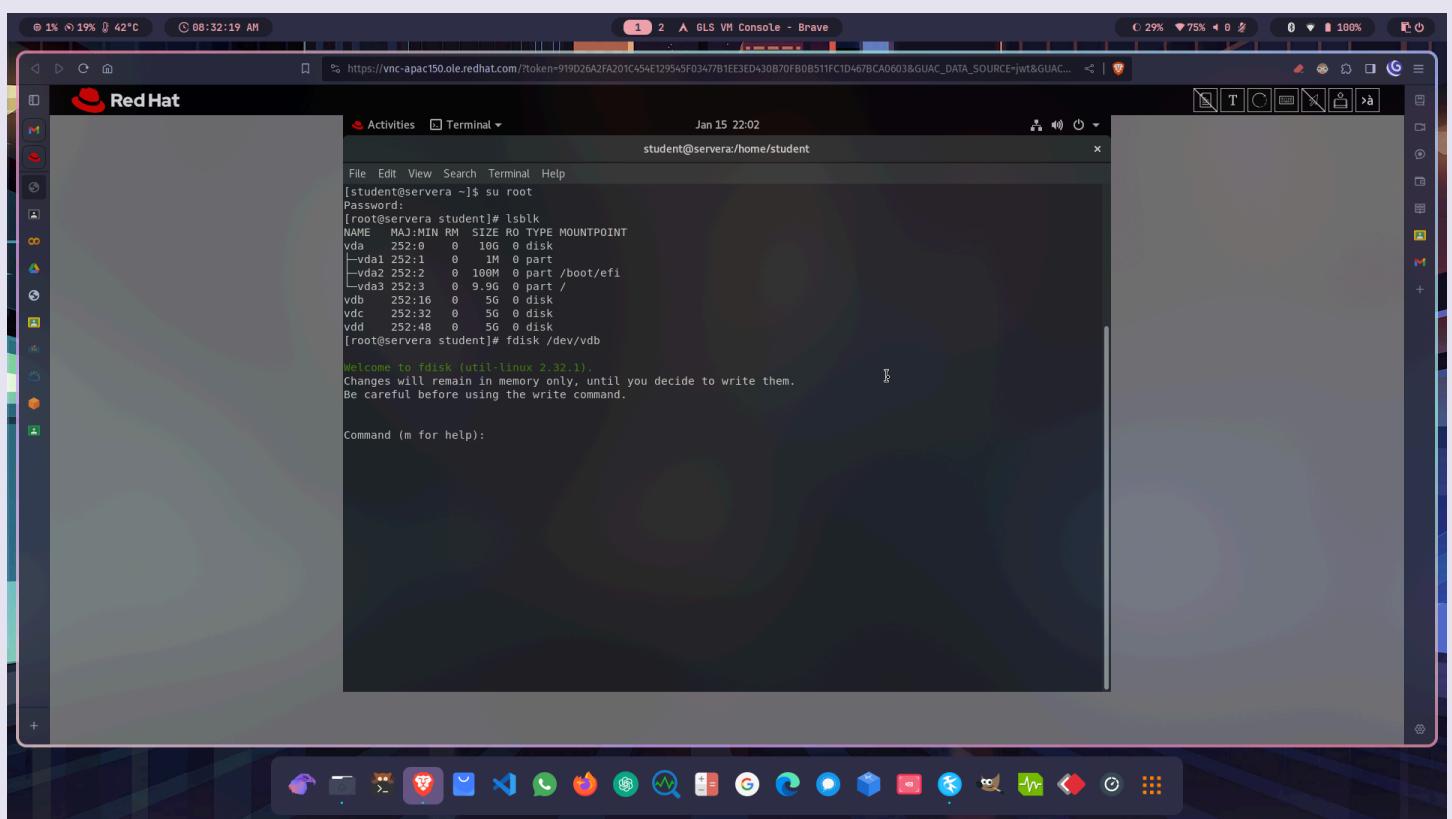


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Exercises :

- 1) You need to create a partition on a new storage device and format it with an ext4 file system, configure it to be mounted at boot, and mount it for use. (The mount point should be a directory named after you)
- Check the empty space and disk partitions and initiate creation of partition using fdisk tool.



The screenshot shows a Linux desktop environment with a terminal window open. The terminal window title is "Activities Terminal" and the command line shows:

```
[student@servera ~]$ su root
[student@servera ~]$ lsblk
[student@servera ~]$ fdisk /dev/vdb
```

The terminal window also displays the output of the lsblk command, listing disk partitions:

NAME	MAJ:MIN	RM	SIZE	RO	TYPE	MOUNTPOINT
vda	252:0	0	10G	0	disk	
vda1	252:1	0	1M	0	part	
vda2	252:2	0	100M	0	part	/boot/efi
vda3	252:3	0	9.9G	0	part	/
vdb	252:16	0	56G	0	disk	
vdc	252:32	0	56G	0	disk	
vdd	252:48	0	56G	0	disk	

The terminal window also displays the output of the fdisk command, which shows the usage information:

```
Welcome to fdisk (util-linux 2.32.1).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.

Command (m for help):
```

