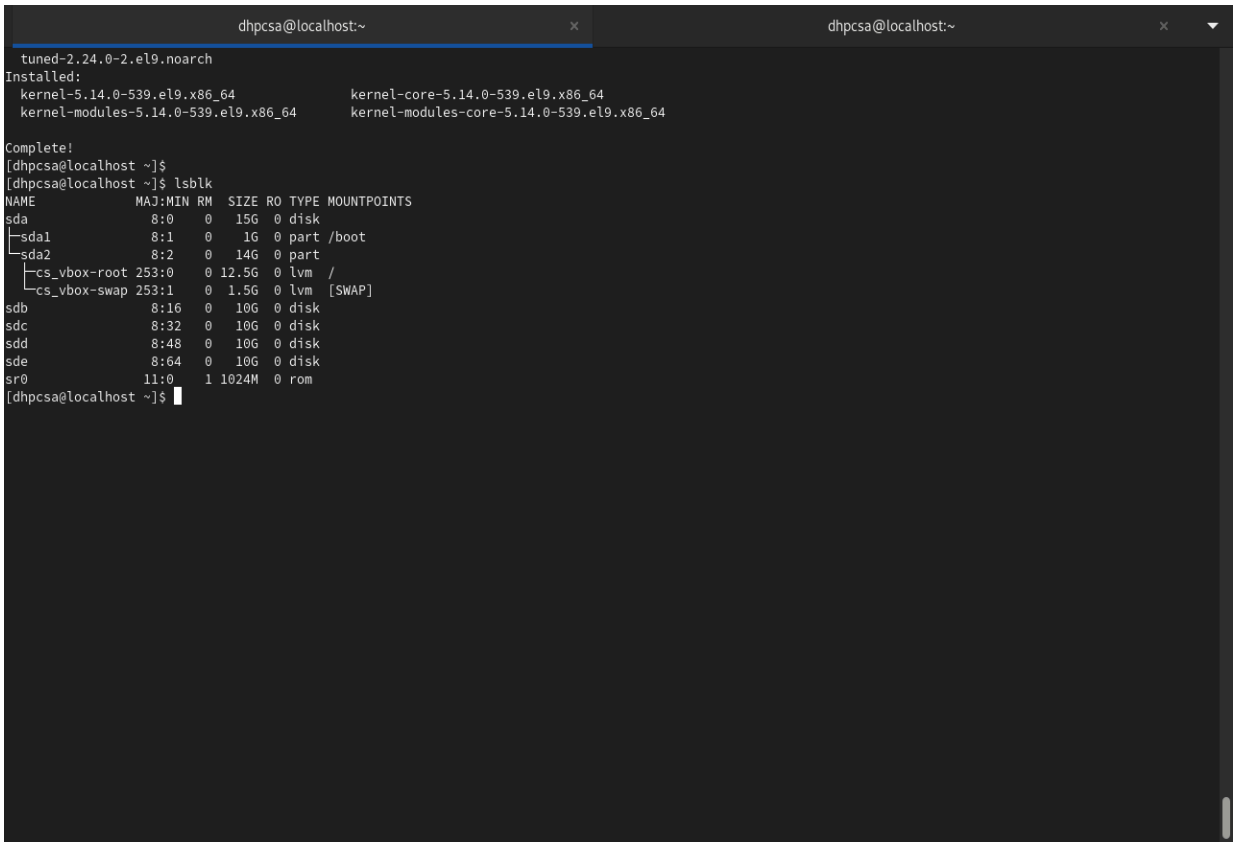
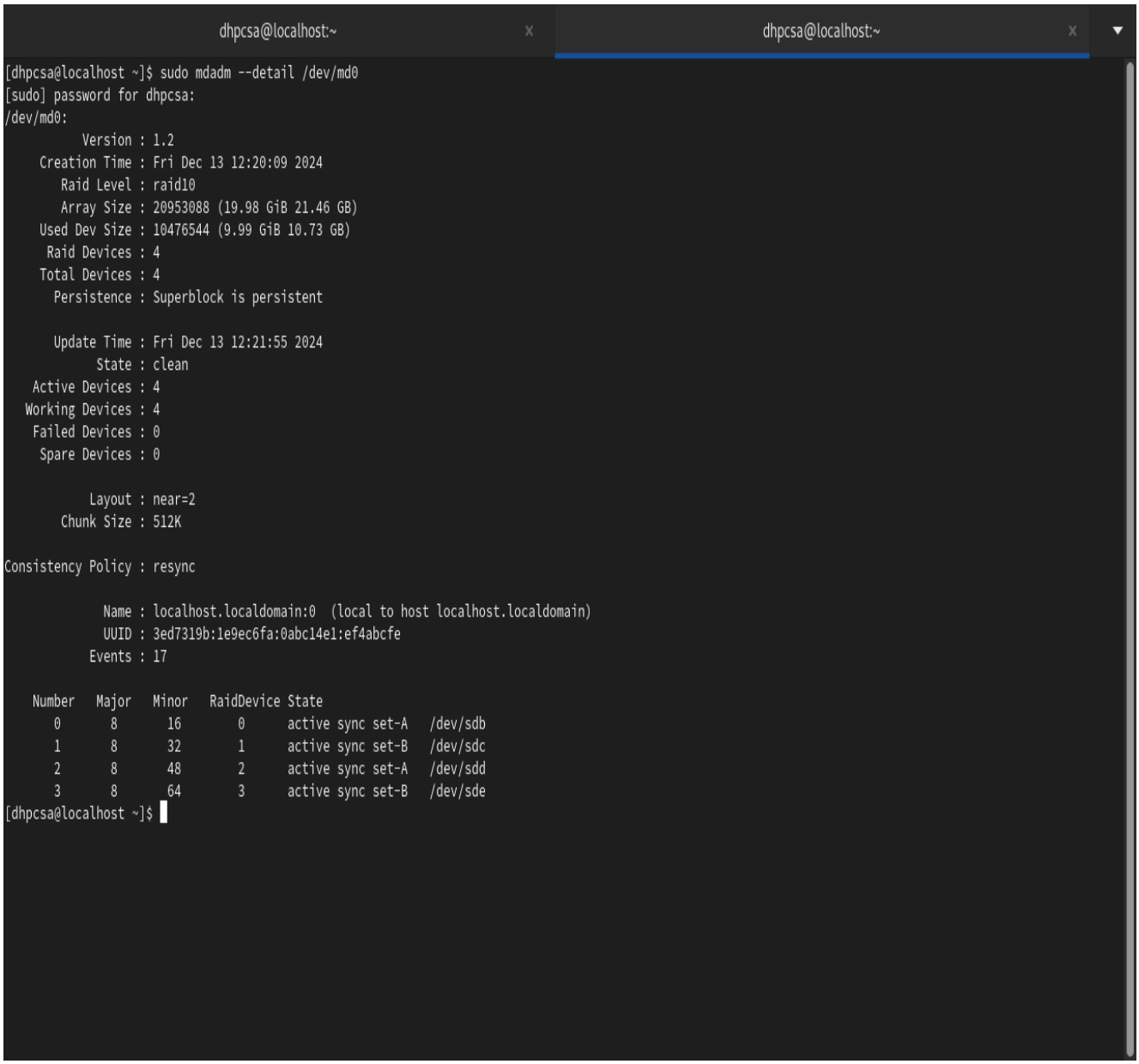
Assignment-2 Creating RAID 10 Array

