

## **LAB 5**

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

### Commands

- dd if=/dev/zero of=/tmp/disk.img bs=512 count=4000

```
hager@hager-VirtualBox:~$ dd if=/dev/zero of=/tmp/disk.img bs=512 count=4000
4000+0 records in
4000+0 records out
2048000 bytes (2.0 MB, 2.0 MiB) copied, 0.0251308 s, 81.5 MB/s
```

- **STEP-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/loop6 /tmp/disk.img

```
hager@hager-VirtualBox:~$ sudo losetup -f
[sudo] password for hager:
/dev/loop6
hager@hager-VirtualBox:~$ sudo losetup /dev/loop6 /tmp/disk.img
```

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

### Commands

- Sudo fdisk /dev/loop6

```

hager@hager-VirtualBox:~$ sudo fdisk /dev/loop6

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 0x3b23708a.

Command (m for help): m

Help:

DOS (MBR)
a  toggle a bootable flag
b  edit nested BSD disklabel
c  toggle the dos compatibility flag

Generic
d  delete a partition
F  list free unpartitioned space
l  list known partition types
n  add a new partition
p  print the partition table
t  change a partition type
v  verify the partition table
i  print information about a partition

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 (1-3999, default 1):
Last sector, +/-sectors or +/-size{K,M,G,T,P} (1-3999, default 3999):

Created a new partition 1 of type 'Linux' and of size 2 MiB.

```

- **STEP-4:** Format the new partition using mkfs.ext4 command

#### Commands

- `sudo mkfs.ext4 /tmp/disk.img`

```
hager@hager-VirtualBox:~$ sudo mkfs.ext4 /tmp/disk.img
mke2fs 1.46.5 (30-Dec-2021)

Filesystem too small for a journal
Discarding device blocks: done
Creating filesystem with 500 4k blocks and 256 inodes

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

- **STEP-5:** Mount the formatted partition into /mnt directory

#### Commands

- sudo mount /dev/loop6 /mnt
- ls /mnt

```
hager@hager-VirtualBox:~$ sudo mount /dev/loop6 /mnt
hager@hager-VirtualBox:~$ ls /mnt
lost+found
```

- **STEP-6:** Create some files inside the mounted /mnt directory

#### Commands

- sudo touch /mnt/file1.txt
- sudo touch /mnt/file2.txt
- ls /mnt

```
hager@hager-VirtualBox:~$ sudo touch /mnt/file1.txt
hager@hager-VirtualBox:~$ sudo touch /mnt/file2.txt
hager@hager-VirtualBox:~$ ls /mnt
file1.txt file2.txt lost+found
```

- **STEP-7:** Unmount /mnt directory using umount command

Commands

- Sudo umount /mnt

```
hager@hager-VirtualBox:~$ sudo umount /mnt
```

- **STEP-8:** Using `apt` command, search and install `gparted` program

Commands

- Sudo apt search gparted
- Sudo apt install gparted

```
hager@hager-VirtualBox:~$ sudo apt search gparted
Sorting... Done
Full Text Search... Done
gparted/jammy 1.3.1-1ubuntu1 amd64
  GNOME partition editor

gparted-common/jammy,jammy 1.3.1-1ubuntu1 all
  GNOME partition editor -- common data

partitionmanager/jammy 21.12.3-0ubuntu1 amd64
  file, disk and partition management for KDE
```



```
hager@hager-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:
  chromium-codecs-ffmpeg-extra gstreamer1.0-vaapi i965-va-driver
  intel-media-va-driver libaacs0 libaom3 libass9 libavcodec58 libavformat58
  libavutil56 libbdplus0 libblas3 libbluray2 libbs2b0 libchromaprint1
  libcodec2-1.0 libdavid5 libflite1 libgme0 libgsm1
  libgstreamer-plugins-bad1.0-0 libigdgmm12 liblilv-0-0 libllvm15 libmfx1
  libmysofa1 libnorm1 libopenmpt0 libpgm-5.3-0 libpostproc55 librabbitmq4
  librubberband2 libserd-0-0 libshine3 libsnappy1v5 libsord-0-0 libsratom-0-0
  libsrt1.4-gnutls libssh-gcrypt-4 libswresample3 libswscale5 libudfread0
  libva-drm2 libva-wayland2 libva-x11-2 libva2 libvdpau1 libvidstab1.1
  libx265-199 libxvidcore4 libzing2 libzmq5 libzvb-common libzvb0
  mesa-va-drivers mesa-va-drivers pocketsphinx-en-us systemd-hwe-hwdb
  va-driver-all vdpau-driver-all
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  gparted-common
Suggested packages:
  dmraid gpart jfsutils kpartx mtools reiser4progs reiserfsprogs udftools
  xfsprogs exfatprogs
The following NEW packages will be installed:
  gparted gparted-common
0 upgraded, 2 newly installed, 0 to remove and 284 not upgraded.
Need to get 490 kB of archives.
After this operation, 2,128 kB of additional disk space will be used.

Do you want to continue? [Y/n] y
Get:1 http://eg.archive.ubuntu.com/ubuntu jammy/main amd64 gparted-common all 1
.3.1-1ubuntu1 [71.9 kB]
Get:2 http://eg.archive.ubuntu.com/ubuntu jammy/main amd64 gparted amd64 1.3.1-
1ubuntu1 [418 kB]
Fetched 490 kB in 4s (135 kB/s)
Selecting previously unselected package gparted-common.
(Reading database ... 197049 files and directories currently installed.)
Preparing to unpack .../gparted-common_1.3.1-1ubuntu1_all.deb ...
Unpacking gparted-common (1.3.1-1ubuntu1) ...
Selecting previously unselected package gparted.
Preparing to unpack .../gparted_1.3.1-1ubuntu1_amd64.deb ...
Unpacking gparted (1.3.1-1ubuntu1) ...
Setting up gparted-common (1.3.1-1ubuntu1) ...
Setting up gparted (1.3.1-1ubuntu1) ...
Processing triggers for mailcap (3.70+nmu1ubuntu1) ...
Processing triggers for desktop-file-utils (0.26-1ubuntu3) ...
Processing triggers for hicolor-icon-theme (0.17-2) ...
Processing triggers for gnome-menus (3.36.0-1ubuntu3) ...
Processing triggers for man-db (2.10.2-1) ...
```

- **STEP-9:** Navigate and use gparted to detect the the new partition.

#### Commands

- `Sudo gparted /dev/loop6`

```
hager@hager-VirtualBox:~$ sudo gparted /dev/loop6
```


```
GParted 1.3.1
```


```
configuration --enable-libparted-dmraid --enable-online-resize
```


```
libparted 3.4
```

**/dev/loop6 - GParted**

GParted Edit View Device Partition Help

 /dev/loop6 (1.95 MiB) ▾

 /dev/loop6  
1.95 MiB

Partition	File System	Size	Used	Unused	Flags
/dev/loop6	 ext4	1.95 MiB	280.00 KiB	1.68 MiB	