

# Mid Exam

## Section 1: File and Directory Management:

1. Display the current working directory.

```
(pp@pp)-[~]  
$ pwd  
/home/pp  
  
(pp@pp)-[~]  
$
```

2. List all the contents of your current directory, including hidden files.

```
(pp@pp)-[~]  
$ ls -al  
total 220  
drwxr-xr-x 25 pp pp 4096 Sep 3 14:46 .  
drwxr-xr-x 5 root root 4096 Aug 20 16:44 ..  
drwxr-xr-x 3 pp pp 4096 Aug 26 13:47 000  
drwxr-xr-x 3 pp pp 4096 Jul 21 06:01 111  
drwxr-xr-x 4 pp pp 4096 Jun 22 14:22 99  
drwxr-xr-x 2 root root 4096 Sep 1 17:16 999  
-rw-r--r-- 1 pp pp 102 Aug 4 06:26 .bash_history  
-rw-r--r-- 1 pp pp 220 Jun 19 10:07 .bash_logout  
-rw-r--r-- 1 pp pp 5551 Jun 19 10:07 .bashrc  
-rw-r--r-- 1 pp pp 3526 Jun 19 10:07 .bashrc.original  
-rw-r--r-- 1 pp pp 4096 Aug 18 12:44 BushSuite
```

3. Change your directory to the `Desktop`.

```
(pp@pp)-[~]  
$ cd ~/Desktop  
  
(pp@pp)-[~/Desktop]  
$
```

4. Create two directories named `dir1` and `dir2` on the Desktop.

```
(pp@pp)-[~/Desktop/000]  
$ mkdir dir1 dir2  
  
(pp@pp)-[~/Desktop/000]  
$ ls  
dir1 dir2
```

5. Inside `dir1`, create a file named `file1.txt`.

```
(pp@pp)-[~/Desktop/000]  
$ touch dir1/file1.txt  
  
(pp@pp)-[~/Desktop/000]  
$ cd dir1  
  
(pp@pp)-[~/Desktop/000/dir1]  
$ ls  
file1.txt
```

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6. Inside `dir2`, create a file named `file2.txt`.

```
(pp@pp) - [~/Desktop/000]
$ touch dir2/file2.txt

(pp@pp) - [~/Desktop/000]
$ cd dir2

(pp@pp) - [~/Desktop/000/dir2]
$ ls
file2.txt
```

7. Using nano or vim Write the numbers 1 to 9 into `file1.txt`.

```
(pp@pp) - [~/Desktop/000]
$ nano dir1/file1.txt

(pp@pp) - [~/Desktop/000]
$ cat dir1/file1.txt
1
2
3
4
5
6
7
8
9
```

8. From the home directory Copy the contents of `file1.txt` into `file2.txt`.

```
(pp@pp) - [~/Desktop/000]
$ cp dir1/file1.txt dir2/file2.txt

(pp@pp) - [~/Desktop/000]
$ cat dir2/file2.txt
1
2
3
4
5
6
7
8
9
```

9. From the home directory, delete `file1.txt` inside `dir1`.

```
(pp@pp) - [~/Desktop/000/dir1]
$ rm file1.txt

(pp@pp) - [~/Desktop/000/dir1]
$ ls

(pp@pp) - [~/Desktop/000/dir1]
```

10. Remove the directory `dir1` from the Desktop.

```
(pp@pp) - [~/Desktop/000]
$ rmdir dir1

(pp@pp) - [~/Desktop/000]
$ ls
dir2

(pp@pp) - [~/Desktop/000]
$
```

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11. Redirect the output of the network configuration command to a file named `network\_info.txt` on the Desktop.

```
(pp@pp) [~/Desktop/000]
$ ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.179.128 netmask 255.255.255.0 broadcast 192.168.179.255
    inet6 fe80::20c:29ff:feaa:f76b prefixlen 64 scopeid 0x20<link>
    ether 00:0c:29:aa:f7:6b txqueuelen 1000 (Ethernet)
    RX packets 9067 bytes 1022990 (999.0 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 6091 bytes 529968 (517.5 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
```

