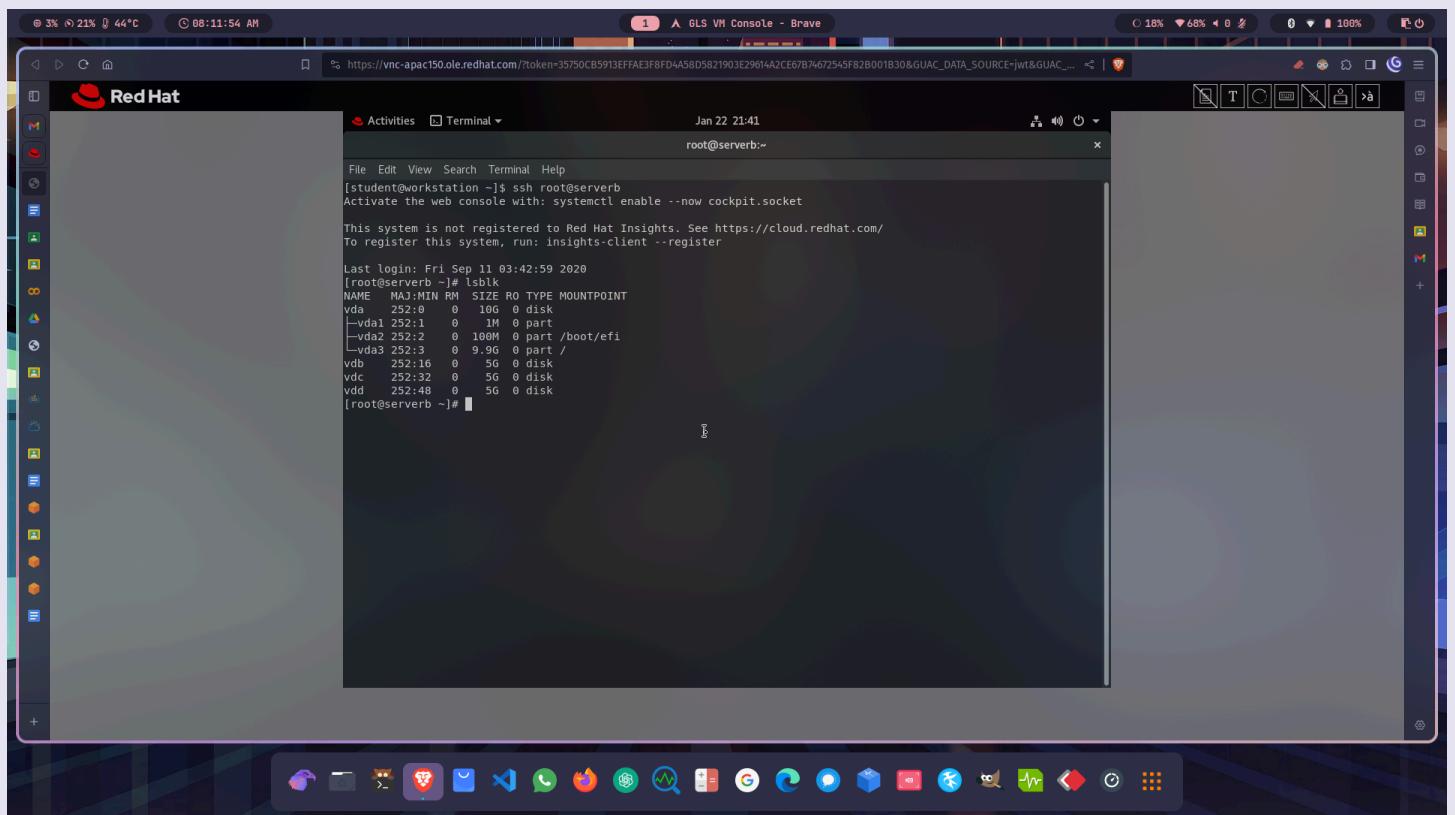


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### Exercises :

- 1. Create and format a partition such that it can be used as swap memory,  
Ensure that the swap memory is persistent change in your memory. The  
swap memory size must be 1.5 GB.**
- a) Enter serverb as root user either directly or via ssh with workstation and check  
the disk details and space using lsblk



The screenshot shows a Red Hat Linux desktop environment with a terminal window open. The terminal window title is "root@serverb:~". The terminal displays the output of the "lsblk" command:

```
Last login: Fri Sep 11 03:42:59 2020
[student@workstation ~]$ ssh root@serverb
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

[root@serverb ~]# lsblk
NAME   MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
vda    252:0    0 10G  0 disk 
└─vda1 252:1    0  1M  0 part 
  └─vda1 252:2    0 100M 0 part /boot/efi
  └─vda3 252:3    0 9.96 0 part /
vdb    252:16   0 56G  0 disk 
vdc    252:32   0 56G  0 disk 
vdd    252:48   0 56G  0 disk
[root@serverb ~]#
```

Command : **lsblk**

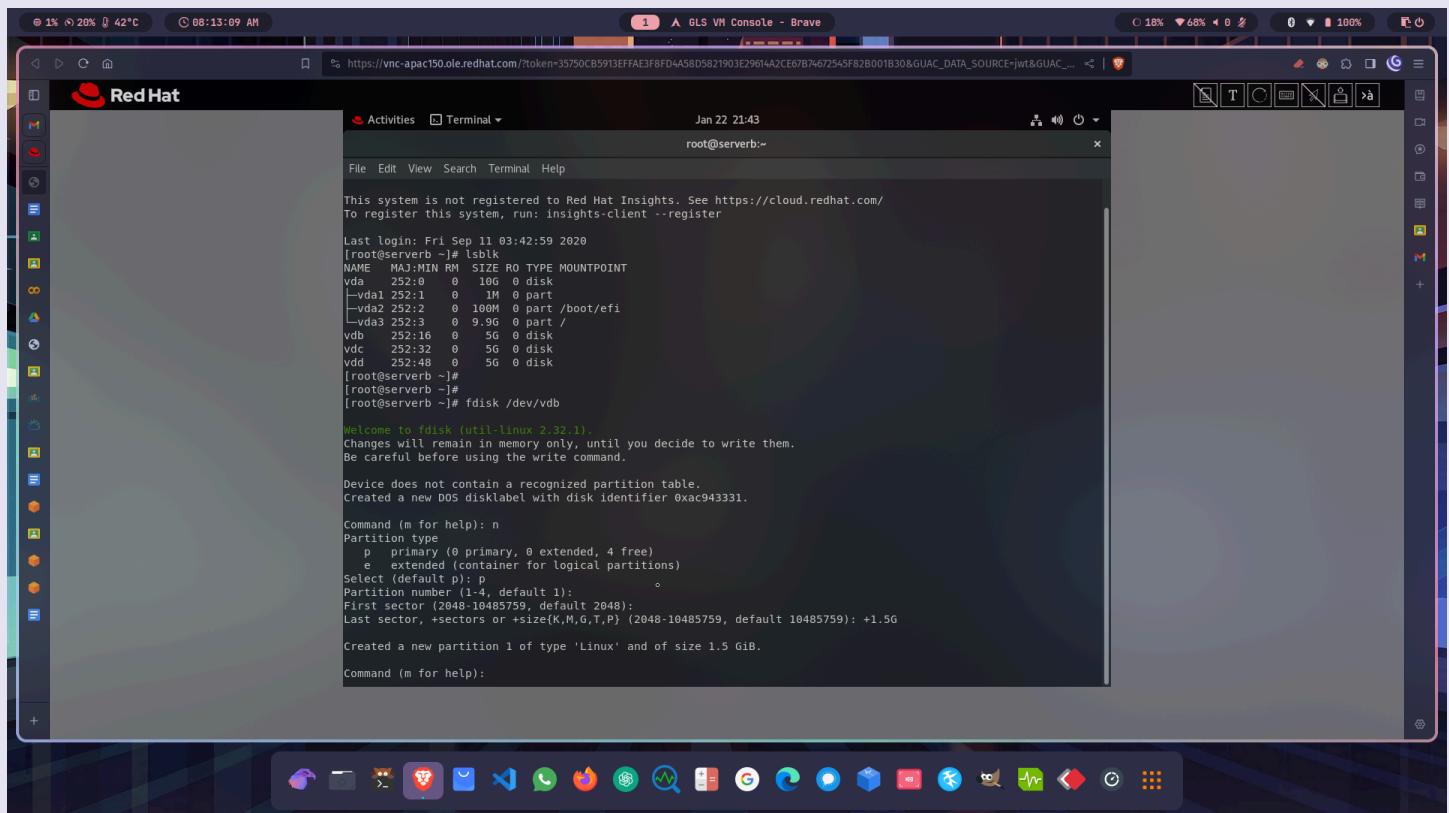
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b) Create swap partition using fdisk command.



