DevOps Shack

250 Linux Scenario Based Interview Questions and Answers

Q1: How would you find all files larger than 100MB in a directory and its subdirectories?

Answer: Use the `find` command:

```
find /path/to/directory -type f -size +100M
```

  - `-type f`: Finds only files.
  - `-size +100M`: Specifies files larger than 100MB.

Q2: What does the command `chmod 755 file` do?

- Answer:
  - Changes the file's permissions to `755`.
  - `7`: Full permission for the owner (read, write, execute).
  - `5`: Read and execute for group and others.

Syntax breakdown:

```
r = 4, w = 2, x = 1 → rwx (7), r-x (5)
```

Q3: How do you recursively delete all `.log` files in a directory?

Answer:

```
find /path/to/directory -name "*.log" -type f -delete
```

  - `-name "*.log"`: Matches files with `.log` extension.
  - `-type f`: Targets only files.
  - `-delete`: Deletes the files found.

Q4: How do you create a tarball of `/var/log` and compress it with gzip?

Answer:

```
tar -czvf logs.tar.gz /var/log
```

  - `-c`: Creates a tarball.
  - `-z`: Compresses using gzip.
  - `-v`: Verbose output.
  - `-f logs.tar.gz`: Specifies the tarball file name.

Q5: How do you troubleshoot a network issue where a server is unreachable?

- Answer:

Check network connectivity:

```
ping <server_ip>
```

Verify DNS resolution:

```
nslookup <server_name>
```

Check routes:

```
ip route
```

Verify firewall settings:

```
sudo iptables -L
```

Test specific port availability:

```
nc -zv <server_ip> <port>
```

Q6: How do you permanently assign an IP address in Linux?

- **Answer: Edit the network configuration file:**

For RHEL/CentOS:

```
vi /etc/sysconfig/network-scripts/ifcfg-eth0
```

Add or update:

```
IPADDR=192.168.1.100
NETMASK=255.255.255.0
GATEWAY=192.168.1.1
```

Restart the network service:

```
sudo systemctl restart network
```

Q7: How do you identify a process consuming high CPU?

Answer:

  - ○ **Sort by CPU usage by pressing `Shift + P`.**

Alternatively, use:

```
ps -eo pid,ppid,cmd,%mem,%cpu --sort=-%cpu | head
```

Q8: How do you monitor disk I/O in real-time?

Answer:

```
iostat -x 2
```

- `-x`: **Shows extended statistics.**
- `2`: **Refreshes every 2 seconds.**

Q9: How do you kill a process by its name?

Answer:

```
pkill <process_name>
```

To verify:

```
pgrep <process_name>
```

Q10: How do you list all services and their statuses?

Answer:

```
systemctl list-units --type=service
```

Q11: How do you set up a basic firewall rule to allow SSH traffic?

Answer:

```
sudo ufw allow ssh
```

Check the status:

```
sudo ufw status
```

Q12: How do you check for unauthorized access attempts on your server?

Answer:

```
sudo cat /var/log/auth.log | grep "Failed password"
```

Q13: Write a script to check if a file exists and display its permissions.

Answer:

```
#!/bin/
FILE=$1
if [ -e "$FILE" ]; then
    echo "File exists."
    ls -l "$FILE" | awk '{print $1}'
else
    echo "File does not exist."
fi
```

- **Usage:** `./script.sh filename`

Q14: How would you write a script to archive logs older than 7 days?

Answer:

```
#!/bin/
find /var/log -type f -mtime +7 -exec tar -rvf old_logs.tar
{} \; -exec rm {} \;
```

   - `-mtime +7`: Finds files older than 7 days.
   - `-exec`: Executes `tar` to archive and `rm` to delete.

Q15: How do you add a new user with a specific home directory?

Answer:

```
sudo useradd -m -d /custom/home/username username
```

   - `-m`: Creates the home directory.
   - `-d`: Specifies the custom directory.

Q16: How do you change the default shell for a user?

Answer:

```
sudo usermod -s /bin/ username
```

Verify with:

```
cat /etc/passwd | grep username
```

Q17: What steps would you take to troubleshoot a slow server?

- **Answer:**

Check CPU usage:

```
Top
```

Analyze disk usage:

```
df -h
```

Inspect running processes:

```
ps aux --sort=-%cpu | head
```

Check I/O operations:

```
iostat -x 2
```

Verify memory usage:

```
free -m
```

Q18: How do you resolve a "permission denied" error for a script?