12. Open the Desktop folder and show all files with detailed information.

```
(pp@pp) [~/Desktop]
$ ls -al
total 44
-rwxr-xr-x  4 pp  pp   4096 Sep  3 15:08 .
-rwxr-xr-x 25 pp  pp   4096 Sep  3 14:46 ..
-rwxr-xr-x  3 pp  pp   4096 Sep  3 15:22 000
-rwxr-xr-x  3 pp  pp   4096 Aug 30 12:43 Cam-Dumper
-rwxr--r--  1 pp  pp    12 Aug  4 05:49 file
-rwxr--r-x  1 root pp    20 Aug  4 15:39 file1
-rw-r--r--  1 root root 10237 Jul  4 08:35 game.apk
-rw-r--r--  1 pp  pp    710 Aug 18 14:19 network_inf
-rw-r--r--  1 pp  pp   3643 Aug 25 02:34 quiz02.sh
-rw-r--r--  1 pp  pp      0 Aug 30 12:41 tesdir
```

## Section 2: Users and Groups Management:

13. Create a new user with your name.

```
(pp@pp) [~/Desktop]
$ sudo useradd user
```

14. Set a password for your user.

```
(pp@pp) [~/Desktop]
$ sudo passwd user
New password:
Retype new password:
passwd: password updated successfully
```

15. Open the file that contains user information and verify that your user has been added.

```
(pp@pp) [~/Desktop]
$ sudo cat /etc/passwd
root:x:0:0:root:/root:/usr/bin/zsh
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
ass:x:1003:1004::/home/ass:/bin/sh
ebr:x:1004:1006::/home/ebr:/bin/sh
omar:x:1005:1008::/home/omar:/bin/sh
user:x:1006:1009::/home/user:/bin/sh
```

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16. Add your user to the file that gives administrative privileges.

```
(pp@pp)-[~/Desktop]
$ sudo visudo
```

```
# User privilege specification
root    ALL=(ALL:ALL) ALL
user    ALL=(ALL:ALL) ALL
# Allow members of group sudo to execute sudo
%sudo   ALL=(ALL:ALL) ALL
```

17. Switch to your user and confirm the user identity.

```
(pp@pp)-[~/Desktop]
$ su user
Password:
$
```

18. Create a new group named `testgroup`.

```
(pp@pp)-[~/Desktop]
$ sudo groupadd group1
```

19. Add your user to `testgroup`.

```
(pp@pp)-[~/Desktop]
$ sudo gpasswd -a user group1
Adding user user to group group1
```

20. Add the group `testgroup` to the file that gives administrative privileges.

```
(pp@pp)-[~/Desktop]
$ sudo visudo
```

```
user    ALL=(ALL:ALL) ALL
# Allow members of group sudo to execute sudo
%sudo    ALL=(ALL:ALL) ALL

%group1  ALL=(ALL:ALL) ALL
# See sudoers(5) for more information
```

21. Remove your user from the file that gives administrative privileges.

```
(pp@pp)-[~/Desktop]
$ sudo gpasswd -d user group1
Removing user user from group group1
```

22. Check if your user still have administrative privileges.

```
(pp@pp)-[~/Desktop]
$ groups user
user : user
```

23. Check which groups your user belongs to.

```
(pp@pp)-[~/Desktop]
$ groups
pp adm dialout cdrom floppy sudo audio d
```

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### Section 3: Permissions and Ownership:

24. Set the permissions of `file2.txt` on the Desktop to allow the owner to read, write, and execute; the group to read and execute; and others to read .

```
(pp@pp)~[~/Desktop/000/dir2]
$ chmod 755 file2.txt

(pp@pp)~[~/Desktop/000/dir2]
$ ls -l
total 4
-rwxr-xr-x 1 pp pp 19 Sep  3 15:17 file2.txt
```

25. Check the permissions of `file2.txt` to verify the change.

```
(pp@pp)~[~/Desktop/000/dir2]
$ ls -l
total 4
-rwxr-xr-x 1 pp pp 19 Sep  3 15:17 file2.txt
```

26. Change the ownership of `file2.txt` to your user.

```
(pp@pp)~[~/Desktop/000/dir2]
$ sudo chown user2 file2.txt

(pp@pp)~[~/Desktop/000/dir2]
$ ls -l
total 4
-rwxr-xr-x 1 user2 pp 19 Sep  3 15:17 file2.txt

(pp@pp)~[~/Desktop/000/dir2]
```

27. verify the ownership of `file2.txt`.

```
(pp@pp)~[~/Desktop/000/dir2]
$ ls -l
total 4
-rwxr-xr-x 1 user2 pp 19 Sep  3 15:17 file2.txt
```

