

Experiment No 1

Title:

Implementation of DevOps-Related Linux Commands

Objective:

To learn and execute essential Linux commands used in DevOps for file handling, process management, package installation, and text processing.

Important Steps

1. Creating and Navigating Directories:

- Used mkdir to create directories.
- Used ls to list files and directories.
- Used cd to change directories and navigate.

```
student@student-ThinkCentre-neo-50t-Gen-3: ~/Desktop/21UAI052
student@student-ThinkCentre-neo-50t-Gen-3:~$ cd Desktop
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop$ mkdir 21UAI052
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop$ mkdir Akshata Pratik
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop$ mkdir 21UAI052/anu
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop$ cd 21UAI052
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$ touch newfile.txt
```

```
GNU nano 4.8 newfile.txt
AKshata Ashok Sangale

Read 1 line
^G Get Help  ^O Write Out  ^W Where Is   ^K Cut Text   ^J Justify    ^C Cur Pos    M-U Undo      M-A Mark Text
^X Exit      ^R Read File  ^\ Replace   ^U Paste Text ^T To Spell   ^_ Go To Line  M-E Redo      M-6 Copy Text
```

2. File Management:

- Used touch to create empty files.
- Used echo to add content to files.
- Used cat to view file contents.
- Used nano to edit files.

```
student@student-ThinkCentre-neo-50t-Gen-3: ~/Desktop
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$ echo "AKshata Ashok Sangale">newfile.txt
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$ cat newfile.txt
AKshata Ashok Sangale
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$ echo "21UAI052 cse(AI) Student">>Info.txt
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$ cat Info.txt
21UAI052 cse(AI) Student
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$ nano newfile.txt
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$ rm file2.txt
```

4. Copying, Moving, and Deleting Files:

- Used cp to copy files and directories.
- Used mv to move or rename files and directories.
- Used rm and rmdir to delete files and directories.

5. Package Management:

- Used sudo apt-get install to install software packages.

```
student@student-ThinkCentre-neo-50t-Gen-3: ~/Desktop/21UAI052
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$ mkdir manali
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$ rmdir manali
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$ move newfile.txt q.txt

Command 'move' not found, did you mean:

  command 'mmove' from deb mtools (4.0.24-1)
  command 'more' from deb util-linux (2.34-0.1ubuntu9.3)

Try: sudo apt install <deb name>

student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$ mv newfile.txt q.txt
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$ cat q.txt
Akshata Ashok Sangale
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$ rm q.txt
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$ sudo apt-get install apache2
[sudo] password for student:
Reading package lists... Done
Building dependency tree
Reading state information... Done
E: Unable to locate package apache2
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$
```

5. Process and System Management:

- Used ps -e to list running processes.
- Used grep to filter process information.
- Used ping to check network connectivity.

```
student@student-ThinkCentre-neo-50t-Gen-3: ~/Desktop/21UAI052
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$ ls
anu Info.txt
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$ echo "Akshata Ashok Sangale">Info.txt
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$ cat Info.txt
Akshata Ashok Sangale
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$ grep 'As' Info.txt
Akshata Ashok Sangale
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$ grep -i 'Sangale' Info.txt
Akshata Ashok Sangale
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$ grep -w 'Akshata' Info.txt
Akshata Ashok Sangale
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$ grep -v 'Aks' Info.txt
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$ cat Info.txt
Akshata Ashok Sangale
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$ ps -e | grep 'ssh'
1451 ?        00:00:00 ssh-agent
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$ mkdir Manali | touch newfile1.txt
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$ ls
anu Info.txt Manali newfile1.txt
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$
```

```
student@student-ThinkCentre-neo-50t-Gen-3: ~/Desktop/21UAI052
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$ ps -e
```

PID	TTY	TIME	CMD
1	?	00:00:02	systemd
2	?	00:00:00	kthreadd
3	?	00:00:00	rcu_gp
4	?	00:00:00	rcu_par_gp
5	?	00:00:00	netns
7	?	00:00:00	kworker/0:0H-events_highpri
9	?	00:00:00	mm_percpu_wq
10	?	00:00:00	rcu_tasks_rude_
11	?	00:00:00	rcu_tasks_trace
12	?	00:00:00	ksoftirqd/0
13	?	00:00:05	rcu_sched
14	?	00:00:00	migration/0
15	?	00:00:00	idle_inject/0
17	?	00:00:00	cpuhp/0
18	?	00:00:00	cpuhp/1
19	?	00:00:00	idle_inject/1
20	?	00:00:00	migration/1
21	?	00:00:00	ksoftirqd/1
23	?	00:00:00	kworker/1:0H-events_highpri
24	?	00:00:00	cpuhp/2
25	?	00:00:00	idle_inject/2
26	?	00:00:00	migration/2

```
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$ ps -f
```

UID	PID	PPID	C	STIME	TTY	TIME	CMD
student	8549	8419	0	17:40	pts/0	00:00:00	bash
student	10493	8549	0	18:05	pts/0	00:00:00	ps -f

```
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$ ps -alx
```