The screenshot shows a Red Hat Linux desktop environment with a terminal window open. The terminal window title is "root@serverb:~". The terminal content shows the following session:

```
Last login: Fri Sep 11 03:42:59 2020
[root@serverb ~]# 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
[root@serverb ~]#
[root@serverb ~]# 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.

Device does not contain a recognized partition table.
Created a new DOS disklabel with disk identifier 0xac943331.

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 (2048-10485759, default 2048):
Last sector, +sectors or +size(K,M,G,T,P) (2048-10485759, default 10485759): +1.5G
Created a new partition 1 of type 'Linux' and of size 1.5 GiB.
Command (m for help):
```

Command : **fdisk /dev/vdb**

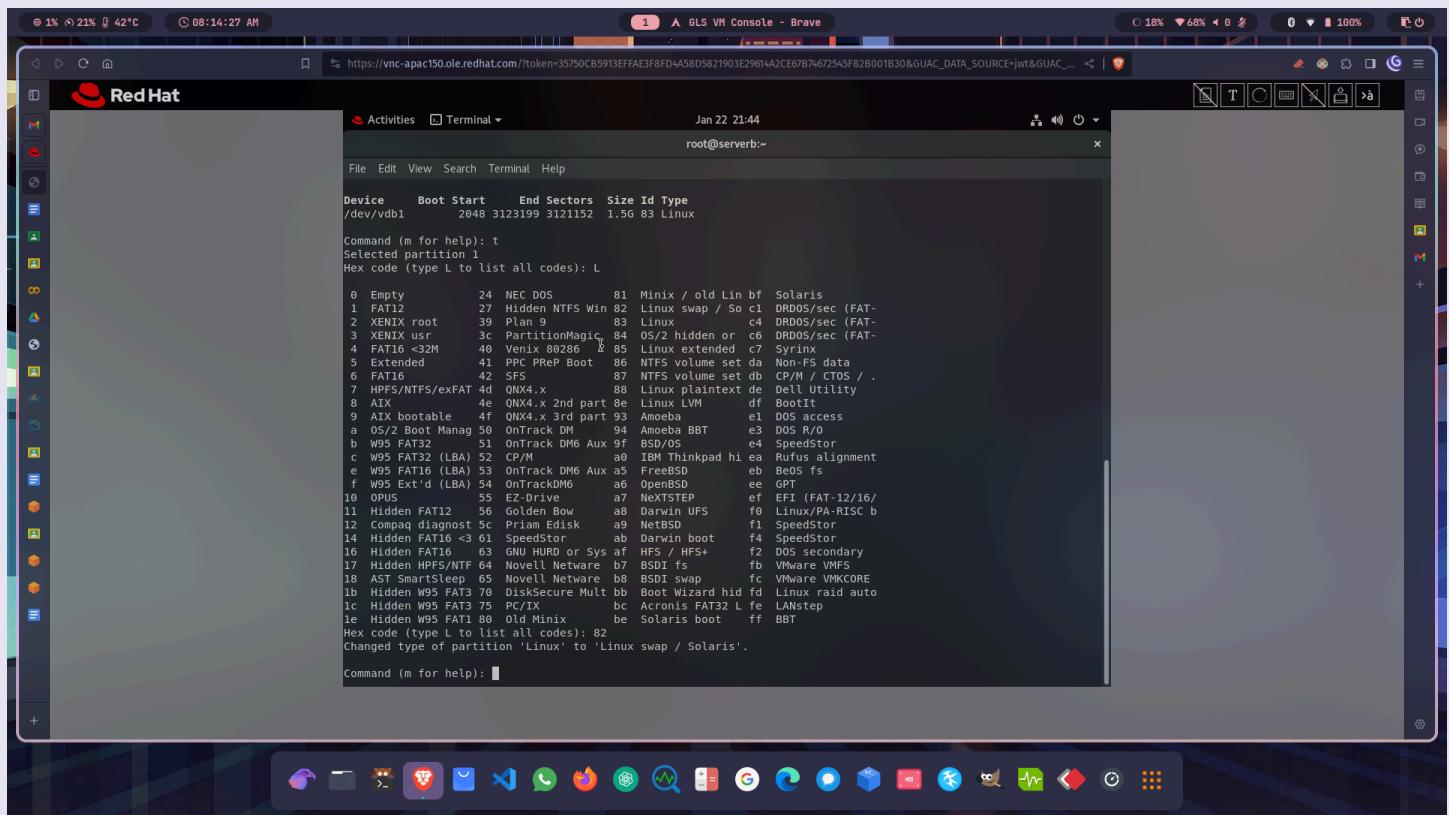
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c) Now, change its type to Linux swap using subcommand of fdisk, **t**



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 displays the output of the fdisk command, specifically the "t" (change partition type) subcommand. The user has selected partition 1 and changed its type to "Linux swap / Solaris" (hex code 82). The terminal also shows the original partition table and a list of hex codes for various file systems.

```
Jan 22 21:44
root@server:~#
File Edit View Search Terminal Help
Device Boot Start End Sectors Size Id Type
/dev/vdb1 2648 3123199 3121152 1.5G 83 Linux

Command (m for help): t
Selected partition 1
Hex code (type L to list all codes): L

0 Empty
24 NEC DOS
27 Hidden NTFS Win
82 Linux swap / Solaris
c1 DRDOS/sec (FAT-32)
c4 DRDOS/sec (FAT-64)
c6 DRDOS/sec (FAT-12/16/48)
c7 Syrix
40 Venix 80286
85 Linux extended
c8 Linux
41 PPC PReP Boot
86 NTFS volume set
da Non-NTFS data
d0 CP/M / CTOS /
d1 Dell Utility
42 SFS
87 NTFS volume set db
d2 Dell Utility
d3 Amoeba
d4 QNX4.x 2nd part
d5 QNX4.x 3rd part
d6 QNX4.x boot
d7 BSD/OS
d8 CP/M
d9 IBM Thinkpad hi ea
dA Rufus alignment
dB OnTrack DM6 Aux
dC FreeBSD
dE BeOS fs
dF OpenBSD
dG OPT
dH EZ-Drive
dI NeXTSTEP
dJ EFI (FAT-12/16/48)
dK Linux/PA-RISC boot
dL NetBSD
dM Darwin boot
dN Darwin UFS
dO FreeBSD
dP SpeedStor
dQ Amoeba BBT
dR DOS R/O
dS SpeedStor
dT DOS secondary
dU GNU HURD or Sys
dV BSD/OS
dW VMware VMFS
dX Novell Netware
dY BSD/OS swap
dZ VMware VMKCORE
dA Hidden W95 FAT32
dB DriveSecure Mult
dC Boot Wizard hid
dD Linux raid auto
dE Acronis FAT32 L
dF LANstep
dG Old Minix
dH Solaris boot
dI BBT

Hex code (type L to list all codes): 82
Changed type of partition 'Linux' to 'Linux swap / Solaris'.

Command (m for help):
```