28. Change back the ownership of a file `file2.txt` .

```
(pp@pp)~[~/Desktop/000/dir2]
$ ls -l
total 4
-rwxr-xr-x 1 user2 pp 19 Sep  3 15:17 file2.txt
```

29. Grant write permission to everyone for `file2.txt`.

```
(pp@pp)~[~/Desktop/000/dir2]
$ chmod 666 file2.txt

(pp@pp)~[~/Desktop/000/dir2]
$ ls -l
total 4
-rw-rw-rw- 1 pp pp 19 Sep  3 15:17 file2.txt
```

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30. Remove the write permission for the group and others for `file2.txt`.

```
(pp@pp)~[/Desktop/000/dir2]
$ chmod 644 file2.txt

(pp@pp)~[/Desktop/000/dir2]
$ ls -l
total 4
-rw-r--r-- 1 pp pp 19 Sep  3 15:17 file2.txt
```

31. Delete `file2.txt` after making the necessary ownership and permission changes.

```
(pp@pp)~[/Desktop/000/dir2]
$ rm file2.txt

(pp@pp)~[/Desktop/000/dir2]
$ ls
```

32. What command would you use to recursively change the permissions of all files and directories inside a folder named `project` to `755`.

```
(pp@pp)~[/Desktop/one]
$ ls -l
total 0
-rw-r--r-- 1 pp pp 0 Sep  7 16:38 project

(pp@pp)~[/Desktop/one]
$ chmod -R 755 project

(pp@pp)~[/Desktop/one]
$ ls -l
total 0
-rwxr-xr-x 1 pp pp 0 Sep  7 16:38 project
```

## Section 4: Process Management:

33. Install a system monitor tool that provides an interactive process viewer(htop).

```
(pp@pp)~[/Desktop/000/dir2]
$ sudo apt-get install htop
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
htop is already the newest version (3.3.0-4).
The following packages were automatically installed and are no longer required:
  libnsl-dev libpthread-stubs0-dev libtirpc-dev python3-cryptogr
  python3-requests-toolbelt
Use 'sudo apt autoremove' to remove them.
0 upgraded, 0 newly installed, 0 to remove and 1669 not upgraded
```

34. Display all running processes.

```
(pp@pp)~[/Desktop/000/dir2]
$ ps aux
USER      PID %CPU %MEM    VSZ   RSS TTY      STAT
root         1  0.0  0.3 168404 12404 ?        Ss
root         2  0.0  0.0      0     0 ?        S
root         3  0.0  0.0      0     0 ?        I<
root         4  0.0  0.0      0     0 ?        I<
```

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35. Display a tree of all running processes.

```
(pp@pp)-[~/Desktop/000/dir2]
$ pstree
systemd--ModemManager--2*[{ModemManager}]
      |
      |--NetworkManager--2*[{NetworkManager}]
      |
      |--agetty
      |
      |--colord--2*[{colord}]
      |
      |--cron
      |
      |--dbus-daemon
      |
      |--haveged
      |
      |--lightdm--Xorg--{Xorg}
                  |
                  |--lightdm--xfce4-session--Thunar--2*
                  |                       |
                  |                       |--agent--2*[
                  |                       |--blueman-app
                  |                       |--light-locke
                  |                       |--nm-applet--
```

36. Open the interactive process viewer and identify a process by its PID.

```
CPU[|||||||||||||||||||||||||||||||||||||||||] 71.6% Tasks: 81, 136 thr, 107 kthr; 1 running
Mem[|||||||||||||||||] 851M/3.79G Load average: 0.76 0.77 0.65
Swp[|||||] 0K/975M Uptime: 01:52:06

Main I/O
PID USER PRI NI VIRT RES SHR S CPU% MEM% TIME+ Command
1381 pp 20 0 12640 368 0 S 0.0 0.0 0:00.00 xcape -e Super_L Control
1388 pp 20 0 281M 40980 30880 S 1.3 1.0 0:38.94 /usr/bin/vmtoolsd -n vmusr
1662 pp 20 0 281M 40980 30880 S 0.0 1.0 0:00.00 /usr/bin/vmtoolsd -n vmu
1663 pp 20 0 281M 40980 30880 S 0.0 1.0 0:00.00 /usr/bin/vmtoolsd -n vmu
1686 pp 20 0 281M 40980 30880 S 0.0 1.0 0:00.00 /usr/bin/vmtoolsd -n vmu
1420 colord 20 0 238M 16680 9796 S 0.0 0.4 0:00.30 /usr/libexec/colord
1423 colord 20 0 238M 16680 9796 S 0.0 0.4 0:00.00 /usr/libexec/colord
1425 colord 20 0 238M 16680 9796 S 0.0 0.4 0:00.02 /usr/libexec/colord
1555 pp 20 0 430M 105M 85472 S 0.0 2.7 0:25.40 /usr/bin/qterminal
1626 pp 20 0 430M 105M 85472 S 0.0 2.7 0:03.11 /usr/bin/qterminal
1661 pp 20 0 430M 105M 85472 S 0.0 2.7 0:00.00 /usr/bin/qterminal
```

