Volume Management & Disk Usage

Objective

The goal of this task is to practice basic **volume management and disk usage verification** on a Linux system. You will:

- Create a mount directory
- Mount a new volume (using a loop device for local practice)
- Verify the mount using standard Linux commands

This exercise is commonly used in **DevOps, Linux administration, and cloud environments**.

Step 1: Create the Mount Directory

Create a directory that will act as the mount point for the new volume.

```
sudo mkdir -p /mnt/devops_data
```

Verify the directory creation:

```
ls -ld /mnt/devops_data
```

Step 2: Create a File to Act as a Disk (Loop Device)

For local practice, a file can be used as a virtual disk.

Create a 1 GB disk image file:

```
sudo dd if=/dev/zero of=/devops_data.img bs=1M count=1024
```

Explanation:

- `dd` copies data at a low level
- `/dev/zero` provides zero-filled data
- `bs=1M` sets the block size to 1 MB
- `count=1024` creates a total size of 1 GB

Step 3: Associate the File with a Loop Device

Attach the image file to the next available loop device:

```
sudo losetup -fP /devops_data.img
```

Check which loop device was assigned:

```
sudo losetup -a
```

Example output:

```
/dev/loop0: [..]: (/devops_data.img)
```

Step 4: Create a Filesystem on the Loop Device

Format the loop device with an ext4 filesystem (replace `/dev/loop0` if needed):

```
sudo mkfs.ext4 /dev/loop0
```

Step 5: Mount the Volume

Mount the loop device to the directory created earlier:

```
sudo mount /dev/loop0 /mnt/devops_data
```

Step 6: Verify the Mount

Using `df -h`

This command shows disk usage in a human-readable format:

```
df -h | grep devops_data
```

Example output:

```
/dev/loop0   1.0G   24M  976M   3% /mnt/devops_data
```

Using `mount`

This confirms that the filesystem is mounted:

```
mount | grep devops_data
```

Example output:

```
/dev/loop0 on /mnt/devops_data type ext4 (rw,relatime)
```

Optional: Cleanup (After Practice)

Unmount and remove the loop device if no longer needed:

```
sudo umount /mnt/devops_data
sudo losetup -d /dev/loop0
sudo rm /devops_data.img
```

Summary

- `/mnt/devops_data` was created as a mount point
- A loop device simulated a physical disk
- The disk was mounted and verified using `df -h` and `mount`

This process mirrors how real disks or cloud volumes are mounted in production systems.

End of Document