

Ex.No:1a

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Basic Networking Commands in Linux Operating System

Aim:

To study and execute basic networking commands in linux operating system.

1. ls

NAME: ls - list directory contents

SYNOPSIS: ls [OPTION]... [FILE]...

DESCRIPTION: List information about the FILES (the current directory by default).

OUTPUT:

```
(JackSparrow@Captain)-[~]  
$ ls  
Desktop Documents Downloads Music Pictures Public Templates Videos
```

a) ls-a : do not ignore entries starting with .

OUTPUT:

```
(JackSparrow@Captain)-[~]  
$ ls -a  
.          .bashrc      .dbus        .face        .java        .profile      Templates  .zshrc  
..         .bashrc.original Desktop      .face.icon   .local       Public        Videos  
.bash_history .cache      Documents   .gnupg       Music        .ssh         .Xauthority  
.bash_logout .config     Downloads  .ICEauthority Pictures     .sudo_as_admin_successful .zprofile
```

b) ls-l : use a long listing format

OUTPUT:

```
(JackSparrow@Captain)-[~]  
$ ls -l  
total 36  
drwxr-xr-x 2 JackSparrow JackSparrow 4096 Sep 28 06:51 Desktop  
drwxr-xr-x 2 JackSparrow JackSparrow 4096 Sep 29 12:46 Documents  
drwxr-xr-x 2 JackSparrow JackSparrow 4096 Sep 28 18:53 Downloads  
drwxr-xr-x 2 JackSparrow JackSparrow 4096 Sep 28 06:51 Music  
-rw----- 1 JackSparrow JackSparrow    1 Oct  2 12:31 nano.423.save  
drwxr-xr-x 2 JackSparrow JackSparrow 4096 Sep 28 06:51 Pictures  
drwxr-xr-x 2 JackSparrow JackSparrow 4096 Sep 28 06:51 Public  
drwxr-xr-x 2 JackSparrow JackSparrow 4096 Sep 28 06:51 Templates  
drwxr-xr-x 2 JackSparrow JackSparrow 4096 Sep 28 06:51 Videos
```

2. echo

NAME: echo- display a line of text

SYNOPSIS: echo [SHORT-OPTION]... [STRING]...

echo LONG-OPTION

DESCRIPTION: Echo the STRING(s) to standard output.

OUTPUT:

```
(JackSparrow@Captain)-[~]  
$ echo "hello"  
hello
```

3.ps

NAME: ps- report a snapshot of the current processes.

SYNOPSIS: ps [options]

DESCRIPTION: ps displays information about a selection of the active processes.

OUTPUT:

```
(JackSparrowⓀ Captain)-[~]  
$ ps  
  PID TTY          TIME CMD  
  440 pts/0        00:00:00 bash  
  460 pts/0        00:00:00 ps
```

a) **ps -e:** See all current running processes in the system.

OUTPUT:

```

(JackSparrow@Captain)-[~]
$ ps -e
  PID TTY          TIME CMD
    1 ?           00:00:00 systemd
    2 ?           00:00:00 init-systemd(ka
    6 ?           00:00:00 init
   47 ?           00:00:00 systemd-journal
   59 ?           00:00:00 systemd-udev
  242 ?           00:00:00 cron
  247 ?           00:00:00 dbus-daemon
  248 ?           00:00:00 polkitd
  249 ?           00:00:00 systemd-logind
  260 ?           00:00:00 lightdm
  267 hvc0          00:00:00agetty
  269 tty1         00:00:00agetty
  297 ?           00:00:00 login
  307 ?           00:00:00 systemd
  309 ?           00:00:00 (sd-pam)
  342 ?           00:00:00 dbus-daemon
  343 ?           00:00:00 pipewire
  345 ?           00:00:00 pipewire
  348 pts/1        00:00:00 bash
  354 ?           00:00:00 mpris-proxy
  356 ?           00:00:00 wireplumber

```

4. cat

NAME: cat- concatenate files and print on the standard output

SYNOPSIS: cat [OPTION]... [FILE]...