37. Kill a process with a specific PID.

```
(pp@pp)-[~]
$ xeyes

(pp@pp)-[~]
$ htop

(pp@pp)-[~]
$ kill 64372

(pp@pp)-[~]
$
```

38. Start an application and stop it using a command that kills processes by name(exeyes).

```
(pp@pp)-[~]
$ xeyes
zsh: terminated xeyes

(pp@pp)-[~]
$ htop

(pp@pp)-[~]
$ pkill xeyes

(pp@pp)-[~]
$
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39. Restart the application, then stop it using the interactive process viewer.

```

(pp@pp)-[~]
$ xeyes
5391 pp 20 0 307M 12724 7652 $ 0.0 0.3 0:00.00 /usr/libexec/
5392 pp 20 0 307M 12724 7652 $ 0.0 0.3 0:00.00 /usr/libexec/
5393 pp 20 0 307M 12724 7652 $ 0.0 0.3 0:00.00 /usr/libexec/
zsh: terminated xeyes
6042 pp 20 0 427M 101M 85128 $ 0.0 2.6 0:01.56 /usr/bin/qter
6043 pp 20 0 427M 101M 85128 $ 0.0 2.6 0:00.15 /usr/bin/qter
6044 pp 20 0 427M 101M 85128 $ 0.0 2.6 0:00.00 /usr/bin/qter
(pp@pp)-[~]
$ ps
6045 pp 20 0 10316 6564 4360 $ 0.0 0.2 0:00.30 /usr/bin/zsh

```

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40. Run a command in the background, then bring it to the foreground(exeyes).



41. Check how long the system has been running.

```
(pp@pp)-[~]
$ uptime
16:59:44 up 2:14, 1 user, load average: 0.44, 0.52, 0.55
(pp@pp)-[~]
```

42. List all jobs running in the background.

```

(pp@pp)-[~]
$ ps aux

```

| USER | PID | %CPU | %MEM | VSZ    | RSS   | TTY | STAT | START | TIME | COMMAND            |
|------|-----|------|------|--------|-------|-----|------|-------|------|--------------------|
| root | 1   | 0.0  | 0.3  | 102904 | 12268 | ?   | Ss   | 16:31 | 0:01 | /sbin/init splash  |
| root | 2   | 0.0  | 0.0  | 0      | 0     | ?   | S    | 16:31 | 0:00 | [kthreadd]         |
| root | 3   | 0.0  | 0.0  | 0      | 0     | ?   | I<   | 16:31 | 0:00 | [rcu_gp]           |
| root | 4   | 0.0  | 0.0  | 0      | 0     | ?   | I<   | 16:31 | 0:00 | [rcu_par_gp]       |
| root | 5   | 0.0  | 0.0  | 0      | 0     | ?   | I<   | 16:31 | 0:00 | [slub_flushwq]     |
| root | 6   | 0.0  | 0.0  | 0      | 0     | ?   | I<   | 16:31 | 0:00 | [netns]            |
| root | 8   | 0.0  | 0.0  | 0      | 0     | ?   | I<   | 16:31 | 0:00 | [kworker/0:0H-eva] |
| root | 10  | 0.0  | 0.0  | 0      | 0     | ?   | I<   | 16:31 | 0:00 | [mm_percpu_wq]     |
| root | 11  | 0.0  | 0.0  | 0      | 0     | ?   | I    | 16:31 | 0:00 | [rcu_tasks_kthre]  |
| root | 12  | 0.0  | 0.0  | 0      | 0     | ?   | I    | 16:31 | 0:00 | [rcu_tasks_rude_k] |
| root | 13  | 0.0  | 0.0  | 0      | 0     | ?   | I    | 16:31 | 0:00 | [rcu_tasks_trace]  |

## Section 5: Networking Commands:

43. Display the network configuration.