- **Answer:**

Check file permissions:

```
ls -l script.sh
```

Add execute permission:

```
chmod +x script.sh
```

Q19: How do you extend a mounted LVM partition?

- **Answer:**

Increase the logical volume:

```
sudo lvextend -L +10G /dev/mapper/vol_group-lv_name
```

Resize the filesystem:

```
sudo resize2fs /dev/mapper/vol_group-lv_name
```

Q20: How do you find the top 10 largest files in a directory?

Answer:

```
find /path/to/dir -type f -exec du -h {} + | sort -rh | head
-n 10
```

Backup and Restore

Q21: How do you back up a directory using `rsync`?

Answer:

```
rsync -av /source/directory /destination/directory
```

- `-a`: Archive mode.
- `-v`: Verbose output.

Q22: How do you restore files from a tar backup?

Answer:

```
tar -xvf backup.tar -C /restore/path
```

Q23: How do you rotate logs manually?

- **Answer:**

Use `logrotate`:

```
sudo logrotate /etc/logrotate.conf --force
```

Q24: How do you view the last 50 lines of a log file?

Answer:

```
tail -n 50 /var/log/syslog
```

Q25: How do you check which kernel modules are currently loaded?

Answer:

```
lsmod
```

Q26: How do you load a kernel module manually?

Answer:

```
sudo modprobe <module_name>
```

Q27: How do you lock a user account?

Answer:

```
sudo passwd -l username
```

Q28: How do you check the groups a user belongs to?

Answer:

```
groups username
```

Q29: How do you check the installed Linux distribution?

Answer:

```
lsb_release -a
```

Or:

```
cat /etc/os-release
```

Q30: How do you list installed packages in RHEL/CentOS?

Answer:

```
yum list installed
```

Q31: How do you list all running virtual machines in KVM?

Answer:

```
virsh list
```

Q32: How do you create a virtual machine in VirtualBox from the command line?

Answer:

```
VBoxManage createvm --name VMName --register
```

Q33: How do you check running Docker containers?

Answer:

```
docker ps
```

Q34: How do you restart a Kubernetes pod?

Answer:

```
kubectl rollout restart deployment <deployment_name>
```

Q35: How do you troubleshoot if a Linux system fails to boot?

- **Answer:**
    1. **Boot into recovery mode or single-user mode.**
    2. **Check logs in `/var/log/boot.log` or `/var/log/messages`.**

Verify the GRUB configuration:

```
cat /boot/grub2/grub.cfg
```

Check disk integrity:

```
fsck /dev/sdX
```

Reinstall GRUB if required:

```
grub2-install /dev/sdX
```

Q36: What is the role of the `init` system in Linux?

- **Answer:**
    - **The `init` system is the first process started by the kernel after booting.**
    - **It initializes the system by starting necessary services and managing runlevels (or targets in `systemd`).**

Q37: How do you check the open ports on a Linux server?

Answer:

```
sudo netstat -tuln
```

Or using `ss`:

```
ss -tuln
```

Q38: How do you add a persistent static route in Linux?

- **Answer:**
    - **Edit the network configuration file:**

RHEL/CentOS:

```
vi /etc/sysconfig/network-scripts/route-eth0
```

Add:

```
192.168.2.0/24 via 192.168.1.1 dev eth0
```

Restart the network service:

```
sudo systemctl restart network
```

Q39: How do you list all installed packages on an Ubuntu system?

Answer:

```
dpkg --get-selections
```

Q40: How do you remove a package along with its configuration files in Debian/Ubuntu?

Answer:

```
sudo apt-get purge <package_name>
```

Q41: How do you check for disk usage by each directory in the current path?

Answer:

```
du -sh *
```

Q42: How do you create and mount an ext4 filesystem?

- **Answer:**

Create the filesystem:

```
mkfs.ext4 /dev/sdX
```

Mount the filesystem:

```
mount /dev/sdX /mnt
```

Q43: How do you find out which process is using the most memory?

Answer:

```
ps aux --sort=-%mem | head
```

Q44: How do you monitor live network traffic on an interface?

Answer:

```
sudo tcpdump -i eth0
```

Q45: How do you change the priority of a running process?

- **Answer:**

Use the `renice` command:

```
sudo renice -n 10 -p <PID>
```

  - `10`: **New priority value.**

Q46: How do you restart a failed systemd service?

Answer:

```
sudo systemctl restart <service_name>
```

Q47: How do you generate an SSH key pair?

