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Experiment No. 1.1

Student Name: Sourabh Singh **Subject Code:**22CAP-648
UID: 22MCC20158 **Section/Group: 22MCD-2/B**
Semester: 1st **Date of Performance: 08-10-2022**

1. Suppose recently your company switched their operating systems from Microsoft to Linux. Now you have all documents in MS word, what you will do to save all of that work in Linux operating system?

2. Perform installation of Redhat Linux in dual boot. Explain the detailed steps along with screenshots.

Task to be done:

Answer: 1

Access Windows MS Word documents in Linux OS: -

You can use LibreOffice in Linux OS to access MS word documents. LibreOffice is the robust word processing application that read and write files in .doc and .docx file format.
LibreOffice can be installed using package manager, to do so, follow these commands: -

- Step 1- Open terminal window
- Step 2- Enter command "SUDO YUM UPDATE && SUDO YUM INSTALL LIBREOFFICE" without quotes to install the LibreOffice.
- Step 3- After installation enter command "LIBREOFFICE" without quotes to access the libre office. You can also access it directly from the application list.

Answer: 2

Steps to Install CentOS in Dual Boot with Windows OS: -
Prerequisites: -

- An active internet connection.
- Minimum 8 GB Flash drive.
- CentOS ISO image file,
- Balena Etcher Application to create bootable device Minimum 50 GB storage space on Secondary storage device.
- Hands on knowledge of Linux and Windows OS.

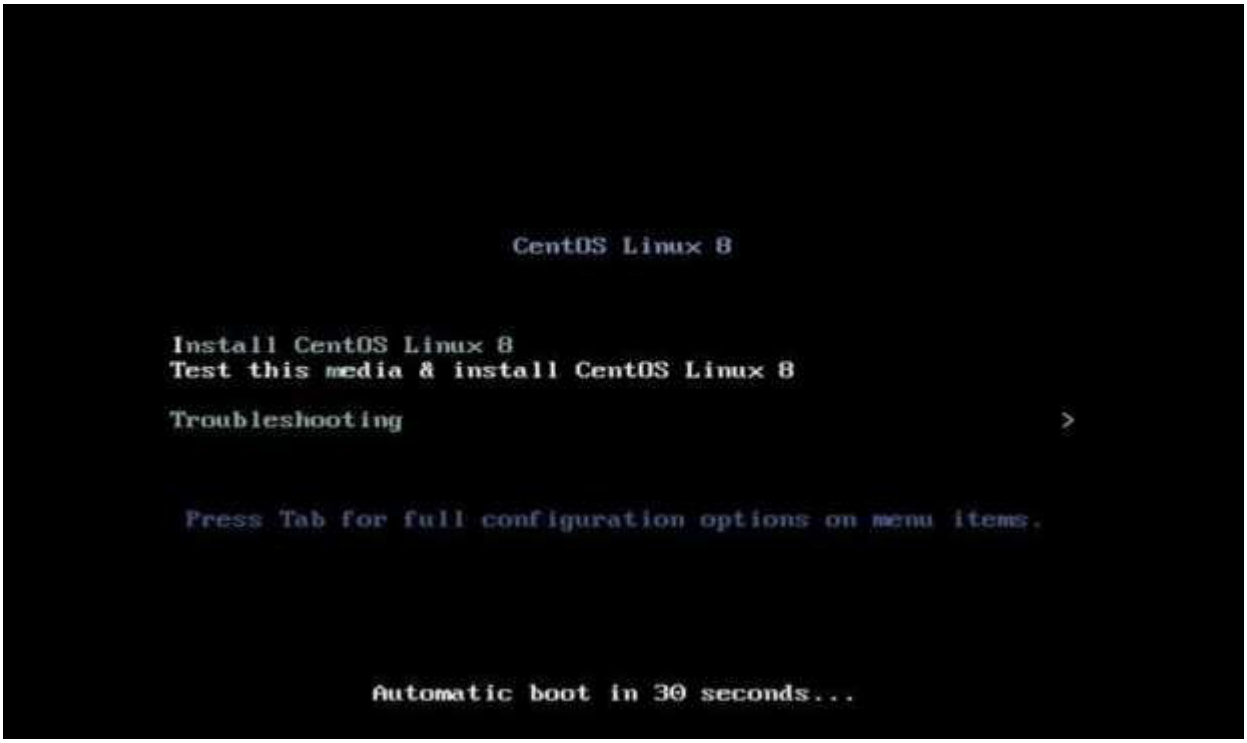
Important Notes: -

- There are no chances of existing data loss if you follow these steps as they are, still, it is recommended to have backup of your existing data in case anything goes wrong.

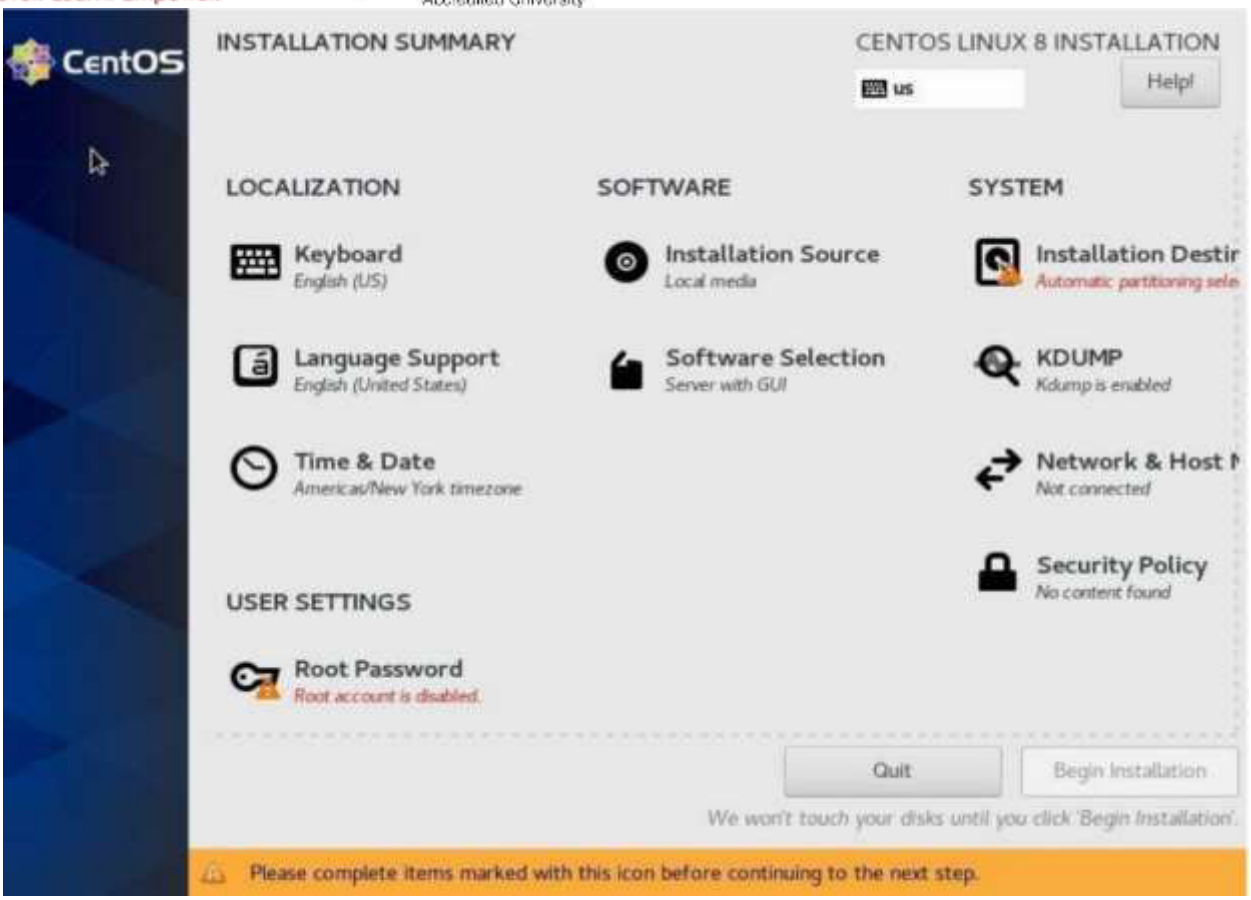
- If you're shrinking your c:/ drive to install the Linux OS, make sure minimum 120 GB storage space available after the shrinking on your e:/ drive.
- Turn off the SECURE BOOT from bios settings.
- If you are using a laptop with factory installed SSD storage drive. Check in your bios settings if the storage controller is not set to Intel RST Controller, because Linux file system doesn't support Intel RST Controlled storage device and while installation, Linux installer didn't detect the storage device.

