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Lab Practical #01:

Perform various Linux commands and configure kali Linux with Virtual Machine.

Practical Assignment #01:

1.Perform various Linux commands

1. **Pwd:**

```
┌──(kali㉿kali)-[~/Downloads]
└─$ pwd
/home/kali/Downloads
```

2. **Ls:**

```
┌──(kali㉿kali)-[~]
└─$ ls
Android  Documents  Music     Public    Templates
Desktop  Downloads  Pictures  scan.txt  Videos

┌──(kali㉿kali)-[~]
└─$
```

3. **Cd:**

```
┌──(kali㉿kali)-[~]
└─$ cd Desktop

┌──(kali㉿kali)-[~/Desktop]
└─$
```

4. **Mkdir:**

```
┌──(kali㉿kali)-[~/Desktop]
└─$ mkdir hello

┌──(kali㉿kali)-[~/Desktop]
└─$ ls
flappybird.apk  hack_flappybird.apk  hello
```

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5. **Rm:**

```
┌──(kali㉿kali)-[~/Desktop]
└─$ rm -r hello

┌──(kali㉿kali)-[~/Desktop]
└─$ ls
flappybird.apk  hack_flappybird.apk
```

6. **Cp:**

```
┌──(kali㉿kali)-[~/Downloads]
└─$ cp hello.txt hii.txt
```

7. **Mv:**

```
┌──(kali㉿kali)-[~/Downloads]
└─$ mv hello.txt by.txt

┌──(kali㉿kali)-[~/Downloads]
└─$ ls
android-sdk  by.txt  commandlinetools-linux.zip  hello  hii.txt
```

8. **Cat:**

```
┌──(kali㉿kali)-[~/Downloads]
└─$ cat hii.txt
hii
```

9. **Less:**

```
┌──(kali㉿kali)-[~/Downloads]
└─$ less by.txt
```

```
hii

by.txt (END)
```

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10. **Nano:**

```
┌──(kali㉿kali)-[~/Downloads]
└─$ nano hello.txt
```

```
  GNU nano 8.1                          hello.txt *
hi
hii
hiii
hiiii
```

```
┌──(kali㉿kali)-[~/Downloads]
└─$ cat hello.txt
hi
hii
hiii
hiiii
```

11. **Vi or vim:**

```
hi
hii
hiii
hiiii
hiiiiiii
~
~
-- INSERT --                                              5,10          All
```

12. **Head:**

```
┌──(kali㉿kali)-[~/Downloads]
└─$ head hello.txt
hi
hii
hiii
hiiii
hiiiiiiii
```

13. **Tail:**

```
┌──(kali㉿kali)-[~/Downloads]
└─$ tail hello.txt
hi
hii
hiii
hiiii
hiiiiiiii
```

14. **Chmod:**

```
┌──(kali㉿kali)-[~/Downloads]
└─$ chmod 755 hello.txt
```

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15. **Chown:**

```
┌──(kali㉿kali)-[~/Downloads]
└─$ chown kali hello.txt
```

16. **Ls -l:**

```
┌──(kali㉿kali)-[~/Downloads]
└─$ ls -l
total 150028
drwxrwxr-x 3 kali kali      4096 Dec  5 10:41 android-sdk
-rw-rw-r-- 1 kali kali         5 Dec 13 02:55 by.txt
-rw-rw-r-- 1 kali kali 153607504 Dec  5 10:34 commandlinetools-linux.zip
drwxrwxr-x 2 kali kali      4096 Dec 13 02:50 hello
-rwxr-xr-x 1 kali kali        28 Dec 16 11:50 hello.txt
-rw-rw-r-- 1 kali kali         5 Dec 13 02:59 hii.txt
```

17. **Uname -a:**

```
┌──(kali㉿kali)-[~/Downloads]
└─$ uname -a
Linux kali 6.8.11-amd64 #1 SMP PREEMPT_DYNAMIC Kali 6.8.11-1kali2 (2024-05-30
) x86_64 GNU/Linux
```

