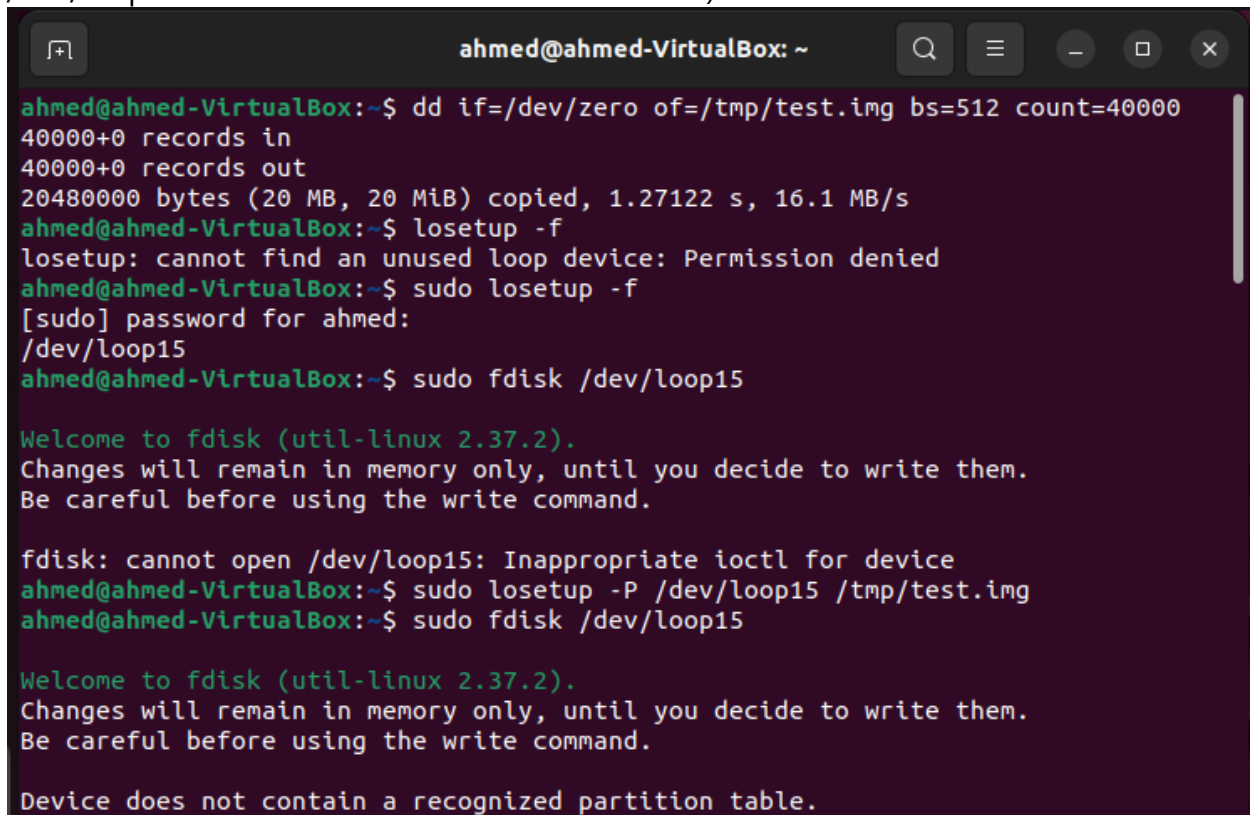


Lab5

- using `dd` command create empty file with size of 20MB (hint: count 40000, bs=512)
- attach the file as loop device using `losetup` command (hint: use `losetup -f` to allocate free device)
- using `fdisk` command, create new partition into the loop device (`fdisk /dev/loop<??>` where `<??>` is the device number)



```
ahmed@ahmed-VirtualBox: ~  
ahmed@ahmed-VirtualBox:~$ dd if=/dev/zero of=/tmp/test.img bs=512 count=40000  
40000+0 records in  
40000+0 records out  
20480000 bytes (20 MB, 20 MiB) copied, 1.27122 s, 16.1 MB/s  
ahmed@ahmed-VirtualBox:~$ losetup -f  
losetup: cannot find an unused loop device: Permission denied  
ahmed@ahmed-VirtualBox:~$ sudo losetup -f  
[sudo] password for ahmed:  
/dev/loop15  
ahmed@ahmed-VirtualBox:~$ 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.  
  
fdisk: cannot open /dev/loop15: Inappropriate ioctl for device  
ahmed@ahmed-VirtualBox:~$ sudo losetup -P /dev/loop15 /tmp/test.img  
ahmed@ahmed-VirtualBox:~$ 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.
```

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

```
ahmed@ahmed-VirtualBox: ~  
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.  
  
Command (m for help): w  
The partition table has been altered.  
Calling ioctl() to re-read partition table.  
Syncing disks.  
  
ahmed@ahmed-VirtualBox:~$ sudo mkfs.et4 /tmp/test.img  
sudo: mkfs.et4: command not found  
ahmed@ahmed-VirtualBox:~$ sudo mkfs.ext4 /tmp/test.img  
mke2fs 1.46.5 (30-Dec-2021)  
Found a dos partition table in /tmp/test.img  
Proceed anyway? (y,N) y  
Discarding device blocks: done
```

- mount the formatted partition into /mnt directory