**********Screenshots**********

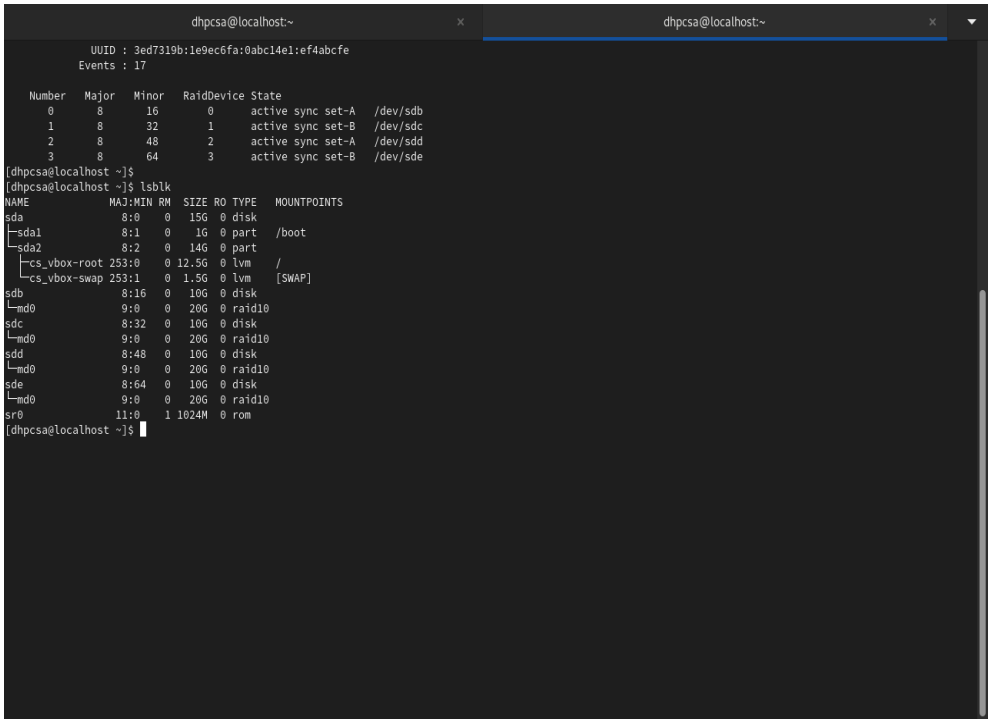
1.



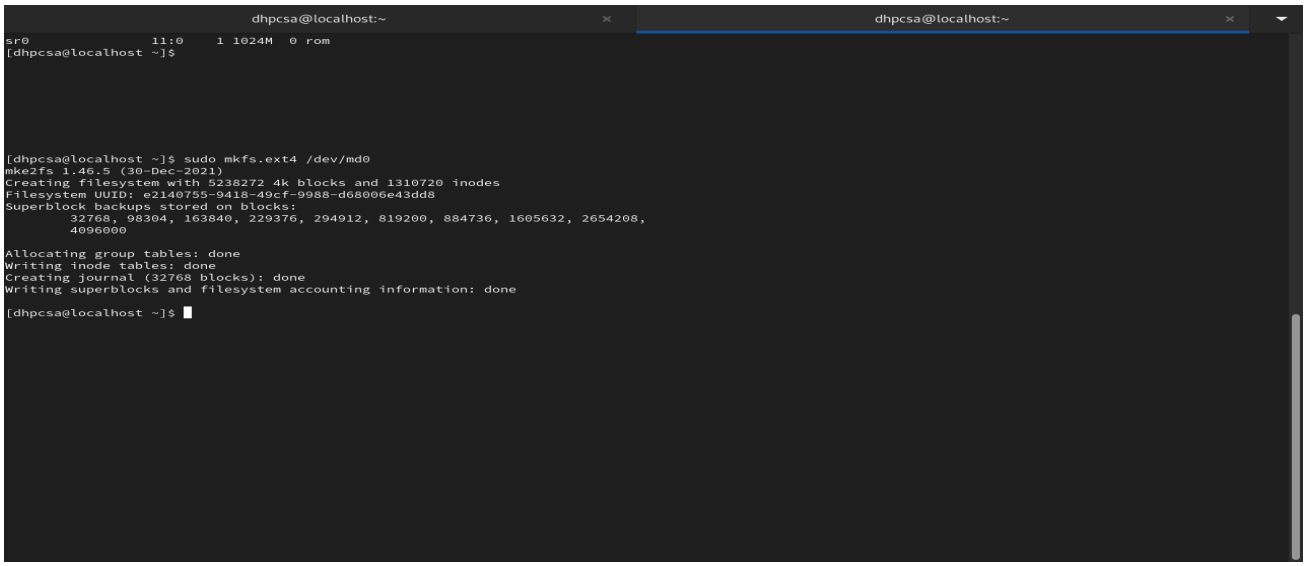
2.


dhpcsa@localhost:~
dhpcsa@localhost:~
[dhpcsa@localhost ~]$ sudo mdadm --detail /dev/md0
[sudo] password for dhpcsa:
/dev/md0:
Version : 1.2
Creation Time : Fri Dec 13 12:20:09 2024
Raid Level : raid10
Array Size : 20953088 (19.98 GiB 21.46 GB)
Used Dev Size : 10476544 (9.99 GiB 10.73 GB)
Raid Devices : 4
Total Devices : 4
Persistence : Superblock is persistent
Update Time : Fri Dec 13 12:21:55 2024
State : clean
Active Devices : 4
Working Devices : 4
Failed Devices : 0
Spare Devices : 0
Layout : near=2
Chunk Size : 512K
Consistency Policy : resync
Name : localhost.localdomain:0 (local to host localhost.localdomain)
UUID : 3ed7319b:1e9ec6fa:0abc14e1:ef4abcfe
Events : 17
Number Major Minor RaidDevice State
0 8 16 0 active sync set-A /dev/sdb
1 8 32 1 active sync set-B /dev/sdc
2 8 48 2 active sync set-A /dev/sdd
3 8 64 3 active sync set-B /dev/sde
[dhpcsa@localhost ~]$