18. **Hostname:**

```
┌──(kali㉿kali)-[~/Downloads]
└─$ hostname
kali
```

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19. Df -h:

```
┌──(kali㉿kali)-[~/Downloads]
└─$ df -h
Filesystem      Size  Used Avail Use% Mounted on
udev            946M     0  946M   0% /dev
tmpfs           198M  968K  197M   1% /run
/dev/sda1        79G   16G   59G  22% /
tmpfs           988M     0  988M   0% /dev/shm
tmpfs           5.0M     0  5.0M   0% /run/lock
tmpfs           1.0M     0  1.0M   0% /run/credentials/systemd-journald.servi
ce
tmpfs           1.0M     0  1.0M   0% /run/credentials/systemd-udev-load-cred
entials.service
tmpfs           1.0M     0  1.0M   0% /run/credentials/systemd-tmpfiles-setup
-dev-early.service
tmpfs           1.0M     0  1.0M   0% /run/credentials/systemd-sysctl.service
tmpfs           1.0M     0  1.0M   0% /run/credentials/systemd-tmpfiles-setup
-dev.service
tmpfs           988M  8.0K  988M   1% /tmp
tmpfs           1.0M     0  1.0M   0% /run/credentials/systemd-tmpfiles-setup
.service
tmpfs           1.0M     0  1.0M   0% /run/credentials/getty@tty1.service
tmpfs           198M  124K  198M   1% /run/user/1000
```

20. Du -sh:

```
┌──(kali㉿kali)-[~/Downloads]
└─$ du -sh
294M    .
```

21. Free -h:

```
┌──(kali㉿kali)-[~/Downloads]
└─$ free -h
               total        used        free      shared  buff/cache   availa
ble
Mem:           1.9Gi       690Mi       791Mi        15Mi       648Mi       1.
3Gi
Swap:          1.0Gi          0B       1.0Gi
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22. Top/htop:

```
┌──(kali㉿kali)-[~/Downloads]
└─$ top
top - 12:04:41 up 37 min,  2 users,  load average: 0.41, 0.21, 0.12
Tasks: 163 total,   1 running, 162 sleeping,   0 stopped,   0 zombie
%Cpu0  :  0.9 us,  1.8 sy,  0.0 ni, 96.4 id,  0.5 wa,  0.0 hi,  0.5 si,  0.0
%Cpu1  :  1.4 us,  1.4 sy,  0.0 ni, 96.8 id,  0.0 wa,  0.0 hi,  0.5 si,  0.0
MiB Mem :   1974.6 total,    791.1 free,    691.2 used,    649.2 buff/cache
MiB Swap:   1024.0 total,   1024.0 free,      0.0 used.   1283.4 avail Mem
```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+
663	root	20	0	428192	119264	63640	S	4.3	5.9	1:05.35
974	kali	20	0	975544	121160	80980	S	0.9	6.0	0:11.56
14777	root	20	0	0	0	0	I	0.9	0.0	0:01.68
30	root	20	0	0	0	0	I	0.4	0.0	0:01.61
919	kali	20	0	216044	3212	2816	S	0.4	0.2	0:10.94
959	kali	20	0	233944	7168	6528	S	0.4	0.4	0:00.41
1025	kali	20	0	594512	78272	43624	S	0.4	3.9	0:02.53
1033	kali	20	0	360848	50180	22508	S	0.4	2.5	0:09.16
1037	kali	20	0	456516	38616	30616	S	0.4	1.9	0:00.24
1095	kali	20	0	459492	104452	88404	S	0.4	5.2	0:06.30
18406	**kali**	**20**	**0**	**9272**	**5248**	**3200**	**R**	**0.4**	**0.3**	**0:00.33**

23. Whoami:

```
┌──(kali㉿kali)-[~/Downloads]
└─$ whoami
kali
```

24. Ifconfig:

```
┌──(kali㉿kali)-[~/Downloads]
└─$ ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.90.100  netmask 255.255.255.224  broadcast 192.168.90.12
7
        inet6 fe80::16ba:3558:2941:eb7b  prefixlen 64  scopeid 0×20<link>
        ether 08:00:27:ad:25:87  txqueuelen 1000  (Ethernet)
        RX packets 76  bytes 5830 (5.6 KiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 113  bytes 11071 (10.8 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 0×10<host>
        loop  txqueuelen 1000  (Local Loopback)
        RX packets 8  bytes 480 (480.0 B)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 8  bytes 480 (480.0 B)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

