Experiment No. 1

Aim- Explore the internal commands of linux and Write shell scripts to do the following:

1. Display top 10 processes in descending order

onworks@onworks-Standard-PC-i440FX-PIIX-1996:~$ echo "top 10 processes in descending order"

top 10 processes in descending order

onworks@onworks-Standard-PC-i440FX-PIIX-1996:~$ ps axl | head -n 10

```
F   UID   PID  PPID PRI  NI    VSZ    RSS WCHAN  STAT TTY        TIME COMMAND
4     0     1     0  20   0  25084  5032 -      Ss   ?          0:02 /sbin/init splash
1     0     2     0  20   0      0     0 -      S    ?          0:00 [kthreadd]
1     0     3     2  20   0      0     0 -      I    ?          0:00 [kworker/0:0]
1     0     4     2   0 -20      0     0 -      I<   ?          0:00 [kworker/0:0H]
1     0     6     2   0 -20      0     0 -      I<   ?          0:00 [mm_percpu_wq]
1     0     7     2  20   0      0     0 -      S    ?          0:00 [ksoftirqd/0]
1     0     8     2  20   0      0     0 -      I    ?          0:03 [rcu_sched]
1     0     9     2  20   0      0     0 -      I    ?          0:00 [rcu_bh]
      1       0    10     2 -100  -      0     0 -      S    ?          0:00 [migration/0]
```

2. Display processes with highest memory usage.

onworks@onworks-Standard-PC-i440FX-PIIX-1996:~$ ps -eo pid,ppid,cmd,%mem,%cpu --sort=%mem |head

```
 PID  PPID CMD                         %MEM %CPU
    2     0 [kthreadd]                  0.0  0.0
    3     2 [kworker/0:0]               0.0  0.0
    4     2 [kworker/0:0H]              0.0  0.0
    6     2 [mm_percpu_wq]              0.0  0.0
    7     2 [ksoftirqd/0]               0.0  0.0
    8     2 [rcu_sched]                 0.0  1.1
    9       2 [rcu_bh]                  0.0  0.0
```

3. Display current logged in user and no. of users

onworks@onworks-Standard-PC-i440FX-PIIX-1996:~$ who –u

```
onworks  tty7         2019-08-30 19:49  old         830 (:0)
```

onworks@onworks-Standard-PC-i440FX-PIIX-1996:~$ who -u | wc -l
1

4. Display current shell, home directory, operating system type, current working directory.

onworks@onworks-Standard-PC-i440FX-PIIX-1996:~$ whoami
onworks

onworks@onworks-Standard-PC-i440FX-PIIX-1996:~$ uname
Linux

onworks@onworks-Standard-PC-i440FX-PIIX-1996:~$ pwd
/home/onworks

onworks@onworks-Standard-PC-i440FX-PIIX-1996:~$ uname
Linux

5. Display OS version, release number.

onworks@onworks-Standard-PC-i440FX-PIIX-1996:~$ uname -a

Linux onworks-Standard-PC-i440FX-PIIX-1996 4.15.0-50-generic #54~16.04.1-Ubuntu SMP Wed May 8 15:50:20 UTC 2019 i686 i686 i686 GNU/Linux

onworks@onworks-Standard-PC-i440FX-PIIX-1996:~$ uname -r

4.15.0-50-generic

6. Illustrate the use of sort, grep, awk, etc

onworks@onworks-Standard-PC-i440FX-PIIX-1996:~$ cat > abc
orage
kiwi
grapes
mangoes

onworks@onworks-Standard-PC-i440FX-PIIX-1996:~$ ls
abc Documents examples.desktop Pictures Templates
Desktop Downloads Music Public Videos

onworks@onworks-Standard-PC-i440FX-PIIX-1996:~$ sort abc
grapes
kiwi
mangoes
orage

onworks@onworks-Standard-PC-i440FX-PIIX-1996:~$ sort abc>lmn.txt

onworks@onworks-Standard-PC-i440FX-PIIX-1996:~$ ls
abc Documents examples.desktop Music Public Videos
Desktop Downloads lmn.txt Pictures Templates

onworks@onworks-Standard-PC-i440FX-PIIX-1996:~$ cat lmn.txt
grapes
kiwi
mangoes
orage

onworks@onworks-Standard-PC-i440FX-PIIX-1996:~$ awk '{print $1 "\t" $2}' abc
orage
kiwi
grapes
mangoes

Experiment No. 2

Aim- System calls for file manipulation

Problem Statement –
Try different file manipulation operations provided by linux

1. **pwd Command**

pwd, short for the print working directory, is a command that prints out the current working directory in a hierarchical order, beginning with the topmost root directory (/).