Subcommand of fdisk :

- **t (for changing partition type via hex code)**
- **L (for listing hex codes for partition types)**

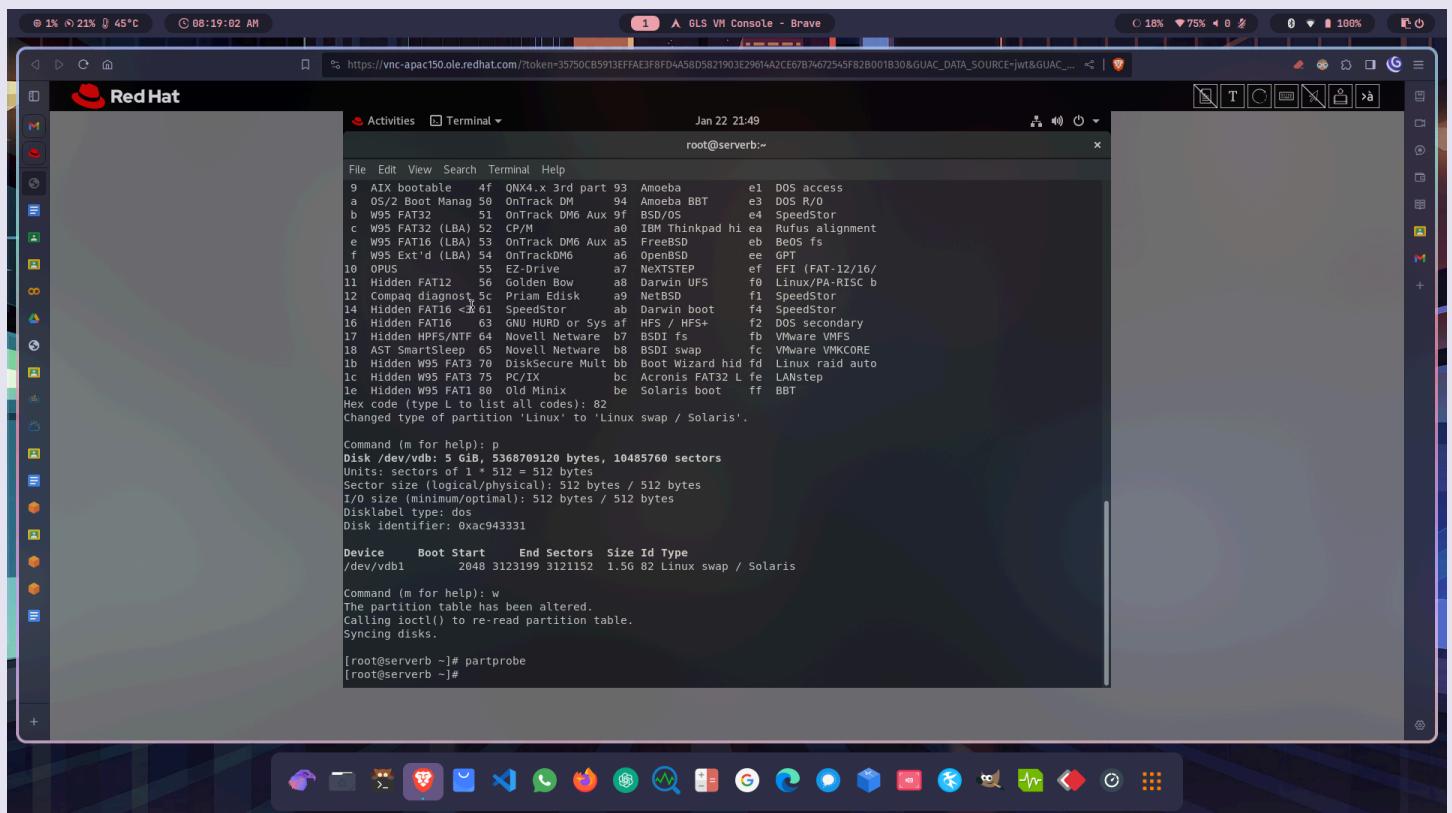
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- d) Now, check the partition table using subcommand **p**, and write the changes using **w**, then use partprobe to force kernel re-read partition changes



The screenshot shows a Red Hat Linux desktop environment with a terminal window open. The terminal window title is "root@serverb:~". The terminal content shows the following sequence of commands:

```
File Edit View Search Terminal Help
9 ATX bootable 4f ONX4.x 3rd part 93 Amoeba      e1 DOS access
a OS/2 Boot Manag 50 OnTrack DM    94 Amoeba BBT    e3 DOS R/O
b W95 FAT32     51 OnTrack DM6 Aux 9f BSD/OS      e4 SpeedStor
c W95 FAT32 (LBA) 52 CP/M        a0 IBM Thinkpad hi ea Rufus alignment
e W95 FAT16 (LBA) 53 OnTrack DM6 Aux a5 FreeBSD    eb BeOS fs
f W95 Ext'd (LBA) 54 OnTrackDM6 a6 OpenBSD      ee GPT
10 OPUS        55 EZ-Drive      a7 NeXTSTEP     ef EFI (FAT-12/16/
11 Hidden FAT12 56 Golden Bow   a8 Darwin UFS    f0 Linux/PA-RISC b
12 Compaq diagnost... 5c Priam Edisk  a9 NetBSD     f1 SpeedStor
14 Hidden FAT16 <3& 61 SpeedStor  ab Darwin boot  f4 SpeedStor
16 Hidden FAT16  63 GNU HURU or Sys af HFS / HFS+  f2 DOS secondary
17 Hidden HPFS/NTP 64 Novell Netware b7 BSDI fs    fb VMware VMFS
18 AST SmartSleep 65 Novell Netware b8 BSDI swap  fc VMware VMKCORE
1b Hidden W95 FAT3 70 DiskSecure Mult bb Boot Wizard hid fd Linux raid auto
1c Hidden W95 FAT3 75 PC/IX       bc Acronis FAT32 L fe LANstep
1e Hidden W95 FAT1 80 Old Minix  be Solaris boot ff BBT
Hex code (type L to list all codes): 82
Changed type of partition 'Linux' to 'Linux swap / Solaris'.
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: 0xac943331

Device      Boot Start    End Sectors  Size Id Type
/dev/vdb1        2048 3123199 3121152 1.5G 82 Linux swap / Solaris

Command (m for help): w
The partition table has been altered.
Calling ioctl() to re-read partition table.
Syncing disks.

[root@serverb ~]# partprobe
[root@serverb ~]
```

Subcommands of fdisk :

