

Lab Objectives:

- 1) Using `dd` command create empty file with size of 20MB (hint: count 40000, bs=512)

```
omarwalid@omarwalid-VirtualBox:~$ dd if=/dev/zero of=/tmp/disk.img bs=512 count=20000
20000+0 records in
20000+0 records out
10240000 bytes (10 MB, 9.8 MiB) copied, 0.107015 s, 95.7 MB/s
```

- 2) Attach the file as loop device using `losetup` command (hint: use `losetup -f` to allocate free device)

```
omarwalid@omarwalid-VirtualBox:~$ sudo losetup -f
/dev/loop7
omarwalid@omarwalid-VirtualBox:~$ sudo losetup /dev/loop7 /tmp/disk.img
```

- 3) using `fdisk` command, create new partition into the loop device (`fdisk /dev/loop<??>` where <??> is the device number)

```
omarwalid@omarwalid-VirtualBox:~$ sudo fdisk /dev/loop7

Welcome to fdisk (util-linux 2.37.2).
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 0x7513c235.

Command (m for help): p
Disk /dev/loop7: 9.77 MiB, 10240000 bytes, 20000 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: 0x7513c235

Command (m for help): n
Partition type
   p   primary (0 primary, 0 extended, 4 free)
   e   extended (container for logical partitions)
Select (default p): p
Partition number (1-4, default 1): 1
First sector (2048-19999, default 2048):
Last sector, +/-sectors or +/-size{K,M,G,T,P} (2048-19999, default 19999): +5m

Created a new partition 1 of type 'Linux' and of size 5 MiB.

Command (m for help): w
```

```
omarwalid@omarwalid-VirtualBox:~$ sudo mkfs /dev/loop7p1
mke2fs 1.46.5 (30-Dec-2021)
Discarding device blocks: done
Creating filesystem with 1280 4k blocks and 1280 inodes

Allocating group tables: done
Writing inode tables: done
Writing superblocks and filesystem accounting information: done
```

- 4) Format the new partition using `mkfs.ext4` command

```
omarwalid@omarwalid-VirtualBox:~$ sudo mkfs.ext4 -c /dev/loop7p1
mke2fs 1.46.5 (30-Dec-2021)
/dev/loop7p1 contains a ext2 file system
   created on Wed Mar  1 14:02:52 2023
Proceed anyway? (y,N) y

Filesystem too small for a journal
Discarding device blocks: done
Creating filesystem with 1280 4k blocks and 1280 inodes

Checking for bad blocks (read-only test):  0.00% done, 0:00 elapsed. (0/0/0 er
done
Allocating group tables: done
Writing inode tables: done
Writing superblocks and filesystem accounting information: done
```

- 5) Mount the formatted partition into `/mnt` directory

```
omarwalid@omarwalid-VirtualBox:~$ sudo mount /dev/loop7p1 /mnt
omarwalid@omarwalid-VirtualBox:~$ ls /mnt
lost+found
```

6) Create some files inside the mounted /mnt directory

```
omarwalid@omarwalid-VirtualBox:/mnt$ sudo touch file1 file2
omarwalid@omarwalid-VirtualBox:/mnt$ ls
file1  file2  lost+found
```

7) Unmount /mnt directory using `umount` command

```
omarwalid@omarwalid-VirtualBox:/$ sudo umount /mnt
```

8) Using `apt` command, search and install `gparted` program

```
omarwalid@omarwalid-VirtualBox:/$ sudo apt install gparted
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required
  libflashrom1 libftdi1-2 liblvm13
```

9) Navigate and use gparted to detect the the new partition.

