

# CS\_344 Assignment 4 Readme

Group C21: Akshat Mittal, 200101011  
Satvik Tiwari, 200101091  
Pranjal Baranwal, 200101083

## Part A: Installing vdbench and testing

Unzip the vdbench.zip file provided and test a sample file to check the working:

```
$unzip vdbench.zip
$cd vdbench
$./vdbench -tf
```

## Part B: Creating new virtual hard disk in Ubuntu virtual machine

In the VM settings, under storage tab, add two hard disks in *Controller: SATA* section.

Check available disks using:

```
$sudo fdisk -l
```

The two new disks are located at `/dev/sdb` and `/dev/sdc` respectively.

## Part C: Installing ZFS file system

Install the file system:

```
$sudo apt install zfsutils-linux
```

Check whether the file system installed correctly:

```
$whereis zfs
```

Create new zfs pool at location `/dev/sdb` (i.e., Disk\_A):

```
$sudo zpool create [pool-name] /dev/sdb
```

To remove a pool, you can use:

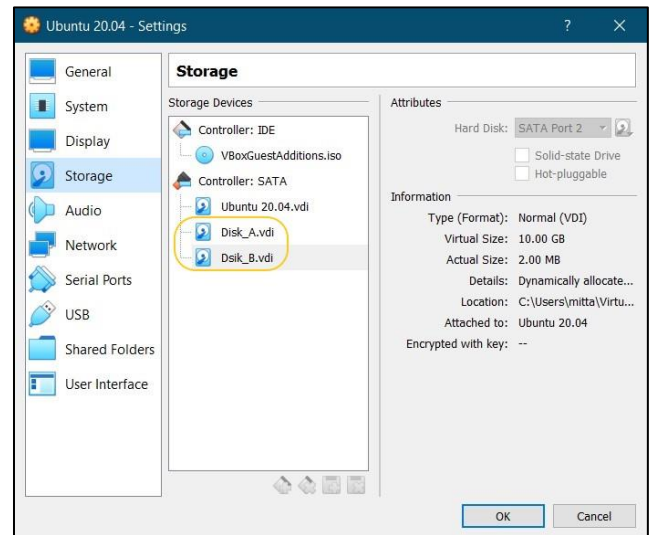
```
$sudo zpool destroy [pool-name]
```

Check mount point and overview of all file systems:

```
$df -hT
```

Check memory usage of pool:

```
$zpool list
```



## Part D: Installing ext4 file system

The ext4 file system is present by default in Ubuntu, we do not need to install it explicitly.

Format file system with ext4 at */dev/sdc* (i.e., Disk\_B):

```
$sudo mkfs.ext4 /dev/sdc
```

Label the partition:

```
$sudo e2label /dev/sdc [name]
```

Create mount point in root directory:

```
$sudo mkdir [name]
```

Mount the partition at mount point:

```
$sudo mount /dev/sdc [name]
```

In case you need to un-mount:

```
$sudo umount [name]
```

## Part E: Compilation and execution for experiment

To set data deduplication on/off for zfs file system:

```
$sudo zfs set dedup=[on/off] [pool-name]
```

To run our workload, change to vdbench directory and run the following command:

```
$sudo ./vdbench -f [workload-file-name] anchor=/[anchor-point]
```

Anchor can be found using `$df -hT`, under *Mounted On* column for zfs and ext4 file system.

### Note:

1. The new hard disks must be of at least 5 GB in size.
2. Finding anchor is important, otherwise our workloads will not work.
3. To see the memory status, you can use `$df -hT` before and after the experiment.