Name:	Prerna Sunil Jadhav
Sap Id:	60004220127
Class:	S. Y. B.Tech (Computer Engineering)
Course:	Operating System Laboratory
Course Code:	DJ19CEL403
Experiment No.:	01

AIM: **EXPLORE THE INTERNAL COMMANDS OF LINUX**

THEORY:
A Linux command is a program or utility that runs on the command line. A command line is an interface that accepts lines of text and processes them into instructions for your computer.

CODE / OUTPUT:
Q. Write shell scripts to do the following

1. Display Top 10 processes in descending order
   - **ps** is a Linux command-line utility with many options that helps you to display output in different formats.
   - To limit the number of processes shown to 10, we pipe the output to the **head** command.

```
student@ubuntu: ~
student@ubuntu:~$ echo " Top 10 Process in descending order "
 Top 10 Process in descending order
student@ubuntu:~$ ps axl | head -n 10
F   UID     PID    PPID PRI  NI    VSZ   RSS WCHAN  STAT TTY        TIME COMMAND
4     0       1       0  20   0  33784  3108 -      Ss   ?          0:01 /sbin/init
1     0       2       0  20   0      0     0 -      S    ?          0:00 [kthreadd]
1     0       3       2  20   0      0     0 -      S    ?          0:00 [ksoftirqd/0]
1     0       5       2   0 -20      0     0 -      S<   ?          0:00 [kworker/0:0H]
1     0       7       2  20   0      0     0 -      S    ?          0:00 [rcu_sched]
1     0       8       2  20   0      0     0 -      S    ?          0:00 [rcu_bh]
1     0       9       2 -100  -      0     0 -      S    ?          0:00 [migration/0]
5     0      10       2 -100  -      0     0 -      S    ?          0:00 [watchdog/0]
5     0      11       2  20   0      0     0 -      S    ?          0:00 [kdevtmpfs]
student@ubuntu:~$
```

2. Display process with highest memory usage
   - The '**ps'** command is used to report a snapshot of the current processes. The 'ps' command stands for process status.
   - You can use the ps command with **--sort** argument to sort the output by memory and CPU usage.

```
student@ubuntu: ~
student@ubuntu:~$ echo "Display process with highest memory usage"
Display process with highest memory usage
student@ubuntu:~$ ps -eo pid,ppid,cmd,%mem,%cpu --sort=%mem | head
   PID    PPID CMD                         %MEM %CPU
     2       0 [kthreadd]                    0.0  0.0
     3       2 [ksoftirqd/0]                 0.0  0.0
     5       2 [kworker/0:0H]                0.0  0.0
     7       2 [rcu_sched]                   0.0  0.0
     8       2 [rcu_bh]                      0.0  0.0
     9       2 [migration/0]                 0.0  0.0
    10       2 [watchdog/0]                  0.0  0.0
    11       2 [kdevtmpfs]                   0.0  0.0
    12       2 [netns]                       0.0  0.0
student@ubuntu:~$
```

3. Display current logged in user and log name.
   - **who** command is a tool print information about users who are currently logged in. who command only see a real user who

```
student@ubuntu: ~
student@ubuntu:~$ who -u
student  :0           2023-02-23 01:47   ?          1708 (:0)
student  pts/8        2023-02-23 01:48   .          2348 (:0)
student@ubuntu:~$ who -u | wc -l
2
```

4. Display current shell, home directory, operating system type, current path setting, current working directory.
   - **whoami** displays the username of the current user when this command is invoked.
   - The **uname** command writes to standard output the name of the operating system that you are using.
   - The **pwd** command writes to standard output the full path name of your current directory (from the root directory).

```
student@ubuntu: ~
student@ubuntu:~$ who -u
student  :0           2023-02-23 01:47   ?          1708 (:0)
student  pts/8        2023-02-23 01:48   .          2348 (:0)
student@ubuntu:~$ who -u | wc -l
2
student@ubuntu:~$ whoami
student
student@ubuntu:~$ uname
Linux
student@ubuntu:~$ pwd
/home/student
```

5. Display OS version, release number, kernel version
   - **uname -a** print all information, in the following order
   - **uname -r** print the kernel release

```
student@ubuntu: ~
student@ubuntu:~$ uname -a
Linux ubuntu 4.4.0-142-generic #168~14.04.1-Ubuntu SMP Sat Jan 19 11:26:28 UTC 2019 x86_64 x86_64 x86_64 GNU/Linux
student@ubuntu:~$ uname -r
4.4.0-142-generic
student@ubuntu:~$
```

6. Illustrate the use of sort, grep, awk, etc
   - **sort** command is used to sort a file, arranging the records in a particular order.
   - The **awk** command is used for text processing in Linux.

```
student@ubuntu: ~
student@ubuntu:~$ cat > fruits
oranges
banana
apple
grapes
mangoes
student@ubuntu:~$ sort fruits
apple
banana
grapes
mangoes
oranges
student@ubuntu:~$ sort fruits>abc
student@ubuntu:~$ ls
abc         Downloads         file3     meetpatel.txt                os11.txt~    Pictures  Templates
abc~        examples.desktop  file.txt  Music                        os12         pqr       test.txt
abc.txt     exp2.png          fruits    nam_1.15-10-ubuntu14_amd64.deb os_file       Public    Videos
Desktop     file1             home      os1                          os_file.txt  sample
Documents   file2             lmn.txt   os112.txt~                   Os_file.txt  student
student@ubuntu:~$ cat abc
apple
banana
grapes
mangoes
oranges
student@ubuntu:~$ awk '{print $1 "\t" $2}' abc
apple
banana
grapes
mangoes
oranges
```

CONCLUSION:

- Linux commands let you perform basic and administrative tasks quickly and effectively from the Terminal.
- With it, you'll have more flexibility over your system and the ability to access features that are not always available through a graphical user interface.
- Learning basic Linux commands is essential to interact with your machine.