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25. Ping:

```
┌──(kali㉿kali)-[~/Downloads]
└─$ ping www.google.com
PING www.google.com (142.250.192.228) 56(84) bytes of data.
64 bytes from del11s13-in-f4.1e100.net (142.250.192.228): icmp_seq=1 ttl=111
time=299 ms
64 bytes from del11s13-in-f4.1e100.net (142.250.192.228): icmp_seq=2 ttl=111
time=176 ms
64 bytes from del11s13-in-f4.1e100.net (142.250.192.228): icmp_seq=3 ttl=111
time=182 ms
64 bytes from del11s13-in-f4.1e100.net (142.250.192.228): icmp_seq=4 ttl=111
time=148 ms
^C
── www.google.com ping statistics ──
4 packets transmitted, 4 received, 0% packet loss, time 3128ms
rtt min/avg/max/mdev = 148.424/201.305/298.878/57.728 ms
```

26. Netstat:

```
┌──(kali㉿kali)-[~/Downloads]
└─$ netstat
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State

udp        0      0 10.0.2.15:bootpc        10.0.2.2:bootps         ESTABLISH
ED
Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags       Type       State         I-Node   Path
unix  3      [ ]         STREAM     CONNECTED     9609     /run/user/1000/bus
unix  3      [ ]         STREAM     CONNECTED     9402
unix  3      [ ]         STREAM     CONNECTED     9152     /run/dbus/system_b
us_socket
```

27. Nmap:

```
┌──(kali㉿kali)-[~/Downloads]
└─$ nmap scanme.nmap.org
Starting Nmap 7.94SVN ( https://nmap.org ) at 2024-12-16 12:10 EST
Note: Host seems down. If it is really up, but blocking our ping probes, try
-Pn
Nmap done: 1 IP address (0 hosts up) scanned in 4.37 seconds
```

28. Wget:

```
┌──(kali㉿kali)-[~/Downloads]
└─$ wget https://dl.prokerala.com/downloads/ringtones/files/mp3/jack-sparrow-
bgm-remix-53256.mp3
```

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29. Curl:

```
┌──(kali㉿kali)-[~/Downloads]
└─$ curl -O https://dl.prokerala.com/downloads/ringtones/files/mp3/jack-sparrow-bgm-remix-53256.mp3
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
  0     0    0     0    0     0      0      0 --:--:-- --:--:-- --:--:--
100  1360    0  1360    0     0   2032      0 --:--:-- --:--:-- --:--:--   202
100  234k    0  234k    0     0   237k      0 --:--:-- --:--:-- --:--:--   237k
```

30. Apt update:

```
┌──(kali㉿kali)-[~/Downloads]
└─$ sudo apt update
Get:1 http://kali.download/kali kali-rolling InRelease [41.5 kB]
Get:2 http://kali.download/kali kali-rolling/main amd64 Packages [20.3 MB]
Get:3 http://kali.download/kali kali-rolling/main amd64 Contents (deb) [48.8 MB]
Get:4 http://kali.download/kali kali-rolling/contrib amd64 Packages [110 kB]
Get:5 http://kali.download/kali kali-rolling/contrib amd64 Contents (deb) [262 kB]
Get:6 http://kali.download/kali kali-rolling/non-free amd64 Packages [196 kB]
Get:7 http://kali.download/kali kali-rolling/non-free amd64 Contents (deb) [876 kB]
Get:8 http://kali.download/kali kali-rolling/non-free-firmware amd64 Packages [10.6 kB]
Fetched 70.6 MB in 1min 5s (1,087 kB/s)
1871 packages can be upgraded. Run 'apt list --upgradable' to see them.
```

31. Apt upgrade:

```
┌──(kali㉿kali)-[~/Downloads]
└─$ sudo apt upgrade
The following packages were automatically installed and are no longer required:
  fonts-liberation2          libjsoncpp25
  freerdp2-x11               libmagickcore-6.q16-7-extra
  hydra-gtk                  libmagickcore-6.q16-7t64
  ibverbs-providers          libmagickwand-6.q16-7t64
  imagemagick-6-common       libmbedcrypto7t64
  imagemagick-6.q16          libmfx1
  libassuan0                 libperl5.38t64
```