Now installation steps:

- Step1- Create a live USB or disk
- Step 2- Make a new partition for Linux operating system: (Make partition in windows operating system using 30-40 GB of space)
- Step 3- Boot in to live USB: You have to restart the system after inserting the Live USB in order to start boot after selecting boot option as USB
- Step 4- Start the installation

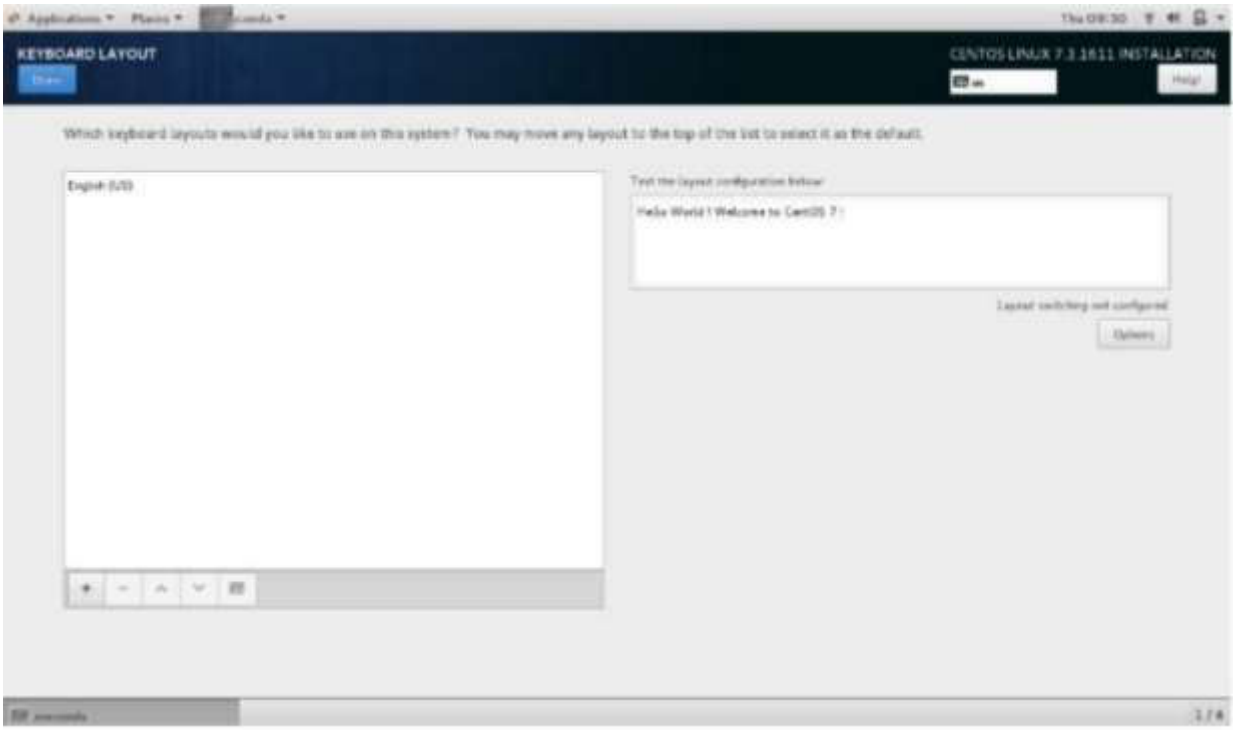


- Step 5- Configure the Date and Time: The world's map will be displayed. Click on your current physical location on the map to set your time.

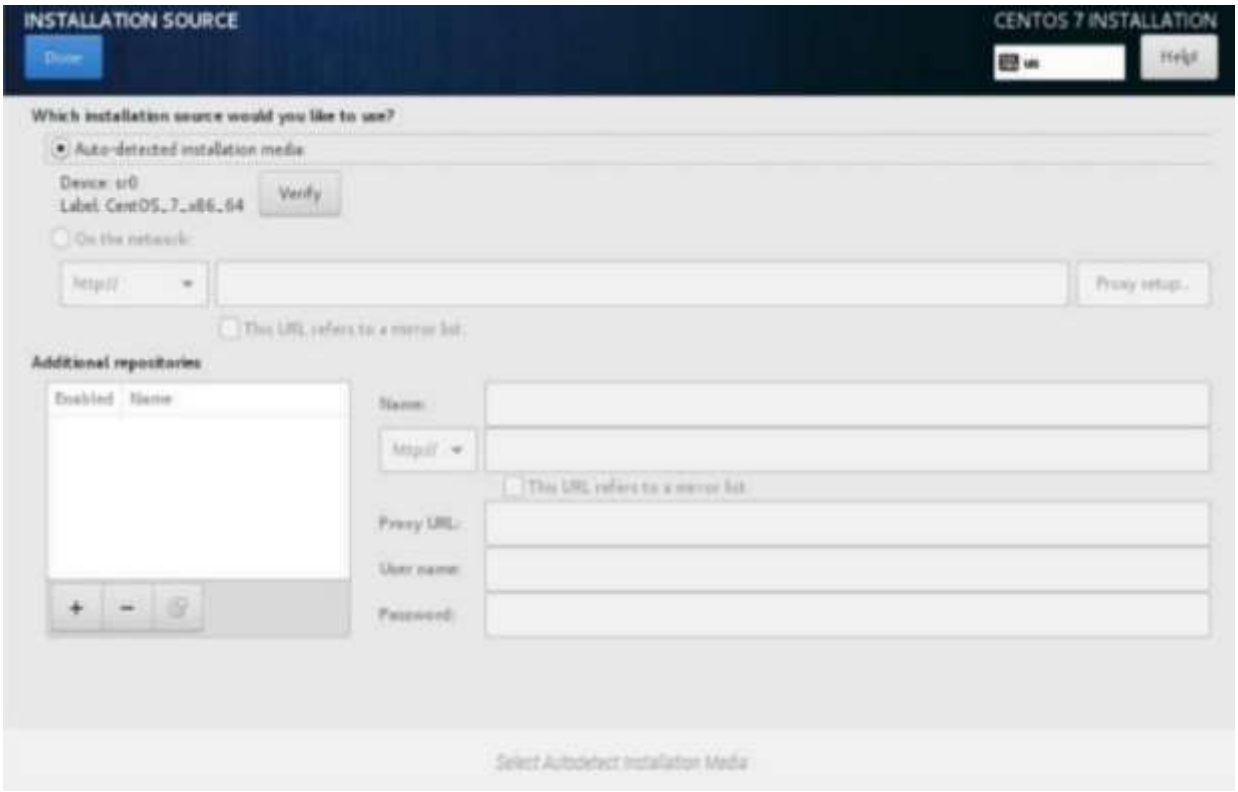


- Step 6- Configure Language Support: to configure your language settings

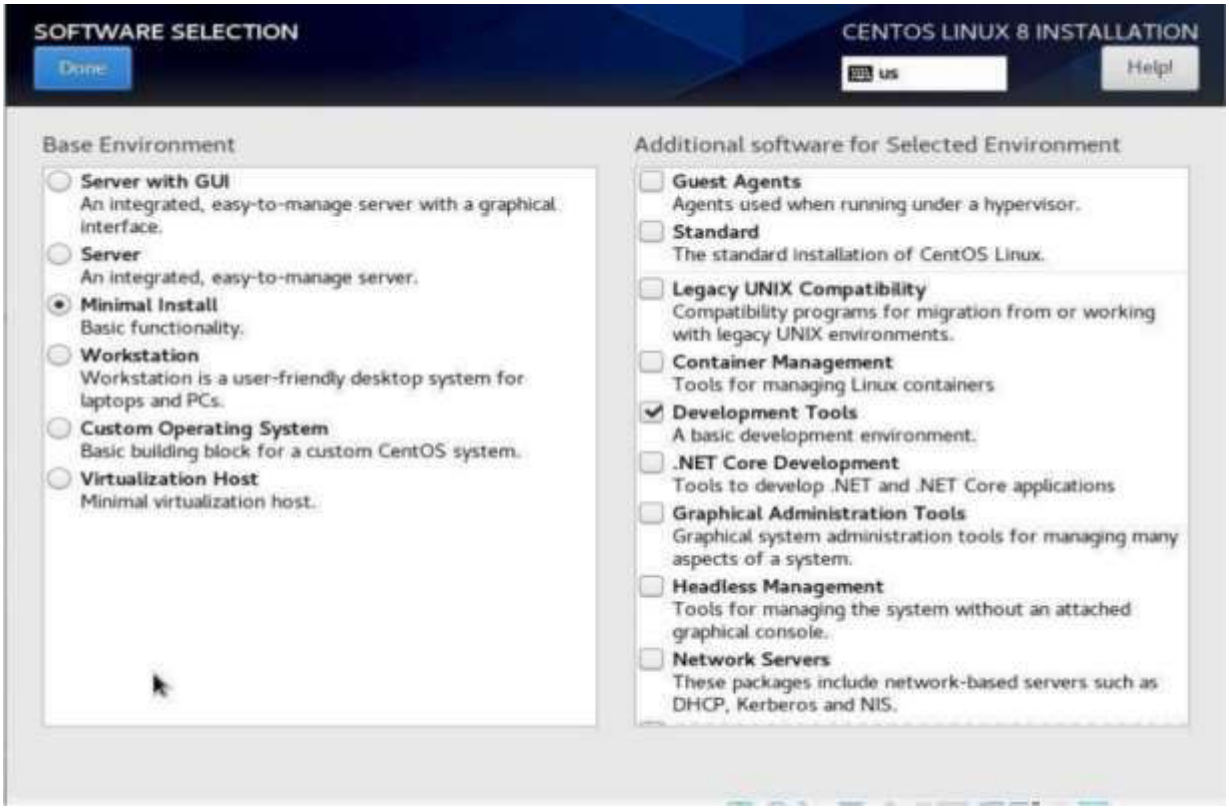
- Step 7-Configure Keyboard: You can test the keyboard configuration here.



