

Project Name:- Secure Multi-User File Sharing Server on a LAN.

- **Description:**

Designed and implemented a secure, multi-user file sharing environment on a CentOS/RHEL 7/8 server tailored for a small office LAN. The system supports departmental access, enforces file-level security, enables encrypted file transfers, and ensures maintainability through process and package management.

- **Objectives Achieved:**

Created and managed users and departmental groups (e.g., HR, Sales, Engineering).

Applied ownership and permission models (chmod, chown, chgrp) to enforce access policies.

Configured sudo for controlled administrative access to critical commands.

Enabled secure file transfers using SSH and SCP between users and server.

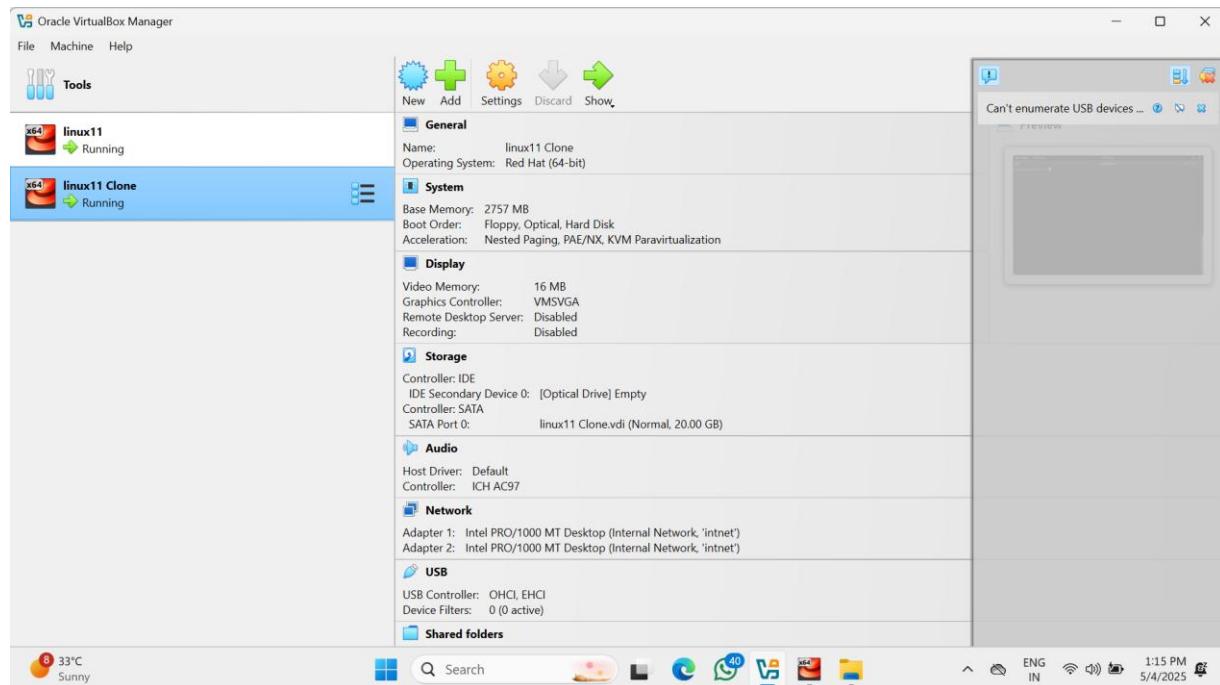
Scheduled archive and compression tasks (tar, gzip) for daily backups.

- **Tools & Technologies Used:**
 1. OS: CentOS / RHEL 7/8
 2. User Management: useradd, groupadd, passwd, /etc/sudoers
 3. File Security: chmod, chown, umask, ACLs
 4. File Transfer: ssh, scp, sshd_config.
- **Outcome:**
 1. Delivered a secure and scalable file sharing system.
 2. Reduced data exposure through tight permission controls.
 3. Simplified administration using groups and sudo.
 4. Ensured operational continuity with monitoring and backup strategies.

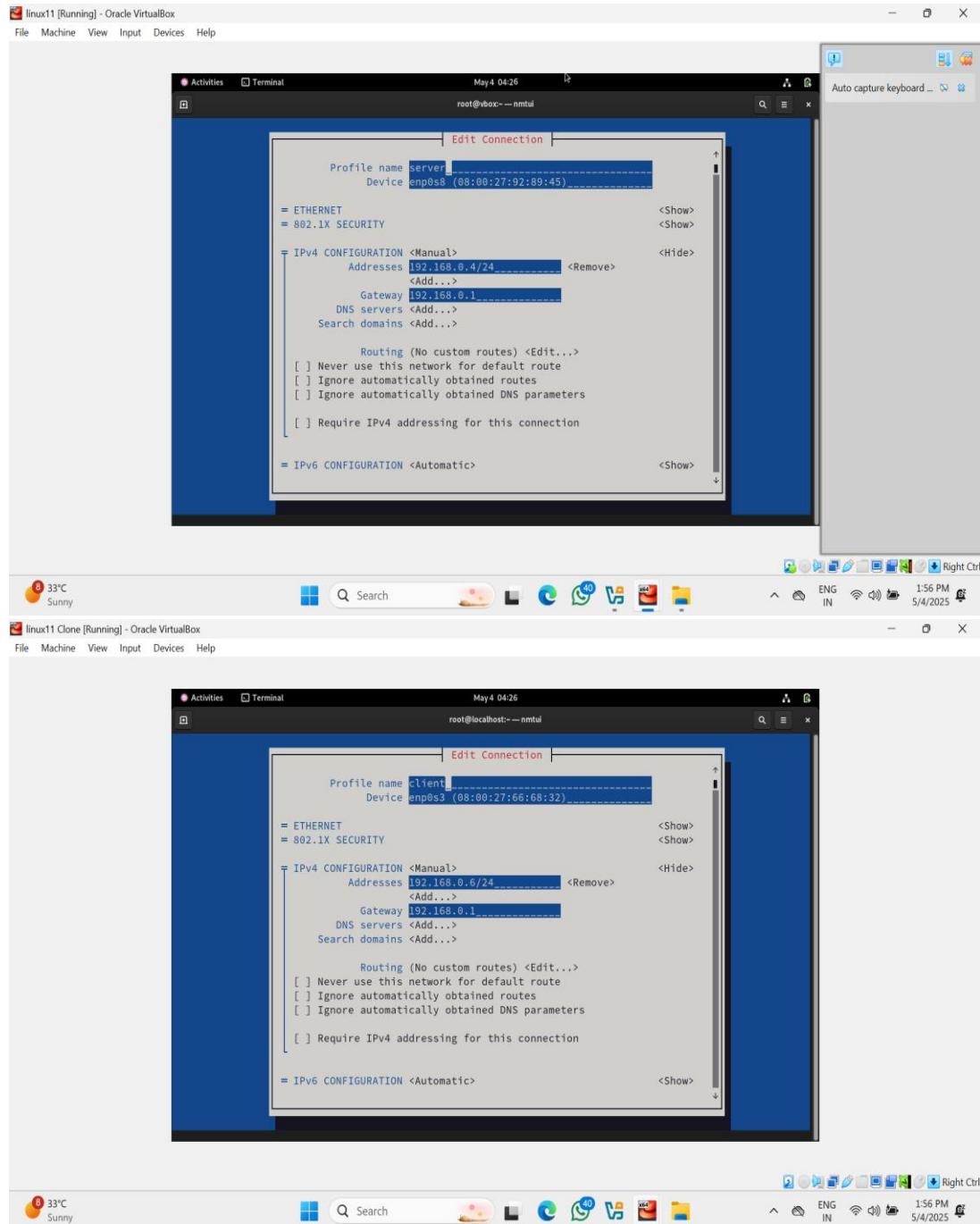
- **Step-by-Step Implementation Guide:**