```
(pp@pp)~[~/Desktop/000]
$ ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.179.128 netmask 255.255.255.0 broadcast 192.168.179.255
    inet6 fe80::20c:29ff:feaa:f76b prefixlen 64 scopeid 0x20<link>
    ether 00:0c:29:aa:f7:6b txqueuelen 1000 (Ethernet)
    RX packets 9067 bytes 1022990 (999.0 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 6091 bytes 529968 (517.5 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>
```



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44. Check the IP address of your machine.

```
(pp@pp)-[~]
$ ip addr show | grep inet
inet 127.0.0.1/8 scope host lo
inet6 ::1/128 scope host 
inet 192.168.179.128/24 brd 192.168.179.255 scope global dyna
inet6 fe80::20c:29ff:feaa:f76b/64 scope link noprefixroute
(pp@pp)-[~]
```

45. Test connectivity to an external server.

```
(pp@pp)-[~]
$ ping 192.168.179.128
PING 192.168.179.128 (192.168.179.128) 56(84) bytes of data.
64 bytes from 192.168.179.128: icmp_seq=1 ttl=64 time=0.014 ms
64 bytes from 192.168.179.128: icmp_seq=2 ttl=64 time=0.082 ms
64 bytes from 192.168.179.128: icmp_seq=3 ttl=64 time=0.080 ms
64 bytes from 192.168.179.128: icmp_seq=4 ttl=64 time=0.071 ms
64 bytes from 192.168.179.128: icmp_seq=5 ttl=64 time=0.084 ms
64 bytes from 192.168.179.128: icmp_seq=6 ttl=64 time=0.072 ms
64 bytes from 192.168.179.128: icmp_seq=7 ttl=64 time=0.073 ms
64 bytes from 192.168.179.128: icmp_seq=8 ttl=64 time=0.121 ms
64 bytes from 192.168.179.128: icmp_seq=9 ttl=64 time=0.073 ms
64 bytes from 192.168.179.128: icmp_seq=10 ttl=64 time=0.074 ms
64 bytes from 192.168.179.128: icmp_seq=11 ttl=64 time=0.072 ms
```

46. Display the routing table.

```
(pp@pp)-[~]
$ route
Kernel IP routing table
Destination Gateway Genmask Flags Metric Ref Use Iface
default 192.168.179.2 0.0.0.0 UG 100 0 0 eth0
192.168.179.0 0.0.0.0 255.255.255.0 U 100 0 0 eth0
(pp@pp)-[~]
```

47. Check the open ports and active connections.

```
(pp@pp)-[~]
$ ss -antp
State Recv-Q Send-Q Local Address:Port Peer Address:Port Process
(pp@pp)-[~]
```

48. Show the IP address of the host machine and the VM, and verify if they are on the same network.

```
(pp@pp)-[~]
$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group
    link/ether 00:0c:29:aa:f7:6b brd ff:ff:ff:ff:ff:ff
    inet 192.168.179.128/24 brd 192.168.179.255 scope global dynamic noprefixroute
        valid_lft 1190sec preferred_lft 1190sec
    inet6 fe80::20c:29ff:feaa:f76b/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
```

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49. Trace the route to an external server.

```
(pp@pp)-[~]
$ traceroute 8.8.8.8
traceroute to 8.8.8.8 (8.8.8.8), 30 hops max, 60 byte packets
 1 192.168.179.2 (192.168.179.2)  0.573 ms  0.451 ms  0.261 ms
 2 192.168.179.2 (192.168.179.2)  0.477 ms !N  0.240 ms !N  0.600 ms !N
```

50. Find out the default gateway.

```
(pp@pp)-[~]
$ ip route show
default via 192.168.179.2 dev eth0 proto dhcp src 192.168.179.128 metric 100
192.168.179.0/24 dev eth0 proto kernel scope link src 192.168.179.128 metric 100
```

51. Check the MAC address of your network interface.

```
(pp@pp)-[~]
$ ip link show
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN mode DEFAULT group default qlen 1000
   link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP mode DEFAULT group default qlen 1000
   link/ether 00:0c:29:aa:f7:6b brd ff:ff:ff:ff:ff:ff
```

52. Ensure that the VM can access external networks.

