Title: Linux Command List Assessment
Assignment 1

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Instructions:-

The following assessment aims to test your understanding and practical knowledge of various Linux commands. Perform the tasks given below using the appropriate commands. Write down the command(s) used to complete each task. You can use any Linux distribution or command-line interface of your choice. Ensure that you provide the correct output or results for each task.

File and Directory Operations:

ls: List files and directories

cd: Change directory

pwd: Print working directory

mkdir: Make directory

```
┌──(nikhil㉿kali)-[~/Documents]
└─$ mkdir my_directory
```

touch: Create an empty file

```
┌──(nikhil㉿kali)-[~/Documents]
└─$ touch myfile.txt
```

cp: Copy files and directories

```
┌──(nikhil㉿kali)-[~/Documents]
└─$ cp myfile.txt /home/nikhil/Downloads
```

```
┌──(nikhil㉿kali)-[~/Documents]
└─$ cp -r my_directory /home/nikhil/Downloads
```

mv: Move or rename files and directories

```
┌──(nikhil㉿kali)-[~/Documents]
└─$ mv myfile.txt /home/nikhil/Downloads
```

```
┌──(nikhil㉿kali)-[~/Documents]
└─$ mv my_directory /home/nikhil/Downloads
```

rm: Remove files and directories

```
┌──(nikhil㉿kali)-[~/Downloads]
└─$ rm myfile.txt
```

```
┌──(nikhil㉿kali)-[~/Downloads]
└─$ rm -r  my_directory
```

find: Search for files and directories

```
┌──(nikhil㉿kali)-[~/Downloads]
└─$ find /home -name myfile.txt
```
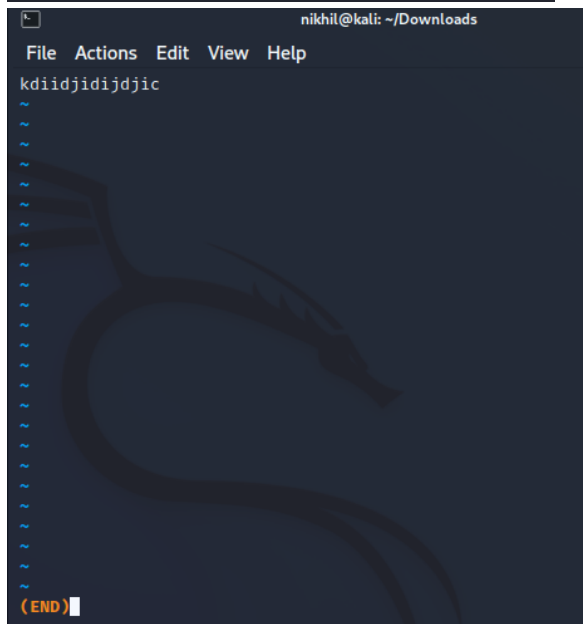
File Viewing and Editing:

cat: Concatenate and display file content

```
┌──(nikhil㉿kali)-[~/Downloads]
└─$ cat myfile.txt
kdiidjidijdjic
```

less: View file content with pagination

```
┌──(nikhil㉿kali)-[~/Downloads]
└─$ less myfile.txt
```

```
                          nikhil@kali: ~/Downloads
 File  Actions  Edit  View  Help
kdiidjidijdjic
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
(END)
```

head: Display the beginning of a file

```
┌──(nikhil㉿kali)-[~/Downloads]
└─$ head myfile.txt
kdiidjidijdjic
```

tail: Display the end of a file

```
┌──(nikhil㉿kali)-[~/Downloads]
└─$ tail myfile.txt
kdiidjidijdjic
```

nano: Text editor for creating and editing files

```
┌──(nikhil㉿kali)-[~/Downloads]
└─$ nano myfile.txt
```
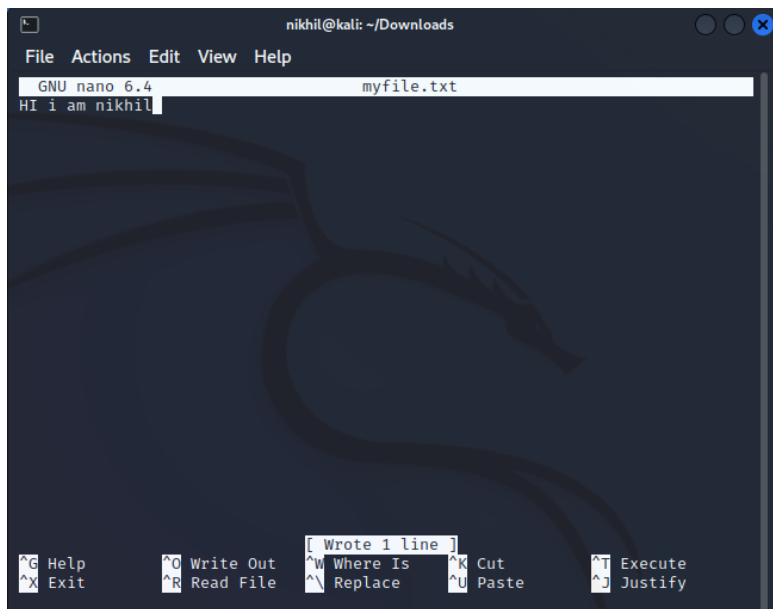
vi/vim: Powerful text editor for experienced users


```
┌──(nikhil㉿kali)-[~/Downloads]
└─$ vi myfile,txt
```

