

Assignment Day 5 | 4th December 2020

Parveen Kumar Rohilla

1. We will use **lsblk** command to lists information about all available or the specified block devices

```
ParveenRohilla - RCHALA... x
Applications Places Terminal

root@rchalab02-scomlab-local:~

File Edit View Search Terminal Help
[root@rchalab02-scomlab-local ~]# lsblk
NAME MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
sda      8:0    0  60G  0 disk
├─sda1    8:1    0   2G  0 part /boot
├─sda2    8:2    0  10G  0 part /
├─sda3    8:3    0  10G  0 part /home
├─sda4    8:4    0   1K  0 part
├─sda5    8:5    0   4G  0 part [SWAP]
└─sda6    8:6    0   2G  0 part /var
sdb      8:16   0  10G  0 disk
sr0     11:0    1 1024M  0 rom
[root@rchalab02-scomlab-local ~]# _
```

2. To view the available partitions, we will use below mention command.

```
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root@rchalab02-scomlab-local:~

File Edit View Search Terminal Help
[root@rchalab02-scomlab-local ~]# cat /proc/partitions
major minor #blocks name

8        0  62914560 sda
8        1   2097152 sda1
8        2  10485760 sda2
8        3  10485760 sda3
8        4         1 sda4
8        5   4194304 sda5
8        6   2097152 sda6
8        16  10485760 sdb
11       0   1048575 sr0
[root@rchalab02-scomlab-local ~]# █
```

3. The **fdisk** command is an interactive tool that is used to create partitions on a block device. **Disk /dev/sdb** is the disk to which we want to use to create our partitions.

```
ParveenRohilla - RCHALA... x
Applications Places Terminal

root@rchalab02-scomlab-local:~

File Edit View Search Terminal Help
[root@rchalab02-scomlab-local ~]# fdisk -l

Disk /dev/sda: 64.4 GB, 64424509440 bytes, 125829120 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk label type: dos
Disk identifier: 0x00074b5d

   Device Boot      Start         End      Blocks   Id  System
/dev/sda1  *        2048       4196351     2097152    83   Linux
/dev/sda2             4196352     25167871     10485760    83   Linux
/dev/sda3             25167872     46139391     10485760    83   Linux
/dev/sda4             46139392    125829119     39844864     5   Extended
/dev/sda5             46143488     54532095     4194304    82   Linux swap / Solaris
/dev/sda6             54534144     58728447     2097152    83   Linux

Disk /dev/sdb: 10.7 GB, 10737418240 bytes, 20971520 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
```

4. Type the **fdisk /dev/sdb** to select the particular disk.

```
ParveenRohilla - RCHALA... x
Applications Places Terminal

root@rchalab02-scomlab-local:~

File Edit View Search Terminal Help
[root@rchalab02-scomlab-local ~]# fdisk /dev/sdb
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.

Device does not contain a recognized partition table
Building a new DOS disklabel with disk identifier 0x68517877.

Command (m for help): █
```

5. Type **m** to view help about the fdisk commands.

```
ParveenRohilla - RCHALA... x
Applications Places Terminal

root@rchalab02-scomlab-local:~

File Edit View Search Terminal Help

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

Device does not contain a recognized partition table
Building a new DOS disklabel with disk identifier 0x68517877.

Command (m for help): m
Command action
a toggle a bootable flag
b edit bsd disklabel
c toggle the dos compatibility flag
d delete a partition
g create a new empty GPT partition table
G create an IRIX (SGI) partition table
l list known partition types
m print this menu
n add a new partition
o create a new empty DOS partition table
p print the partition table
q quit without saving changes
s create a new empty Sun disklabel
t change a partition's system id
u change display/entry units
v verify the partition table
w write table to disk and exit
x extra functionality (experts only)
```

6. Type **p** to print or show the partitions.

```
ParveenRohilla - RCHALA... x
Applications Places Terminal

root@rchalab02-scomlab-local:~

File Edit View Search Terminal Help

m print this menu
n add a new partition
o create a new empty DOS partition table
p print the partition table
q quit without saving changes
s create a new empty Sun disklabel
t change a partition's system id
u change display/entry units
v verify the partition table
w write table to disk and exit
x extra functionality (experts only)

Command (m for help): p

Disk /dev/sdb: 10.7 GB, 10737418240 bytes, 20971520 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk label type: dos
Disk identifier: 0xfdb22b89

Device Boot      Start          End      Blocks   Id  System

Command (m for help):
```