F	UID	PID	PPID	PRI	NI	VSZ	RSS	WCHAN	STAT	TTY	TIME	COMMAND
4	0	1	0	20	0	168276	11416	-	Ss	?	0:02	/sbin/init splash
1	0	2	0	20	0	0	0	-	S	?	0:00	[kthreadd]
1	0	3	2	0	-20	0	0	-	I<	?	0:00	[rcu_gp]
1	0	4	2	0	-20	0	0	-	I<	?	0:00	[rcu_par_gp]
1	0	5	2	0	-20	0	0	-	I<	?	0:00	[netns]
1	0	7	2	0	-20	0	0	-	I<	?	0:00	[kworker/0:0H-events_highpri
1	0	9	2	0	-20	0	0	-	I<	?	0:00	[mm_percpu_wq]
1	0	10	2	20	0	0	0	-	S	?	0:00	[rcu_tasks_rude_]
1	0	11	2	20	0	0	0	-	S	?	0:00	[rcu_tasks_trace]
1	0	12	2	20	0	0	0	-	S	?	0:00	[ksoftirqd/0]
1	0	13	2	20	0	0	0	-	I	?	0:05	[rcu_sched]
1	0	14	2	-100	-	0	0	-	S	?	0:00	[migration/0]
1	0	15	2	-51	-	0	0	-	S	?	0:00	[idle_inject/0]
1	0	17	2	20	0	0	0	-	S	?	0:00	[cpuhp/0]
5	0	18	2	20	0	0	0	-	S	?	0:00	[cpuhp/1]

```
student@student-ThinkCentre-neo-50t-Gen-3: ~/Desktop/21UAI052
```

PS(1)

NAME

`ps` - report a snapshot of the current processes.

SYNOPSIS

`ps` [options]

DESCRIPTION

`ps` displays information about a selection of the active processes. If you want a repetitive update of the selection and the displayed information, use `top(1)` instead.

This version of `ps` accepts several kinds of options:

- 1 UNIX options, which may be grouped and must be preceded by a dash.
- 2 BSD options, which may be grouped and must not be used with a dash.
- 3 GNU long options, which are preceded by two dashes.

Options of different types may be freely mixed, but conflicts can appear. There are some synonymous options, which are functionally identical, due to the many standards and `ps` implementations that this `ps` is compatible with.

Note that "`ps -aux`" is distinct from "`ps aux`". The POSIX and UNIX standards require that

PS(1)

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

```
student@student-ThinkCentre-neo-50t-Gen-3: ~/Desktop/21UAI052
GNU nano 4.8 /home/student/.bashrc
# ~/.bashrc: executed by bash(1) for non-login shells.
# see /usr/share/doc/bash/examples/startup-files (in the package bash-doc)
# for examples

# If not running interactively, don't do anything
case $- in
  *i*) ;;
  *) return;;
esac

# don't put duplicate lines or lines starting with space in the history.
# See bash(1) for more options
HISTCONTROL=ignoreboth

# append to the history file, don't overwrite it
shopt -s histappend

# for setting history length see HISTSIZE and HISTFILESIZE in bash(1)
HISTSIZE=1000
HISTFILESIZE=2000

[ Read 117 lines ]
^G Get Help  ^O Write Out  ^W Where Is  ^K Cut Text   ^J Justify    ^C Cur Pos    M-U Undo
^X Exit      ^R Read File  ^_ Replace   ^U Paste Text ^T To Spell   ^_ Go To Line  M-E Redo
```

6. Text Processing with awk:

- Extracted columns and rows from structured files.
- Counted fields and rows using NF and NR.

```
student@student-ThinkCentre-neo-50t-Gen-3: ~/Desktop/21UAI052
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$ man ps
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$ awk '{print $0}' Info.txt
Akshata Ashok Sangale
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$ awk '{print $1}' Info.txt
Akshata
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$ awk '{print $2,$3}' Info.txt
Ashok Sangale
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$ awk '{print NF}' Info.txt
3
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$ ping -google.com
ping: invalid option -- 'g'

Usage
  ping [options] <destination>

Options:
  <destination>    dns name or ip address
  -a               use audible ping
  -A               use adaptive ping
  -B               sticky source address
  -c <count>       stop after <count> replies
  -D               print timestamps
  -d               use SO_DEBUG socket option
```

7. Alias and Permissions:

- Created command shortcuts using alias.
- Used ls -l to check file permissions.

```
student@student-ThinkCentre-neo-50t-Gen-3: ~/Desktop/21UAI052

-W <timeout>      time to wait for response

IPv4 options:
-4                use IPv4
-b                allow pinging broadcast
-R                record route
-T <timestamp>    define timestamp, can be one of <tsonly|tsandaddr|tsprespec>

IPv6 options:
-6                use IPv6
-F <flowlabel>    define flow label, default is random
-N <nodeinfo opt> use icmp6 node info query, try <help> as argument

For more details see ping(8).
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$ alias ll='ls -l'
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$ ls
anu  Info.txt  Manali  newfile1.txt
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$ alias linux='sudo apt-get update'
bash: alias: linux: not found
bash: alias: =sudo apt-get update: not found
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$ alias linux='sudo apt-get update'
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$ nano ~/.bashrc
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$ source ~/.bashrc
student@student-ThinkCentre-neo-50t-Gen-3:~/Desktop/21UAI052$
```

Conclusion:

The experiment helped in understanding and executing fundamental Linux commands essential for DevOps tasks. It covered directory handling, file operations, package management, process monitoring, text processing, and system administration, all of which are crucial for DevOps workflows.