Answer:

```
ssh-keygen -t rsa -b 4096 -C "your_email@example.com"
```

  - `-t rsa`: **Specifies the key type.**
  - `-b 4096`: **Sets the key length.**

Q48: How do you prevent a user from logging in via SSH?

- **Answer:**

Add the user to `/etc/ssh/sshd_config`:

```
DenyUsers username
```

Restart the SSH service:

```
sudo systemctl restart sshd
```

Q49: How do you find specific error messages in a log file?

Answer:

```
grep "ERROR" /var/log/syslog
```

Q50: How do you monitor a log file in real-time?

Answer:

```
tail -f /var/log/syslog
```

Q51: How do you check the current Linux kernel version?

Answer:

```
uname -r
```

Q52: How do you remove a kernel module?

Answer:

```
sudo rmmod <module_name>
```

Q53: How do you create a group and add a user to it?

- **Answer:**

Create the group:

```
sudo groupadd groupname
```

Add the user:

```
sudo usermod -aG groupname username
```

Q54: How do you delete a user and their home directory?

Answer:

```
sudo userdel -r username
```

Q55: Write a script to print the number of files in a directory.

Answer:

```
#!/bin/
DIR=$1
if [ -d "$DIR" ]; then
    echo "Number of files in $DIR: $(ls -1 $DIR | wc -l)"
else
    echo "$DIR is not a directory."
fi
```

Q56: How do you test if a specific port on a remote server is open?

Answer:

```
nc -zv <server_ip> <port>
```

  - `-z`: Scans without sending data.
  - `-v`: Enables verbose output.

Q57: How do you flush the DNS cache in Linux?

- **Answer:**

For `systemd-resolved`:

```
sudo systemd-resolve --flush-caches
```

Verify:

```
sudo systemd-resolve --statistics
```

Q58: How do you check which services are enabled to start at boot?

Answer:

```
systemctl list-unit-files --type=service | grep enabled
```

Q59: How do you stop a service and ensure it doesn't start at boot?

Answer:

```
sudo systemctl stop <service_name>
sudo systemctl disable <service_name>
```

Q60: How do you check memory usage in Linux?

Answer:

```
free -m
```

- **Or using `top` or `htop` for a real-time view.**

Q61: How do you identify zombie processes?

Answer:

```
ps aux | grep 'Z'
```

- **A zombie process will have a status of `Z`.**

Q62: Write a script to monitor disk usage and send an email alert if usage exceeds 80%.

Answer:

```
#!/bin/
THRESHOLD=80
USAGE=$(df -h / | grep -v Filesystem | awk '{print $5}' |
sed 's/%//')
if [ "$USAGE" -gt "$THRESHOLD" ]; then
    echo "Disk usage is at ${USAGE}% on $(hostname)" | mail
-s "Disk Usage Alert" user@example.com
fi
```

Q63: Write a script to check if a service is running and restart it if it's not.

Answer:

```
#!/bin/
SERVICE=nginx
if ! systemctl is-active --quiet $SERVICE; then
    systemctl restart $SERVICE
    echo "$SERVICE was down and has been restarted."
else
    echo "$SERVICE is running."
fi
```

Q64: How do you unmount a busy filesystem?

- **Answer:**

Identify processes using the filesystem:

```
lsof | grep /path/to/mount
```

Kill those processes:

```
kill -9 <PID>
```

Unmount the filesystem:

```
sudo umount /path/to/mount
```

Q65: How do you create a swap file?

- **Answer:**

Create the file:

```
sudo dd if=/dev/zero of=/swapfile bs=1G count=2
```

Set permissions:

```
sudo chmod 600 /swapfile
```

Set up the swap space:

```
sudo mkswap /swapfile
sudo swapon /swapfile
```

Make it persistent:

```
echo '/swapfile none swap sw 0 0' | sudo tee -a /etc/fstab
```

Q66: How do you check for failed login attempts?

Answer:

```
sudo grep "Failed password" /var/log/auth.log
```

Q67: How do you restrict a user to their home directory using SSH?

- **Answer:**

Edit `/etc/ssh/sshd_config`**:**

```
Match User username
    ChrootDirectory /home/username
    AllowTCPForwarding no
    X11Forwarding no
```

Restart the SSH service:

```
sudo systemctl restart sshd
```

Q68: How do you take a snapshot of an LVM volume?