7. Now we type **n** to create or add a new partition. We first creating a 4GB partition.

```
ParveenRohilla - RCHALA... x
Applications Places Terminal

root@rchalab02-scomlab-local:~

File Edit View Search Terminal Help

Command (m for help): p

Disk /dev/sdb: 10.7 GB, 10737418240 bytes, 20971520 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk label type: dos
Disk identifier: 0x7b57cb57

   Device Boot      Start         End      Blocks   Id  System
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 (2048-20971519, default 2048):
Using default value 2048
Last sector, +sectors or +size{K,M,G} (2048-20971519, default 20971519): +4G
Partition 1 of type Linux and of size 4 GiB is set

Command (m for help):
```

8. Now we type **p** to view the newly created partition.

```
ParveenRohilla - RCHALA... x
Applications Places Terminal

root@rchalab02-scomlab-local:~

File Edit View Search Terminal Help

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 (2048-20971519, default 2048):
Using default value 2048
Last sector, +sectors or +size{K,M,G} (2048-20971519, default 20971519): +4G
Partition 1 of type Linux and of size 4 GiB is set

Command (m for help): p

Disk /dev/sdb: 10.7 GB, 10737418240 bytes, 20971520 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk label type: dos
Disk identifier: 0x7b57cb57

   Device Boot      Start         End      Blocks   Id  System
/dev/sdb1          2048         8390655      4194304    83   Linux

Command (m for help):
```

9. Now we will type the **n** to create a second partition of 6GB.

```
ParveenRohilla - RCHALA... x
Applications Places Terminal

root@rchalab02-scomlab-local:~

File Edit View Search Terminal Help
Disk identifier: 0x7b57cb57

   Device Boot      Start         End      Blocks   Id  System
/dev/sdb1            2048        8390655        4194304    83   Linux

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 (8390656-20971519, default 8390656):
Using default value 8390656
Last sector, +sectors or +size{K,M,G} (8390656-20971519, default 20971519):
Using default value 20971519
Partition 2 of type Linux and of size 6 GiB is set

Command (m for help):
```

10. Now we will type **p** to see the newly created partition. As show below, we have two portions, one of 4GB and second of 6GB.

```
ParveenRohilla - RCHALA... x
Applications Places Terminal

root@rchalab02-scomlab-local:~

File Edit View Search Terminal Help

Command (m for help): p

Disk /dev/sdb: 10.7 GB, 10737418240 bytes, 20971520 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk label type: dos
Disk identifier: 0x7b57cb57

   Device Boot      Start         End      Blocks   Id  System
/dev/sdb1            2048        8390655        4194304    83   Linux
/dev/sdb2            8390656       20971519        6290432    83   Linux

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

11. Now We will use **lsblk -l** command to lists information about all available or the specified block devices

```
ParveenRohilla - RCHALA... x
Applications Places Terminal
root@rchalab02-scomlab-local ~]# fdisk -l

Disk /dev/sda: 64.4 GB, 64424509440 bytes, 125829120 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk label type: dos
Disk identifier: 0x00074b5d

   Device Boot      Start         End      Blocks   Id  System
/dev/sda1    *        2048     4196351     2097152    83   Linux
/dev/sda2             4196352     25167871     10485760    83   Linux
/dev/sda3             25167872     46139391     10485760    83   Linux
/dev/sda4             46139392    125829119     39844864     5   Extended
/dev/sda5             46143488     54532095     4194304    82   Linux swap / S
/dev/sda6             54534144     58728447     2097152    83   Linux

Disk /dev/sdb: 10.7 GB, 10737418240 bytes, 20971520 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk label type: dos
Disk identifier: 0x7b57cb57

   Device Boot      Start         End      Blocks   Id  System
/dev/sdb1        2048     8390655     4194304    83   Linux
/dev/sdb2       8390656    20971519     6290432    83   Linux
[root@rchalab02-scomlab-local ~]#
```

12. Now we format our 4GB disk with ext4 file system. We will use **mkfs.ext4 -j /dev/sdb2** for the same.