File Permissions:

chmod: Change file permissions

```
┌──(nikhil㉿kali)-[~/Downloads]
└─$ chmod 755 myfile.txt
```

chown: Change file owner

```
┌──(nikhil㉿kali)-[~/Downloads]
└─$ chown nikhil  myfile.txt
```

chgrp: Change file group

```
┌──(nikhil㉿kali)-[~/Downloads]
└─$ chgrp nikhil myfile.txt
```

File Compression and Archiving:

tar: Archive files

```
┌──(nikhil㉿kali)-[~/Downloads]
└─$ tar -cvf archive.tar myfile.txt
myfile.txt
```

gzip: Compress files

```
┌──(nikhil㉿kali)-[~/Downloads]
└─$ gzip myfile.txt
```

unzip: Extract files from a ZIP archive

```
┌──(nikhil㉿kali)-[~/Downloads]
└─$ unzip myfilee
Archive:  myfilee
  End-of-central-directory signature not found.  Either this file is not
  a zipfile, or it constitutes one disk of a multi-part archive.  In the
  latter case the central directory and zipfile comment will be found on
  the last disk(s) of this archive.
Archive:  myfilee.zip
replace myfilee? [y]es, [n]o, [A]ll, [N]one, [r]ename: r
new name: mfyyf
 extracting: mfyyf
```

Process Management:

ps: List running processes

```
┌──(nikhil㉿kali)-[~/Downloads]
└─$ ps aux
USER         PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root           1  0.0  0.3 167624 12164 ?       Ss   10:09   0:00 /sbin/init
root           2  0.0  0.0      0     0 ?       S    10:09   0:00 [kthreadd]
root           3  0.0  0.0      0     0 ?       I<   10:09   0:00 [rcu_gp]
root           4  0.0  0.0      0     0 ?       I<   10:09   0:00 [rcu_par_g
root           5  0.0  0.0      0     0 ?       I<   10:09   0:00 [slub_flus
root           6  0.0  0.0      0     0 ?       I<   10:09   0:00 [netns]
root           8  0.0  0.0      0     0 ?       I<   10:09   0:00 [kworker/0
root          10  0.0  0.0      0     0 ?       I<   10:09   0:00 [mm_percpu
root          11  0.0  0.0      0     0 ?       I    10:09   0:00 [rcu_tasks
root          12  0.0  0.0      0     0 ?       I    10:09   0:00 [rcu_tasks
root          13  0.0  0.0      0     0 ?       I    10:09   0:00 [rcu_tasks
root          14  0.0  0.0      0     0 ?       S    10:09   0:00 [ksoftirqd
root          15  0.0  0.0      0     0 ?       I    10:09   0:01 [rcu_preem
root          16  0.0  0.0      0     0 ?       S    10:09   0:00 [migration
root          18  0.0  0.0      0     0 ?       S    10:09   0:00 [cpuhp/0]
root          19  0.0  0.0      0     0 ?       S    10:09   0:00 [cpuhp/1]
root          20  0.0  0.0      0     0 ?       S    10:09   0:00 [migration
root          21  0.0  0.0      0     0 ?       S    10:09   0:00 [ksoftirqd
root          23  0.0  0.0      0     0 ?       I<   10:09   0:00 [kworker/1
root          24  0.0  0.0      0     0 ?       S    10:09   0:00 [cpuhp/2]
root          25  0.0  0.0      0     0 ?       S    10:09   0:00 [migration
root          26  0.0  0.0      0     0 ?       S    10:09   0:00 [ksoftirqd
root          28  0.0  0.0      0     0 ?       I<   10:09   0:00 [kworker/2
root          29  0.0  0.0      0     0 ?       S    10:09   0:00 [cpuhp/3]
```