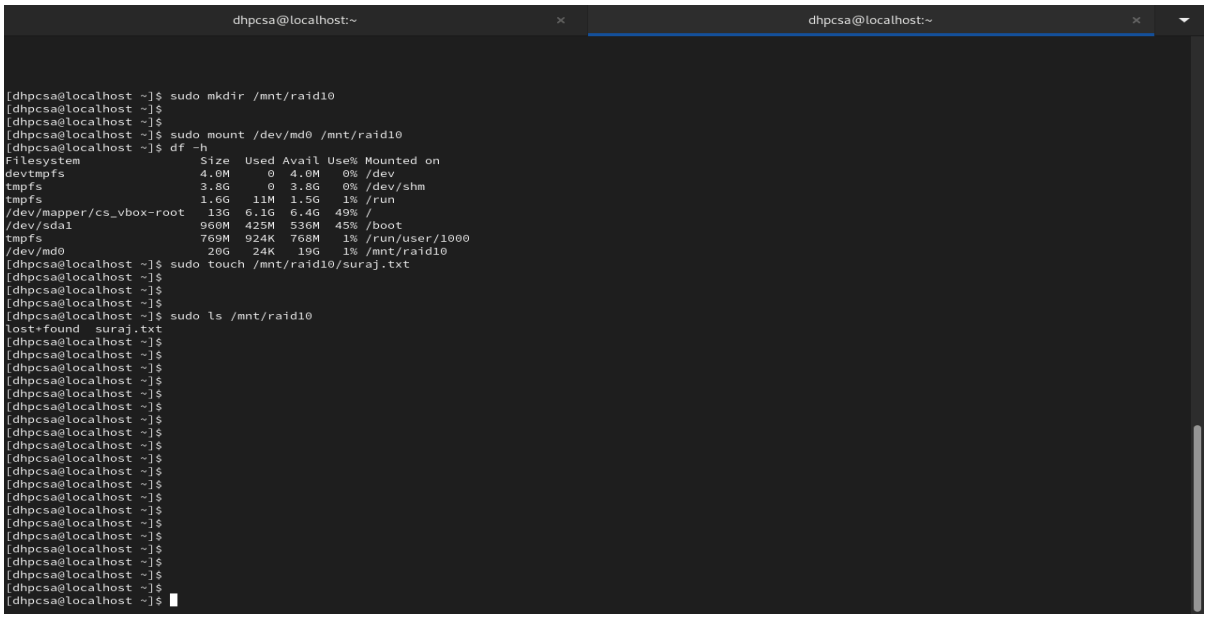
3.


dhpcsa@localhost:~
dhpcsa@localhost:~
UUID : 3ed7319b:1e9ec6fa:0abc14e1:ef4abcfe
Events : 17
Number Major Minor RaidDevice State
0 8 16 0 active sync set-A /dev/sdb
1 8 32 1 active sync set-B /dev/sdc
2 8 48 2 active sync set-A /dev/sdd
3 8 64 3 active sync set-B /dev/sde
[dhpcsa@localhost ~]$
[dhpcsa@localhost ~]$ lsblk
NAME MAJ:MIN RM SIZE RO TYPE MOUNTPOINTS
sda 8:0 0 15G 0 disk
├─sda1 8:1 0 1G 0 part /boot
└─sda2 8:2 0 14G 0 part
├─cs_vbox-root 253:0 0 12.5G 0 lvm /
└─cs_vbox-swap 253:1 0 1.5G 0 lvm [SWAP]
sdb 8:16 0 10G 0 disk
└─md0 9:0 0 20G 0 raid10
sdc 8:32 0 10G 0 disk
└─md0 9:0 0 20G 0 raid10
sdd 8:48 0 10G 0 disk
└─md0 9:0 0 20G 0 raid10
sde 8:64 0 10G 0 disk
└─md0 9:0 0 20G 0 raid10
sr0 11:0 1 1024M 0 rom
[dhpcsa@localhost ~]$

