Name: mahmoud hassan amin   Track: IOT

1. Use fdisk -l to locate information about the partition sizes.

```
[Eng.mahmoud@192 ~]$ sudo fdisk -l
[sudo] password for Eng.mahmoud:
Disk /dev/nvme0n1: 477 GiB, 512110190592 bytes, 1000215216 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: dos
Disk identifier: 0x4c2d2090

Device          Boot     Start        End     Sectors   Size Id Type
/dev/nvme0n1p1  *         2048     104447      102400    50M  c W95 FAT32 (LBA)
/dev/nvme0n1p2          104448  255999999   255895552   122G  7 HPFS/NTFS/exFAT
/dev/nvme0n1p3       618496000 1000212479   381716480   182G  7 HPFS/NTFS/exFAT
/dev/nvme0n1p4       256000000  618495999   362496000 172.9G  5 Extended
/dev/nvme0n1p5       256002048  258099199     2097152    1G 83 Linux
/dev/nvme0n1p6       258101248  618495999   360394752 171.9G 8e Linux LVM

Partition table entries are not in disk order.


Disk /dev/mapper/rhel-root: 70 GiB, 75161927680 bytes, 146800640 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 /dev/mapper/rhel-swap: 15.6 GiB, 16777216000 bytes, 32768000 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 /dev/mapper/rhel-home: 86.2 GiB, 92580872192 bytes, 180822016 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
```

2. Use fdisk to add a new logical partition that is 1GB in size

```
[Eng.mahmoud@192 ~]$ sudo fdisk /dev/mapper/rhel-home
[sudo] password for Eng.mahmoud:

Welcome to fdisk (util-linux 2.32.1).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.

The old xfs signature will be removed by a write command.

Device does not contain a recognized partition table.
Created a new DOS disklabel with disk identifier 0xa236cd3a.

Command (m for help): n
Partition type
   p   primary (0 primary, 0 extended, 4 free)
   e   extended (container for logical partitions)
Select (default p): e
Partition number (1-4, default 1): 2
First sector (2048-180822015, default 2048):
Last sector, +sectors or +size{K,M,G,T,P} (2048-180822015, default 180822015): 1G
Value out of range.
Last sector, +sectors or +size{K,M,G,T,P} (2048-180822015, default 180822015): 1GB
Value out of range.
Last sector, +sectors or +size{K,M,G,T,P} (2048-180822015, default 180822015): 1 GB
Last sector, +sectors or +size{K,M,G,T,P} (2048-180822015, default 180822015): 1 G
Last sector, +sectors or +size{K,M,G,T,P} (2048-180822015, default 180822015): +1G

Created a new partition 2 of type 'Extended' and of size 1 GiB.
```

3. Did the kernel feel the changes?

```
Command (m for help): w
The partition table has been altered.
Failed to add partition 2 to system: Invalid argument

The kernel still uses the old partitions. The new table will be used at the next reboot.
Syncing disks.
```

Display the content of /proc/partitions file?

```
[Eng.mahmoud@192 ~]$ cat /proc/partitions
major minor  #blocks   name

 259        0  500107608 nvme0n1
 259        1      51200 nvme0n1p1
 259        2  127947776 nvme0n1p2
 259        3  190858240 nvme0n1p3
 259        4          1 nvme0n1p4
 259        5    1048576 nvme0n1p5
 259        6  180197376 nvme0n1p6
 253        0   73400320 dm-0
 253        1   16384000 dm-1
 253        2   90411008 dm-2
```

What did you notice?
My new partition not exist in list.

How to overcome that?
By reboot my system.

4. Make a new ext2 file system on the new logical partition you just created.

```
[root@192 ~]# mkfs -t ext2 /dev/mapper/rhel-root-part1
```

5.Create a directory, name it /data. sudo mkdir /data

```
[root@192 ~]# mkdir /data
```

6.Add a label to the new filesystem, name it data. done

```
[root@192 ~]# e2label /dev/mapper/rhel-root-part1  label1
```

7.Add a new entry to /etc/fstab for the new filesystem using the label you just create

```
/dev/mapper/rhel-root      /                          xfs      defaults       0 0
UUID=c1f8ef8a-5ece-4ea6-b9a2-3ec543f91f6f /boot                 xfs     defaults        0 0
UUID=06DD-D287             /boot/efi                  vfat     umask=0077,shortname=winnt 0 2
/dev/mapper/rhel-home      /home                      xfs      defaults       0 0
/dev/mapper/rhel-swap      none                       swap     defaults       0 0
LABEL=label1               /data                      ext2     defaults       0 0
```

8.Mount the new filesystem.

```
[root@192 ~]# mount -t ext2 /dev/mapper/rhel-root-part1 /data
```

9.Display your swap size.

```
[Eng.mahmoud@192 ~]$ sudo swapon
[sudo] password for Eng.mahmoud:
NAME        TYPE         SIZE USED PRIO
/dev/dm-1 partition 15.6G   0B    -2
```

10.Create a swap file of size 512MB.

```
[Eng.mahmoud@192 ~]$ sudo dd if=/dev/zero of=/myswap bs=1024 count=524288
524288+0 records in
524288+0 records out
536870912 bytes (537 MB, 512 MiB) copied, 0.947121 s, 567 MB/s
```

11. Add the swap file to the virtual memory of the system.
&&
12. Display the swap size 11 &12

```
[Eng.mahmoud@192 ~]$ sudo chmod 600 /myswap
[Eng.mahmoud@192 ~]$ sudo mkswap /myswap
Setting up swapspace version 1, size = 512 MiB (536866816 bytes)
no label, UUID=3a934300-770f-4429-832c-e88c181de438
[Eng.mahmoud@192 ~]$ sudo swapon -a /myswap
[Eng.mahmoud@192 ~]$ sudo swapon
NAME        TYPE       SIZE USED PRIO
/dev/dm-1 partition 15.6G   0B   -2
/myswap    file       512M   0B   -3
```