- **p (to check partition table)**
- **w (to write the changes)**

Command : partprobe

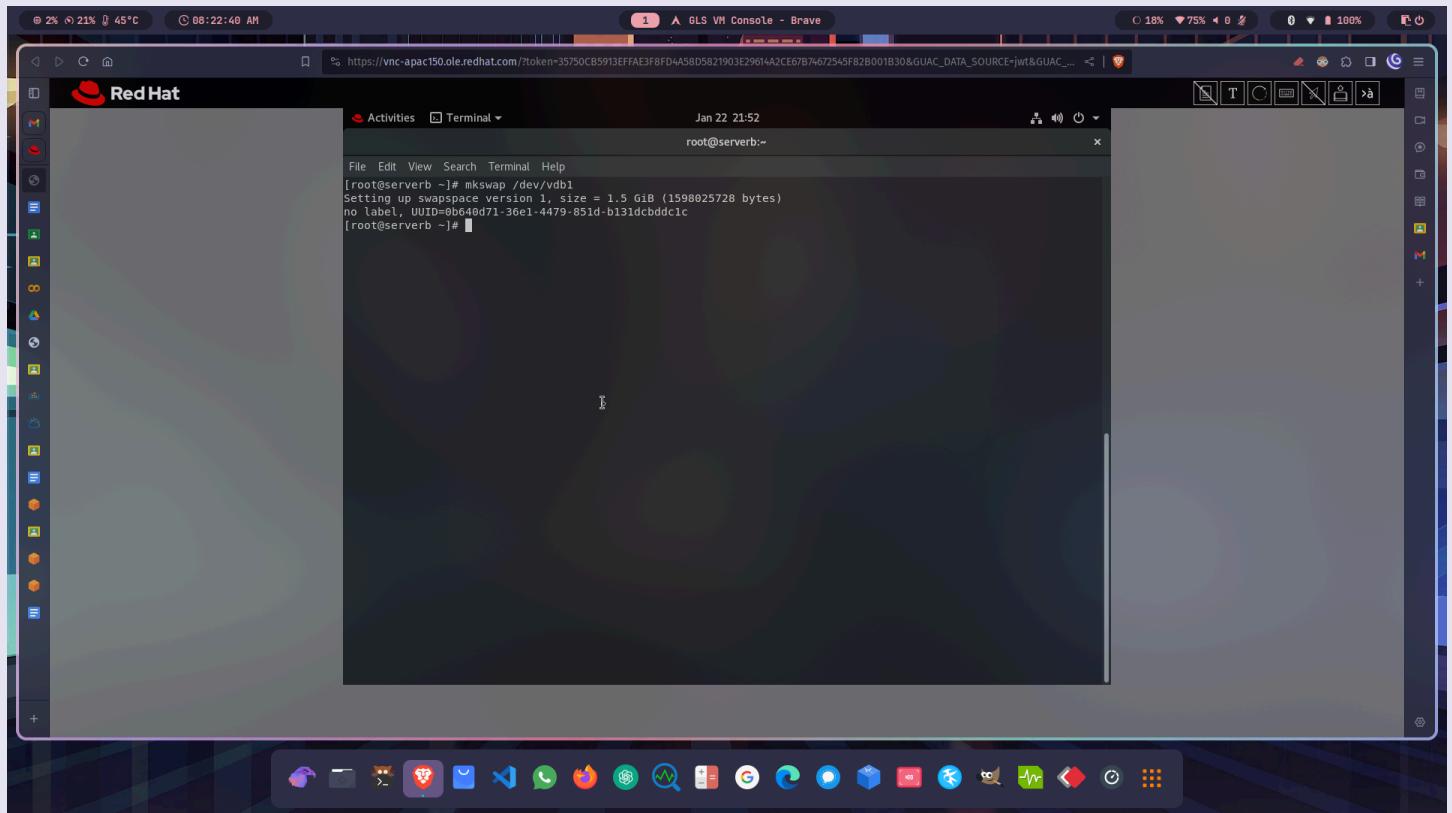
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e) Afterwards, assign swap partition to the system and write entry in fstab.



Command : **mkswap /dev/vdb1**

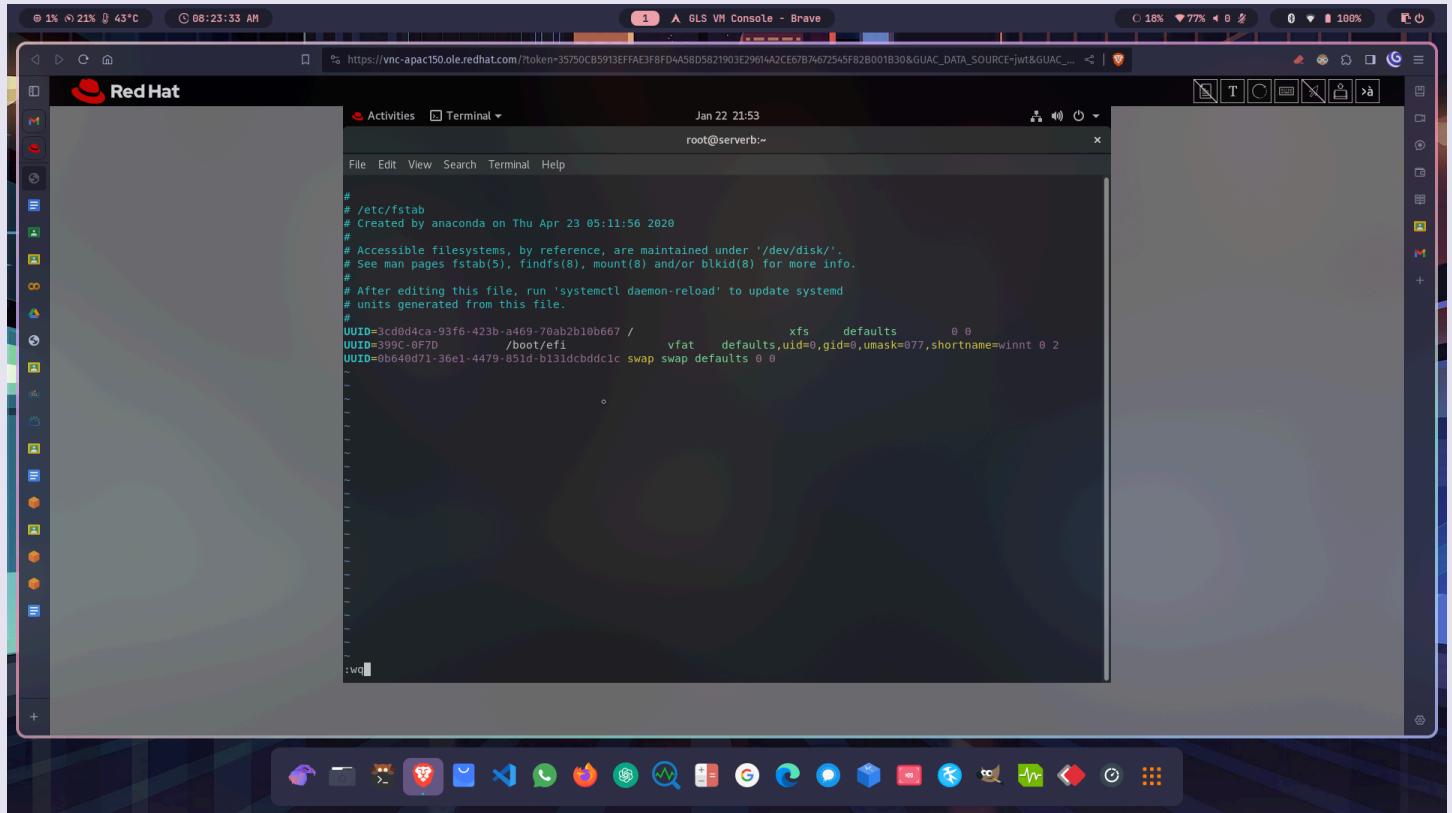
Explanation : mkswap is used to make the specified partition (vdb1 here) as the swap partition of the current running system.