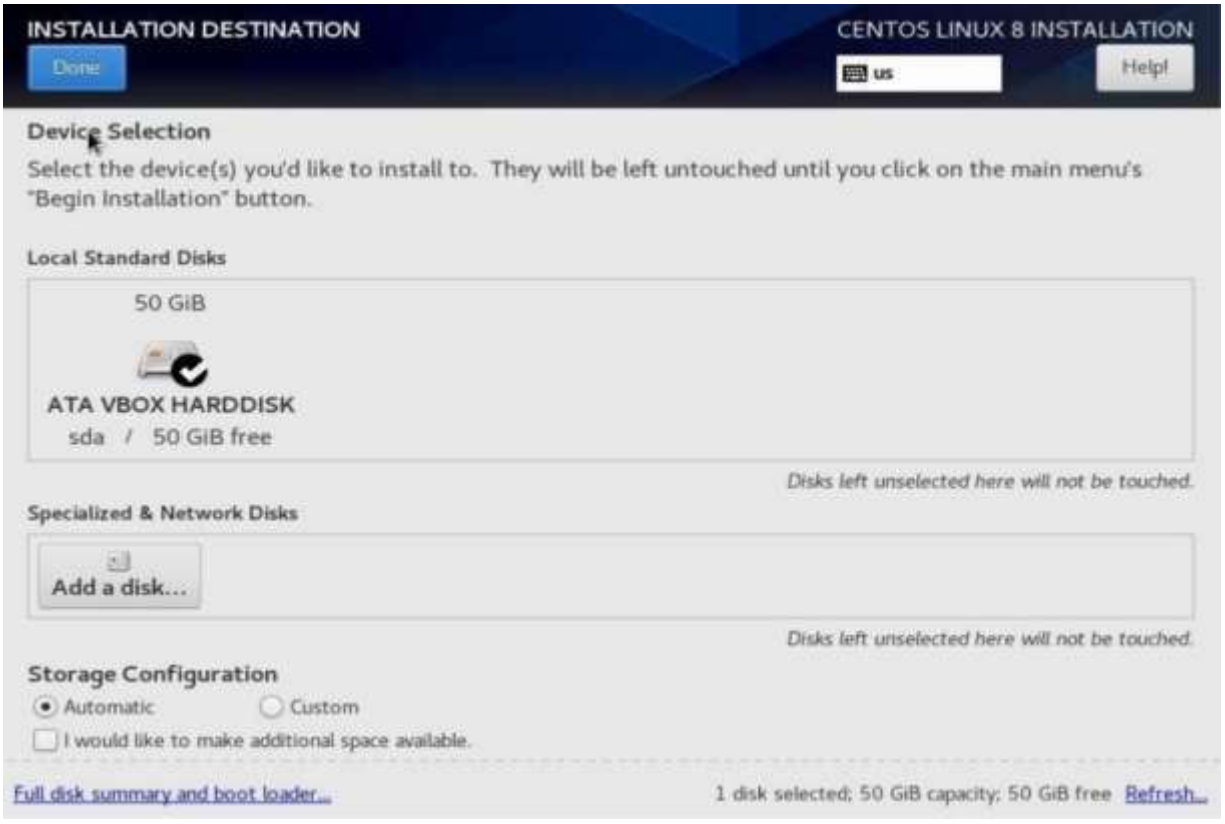
- Step 8- Select Installation Source: to customize your installation using other sources other than the traditional USB/DVD.



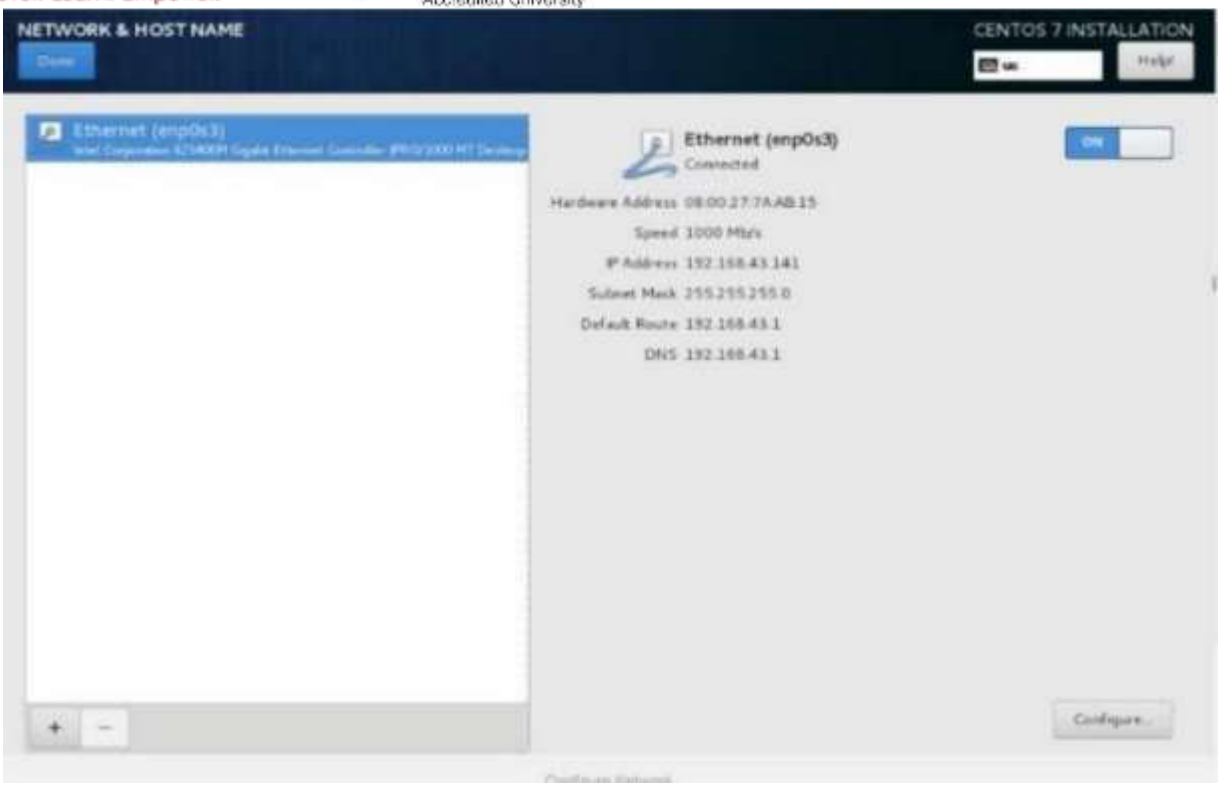
- Step 9- Configure Software Selection: This is the step where you will select your preferred system installation software



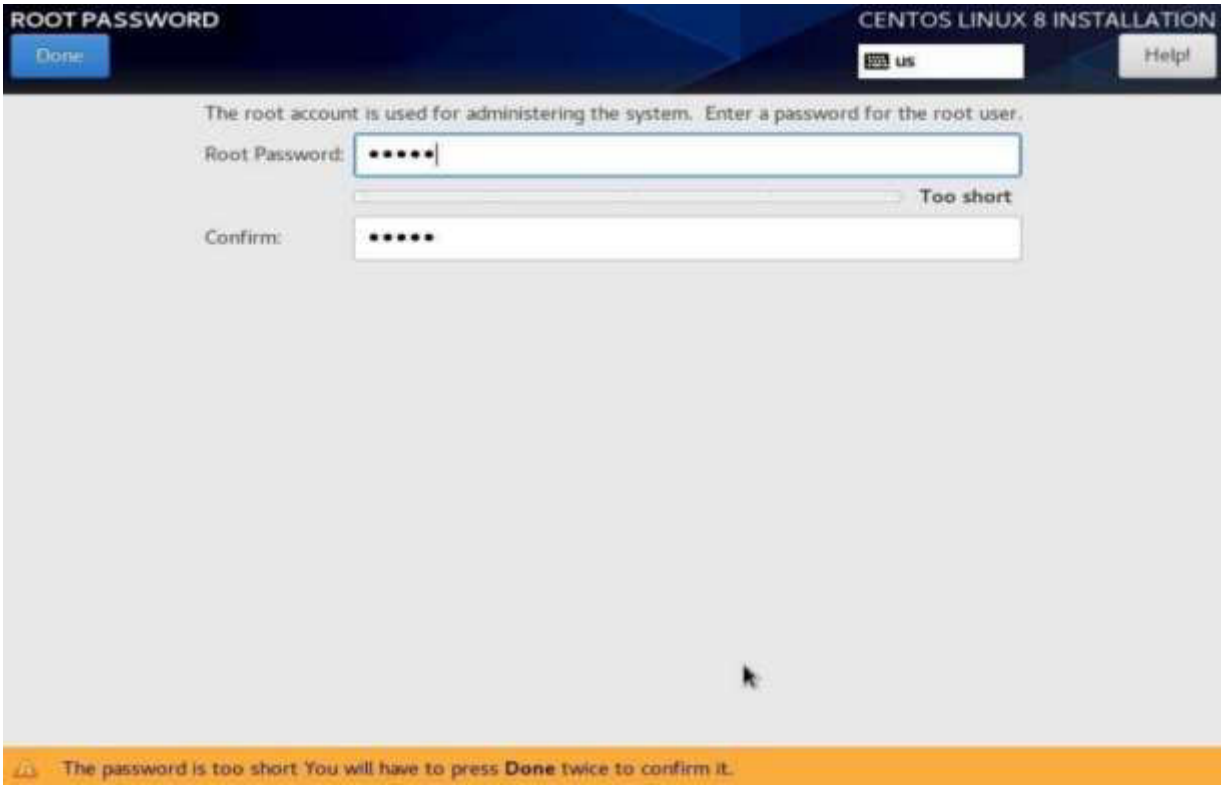
- Step10- Configure Partitioning: This is the part where you configure your hard disk.



- Step 11- Configure Networking & Hostname: for network related settings.



- Step 12- Begin CentOS 7 Installation: set root user password and create a user



- Step 14- One installation is complete then Remove the USB button and hit the ‘Reboot’ button to restart your system.
- Step 15- Click on ‘LICENSE INFORMATION’: Accept the license
- Step 16- Finish configuration

Learning outcomes (What I have learnt):

1. **I learnt to install CentOS.**
2. **I learnt to use Linux.**

Evaluation Grid:

Sr. No.	Parameters	Marks Obtained	Maximum Marks
1.	Demonstration and Performance (Pre Lab Quiz)		5
2.	Worksheet		10
3.	Post Lab Quiz		5

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Experiment No. 1.2

Student Name: Sourabh Singh
UID: 22MCC20158
Semester: 1st

Subject Code:22CAP-648
Section/Group: 22MCD-2/B
Date of Performance: 07-11-2022

1. **Write a command used to display existing partitions and sizes using 2 different commands. After than compare the outputs of both,**

   After this create a new 400MB primary partition and 2 extended partition under that primary partition and check whether both partitions are created or not.