Command : **lsblk**

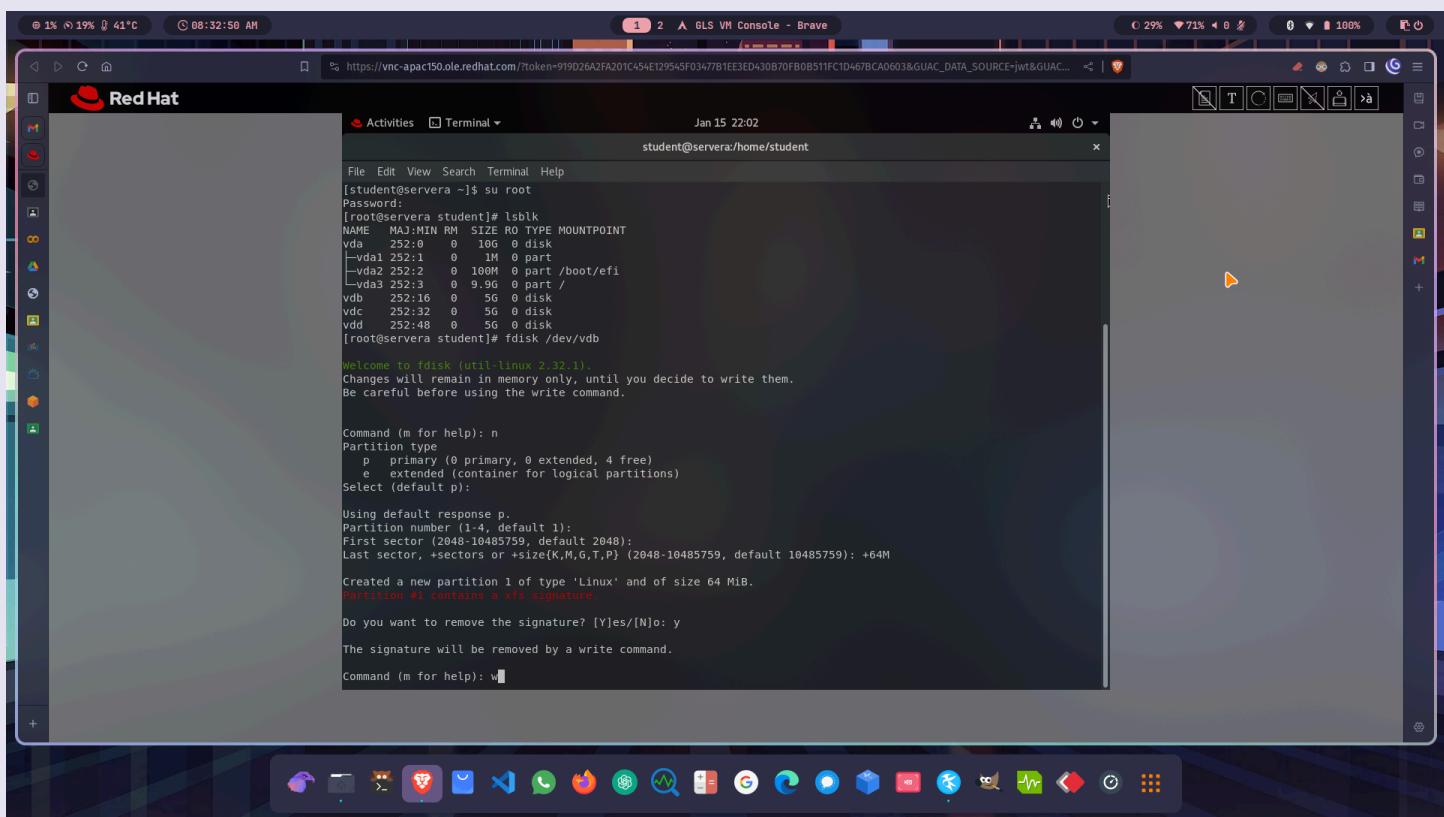
Explanation : This command is used to list the information about the current block devices in linux filesystem, which includes hard drives, SSDs, external drives, etc.

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Command : **fdisk /dev/vdb**

Explanation : It is the command-line utility for disk partitioning. Here **/dev/vdb** block is used for managing its partitions.

b. Creating the partition



The screenshot shows a Red Hat Linux desktop environment with a terminal window open. The terminal window title is "GLS VM Console - Brave". The terminal content shows the following session:

```
student@servera ~]$ su root
[student@servera ~]$ lsblk
NAME  MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
vda   252:0    0 10G  0 disk
└─vda1 252:1    0  1M  0 part
  └─vda2 252:2    0 100M 0 part /boot/efi
  └─vda3 252:3    0 9.9G 0 part /
vdb   252:16   0   5G  0 disk
vdc   252:32   0   5G  0 disk
vdd   252:48   0   5G  0 disk
[student@servera ~]$ fdisk /dev/vdb
Welcome to fdisk (util-linux 2.32.1).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.

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
Using default response p.
Partition number (1-4, default 1):
First sector (2048-10485759, default 2048):
Last sector, +sectors or +size[K,M,G,T,P] (2048-10485759, default 10485759): +64M
Created a new partition 1 of type 'Linux' and of size 64 MiB.
Partition #1 contains a xfs signature.

Do you want to remove the signature? [Y]es/[N]o: y
The signature will be removed by a write command.

Command (m for help): w
```

Command : **fdisk /dev/vdb** then subcommand : **n** (for creating new partition)

Explanation : Here, subcommand of fdisk, n is used to create new partition in /dev/vdb. Then, it asks for partition type, where primary (default) is used, then partition number, here default 1, then the start sector of the partition, default is used here, then end sector or size, where **64MB** size is given.