```
ParveenRohilla - RCHALA... x
Applications Places Terminal

root@rchalab02-scomlab-local:~

File Edit View Search Terminal Help
Disk identifier: 0x7b57cb57

   Device Boot      Start         End      Blocks   Id  System
/dev/sdb1           2048        8390655       4194304   83   Linux
/dev/sdb2          8390656       20971519       6290432   83   Linux
[root@rchalab02-scomlab-local ~]# mkfs.ext4 -j /dev/sdb2
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
393216 inodes, 1572608 blocks
78630 blocks (5.00%) reserved for the super user
First data block=0
Maximum filesystem blocks=1610612736
48 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 (32768 blocks): done
Writing superblocks and filesystem accounting information: done
```


13. Now we format out 6GB with xfs file system. We will use **mkfs.xfs /dev/sdb1** for the same.

```
ParveenRohilla - RCHALA... x
Applications Places Terminal

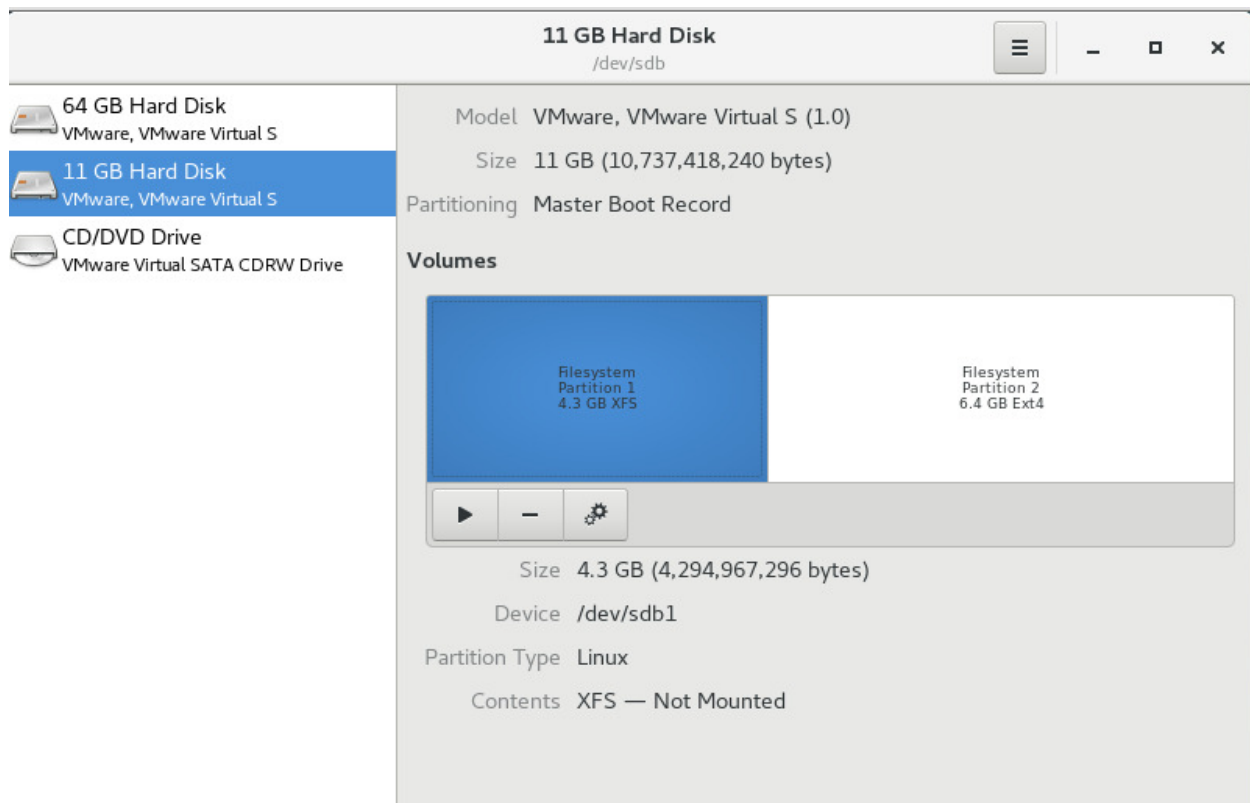
root@rchalab02-scomlab-local:~

File Edit View Search Terminal Help
Fragment size=4096 (log=2)
Stride=0 blocks, Stripe width=0 blocks
393216 inodes, 1572608 blocks
78630 blocks (5.00%) reserved for the super user
First data block=0
Maximum filesystem blocks=1610612736
48 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 (32768 blocks): done
Writing superblocks and filesystem accounting information: done

[root@rchalab02-scomlab-local ~]# mkfs.xfs /dev/sdb1
meta-data=/dev/sdb1      isize=512    agcount=4, agsize=262144 blks
                =               sectsz=512   attr=2, projid32bit=1
                =               crc=1        finobt=0, sparse=0
data        =               bsize=4096   blocks=1048576, 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
```

14. We will show or verify our created partitions information in GUI tool as shown below.



15. Now we will create to directory to mount our created partitions as shown below.