Task to be done:

Answer: 1

Steps/Commands involved to perform practical:

Steps of Answer-1

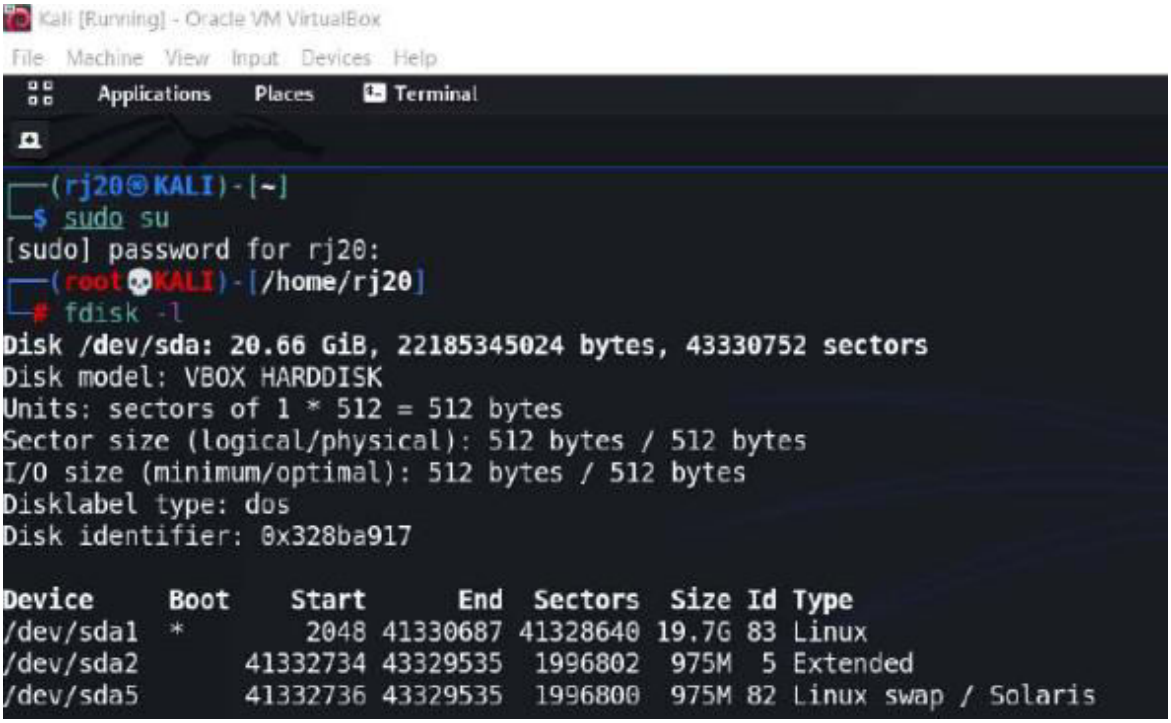
1. Open Linux terminal
2. Write fdisk –l to view the partitions
3. Select the partition using fdisk /dev/sda1
4. Disk Partitions displayed with details

We can also view Disk partitions using lsblk. it displays block devices, when used with the -f option, it prints file system type on partitions as well, now Creating primary partition and 2 extended partitions

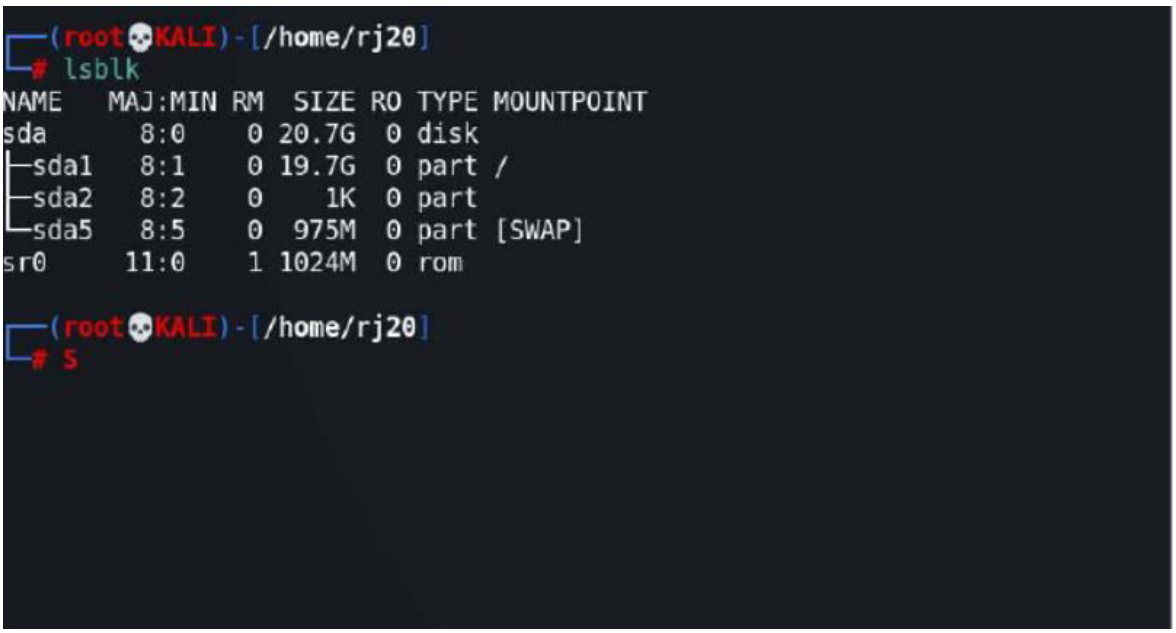
1. Verify the partitions available on the server: fdisk –l
2. Choose which device you wish to use (such as /dev/sda or /dev/sdb)
3. Run fdisk /dev/sdX (where X is the device you would like to add the partition to)
4. Type ‘n’ to create a new partition.
5. Specify where you would like the partition to end and start. You can set the number of MB of the partition instead of the end cylinder. For example: 400M
6. Type ‘p’ to view the partition, and type ‘w’ to save the partition

Output of Answer 1:

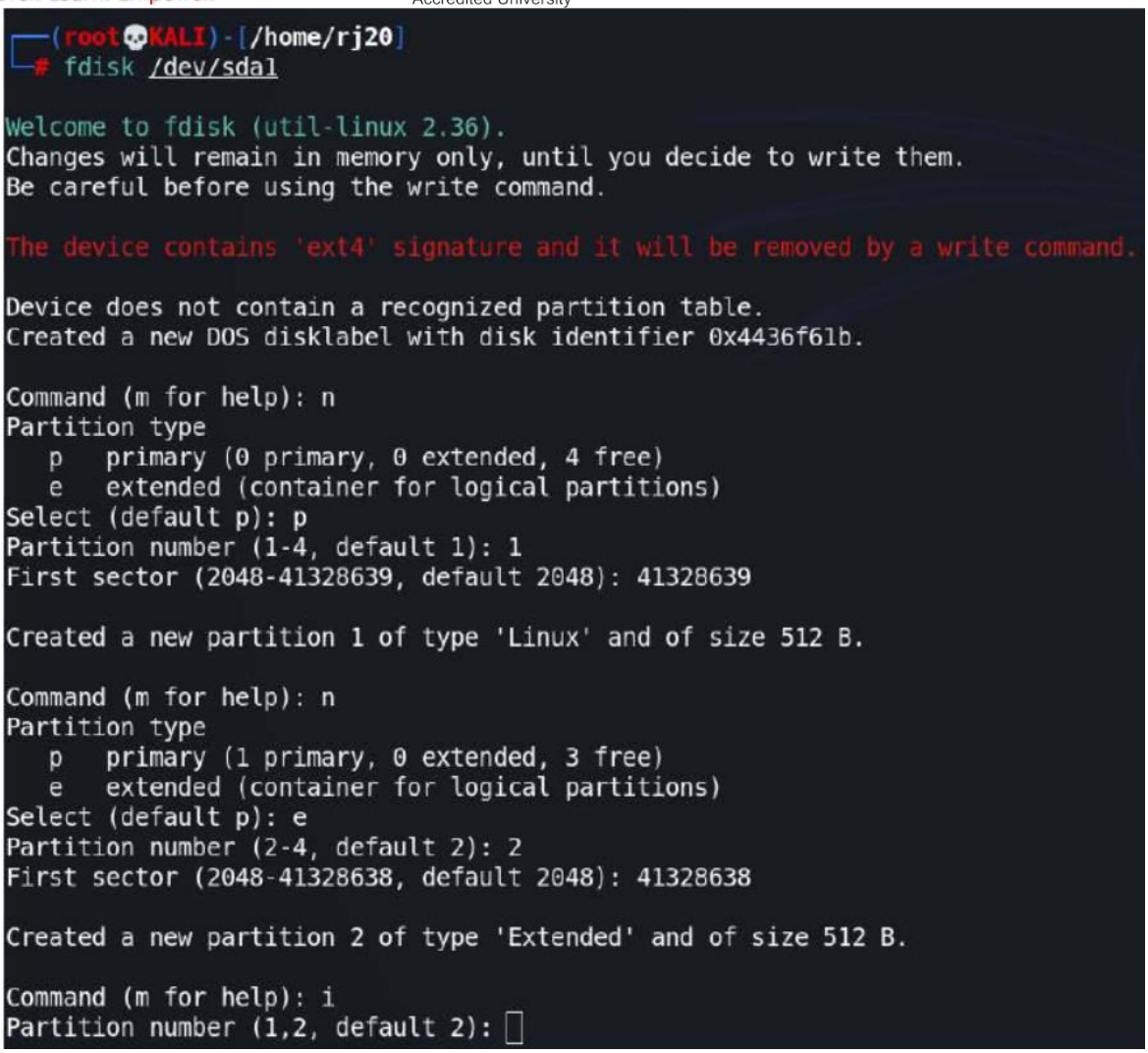
Viewing Disk partition using fdisk command



Viewing Disk partition using fsblk Command



creating a primary partition and 2 extended partition under that primary



Checking whether Partitions created or not

```
Device      Boot    Start      End Sectors  Size Id Type
/dev/sda1p1       41328639 41328639       1  512B 83 Linux
/dev/sda1p2       41328638 41328638       1  512B  5 Extended

Partition table entries are not in disk order.

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

        Device: /dev/sda1p1
         Start: 41328639
           End: 41328639
       Sectors: 1
     Cylinders: 1
          Size: 512B
            Id: 83
          Type: Linux
   Start-C/H/S: 524/150/10
     End-C/H/S: 524/150/10

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

        Device: /dev/sda1p2
         Start: 41328638
           End: 41328638
       Sectors: 1
     Cylinders: 1
          Size: 512B
            Id: 5
          Type: Extended
   Start-C/H/S: 524/150/9
     End-C/H/S: 524/150/9
```

Learning outcomes (What I have learnt):

1. **I learnt to display disk information.**
2. **I learnt to create partition.**

Evaluation Grid:

Sr. No.	Parameters	Marks Obtained	Maximum Marks
1.	Demonstration and Performance (Pre Lab Quiz)		5
2.	Worksheet		10
3.	Post Lab Quiz		5

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Experiment No. 1.3

Student Name: Sourabh Singh **Subject Code:**22CAP-648

UID: 22MCC20158 **Section/Group: 22MCD-2/B**

Semester: 1st **Date of Performance: 07-11-2022**

1. Create the directory DIR1 and inside this create another directory DIR2 and inside DIR2 create directory DIR3

   Using a one single command. Show the path of the DIR3 directory. Create a blank file ABC.txt. Add the contents using cat command. Show long list of this directory also show hidden files.