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Command : **vim /etc/fstab**

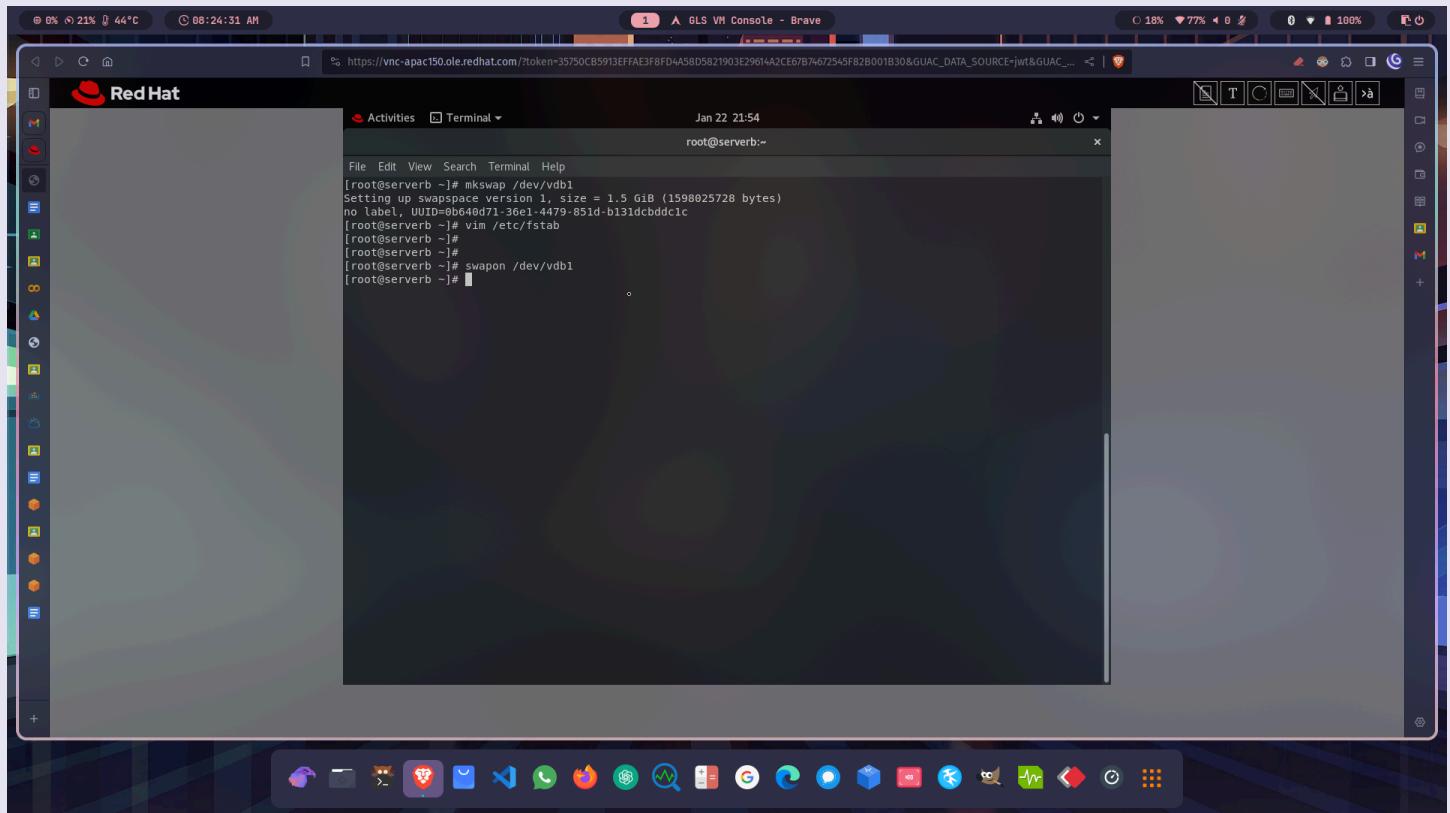
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f) Turn on the swap usage using the command **swapon**



Command : **swapon /dev/vdb1**

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g) Reboot the device and check if the changes are successful

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 root shell session. The user has run several commands:

```
[root@serverb ~]# mkswap /dev/vdb1
Setting up swapspace version 1, size = 1.5 GiB (1598025728 bytes)
no label, UUID=0b640d71-36e1-4479-851d-b131dc8ddc1c
[root@serverb ~]# vim /etc/fstab
[root@serverb ~]#
[root@serverb ~]# swapon /dev/vdb1
[root@serverb ~]# reboot
Connection to serverb closed by remote host.
Connection to serverb closed.
```

After the reboot command, the terminal shows a message about the connection closing. The user then logs in again from a different terminal window:

```
[student@workstation ~]$ ssh root@serverb
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 22 21:40:50 2024 from 172.25.250.9
[root@serverb ~]# 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 56 0 disk
└─vdb1 252:17 0 1.5G 0 part [SWAP]
vdc 252:32 0 56 0 disk
vdd 252:48 0 56 0 disk
[root@serverb ~]#
```

Commands :

- **reboot**
- **lsblk**

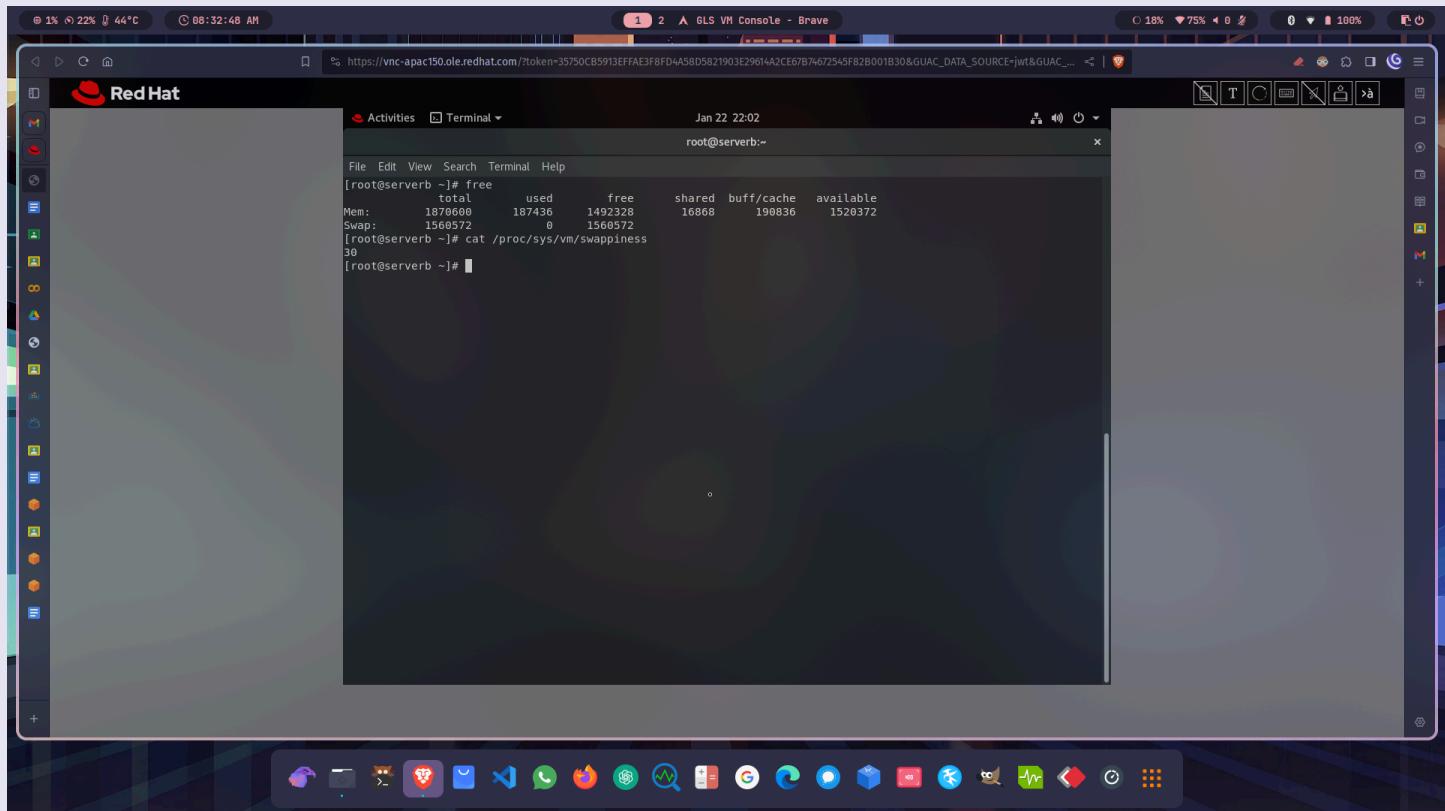
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## 2. Demonstrate how to check the swap memory usage details.