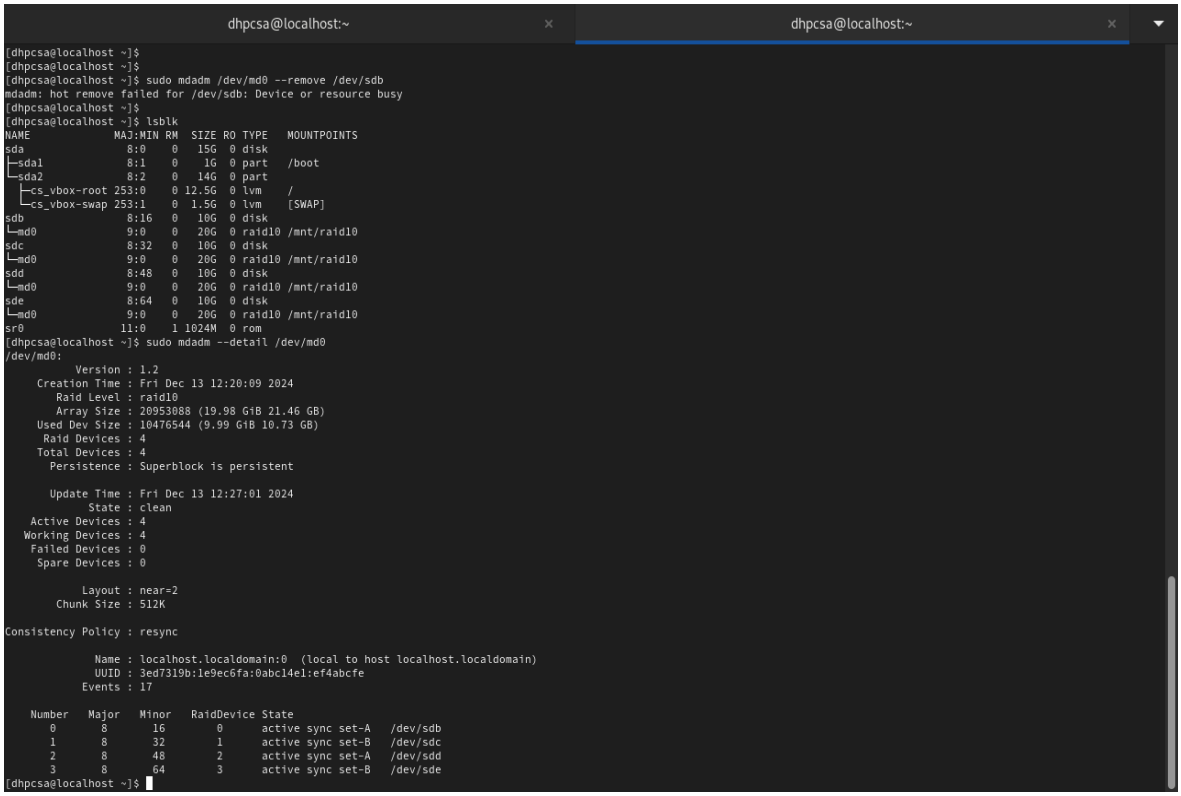
4.


dhpcsa@localhost:~
dhpcsa@localhost:~
sr0 11:0 1 1024M 0 rom
[dhpcsa@localhost ~]$
[dhpcsa@localhost ~]$ sudo mkfs.ext4 /dev/md0
mke2fs 1.46.5 (30-Dec-2021)
Creating filesystem with 5238272 4k blocks and 1310720 inodes
Filesystem UUID: e2140755-9418-49cf-9988-d68006e43dd8
Superblock backups stored on blocks:
32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632, 2654208,
4096000
Allocating group tables: done
Writing inode tables: done
Creating journal (32768 blocks): done
Writing superblocks and filesystem accounting information: done
[dhpcsa@localhost ~]$