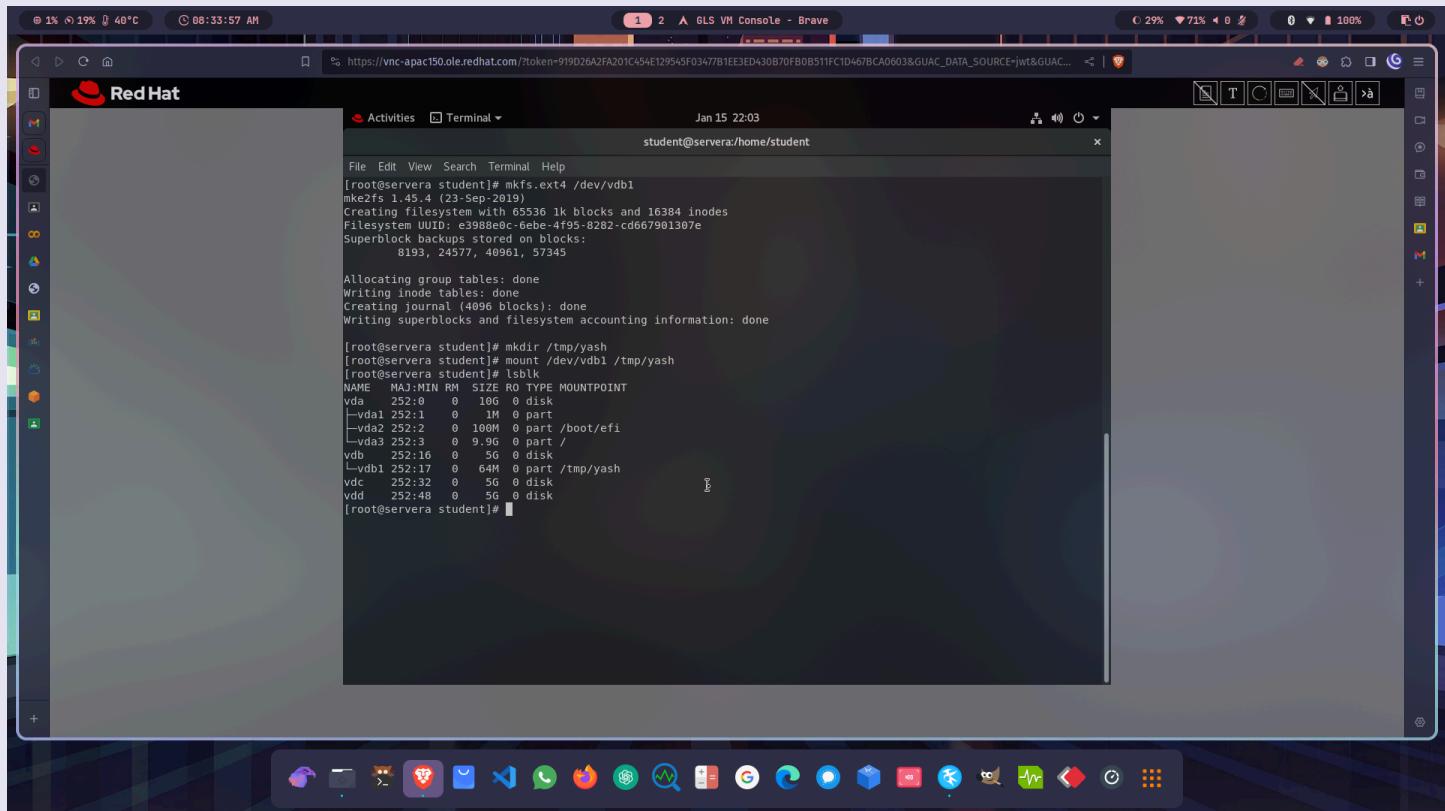
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c. Assigning filesystem to the newly created partition.



The screenshot shows a terminal window titled "Red Hat" running on a Red Hat Linux desktop environment. The terminal output is as follows:

```
[root@servera student]# mkfs.ext4 /dev/vdb1
mke2fs 1.45.4 (23-Sep-2019)
Creating filesystem with 65536 1k blocks and 16384 inodes
Filesystem UUID: e3988e0c-6ebe-4f95-8282-cd6679b1307e
Superblock backups stored on blocks:
      8193, 24577, 40961, 57345

Allocating group tables: done
Writing inode tables: done
Creating journal (4096 blocks): done
Writing superblocks and filesystem accounting information: done

[root@servera student]# mkdir /tmp/yash
[root@servera student]# mount /dev/vdb1 /tmp/yash
[root@servera student]# lsblk
NAME   MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
vda    252:0    0 10G  0 disk
└─vda1 252:1    0   1M  0 part
  └─vda2 252:2    0 100M 0 part /boot/efi
    └─vda3 252:3    0  9.9G 0 part /
vdb    252:16   0   5G  0 disk
└─vdb1 252:17   0   64M 0 part /tmp/yash
vdc    252:32   0   5G  0 disk
vdd    252:48   0   5G  0 disk
[root@servera student]#
```

Command : **mkfs.ext4 /dev/vdb1**

Explanation : **mkfs** is used to make filesystem. Then filesystem type - **ext4** is specified directly after dot in mkfs, then the name or location of the partition.

Command : **mount /dev/vdb1 /tmp/yash**

Explanation : **mount** is used to mount the block **/dev/vdb1** to the directory **/tmp/yash**.