1. Initial Setup

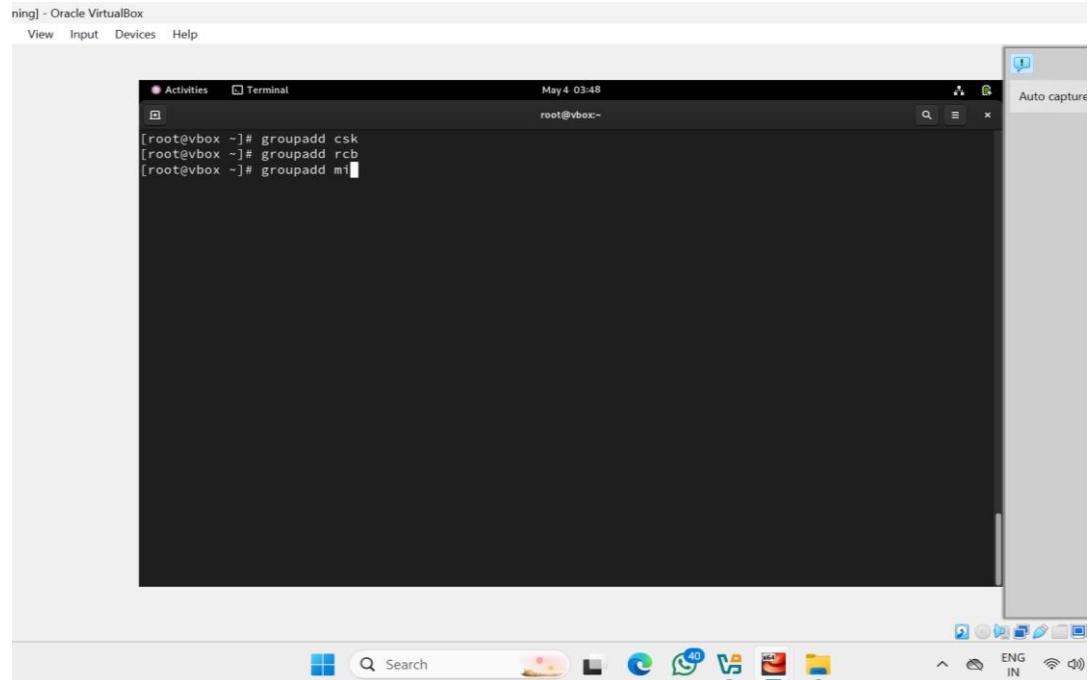
Install CentOS/RHEL 7/8 on a virtual machine or bare-metal server.