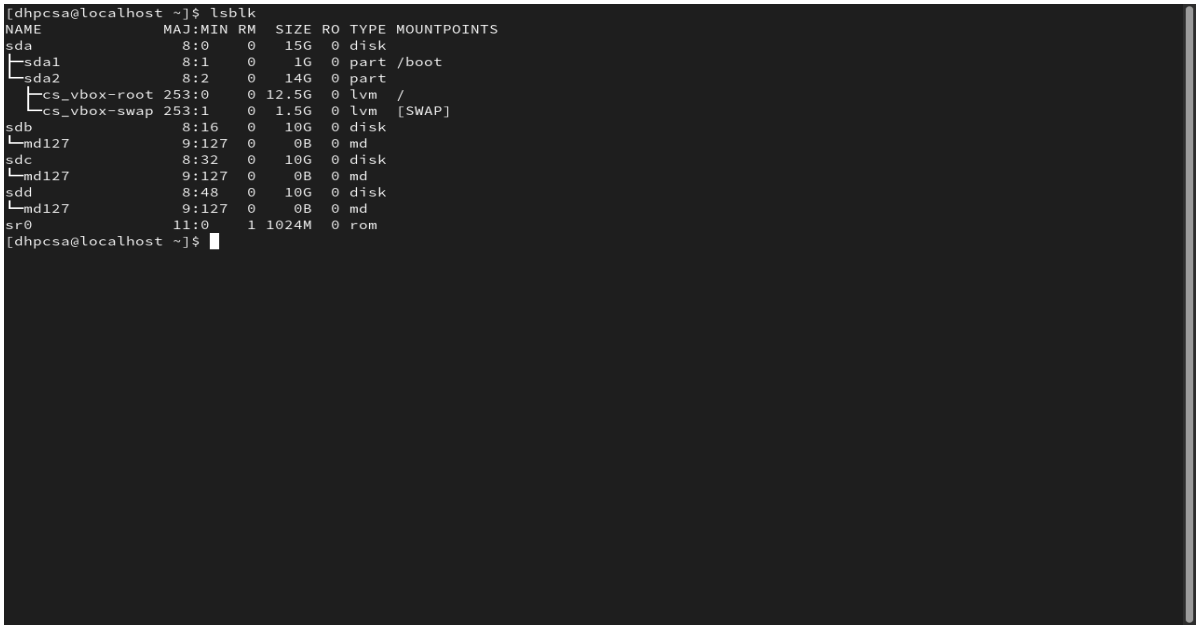
5.


dhpcsa@localhost:~
dhpcsa@localhost:~
[dhpcsa@localhost ~]$ sudo mkdir /mnt/raid10
[dhpcsa@localhost ~]$
[dhpcsa@localhost ~]$
[dhpcsa@localhost ~]$ sudo mount /dev/md0 /mnt/raid10
[dhpcsa@localhost ~]$ df -h
Filesystem Size Used Avail Use% Mounted on
devtmpfs 4.0M 0 4.0M 0% /dev
tmpfs 3.8G 0 3.8G 0% /dev/shm
tmpfs 1.6G 11M 1.5G 1% /run
/dev/mapper/cs_vbox-root 13G 6.1G 6.4G 49% /
/dev/sda1 960M 425M 536M 45% /boot
tmpfs 769M 924K 768M 1% /run/user/1000
/dev/md0 20G 24K 19G 1% /mnt/raid10
[dhpcsa@localhost ~]$ sudo touch /mnt/raid10/suraj.txt
[dhpcsa@localhost ~]$
[dhpcsa@localhost ~]$
[dhpcsa@localhost ~]$
[dhpcsa@localhost ~]$ sudo ls /mnt/raid10
lost+found suraj.txt
[dhpcsa@localhost ~]$
[dhpcsa@localhost ~]$
[dhpcsa@localhost ~]$
[dhpcsa@localhost ~]$
[dhpcsa@localhost ~]$
[dhpcsa@localhost ~]$
[dhpcsa@localhost ~]$
[dhpcsa@localhost ~]$
[dhpcsa@localhost ~]$
[dhpcsa@localhost ~]$
[dhpcsa@localhost ~]$
[dhpcsa@localhost ~]$
[dhpcsa@localhost ~]$
[dhpcsa@localhost ~]$
[dhpcsa@localhost ~]$
[dhpcsa@localhost ~]$
[dhpcsa@localhost ~]$
[dhpcsa@localhost ~]$
[dhpcsa@localhost ~]$
[dhpcsa@localhost ~]$
[dhpcsa@localhost ~]$

6.