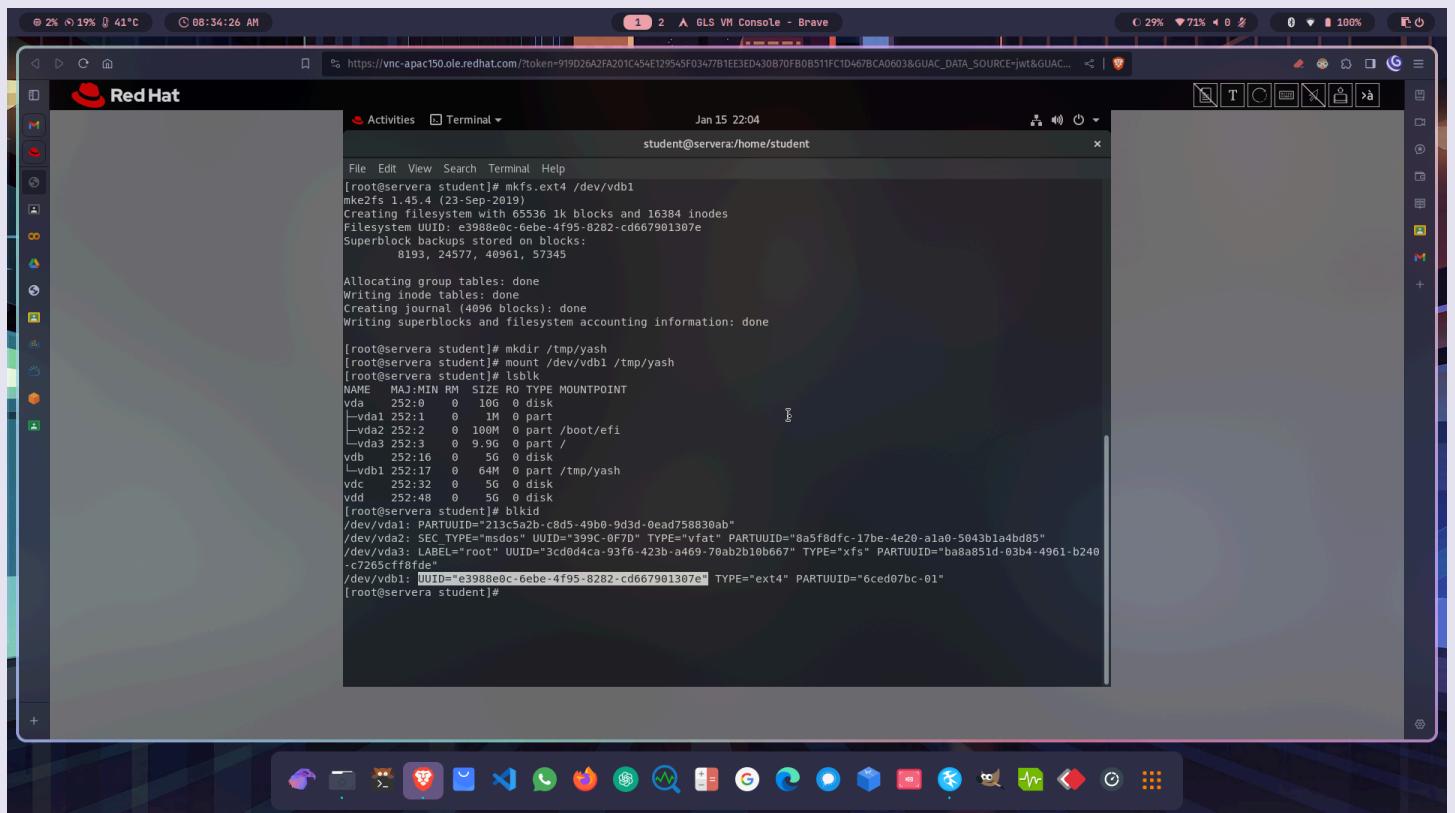
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d. Getting the UUID of the partition to create its manual entry in fstab



```
[root@servera student]# mkfs.ext4 /dev/vdb1
mke2fs 1.45.4 (23-Sep-2019)
Creating filesystem with 65536 1k blocks and 16384 inodes
Filesystem UUID: e3988e0c-6ebe-4f95-8282-cd6679b1307e
Superblock backups stored on blocks:
      8193, 24577, 40961, 57345

Allocating group tables: done
Writing inode tables: done
Creating journal (4096 blocks): done
Writing superblocks and filesystem accounting information: done

[root@servera student]# mkdir /tmp/yash
[root@servera student]# mount /dev/vdb1 /tmp/yash
[root@servera student]# lsblk
NAME   MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
vda    252:0    0  10G  0 disk
└─vda1 252:1    0   1M  0 part
vda2  252:2    0 100M  0 part /boot/efi
└─vda3 252:3    0  9.9G  0 part /
vdb  252:16   0   5G  0 disk
└─vdb1 252:17   0  64M  0 part /tmp/yash
vdc  252:32   0   5G  0 disk
vdd  252:48   0   5G  0 disk
[root@servera student]# blkid
/dev/vda1: PARTUUID=213c5a2b-c8d5-49b0-9d3d-0ead758830ab"
/dev/vda2: SEC_TYPE="msdos" UUID="399c-0f7d" TYPE="vfat" PARTUUID="8a5f8dfc-17be-4e20-a1a0-5043b1a4bd85"
/dev/vda3: SEC_TYPE="root" UUID="3cd0d4ca-93f6-423b-a469-70ab2b10b667" TYPE="xfs" PARTUUID="ba8a851d-03b4-4961-b240
-c7265cff814d"
/dev/vdb1: UUID=e3988e0c-6ebe-4f95-8282-cd6679b1307e" TYPE="ext4" PARTUUID="5ced07bc-01"
[root@servera student]#
```

Command : **blkid**

Explanation : This command is used to get the list of block devices with their UUIDs, types and partition UUIDs.

