Lab-5

1- using dd command create empty file with size of 20MB:

```
yossef@ubuntu-18:~$ man dd
yossef@ubuntu-18:~$ 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, 0.419611 s, 48.8 MB/s
yossef@ubuntu-18:~$ ls /tmp/disk.img
/tmp/disk.img
yossef@ubuntu-18:~$
```

2- attach the file as loop device using losetup command:

```
                                    yossef@ubuntu-18: ~
File  Edit  View  Search  Terminal  Help
sudo losetup /dev/loop24 /tmp/disk.img
[sudo] password for yossef:
```

3- using fdisk command, create new partition into the loop device:

```
yossef@ubuntu-18:/$ sudo fdisk /dev/loop24

Welcome to fdisk (util-linux 2.31.1).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.

The old ext4 signature will be removed by a write command.

Device does not contain a recognized partition table.
Created a new DOS disklabel with disk identifier 0xbb60901c.

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):
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:

```
yossef@ubuntu-18:~$ sudo mkfs.ext4 /tmp/disk.img
mke2fs 1.44.1 (24-Mar-2018)
Found a dos partition table in /tmp/disk.img
Proceed anyway? (y,N) y
Discarding device blocks: done
Creating filesystem with 20000 1k blocks and 5016 inodes
Filesystem UUID: ea7afdd2-2b4a-4e58-91f6-476466352aea
Superblock backups stored on blocks:
        8193

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:

```
yossef@ubuntu-18:~$ sudo mount /dev/loop24 /mnt
yossef@ubuntu-18:~$ ls /mnt
lost+found
yossef@ubuntu-18:~$ cd /mnt
yossef@ubuntu-18:/mnt$ touch
```

6- create some files inside the mounted /mnt directory:

```
yossef@ubuntu-18:/mnt$ touch file1.txt
touch: cannot touch 'file1.txt': Permission denied
yossef@ubuntu-18:/mnt$ sudo !!
sudo touch file1.txt
yossef@ubuntu-18:/mnt$ ls
file1.txt  lost+found
yossef@ubuntu-18:/mnt$ ls -i file1.txt
12 file1.txt
yossef@ubuntu-18:/mnt$
```

7- unmount /mnt directory using umount command:

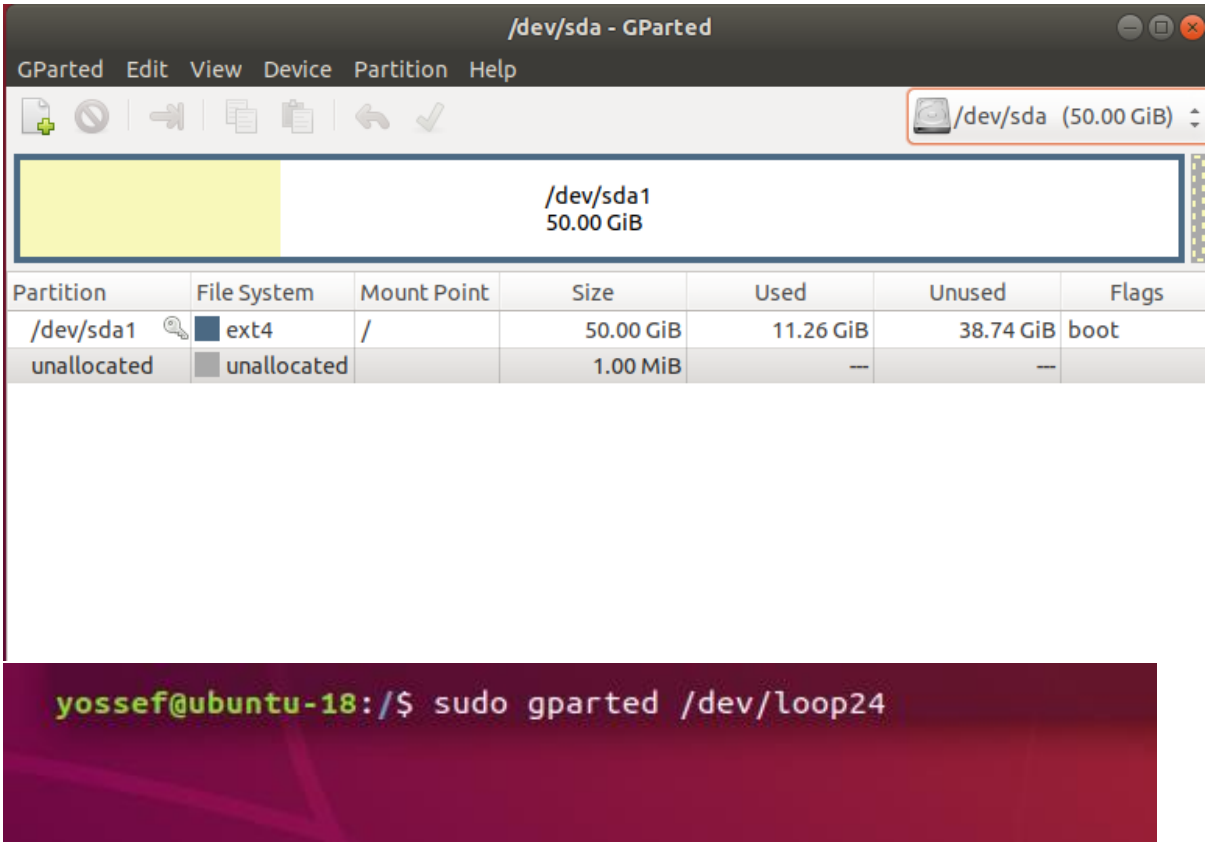
```
yossef@ubuntu-18:/$ sudo umount /mnt
yossef@ubuntu-18:/$ ls /mnt
yossef@ubuntu-18:/$
```

