00 [kworker/0:1
anjana 27845 0.0 0.0 21732 3948 pts/1 T 21:46 0:00 top -o PID
root 29569 0.0 0.0 0 0 ? I 21:48 0:00 [kworker/u8:
root 29793 0.1 0.0 0 0 ? I 21:48 0:00 [kworker/1:2
anjana 29919 0.0 0.0 21324 1604 pts/1 R+ 21:49 0:00 ps aux
```

c) df -h

```
anjana@anjana-VirtualBox:~$ df -h
Filesystem      Size  Used Avail Use% Mounted on
tmpfs           493M  1.5M  492M   1% /run
/dev/sda3       31G   15G   16G  49% /
tmpfs           2.5G    0  2.5G   0% /dev/shm
tmpfs           5.0M  4.0K  5.0M   1% /run/lock
/dev/sda2       512M  5.3M  507M   2% /boot/efi
tmpfs           493M 100K  493M   1% /run/user/1000
anjana@anjana-VirtualBox:~$
```