top: Display real-time system information and processes

```
┌──(nikhil㉿kali)-[~/Downloads]
└─$ top
top - 10:36:16 up 26 min,  1 user,  load average: 0.15, 0.13, 0.10
Tasks: 165 total,   1 running, 164 sleeping,   0 stopped,   0 zombie
%Cpu(s):  0.3 us,  0.6 sy,  0.0 ni, 98.9 id,  0.1 wa,  0.0 hi,  0.1 si,  0.0
MiB Mem :   3929.0 total,   2831.0 free,    662.7 used,    435.3 buff/cache
MiB Swap:    975.0 total,    975.0 free,      0.0 used.   3040.0 avail Mem

    PID USER      PR  NI    VIRT    RES    SHR S  %CPU  %MEM     TIME+
    592 root      20   0  439728 121932  64532 S   1.0   3.0   0:15.42
    338 root      20   0   49428  16652  15380 S   0.3   0.4   0:00.19
    514 root      20   0   25224   7884   6852 S   0.3   0.2   0:00.09
    910 nikhil    20   0 1226004 105740  76872 S   0.3   2.6   0:06.04
    957 nikhil    20   0  527608 110536  43592 S   0.3   2.7   0:01.84
    963 nikhil    20   0  210100  35456  18148 S   0.3   0.9   0:08.24
    965 nikhil    20   0  358416  30284  20456 S   0.3   0.8   0:04.16
   3817 nikhil    20   0  463916 104844  84048 S   0.3   2.6   0:03.80
      1 root      20   0  167624  12164   8992 S   0.0   0.3   0:00.82
      2 root      20   0       0      0      0 S   0.0   0.0   0:00.00
      3 root       0 -20       0      0      0 I   0.0   0.0   0:00.00
      4 root       0 -20       0      0      0 I   0.0   0.0   0:00.00
      5 root       0 -20       0      0      0 I   0.0   0.0   0:00.00
      6 root       0 -20       0      0      0 I   0.0   0.0   0:00.00
      8 root       0 -20       0      0      0 I   0.0   0.0   0:00.00
     10 root       0 -20       0      0      0 I   0.0   0.0   0:00.00
```

kill: Terminate processes

```
┌──(nikhil㉿kali)-[~]
└─$ kill 965
```

bg: Run processes in the background

```
┌──(nikhil㉿kali)-[~/Downloads]
└─$ command &
[1] 8792
[1]  + done       command
```

fg: Bring background processes to the foreground

```
┌──(nikhil㉿kali)-[~/Downloads]
└─$ fg
fg: no current job
```

System Information:

uname: Print system information

```
┌──(nikhil㉿kali)-[~/Downloads]
└─$ uname -a
Linux kali 6.0.0-kali3-amd64 #1 SMP PREEMPT_DYNAMIC Debian 6.0.7-1kali1 (2022
-11-07) x86_64 GNU/Linux
```

df: Display disk space usage

```
┌──(nikhil㉿kali)-[~/Downloads]
└─$ df -h
Filesystem      Size  Used Avail Use% Mounted on
udev            1.9G     0  1.9G   0% /dev
tmpfs           393M  956K  392M   1% /run
/dev/sda1        25G   13G   11G  54% /
tmpfs           2.0G     0  2.0G   0% /dev/shm
tmpfs           5.0M     0  5.0M   0% /run/lock
tmpfs           393M   88K  393M   1% /run/user/1000
```

free: Display memory usage

```
┌──(nikhil㉿kali)-[~/Downloads]
└─$ free -m
               total        used        free      shared  buff/cache   availa
ble
Mem:            3928         686        2801          15         440          3
014
Swap:            974           0         974
```

uptime: Show system uptime

```
┌──(nikhil㉿kali)-[~/Downloads]
└─$ uptime
 10:37:19 up 27 min,  1 user,  load average: 0.05, 0.10, 0.09
```

who: Display logged-in users

```
┌──(nikhil㉿kali)-[~/Downloads]
└─$ who
nikhil   tty7         2023-05-28 10:09 (:0)
```

w: Display logged-in users and their activities

```
┌──(nikhil㉿kali)-[~/Downloads]
└─$ w
 10:37:24 up 27 min,  1 user,  load average: 0.05, 0.10, 0.09
USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
nikhil   tty7     :0               10:09    27:55  16.76s  0.34s xfce4-sessio
```

Networking:

ifconfig: Configure network interfaces

```
┌──(nikhil㉿kali)-[~/Downloads]
└─$ ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 10.0.2.15  netmask 255.255.255.0  broadcast 10.0.2.255
        inet6 fe80::a00:27ff:fe5b:9e2f  prefixlen 64  scopeid 0×20<link>
        ether 08:00:27:5b:9e:2f  txqueuelen 1000  (Ethernet)
        RX packets 6  bytes 1226 (1.1 KiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 33  bytes 3804 (3.7 KiB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        inet6 ::1  prefixlen 128  scopeid 0×10<host>
        loop  txqueuelen 1000  (Local Loopback)
        RX packets 4  bytes 240 (240.0 B)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 4  bytes 240 (240.0 B)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

ping: Send ICMP echo requests to a network host