Commands :

- **free** (to check the swap and memory usage details)
- **cat /proc/sys/vm/swappiness** (to check swappiness of the swap memory, in short, its usage priority over RAM)

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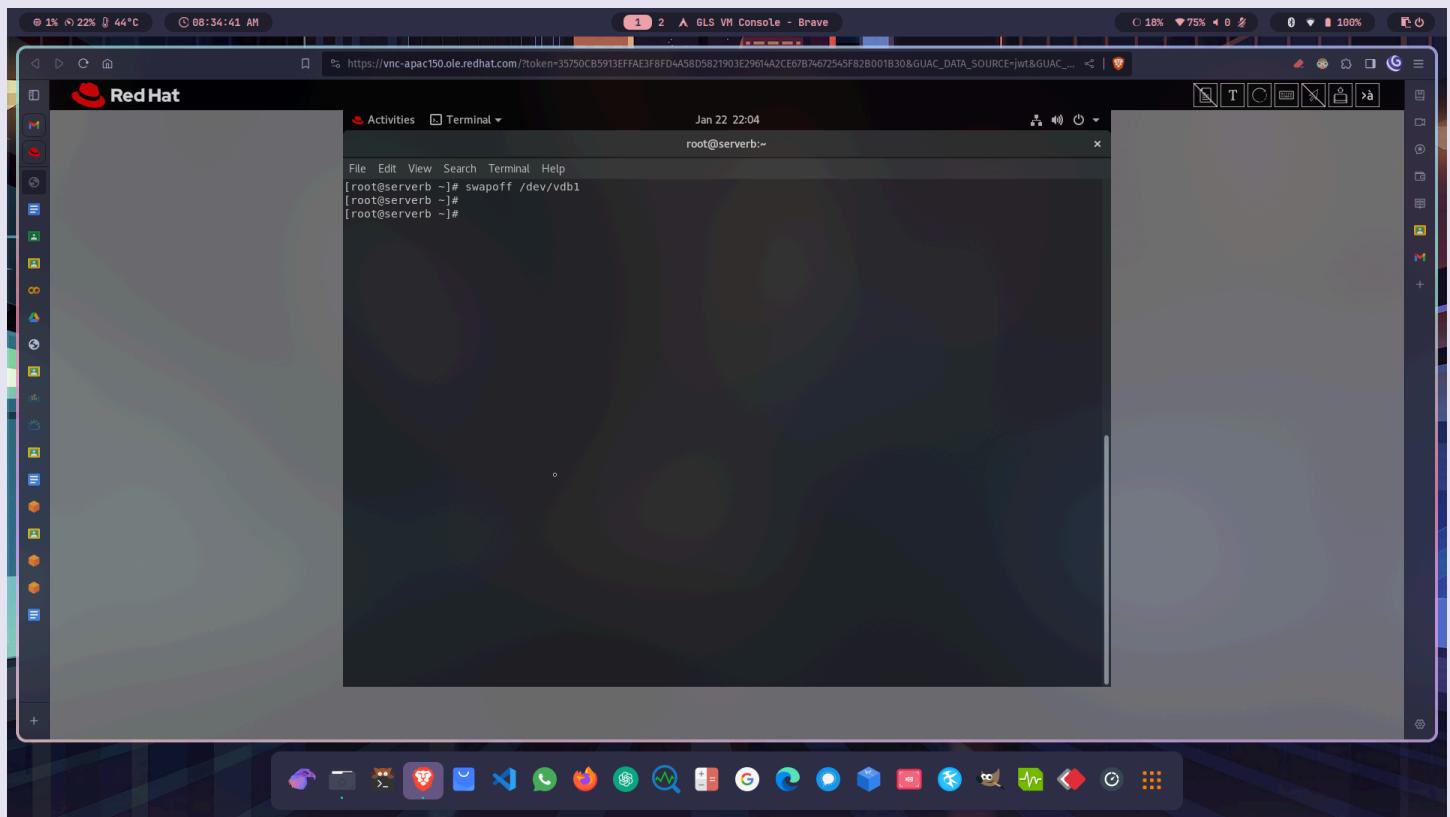
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### 3. Delete the created swap memory partition on server B and ensure it is a persistent configuration.