Task to be done:

Answer- 1

To create nested directories, we do:

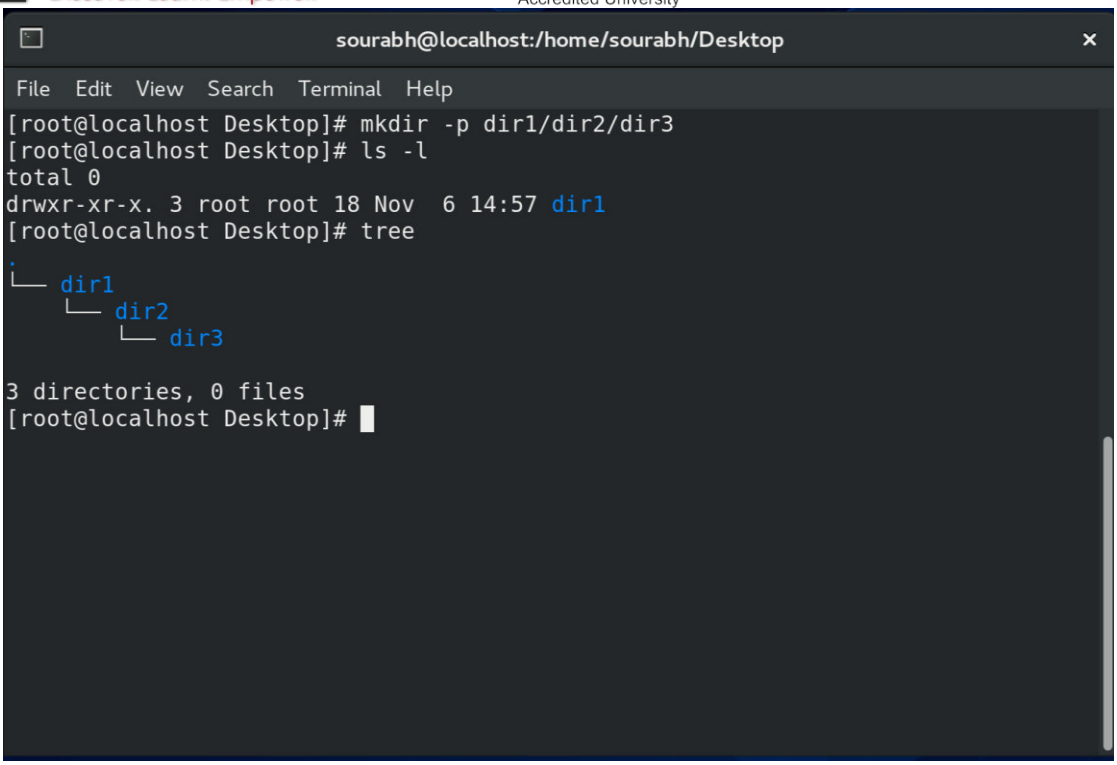
```
mkdir -p dir1/dir2/dir3
```

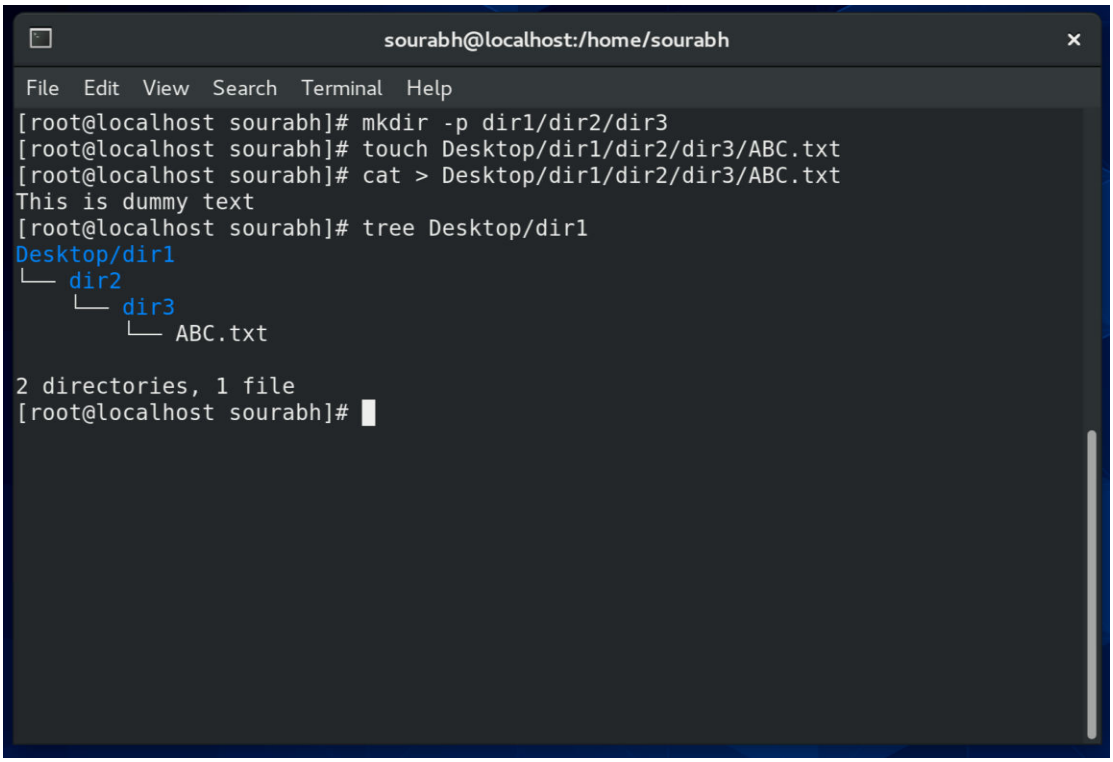
- The **-p** option allows you to create parent directory if it is not created already. The above command creates dir2 within dir1 and dir3 within dir2. Here, dir1 is the parent directory to dir2 and dir3. dir2 is the parent directory to dir3. In other words, dir2 is the child directory of dir1 and dir3 is the child directory of dir2 and dir1.

  To create a blank file and adding contents to it using cat command, we do:

```
touch dir1/dir2/dir3/ABC.txt
cat > dir1/dir2/dir3/ABC.txt
This is a dummy text
```

Steps for experiment/practical: copy and paste your code here/screenshot





Learning outcomes (What I have learnt):

1. **Learnt to create nested directories.**
2. **I learnt to create a blank file.**
3. **Learnt to append a file**

Evaluation Grid:

Sr. No.	Parameters	Marks Obtained	Maximum Marks
1.	Demonstration and Performance (Pre Lab Quiz)		5
2.	Worksheet		10
3.	Post Lab Quiz		5

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Experiment No. 1.4

Student Name: Sourabh Singh
UID: 22MCC20158
Semester: 1st

Subject Code:22CAP-648
Section/Group: 22MCD-2/B
Date of Performance: 28-11-2022

Create a blank file ABC.txt. Add the contents using vi-editor as follows

"Have more than you show,

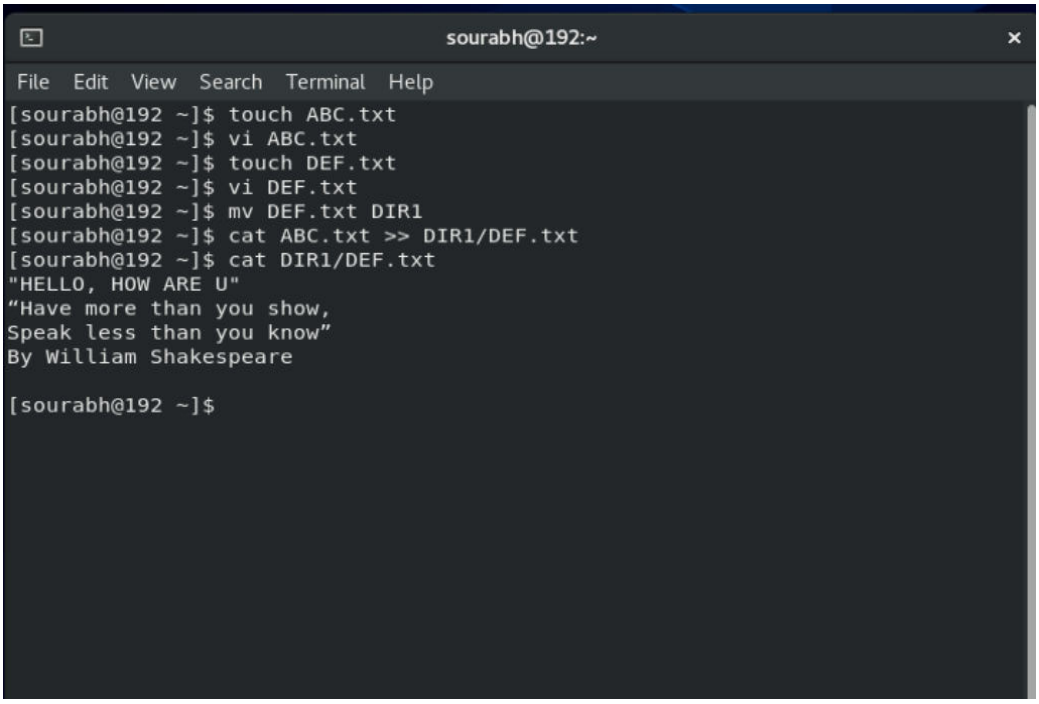
Speak less than you know"