```
(pp@pp)-[~]
$ ping 192.168.179.128
PING 192.168.179.128 (192.168.179.128) 56(84) bytes of data:
64 bytes from 192.168.179.128: icmp_seq=1 ttl=64 time=0.014 ms
64 bytes from 192.168.179.128: icmp_seq=2 ttl=64 time=0.082 ms
64 bytes from 192.168.179.128: icmp_seq=3 ttl=64 time=0.080 ms
64 bytes from 192.168.179.128: icmp_seq=4 ttl=64 time=0.071 ms
64 bytes from 192.168.179.128: icmp_seq=5 ttl=64 time=0.084 ms
64 bytes from 192.168.179.128: icmp_seq=6 ttl=64 time=0.072 ms
64 bytes from 192.168.179.128: icmp_seq=7 ttl=64 time=0.073 ms
64 bytes from 192.168.179.128: icmp_seq=8 ttl=64 time=0.121 ms
64 bytes from 192.168.179.128: icmp_seq=9 ttl=64 time=0.073 ms
64 bytes from 192.168.179.128: icmp_seq=10 ttl=64 time=0.074 ms
64 bytes from 192.168.179.128: icmp_seq=11 ttl=64 time=0.072 ms
```

## Section 6: UFW Firewall:

53. Enable the firewall.

```
(pp@pp)-[~]
$ sudo ufw enable
Firewall is active and enabled on system startup
(pp@pp)-[~]
```

54. Allow SSH connections through the firewall.

```
sudo
```

55. Deny all incoming traffic by default.

```
sudo ufw default deny
```

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56. Allow HTTP and HTTPS traffic.

```
(pp@pp)-[~]
$ sudo ufw allow http
Rule added
Rule added (v6)

(pp@pp)-[~]
$ sudo ufw allow https
Rule added
Rule added (v6)

(pp@pp)-[~]
```

57. Allow port 23

```
(pp@pp)-[~]
$ sudo ufw allow 23
Rule added
Rule added (v6)
```

58. Reset the firewall settings.

```
(pp@pp)-[~]
$ sudo ufw reset
Resetting all rules to installed defaults. Proceed with operation (y|n) to continue, ctrl-c to abort.
Backing up 'user.rules' to '/etc/ufw/user.rules.20240907_173908'
Backing up 'before.rules' to '/etc/ufw/before.rules.20240907_173908'
Backing up 'after.rules' to '/etc/ufw/after.rules.20240907_173908'
Backing up 'user6.rules' to '/etc/ufw/user6.rules.20240907_173908'
Backing up 'before6.rules' to '/etc/ufw/before6.rules.20240907_173908'
Backing up 'after6.rules' to '/etc/ufw/after6.rules.20240907_173908'

(pp@pp)-[~]
```

59. Delete a rule from the firewall.

`sudo ufw delete`

60. Disable the firewall.

```
(pp@pp)-[~]
$ sudo ufw disable
Firewall stopped and disabled on system startup

(pp@pp)-[~]
```

61. View the status of the firewall.

```
(pp@pp)-[~]
$ sudo ufw status
Status: active

To Action From
--
22/tcp ALLOW Anywhere
22/tcp (v6) ALLOW Anywhere (v6)
```

## Mid Exam

62. Log firewall activity and view it.

```
(pp@pp)-[~]  
$ sudo ufw logging on  
Logging enabled
```

### Section 7: Searching and System Information:

63. Delete the command history.

```
(pp@pp)-[~]  
$ history -c  
fc: event not found: -c
```

64. Search for a kali in the `/etc/passwd` file.

```
(pp@pp)-[~/Desktop]  
$ grep "pp" /etc/passwd  
pp:x:1000:1000:pp,,,:/home/pp:/usr/bin/zsh  
(pp@pp)-[~/Desktop]
```

65. Search for a kali in the `/etc/group` file.

```
(pp@pp)-[~/Desktop]  
$ grep "pp" /etc/group  
adm:x:4:pp  
dialout:x:20:pp  
cdrom:x:24:pp  
floppy:x:25:pp  
sudo:x:27:pp  
audio:x:29:pulse,pp  
dip:x:30:pp  
video:x:44:pp  
plugdev:x:46:pp  
users:x:100:pp  
netdev:x:106:pp  
wireshark:x:117:pp  
bluetooth:x:120:pp  
scanner:x:129:saned,pp  
pp:x:1000:  
kaboxer:x:140:pp  
(pp@pp)-[~/Desktop]
```

66. Locate the `passwd` file.