- **Answer:**

Create a snapshot:

```
sudo lvcreate --size 1G --snapshot --name snap_name
/dev/vol_group/lv_name
```

Mount the snapshot (optional):

```
sudo mount /dev/vol_group/snap_name /mnt
```

Q69: How do you schedule a daily backup with `cron`?

- **Answer:**

Edit the cron jobs:

```
crontab -e
```

Add the job:

```
0 2 * * * tar -czf /backup/$(date +\%F).tar.gz /data
```

Q70: How do you compress log files older than 30 days?

Answer:

```
find /var/log -type f -mtime +30 -exec gzip {} \;
```

Q71: How do you rotate logs for a custom application?

- **Answer:**

Create a logrotate configuration file:

```
sudo vi /etc/logrotate.d/custom_app
```

Add the configuration:

```
/var/log/custom_app/*.log {
    daily
    rotate 7
    compress
    missingok
    notifempty
}
```

Test the configuration:

```
sudo logrotate -d /etc/logrotate.d/custom_app
```

Q72: How do you list all available kernel versions?

Answer:

```
dpkg --list | grep linux-image
```

Q73: How do you update the Linux kernel?

- **Answer:**

For Debian/Ubuntu:

```
sudo apt-get update
sudo apt-get upgrade linux-image-$(uname -r)
```

Q74: How do you update all installed packages on a CentOS system?

Answer:

```
sudo yum update
```

Q75: How do you check dependencies for a package in Ubuntu?

Answer:

```
apt-cache depends <package_name>
```

Q76: How do you configure a static IP address on a Linux server?

- **Answer:**
  - **For RHEL/CentOS:**

Edit the network configuration file:

```
sudo vi /etc/sysconfig/network-scripts/ifcfg-eth0
```

Add or update:

makefile

```
BOOTPROTO=static
IPADDR=192.168.1.100
NETMASK=255.255.255.0
GATEWAY=192.168.1.1
DNS1=8.8.8.8
```

Restart the network:

```
sudo systemctl restart network
```

Q77: How do you check the default gateway on a Linux system?

Answer:

```
ip route | grep default
```

Q78: How do you find the parent process of a given process?

Answer:

```
ps -o ppid= -p <PID>
```

Q79: How do you kill all processes owned by a specific user?

Answer:

```
sudo pkill -u <username>
```

Q80: How do you generate a CPU usage report over time?

Answer:

```
sar -u 1 10
```

- `-u`: CPU usage.
- `1 10`: Sample every 1 second for 10 intervals.

Q81: How do you monitor real-time I/O usage per process?

Answer:

```
iotop
```

Q82: Write a script to display the top 5 largest files in a directory.

Answer:

```
#!/bin/
du -ah $1 | sort -rh | head -n 5
```

Q83: Write a script to automate user creation and password assignment.

Answer:

```
#!/bin/
USER=$1
PASS=$2
sudo useradd -m $USER
echo "$USER:$PASS" | sudo chpasswd
echo "User $USER created with the given password."
```

Q84: How do you repair a corrupted filesystem?

- **Answer:**

Unmount the filesystem:

```
sudo umount /dev/sdX
```

Run `fsck`:

```
sudo fsck -y /dev/sdX
```

Q85: How do you check the inode usage on a filesystem?

Answer:

```
df -i
```

Q86: How do you disable root login over SSH?

- **Answer:**

Edit the SSH configuration file:

```
sudo vi /etc/ssh/sshd_config
```

Update or add:

perl

```
PermitRootLogin no
```

Restart the SSH service:

```
sudo systemctl restart sshd
```

Q87: How do you configure a Linux firewall to allow only HTTP and SSH traffic?

Answer:

```
sudo ufw allow ssh
sudo ufw allow http
sudo ufw enable
```

Q88: How do you schedule a weekly backup of the `/home` directory?

- **Answer:**

Create a backup script:

```
vi /usr/local/bin/backup.sh
```

Add:

```
#!/bin/
tar -czf /backup/home_$(date +%F).tar.gz /home
```

Make the script executable:

```
chmod +x /usr/local/bin/backup.sh
```

Add to cron:

```
crontab -e
```

Add:

```
0 3 * * 0 /usr/local/bin/backup.sh
```

Q89: How do you restore files from a compressed tar archive?

Answer:

```
tar -xvzf backup.tar.gz -C /restore/path
```

Q90: How do you clear logs without deleting the file?

Answer:

```
sudo truncate -s 0 /var/log/syslog
```

Q91: How do you archive logs older than 60 days?