By William Shakespeare

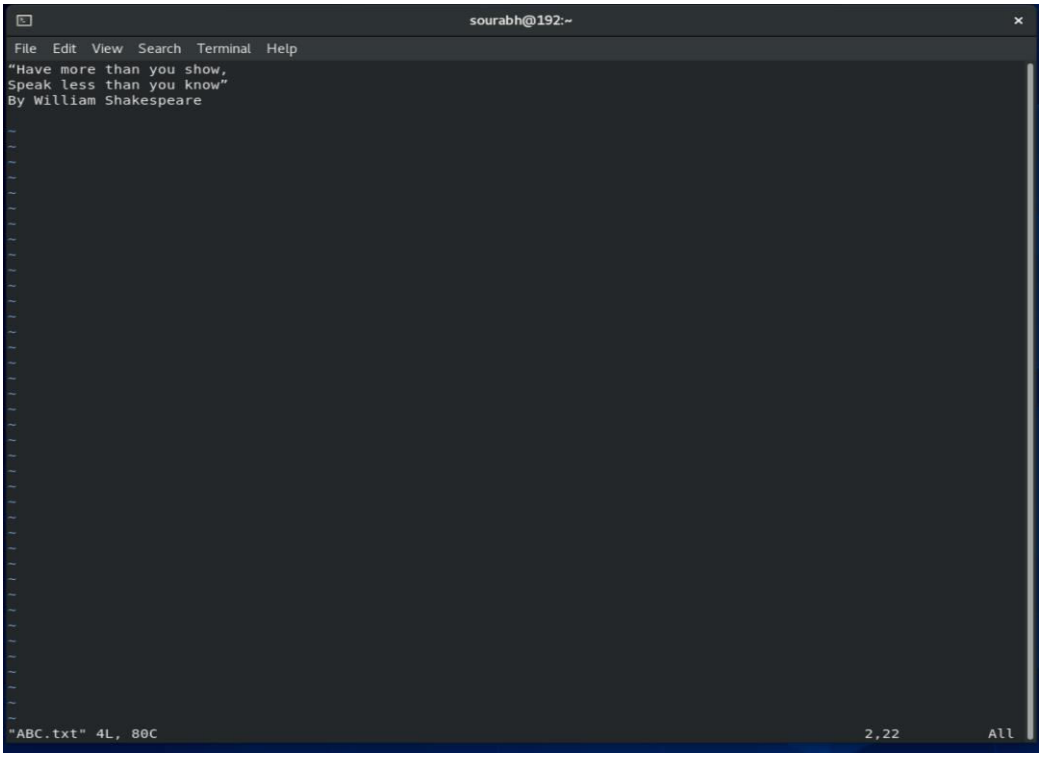
Save and quit from the file. Create another file named DEF.txt and enter the content "HELLO, HOW R U?" in it.

Now delete "R" and edit it as "ARE" and now move this file to another directory DIR1. At last append the contents of ABC.txt to DEF.txt. After appending store the contents in DEF.txt file.

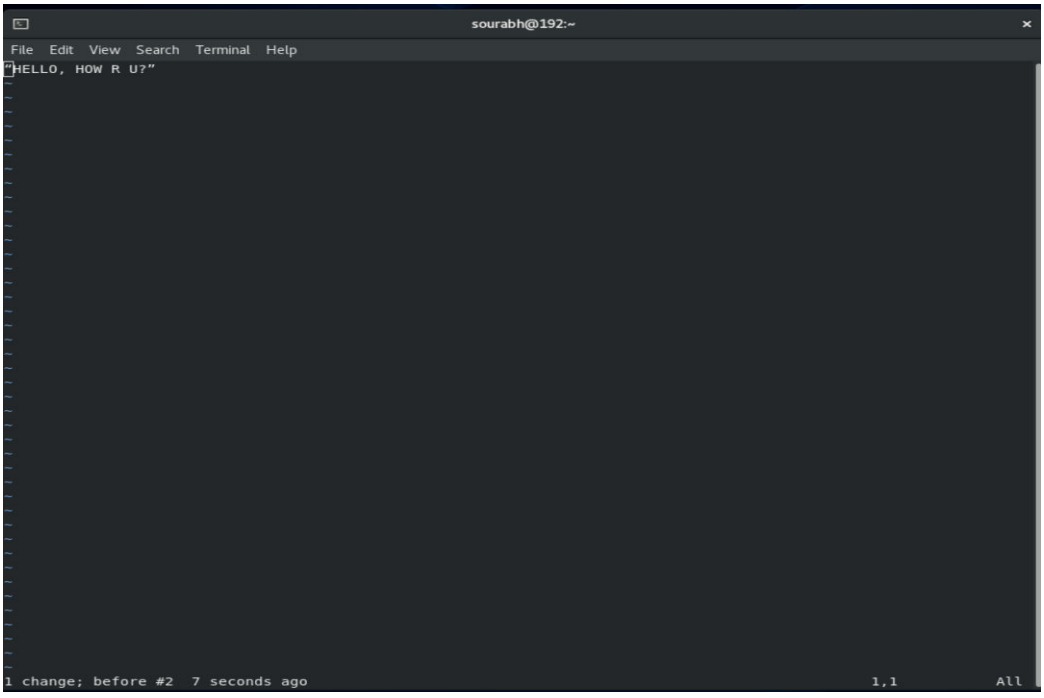
Steps for experiment/practical: copy and paste your code here/screenshot



1) ABC.txt File -



2) DEF.txt File -



Learning outcomes (What I have learnt):

Got to know about editing text files in Vi editor and it's various functions

Evaluation Grid:

Sr. No.	Parameters	Marks Obtained	Maximum Marks
1.	Demonstration and Performance (Pre Lab Quiz)		5
2.	Worksheet		10
3.	Post Lab Quiz		5

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LINUX ADMINISTRATION LAB

Experiment No. 2.1

Student Name: Sourabh Singh **Subject Code:**22CAP-648
UID: 22MCC20158 **Section/Group: 22MCD-2/B**
Semester: 1st **Date of Performance: 14-12-2022**

1. **Aim/Overview of the practical:**

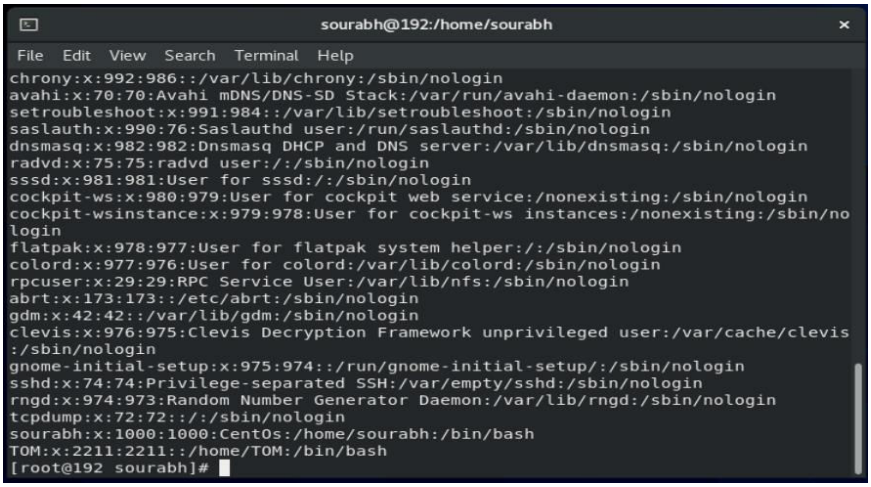
   Task to be done: Create a user TOM with uid 2211 and assign a password "redhat". Check that its entry exists in the configuration file and check whether they can log in or not. Now check the name of primary group of that user by visiting group configuration file. After check its availability in primary group, add that used to the secondary group named GRP

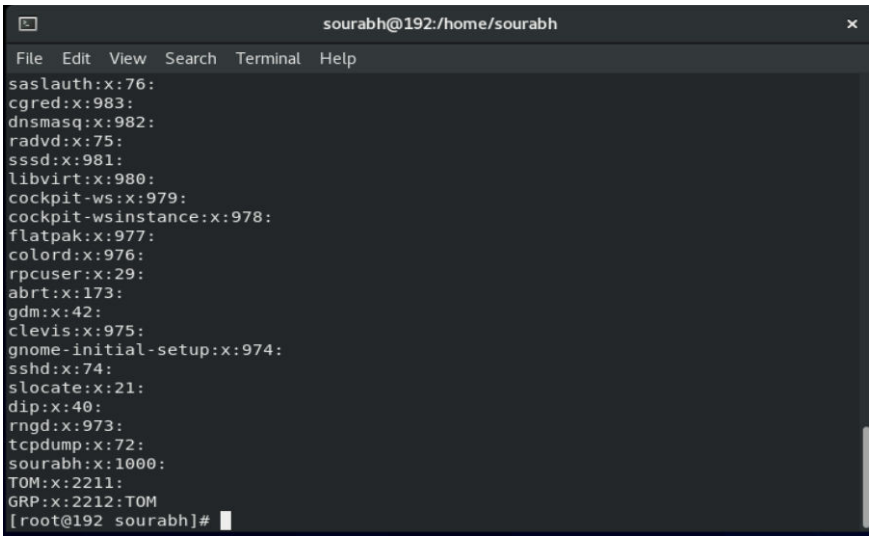
2. **Steps for experiment/practical: copy and paste your code here/screenshot**

```
sourabh@192:/home/sourabh
File  Edit  View  Search  Terminal  Help
[root@192 sourabh]# useradd -u 2211 TOM -p redhat
[root@192 sourabh]# id 2211
uid=2211(TOM) gid=2211(TOM) groups=2211(TOM)
[root@192 sourabh]# groups TOM
TOM : TOM
[root@192 sourabh]# cat /etc/passwd
root:x:0:0:root:/root:/bin/bash
bin:x:1:1:bin:/bin:/sbin/nologin
daemon:x:2:2:daemon:/sbin:/sbin/nologin
adm:x:3:4:adm:/var/adm:/sbin/nologin
lp:x:4:7:lp:/var/spool/lpd:/sbin/nologin
sync:x:5:0:sync:/sbin:/bin/sync
shutdown:x:6:0:shutdown:/sbin:/sbin/shutdown
halt:x:7:0:halt:/sbin:/sbin/halt
mail:x:8:12:mail:/var/spool/mail:/sbin/nologin
operator:x:11:0:operator:/root:/sbin/nologin
games:x:12:100:games:/usr/games:/sbin/nologin
ftp:x:14:50:FTP User:/var/ftp:/sbin/nologin
nobody:x:65534:65534:Kernel Overflow User:/:/sbin/nologin
dbus:x:81:81:System message bus:/:/sbin/nologin
systemd-coredump:x:999:997:systemd Core Dumper:/:/sbin/nologin
systemd-resolve:x:193:193:systemd Resolver:/:/sbin/nologin
tss:x:59:59:Account used by the trousers package to sandbox the tcsd daemon:/dev
```

```
sourabh@192:/home/sourabh
File  Edit  View  Search  Terminal  Help
[root@192 sourabh]# groupadd GRP
[root@192 sourabh]# usermod -a -G GRP TOM
[root@192 sourabh]#
```