DESCRIPTION: Concatenate FILE(s) to standard output.

OUTPUT:

```
(JackSparrow@Captain)~[~/Documents]
$ cat test.txt
Hello World!
```

5. free

NAME: free- Display amount of free and used memory in the system

SYNOPSIS: free [options]

DESCRIPTION: free displays the total amount of free and used physical and swap memory in the system, as well as the buffers and caches used by the kernel.

OUTPUT:

```
(JackSparrow@Captain)~[~]
$ free
```

	total	used	free	shared	buff/cache	available
Mem:	7990484	514864	7202472	5824	431944	7475620
Swap:	2097152	0	2097152			

6. rm

NAME: rm- remove files or directories

SYNOPSIS: rm [OPTION]... [FILE]...

DESCRIPTION: rm removes each specified file.

OUTPUT:

```
(JackSparrow@Captain)~[~/Documents]
$ ls
test.txt

(JackSparrow@Captain)~[~/Documents]
$ rm test.txt

(JackSparrow@Captain)~[~/Documents]
$ ls

(JackSparrow@Captain)~[~/Documents]
$
```

7. top

NAME: top- display Linux processes

SYNOPSIS : top [options]

DESCRIPTION: The top program provides a dynamic real-time view of a running system.

OUTPUT:


```
(JackSparrow@Captain)-[~]
$ top
top - 12:34:01 up 4 min, 1 user, load average: 0.00, 0.00, 0.00
Tasks: 27 total, 1 running, 26 sleeping, 0 stopped, 0 zombie
%Cpu(s): 0.0 us, 0.0 sy, 0.0 ni,100.0 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st
MiB Mem : 7803.2 total, 7043.6 free, 492.9 used, 421.8 buff/cache
MiB Swap: 2048.0 total, 2048.0 free, 0.0 used, 7310.3 avail Mem

  PID USER      PR  NI    VIRT    RES    SHR S  %CPU  %MEM    TIME+  COMMAND
    1 root        20   0   23560   13392   10320 S   0.0   0.2   0:00.68 systemd
    2 root        20   0    3072    1664    1664 S   0.0   0.0   0:00.00 init-systemd(ka
    6 root        20   0    3104    2008    1920 S   0.0   0.0   0:00.01 init
   47 root        20   0   42708   15240   14216 S   0.0   0.2   0:00.19 systemd-journal
   59 root        20   0   34604   10880    8064 S   0.0   0.1   0:00.30 systemd-udev
  242 root        20   0    4300    2560    2432 S   0.0   0.0   0:00.00 cron
  247 message+    20   0    8280    4096    3584 S   0.0   0.1   0:00.06 dbus-daemon
  248 polkitd      20   0   381480   8812    6868 S   0.0   0.1   0:00.11 polkitd
  249 root        20   0   18676    8576    7552 S   0.0   0.1   0:00.06 systemd-logind
  260 root        20   0   380880   6380    5996 S   0.0   0.1   0:00.03 lightdm
  267 root        20   0    5212    2560    2432 S   0.0   0.0   0:00.00 agetty
  269 root        20   0    5168    2432    2304 S   0.0   0.0   0:00.01 agetty
  297 root        20   0    7352    4096    3584 S   0.0   0.1   0:00.01 login
  307 JackSpa+    20   0   22744   12544   9984 S   0.0   0.2   0:00.17 systemd
  309 JackSpa+    20   0   22440    3376    1792 S   0.0   0.0   0:00.00 (sd-pam)
  342 JackSpa+    20   0    7816    3840    3584 S   0.0   0.0   0:00.03 dbus-daemon
  343 JackSpa+    20   0   94292    7680    6272 S   0.0   0.1   0:00.03 pipewire
  345 JackSpa+    20   0   82156    4864    4352 S   0.0   0.1   0:00.01 pipewire
  348 JackSpa+    20   0    5996    4992    2816 S   0.0   0.1   0:00.04 bash
  354 JackSpa+    20   0    7232    3456    3200 S   0.0   0.0   0:00.00 mpris-proxy
  356 JackSpa+    20   0   396652   13184   10624 S   0.0   0.2   0:00.09 wireplumber
  357 rtkit        21   1   21472    3072    2944 S   0.0   0.0   0:00.03 rtkit-daemon
  358 JackSpa+    20   0   96168    8064    7168 S   0.0   0.1   0:00.02 pipewire-pulse
  438 root        20   0    3076    1028     896 S   0.0   0.0   0:00.00 SessionLeader
  439 root        20   0    3092    1160    1024 S   0.0   0.0   0:00.01 Relay(440)
  440 JackSpa+    20   0    9108    5888    3456 S   0.0   0.1   0:00.04 bash
  461 JackSpa+    20   0   10408    5760    3584 R   0.0   0.1   0:00.02 top
```

