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**1Q)Distinguish between man and whatis commands? Justify with proper example.
sol)**

The 'man' command displays the full manual page for a Linux command. This manual page provides details on syntax, options, and other usage instructions.

Example:

'\$ man ls' produces a display of the manual for ls.

The 'whatis' command provides only a short, one-line description of the command.

Example:

'\$ whatis ls' produces 'ls (1) – list directory contents'.

**2Q)Use the tee command to save the output of ls -l into a file while also displaying it.
sol)**

The tee command allows for output to be split between the display and a file.

ls -l | tee output.txt

This will display on STDOUT and save the output to output.txt.

Example:

```
(raakin@Kali)-[~]  
$ ls -l | tee demo.txt  
total 60
```

```
-rw-rw-r-- 1 raakin raakin  20 Sep  8 15:49 demo.txt  
drwxr-xr-x 2 raakin raakin 4096 Aug 16 12:04 Desktop  
drwxr-xr-x 2 raakin raakin 4096 Sep 18 14:21 Documents  
drwxr-xr-x 2 raakin raakin 4096 Aug 16 12:04 Downloads  
-rw-rw-r-- 1 raakin raakin   0 Sep 18 14:23 hi1.txt  
-rw-r--r-- 1 root  root   28 Sep 16 15:48 hi.txtM-A  
-rw-rw-r-- 1 raakin raakin   0 Sep 13 23:04 hi.zh  
drwxrwxr-x 2 raakin raakin 4096 Sep 23 16:05 linx  
-rw-rw-r-- 1 raakin raakin  18 Sep 18 14:17 lol.txt  
drwxr-xr-x 2 raakin raakin 4096 Aug 16 12:04 Music  
-rw-rw-r-- 2 raakin raakin  18 Sep  9 20:40 no.txt  
-rw-rw-r-- 1 raakin raakin 854 Sep 27 18:21 output.txt  
drwxr-xr-x 2 raakin raakin 4096 Sep  8 15:54 Pictures  
drwxr-xr-x 2 raakin raakin 4096 Aug 16 12:04 Public  
drwxrwxr-x 2 raakin raakin 4096 Sep 18 14:24 raak  
drwxr-xr-x 2 raakin raakin 4096 Aug 16 12:04 Templates  
drwxr-xr-x 2 raakin raakin 4096 Aug 16 12:04 Videos
```

3Q)Explain with an example how the tee command can be used in logging.

sol)

The tee command logs program output as it's being displayed.

The ping command will show the ping output live, while also saving a copy in the ping_log.txt to be referenced later.

Example:

```
(raakin@Kali)-[~]  
$ ping google.com | tee ping_log.txt  
PING google.com (172.217.26.14) 56(84) bytes of data.  
64 bytes from nrt20s02-in-f14.1e100.net (172.217.26.14): icmp_seq=1 ttl=118 time=49.9 ms  
64 bytes from nrt20s02-in-f14.1e100.net (172.217.26.14): icmp_seq=2 ttl=118 time=70.6 ms  
64 bytes from nrt20s02-in-f14.1e100.net (172.217.26.14): icmp_seq=3 ttl=118 time=102 ms  
64 bytes from nrt20s02-in-f14.1e100.net (172.217.26.14): icmp_seq=4 ttl=118 time=56.9 ms  
64 bytes from nrt20s02-in-f14.1e100.net (172.217.26.14): icmp_seq=5 ttl=118 time=82.7 ms  
64 bytes from nrt20s02-in-f14.1e100.net (172.217.26.14): icmp_seq=6 ttl=118 time=57.1 ms  
64 bytes from nrt20s02-in-f14.1e100.net (172.217.26.14): icmp_seq=7 ttl=118 time=70.9 ms  
64 bytes from nrt20s02-in-f14.1e100.net (172.217.26.14): icmp_seq=8 ttl=118 time=50.0 ms  
64 bytes from nrt20s02-in-f14.1e100.net (172.217.26.14): icmp_seq=9 ttl=118 time=67.1 ms  
64 bytes from nrt20s02-in-f14.1e100.net (172.217.26.14): icmp_seq=10 ttl=118 time=90.7 ms  
64 bytes from nrt20s02-in-f14.1e100.net (172.217.26.14): icmp_seq=11 ttl=118 time=51.4 ms
```

4Q)List the steps involved in installing Ubuntu 25.04 LTS on Oracle VirtualBox

sol)

Steps to install ubuntu in virtual box are:

1. Acquire the Ubuntu 25.04 LTS ISO image.
2. Install Oracle VirtualBox and open it.
3. Create a new virtual machine and select the Ubuntu option from the list (it is a choice of 64 bit).
4. Choose how much RAM you would like to dedicate, e.g. 4GB, and allocate space on disk for the virtual machine, e.g. 20GB.
5. Attach the ISO in the Storage section.
6. Start the virtual machine and follow steps in the Ubuntu installation wizard.
7. Create a username and password for the installation process and complete the install process.

5Q) During Ubuntu OS installation, you face a Kernel Panic Error. How would you troubleshoot it?

sol)

Solutions:

1. Make sure the ISO file is not corrupt (verify the SHA checksum).
2. Ability to increase resources of the VM (RAM/CPU).

3. Enable virtualization in BIOS.
4. Change VirtualBox settings → Processor (enable PAE/NX).
5. If the error persists, re-download the ISO and try again.

6Q)Write the command to display the system's hostname? How to change hostname using sysctl command?

sol)

Display hostname:

hostname

Change hostname:

sudo sysctl kernel.hostname=newname

This sets a new temporary hostname until reboot.

7Q)Which command is used to show the calendar of the year 1984 with August month?
sol)

The cal command is used.

Example:

```
└─(raakin@Kali)-[~]
```

```
└─$ cal 8 1984
```

August 1984

Su Mo Tu We Th Fr Sa

1 2 3 4

5 6 7 8 9 10 11

12 13 14 15 16 17 18

19 20 21 22 23 24 25

26 27 28 29 30 31

8Q)Write a command to display system uptime and logged-in users together.

sol)

The command “w” was used to display the system uptime and logged in users together.

Example:

└─(raakin@Kali)-[~]

└─\$ w

18:36:16 up 1:56, 1 user, load average: 0.31, 0.25, 0.15

USER	TTY	FROM	LOGIN@	IDLE	JCPU	PCPU	WHAT
raakin	-	16:41	0.00s	0.02s	lightdm	--session-child 13	20

9Q)Use the find command to list all “.c” files in /home/user.

sol)

The command “find /home/user -name “*.c””

This searches recursively inside /home/user for all files ending with .c.

10Q)How do you change file permissions to allow only the owner to read and write?

sol)

The command chmod is used to change permissions of a file to only allow the owner to read and write

chmod 600 filename

This gives owner = read/write, group = no permission, others = no permission.