2. Result/Output/Writing Summary:





Learning outcomes (What I have learnt):

- **Learn about Managing Groups**
- **Learn about different commands**

Evaluation Grid:

Sr. No.	Parameters	Marks Obtained	Maximum Marks
1.	Demonstration and Performance (Pre Lab Quiz)		5
2.	Worksheet		10
3.	Post Lab Quiz		5

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Experiment No. 2.2

Student Name: Sourabh Singh
UID: 22MCC20158
Semester: 1st

Subject Code:22CAP-648
Section/Group: 22MCD-2/B
Date of Performance: 26-12-2022

1. Aim/Overview of the practical:

Task to be done: create a file testfile having 5 students names. now display first two names and last one name in file. Then display first 3 and last4 characters of file. count the number of lines and characters in file individually and display content along with no of lines then sort the names in reverse dictionary order and save in file name as studentlist and in end display content of studentlist in upper case alphabets.

Steps for experiment/practical: copy and paste your code here/screenshot:

```
File  Edit  View  Search  Terminal  Help
[SBK@localhost ~]$ pwd
/home/SBK
[SBK@localhost ~]$ cat > test
Suraj
Nikhil
Sourabh
Harsh
Sampark
[SBK@localhost ~]$ head -n2 test
Suraj
Nikhil
[SBK@localhost ~]$ tail -n1 test
Sampark
[SBK@localhost ~]$

[SBK@localhost ~]$ head -c 3 test
Sur[SBK@localhost ~]$ tail -c 4 test
ark
[SBK@localhost ~]$ tail -c 5 test
park
[SBK@localhost ~]$
```

```
File  Edit  View  Search  Terminal  Help
 5  5 35 test
[SBK@localhost ~]$ cat test
Suraj
Nikhil
Sourabh
Harsh
Sampark
[SBK@localhost ~]$ sort test > studentlist
[SBK@localhost ~]$ cat studentlist
Harsh
Nikhil
Sampark
Sourabh
Suraj
```

Learning outcomes (What I have learnt):

- **Learn about sorting**
- **Learn about different commands**

Evaluation Grid:

Sr. No.	Parameters	Marks Obtained	Maximum Marks
1.	Demonstration and Performance (Pre Lab Quiz)		5
2.	Worksheet		10
3.	Post Lab Quiz		5

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Experiment No. 2.3

Student Name: Sourabh Singh
UID: 22MCC20158
Semester: 1st

Subject Code: 22CAP-648
Section/Group: 22MCD-2/B
Date of Performance: 26-12-2022

1. Aim/Overview of the practical:

Task to be done: You wish to restore the file named ABC.txt which was backed up in the tarfile with name MyBackup.tar. What command should you type? Use an option of gzip command to compress a tar file MyBackup.tar. Now create a file with name MyBackUp.tar and then try to search a file named MyBackup.tar using regular expressions after executing listing command.

Steps for experiment/practical: copy and paste your code here/screenshot

i. **Creating MyBackup.tar with ABC.tx**

$cat > ABC.txt

Hello this is ABC.txt

$tar -cvf MyBackup.tar ABC.txt

ii. **Unarchiving MyBackup using tar command with -x option**

$tar -xvf MyBackup.tar

iii. **Compressing MyBackup.tar using gzip command**

$gzip MyBackup.tar

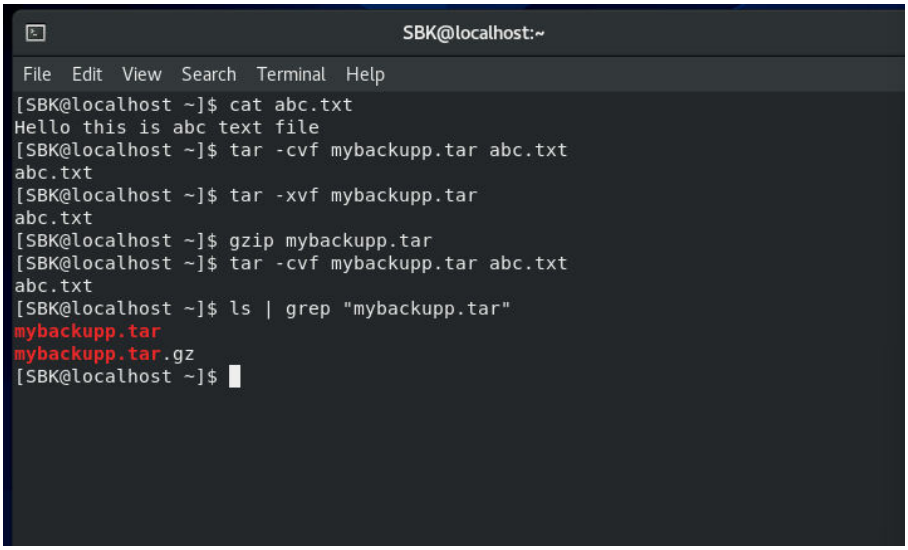
iv. **Creating file MyBackUp.tar**

$tar -cvf MyBackUp.tar ABC.txt

v. **Searching MyBackup.tar using regular expression**

$ls | grep “MyBackup.tar”

2. Result/Output/Writing Summary:



Learning outcomes (What I have learnt):

- **Learn about compression and tar**
- **Learn about different commands**

Evaluation Grid:

Sr. No.	Parameters	Marks Obtained	Maximum Marks
1.	Demonstration and Performance (Pre Lab Quiz)		5
2.	Worksheet		10
3.	Post Lab Quiz		5

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Experiment No. 3.1

Student Name: Sourabh Singh **Subject Code:** 22CAP-648
UID: 22MCC20158 **Section/Group: 22MCD-2/B**
Semester: 1st **Date of Performance: 04-01-2023**

1. Aim/Overview of the practical:

Task to be done:

Q1) How to temporarily turn off enforcing mode without having to reboot?
What are the access control attributes used by SELinux type enforcement security to control access?

Ans:

Turning off enforcing mode without having to reboot

Occasionally you may need to perform an action that is normally prevented by policy. Run the command setenforce 0 to turn off enforcing mode in real time. When you are finished, run setenforce 1 to turn enforcing back on.

```
# setenforce 0
```

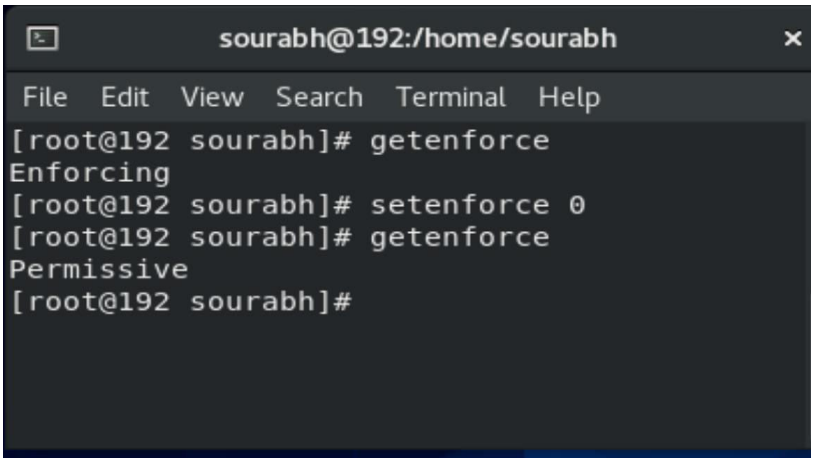
Or we can also change value of /sys/fs/selinux/enforce to **0**

```
# echo 0 > /sys/fs/selinux/enforce
```

The access control attributes used by SELinux type enforcement security to control access are -

In SELinux, type enforcement is implemented based on the labels of the subjects and objects.SELinux by itself does not have rules that say "/bin/bash can execute /bin/ls". Instead, it hasrules similar to "Processes with the label user_t can execute regular files labeled bin_t."SELinux has a particular feature that allows grouping access control rules, called attributes.A domain or type can be assigned an attribute, and access control rules can be defined on attributes(both on subject level, object level or both). When checking the access of a particular subject, its labelis checked for supported attributes and rules on that attribute are accepted as well. Similarly, the labelof the object is checked for attributes and rules on that attribute are also used.This allows a single rule to be used to say that "Every user domain can execute files labeled as bin_t" Through attributes, this rule is valid for all types that are assigned the userdomain attribute

Steps for experiment/practical: copy and paste your code here/screenshot



Learning outcomes (What I have learnt):

1. **I have learnt about SELinux**
2. **I have learnt about SELinux mode**

Evaluation Grid:

Sr. No.	Parameters	Marks Obtained	Maximum Marks
1.	Demonstration and Performance (Pre Lab Quiz)		5
2.	Worksheet		10
3.	Post Lab Quiz		5

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LINUX ADMINISTRATION LAB

Experiment No. 3.2

Student Name: Sourabh Singh
UID: 22MCC20158
Semester: 1st

Subject Code:22CAP-648
Section/Group: 22MCD-2/B
Date of Performance: 07-01-2023

1. Aim/Overview of the practical:

Q.1

Schedule echo command to type ur UID on 30th June 08:30 pm. Perform tar command to backup file1 and file2 on 5th july at 11am and 4pm. perform echo ur name on very weekday during working hours.