dhpcsa@localhost:~
dhpcsa@localhost:~
[dhpcsa@localhost ~]$
[dhpcsa@localhost ~]$
[dhpcsa@localhost ~]$ sudo mdadm /dev/md0 --remove /dev/sdb
mdadm: hot remove failed for /dev/sdb: Device or resource busy
[dhpcsa@localhost ~]$
[dhpcsa@localhost ~]$ lsblk
NAME MAJ:MIN RM SIZE RO TYPE MOUNTPOINTS
sda 8:0 0 15G 0 disk
├─sda1 8:1 0 1G 0 part /boot
└─sda2 8:2 0 14G 0 part
├─cs_vbox-root 253:0 0 12.5G 0 lvm /
└─cs_vbox-swap 253:1 0 1.5G 0 lvm [SWAP]
sdb 8:16 0 10G 0 disk
└─md0 9:0 0 20G 0 raid10 /mnt/raid10
sdc 8:32 0 10G 0 disk
└─md0 9:0 0 20G 0 raid10 /mnt/raid10
sdd 8:48 0 10G 0 disk
└─md0 9:0 0 20G 0 raid10 /mnt/raid10
sde 8:64 0 10G 0 disk
└─md0 9:0 0 20G 0 raid10 /mnt/raid10
sr0 11:0 1 1024M 0 rom
[dhpcsa@localhost ~]$ sudo mdadm --detail /dev/md0
/dev/md0:
Version : 1.2
Creation Time : Fri Dec 13 12:20:09 2024
Raid Level : raid10
Array Size : 20953088 (19.98 GiB 21.46 GB)
Used Dev Size : 10476544 (9.99 GiB 10.73 GB)
Raid Devices : 4
Total Devices : 4
Persistence : Superblock is persistent
Update Time : Fri Dec 13 12:27:01 2024
State : clean
Active Devices : 4
Working Devices : 4
Failed Devices : 0
Spare Devices : 0
Layout : near=2
Chunk Size : 512K
Consistency Policy : resync
Name : localhost.localdomain:0 (local to host localhost.localdomain)
UUID : 3ed7319b:1e9ec6fa:0abc14e1:ef4abcfe
Events : 17
Number Major Minor RaidDevice State
0 8 16 0 active sync set-A /dev/sdb
1 8 32 1 active sync set-B /dev/sdc
2 8 48 2 active sync set-A /dev/sdd
3 8 64 3 active sync set-B /dev/sde
[dhpcsa@localhost ~]$

7.


[dhpcsa@localhost ~]$ lsblk
NAME MAJ:MIN RM SIZE RO TYPE MOUNTPOINTS
sda 8:0 0 15G 0 disk
├─sda1 8:1 0 1G 0 part /boot
└─sda2 8:2 0 14G 0 part
├─cs_vbox-root 253:0 0 12.5G 0 lvm /
└─cs_vbox-swap 253:1 0 1.5G 0 lvm [SWAP]
sdb 8:16 0 10G 0 disk
└─md127 9:127 0 0B 0 md
sdc 8:32 0 10G 0 disk
└─md127 9:127 0 0B 0 md
sdd 8:48 0 10G 0 disk
└─md127 9:127 0 0B 0 md
sr0 11:0 1 1024M 0 rom
[dhpcsa@localhost ~]$

8.

```
sda               8:0    0   15G  0 disk
├─sda1            8:1    0    1G  0 part /boot
└─sda2            8:2    0   14G  0 part
  ├─cs_vbox-root 253:0    0 12.5G  0 lvm  /
  └─cs_vbox-swap 253:1    0  1.5G  0 lvm  [SWAP]
sdb               8:16   0   10G  0 disk
└─md127           9:127  0    0B  0 md
sdc               8:32   0   10G  0 disk
└─md127           9:127  0    0B  0 md
sdd               8:48   0   10G  0 disk
└─md127           9:127  0    0B  0 md
sr0              11:0    1 1024M  0 rom
[dhpcsa@localhost ~]$ sudo mdadm --detail /dev/md0
[sudo] password for dhpcsa:
mdadm: cannot open /dev/md0: No such file or directory
[dhpcsa@localhost ~]$ sudo mdadm --detail /dev/md127
/dev/md127:
           Version : 1.2
        Raid Level : raid10
     Total Devices : 3
       Persistence : Superblock is persistent

             State : inactive
    Active Devices : 0
   Working Devices : 3
    Failed Devices : 0
     Spare Devices : 3

              Name : localhost.localdomain:0  (local to host localhost.localdomain)
              UUID : 3ed7319b:1e9ec6fa:0abc14e1:ef4abcfe
            Events : 17

    Number   Major   Minor   RaidDevice

       -       8       32        -        /dev/sdc
       -       8       48        -        /dev/sdd
       -       8       16        -        /dev/sdb
[dhpcsa@localhost ~]$
```

9.

```
Every 2.0s: cat /proc/mdstat                                    localhost.localdomain: Fri Dec 13 12:33:18
2024
Personalities :
md127 : inactive sdb[1](S) sdc[3](S) sdd[2](S)
      31429632 blocks super 1.2

unused devices: <none>
```

10.