```
ParveenRohilla - RCHALA... x
Applications Places Terminal

root@rchalab02-scomlab-local:~

File Edit View Search Terminal Help
[root@rchalab02-scomlab-local ~]# mkdir /data
[root@rchalab02-scomlab-local ~]# mkdir /music
[root@rchalab02-scomlab-local ~]# █
```

16. We will use **mount** command to mount our disk partition for our use as shown below.

mount /dev/sdb1 /data

mount /dev/sdb2 /music

```
ParveenRohilla - RCHALA... x
Applications Places Terminal

root@rchalab02-scomlab-local:~

File Edit View Search Terminal Help
Disk /dev/sda: 64.4 GB, 64424509440 bytes, 125829120 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk label type: dos
Disk identifier: 0x00074b5d

   Device Boot      Start         End      Blocks   Id  System
/dev/sda1  *        2048       4196351       2097152    83   Linux
/dev/sda2             4196352       25167871      10485760    83   Linux
/dev/sda3        25167872       46139391      10485760    83   Linux
/dev/sda4        46139392      125829119       39844864     5   Extended
/dev/sda5        46143488       54532095        4194304    82   Linux swap / Solaris
/dev/sda6        54534144       58728447        2097152    83   Linux

Disk /dev/sdb: 10.7 GB, 10737418240 bytes, 20971520 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk label type: dos
Disk identifier: 0x7b57cb57

   Device Boot      Start         End      Blocks   Id  System
/dev/sdb1             2048       8390655        4194304    83   Linux
/dev/sdb2         8390656       20971519        6290432    83   Linux
[root@rchalab02-scomlab-local ~]# mount /dev/sdb1 /data
[root@rchalab02-scomlab-local ~]# mount /dev/sdb2 /music
```

17. We will use `df -h` to view information about the disk.

```
ParveenRohilla - RCHALA... x
Applications Places Terminal

root@rchalab02-scomlab-local:~

File Edit View Search Terminal Help

[root@rchalab02-scomlab-local ~]# df -h
Filesystem      Size  Used Avail Use% Mounted on
/dev/sda2        9.8G  4.0G  5.3G  44% /
devtmpfs         346M    0  346M   0% /dev
tmpfs            362M    0  362M   0% /dev/shm
tmpfs            362M   12M  350M   4% /run
tmpfs            362M    0  362M   0% /sys/fs/cgroup
/dev/sda3        9.8G   44M   9.2G   1% /home
/dev/sda6        2.0G   1.3G  561M  70% /var
/dev/sda1        2.0G  165M   1.9G   9% /boot
tmpfs            73M   36K   73M   1% /run/user/0
/dev/sdb1        4.0G   33M   4.0G   1% /data
/dev/sdb2        5.8G   24M   5.5G   1% /music
[root@rchalab02-scomlab-local ~]#
```

18. We can also use the `mount` command to see the disk information as highlighted below.