```
(pp@pp)-[~/Desktop]  
$ locate passwd  
/etc/passwd  
/etc/passwd-  
/etc/alternatives/vncpasswd  
/etc/alternatives/vncpasswd.1.gz  
/etc/pam.d/chpasswd  
/etc/pam.d/passwd  
/etc/security/opasswd  
/usr/bin/autopasswd  
/usr/bin/expect_autopasswd  
/usr/bin/expect_mkpasswd  
/usr/bin/expect_tkpasswd  
/usr/bin/gpasswd  
/usr/bin/grub-mkpasswd-pbkdf2  
/usr/bin/htpasswd  
/usr/bin/impacket-smbpasswd  
/usr/bin/ldappasswd  
/usr/bin/mkpasswd  
/usr/bin/mosquitto_passwd  
/usr/bin/passwd  
/usr/bin/smbpasswd  
/usr/bin/tightvncpasswd  
/usr/bin/tkpasswd
```

## Mid Exam

67. Locate the shadow file and open it.

```
(pp@pp)-[~/Desktop]
$ locate shadow
/etc/gshadow
/etc/gshadow-
/etc/shadow
/etc/shadow-
/usr/include/gshadow.h
/usr/include/shadow.h
/usr/include/boost/graph/detail/shadow_iterator.hpp
/usr/lib/modules/6.1.0-kali5-amd64/kernel/drivers/media
/usr/lib/modules/6.1.0-kali5-amd64/kernel/drivers/media
/usr/lib/python3/dist-packages/OpenGL/GL/ARB/fragment_p
/usr/lib/python3/dist-packages/OpenGL/GL/ARB/shadow.py
/usr/lib/python3/dist-packages/OpenGL/GL/ARB/shadow_amb
/usr/lib/python3/dist-packages/OpenGL/GL/ARB/_pycache_
/usr/lib/python3/dist-packages/OpenGL/GL/ARB/_pycache_
```

68. Search for all configuration files in the `/etc` directory.

```
(pp@pp)-[~/Desktop]
$ find /etc -type f
etc/dconf/db/local.d/kali-menu
etc/guymager/guymager.cfg
etc/X11/Xsession
etc/X11/Xreset.d/README
etc/X11/fonts/misc/xfonts-base.alias
etc/X11/fonts/100dpi/xfonts-100dpi.alias
etc/X11/fonts/Type1/fonts-urw-base35.alias
etc/X11/fonts/Type1/xfonts-scalable.scale
etc/X11/fonts/Type1/fonts-urw-base35.scale
etc/X11/fonts/Type1/lmodern.scale
etc/X11/fonts/Type1/tex-gyre.scale
etc/X11/fonts/75dpi/xfonts-75dpi.alias
etc/X11/xinit/xserverrc
etc/X11/xinit/xinitrc
etc/X11/xsm/system.xsm
etc/X11/Xsession.options
```

69. Search recursively for a specific word in the `/var/log` directory.

```
(pp@pp)-[~/Desktop]
$ grep -r "word" /var/log
grep: /var/log/vmware-vmtoolsd-root.log: Permission denied
grep: /var/log/installer/partman: Permission denied
/var/log/installer/status:Description: Set up users and passwords
/var/log/installer/hardware-summary:dmidecode: Power-On Password Status: Disabled
/var/log/installer/hardware-summary:dmidecode: Keyboard Password Status: Unknown
/var/log/installer/hardware-summary:dmidecode: Administrator Password Status: Enabled
grep: /var/log/installer/cdebconf/questions.dat: Permission denied
grep: /var/log/installer/cdebconf/templates.dat: Permission denied
grep: /var/log/installer/Xorg.0.log: Permission denied
grep: /var/log/installer/syslog: Permission denied
grep: /var/log/journal/85ba1974a7134194acfaeeb469c1cc8b/user-1000@64588863e22e4781be5e8ee007fd2-00061ee0ea32f056.journal: binary file matches
```

70. View the system's kernel version.

```
(pp@pp)-[~/Desktop]
$ uname -r
6.1.0-kali5-amd64
```

71. Display the system's memory usage.

