**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

1. 2 [rcu\_bh] 0.0 0.0
2. 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

1. 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

1. 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

1. 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**

1. **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**

1. **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**

1. **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**

1. **rmdir Command**

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

**$ rmdir tutorials**

1. **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**

1. **cat Command**

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

$ cat filename

1. **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/**

1. **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**

1. **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](http://www.linuxguide.it/command_line/linux-manpage/do.php?file=cd)] |
| # cd .. | go back one level   [[man](http://www.linuxguide.it/command_line/linux-manpage/do.php?file=cd)] |
| # cd ../.. | go back two levels   [[man](http://www.linuxguide.it/command_line/linux-manpage/do.php?file=cd)] |
| # cd | go to home directory   [[man](http://www.linuxguide.it/command_line/linux-manpage/do.php?file=cd)] |
| # cd ~user1 | go to home directory   [[man](http://www.linuxguide.it/command_line/linux-manpage/do.php?file=cd)] |
| # cd - | go to previous directory   [[man](http://www.linuxguide.it/command_line/linux-manpage/do.php?file=cd)] |
| # cp file1 file2 | copying a file   [[man](http://www.linuxguide.it/command_line/linux-manpage/do.php?file=cp)] |
| # cp dir/\* . | copy all files of a directory within the current work directory   [[man](http://www.linuxguide.it/command_line/linux-manpage/do.php?file=cp)] |
| # cp -a /tmp/dir1 . | copy a directory within the current work directory   [[man](http://www.linuxguide.it/command_line/linux-manpage/do.php?file=cp)] |
| # cp -a dir1 dir2 | copy a directory   [[man](http://www.linuxguide.it/command_line/linux-manpage/do.php?file=cp)] |
| # cp file file1 | outputs the mime type of the file as text   [[man](http://www.linuxguide.it/command_line/linux-manpage/do.php?file=file)] |
| # iconv –l | lists known encodings   [[man](http://www.linuxguide.it/command_line/linux-manpage/do.php?file=iconv)] |
| # iconv -f fromEncoding -t toEncoding inputFile > outputFile | converting the coding of characters from one format to another   [[man](http://www.linuxguide.it/command_line/linux-manpage/do.php?file=iconv)] |
| # 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](http://www.linuxguide.it/command_line/linux-manpage/do.php?file=iconv)] |
| # ln -s file1 lnk1 | create a symbolic link to file or directory   [[man](http://www.linuxguide.it/command_line/linux-manpage/do.php?file=ln)] |
| # ln file1 lnk1 | create a physical link to file or directory   [[man](http://www.linuxguide.it/command_line/linux-manpage/do.php?file=ln)] |
| # ls | view files of directory   [[man](http://www.linuxguide.it/command_line/linux-manpage/do.php?file=ls)] |
| # ls –F | view files of directory   [[man](http://www.linuxguide.it/command_line/linux-manpage/do.php?file=ls)] |
| # ls –l | show details of files and directory   [[man](http://www.linuxguide.it/command_line/linux-manpage/do.php?file=ls)] |
| # ls –a | show hidden files   [[man](http://www.linuxguide.it/command_line/linux-manpage/do.php?file=ls)] |
| # ls \*[0-9]\* | show files and directory containing numbers   [[man](http://www.linuxguide.it/command_line/linux-manpage/do.php?file=ls)] |
| # lstree | show files and directories in a tree starting from root(2)   [[man](http://www.linuxguide.it/command_line/linux-manpage/do.php?file=lstree)] |
| # mkdir dir1 | create a directory called 'dir1'   [[man](http://www.linuxguide.it/command_line/linux-manpage/do.php?file=mkdir)] |
| # mkdir dir1 dir2 | create two directories simultaneously   [[man](http://www.linuxguide.it/command_line/linux-manpage/do.php?file=mkdir)] |
| # mkdir -p /tmp/dir1/dir2 | create a directory tree   [[man](http://www.linuxguide.it/command_line/linux-manpage/do.php?file=mkdir)] |
| # mv dir1 new\_dir | rename / move a file or directory   [[man](http://www.linuxguide.it/command_line/linux-manpage/do.php?file=mv)] |
| # pwd | show the path of work directory   [[man](http://www.linuxguide.it/command_line/linux-manpage/do.php?file=pwd)] |
| # rm -f file1 | delete file called 'file1'   [[man](http://www.linuxguide.it/command_line/linux-manpage/do.php?file=rm)] |
| # rm -rf dir1 | remove a directory called 'dir1' and contents recursively   [[man](http://www.linuxguide.it/command_line/linux-manpage/do.php?file=rm)] |
| # rm -rf dir1 dir2 | remove two directories and their contents recursively   [[man](http://www.linuxguide.it/command_line/linux-manpage/do.php?file=rm)] |
| # rmdir dir1 | delete directory called 'dir1'   [[man](http://www.linuxguide.it/command_line/linux-manpage/do.php?file=rmdir)] |
| # touch -t 0712250000 file1 | modify timestamp of a file or directory - (YYMMDDhhmm)   [[man](http://www.linuxguide.it/command_line/linux-manpage/do.php?file=touch)] |
| # tree | show files and direct |