```
ParveenRohilla - RCHALA... x
Applications Places Terminal

root@rchalab02-scomlab-local:~

File Edit View Search Terminal Help

cgroup on /sys/fs/cgroup/cpu,cpuacct type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,cpuacct,cpu)
cgroup on /sys/fs/cgroup/memory type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,memory)
cgroup on /sys/fs/cgroup/hugetlb type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,hugetlb)
cgroup on /sys/fs/cgroup/perf_event type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,perf_event)
cgroup on /sys/fs/cgroup/net_cls,net_prio type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,net_prio,net_cls)
cgroup on /sys/fs/cgroup/pids type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,pids)
cgroup on /sys/fs/cgroup/blkio type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,blkio)
cgroup on /sys/fs/cgroup/freezer type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,freezer)
cgroup on /sys/fs/cgroup/devices type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,devices)
cgroup on /sys/fs/cgroup/cpuset type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,cpuset)
configfs on /sys/kernel/config type configfs (rw,relatime)
/dev/sda2 on / type ext4 (rw,relatime,seclabel,data=ordered)
selinuxfs on /sys/fs/selinux type selinuxfs (rw,relatime)
mqueue on /dev/mqueue type mqueue (rw,relatime,seclabel)
debugfs on /sys/kernel/debug type debugfs (rw,relatime)
hugetlbfs on /dev/hugepages type hugetlbfs (rw,relatime,seclabel)
systemd-1 on /proc/sys/fs/binfmt_misc type autofs (rw,relatime,fd=32,pgrp=1,timeout=0,minproto=5,maxproto=5,direct,pipe_ino=12565)
/dev/sda3 on /home type ext4 (rw,relatime,seclabel,data=ordered)
/dev/sda6 on /var type ext4 (rw,relatime,seclabel,data=ordered)
/dev/sda1 on /boot type xfs (rw,relatime,seclabel,attr2,inode64,noquota)
sunrpc on /var/lib/nfs/rpc pipefs type rpc_pipefs (rw,relatime)
fusectl on /sys/fs/fuse/connections type fusectl (rw,relatime)
tmpfs on /run/user/0 type tmpfs (rw,nosuid,nodev,relatime,seclabel,size=73992k,mode=700)
gvfsd-fuse on /run/user/0/gvfs type fuse.gvfsd-fuse (rw,nosuid,nodev,relatime,user_id=0,group_id=0)
/dev/sdb1 on /data type xfs (rw,relatime,seclabel,attr2,inode64,noquota)
/dev/sdb2 on /music type ext4 (rw,relatime,seclabel,data=ordered)
binfmt_misc on /proc/sys/fs/binfmt_misc type binfmt_misc (rw,relatime)
[root@rchalab02-scomlab-local ~]#
```

19. To permanently mount our partition we will use the **vi /etc/fstab** and edit the file as mention below.

```
ParveenRohilla - RCHALA... x
Applications Places Terminal

root@rchalab02-scomlab-local:~

File Edit View Search Terminal Help

#
# /etc/fstab
# Created by anaconda on Wed Jul 29 18:41:27 2020
#
# Accessible filesystems, by reference, are maintained under '/dev/disk'
# See man pages fstab(5), findfs(8), mount(8) and/or blkid(8) for more info
#
UUID=47dea375-0cd7-4b97-bc20-e298a1c0a93a / ext4 defaults 1 1
UUID=9e1c9381-81a7-48a9-a2ff-f8668feb03d /boot xfs defaults 0 0
UUID=24fc27dc-eb2c-4274-9d3d-f8b5217c12d5 /home ext4 defaults 1 2
UUID=ac2ce7c8-a8c6-4958-921b-6eae3eef3ea /var ext4 defaults 1 2
UUID=1ab2f39f-d35a-4ab3-af10-38076c4756ba swap swap defaults 0 0
/dev/sdb1 /data xfs defaults 0 0
/dev/sdb2 /music ext4 defaults 0 0
```

20. Now will create approx. 1GB of file in our each mount partition as mention below.

```
ParveenRohilla - RCHALA... x
Applications Places Terminal

root@rchalab02-scomlab-local:~

File Edit View Search Terminal Help

[root@rchalab02-scomlab-local ~]# seq 170000000 > /data/SQ1
[root@rchalab02-scomlab-local ~]# seq 170000000 > /music/SQ1
```

21. Now we will use **df -h** command to verify the used disk space in our newly mounted partitions.

```
ParveenRohilla - RCHALA... x
Applications Places Terminal

root@rchalab02-scomlab-local:~

File Edit View Search Terminal Help

[root@rchalab02-scomlab-local ~]# seq 170000000 > /data/SQ1
[root@rchalab02-scomlab-local ~]# seq 170000000 > /music/SQ1
[root@rchalab02-scomlab-local ~]# df -h
Filesystem      Size  Used Avail Use% Mounted on
/dev/sda2       9.8G  4.0G  5.3G  44% /
devtmpfs        346M    0  346M   0% /dev
tmpfs           362M    0  362M   0% /dev/shm
tmpfs           362M   12M  350M   4% /run
tmpfs           362M    0  362M   0% /sys/fs/cgroup
/dev/sda3       9.8G   44M   9.2G   1% /home
/dev/sda6       2.0G   1.3G  560M  70% /var
/dev/sda1       2.0G   165M   1.9G   9% /boot
tmpfs           73M    44K   73M   1% /run/user/0
/dev/sdb1       4.0G   1.6G   2.5G  38% /data
/dev/sdb2       5.8G   1.6G   4.0G  28% /music
[root@rchalab02-scomlab-local ~]#
```