Task 7.1

♦ 6 7.1: Elasticity Task

Increase or Decrease the Size of Static Partition in Linux.

```
Amazon Linux 2 AMI
https://aws.amazon.com/amazon-linux-2/
25 package(s) needed for security, out of 39 available
Run "sudo yum update" to apply all updates.
[ec2-user@ip-172-31-20-85 ~]$ sudo su - root
[root@ip-172-31-20-85 ~]# fdisk -l
Disk /dev/xvda: 8 GiB, 8589934592 bytes, 16777216 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
Disklabel type: gpt
Disk identifier: 66B3909F-969E-4FD1-901C-CEE3A9974A83
                            End Sectors Size Type
7182 16773087 8G Linux filesystem
                                                                               Attached EBS
Device
               Start
                4096 16777182 16773087
/dev/xvda1
/dev/xvda128 2048
                           4095
                                     2048
                                             1M BIOS boot
Partition table entries are not in disk order.
Disk /dev/xvdf: 10 GiB, 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
[root@ip-172-31-20-85 ~]# ■
[root@ip-172-31-20-85 ~]# fdisk /dev/xvdf  Going inside the hard disk
Welcome to fdisk (util-linux 2.30.2).
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.
Created a new DOS disklabel with disk identifier 0x576723da.
Command (m for help): n 🖒 Create new partition
Partition type
   p primary (0 primary, 0 extended, 4 free)
   e extended (container for logical partitions)
Select (default p): p → Primary partition
Partition number (1-4, default 1):
First sector (2048-20971519, default 2048):
Last sector, +sectors or +size{K,M,G,T,P} (2048-20971519, default 20971519): +5G
Created a new partition 1 of type 'Linux' and of size 5 GiB.
                                                                                        Size of partition is 5GB
Command (m for help): wq 🖒 Save the partition creation
The partition table has been altered.
 Calling ioctl() to re-read partition table.
Syncing disks.
[root@ip-172-31-20-85 ~]#
```

```
[root@ip-172-31-20-85 ~]# mkfs.ext4 /dev/xvdf1 Format the partition
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
327680 inodes, 1310720 blocks
65536 blocks (5.00%) reserved for the super user
First data block=0
Maximum filesystem blocks=1342177280
40 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@ip-172-31-20-85 ~]# mkdir /folder 🗘 Create a directory
[root@ip-172-31-20-85 ~]# mount /dev/xvdf1 /folder 🖒 Mount the partition
[root@ip-172-31-20-85 ~]#
[root@ip-172-31-20-85 ~]# df -h
               Size Used Avail Use% Mounted on
Filesystem
               474M
                        0 474M
devtmpfs
                                  0% /dev
               492M
                       0 492M
                                  0% /dev/shm
tmpfs
                                  1% /run
               492M 464K 492M
tmpfs
               492M
                        0 492M
tmpfs
                                0% /sys/fs/cgroup
/dev/xvda1
               8.0G 1.4G 6.7G
                                 17% /
                99M
                            99M
                                  0% /run/user/1000
tmpfs
                99M
                        0
                           99M
tmpfs
                                  0% /run/user/0
/dev/xvdfl
               4.8G 20M 4.6G 1% /folder
[root@ip-172-31-20-85 ~]# lsblk
NAME
       MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
                    8G 0 disk
xvda
       202:0
                0
∟xvda1 202:1
                0
                    8G 0 part /
      202:80 0 10G 0 disk
-xvdfl 202:81 0 5G 0 part /folder
[root@ip-172-31-20-85 ~]#
```

```
root@ip-172-31-20-85 folder]# ls

ile.txt lost+found Created a file in /folder file.txt

root@ip-172-31-20-85 folder]# cat file.txt

[This is first file" root@ip-172-31-20-85 folder]#
```

```
[root@ip-172-31-20-85 ~]# umount /dev/xvdf1 /folder
umount: /folder: not mounted.
[root@ip-172-31-20-85 ~]# lsblk
NAME
        MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
                                               Umounted the
                                               partition to make
        202:0
                 0
                     8G 0 disk
xvda
                                               changes to it.
-xvda1 202:1
                 0
                     8G
                         0 part /
        202:80
                 0 10G
                         0 disk
xvdf
                         0 part
-xvdfl 202:81
               0
                     5G
[root@ip-172-31-20-85 ~]# df -h
Filesystem
                Size Used Avail Use% Mounted on
devtmpfs
                474M
                         0 474M
                                    0% /dev
                492M
                         0
                            492M
                                    0% /dev/shm
tmpfs
                                    1% /run
tmpfs
                492M 464K
                            492M
tmpfs
                492M
                         0
                            492M
                                    0% /sys/fs/cgroup
/dev/xvdal
                8.0G
                      1.4G
                             6.7G
                                   17% /
                 99M
                         0
                              99M
                                    0% /run/user/1000
tmpfs
                 99M
                         0
                             99M
                                    0% /run/user/0
tmpfs
```