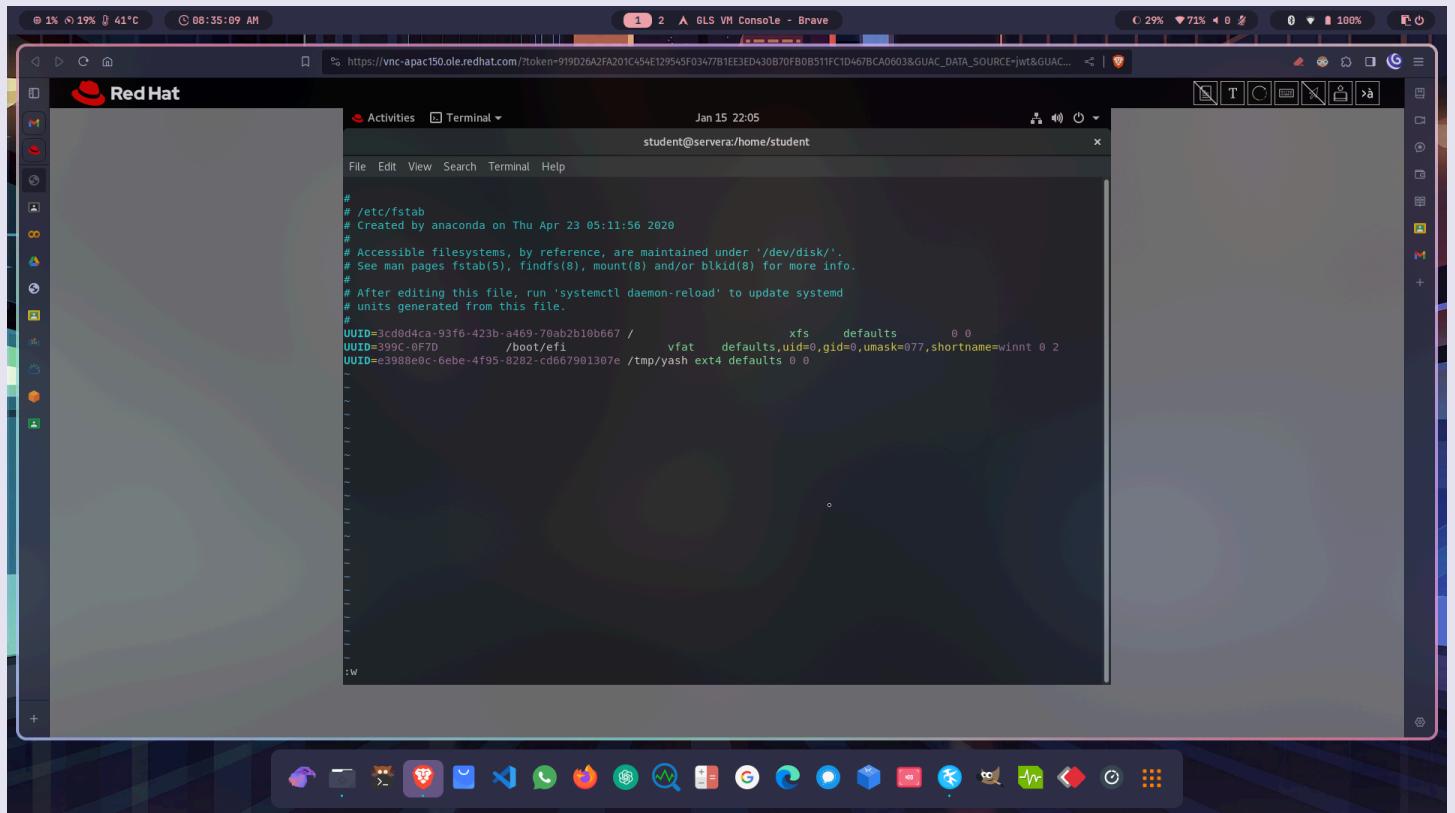
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e. To ensure block device boot, creating manual entry in /etc/fstab

