Lab 5

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

```
vboxuser@Ubuntuu:~$ 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, 0.323833 s, 63.2 MB/s
```

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

```
vboxuser@Ubuntuu:~$ sudo losetup -f
/dev/loop15
vboxuser@Ubuntuu:~$ sudo losetup /dev/loop15 /tmp/disk.img
```

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

```
vboxuser@Ubuntuu:~$ sudo fdisk /dev/loop15

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 0xa1149c5c.

Command (m for help): p
Disk /dev/loop15: 19.53 MiB, 20480000 bytes, 40000 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: 0xa1149c5c

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): +5

Created a new partition 1 of type 'Linux' and of size 3 KiB.
```

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

```
vboxuser@Ubuntuu:~$ sudo mkfs.ext4 /tmp/disk.img
mke2fs 1.46.5 (30-Dec-2021)
Found a dos partition table in /tmp/disk.img
Proceed anyway? (y,N) y
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.

```
vboxuser@Ubuntuu:~$ sudo mount /dev/loop15 /mnt
vboxuser@Ubuntuu:~$ ls /mnt
lost+found
```

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

```
vboxuser@Ubuntuu:~$ sudo touch file1 file2
vboxuser@Ubuntuu:~$ ls
bg_process.service  disk.img   file1  Music     snap
bg_script.service   Documents  file2  Pictures  Templates
Desktop             Downloads  iti-0  Public    Videos
vboxuser@Ubuntuu:~$
```

7. unmount /mnt directory using umount command.

```
vboxuser@Ubuntuu:~$ sudo umount /mnt
```

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

```
vboxuser@Ubuntuu:~$ sudo apt install gparted
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following package was automatically installed and is no longer required:
  systemd-hwe-hwdb
Use 'sudo apt autoremove' to remove it.
```

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

```
vboxuser@Ubuntuu:~$ sudo gparted /dev/loop15
GParted 1.3.1
configuration --enable-libparted-dmraid --enable-online-resize
libparted 3.4
```