Steps till now are common for extending and reducing partition size Further steps for Increasing the partition size -

```
[root@ip-172-31-20-85 ~]# fdisk /dev/xvdf
Welcome to fdisk (util-linux 2.30.2).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.
                                                         Deleted the partition
(5GB) created earlier
with the file, although
data is still there on
Command (m for help): d
Selected partition 1
Partition 1 has been deleted.
                                                          the hard disk.
Command (m for help): wq
The partition table has been altered.
Calling ioctl() to re-read partition table.
Syncing disks.
[root@ip-172-31-20-85 ~]# lsblk
NAME
         MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
                 0 8G 0 disk
0 8G 0 part /
         202:0
xvda
∟xvda1 202:1
         202:80 0 10G 0 disk
```

```
[root@ip-172-31-20-85 ~]# fdisk /dev/xvdf
Welcome to fdisk (util-linux 2.30.2).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.
                                              Here creating a new
                                               partition with
                                              increased size of 8GB
Command (m for help): n
Partition type
      primary (0 primary, 0 extended, 4 free)
      extended (container for logical partitions)
Select (default p): p
Partition number (1-4, default 1):
First sector (2048-20971519, default 2048):
Last sector, +sectors or +size{K,M,G,T,P} (2048-20971519, default 20971519): +8G
Created a new partition 1 of type 'Linux' and of size 8 GiB.
Partition #1 contains a ext4 signature
                                                         Since we want to retain ext4
Do you want to remove the signature? [Y]es/[N]o: No
                                                         signature on our root partition
                                                         we will use No, else all the
Command (m for help): wq
                                                         metadat in partition related to
                                                         data stored in previous partition
The partition table has been altered.
                                                         will be lost.
Calling ioctl() to re-read partition table.
Syncing disks.
[root@ip-172-31-20-85 ~]# resize2fs /dev/xvdf1
resize2fs 1.42.9 (28-Dec-2013)
Please run 'e2fsck
                     -f /dev/xvdfl' first.
[root@ip-172-31-20-85 ~]# ^C
[root@ip-172-31-20-85 ~]# e2fsck -f /dev/xvdf1  Checks the modified file system for errors.
e2fsck 1.42.9 (28-Dec-2013)
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/xvdf1: 12/327680 files (0.0% non-contiguous), 5<u>8463/1310720 blocks</u>
[root@ip-172-31-20-85 ~]# resize2fs /dev/xvdf1 📥
                                                           Modifies existing file system to fit
                                                            new partition size bounds.
resize2fs 1.42.9 (28-Dec-2013)
Resizing the filesystem on /dev/xvdf1 to 2097152 (4k) blocks.
The filesystem on /dev/xvdf1 is now 2097152 blocks long.
[root@ip-172-31-20-85 ~]# mount /dev/xvdf1 /folder
[root@ip-172-31-20-85 ~]# cd /folder
[root@ip-172-31-20-85 folder]# ls
                                                         New partition still has the old file.
file.txt lost+found
[root@ip-172-31-20-85 folder]# cat file.txt
                                                         Hence no data loss on size extension
'THis is first file"
[root@ip-172-31-20-85 folder]# lsblk
NAME
         MAJ: MIN RM SIZE RO TYPE MOUNTPOINT
         202:0
                       8G 0 disk
xvda
∟xvda1 202:1
                   0
                        8G
                            0 part /
                      10G 0 disk
xvdf 202:80
                   0
                                                  We can see the increased size
                  0 8G 0 part /folder 🗲
 xvdf1 202:81
                                                  of partition.
[root@ip-172-31-20-85 folder]# 📗
```