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32. Apt install:

```
┌──(kali㉿kali)-[~/Downloads]
└─$ sudo apt install nmap
Upgrading:
  nmap  nmap-common

Summary:
  Upgrading: 2, Installing: 0, Removing: 0, Not Upgrading: 1869
  Download size: 6,269 kB
  Space needed: 290 kB / 62.9 GB available
```

33. Apt remove:

```
┌──(kali㉿kali)-[~/Downloads]
└─$ sudo apt remove neofetch
The following packages were automatically installed and are no longer require
d:
  caca-utils  chafa  jp2a  libchafa0t64
Use 'sudo apt autoremove' to remove them.

REMOVING:
  neofetch

Summary:
  Upgrading: 0, Installing: 0, Removing: 1, Not Upgrading: 1865
  Freed space: 360 kB

Continue? [Y/n]
```

34. Ps:

```
┌──(kali㉿kali)-[~/Downloads]
└─$ ps
    PID TTY          TIME CMD
   1291 pts/0    00:00:09 zsh
  33865 pts/0    00:00:00 ps
```

35. Kill:

```
┌──(kali㉿kali)-[~/Downloads]
└─$ kill -9 100
kill: kill 100 failed: no such process
```

36. Jobs:

```
┌──(kali㉿kali)-[~]
└─$ jobs

┌──(kali㉿kali)-[~]
└─$
```

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37. Bg/fg:

```
┌──(kali㉿kali)-[~]
└─$ bg
bg: no current job
```

38. Bash :

```
┌──(kali㉿kali)-[~/Downloads]
└─$ bash welcome.sh
hello
```

39. Crontab -e :

```
┌──(kali㉿kali)-[~/Downloads]
└─$ crontab -e
no crontab for kali - using an empty one
Select an editor.  To change later, run select-editor again.
  1. /bin/nano        <---- easiest
  2. /usr/bin/vim.basic
  3. /usr/bin/vim.tiny

Choose 1-3 [1]: 3
No modification made
```

40. Grep:

```
┌──(kali㉿kali)-[~/Downloads]
└─$ grep "h" hello.txt
hi
hii
hiii
hiiii
hiiiiiii
```

41. Find

```
┌──(kali㉿kali)-[~/Downloads]
└─$ find 100bitcoin.txt
find: ‘100bitcoin.txt’: No such file or directory
```

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2. Configure kali Linux with Virtual Machine.

Here are the brief steps to configure Kali Linux with a Virtual Machine:

1. Download Required Software
   - Download a Virtual Machine software Oracle VirtualBox.
   - Download the Kali Linux ISO file or the Kali Linux VirtualBox image from the
   - official Kali Linux website.
2. Install Virtual Machine Software
   - Install VirtualBox on your host machine by following the installation prompts.
3. Create a New Virtual Machine
   - Open VirtualBox and click New.
   - Enter a name (e.g., "Kali Linux") and select Linux as the type and Debian (64-bit) as the version.
4. Allocate Resources
   - Assign the RAM (minimum 2 GB, recommended 4 GB or more).
   - Set the Processor count (2 or more cores for optimal performance).
   - Create a new Virtual Hard Disk (20 GB or more recommended).
5. Attach Kali Linux Image • Go to Settings > Storage and add the Kali Linux ISO to the optical drive.
6. Start the Virtual Machine
   - Boot the virtual machine, and it will load the Kali Linux installer or live environment.
   - Follow the on-screen instructions to install or run the live version of Kali Linux.
7. Install Kali Linux
   - Choose Graphical Install or Text Install (recommended: Graphical Install).
   - Set language, time zone, and keyboard layout.
   - Partition the disk (choose Guided - use entire disk for simplicity).
   - Create a user account and set a strong password.
   - Wait for the installation to complete.
8. Update Kali Linux
   - Open a terminal and run: sudo apt update && sudo apt upgrade -y
9. Start Using Kali Linux
   - Reboot the virtual machine if needed, and start exploring Kali Linux.