8. vmstat

NAME: vmstat- Report virtual memory statistics

SYNOPSIS: vmstat [options] [delay [count]]

DESCRIPTION: vmstat reports information about processes, memory, paging, block IO, traps, disks and cpu activity

OUTPUT:

```
(JackSparrow@Captain)~[~]
$ vmstat
procs -----memory----- ---swap-- -----io----- -system-- -----cpu-----
 r  b   swpd   free   buff  cache   si   so    bi    bo    in   cs  us  sy  id  wa  st  gu
 0   0       0 7201868 64120 367904    0    0   670   31  328    0   0   0 100   0   0   0
```

9. ping

NAME: ping- send ICMP ECHO_REQUEST to network hosts

SYNOPSIS: ping

[- aAbBdCDfhHLnOqrRUvV346] [-c count]

[-e identifier] [-F flowlabel] [-i interval]

[-I interface] [-l preload] [-m mark]

[-M pmtudisc_option] [-N nodeinfo_option]

[-w deadline] [-W timeout] [-p pattern] [-Q tos]

[-s packetsize] [-S sndbuf] [-t ttl]

[-T timestamp option] [hop...] {destination}

DESCRIPTION: ping uses the ICMP protocol's mandatory ECHO_REQUEST datagram to elicit an ICMP ECHO_RESPONSE from a host or gateway.

OUTPUT:


```
(JackSparrow@Captain) ~
$ ping www.google.com
PING www.google.com (142.250.182.164) 56(84) bytes of data:
64 bytes from del11s10-in-f4.1e100.net (142.250.182.164): icmp_seq=1 ttl=118 time=117 ms
64 bytes from del11s10-in-f4.1e100.net (142.250.182.164): icmp_seq=2 ttl=118 time=141 ms
64 bytes from del11s10-in-f4.1e100.net (142.250.182.164): icmp_seq=3 ttl=118 time=162 ms
64 bytes from del11s10-in-f4.1e100.net (142.250.182.164): icmp_seq=4 ttl=118 time=82.1 ms
64 bytes from del11s10-in-f4.1e100.net (142.250.182.164): icmp_seq=5 ttl=118 time=104 ms
^C
--- www.google.com ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4008ms
rtt min/avg/max/mdev = 82.117/121.295/162.443/27.972 ms
```

10. ifconfig

NAME: ifconfig- configure a network interface

SYNOPSIS: ifconfig [-v] [-a] [-s] [interface]

ifconfig [-v] interface [atype] options |
address ...

DESCRIPTION: Ifconfig is used to configure the kernel-resident network interfaces

OUTPUT:

```
(JackSparrow@Captain) ~
$ ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1492
    inet 172.24.234.127 netmask 255.255.240.0 broadcast 172.24.239.255
    inet6 fe80::215:5dff:fe94:5568 prefixlen 64 scopeid 0x20<link>
    ether 00:15:5d:94:55:68 txqueuelen 1000 (Ethernet)
    RX packets 43 bytes 3878 (3.7 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 61 bytes 5238 (5.1 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 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 16 bytes 1526 (1.4 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 16 bytes 1526 (1.4 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

Result:

Thus the above linux commands were executed.

NAME:DHARANI K

ROLL NO:241901025

DEPARTMENT:CSE-CYBER SECURITY