Continued steps for Decreasing the partition size -

Syncing disks.

```
[root@ip-172-31-20-85 ~]# umount /dev/xvdf1 /folder
umount: /folder: not moun<del>ted.</del>
[root@ip-172-31-20-85 ~]# lsblk
            MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
NAME
                                                                    Unmounted the partition to make
xvda
            202:0
                          0
                                8G 0 disk
                                                                    furter changes in partition
 -xvda1 202:1
                          0
                                8G
                                      0 part /
                                                                    size(Reduce size) At present the
xvdf
            202:80
                         0
                              10G
                                      0 disk
                                                                   size of partition is 8GB
 -xvdf1 202:81
                                8G 0 part
                          0
[root@ip-172-31-20-85 ~]# lsblk
         MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
                         8G 0 disk
xvda
         202:0
                    0
 -xvda1 202:1
                    0
                        8G 0 part /
xvdf
         202:80
                    0
                       10G 0 disk
                                                                              Unlike in extension, here we will
_xvdf1 202:81
                    0
                        8G 0 part
                                                                              first reduce the size of file system
[root@ip-172-31-20-85 ~]# e2fsck -f /dev/xvdf1
                                                                              to desired reduced size of
e2fsck 1.42.9 (28-Dec-201<del>3)</del>
                                                                              partition and then delete it.
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/xvdf1: 12/393216 files (0.0% non-contiguous), 65647/1572864 blocks
[root@ip-172-31-20-85 ~]# resize2fs /dev/xvdf1 6G
resize2fs 1.42.9 (28-Dec-2013)
The filesystem is already 1572864 blocks long. Nothing to do!
Pass 5: Checking group summary information
/dev/xvdf1: 12/393216 files (0.0% non-contiguous), 65647/1572864 blocks
[root@ip-172-31-20-85 ~]# resize2fs /dev/xvdf1 6G
resize2fs 1.42.9 (28-Dec-2013)
The filesystem is already 1572864 blocks long. Nothing to do!
[root@ip-172-31-20-85 ~]# fdisk /dev/xvdf
Welcome to fdisk (util-linux 2.30.2)
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command
 ommand (m for help): d
                                                       Deleted the partition of
Selected partition
Partition 1 has been deleted.
Command (m for help): wq
The partition table has been altered.
Calling ioctl() to re-read partition table.
```

```
[root@ip-172-31-20-85 ~]# fdisk /dev/xvdf
Welcome to fdisk (util-linux 2.30.2).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.
                                                              Creating new partition of reduce
size. Make sure to not wipe data
else all metadat of the filesystem
Command (m for help): n
Partition type
  p primary (0 primary, 0 extended, 4 free)
                                                              will be lost and hence your data
  e extended (container for logical partitions)
                                                              will also be lost.
Select (default p):
Using default response p.
Partition number (1-4, default 1):
First sector (2048-20971519, default 2048):
Last sector, +sectors or +size{K,M,G,T,P} (2048-20971519, default 20971519): +6G
Created a new partition 1 of type 'Linux' and of size 6 GiB.
o you want to remove the signature? [Y]es/[N]o: No
Command (m for help): wq
The partition table has been altered.
Calling ioctl() to re-read partition table.
Syncing disks.
[root@ip-172-31-20-85 ~]# resize2fs /dev/xvdf1 6G
resize2fs 1.42.9 (28-Dec-2013)
The filesystem is already 1572864 blocks long. Nothing to do!
                                                                  Mounted the folder
and we can see the file still there after
[root@ip-172-31-20-85 folder]# ls
                                                                 reducing partition size.
file.txt lost+found
[root@ip-172-31-20-85 folder]# cat file.txt
"THis is first file"
[root@ip-172-31-20-85 folder]#
```