

Task 1: Attach 3 disks of 5GB each. create 2 LVMs from these disks of 7GB (/lvm1) and 8GB (/lvm2) with XFS and EXT4 file systems respectively. add another hdd of 4GB and extend 2-2GB on both LVMs.

Hint:

```
lvcreate -l 50%FREE -n lv1 vg1
lvcreate -l 50%FREE -n lv2 vg1
mkfs.xfs
mkfs.ext4
vgextend
lvextend
xfs_growfs
```

## Solution-

```
[root@svr ~]# fdisk /dev/sdc
Welcome to fdisk (util-linux 2.23.2).
```

Changes will remain in memory only, until you decide to write them.  
Be careful before using the write command.

```
Command (m for help): n
Partition type:
   p   primary (0 primary, 0 extended, 4 free)
   e   extended
Select (default p):
Using default response p
Partition number (1-4, default 1):
First sector (2048-10485759, default 2048):
Using default value 2048
Last sector, +sectors or +size{K,M,G} (2048-10485759, default 10485759):
Using default value 10485759
Partition 1 of type Linux and of size 5 GiB is set
```

```
Command (m for help): t
Selected partition 1
Hex code (type L to list all codes): 8e
Changed type of partition 'Linux' to 'Linux LVM'
```

```
Command (m for help): w
The partition table has been altered!
```

Calling ioctl() to re-read partition table.  
Syncing disks.

```
[root@svr ~]# fdisk /dev/sdd
Welcome to fdisk (util-linux 2.23.2).
```

Changes will remain in memory only, until you decide to write them.  
Be careful before using the write command.

```
Command (m for help): n
Partition type:
   p   primary (0 primary, 0 extended, 4 free)
   e   extended
Select (default p): p
Partition number (1-4, default 1): 1
First sector (2048-10485759, default 2048):
Using default value 2048
Last sector, +sectors or +size{K,M,G} (2048-10485759, default 10485759): 2G
Value out of range.
Last sector, +sectors or +size{K,M,G} (2048-10485759, default 10485759): +2G
Partition 1 of type Linux and of size 2 GiB is set
```

```
Command (m for help): t
Selected partition 1
Hex code (type L to list all codes): 8e
Changed type of partition 'Linux' to 'Linux LVM'
```

```
Command (m for help): n
Partition type:
   p   primary (1 primary, 0 extended, 3 free)
   e   extended
Select (default p): p
Partition number (2-4, default 2): 2
First sector (4196352-10485759, default 4196352):
Using default value 4196352
Last sector, +sectors or +size{K,M,G} (4196352-10485759, default 10485759):
Using default value 10485759
Partition 2 of type Linux and of size 3 GiB is set
```

```
Command (m for help): t
Partition number (1,2, default 2): 2
Hex code (type L to list all codes): 8e
Changed type of partition 'Linux' to 'Linux LVM'
```

```
Command (m for help): w
The partition table has been altered!
```

```
Calling ioctl() to re-read partition table.
Syncing disks.
```

```
[root@svr ~]# fdisk /dev/sde
Welcome to fdisk (util-linux 2.23.2).
```

```
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.
```

```
Command (m for help): n
Partition type:
   p   primary (0 primary, 0 extended, 4 free)
   e   extended
Select (default p):
Using default response p
Partition number (1-4, default 1):
First sector (2048-10485759, default 2048):
Using default value 2048
Last sector, +sectors or +size{K,M,G} (2048-10485759, default 10485759):
Using default value 10485759
Partition 1 of type Linux and of size 5 GiB is set
```

```
Command (m for help): t
Selected partition 1
Hex code (type L to list all codes): 8e
Changed type of partition 'Linux' to 'Linux LVM'
```

```
Command (m for help): w
The partition table has been altered!
```

```
Calling ioctl() to re-read partition table.
Syncing disks.
```

```
[root@svr ~]# pvcreate /dev/sdc1 /dev/sdd1
WARNING: dos signature detected on /dev/sdd1 at offset 510. Wipe it? [y/n]: y
Wiping dos signature on /dev/sdd1.
Physical volume "/dev/sdc1" successfully created.
Physical volume "/dev/sdd1" successfully created.
[root@svr ~]# pvcreate /dev/sdc2 /dev/sde1
Device /dev/sdc2 not found.
Physical volume "/dev/sde1" successfully created.
[root@svr ~]# pvcreate /dev/sdd2 /dev/sde1
WARNING: dos signature detected on /dev/sdd2 at offset 510. Wipe it? [y/n]: y
Wiping dos signature on /dev/sdd2.
Physical volume "/dev/sdd2" successfully created.
Physical volume "/dev/sde1" successfully created.
```

```

[root@svr ~]# lsblk
NAME                                MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
sda                                  8:0      0   30G  0 disk
├─sda1                              8:1      0    1G  0 part /boot
├─sda2                              8:2      0   29G  0 part
│   └─centos-root 253:0      0   26G  0 lvm  /
│       └─centos-swap 253:1    0    3G  0 lvm  [SWAP]
sdb                                  8:16     0    5G  0 disk
├─sdb1                              8:17     0    5G  0 part
sdc                                  8:32     0    5G  0 disk
├─sdc1                              8:33     0    5G  0 part
sdd                                  8:48     0    5G  0 disk
├─sdd1                              8:49     0    2G  0 part
├─sdd2                              8:50     0    3G  0 part
sde                                  8:64     0    5G  0 disk
├─sde1                              8:65     0    5G  0 part
sr0                                  11:0     1  4.4G  0 rom  /run/media/root/CentOS 7 x86_64

[root@svr ~]# vgcreate vg1 /dev/sdc1 /dev/sdd1
Volume group "vg1" successfully created
[root@svr ~]# vgcreate vg1 /dev/sdd2 /dev/sde1
A volume group called vg1 already exists.
[root@svr ~]# vgcreate vg2 /dev/sdd2 /dev/sde1
Volume group "vg2" successfully created
[root@svr ~]# lvcreate -l 50%FREE -n lv1 vg1
Logical volume "lv1" created.
[root@svr ~]# lvcreate -l 50%FREE -n lv2 vg2
Logical volume "lv2" created.
[root@svr ~]# mkfs.xfs /dev/vg1/lv1
meta-data=/dev/vg1/lv1             isize=512    agcount=4, agsize=229120 blks
=                                   sectsz=512   attr=2, projid32bit=1
=                                   crc=1      finobt=0, sparse=0
data   =                           bsize=4096   blocks=916480, imaxpct=25
=                                   sunit=0    swidth=0 blks
naming  =version 2                 bsize=4096   ascii-ci=0 ftype=1
log     =internal log             bsize=4096   blocks=2560, version=2
=                                   sectsz=512   sunit=0 blks, lazy-count=1
realtime =none                    extsz=4096   blocks=0, rtextents=0

[root@svr ~]# mkfs.ext4 /dev/vg2/lv2
mke2fs 1.42.9 (28-Dec-2013)
Filesystem label=
OS type: Linux
Block size=4096 (log=2)
Fragment size=4096 (log=2)
Stride=0 blocks, Stripe width=0 blocks
262144 inodes, 1047552 blocks
52377 blocks (5.00%) reserved for the super user
First data block=0
Maximum filesystem blocks=1073741824
32 block groups
32768 blocks per group, 32768 fragments per group
8192 inodes per group
Superblock backups stored on blocks:
    32768, 98304, 163840, 229376, 294912, 819200, 884736

Allocating group tables: done
Writing inode tables: done
Creating journal (16384 blocks): done
Writing superblocks and filesystem accounting information: done