8- using `apt` command, search and install `gparted` program:

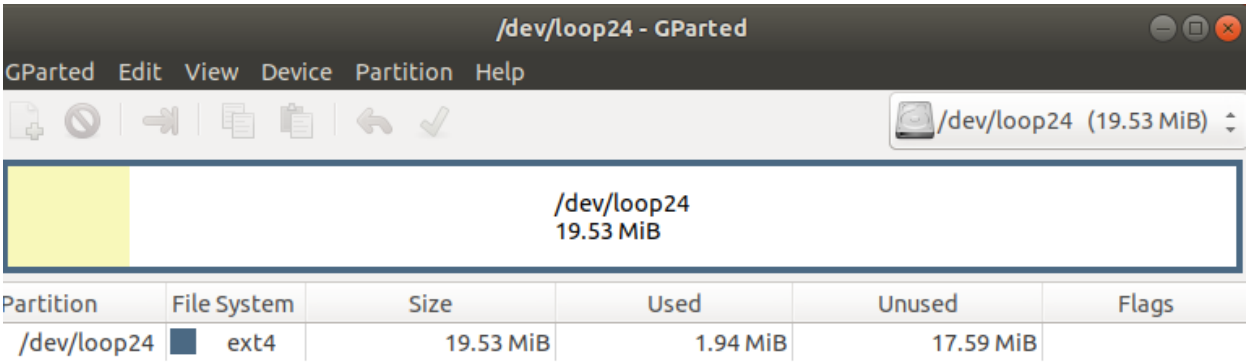
```
yossef@ubuntu-18:/$ apt-cache search gparted
gparted - GNOME partition editor
drobo-utils - manage data robotics storage units (drobos)
partitionmanager - file, disk and partition management for KDE
yossef@ubuntu-18:/$ sudo !!
sudo apt-get install  gparted
Reading package lists... Done
Building dependency tree
Reading state information... Done
```

