Faculty of Technology and Engineering

Chandubhai S. Patel Institute of Technology

Department of Computer Science & Engineering

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Practical 4

Academic Year	:	2023-24	Semester	:	4th
Course code	:	CSE208	Course name	:	Operating System

Perform Linux Commands for the following

Practical 4: Managing Disk Partitions in Linux

Imagine you are a system administrator and you are assigned a task to set up a new Linux server. The server has a 40GB hard drive, and your goal is to configure the disk to meet the following requirements:

1. Primary Partition: Allocate 10GB for the operating system and core files.
2. Extended Partition: Create an extended partition to allow for flexibility in creating additional logical partitions in the future.
3. Logical Partitions: Create a Logical Partition by using lvcreate command.

You must perform these tasks using Linux tools like fdisk or parted and ensure the partitions are formatted and mounted properly.

```
[cse@vbox ~]$ sudo fdisk /dev/sda
[sudo] password for cse:

Welcome to fdisk (util-linux 2.37.4).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.

This disk is currently in use - repartitioning is probably a bad idea.
It's recommended to umount all file systems, and swapoff all swap
partitions on this disk.


Command (m for help): m

Help:

  DOS (MBR)
   a   toggle a bootable flag
   b   edit nested BSD disklabel
   c   toggle the dos compatibility flag

  Generic
   d   delete a partition
   F   list free unpartitioned space
   l   list known partition types
   n   add a new partition
   p   print the partition table
   t   change a partition type
   v   verify the partition table
   i   print information about a partition

  Misc
```

```
  Misc
   m   print this menu
   u   change display/entry units
   x   extra functionality (experts only)

  Script
   I   load disk layout from sfdisk script file
   O   dump disk layout to sfdisk script file

  Save & Exit
   w   write table to disk and exit
   q   quit without saving changes

  Create a new label
   g   create a new empty GPT partition table
   G   create a new empty SGI (IRIX) partition table
   o   create a new empty DOS partition table
   s   create a new empty Sun partition table


Command (m for help): n

All space for primary partitions is in use.

Command (m for help): d
Partition number (1,2, default 2):

Partition 2 has been deleted.
```

```
Command (m for help): l

00 Empty            24 NEC DOS          81 Minix / old Lin  bf Solaris
01 FAT12            27 Hidden NTFS Win  82 Linux swap / So  c1 DRDOS/sec (FAT-
02 XENIX root       39 Plan 9           83 Linux            c4 DRDOS/sec (FAT-
03 XENIX usr        3c PartitionMagic   84 OS/2 hidden or   c6 DRDOS/sec (FAT-
04 FAT16 <32M       40 Venix 80286      85 Linux extended   c7 Syrinx
05 Extended         41 PPC PReP Boot    86 NTFS volume set  da Non-FS data
06 FAT16            42 SFS              87 NTFS volume set  db CP/M / CTOS / .
07 HPFS/NTFS/exFAT  4d QNX4.x           88 Linux plaintext  de Dell Utility
08 AIX              4e QNX4.x 2nd part  8e Linux LVM        df BootIt
09 AIX bootable     4f QNX4.x 3rd part  93 Amoeba           e1 DOS access
0a OS/2 Boot Manag  50 OnTrack DM       94 Amoeba BBT       e3 DOS R/O
0b W95 FAT32        51 OnTrack DM6 Aux  9f BSD/OS           e4 SpeedStor
0c W95 FAT32 (LBA)  52 CP/M             a0 IBM Thinkpad hi  ea Linux extended
0e W95 FAT16 (LBA)  53 OnTrack DM6 Aux  a5 FreeBSD          eb BeOS fs
0f 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 HURD or Sys  af HFS / HFS+       f2 DOS secondary
17 Hidden HPFS/NTF  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

Aliases:
   linux         - 83
   swap          - 82
   extended      - 05
```

```
   uefi          - EF
   raid          - FD
   lvm           - 8E
   linuxex       - 85

Command (m for help): p
Disk /dev/sda: 25.58 GiB, 27463155712 bytes, 53638976 sectors
Disk model: VBOX HARDDISK
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: 0x372d45fb

Device     Boot Start     End Sectors Size Id Type
/dev/sda1  *    2048 2099199 2097152   1G 83 Linux

Command (m for help): n
Partition type
   p   primary (1 primary, 0 extended, 3 free)
   e   extended (container for logical partitions)
