

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-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 getty
  269 tty1      00:00:00 getty
  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 mprefs-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]~$ 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  3972  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-udevd
     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
    268 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 getty
    269 root      20   0  5168  2432  2304 S  0.0  0.0  0:00.01 getty
    297 root      20   0  7352  4096  3584 S  0.0  0.1  0:00.01 login
   307 JackSpar+ 20   0 22744 12544  9984 S  0.0  0.2  0:00.17 systemd
   309 JackSpar+ 20   0 22440  3376  1792 S  0.0  0.0  0:00.00 (sd-pam)
   342 JackSpar+ 20   0  7816  3840  3584 S  0.0  0.0  0:00.03 dbus-daemon
   343 JackSpar+ 20   0 94292  7680  6272 S  0.0  0.1  0:00.03 pipewire
   345 JackSpar+ 20   0  82156  4864  4352 S  0.0  0.1  0:00.01 pipewire
   348 JackSpar+ 20   0  5996  4992  2816 S  0.0  0.1  0:00.04 bash
   354 JackSpar+ 20   0  7232  3456  3200 S  0.0  0.0  0:00.00 mpris-proxy
   356 JackSpar+ 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 JackSpar+ 20   0 96168  8064  7168 S  0.0  0.1  0:00.02 pipewire-pulse
   438 root      20   0  3976  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 JackSpar+ 20   0  9108  5888  3456 S  0.0  0.1  0:00.04 bash
   461 JackSpar+ 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 [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.

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