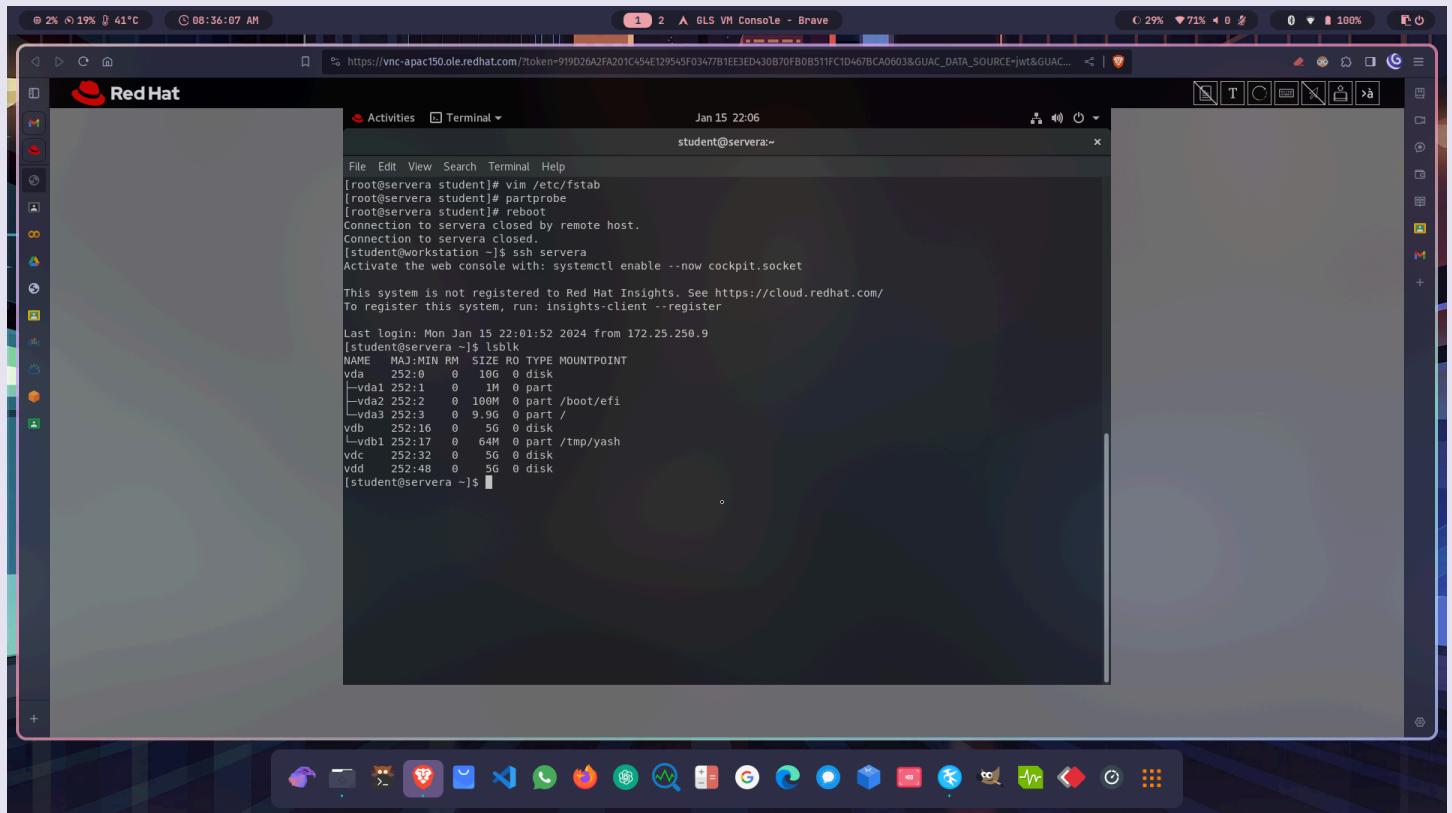


Command : **vim /etc/fstab**

Explanation : **vim** is the full-featured command line text editor, here used to edit **/etc/fstab** file, where entry of newly created partition is done.

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f. Refreshing and rebooting the device to check the successful setup



The screenshot shows a Red Hat Linux desktop environment with a terminal window open. The terminal window title is "Red Hat" and it displays a command-line session. The session starts with root user commands: vim /etc/fstab, partprobe, and reboot. It then shows a connection closed message and an attempt to ssh into the server from a workstation. Finally, it lists disk partitions using lsblk, showing vda, vda1, vda2, vda3, vdb, vdb1, vdc, and vdd. The desktop background is a dark blue gradient, and the taskbar at the bottom has various application icons.

```
[root@servera student]# vim /etc/fstab
[root@servera student]# partprobe
[root@servera student]# reboot
Connection to servera closed by remote host.
Connection to servera closed.
[student@workstation ~]$ ssh servera
Activate the web console with: systemctl enable --now cockpit.socket

This system is not registered to Red Hat Insights. See https://cloud.redhat.com/
To register this system, run: insights-client --register

Last login: Mon Jan 15 22:01:52 2024 from 172.25.250.9
[student@servera ~]$ lsblk
NAME   MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
vda    252:0    0 10G  0 disk
└─vda1 252:1    0  1M  0 part
  └─vda2 252:2    0 100M 0 part /boot/efi
    └─vda3 252:3    0 9.9G 0 part /
vdb    252:16   0   5G  0 disk
└─vdb1 252:17   0   64M 0 part /tmp/yash
vdc    252:32   0   5G  0 disk
vdd    252:48   0   5G  0 disk
[student@servera ~]$
```

Command : **partprobe**

Explanation : This command is used to force kernel re-read the changes in partitions. It is used to ensure the changes are successful.

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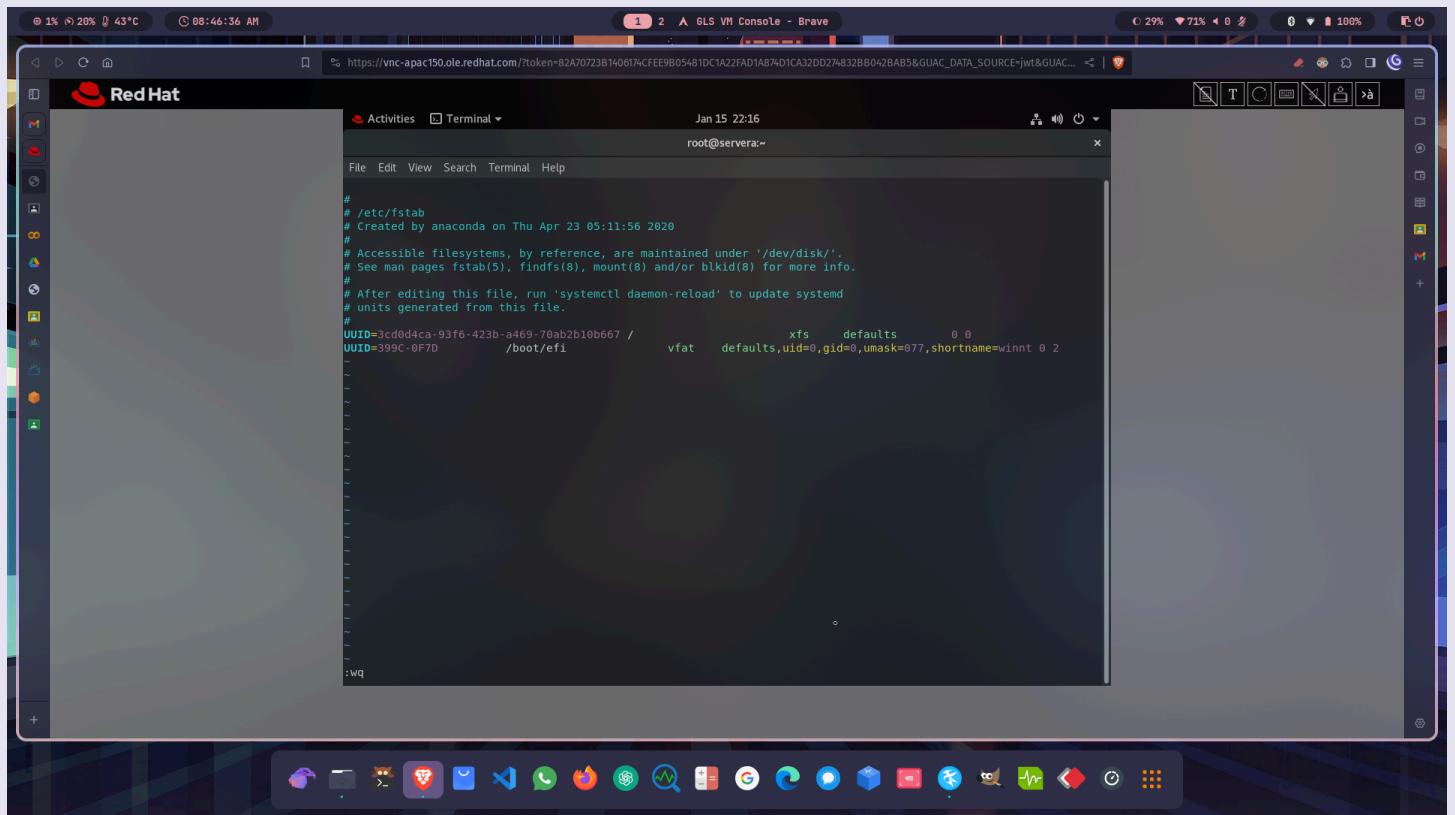
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2) You need to delete the created partition and ensure that the changes are persistent, so that when the device is rebooted, the created partition is removed.