To check your current working directory, simply invoke the pwd command as shown.

$ pwd

2. **mkdir Command**

You might have wondered how we created the tutorials directory. Well, it's pretty simple. To create a new directory use the mkdir (make directory) command as follows:

$ mkdir directory_name

3. **ls Command**

The ls command is a command used for listing existing files or folders in a directory. For example, to list all the contents in the home directory, we will run the command.

$ ls

4. **cd Command**

To change or navigate directories, use the cd command which is short for change directory.

For instance, to navigate to particular directory run the command:

$ cd directory_name

To go a directory up append two dots or periods in the end.

$ cd ..

To go back to the home directory run the cd command without any arguments.

$ cd

5. **rmdir Command**

The rmdir command deletes an empty directory. For example, to delete or remove the tutorials directory, run the command:

$ rmdir tutorials

6. **touch Command**

The touch command is used for creating simple files on a Linux system. To create a file, use the syntax:

$ touch filename
For example, to create a file1.txt file, run the command:
$ touch file1.txt

7. **cat Command**

To view the contents of a file, use the cat command as follows:
$ cat filename

8. **mv Command**

The mv command is quite a versatile command. Depending on how it is used, it can rename a file or move it from one location to another.

To move the file, use the syntax below:

$ mv filename /path/to/destination/

9. **cp Command**

The cp command, short for copy, copies a file from one file location to another. Unlike the move command, the cp command retains the original file in its current location and makes a duplicate copy in a different directory.

The syntax for copying a file is shown below.

$ cp /file/path /destination/path

10. **Deleting a File**

rm command could be used to delete a file. It will remove the filename file from the directory.

$rm filename

Also try the following commands

Directory and file commands

cd /home	enter to directory '/ home' [man]
# cd ..	go back one level [man]
# cd ../..	go back two levels [man]
# cd	go to home directory [man]
# cd ~user1	go to home directory [man]
# cd -	go to previous directory [man]
# cp file1 file2	copying a file [man]
# cp dir/* .	copy all files of a directory within the current work directory [man]
# cp -a /tmp/dir1 .	copy a directory within the current work directory [man]
# cp -a dir1 dir2	copy a directory [man]
# cp file file1	outputs the mime type of the file as text [man]
# iconv –l	lists known encodings [man]
# iconv -f fromEncoding -t toEncoding inputFile > outputFile	converting the coding of characters from one format to another [man]
# find . -maxdepth 1 -name *.jpg -print -exec convert	batch resize files in the current directory and send them to a thumbnails directory (requires convert from Imagemagick) [man]
# ln -s file1 lnk1	create a symbolic link to file or directory [man]
# ln file1 lnk1	create a physical link to file or directory [man]
# ls	view files of directory [man]
# ls –F	view files of directory [man]
# ls –l	show details of files and directory [man]
# ls –a	show hidden files [man]
# ls *[0-9]*	show files and directory containing numbers [man]
# lstree	show files and directories in a tree starting from root(2) [man]
# mkdir dir1	create a directory called 'dir1' [man]
# mkdir dir1 dir2	create two directories simultaneously [man]
# mkdir -p /tmp/dir1/dir2	create a directory tree [man]

# mv dir1 new_dir	rename / move a file or directory [man]
# pwd	show the path of work directory [man]
# rm -f file1	delete file called 'file1' [man]
# rm -rf dir1	remove a directory called 'dir1' and contents recursively [man]
# rm -rf dir1 dir2	remove two directories and their contents recursively [man]
# rmdir dir1	delete directory called 'dir1' [man]
# touch -t 0712250000 file1	modify timestamp of a file or directory - (YYMMDDhhmm) [man]
# tree	show files and direct