2. Set a static IP address for LAN communication: (Machine A & B)

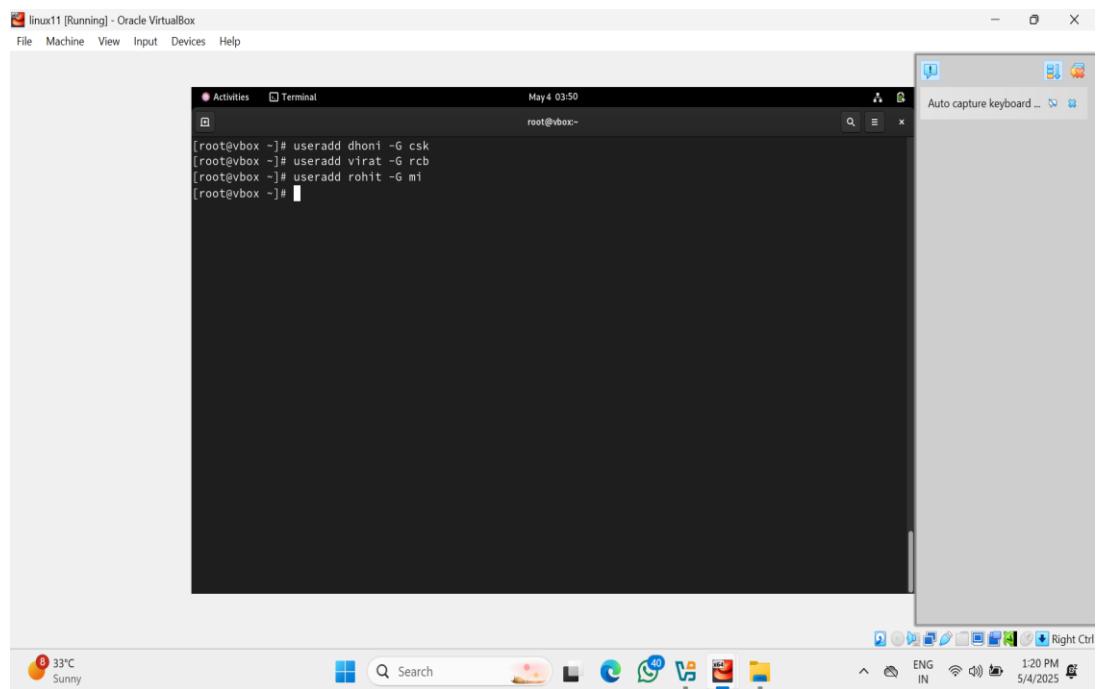


3. User and Group Management and Create departmental groups:



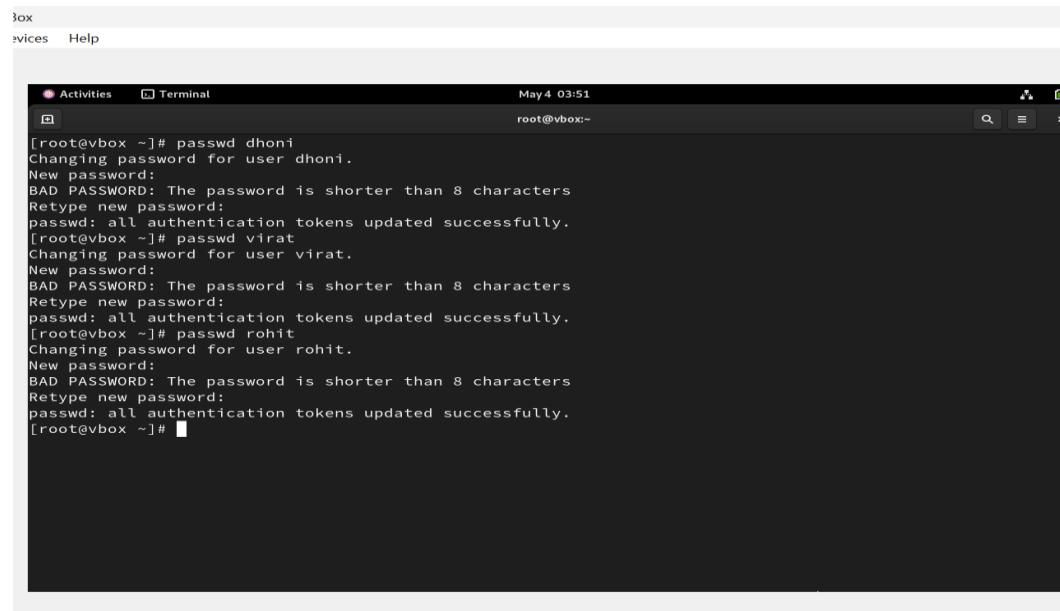
```
ning] - Oracle VirtualBox
View Input Devices Help
Activities Terminal May 4 03:48
root@vbox:~#
[root@vbox ~]# groupadd csk
[root@vbox ~]# groupadd rcb
[root@vbox ~]# groupadd mi
```

4. Create users and assign them to groups:



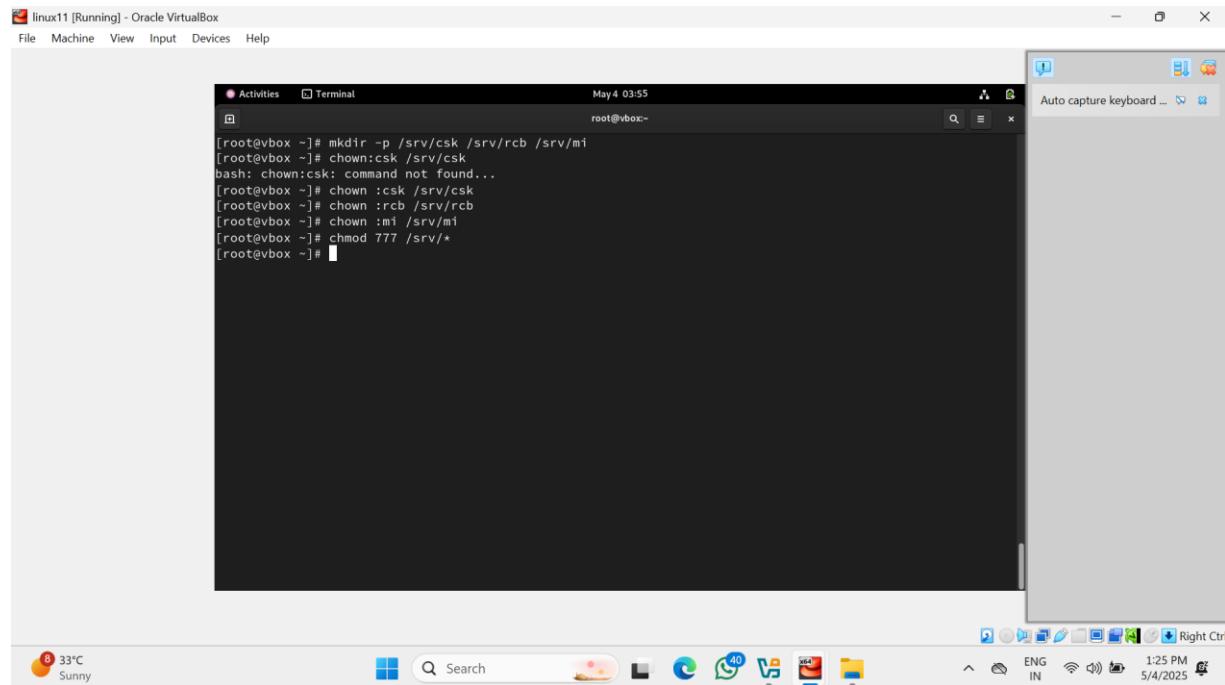
```
linux1 [Running] - Oracle VirtualBox
File Machine View Input Devices Help
Activities Terminal May 4 03:50
root@vbox:~#
[root@vbox ~]# useradd dhoni -G csk
[root@vbox ~]# useradd virat -G rcb
[root@vbox ~]# useradd rohit -G mi
[root@vbox ~]#
```

5. Assign Password for all User:



```
[root@vbox ~]# passwd dhoni
Changing password for user dhoni.
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: all authentication tokens updated successfully.
[root@vbox ~]# passwd virat
Changing password for user virat.
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: all authentication tokens updated successfully.
[root@vbox ~]# passwd rohit
Changing password for user rohit.
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: all authentication tokens updated successfully.
[root@vbox ~]#
```

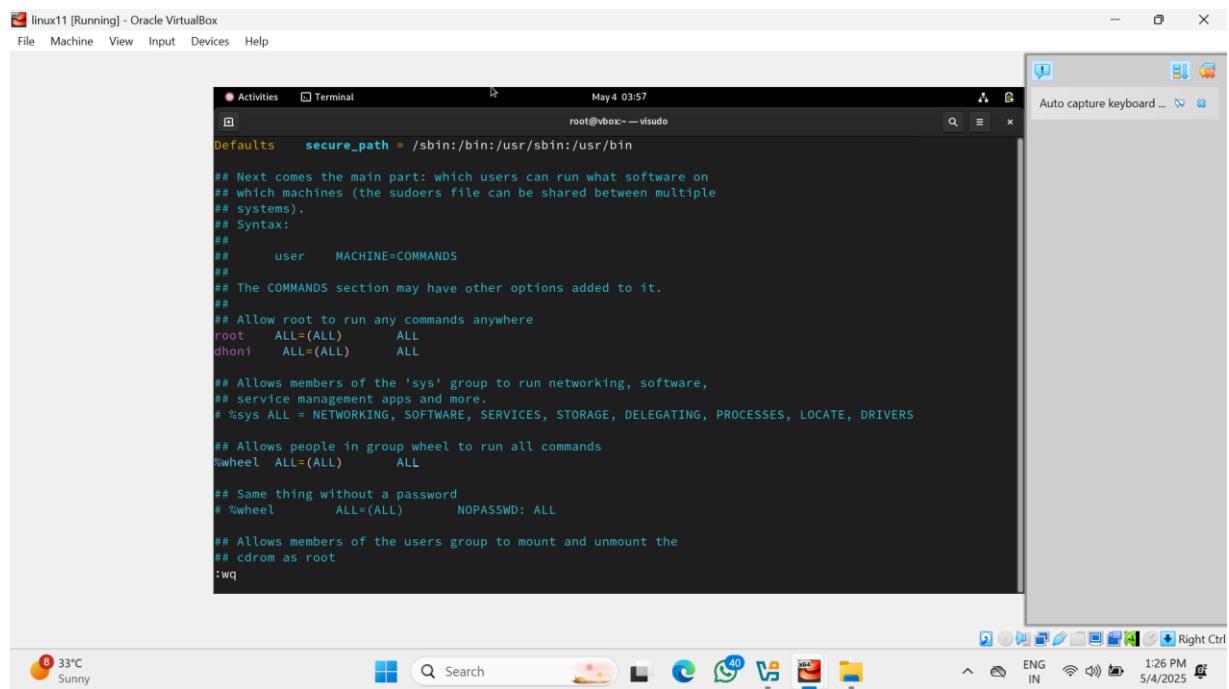
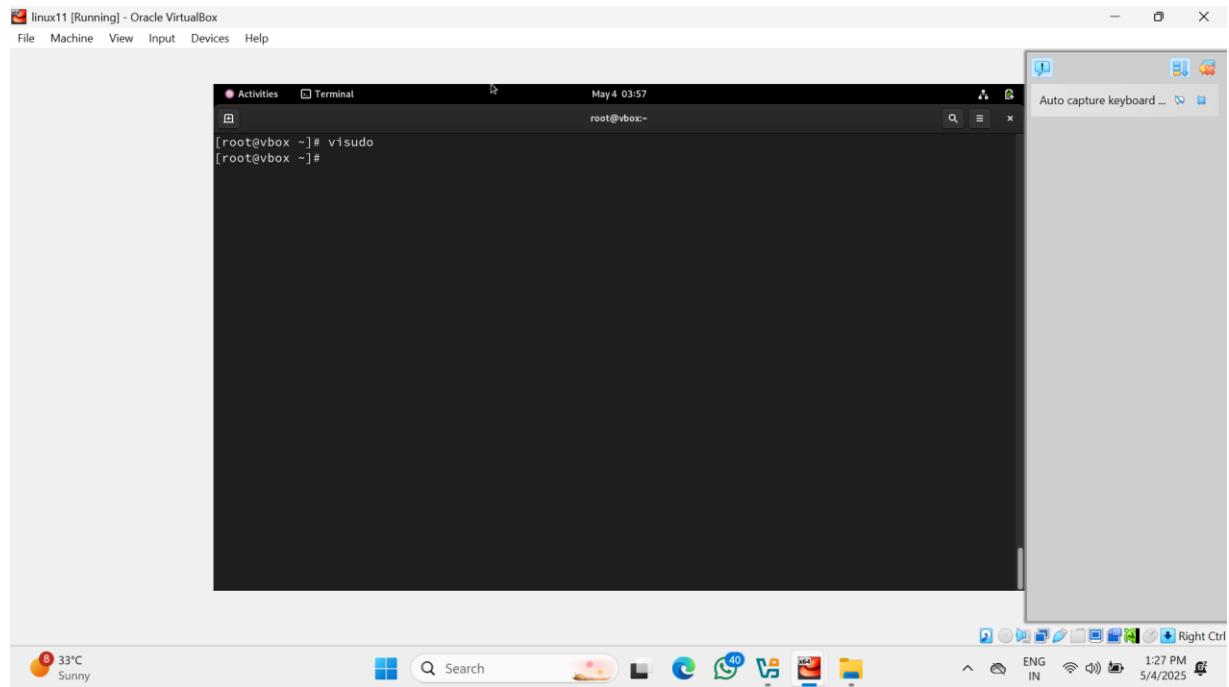
6. File and Directory Permissions-Create department directories:



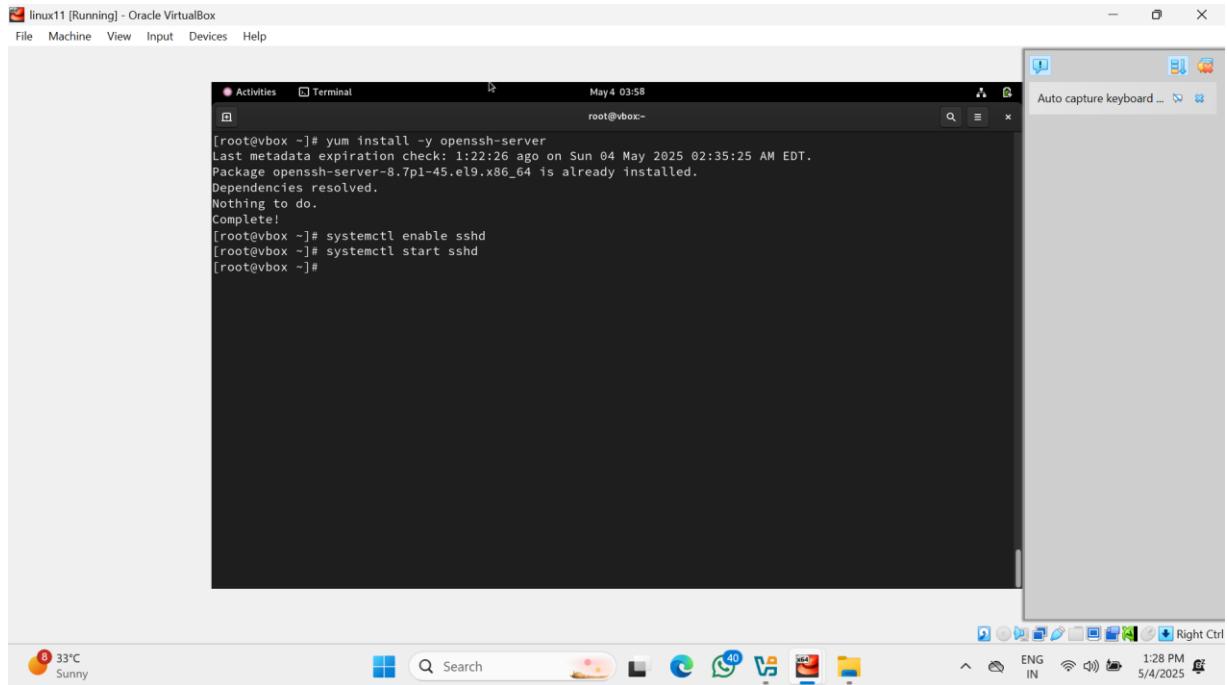
```
linux11 [Running] - Oracle VirtualBox
File Machine View Input Devices Help

Activities Terminal May 4 03:55
root@vbox:~#
[root@vbox ~]# mkdir -p /srv/csk /srv/rcb /srv/mi
[root@vbox ~]# chown:csk /srv/csk
bash: chown: command not found...
[root@vbox ~]# chown :csk /srv/csk
[root@vbox ~]# chown :rcb /srv/rcb
[root@vbox ~]# chown :mi /srv/mi
[root@vbox ~]# chmod 777 /srv/*
[root@vbox ~]#
```

7. Sudo Privileges (Grant sudo to specific users):

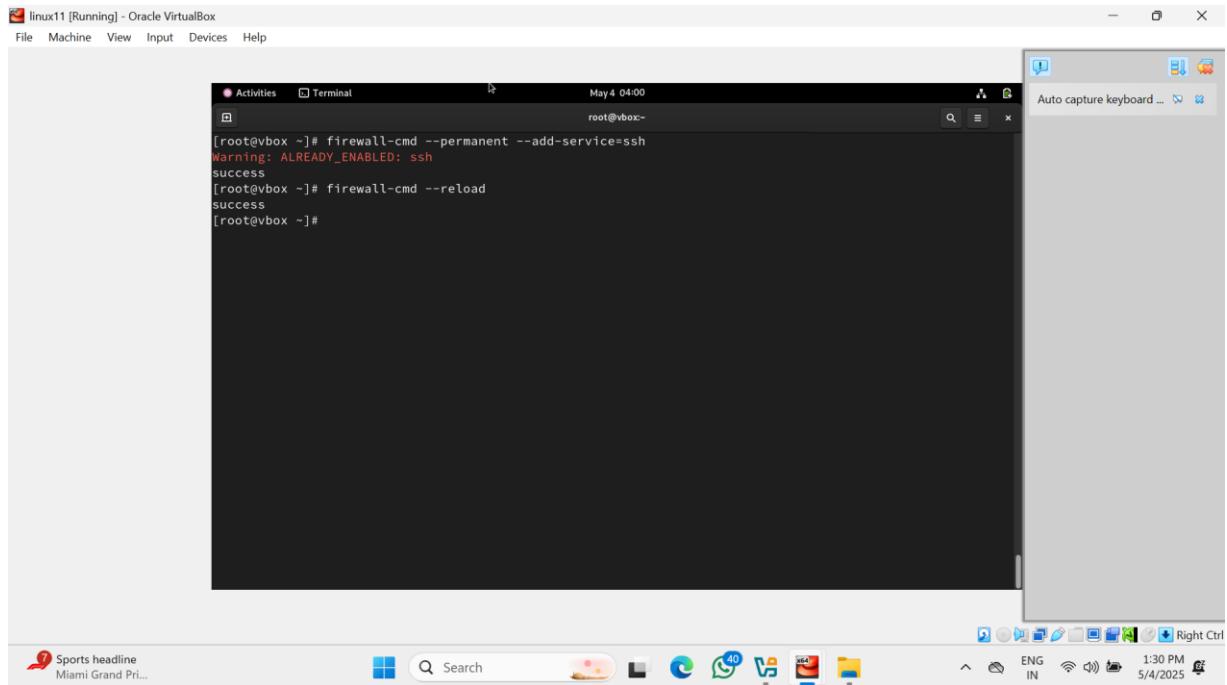


8. Secure File Transfer (SSH/SCP) Install and enable SSH:



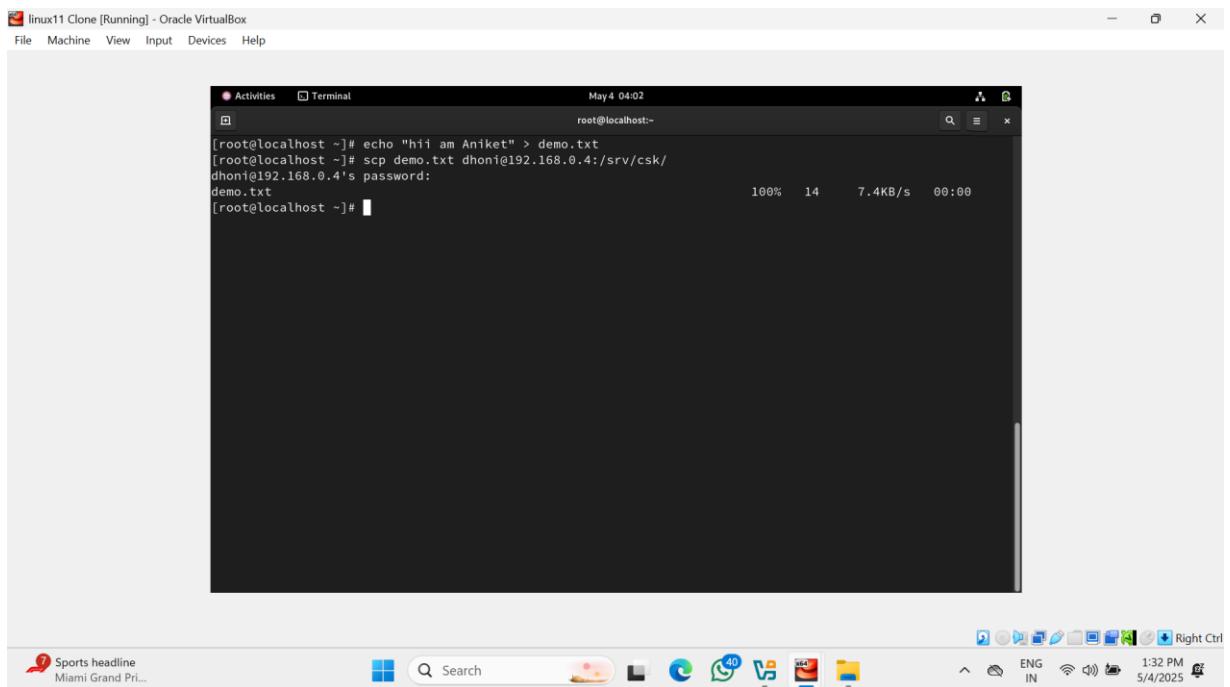
```
[root@vbox ~]# yum install -y openssh-server
Last metadata expiration check: 1:22:26 ago on Sun 04 May 2025 02:35:25 AM EDT.
Package openssh-server-8.7p1-45.el9.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[root@vbox ~]# systemctl enable sshd
[root@vbox ~]# systemctl start sshd
[root@vbox ~]#
```

9. Add SSH to the Firewall:



```
[root@vbox ~]# firewall-cmd --permanent --add-service=ssh
Warning: ALREADY_ENABLED: ssh
success
[root@vbox ~]# firewall-cmd --reload
success
[root@vbox ~]#
```

10. Run SCP on Machine B:

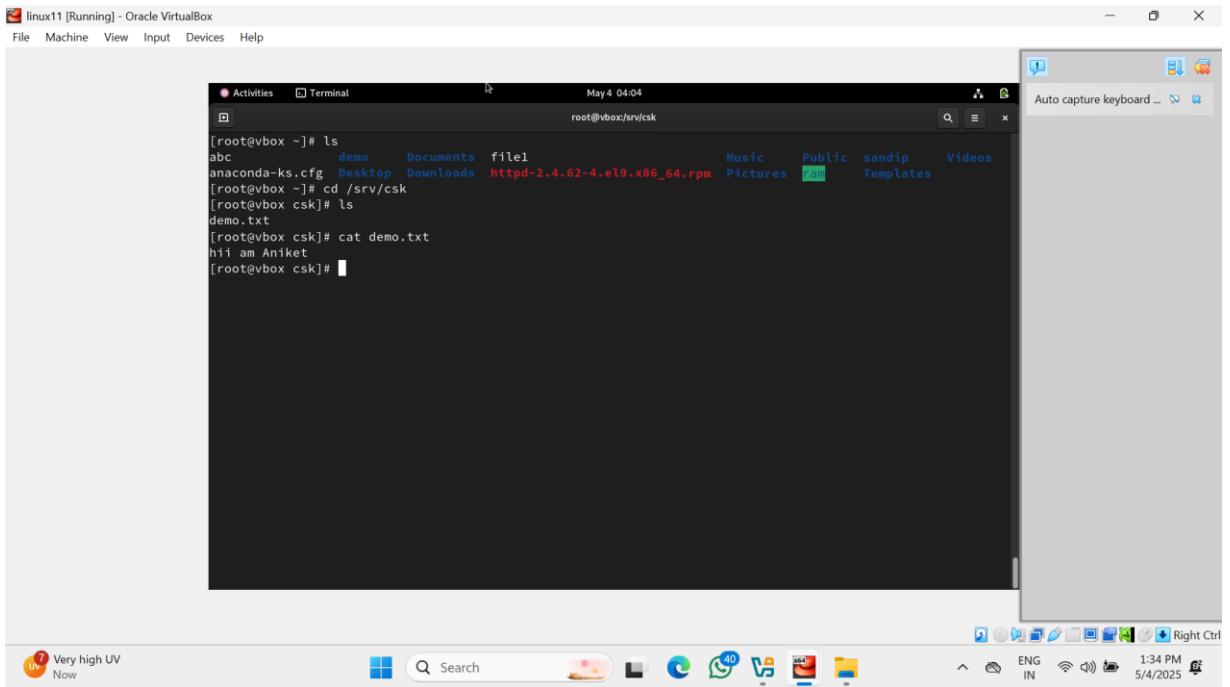


The screenshot shows a Linux desktop environment with a terminal window open. The terminal window title is "Activities Terminal". The terminal content shows the following command being run:

```
[root@localhost ~]# echo "hii am Aniket" > demo.txt
[root@localhost ~]# scp demo.txt dhoni@192.168.0.4:/srv/csk/
dhoni@192.168.0.4's password:
demo.txt                                100%   14    7.4KB/s   00:00
[root@localhost ~]#
```

The terminal window has a dark background and light-colored text. The status bar at the bottom right shows the date and time as May 4 04:02.

11. Check file demo.txt on machine A:

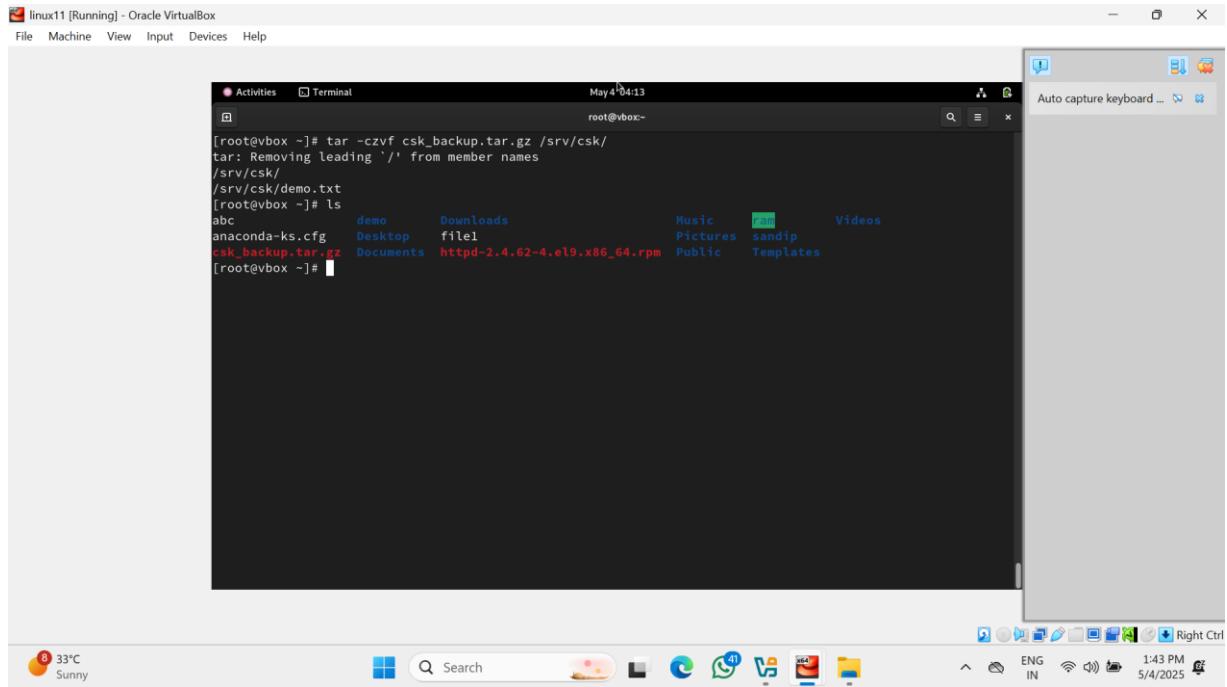


The screenshot shows a Linux desktop environment with a terminal window open. The terminal window title is "Activities Terminal". The terminal content shows the following commands and their results:

```
[root@vbox ~]# ls
abc      demo      Documents  file1          Music      Public  sandip  Videos
anaconda-ks.cfg  Desktop  Downloads httpd-2.4.62-4.el9.x86_64.rpm  Pictures  [all]  Templates
[root@vbox ~]# cd /srv/csk
[root@vbox csk]# ls
demo.txt
[root@vbox csk]# cat demo.txt
hii am Aniket
[root@vbox csk]#
```

A floating window titled "Auto capture keyboard ..." is visible on the right side of the screen. The status bar at the bottom right shows the date and time as May 4 04:04.

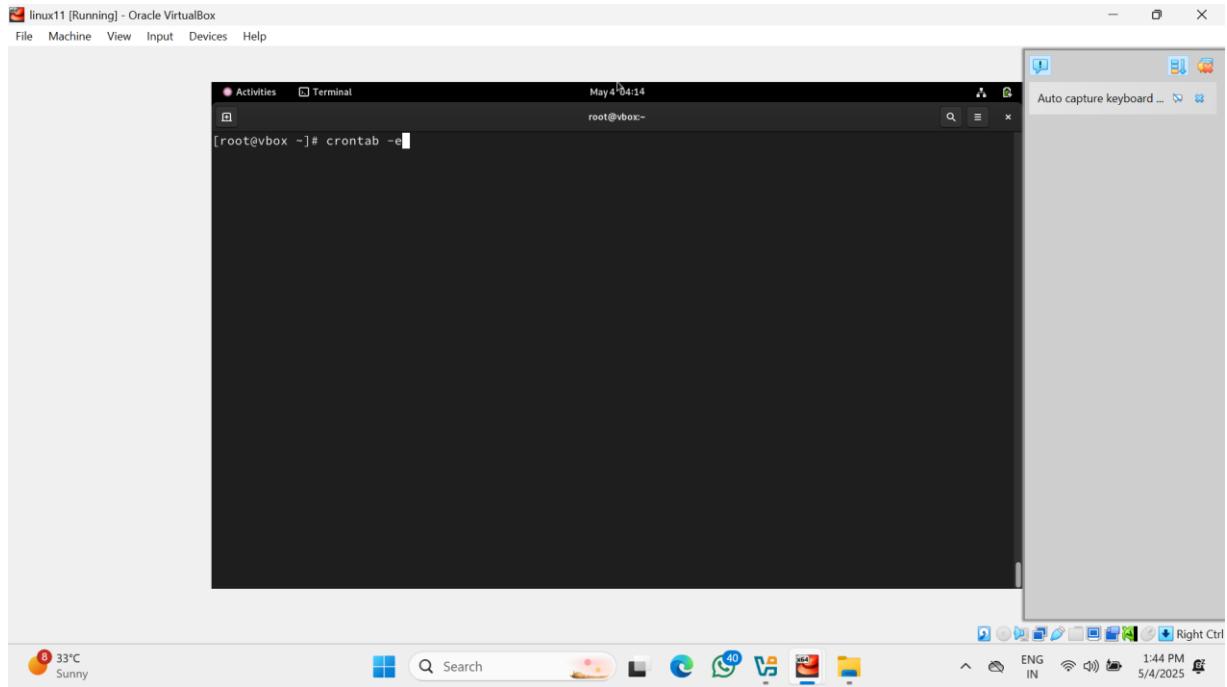
12. Archive and compress the shared directories:



A screenshot of a Linux desktop environment (Ubuntu) running in Oracle VM VirtualBox. The desktop has a standard Unity interface with a dock at the bottom containing icons for various applications like Dash, Home, and File Manager. A terminal window is open in the center, showing the command `tar -czvf csk_backup.tar.gz /srv/csk/` being run by root. The terminal output shows the command removing leading '/' from member names and listing files in the directory. A file manager window titled "Auto capture keyboard ..." is visible in the background.

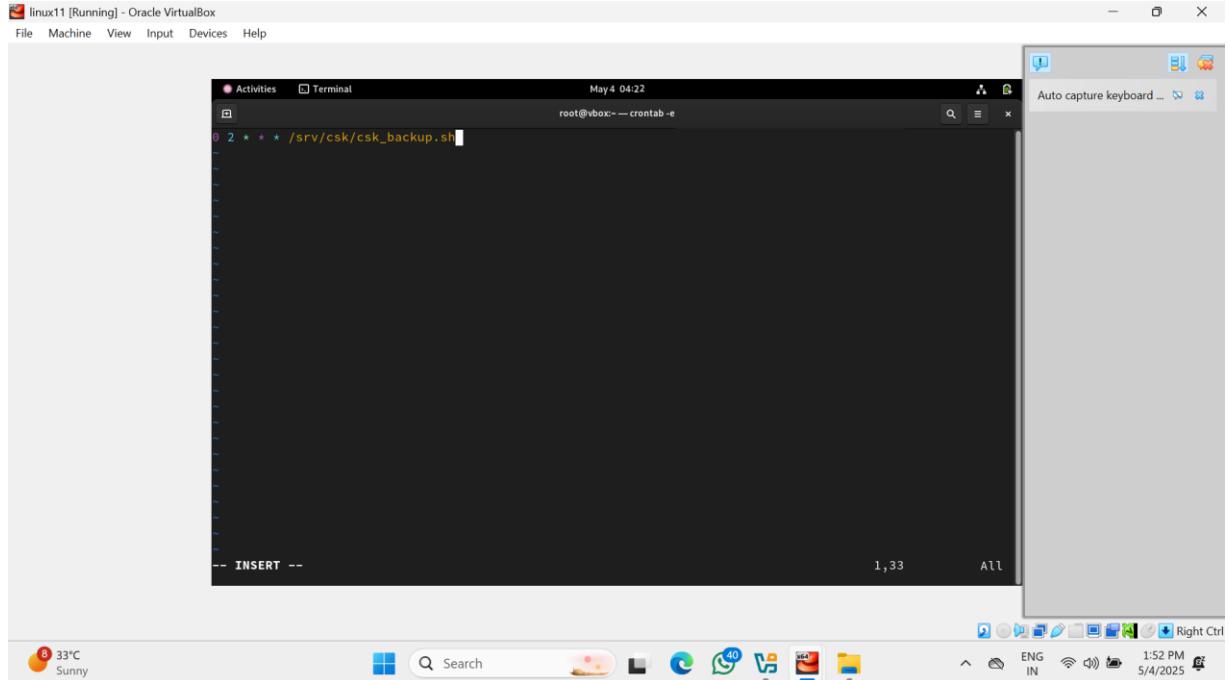
```
[root@vbox ~]# tar -czvf csk_backup.tar.gz /srv/csk/
tar: Removing leading '/' from member names
/srv/csk/
/srv/csk/demo.txt
[root@vbox ~]# ls
abc      demo      Downloads          Music      Videos
anaconda-ks.cfg  Desktop   file1           Pictures  sandip
csk_backup.tar.gz Documents httpd-2.4.62-4.el9.x86_64.rpm Public    Templates
[root@vbox ~]#
```

13. Automate Backup With Crontab:

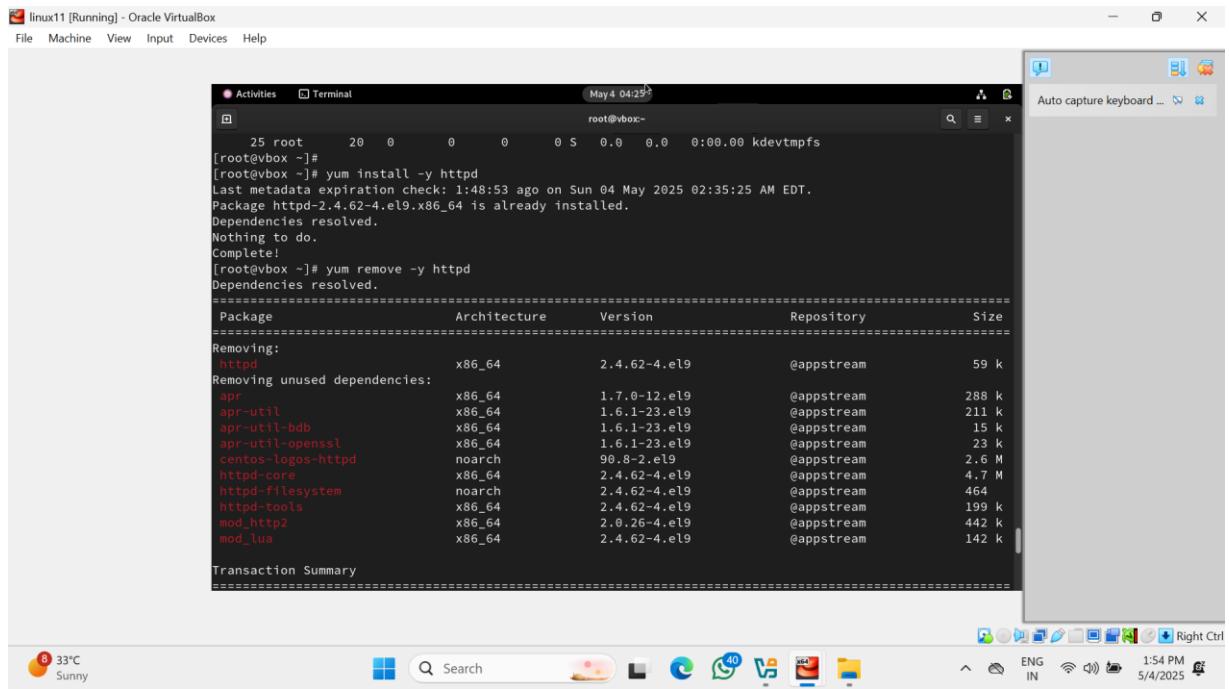


A screenshot of a Linux desktop environment (Ubuntu) running in Oracle VM VirtualBox. The desktop has a standard Unity interface with a dock at the bottom containing icons for various applications like Dash, Home, and File Manager. A terminal window is open in the center, showing the command `crontab -e` being run by root. The terminal output shows the command being entered. A file manager window titled "Auto capture keyboard ..." is visible in the background.

```
[root@vbox ~]# crontab -e
```



14. Package and Service Management (with yum):



linux1 [Running] - Oracle VirtualBox

File Machine View Input Devices Help

Activities Terminal May 4 04:25 root@vbox:~

```
Erasing : httpd-filesystem-2.4.62-4.el9.noarch 7/11
Erasing : apr-util-1.6.1-23.el9.x86_64 8/11
Erasing : apr-util-bdb-1.6.1-23.el9.x86_64 9/11
Erasing : apr-1.7.0-12.el9.x86_64 10/11
Erasing : apr-util-openssl-1.6.1-23.el9.x86_64 11/11
Running scriptlet: apr-util-openssl-1.6.1-23.el9.x86_64 11/11
Verifying : apr-1.7.0-12.el9.x86_64 1/11
Verifying : apr-util-1.6.1-23.el9.x86_64 2/11
Verifying : apr-util-bdb-1.6.1-23.el9.x86_64 3/11
Verifying : apr-util-openssl-1.6.1-23.el9.x86_64 4/11
Verifying : centos-logos-htpd-90.8-2.el9.noarch 5/11
Verifying : httpd-2.4.62-4.el9.x86_64 6/11
Verifying : httpd-core-2.4.62-4.el9.x86_64 7/11
Verifying : httpd-filesystem-2.4.62-4.el9.noarch 8/11
Verifying : httpd-tools-2.4.62-4.el9.x86_64 9/11
Verifying : mod_http2-2.0.26-4.el9.x86_64 10/11
Verifying : mod_lua-2.4.62-4.el9.x86_64 11/11

Removed:
apr-1.7.0-12.el9.x86_64
apr-util-bdb-1.6.1-23.el9.x86_64
centos-logos-htpd-90.8-2.el9.noarch
httpd-core-2.4.62-4.el9.x86_64
httpd-tools-2.4.62-4.el9.x86_64
mod_lua-2.4.62-4.el9.x86_64

apr-util-1.6.1-23.el9.x86_64
apr-util-openssl-1.6.1-23.el9.x86_64
httpd-2.4.62-4.el9.x86_64
httpd-filesystem-2.4.62-4.el9.noarch
mod_http2-2.0.26-4.el9.x86_64

Complete!
[root@vbox ~]#
```

Auto capture keyboard ...

8 33°C Sunny

Search

Cloud Mail Calendar File Manager Network System Settings

ENG IN 1:55 PM 5/4/2025 Right Ctrl