Select (default p):

Using default response p.
Partition number (2-4, default 2):
First sector (2099200-53638975, default 2099200):
Last sector, +/-sectors or +/-size{K,M,G,T,P} (2099200-53638975, default 5363897
5): +700K

Created a new partition 2 of type 'Linux' and of size 700.5 KiB.

Command (m for help): p
```

```
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Device     Boot    Start     End Sectors    Size Id Type
/dev/sda1  *        2048 2099199 2097152      1G 83 Linux
/dev/sda2        2099200 2100600    1401 700.5K 83 Linux

Command (m for help): q

[cse@vbox ~]$ sudo fdisk /dev/sda

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It's recommended to umount all file systems, and swapoff all swap
partitions on this disk.


Command (m for help): q

[cse@vbox ~]$ lsblk
NAME           MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
sda              8:0    0 25.6G  0 disk
├─sda1           8:1    0    1G  0 part /boot
└─sda2           8:2    0 24.6G  0 part
```

```
[cse@vbox ~]$ lsblk
NAME           MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
sda              8:0    0 25.6G  0 disk
├─sda1           8:1    0    1G  0 part /boot
└─sda2           8:2    0 24.6G  0 part
  ├─rhel-root 253:0    0   22G  0 lvm  /
  └─rhel-swap 253:1    0  2.6G  0 lvm  [SWAP]
sr0             11:0    1 1024M  0 rom
[cse@vbox ~]$
```

```
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NAME          MAJ:MIN RM   SIZE RO TYPE MOUNTPOINTS
sda             8:0     0 25.6G  0 disk
├─sda1          8:1     0    1G  0 part /boot
└─sda2          8:2     0 24.6G  0 part
  ├─rhel-root 253:0     0   22G  0 lvm  /
  └─rhel-swap 253:1     0  2.6G  0 lvm  [SWAP]
sr0            11:0     1 1024M  0 rom
[cse@vbox ~]$ sudo mkdir -p /sda/sda{1..4}
[sudo] password for cse:
[cse@vbox ~]$ tree /sda
/sda
├── sda1
├── sda2
├── sda3
└── sda4

4 directories, 0 files
[cse@vbox ~]$ sudo fdisk /dev/sda

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sda             8:0     0 25.6G  0 disk
├─sda1          8:1     0    1G  0 part /boot
└─sda2          8:2     0 24.6G  0 part
  ├─rhel-root 253:0     0   22G  0 lvm  /
  └─rhel-swap 253:1     0  2.6G  0 lvm  [SWAP]
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partitions on this disk.
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```
Command (m for help): d
Partition number (1,2, default 2):

Partition 2 has been deleted.

Command (m for help): n
Partition type
   p   primary (1 primary, 0 extended, 3 free)
   e   extended (container for logical partitions)
Select (default p):

Using default response p.
Partition number (2-4, default 2):
First sector (2099200-53638975, default 2099200):
Last sector, +/-sectors or +/-size{K,M,G,T,P} (2099200-53638975, default 536389
75): +700M

Created a new partition 2 of type 'Linux' and of size 700 MiB.
Partition #2 contains a LVM2_member signature.

Do you want to remove the signature? [Y]es/[N]o: N

Command (m for help): p

Disk /dev/sda: 25.58 GiB, 27463155712 bytes, 53638976 sectors
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Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0x372d45fb
```

```
Device     Boot    Start     End Sectors  Size Id Type
/dev/sda1   *        2048 2099199 2097152    1G 83 Linux
/dev/sda2          2099200 3532799 1433600  700M 83 Linux

Command (m for help): q

[cse@vbox ~]$ sudo mount /dev/sda1 /sda/sda2
[cse@vbox ~]$ lsblk
NAME          MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
sda             8:0    0 25.6G  0 disk
├─sda1          8:1    0    1G  0 part /sda/sda2
                                       /boot
└─sda2          8:2    0 24.6G  0 part
  ├─rhel-root 253:0    0   22G  0 lvm  /
  └─rhel-swap 253:1    0  2.6G  0 lvm  [SWAP]
sr0            11:0    1 1024M  0 rom
[cse@vbox ~]$ sudo unmount /sda/sda2
sudo: unmount: command not found
[cse@vbox ~]$ sudo umount /sda/sda2
[cse@vbox ~]$ lsblk
NAME          MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
sda             8:0    0 25.6G  0 disk
├─sda1          8:1    0    1G  0 part /boot
└─sda2          8:2    0 24.6G  0 part
  ├─rhel-root 253:0    0   22G  0 lvm  /
  └─rhel-swap 253:1    0  2.6G  0 lvm  [SWAP]
sr0            11:0    1 1024M  0 rom
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```