- First, turn off the swap partition, if it is in use

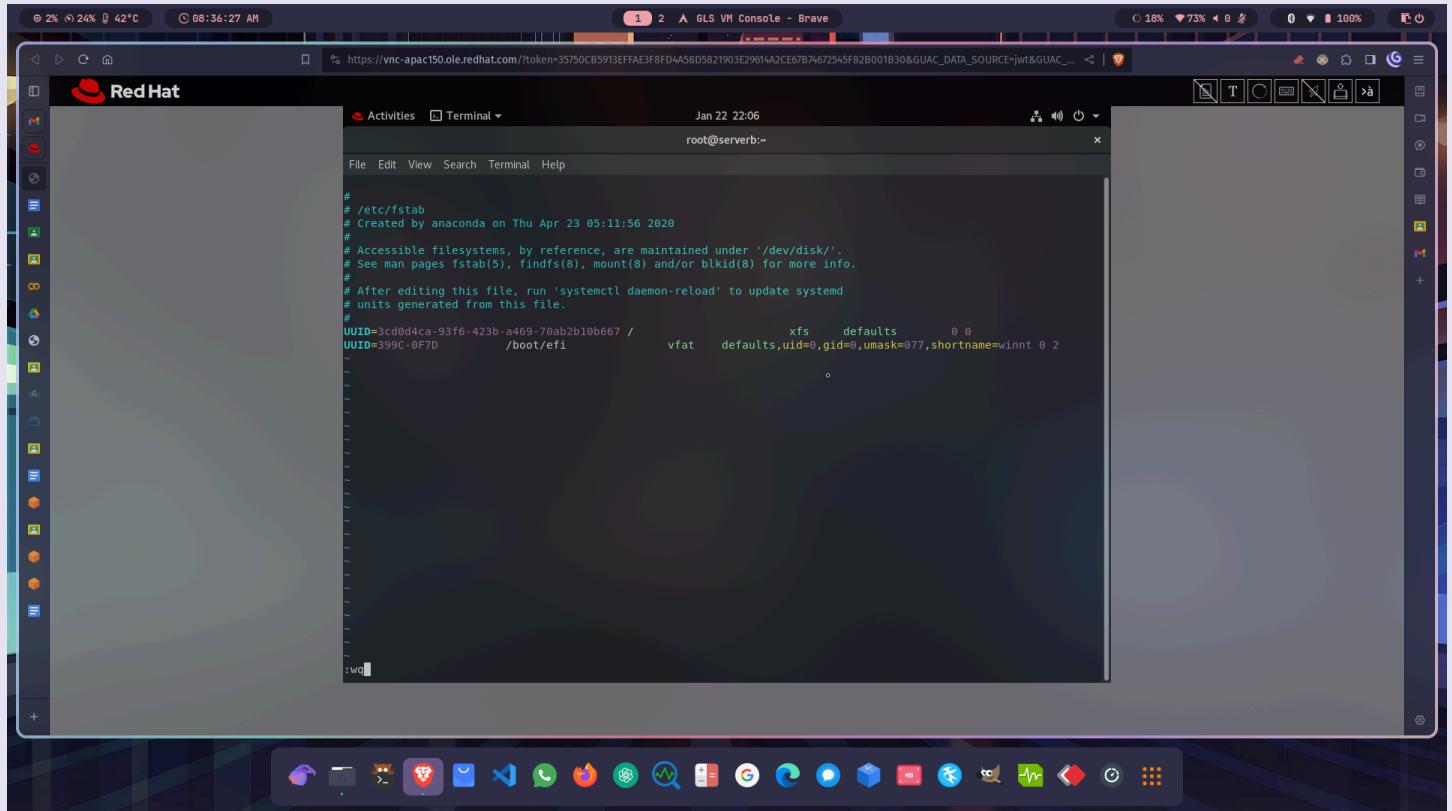


Command : **swapoff /dev/vdb1**

Explanation : It is used to turn off using the swap partition specified (vdb1 here)

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b) Remove its entry from fstab



The screenshot shows a Red Hat Linux desktop environment. A terminal window titled 'root@server:~' is open, displaying the contents of the /etc/fstab file. The file contains the following entries:

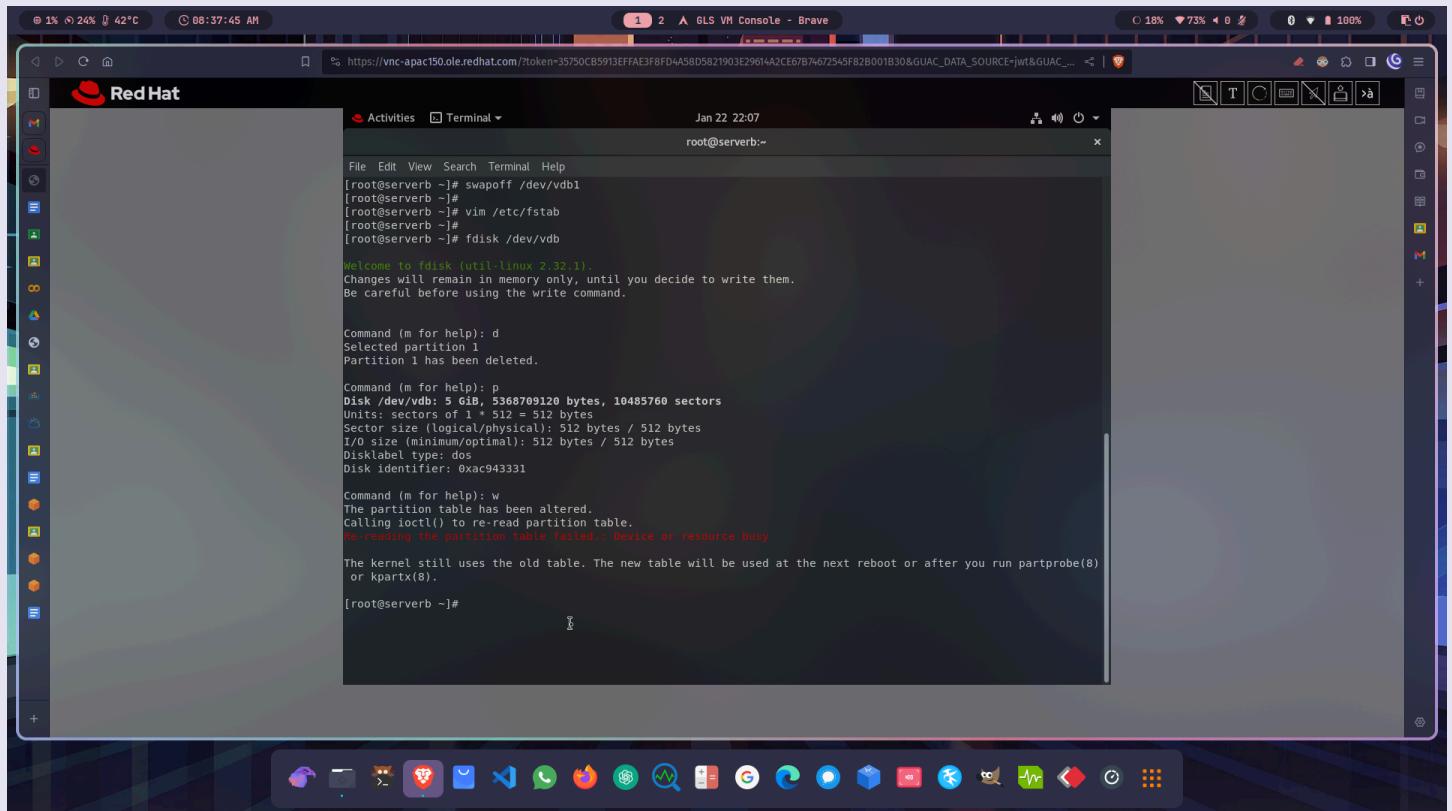
```
# /etc/fstab
# Created by anaconda on Thu Apr 23 05:11:56 2020
#
# Accessible filesystems, by reference, are maintained under '/dev/disk/'.
# See man pages fstab(5), findfs(8), mount(8) and/or blkid(8) for more info.
#
# After editing this file, run 'systemctl daemon-reload' to update systemd
# units generated from this file.
#
UUID=3cd8d4ca-93f6-423b-a469-70ab2b10b667 /          xfs      defaults        0 0
UUID=399C-0F7D    /boot/efi      vfat    defaults,uid=0,gid=0,umask=077,shortname=winnt 0 2
```

The terminal window has a dark background and light-colored text. The bottom of the screen shows a dock with various application icons.

Command : **vim /etc/fstab**

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### c) Delete the partition using fdisk



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 root shell session. The user has run several commands to prepare the disk:

```
[root@serverb ~]# swapoff /dev/vdb1
[root@serverb ~]#
[root@serverb ~]# vim /etc/fstab
[root@serverb ~]#
[root@serverb ~]# 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): d
Selected partition 1
Partition 1 has been deleted.

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: 0xac943331

Command (m for help): w
The partition table has been altered.
Calling ioctl() to re-read partition table.
Re-reading the partition table failed : device or resource busy

The kernel still uses the old table. The new table will be used at the next reboot or after you run partprobe(8).
or kpartx(8).

[root@serverb ~]#
```

Subcommand of fdisk : **d** (to delete the partition)