a. Removing the entry from /etc/fstab



Command : **vim /etc/fstab**

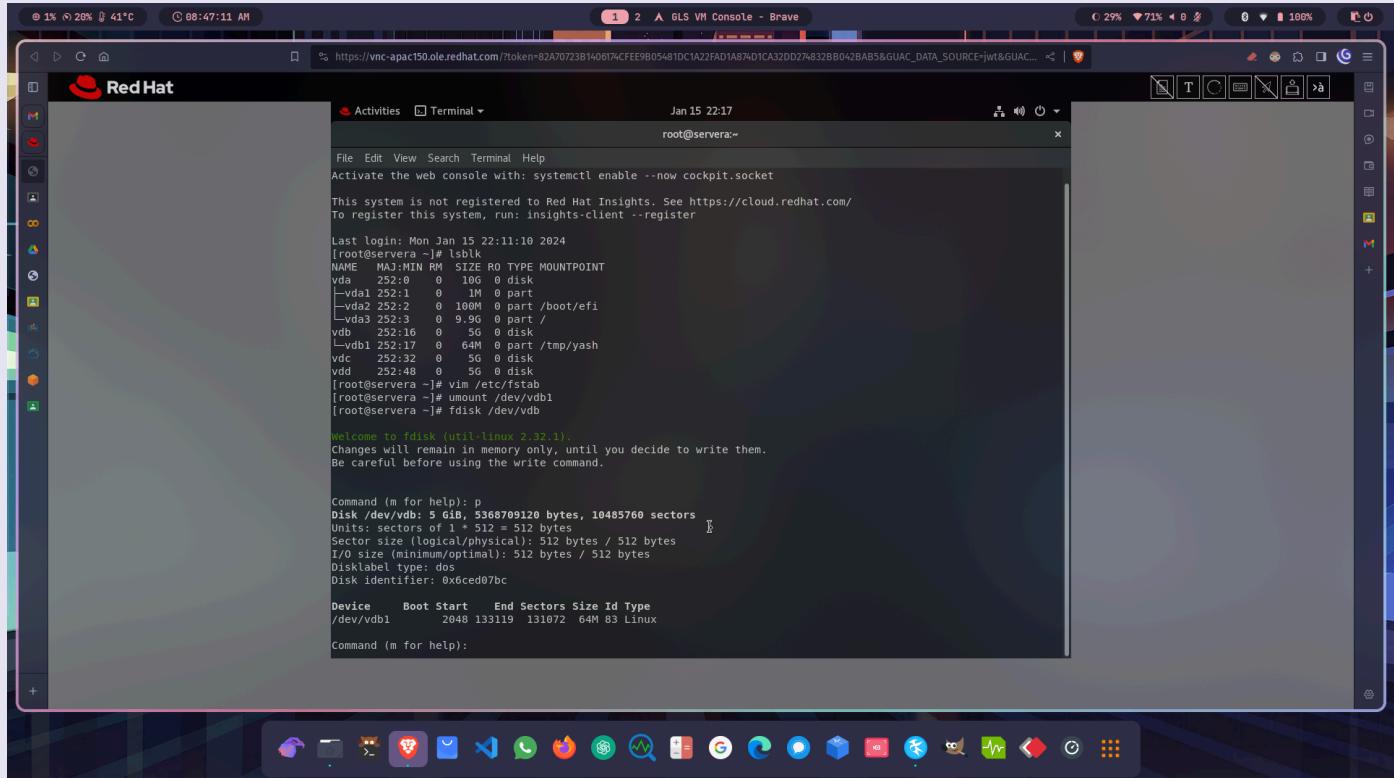
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b. Unmounting the block and removing the partition



The screenshot shows a Red Hat Linux desktop environment with a terminal window open. The terminal window title is "Activities Terminal" and the date and time are "Jan 15 22:17". The user is root at the prompt "[root@servera ~]#". The terminal displays the following command-line session:

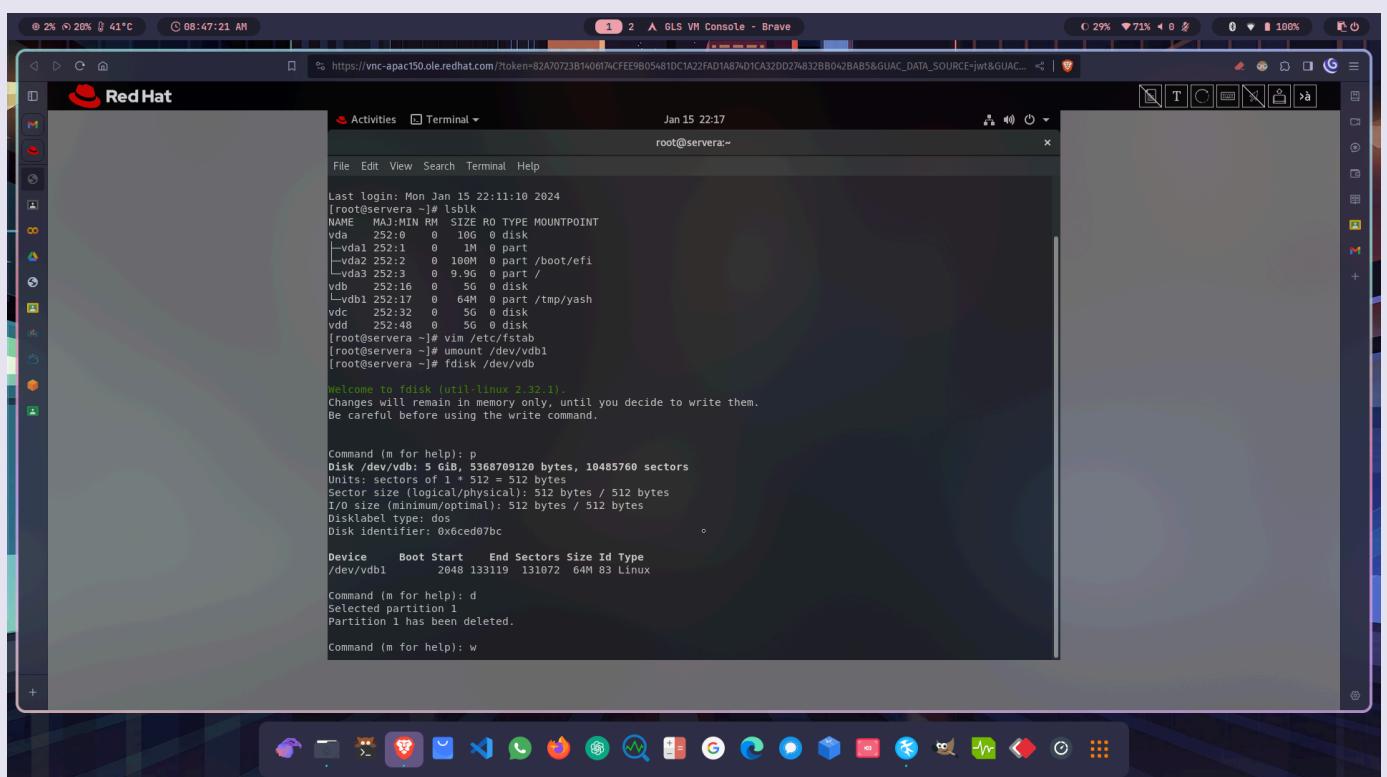
```
Last login: Mon Jan 15 22:11:10 2024
[root@servera ~]# lsblk
NAME MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
vda 252:0 0 10G 0 disk
└─vda1 252:1 0 1M 0 part
vda2 252:2 0 100M 0 part /boot/efi
vda3 252:3 0 9.9G 0 part /
vdb 252:16 0 5G 0 disk
└─vdb1 252:17 0 64M 0 part /tmp/yash
vdc 252:32 0 5G 0 disk
vdd 252:48 0 5G 0 disk
[root@servera ~]# vim /etc/fstab
[root@servera ~]# umount /dev/vdb1
[root@servera ~]# fdisk /dev/vdb

Welcome to fdisk (util-linux 2.32.1).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.

Command (m for help): p
Disk /dev/vdb: 5 GiB, 5368709120 bytes, 10485760 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0x6ced07bc

Device     Boot Start   End Sectors Size Id Type
/dev/vdb1      2048 133119 131072 64M 83 Linux

Command (m for help):
```



The screenshot shows a Red Hat Linux desktop environment with a terminal window open. The terminal window title is "Activities Terminal" and the date and time are "Jan 15 22:17". The user is root at the prompt "[root@servera ~]#". The terminal displays the following command-line session, showing the deletion of partition 1:

```
Last login: Mon Jan 15 22:11:10 2024
[root@servera ~]# lsblk
NAME MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
vda 252:0 0 10G 0 disk
└─vda1 252:1 0 1M 0 part
vda2 252:2 0 100M 0 part /boot/efi
vda3 252:3 0 9.9G 0 part /
vdb 252:16 0 5G 0 disk
└─vdb1 252:17 0 64M 0 part /tmp/yash
vdc 252:32 0 5G 0 disk
vdd 252:48 0 5G 0 disk
[root@servera ~]# vim /etc/fstab
[root@servera ~]# umount /dev/vdb1
[root@servera ~]# fdisk /dev/vdb

Welcome to fdisk (util-linux 2.32.1).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.

Command (m for help): p
Disk /dev/vdb: 5 GiB, 5368709120 bytes, 10485760 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0x6ced07bc

Device     Boot Start   End Sectors Size Id Type
/dev/vdb1      2048 133119 131072 64M 83 Linux

Command (m for help): d
Selected partition 1
Partition 1 has been deleted.

Command (m for help): w
```

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Command : **umount /dev/vdb1**

Explanation : It unmounts the specified block from the file system.

Command : **fdisk /dev/vdb**

Subcommands of fdisk :

- p (to check the partition table)
- d (to delete the partition)

c. Reboot and check if the partition is successfully deleted

