

Ex.No:1a**Date:18/8/25**

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
```

a. **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
```

1. 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
```

1. 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-udevd
  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          00:00:00 agetty
  269 tty1         00:00:00 agetty
  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
  357 ?            00:00:00 rtkit-daemon
  358 ?            00:00:00 pipewire-pulse
  438 ?            00:00:00 SessionLeader
  439 ?            00:00:00 Relay(440)
  440 pts/0        00:00:00 bash
  477 pts/0        00:00:00 ps
```

1. 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!
```

1. 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			

1. 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]
$
```

1. 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	mpiris-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

1. 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

```
(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

OUTPUT:

1. 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
```

1. ifconfig

NAME: ifconfig - configure a network interface

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

ifconfig [-v] interface [aftype] 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.