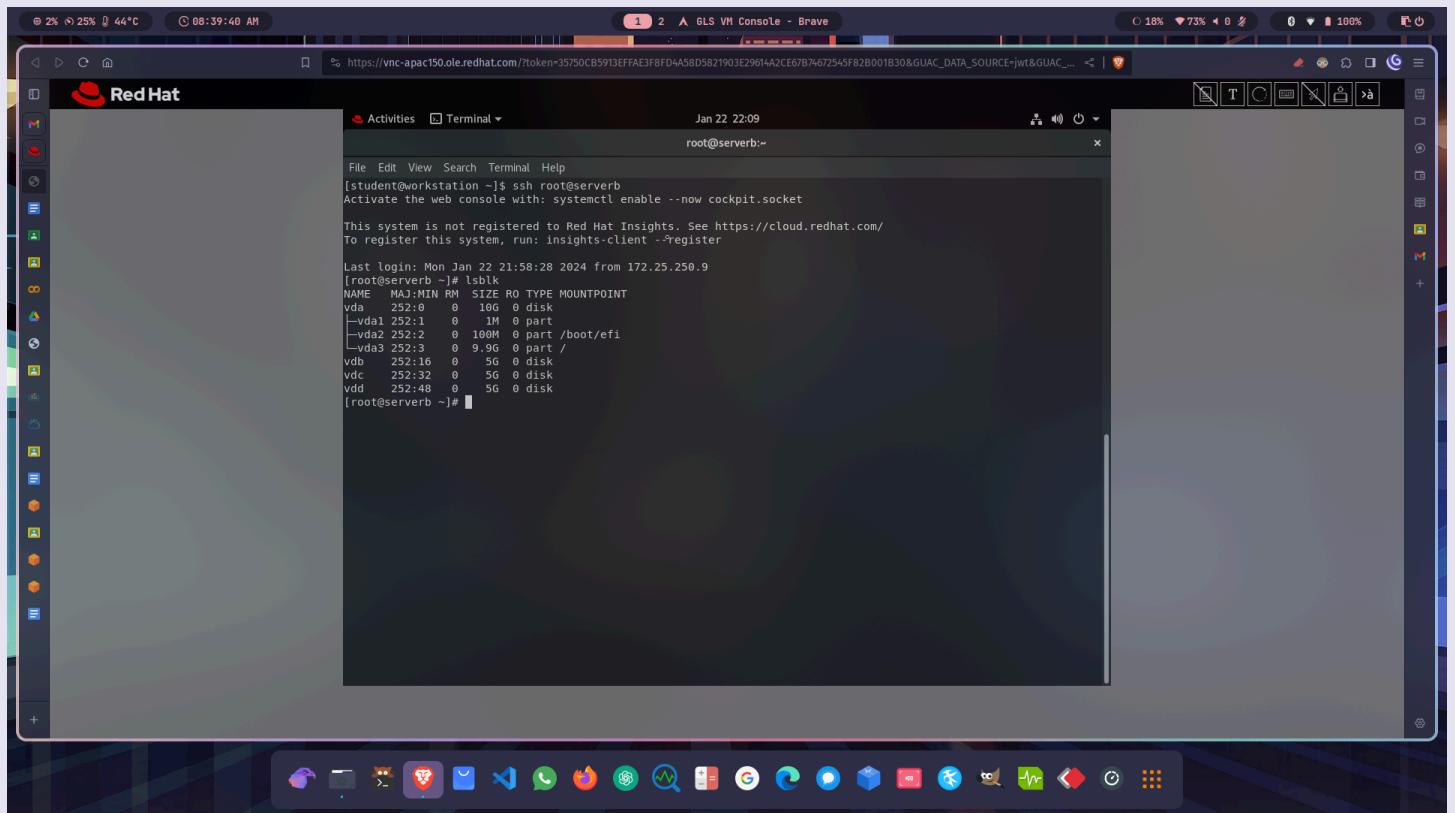
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- d) Reboot and check the block device details using **lsblk**, ensuring the partition is deleted successfully.



The screenshot shows a Red Hat Linux desktop environment. A terminal window is open, displaying the output of the `lsblk` command. The terminal window title is "Activities Terminal". The terminal content shows the following:

```
[student@workstation ~]$ ssh root@serverb
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 -rregister
Last login: Mon Jan 22 21:58:28 2024 from 172.25.250.9
[root@serverb ~]# 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
[root@serverb ~]#
```

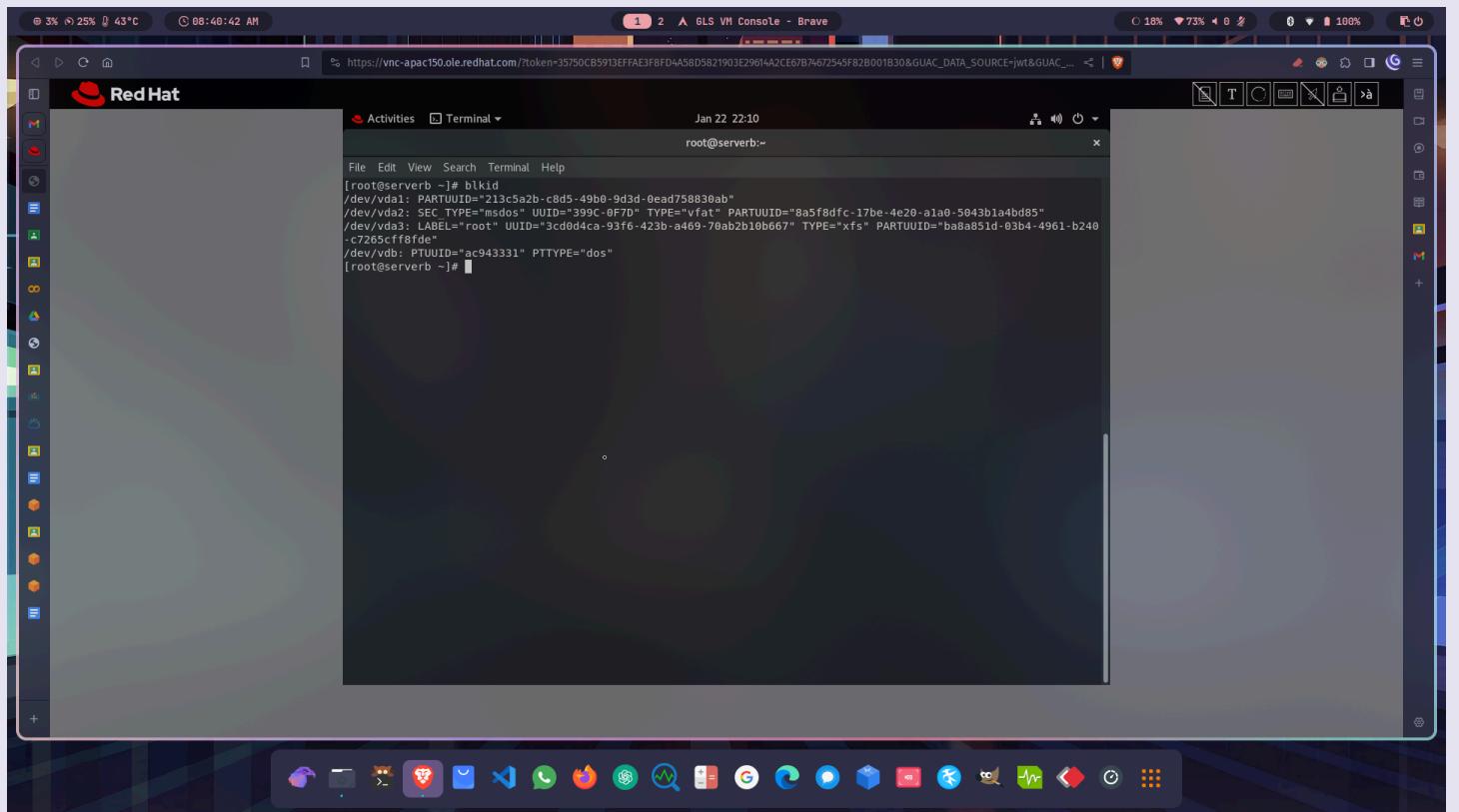
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#### 4. Using which command you will be able to get the partition ID of the created partition?



Command : **blkid** (to get the partition ID of the created partition and existing partitions)