Q.2

Schedule two jobs of echo with at, display the at queue and remove a job. schedule ls command to run every four hour. display the crontab file of your normal user Then , remove your crontab file.

Steps for experiment/practical: copy and paste your code here/screenshot

Ans:1

First of all, open crontab file for a user using “crontab -e” and them type following command-

a) **Schedule echo command to type your UID on 30th June 08:30 pm:**
   30 20 30 06 * echo id -u
b) **Perform tar command to backup file1 and file2 on 5th July at 11am and 4pm:**
   00 11, 16 05 07 * tar -czf archive_file.rar file1 file2
c) **Perform echo your name on every weekday during working hours:**
   00 10-17 * * 1-5 echo "Sourabh Singh"

Ans:2

a) Schedule two jobs of echo with at:
at 11:30 PM 01/26/2023 at> echo "I am in MCA-CCD"
at> echo "This task is scheduled using at command" at> ^D

b) Display the at queue:
press Control-D on a new line, and your command will be placed in the queue

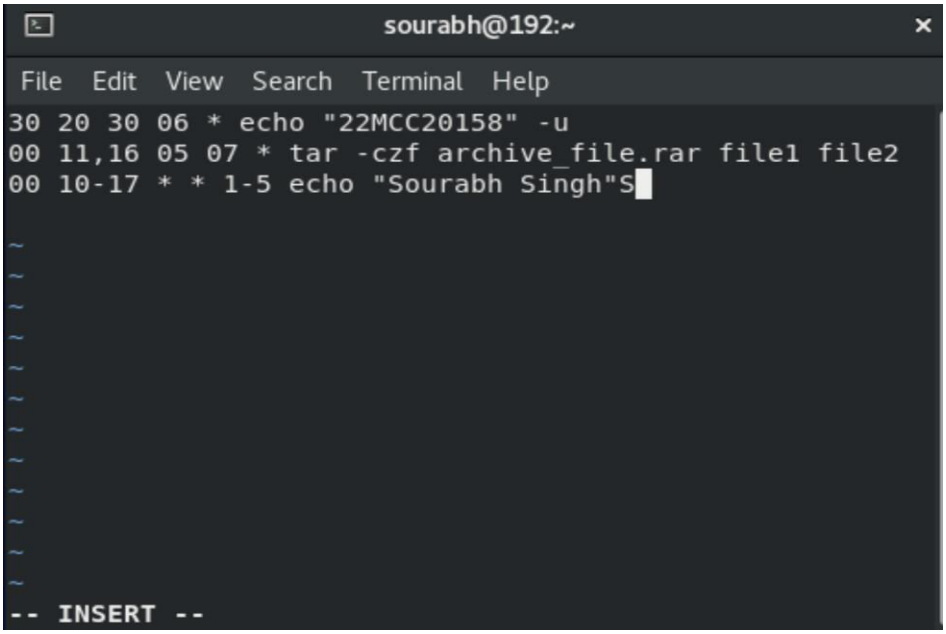
c) To remove a job: **at -r 22**

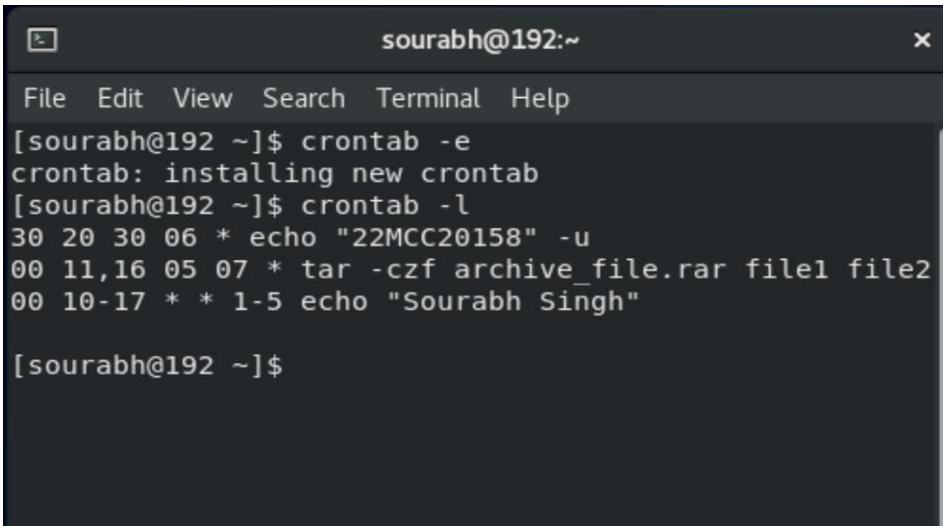
d) Schedule ls command to run every four hours: *** */4 * * * ls**

e) Display the crontab file of your normal user: **crontab -l [username]**

f) Remove your crontab file: **crontab -r [username]**

Result/Output/Writing Summary:





Learning outcomes (What I have learnt):

Got to know about editing text files in Vi editor and it's various functions

Evaluation Grid:

Sr. No.	Parameters	Marks Obtained	Maximum Marks
1.	Demonstration and Performance (Pre Lab Quiz)		5
2.	Worksheet		10
3.	Post Lab Quiz		5

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LINUX ADMINISTRATION LAB

Experiment No. 3.3

Student Name: Sourabh Singh
UID: 22MCC20158
Semester: 1st

Subject Code:22CAP-648
Section/Group: 22MCD-2/B
Date of Performance: 07-01-2023

1. Aim/Overview of the practical:

Q.1

Write shell script program to swap two numbers by using third variable.

Write a shell script to print this following sequence.

0

1 0

2 1 0

3 2 1 0

4 3 2 1 0

5 4 3 2 1 0

Q.2

Write a shell script to print the number is prime or not.

Write a shell script to print number 1 to 10 use continue at 6.

Steps for experiment/practical: copy and paste your code here/screenshot

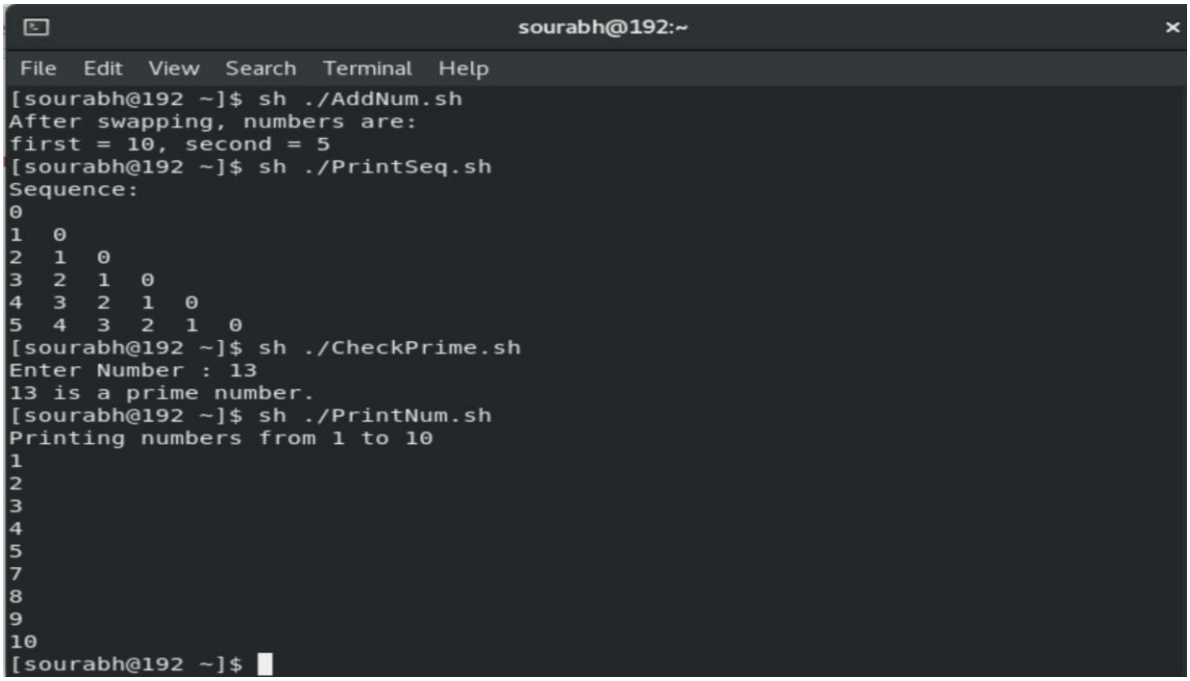
```
first=5
second=10

third_var=$first
first=$second
second=$third_var

echo "After swapping, numbers are:"
echo "first = $first, second = $second"
```

```
echo "Sequence: "
for i in $(seq 0 5)
do
 for j in $(seq $i -1 0)
 do
  echo -n $j " "
done
echo
done
```

```
#!/bin/bash
echo -e "Enter Number : \c"
read n
for((i=2; i<=$n/2; i++))
do
  ans=$(( n%i ))
  if [ $ans -eq 0 ]
  then
    echo "$n is not a prime number."
    exit 0
  fi
done
echo "$n is a prime number."
```

```
echo "Printing numbers from 1 to 10"
for i in {1..10}
do
 if [ $i -eq 6 ]
  then continue
fi
echo "$i"
done
```

Result/Output/Writing Summary:



Learning outcomes (What I have learnt):

1) **Learnt to swap two numbers**
2) **Learnt to print a sequence of numbers**
3) **Learnt to write a shell script to check whether a number is prime or not**
4) **Learnt to print number between a given range**

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