- create some files inside the mounted /mnt directory
- unmount /mnt directory using umount command

```
ahmed@ahmed-VirtualBox: ~  
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  
  
ahmed@ahmed-VirtualBox:~$ cd /mnt  
ahmed@ahmed-VirtualBox:/mnt$ sudo mount /dev/loop15  
mount: /dev/loop15: can't find in /etc/fstab.  
ahmed@ahmed-VirtualBox:/mnt$ cd ~  
ahmed@ahmed-VirtualBox:~$ sudo mount /dev/loop15 /mnt  
ahmed@ahmed-VirtualBox:~$ cd /mnt  
ahmed@ahmed-VirtualBox:/mnt$ ls  
lost+found  
ahmed@ahmed-VirtualBox:/mnt$ touch test1.txt  
touch: cannot touch 'test1.txt': Permission denied  
ahmed@ahmed-VirtualBox:/mnt$ sudo touch test1.txt  
ahmed@ahmed-VirtualBox:/mnt$ ls  
lost+found test1.txt  
ahmed@ahmed-VirtualBox:/mnt$ ls -li test1.txt  
12 test1.txt  
ahmed@ahmed-VirtualBox:/mnt$ cd ~
```

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

```

ahmed@ahmed-VirtualBox:/mnt$ touch test1.txt
touch: cannot touch 'test1.txt': Permission denied
ahmed@ahmed-VirtualBox:/mnt$ sudo touch test1.txt
ahmed@ahmed-VirtualBox:/mnt$ ls
lost+found  test1.txt
ahmed@ahmed-VirtualBox:/mnt$ ls -li test1.txt
12 test1.txt
ahmed@ahmed-VirtualBox:/mnt$ cd ~
ahmed@ahmed-VirtualBox:~$ sudo umount /mnt
ahmed@ahmed-VirtualBox:~$ cd /mnt
ahmed@ahmed-VirtualBox:/mnt$ ls
test1.txt
ahmed@ahmed-VirtualBox:/mnt$ cd ~
ahmed@ahmed-VirtualBox:~$ sudo gparted
GParted 1.3.1
configuration --enable-libparted-dmraid --enable-online-resize
libparted 3.4
^[[A^C\
ahmed@ahmed-VirtualBox:~$ sudo gparted /dev/loop15
GParted 1.3.1
configuration --enable-libparted-dmraid --enable-online-resize
libparted 3.4
ahmed@ahmed-VirtualBox:~$

```

- navigate and use gparted to detect the the new partition