```

```

[root@svr ~]# mkdir /lvm1
[root@svr ~]#
[root@svr ~]# vim /etc/fstab
[root@svr ~]# mount -a
[root@svr ~]#
[root@svr ~]# mount | grep /lvm
/dev/mapper/vg1-lv1 on /lvm1 type xfs (rw,relatime,attr2,inode64,noquota)
[root@svr ~]#
[root@svr ~]# df -h
Filesystem                Size      Used Avail Use% Mounted on
devtmpfs                   1.9G         0   1.9G   0% /dev
tmpfs                      1.9G         0   1.9G   0% /dev/shm
tmpfs                      1.9G       13M   1.9G   1% /run
tmpfs                      1.9G         0   1.9G   0% /sys/fs/cgroup
/dev/mapper/centos-root    26G       7.8G   19G  30% /
/dev/sda1                 1014M      187M   828M  19% /boot
tmpfs                      378M       24K   378M   1% /run/user/0
/dev/sr0                   4.4G       4.4G     0 100% /run/media/root/CentOS 7 x86_64
/dev/mapper/vg1-lv1        3.5G       33M   3.5G   1% /lvm1
[root@svr ~]# mkdir /lvm2
[root@svr ~]# vim /etc/fstab
[root@svr ~]# mount -a
[root@svr ~]# mount | grep /lvm
/dev/mapper/vg1-lv1 on /lvm1 type xfs (rw,relatime,attr2,inode64,noquota)
/dev/mapper/vg2-lv2 on /lvm2 type ext4 (rw,relatime,data=ordered)
[root@svr ~]# df -h
Filesystem                Size      Used Avail Use% Mounted on
devtmpfs                   1.9G         0   1.9G   0% /dev
tmpfs                      1.9G         0   1.9G   0% /dev/shm
tmpfs                      1.9G       13M   1.9G   1% /run
tmpfs                      1.9G         0   1.9G   0% /sys/fs/cgroup
/dev/mapper/centos-root    26G       7.8G   19G  30% /
/dev/sda1                 1014M      187M   828M  19% /boot
tmpfs                      378M       24K   378M   1% /run/user/0
/dev/sr0                   4.4G       4.4G     0 100% /run/media/root/CentOS 7 x86_64
/dev/mapper/vg1-lv1        3.5G       33M   3.5G   1% /lvm1
/dev/mapper/vg2-lv2        3.9G       16M   3.7G   1% /lvm2

```

Adding HDD Of 4GB and Extending 2-2GB on both LVMs-

```
fdisk /dev/sdf
```

Creating Physical Volume-

```
pvcreeate /dev/sdf1
```

```
pvcreeate /dev/sdf2
```

Extending Volume Group-

```
vgextend vg1 /dev/sdf1
```

```
vgextend vg2 /dev/sdf2
```

Extending Logical Volume-

```
lvextend -L +2G -n /dev/vg1/lv1
```

```
lvextend -L +2G -n /dev/vg2/lv2
```

```
lvs
```

Extending File Systems-

```
xfs_growfs
```

```
xfs_growfs -D size /dev/vg1/lv1
```

```
df -h
```

```
resize2fs /dev/vg2/lv2
```

```
df -h
```