```
┌──(nikhil㉿kali)-[~/Downloads]
└─$ ping google.com
PING google.com (142.250.195.78) 56(84) bytes of data.
64 bytes from maa03s38-in-f14.1e100.net (142.250.195.78): icmp_seq=1 ttl=116
time=16.6 ms
64 bytes from maa03s38-in-f14.1e100.net (142.250.195.78): icmp_seq=2 ttl=116
time=14.1 ms
64 bytes from maa03s38-in-f14.1e100.net (142.250.195.78): icmp_seq=3 ttl=116
time=13.5 ms
64 bytes from maa03s38-in-f14.1e100.net (142.250.195.78): icmp_seq=4 ttl=116
time=13.1 ms
64 bytes from maa03s38-in-f14.1e100.net (142.250.195.78): icmp_seq=5 ttl=116
time=15.3 ms
64 bytes from maa03s38-in-f14.1e100.net (142.250.195.78): icmp_seq=6 ttl=116
time=13.4 ms
64 bytes from maa03s38-in-f14.1e100.net (142.250.195.78): icmp_seq=7 ttl=116
time=15.6 ms
64 bytes from maa03s38-in-f14.1e100.net (142.250.195.78): icmp_seq=8 ttl=116
time=13.2 ms
64 bytes from maa03s38-in-f14.1e100.net (142.250.195.78): icmp_seq=9 ttl=116
```

ssh: Securely connect to a remote system

```
┌──(nikhil㉿kali)-[~/Downloads]
└─$ ssh nikhi@192.168.0.7

█
```

scp: Securely copy files between systems

```
┌──(nikhil㉿kali)-[~]
└─$ scp myfilee.txt nikhi@192.168.0.7:/C:/Windows/System32/█
```

wget: Download files from the web

```
┌──(nikhil㉿kali)-[~/Downloads]
└─$ wget http://www.google.com/
--2023-05-28 11:08:50--  http://www.google.com/
Resolving www.google.com (www.google.com)... 142.250.196.164, 2404:6800:4007:
81f::2004
Connecting to www.google.com (www.google.com)|142.250.196.164|:80... connecte
d.
HTTP request sent, awaiting response... 200 OK
Length: unspecified [text/html]
Saving to: 'index.html'

index.html                [ ⟺                ]  19.02K  --.-KB/s    in 0.01s

2023-05-28 11:08:50 (1.34 MB/s) - 'index.html' saved [19478]
```

System Administration:

sudo: Execute commands with superuser privileges

```
┌──(nikhil㉿kali)-[~/Downloads]
└─$ sudo su
┌──(root㉿kali)-[/home/nikhil/Downloads]
└─#
```

apt-get: Package management for Debian-based distributions

```
┌──(root㉿kali)-[/home/nikhil/Downloads]
└─# apt-get update
Hit:1 http://kali.download/kali kali-rolling InRelease
Reading package lists... Done
```

yum: Package management for Red Hat-based distributions

```
┌──(root㉿kali)-[/home/nikhil/Downloads]
└─# yum info vsftpd
```

systemctl: Manage system services

```
┌──(root㉿kali)-[/home/nikhil/Downloads]
└─# systemctl list-unit-files --type service -all
UNIT FILE                                    STATE      PRESET
apache-htcacheclean.service                  disabled   disabled
apache-htcacheclean@.service                 disabled   disabled
apache2.service                              disabled   disabled
apache2@.service                             disabled   disabled
apparmor.service                             disabled   disabled
apt-daily-upgrade.service                    static     –
apt-daily.service                            static     –
atftpd.service                               indirect   disabled
auth-rpcgss-module.service                   static     –
autovt@.service                              alias      –
avahi-daemon.service                         disabled   disabled
blueman-mechanism.service                    disabled   disabled
bluetooth.service                            disabled   disabled
colord.service                               static     –
console-getty.service                        disabled   disabled
console-setup.service                        enabled    enabled
container-getty@.service                     static     –
cron.service                                 enabled    enabled
cryptdisks-early.service                     masked     disabled
cryptdisks.service                           masked     disabled
dbus-org.freedesktop.hostname1.service       alias      –
dbus-org.freedesktop.locale1.service         alias      –
dbus-org.freedesktop.login1.service          alias      –
```

crontab: Schedule recurring tasks

```
┌──(root㉿kali)-[/home/nikhil/Downloads]
└─# crontab -e
no crontab for root - using an empty one

Select an editor.  To change later, run 'select-editor'.
  1. /bin/nano        ←─── easiest
  2. /usr/bin/vim.basic
  3. /usr/bin/vim.tiny

Choose 1-3 [1]: 1
No modification made
```

useradd: Add a new user

```
┌──(root㉿kali)-[/home/nikhil/Downloads]
└─# useradd new
```

passwd: Change user password

```
┌──(root㉿kali)-[/home/nikhil/Downloads]
└─# passwd new
New password:
Retype new password:
passwd: password updated successfully
```