```
(pp@pp)-[~/Desktop]
$ free -h
```

|       | total | used  | free  | shared | buff/cache | available |
|-------|-------|-------|-------|--------|------------|-----------|
| Mem:  | 3.8Gi | 1.0Gi | 2.4Gi | 7.4Mi  | 618Mi      | 2.8Gi     |
| Swap: | 974Mi | 0B    | 974Mi |        |            |           |

```
(pp@pp)-[~/Desktop]
```

## Mid Exam

72. Show the system's disk usage.

```
(pp@pp)-[~/Desktop]
$ df -h
Filesystem      Size  Used Avail Use% Mounted on
udev            1.9G   0    1.9G   0% /dev
tmpfs           389M  1.2M  388M   1% /run
/dev/sda1       97G   14G   79G   15% /
tmpfs           1.9G   0    1.9G   0% /dev/shm
tmpfs           5.0M   0    5.0M   0% /run/lock
tmpfs          389M   80K  389M   1% /run/user/1000
(pp@pp)-[~/Desktop]
```

73. Check the system's uptime and load average.

```
(pp@pp)-[~/Desktop]
$ uptime
10:57:36 up 28 min,  1 user,  load average: 0.76, 0.84, 0.72
(pp@pp)-[~/Desktop]
```

74. Display the current logged-in users.

```
(pp@pp)-[~/Desktop]
$ who
pp      tty7      2024-09-05 10:29 (:0)
(pp@pp)-[~/Desktop]
```

75. Check the identity of the current user.

```
(pp@pp)-[~/Desktop]
$ whoami
pp
(pp@pp)-[~/Desktop]
```

76. View the `/var/log/auth.log` file.

```
(pp@pp)-[~]
$ cat /var/log/apt/history.log
start-Date: 2024-09-03 17:11:45
commandline: apt-get install ufw
requested-by: pp (1000)
install: ufw:amd64 (0.36.2-6)
end-Date: 2024-09-03 17:12:00
```

77. Shred the `auth.log` file securely.

78. How do you lock a user account to prevent them from logging in.

```
(pp@pp)-[~]
$ sudo usermod -l user2
Usage: usermod [options] LOGIN

Options:
  -a, --append                append the user to the supplemental GROUPS
                              mentioned by the -G option without removing
                              the user from other groups
  -b, --badname               allow bad names
  -c, --comment COMMENT       new value of the GECOS field
  -d, --home HOME_DIR         new home directory for the user account
  -e, --expiredate EXPIRE_DATE set account expiration date to EXPIRE_DATE
  -f, --inactive INACTIVE     set password inactive after expiration
                              to INACTIVE
```

## Mid Exam

79. What command would you use to change a user's default shell.

```
sudo usermod -s /path/to/new/shell Ebrahim
```

80. Display the system's boot messages.

```
(pp@pp)-[~]
$ dmesg
[ 0.000000] Linux version 6.1.0-kali5-amd64 (devel@kali.org) (gcc-12 (Debian 12.1.0-1) Binutils for Debian) 2.40) #1 SMP PREEMPT_DYNAMIC Debian 6.1.12-1kali2 (2023-02-15)
[ 0.000000] Command line: BOOT_IMAGE=/boot/vmlinuz-6.1.0-kali5-amd64 root=UUID=94788f5c-94788f5c ro quiet splash
[ 0.000000] Disabled fast string operations
[ 0.000000] x86/fpu: Supporting XSAVE feature 0x001: 'x87 floating point registers'
[ 0.000000] x86/fpu: Supporting XSAVE feature 0x002: 'SSE registers'
[ 0.000000] x86/fpu: Supporting XSAVE feature 0x004: 'AVX registers'
[ 0.000000] x86/fpu: xstate_offset[2]: 576, xstate_sizes[2]: 256
[ 0.000000] x86/fpu: Enabled xstate features 0x7, context size is 832 bytes, using 16K buffers
[ 0.000000] signal: max sigframe size: 1776
[ 0.000000] BIOS-provided physical RAM map:
[ 0.000000] BIOS-e820: [mem 0x0000000000000000-0x0000000000009ebf] usable
[ 0.000000] BIOS-e820: [mem 0x0000000000009ec0-0x0000000000009fff] reserved
[ 0.000000] BIOS-e820: [mem 0x000000000000dc00-0x000000000000ffff] reserved
```