[dhpcsa@localhost ~]$ sudo mdadm --detail /dev/md0
[sudo] password for dhpcsa:
mdadm: cannot open /dev/md0: No such file or directory
[dhpcsa@localhost ~]$ sudo mdadm --detail /dev/md127
/dev/md127:
Version : 1.2
Raid Level : raid10
Total Devices : 3
Persistence : Superblock is persistent
State : inactive
Active Devices : 0
Working Devices : 3
Failed Devices : 0
Spare Devices : 3
Name : localhost.localdomain:0 (local to host localhost.localdomain)
UUID : 3ed7319b:1e9ec6fa:0abc14e1:ef4abcfe
Events : 17
Number Major Minor RaidDevice
- 8 32 - /dev/sdc
- 8 48 - /dev/sdd
- 8 16 - /dev/sdb
[dhpcsa@localhost ~]$

11.

```
       -       8       32        -        /dev/sdc
       -       8       48        -        /dev/sdd
       -       8       16        -        /dev/sdb
[dhpcsa@localhost ~]$
[dhpcsa@localhost ~]$ lsblk
NAME              MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
sda                 8:0    0   15G  0 disk
├─sda1              8:1    0    1G  0 part /boot
└─sda2              8:2    0   14G  0 part
  ├─cs_vbox-root 253:0    0 12.5G  0 lvm  /
  └─cs_vbox-swap 253:1    0  1.5G  0 lvm  [SWAP]
sdb                 8:16   0   10G  0 disk
└─md127             9:127  0    0B  0 md
sdc                 8:32   0   10G  0 disk
└─md127             9:127  0    0B  0 md
sdd                 8:48   0   10G  0 disk
└─md127             9:127  0    0B  0 md
sr0                11:0    1 1024M  0 rom
[dhpcsa@localhost ~]$
```

12

```
[dhpcsa@localhost ~]$ lsblk
NAME              MAJ:MIN RM  SIZE RO TYPE   MOUNTPOINTS
sda                 8:0    0   15G  0 disk
├─sda1              8:1    0    1G  0 part   /boot
└─sda2              8:2    0   14G  0 part
  ├─cs_vbox-root 253:0    0 12.5G  0 lvm    /
  └─cs_vbox-swap 253:1    0  1.5G  0 lvm    [SWAP]
sdb                 8:16   0   10G  0 disk
└─md127             9:127  0   20G  0 raid10
sdc                 8:32   0   10G  0 disk
└─md127             9:127  0   20G  0 raid10
sdd                 8:48   0   10G  0 disk
└─md127             9:127  0   20G  0 raid10
sde                 8:64   0   10G  0 disk
└─md127             9:127  0   20G  0 raid10
sr0                11:0    1 1024M  0 rom
[dhpcsa@localhost ~]$
```

13.

14.

```
└─md127           9:127  0   20G  0 raid10
sde               8:64   0   10G  0 disk
└─md127           9:127  0   20G  0 raid10
sr0              11:0    1 1024M  0 rom
[dhpcsa@localhost ~]$
[dhpcsa@localhost ~]$ sudo mdadm --detail /dev/md127
[sudo] password for dhpcsa:
/dev/md127:
           Version : 1.2
     Creation Time : Fri Dec 13 12:20:09 2024
        Raid Level : raid10
        Array Size : 20953088 (19.98 GiB 21.46 GB)
     Used Dev Size : 10476544 (9.99 GiB 10.73 GB)
      Raid Devices : 4
     Total Devices : 4
       Persistence : Superblock is persistent

       Update Time : Fri Dec 13 12:30:53 2024
             State : clean
    Active Devices : 4
   Working Devices : 4
    Failed Devices : 0
     Spare Devices : 0

            Layout : near=2
        Chunk Size : 512K

Consistency Policy : resync

              Name : localhost.localdomain:0  (local to host localhost.localdomain)
              UUID : 3ed7319b:1e9ec6fa:0abc14e1:ef4abcfe
            Events : 17

    Number   Major   Minor   RaidDevice State
       0       8       16        0      active sync set-A   /dev/sdb
       1       8       32        1      active sync set-B   /dev/sdc
       2       8       48        2      active sync set-A   /dev/sdd
       3       8       64        3      active sync set-B   /dev/sde
[dhpcsa@localhost ~]$
[dhpcsa@localhost ~]$
[dhpcsa@localhost ~]$
[dhpcsa@localhost ~]$
[dhpcsa@localhost ~]$
[dhpcsa@localhost ~]$
[dhpcsa@localhost ~]$
[dhpcsa@localhost ~]$
[dhpcsa@localhost ~]$
```