Exercises Filesystem Integrity

1. Check Disk Space Usage

Task: Use `df` and `du` to check the disk space usage of the root filesystem and a directory of your choice.

Hints:

- `df` reports filesystem disk space usage.
- `du` reports directory space usage.

Solution:

```
# Check overall disk usage for root
df -h /

# Check disk usage of /var directory
du -sh /var
```

2. Verify Filesystem Integrity

Task: Verify and repair the filesystem on partition `/dev/sdb1`.

Hints:

- Filesystem must be unmounted before checking.
- Use `fsck` for checking and repairing.
- Use `-y` flag to answer "yes" to repair prompts automatically.

Solution:

```
sudo umount /dev/sdb1
sudo fsck -y /dev/sdb1
```

3. Create a New ext4 Filesystem

Task: Format the partition `/dev/sdc1` with an ext4 filesystem.

Hints:

- Use `mke2fs` or `mkfs.ext4`.

Solution:

```
sudo mke2fs -t ext4 /dev/sdc1
# or
sudo mkfs.ext4 /dev/sdc1
```

4. Adjust Filesystem Parameters

Task: Change the maximum mount count to 20 and enable journaling on `/dev/sdb1`.

Hints:

- Use `tune2fs` for ext2/ext3/ext4 filesystems.
- Journaling is usually enabled by default for ext4; use `-j` for ext3.

Solution:

```
sudo tune2fs -c 20 /dev/sdb1
sudo tune2fs -j /dev/sdb1
```

5. Repair a Corrupted XFS Filesystem

Task: Repair an unmounted XFS filesystem on `/dev/xvdb1`.

Hints:

- Use `xfs_repair` for XFS filesystems.
- Make sure the filesystem is not mounted before repair.

Solution:

```
sudo umount /dev/xvdb1
sudo xfs_repair /dev/xvdb1
```

6. Check Inode Usage

Task: Display inode usage for the root filesystem.

Hints:

- `df` has a `-i` option for inode info.

Solution:

```
df -i /
```

Quick Review

- `df` and `du`: Monitor disk and directory space.
- `fsck`: Check and repair filesystems (usually ext).
- `mke2fs`: Create ext2/ext3/ext4 filesystems.
- `tune2fs`: Modify ext filesystem parameters.

- `xfs_repair`: Repair XFS filesystems.
- Always unmount filesystems before repairing.