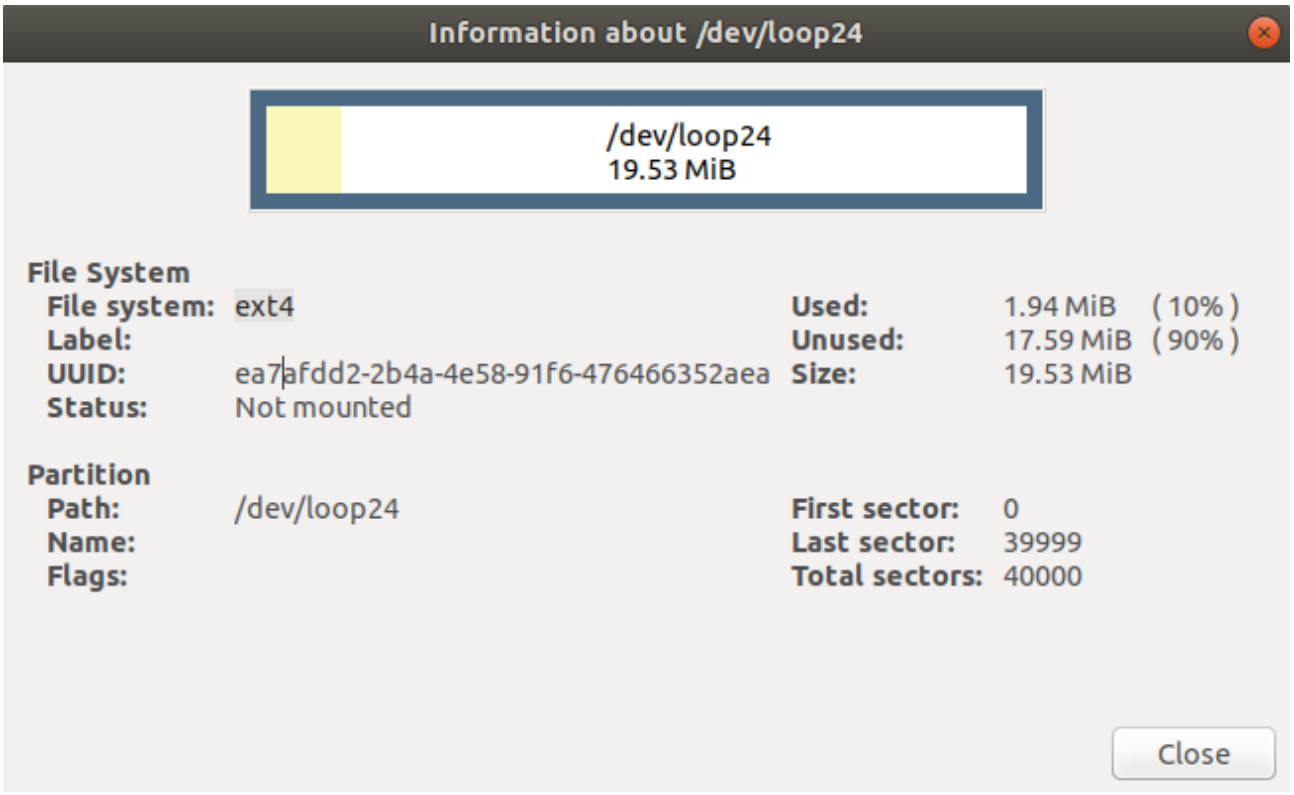
9- navigate and use gparted to detect the the new partition:

```
yossef@ubuntu-18:/$ sudo gparted
Unit -.mount does not exist, proceeding anyway.
Gtk-Message: 14:32:51.865: Failed to load module "canberra-gtk-module"
=====================
libparted : 3.2
=====================
```




```
yossef@ubuntu-18:/$ sudo gparted /dev/loop24
```


/dev/loop24 - GParted
GParted Edit View Device Partition Help
/dev/loop24 (19.53 MiB)
/dev/loop24
19.53 MiB
Partition File System Size Used Unused Flags
/dev/loop24 ext4 19.53 MiB 1.94 MiB 17.59 MiB


Information about /dev/loop24
/dev/loop24
19.53 MiB
File System
File system: ext4
Label:
UUID: ea7afdd2-2b4a-4e58-91f6-476466352aea
Status: Not mounted
Used: 1.94 MiB (10%)
Unused: 17.59 MiB (90%)
Size: 19.53 MiB
Partition
Path: /dev/loop24
Name:
Flags:
First sector: 0
Last sector: 39999
Total sectors: 40000
Close