Admin 2-Lab1

1-Display the network interface information using `ip` command

```
radwa@radwa-VirtualBox:~$ ip addr show
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group defaul
t qlen 1000
    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: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP gr
oup default qlen 1000
    link/ether 08:00:27:fe:8d:d4 brd ff:ff:ff:ff:ff:ff
    inet 10.0.2.15/24 brd 10.0.2.255 scope global dynamic noprefixroute enp0s3
       valid_lft 77899sec preferred_lft 77899sec
    inet6 fe80::6d29:1cb2:8049:801d/64 scope link noprefixroute
       valid_lft forever preferred_lft forever
radwa@radwa-VirtualBox:~$
```

2-Display currently active TCP connections on your OS using `netstat`command

```
radwa@radwa-VirtualBox:~$ sudo apt install nmap
[sudo] password for radwa:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  libblas3 liblinear4 lua-lpeg nmap-common
Suggested packages:
  liblinear-tools liblinear-dev ncat ndiff zenmap
The following NEW packages will be installed:
  libblas3 liblinear4 lua-lpeg nmap nmap-common
0 upgraded, 5 newly installed, 0 to remove and 7 not upgraded.
Need to get 5,972 kB of archives.
After this operation, 26.3 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://us.archive.ubuntu.com/ubuntu jammy/main amd64 libblas3 amd64 3.10.0
-2ubuntu1 [228 kB]
Get:2 http://us.archive.ubuntu.com/ubuntu jammy/universe amd64 liblinear4 amd64
2.3.0+dfsg-5 [41.4 kB]
Get:3 http://us.archive.ubuntu.com/ubuntu jammy/universe amd64 lua-lpeg amd64 1.
0.2-1 [31.4 kB]
Get:4 http://us.archive.ubuntu.com/ubuntu jammy/universe amd64 nmap-common all 7
.91+dfsg1+really7.80+dfsg1-2build1 [3,940 kB]
Get:5 http://us.archive.ubuntu.com/ubuntu jammy/universe amd64 nmap amd64 7.91+d
```

```
radwa@radwa-VirtualBox:~$ netstat -t
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp        0      0 10.0.2.15:39688         banjo.canonical.co:http TIME_WAIT
radwa@radwa-VirtualBox:~$
```

3-Display currently open ports on your system using `nmap` command

```
radwa@radwa-VirtualBox:~$ netstat -a -n | grep ESTABLISHED
udp        0      0 10.0.2.15:68            10.0.2.2:67             ESTABLISHED
radwa@radwa-VirtualBox:~$
```

Part1

1-Using loop devices create 4 PVs

```
radwa@radwa-VirtualBox:~$ sudo dd if=/dev/zero of=/pv1.img bs=512M count=1
1+0 records in
1+0 records out
536870912 bytes (537 MB, 512 MiB) copied, 1.70247 s, 315 MB/s
radwa@radwa-VirtualBox:~$ sudo dd if=/dev/zero of=/pv2.img bs=512M count=1
1+0 records in
1+0 records out
536870912 bytes (537 MB, 512 MiB) copied, 1.12267 s, 478 MB/s
radwa@radwa-VirtualBox:~$ sudo dd if=/dev/zero of=/pv3.img bs=512M count=1
1+0 records in
1+0 records out
536870912 bytes (537 MB, 512 MiB) copied, 1.27246 s, 422 MB/s
radwa@radwa-VirtualBox:~$ sudo dd if=/dev/zero of=/pv4.img bs=512M count=1
1+0 records in
1+0 records out
536870912 bytes (537 MB, 512 MiB) copied, 1.19664 s, 449 MB/s
radwa@radwa-VirtualBox:~$
```

```
radwa@radwa-VirtualBox:~$ sudo losetup -f /pv1.img
radwa@radwa-VirtualBox:~$ sudo losetup -f /pv2.img
radwa@radwa-VirtualBox:~$ sudo losetup -f /pv3.img
radwa@radwa-VirtualBox:~$ sudo losetup -f /pv4.img
radwa@radwa-VirtualBox:~$ sudo losetup
NAME SIZELIMIT OFFSET AUTOCLEAR RO BACK-FILE                              DIO LOG-SEC
/dev/loop1
             0      0         1  1 /var/lib/snapd/snaps/core20_1587.snap
                                                                          0     512
/dev/loop19
             0      0         0  0 /pv3.img                               0     512
/dev/loop17
             0      0         0  0 /pv1.img                               0     512
/dev/loop8
             0      0         1  1 /var/lib/snapd/snaps/snap-store_582.snap
                                                                          0     512
/dev/loop15
             0      0         1  1 /var/lib/snapd/snaps/snapd-desktop-integratio
n_57.snap
                                                                          0     512
/dev/loop6
             0      0         1  1 /var/lib/snapd/snaps/gnome-3-38-2004_119.snap
                                                                          0     512
```

