

Lab4 Objectives:

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

- command:

➤ dd if=/dev/zero of=/tmp/disk.img bs=512 count=40000

- screen shot:

```
mariam@mariam-VirtualBox:~/Desktop$ dd if=/dev/zero of=/tmp/disk.img bs=512 count=40000
40000+0 records in
40000+0 records out
20480000 bytes (20 MB, 20 MiB) copied, 0.810994 s, 25.3 MB/s
```

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

- commands:

➤ sudo losetup -f

➤ sudo losetup /dev/loop18 /tmp/disk.img

- screen shot:

```
mariam@mariam-VirtualBox:~/Desktop$ sudo losetup -f
[sudo] password for mariam:
/dev/loop1
mariam@mariam-VirtualBox:~/Desktop$ sudo losetup /dev/loop1 /tmp/disk.img
```

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

- commands:

➤ sudo fdisk /dev/loop1

- screen shot:

```
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 0xee6081d8.

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 (2048-39999, default 2048):
Last sector, +/-sectors or +/-size{K,M,G,T,P} (2048-39999, default 39999):

Created a new partition 1 of type 'Linux' and of size 18.5 MiB.
```

4. format the new partition using `mkfs.ext4` command

- commands:
 - `sudo mkfs.ext4 /tmp/disk.img`
- screen shot:

```
mariam@mariam-VirtualBox:~/Desktop$ sudo mkfs.ext4 /tmp/disk.img
mke2fs 1.46.5 (30-Dec-2021)
Discarding device blocks: done
Creating filesystem with 5000 4k blocks and 5008 inodes

Allocating group tables: done
Writing inode tables: done
Creating journal (1024 blocks): done
Writing superblocks and filesystem accounting information: done
```

5. mount the formatted partition into `/mnt` directory

- commands:
 - `sudo mount /dev/loop1 /mnt`
 - `$ ls /mnt`
- screen shot:

```
mariam@mariam-VirtualBox:~/Desktop$ sudo mount /dev/loop1 /mnt
mariam@mariam-VirtualBox:~/Desktop$ ls /mnt
lost+found
```

6. create some files inside the mounted `/mnt` directory

- commands:
 - `sudo touch /mnt/lab5.txt`
 - `sudo touch /mnt/sysAdmin.txt`
 - `sudo touch /mnt/file.txt`
 - `ls /mnt`
- screen shot:

```
mariam@mariam-VirtualBox:~/Desktop$ sudo touch /mnt/lab5.txt
mariam@mariam-VirtualBox:~/Desktop$ sudo touch /mnt/sysAdmin.txt
mariam@mariam-VirtualBox:~/Desktop$ sudo touch /mnt/file.txt
mariam@mariam-VirtualBox:~/Desktop$ ls /mnt
file.txt lab5.txt lost+found sysAdmin.txt
```

7. unmount /mnt directory using umount command

- commands:
 - `sudo umount /mnt`
 - `$ ls /mnt`

- screen shot:

```
mariam@mariam-VirtualBox:~/Desktop$ sudo umount /mnt
mariam@mariam-VirtualBox:~/Desktop$ ls /mnt
```

8. using `apt` command, search and install `gparted` program

- commands:
 - `sudo apt install gparted`

9. navigate and use gparted to detect the the new partition.

- commands:
 - `gparted /dev/loop1`
- screen shot:

