

Module -1 : Linux

Lab 1: Understanding & Exploring the OS

Objective: Identify OS version, kernel info, and processes.

Tasks:

- Find out the OS name, version, and kernel release.

```
root@ip-172-31-22-193:~# cat /etc/os-release
PRETTY_NAME="Ubuntu 24.04.3 LTS"
NAME="Ubuntu"
VERSION_ID="24.04"
VERSION="24.04.3 LTS (Noble Numbat)"
VERSION_CODENAME=noble
ID=ubuntu
ID_LIKE=debian
HOME_URL="https://www.ubuntu.com/"
SUPPORT_URL="https://help.ubuntu.com/"
BUG_REPORT_URL="https://bugs.launchpad.net/ubuntu/"
PRIVACY_POLICY_URL="https://www.ubuntu.com/legal/terms-and-policies/privacy-policy"
UBUNTU_CODENAME=noble
LOGO=ubuntu-logo
root@ip-172-31-22-193:~# uname -a
Linux ip-172-31-22-193 6.14.0-1018-aws #18~24.04.1-Ubuntu SMP Mon Nov 24 19:46:27 UTC 2025 x86_64 x86_64 x86_64 GNU/Linux
root@ip-172-31-22-193:~# uname -r
6.14.0-1018-aws
root@ip-172-31-22-193:~#
```

- List all running processes and identify the top 5 memory consumers.

```
root@ip-172-31-22-193:~# ps aux
USER      PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root         1  1.1  1.5  22696 14100 ?        Ss  07:22  0:05 /usr/lib/systemd/systemd --system --deserialize=69
root         2  0.0  0.0     0     0 ?        S    07:22  0:00 [kthreadd]
root         3  0.0  0.0     0     0 ?        S    07:22  0:00 [pool_workqueue_release]
root         4  0.0  0.0     0     0 ?        I<  07:22  0:00 [kworker/R-rCU_gp]
root         5  0.0  0.0     0     0 ?        I<  07:22  0:00 [kworker/R-sync_wq]
root         6  0.0  0.0     0     0 ?        I<  07:22  0:00 [kworker/R-kvfree_rcu_reclaim]
root         7  0.0  0.0     0     0 ?        I<  07:22  0:00 [kworker/R-slub_flushwq]
root         8  0.0  0.0     0     0 ?        I<  07:22  0:00 [kworker/R-netns]
root         9  0.0  0.0     0     0 ?        I    07:22  0:00 [kworker/0:0-cgroup_destroy]
root        10  0.0  0.0     0     0 ?        I    07:22  0:00 [kworker/0:1-events]
root        11  0.0  0.0     0     0 ?        I<  07:22  0:00 [kworker/0:OH-events_highpri]
root        12  0.0  0.0     0     0 ?        I    07:22  0:00 [kworker/u8:0-events_unbound]
root        13  0.0  0.0     0     0 ?        I<  07:22  0:00 [kworker/R-mm_percpu_wq]
root        14  0.0  0.0     0     0 ?        I    07:22  0:00 [rcu_tasks_rude_kthread]
```

```
root@ip-172-31-22-193:~# ps aux --sort=-%mem | head -6
USER      PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root      3584  0.0  3.7 1849224 35432 ?        Ssl  07:24  0:00 /usr/lib/snapd/snapd
root      3849  0.0  2.9 223416 27160 ?        Slsl  07:24  0:00 /sbin/multipathd -d -
root      774  0.0  2.4 109996 23168 ?        Ssl  07:23  0:00 /usr/bin/python3 /usr/share/unattended-upgrades/unattended-upgrade-shutdown --wait-for-signal
root      607  0.0  2.2  32416 20788 ?        Ss  07:23  0:00 /usr/bin/python3 /usr/bin/networkd-dispatcher --run-startup-triggers
root      968  0.1  2.1 1756892 20172 ?        Ssl  07:23  0:00 /snap/amazon-ssm-agent/11797/amazon-ssm-agent
root@ip-172-31-22-193:~#
```

- Check the system uptime and logged-in users.

Commands Hint: `uname -a`, `cat /etc/os-release`, `ps aux`, `top`,

W

```
root@ip-172-31-22-193:~# uptime
 07:32:04 up 9 min,  1 user,  load average: 0.00, 0.05, 0.05
root@ip-172-31-22-193:~# w
 07:32:07 up 9 min,  1 user,  load average: 0.00, 0.05, 0.05
USER     TTY      FROM             LOGIN@    IDLE   JCPU   PCPU WHAT
ubuntu   18.206.107.28    07:23    7:34   0.00s  0.02s sshd: ubuntu [priv]
root@ip-172-31-22-193:~# who
ubuntu  pts/0        2026-01-29 07:23 (18.206.107.28)
ubuntu  pts/1        2026-01-29 07:23 (18.206.107.28)
root@ip-172-31-22-193:~#
```

Lab 2: Virtual Machines & Networking

Objective: Set up a Linux VM and configure basic networking.

Tasks:

- Create a new Ubuntu VM using VirtualBox or VMware.
- Assign a static IP and verify connectivity with another VM using `ping`.
- Configure hostname and update `/etc/hosts` file.

```
root@devops-vm:~#
```

Lab 3: Package Management

Objective: Manage software packages.

Tasks:

- Install `nginx`, verify it's running, and check its version.

```
no VM guests are running outdated hypervisor (qemu) binaries on this host.
root@devops-vm:~# systemctl status nginx
● nginx.service - A high performance web server and a reverse proxy server
   Loaded: loaded (/usr/lib/systemd/system/nginx.service; enabled; preset: enabled)
     Active: active (running) since Thu 2026-01-29 07:44:11 UTC; 28s ago
       Docs: man:nginx(8)
   Process: 8291 ExecStartPre=/usr/sbin/nginx -t -q -g daemon on; master_process on; (code=exited, status=0/SUCCESS)
   Process: 8293 ExecStart=/usr/sbin/nginx -g daemon on; master_process on; (code=exited, status=0/SUCCESS)
 Main PID: 8323 (nginx)
    Tasks: 3 (limit: 1008)
   Memory: 2.5M (peak: 5.4M)
      CPU: 26ms
     CGroup: /system.slice/nginx.service
             ├─8323 "nginx: master process /usr/sbin/nginx -g daemon on; master_process on;"
             ├─8325 "nginx: worker process"
             └─8326 "nginx: worker process"

Jan 29 07:44:11 devops-vm systemd[1]: Starting nginx.service - A high performance web server and a reverse proxy server...
Jan 29 07:44:11 devops-vm systemd[1]: Started nginx.service - A high performance web server and a reverse proxy server.
root@devops-vm:~# nginx -v
nginx version: nginx/1.24.0 (Ubuntu)
root@devops-vm:~# curl 54.204.56.51
```

```
nginx version: nginx/1.24.0 (Ubuntu),
root@devops-vm:~# curl 54.204.56.51
<!DOCTYPE html>
<html>
<head>
<title>Welcome to nginx!</title>
<style>
html { color-scheme: light dark; }
body { width: 35em; margin: 0 auto;
font-family: Tahoma, Verdana, Arial, sans-serif; }
</style>
</head>
<body>
<h1>Welcome to nginx!</h1>
<p>If you see this page, the nginx web server is successfully installed and
working. Further configuration is required.</p>
<p>For online documentation and support please refer to
<a href="http://nginx.org/">nginx.org</a>.<br/>
Commercial support is available at
```

- Remove a package safely and clean up dependencies.

```
root@devops-vm:~# sudo apt remove nginx -y
sudo apt autoremove -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following package was automatically installed and is no longer required
  nginx-common
Use 'sudo apt autoremove' to remove it.
The following packages will be REMOVED:
  nginx
0 upgraded, 0 newly installed, 1 to remove and 6 not upgraded.
After this operation, 1352 kB disk space will be freed.
(Reading database ... 71799 files and directories currently installed.)
Removing nginx (1.24.0-2ubuntu7.5) ...
Processing triggers for man-db (2.12.0-4build2) ...
```

- Use `apt`, `snap`, or `yum` (depending on OS).
Commands Hint: `sudo apt update`, `sudo apt install nginx -y`, `systemctl status nginx`

Lab 4: Users, Groups & Permissions

Objective: Manage users and permissions.

Tasks:

- Create a new group `devops` and a user `jenkins`.

```
root@devops-vm:~# sudo groupadd devops
root@devops-vm:~# sudo adduser jenkins
```

- Add the user to the `devops` group and set a password.

```
New password:  
Retype new password:  
Sorry, passwords do not match.  
passwd: Authentication token manipulation error  
passwd: password unchanged  
Try again? [y/N] Yes  
New password:  
Retype new password:  
passwd: password updated successfully  
Changing the user information for jenkins
```

- Create a shared directory /opt/shared and assign group ownership.
Commands Hint: adduser, groupadd, usermod, chown, chmod

```
root@devops-vm:~# sudo mkdir /opt/shared  
sudo chown :devops /opt/shared  
sudo chmod 2775 /opt/shared  
root@devops-vm:~# ls -lrth  
total 4.0K  
drwx----- 3 root root 4.0K Jan 29 07:23 snap  
root@devops-vm:~# cd /opt/shared  
root@devops-vm:/opt/shared# ls -lrth  
total 0  
root@devops-vm:/opt/shared# df -kh  
Filesystem      Size  Used Avail Use% Mounted on  
/dev/root       6.8G  2.1G  4.7G  31% /  
tmpfs          458M    0  458M   0% /dev/shm  
tmpfs          183M  884K  182M   1% /run  
tmpfs          5.0M    0  5.0M   0% /run/lock  
efivarfs        128K  3.6K  120K   3% /sys/firmware/efi/efivars  
/dev/nvme0n1p16 881M   89M  730M  11% /boot  
/dev/nvme0n1p15 105M   6.2M  99M   6% /boot/efi  
tmpfs           92M   12K   92M   1% /run/user/1000  
root@devops-vm:/opt/shared# ls -ld /opt/shared  
drwxrwsr-x  2 root devops 4096 Jan 29 07:55 /opt/shared  
root@devops-vm:/opt/shared#
```

-a adds the user to a new group without removing existing groups.

👉 It appends the group.

Lab 5: Linux File System & Ownership

Objective: Explore file system hierarchy and permissions.

Tasks:

- Find the mount points and available disk space.

```
root@devops-vm:~# df -kh
Filesystem      Size  Used Avail Use% Mounted on
/dev/root       6.8G  2.1G  4.7G  31% /
tmpfs          458M    0  458M   0% /dev/shm
tmpfs          183M  884K  182M   1% /run
tmpfs          5.0M    0  5.0M   0% /run/lock
efivarsfs      128K  3.6K  120K   3% /sys/firmware/efi/efivars
/dev/nvme0n1p16 881M   89M  730M  11% /boot
/dev/nvme0n1p15 105M   6.2M  99M   6% /boot/efi
tmpfs           92M   12K   92M   1% /run/user/1000
root@devops-vm:~# lsblk
NAME      MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
loop0      7:0    0 27.6M  1 loop /snap/amazon-ssm-agent/11797
loop1      7:1    0   74M  1 loop /snap/core22/2163
loop2      7:2    0 50.9M  1 loop /snap/snapd/25577
nvme0n1    259:0   0   8G  0 disk 
└─nvme0n1p1 259:1   0   7G  0 part /
└─nvme0n1p14 259:2   0   4M  0 part
└─nvme0n1p15 259:3   0 106M  0 part /boot/efi
└─nvme0n1p16 259:4   0 913M  0 part /boot
root@devops-vm:~# mount
/dev/nvme0n1p1 on / type ext4 (rw,relatime,discard,errors=remount-ro,commit=30)
devtmpfs on /dev type devtmpfs (rw,nosuid,noexec,relatime,size=456788k,nr_inodes=114197,mode=755,inode64)
proc on /proc type proc (rw,nosuid,nodev,noexec,relatime)
```

- Identify file types using `ls -l` and `file`.

```
root@devops-vm:~# ls -l /etc/passwd
file /etc/passwd
-rw-r--r-- 1 root root 1898 Jan 29 07:51 /etc/passwd
/etc/passwd: ASCII text
root@devops-vm:~# █
```

- Change ownership of a file to another user.

Commands Hint: df -h, lsblk, du -sh, chown, chmod

```
root@devops-vm:~# ls -lrth
total 4.0K
drwx----- 3 root      root   4.0K Jan 29 07:23 snap
-rw-r--r-- 1 jenkins  devops    0 Jan 29 08:09 testfile
root@devops-vm:~#
```

Jenkins -> user who owns the file

Devops -> Group owning the file.

Lab 6: Security and System Administration

Objective: Strengthen Linux security.

Tasks:

- Check running services and open ports.

```
root@devops-vm:~# systemctl list-units --type=service --state=running
UNIT                                     LOAD   ACTIVE SUB   DESCRIPTION
acpid.service                            loaded active running ACPI event daemon
chrony.service                           loaded active running chrony, an NTP client/server
cron.service                             loaded active running Regular background program processing daemon
dbus.service                             loaded active running D-Bus System Message Bus
getty@tty1.service                       loaded active running Getty on tty1
irqbalance.service                      loaded active running irqbalance daemon
ModemManager.service                     loaded active running Modem Manager
multipathd.service                      loaded active running Device-Mapper Multipath Device Controller
networkd-dispatcher.service             loaded active running Dispatcher daemon for systemd-networkd
polkit.service                           loaded active running Authorization Manager
rsyslog.service                          loaded active running System Logging Service
serial-getty@ttyS0.service              loaded active running Serial Getty on ttyS0
snap.amazon-ssm-agent.amazon-ssm-agent.service loaded active running Service for snap application amazon-ssm-agent.amazon-ssm-agent
snapd.service                            loaded active running Snap Daemon
ssh.service                             loaded active running OpenBSD Secure Shell server
systemd-journald.service               loaded active running Journal Service
systemd-logind.service                 loaded active running User Login Management
```

```
root@devops-vm:~# netstat -tulnp
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State       PID/Program name
tcp        0      0 0.0.0.0:22              0.0.0.0:*             LISTEN     1/systemd
tcp        0      0 127.0.0.53:53            0.0.0.0:*             LISTEN     3328/systemd-resolv
tcp        0      0 127.0.0.54:53            0.0.0.0:*             LISTEN     3328/systemd-resolv
tcp6       0      0 :::22                  :::*                  LISTEN     1/systemd
udp        0      0 127.0.0.54:53            0.0.0.0:*             LISTEN     3328/systemd-resolv
udp        0      0 127.0.0.53:53            0.0.0.0:*             LISTEN     3328/systemd-resolv
udp        0      0 172.31.22.193:68          0.0.0.0:*             LISTEN     3152/systemd-networ
udp        0      0 127.0.0.1:323             0.0.0.0:*             LISTEN     7656/chronyd
udp6       0      0 :::1323                :::*                  LISTEN     7656/chronyd
root@devops-vm:~#
```

- Stop an unused service and disable it from auto-start.

```

root@devops-vm:~# systemctl status apache2
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/apache2.service; enabled; preset: enabled)
   Active: active (running) since Thu 2026-01-29 08:17:48 UTC; 1min 0s ago
     Docs: https://httpd.apache.org/docs/2.4/
      Main PID: 9910 (apache2)
        Tasks: 55 (limit: 1008)
       Memory: 5.3M (peak: 5.6M)
          CPU: 41ms
        CGroup: /system.slice/apache2.service
                  └─9910 /usr/sbin/apache2 -k start
                     ├─9912 /usr/sbin/apache2 -k start
                     ├─9913 /usr/sbin/apache2 -k start

Jan 29 08:17:48 devops-vm systemd[1]: Starting apache2.service - The Apache HTTP Server...
Jan 29 08:17:48 devops-vm systemd[1]: Started apache2.service - The Apache HTTP Server.
root@devops-vm:~# 

```

```

root@devops-vm:~# sudo systemctl stop apache2
sudo systemctl disable apache2
Synchronizing state of apache2.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install disable apache2
Removed "/etc/systemd/system/multi-user.target.wants/apache2.service".
root@devops-vm:~# 

```

- Configure ufw firewall to allow only SSH and HTTP.

Commands Hint: netstat -tuln, systemctl disable, ufw enable, ufw allow ssh

```

root@devops-vm:~# sudo ufw allow ssh
sudo ufw allow http
sudo ufw enable
sudo ufw status
Rules updated
Rules updated (v6)
Rules updated
Rules updated (v6)
Command may disrupt existing ssh connections. Proceed with operation (y|n)? y
Firewall is active and enabled on system startup
Status: active

To                         Action      From
--                         ----
22/tcp                      ALLOW      Anywhere
80/tcp                      ALLOW      Anywhere
22/tcp (v6)                 ALLOW      Anywhere (v6)
80/tcp (v6)                 ALLOW      Anywhere (v6)

root@devops-vm:~# 

```

UFW is host-level

UFW is a **frontend for iptables / nftables**

It controls:

- Incoming traffic
- Outgoing traffic
- Ports (80, 443, 22, etc.)
- Protocols (TCP / UDP)
- Source IPs

How UFW is used in REAL production

- ◆ Typical production setup (Cloud)

| Layer | Tool |
|-------------------|---------------------------------------|
| Network perimeter | AWS Security Groups / Azure NSG |
| Subnet level | NACL |
| Host level | UFW (optional but recommended) |

App level Auth, TLS, WAF

- 📌 UFW is a **second line of defense**

When companies **ENABLE UFW** in prod

- ✓ Bastion hosts
- ✓ Database servers
- ✓ Jenkins servers
- ✓ On-prem VMs
- ✓ Critical VMs with SSH exposure

Lab 7: Working with Vim & Filters

Objective: Use **vim** and shell filters effectively.

Tasks:

- Open a file in **vim**, edit text, and save changes.

```
root@devops-vm:~# vi testfile
root@devops-vm:~# █
```

Vim basics

- Insert: **i**
- Save: **:w**

- Exit: `:q`
- Save & exit: `:wq`
- Use filters: extract all error lines from `/var/log/syslog` using `grep`.

```
root@devops-vm:~# grep -i error /var/log/syslog
2026-01-29T07:23:03.919782+00:00 ip-172-31-22-193 systemd[1]: apport-autoreport.path - Process error reports when automatic reporting is enabled (file
watch) was skipped because of an unmet condition check (ConditionPathExists=/var/lib/apport/autoreport).
2026-01-29T07:23:03.919792+00:00 ip-172-31-22-193 systemd[1]: apport-autoreport.timer - Process error reports when automatic reporting is enabled (tim
er based) was skipped because of an unmet condition check (ConditionPathExists=/var/lib/apport/autoreport).
2026-01-29T07:23:03.919792+00:00 ip-172-31-22-193 kernel: RAS: Correctable Errors collector initialized.
2026-01-29T07:23:05.909243+00:00 ip-172-31-22-193 amazon-ssm-agent.amazon-ssm-agent[968]: Error occurred fetching the seelog config file path: open /
etc/amazon/ssm/seelog.xml: no such file or directory
2026-01-29T07:23:05.910125+00:00 ip-172-31-22-193 amazon-ssm-agent.amazon-ssm-agent[968]: 2026-01-29 07:23:05.9093 WARN Error adding the directory '/e
tc/amazon/ssm' to watcher: no such file or directory
2026-01-29T07:23:08.076306+00:00 ip-172-31-22-193 amazon-ssm-agent.amazon-ssm-agent[968]: 2026-01-29 07:23:06.1119 WARN EC2RoleProvider Failed to conn
ect to Systems Manager with instance profile role credentials. Err: retrieved credentials failed to report to ssm. Error: EC2RoleRequestError: no EC2
instance role found
2026-01-29T07:23:08.076395+00:00 ip-172-31-22-193 amazon-ssm-agent.amazon-ssm-agent[968]: 2026-01-29 07:23:06.1559 ERROR EC2RoleProvider Failed to con
nect to Systems Manager with SSM role credentials. error calling RequestManagedInstanceRoleToken: AccessDeniedException: Systems Manager's instance ma
```

- Sort and count unique entries from a text file.
- Commands Hint: `vim`, `grep`, `sort`, `uniq`, `awk`, `cut`

```
root@devops-vm:~# sort testfile | uniq -c | sort -nr
      1 Hi This is vinod
root@devops-vm:~#
```

This command sorts a file, counts duplicate lines, and displays them in descending frequency order.

S → **U** → **S**

Sort → **Uniq** → **Sort**

Lab 8: Cron Jobs & Automation

Objective: Schedule automated tasks.

Tasks:

- Create a cron job that backs up `/etc` every day to `/backup/etc`.

```
root@devops-vm:~# sudo mkdir -p /backup/etc  
root@devops-vm:~#
```

```
crontab -l    # list cron jobs  
crontab -e    # edit cron jobs  
crontab -r    # remove cron jobs (dangerous)
```

- Verify scheduled jobs for a user.

```
0 1 * * * tar -czf /backup/etc/etc_$(date +\%F).tar.gz /etc >> /var/log/etc_backup.log 2>&1  
root@devops-vm:~#
```

- Redirect cron job output to a log file.

Commands Hint: `crontab -e`, `crontab -l`, `cat /var/log/syslog | grep CRON`

```
root@devops-vm:~# grep CRON /var/log/syslog  
2026-01-29T07:23:03.919961+00:00 ip-172-31-22-193 cron[598]: (CRON) INFO (pidfile fd = 3)  
2026-01-29T07:23:03.919966+00:00 ip-172-31-22-193 cron[598]: (CRON) INFO (Running @reboot jobs)  
2026-01-29T07:25:01.790573+00:00 ip-172-31-22-193 CRON[7740]: (root) CMD (command -v debian-sal > /dev/null && debian-sal 1 1)  
2026-01-29T07:35:01.811493+00:00 ip-172-31-22-193 CRON[7769]: (root) CMD (command -v debian-sal > /dev/null && debian-sal 1 1)  
2026-01-29T07:45:01.824604+00:00 ip-172-31-22-193 CRON[8407]: (root) CMD (command -v debian-sal > /dev/null && debian-sal 1 1)  
2026-01-29T07:55:01.863778+00:00 ip-172-31-22-193 CRON[8715]: (root) CMD (command -v debian-sal > /dev/null && debian-sal 1 1)  
2026-01-29T08:05:01.904786+00:00 ip-172-31-22-193 CRON[8766]: (root) CMD (command -v debian-sal > /dev/null && debian-sal 1 1)  
2026-01-29T08:15:01.989071+00:00 ip-172-31-22-193 CRON[8840]: (root) CMD (command -v debian-sal > /dev/null && debian-sal 1 1)  
2026-01-29T08:17:01.996182+00:00 ip-172-31-22-193 CRON[8951]: (root) CMD (cd / && run-parts --report /etc/cron.hourly)  
2026-01-29T08:25:01.024899+00:00 ip-172-31-22-193 CRON[10588]: (root) CMD (command -v debian-sal > /dev/null && debian-sal 1 1)  
2026-01-29T08:35:01.037068+00:00 ip-172-31-22-193 CRON[10616]: (root) CMD (command -v debian-sal > /dev/null && debian-sal 1 1)  
root@devops-vm:~#
```

Lab 9: Archiving & Compression

Objective: Manage file backups.

Tasks:

- Compress `/var/log` using `tar` and `gzip`.

```
root@devops-vm:~# tar -cvzf logs_backup.tar.gz /var/log
tar: Removing leading `/' from member names
/var/log/
/var/log/btmp
/var/log/private/
/var/log/lastlog
/var/log/kern.log
/var/log/sysstat/
/var/log/sysstat/sa29
/var/log/auth.log
/var/log/README
/var/log/wtmp
/var/log/chrony/
/var/log/apache2/
/var/log/apache2/access.log
/var/log/apache2/other_vhosts_access.log
/var/log/apache2/error.log
/var/log/cloud-init.log
/var/log/dpkg.log
```

- Extract the archive to /tmp/log_backup.

```
root@devops-vm:~# mkdir /tmp/log_backup
tar -xvzf logs_backup.tar.gz -C /tmp/log_backup
var/log/
var/log/btmp
var/log/private/
var/log/lastlog
var/log/kern.log
var/log/sysstat/
var/log/sysstat/sa29
var/log/auth.log
var/log/README
var/log/wtmp
var/log/chrony/
var/log/apache2/
var/log/apache2/access.log
var/log/apache2/other_vhosts_access.log
var/log/apache2/error.log
var/log/cloud-init.log
var/log/dpkg.log
```

- Verify file integrity after extraction.

Commands Hint: `tar -cvzf`, `tar -xvzf`, `gzip`, `gunzip`

```
var/log/nginx/error.log
root@devops-vm:~# ls /tmp/log_backup/var/log
README      apache2      auth.log    cloud-init-output.log  dmesg      kern.log    nginx      sysstat      wtmp
alternatives.log  apport.log   btmp       cloud-init.log     dpkg.log   landscape  private   ubuntu-advantage-apt-hook.log
amazon        apt         chrony     dist-upgrade    journal   lastlog   syslog   unattended-upgrades
root@devops-vm:~#
```

Lab 10: SSH, SCP & Remote Access

Objective: Secure remote connection and file transfer.

Tasks:

- Generate SSH key pair using `ssh-keygen`.
- Copy the public key to another VM for passwordless SSH.
- Transfer a file securely using `scp`.

Bonus: Use `ssh` to automate a remote command execution (e.g., `uptime` check).

Commands Hint: `ssh-keygen`, `ssh-copy-id`, `scp`, `ssh user@host`