2-Create VG and add 3 on PVs to it

```
radwa@radwa-VirtualBox:~$ sudo vgcreate vg1 /dev/loop17 /dev/loop18 /dev/loop19
  Physical volume "/dev/loop17" successfully created.
  Physical volume "/dev/loop18" successfully created.
  Physical volume "/dev/loop19" successfully created.
  Volume group "vg1" successfully created
radwa@radwa-VirtualBox:~$
```

3-Create LV which has size of 250M

```
radwa@radwa-VirtualBox:~$ sudo lvcreate -L 250M -n lv1 vg1
  Rounding up size to full physical extent 252.00 MiB
  Logical volume "lv1" created.
radwa@radwa-VirtualBox:~$
```

4-format LV using ext4

```
radwa@radwa-VirtualBox:~$ sudo mkfs.ext4 /dev/vg1/lv1
mke2fs 1.46.5 (30-Dec-2021)
Discarding device blocks: done
Creating filesystem with 64512 4k blocks and 64512 inodes
Filesystem UUID: d8af596b-d570-4f7d-8e37-ad83a8e72bc2
Superblock backups stored on blocks:
        32768

Allocating group tables: done
Writing inode tables: done
Creating journal (4096 blocks): done
Writing superblocks and filesystem accounting information: done
```

5-mount LV into /mnt directory

```
radwa@radwa-VirtualBox:~$ sudo mkdir /mnt/mylv
radwa@radwa-VirtualBox:~$ sudo mount /dev/vg1/lv1 /mnt/mylv
radwa@radwa-VirtualBox:~$
```

6-Extend vg with remaining PV

```
radwa@radwa-VirtualBox:~$ sudo vgextend vg1 /dev/loop20
  Physical volume "/dev/loop20" successfully created.
  Volume group "vg1" successfully extended
radwa@radwa-VirtualBox:~$
```

7-Extend LV with +50M

```
radwa@radwa-VirtualBox:~$ sudo lvextend /dev/vg1/lv1 -L +50M
  Rounding size to boundary between physical extents: 52.00 MiB.
  Size of logical volume vg1/lv1 changed from 252.00 MiB (63 extents) to 304.00
MiB (76 extents).
  Logical volume vg1/lv1 successfully resized.
radwa@radwa-VirtualBox:~$
```

8-resize2fs LV with the 50M extra

```
radwa@radwa-VirtualBox:~$ sudo umount /dev/vg1/lv1
```

```
radwa@radwa-VirtualBox:~$ sudo e2fsck -f /dev/vg1/lv1
e2fsck 1.46.5 (30-Dec-2021)
Pass 1: Checking inodes, blocks, and sizes
Pass 2: Checking directory structure
Pass 3: Checking directory connectivity
Pass 4: Checking reference counts
Pass 5: Checking group summary information
/dev/vg1/lv1: 11/64512 files (0.0% non-contiguous), 8204/64512 blocks
radwa@radwa-VirtualBox:~$ sudo resize2fs /dev/vg1/lv1 +50M
resize2fs 1.46.5 (30-Dec-2021)
Resizing the filesystem on /dev/vg1/lv1 to 12800 (4k) blocks.
The filesystem on /dev/vg1/lv1 is now 12800 (4k) blocks long.
```