Lab 1

- Using loop devices, create 4 PVs

```
nada@Ubuntu:~$ sudo dd if=/dev/zero of=/d1.img bs=512 count=100000
100000+0 records in
100000+0 records out
51200000 bytes (51 MB, 49 MiB) copied, 3.17636 s, 16.1 MB/s
nada@Ubuntu:~$ sudo dd if=/dev/zero of=/d2.img bs=512 count=100000
100000+0 records in
100000+0 records out
51200000 bytes (51 MB, 49 MiB) copied, 3.273 s, 15.6 MB/s
nada@Ubuntu:~$ sudo dd if=/dev/zero of=/d3.img bs=512 count=100000
100000+0 records in
100000+0 records out
51200000 bytes (51 MB, 49 MiB) copied, 3.41648 s, 15.0 MB/s
nada@Ubuntu:~$ sudo dd if=/dev/zero of=/d4.img bs=512 count=100000
100000+0 records in
100000+0 records out
51200000 bytes (51 MB, 49 MiB) copied, 3.38941 s, 15.1 MB/s
```

```
nada@Ubuntu:~$ sudo losetup -f /d1.img
nada@Ubuntu:~$ sudo losetup -f /d2.img
nada@Ubuntu:~$ sudo losetup -f /d3.img
nada@Ubuntu:~$ sudo losetup -f /d4.img
```

- Create VG and add 3 on PVs to it

```
nada@Ubuntu:~$ sudo vgcreate vg /dev/loop16 /dev/loop17 /dev/loop18
  Physical volume "/dev/loop16" successfully created.
  Physical volume "/dev/loop17" successfully created.
  Physical volume "/dev/loop18" successfully created.
  Volume group "vg" successfully created
```

- create LV which has size of 250M

```
nada@Ubuntu:~$ sudo lvcreate -L 100M vg
  Logical volume "lvol0" created.
```

- format LV using ext4

```
nada@Ubuntu:~$ sudo mkfs.ext4 /dev/mapper/vg-lvol0
mke2fs 1.46.5 (30-Dec-2021)
Discarding device blocks: done
Creating filesystem with 25600 4k blocks and 25600 inodes

Allocating group tables: done
Writing inode tables: done
Creating journal (1024 blocks): done
Writing superblocks and filesystem accounting information: done
```

- mount LV into /mnt directory

```
nada@Ubuntu:~$ sudo mkdir /mnt/mylvo
nada@Ubuntu:~$ sudo mount /dev/vg/lvol0 /mnt/mylvo
```

- extend VG with the remaining PV

```
nada@Ubuntu:~$ sudo vgextend vg /dev/loop19
  Physical volume "/dev/loop19" successfully created.
  Volume group "vg" successfully extended
```

- extend LV with +50M

```
nada@Ubuntu:~$ sudo lvextend /dev/vg/lvol0 -L +50M
  Rounding size to boundary between physical extents: 52.00 MiB.
  Size of logical volume vg/lvol0 changed from 100.00 MiB (25 extents) to 152.00
 MiB (38 extents).
  Logical volume vg/lvol0 successfully resized.
```

- resize2fs LV with the 50M extra

```
nada@Ubuntu:~$ sudo resize2fs /dev/vg/lvol0 +50M
resize2fs 1.46.5 (30-Dec-2021)
```

- Display the network interface information using ip command

```
nada@Ubuntu:~$ 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 08:00:27:81:1c:bb 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 86065sec preferred_lft 86065sec
    inet6 fe80::daff:18f9:795e:a755/64 scope link noprefixroute
       valid_lft forever preferred_lft forever
```

```
nada@Ubuntu:~$ sudo apt install nmap
[sudo] password for nada:
Reading package lists... Done
Building dependency tree... Done
```

```
nada@Ubuntu:~$ sudo apt install net-tools
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
```

- Display currently active TCP connections on your OS using netstatcommand

```
nada@Ubuntu:~$ netstat -t
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp        0      0 Ubuntu:39140           snapstore-content:https ESTABLISHED
```

- Display currently open ports on your system using nmap command (install it using apt)

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