Answer:

```
find /var/log -type f -mtime +60 -exec tar -rvf old_logs.tar
{} \; -exec rm {} \;
```

Q92: How do you rebuild the initramfs image?

Answer:

```
sudo dracut -f
```

Q93: How do you blacklist a kernel module?

- **Answer:**

Add the module name to `/etc/modprobe.d/blacklist.conf`**:**

```
echo "blacklist <module_name>" | sudo tee -a
/etc/modprobe.d/blacklist.conf
```

Regenerate the initramfs:

```
sudo dracut -f
```

Q94: How do you check which package owns a specific file?

- **Answer:**

For Debian/Ubuntu:

```
dpkg -S /path/to/file
```

For RHEL/CentOS:

```
rpm -qf /path/to/file
```

Q95: How do you clean up cached package files in CentOS?

Answer:

```
sudo yum clean all
```

Q96: How do you list available virtual machines in KVM?

Answer:

```
virsh list --all
```

Q97: How do you take a snapshot of a running VM in KVM?

Answer:

```
virsh snapshot-create-as <vm_name> <snapshot_name>
```

Q98: How do you restart all Docker containers?

Answer:

```
docker restart $(docker ps -q)
```

Q99: How do you check the status of Kubernetes pods?

Answer:

```
kubectl get pods
```

Q100: How do you determine the Linux distribution and version?

Answer:

```
lsb_release -a
```

Or:

```
cat /etc/os-release
```

Q101: How do you test network connectivity using `ping` and set a timeout?

Answer:

```
ping -c 4 -W 2 <host>
```

  - `-c 4`: **Sends 4 packets.**
  - `-W 2`: **Sets a timeout of 2 seconds.**

Q102: How do you check active network connections on a system?

Answer:

```
netstat -an
```

Or:

```
ss -tunap
```

Q103: How do you schedule a process to run at a specific time using `at`?

- **Answer:**

Install `at` if not already available:

```
sudo apt install at
```

Use the `at` command:

```
echo "service apache2 restart" | at 02:00
```

Q104: How do you view the priority of a running process?

Answer:

```
ps -eo pid,ni,comm | grep <process_name>
```

  - **`ni`: Displays the process's nice value.**

Q105: How do you monitor memory usage for a specific process?

Answer:

```
pmap <PID> | grep total
```

- ○ `pmap`: Displays memory map of a process.

Q106: How do you find the top 5 CPU-consuming processes?

Answer:

```
ps -eo pid,ppid,cmd,%mem,%cpu --sort=-%cpu | head -n 5
```

Q107: Write a script to check if a directory exists and create it if not.

Answer:

```
#!/bin/
DIR=$1
if [ ! -d "$DIR" ]; then
    mkdir -p "$DIR"
    echo "Directory $DIR created."
else
    echo "Directory $DIR already exists."
fi
```

Q108: Write a script to calculate the factorial of a given number.

Answer:

```
#!/bin/
factorial=1
for (( i=1; i<=$1; i++ ))
do
    factorial=$((factorial * i))
done
echo "Factorial of $1 is $factorial"
```

Q109: How do you display disk usage for a specific directory in a human-readable format?

Answer:

```
du -sh /path/to/directory
```

Q110: How do you check for filesystem errors on a specific partition?

Answer:

```
sudo fsck /dev/sdX
```

Q111: How do you enforce password expiration for a user?

Answer:

```
sudo chage -M 30 username
```

- `-M 30`: **Sets the maximum number of days before password expiration.**

Q112: How do you set up a firewall rule to block all incoming traffic except SSH?

Answer:

```
sudo ufw default deny incoming
sudo ufw allow ssh
sudo ufw enable
```

Q113: How do you compress and back up a MySQL database?

Answer:

```
mysqldump -u root -p database_name | gzip >
database_backup.sql.gz
```

Q114: How do you restore a database from a compressed backup?

Answer:

```
gunzip < database_backup.sql.gz | mysql -u root -p
database_name
```

Q115: How do you view only the last 10 lines of multiple log files?

Answer:

```
tail -n 10 /var/log/*.log
```

Q116: How do you delete log files older than 90 days?

Answer:

```
find /var/log -type f -mtime +90 -exec rm -f {} \;
```

Q117: How do you enable or disable a kernel module at runtime?

- **Answer:**

Enable:

```
sudo modprobe <module_name>
```

Disable:

```
sudo rmmod <module_name>
```

Q118: How do you check the kernel boot parameters?

Answer:

```
cat /proc/cmdline
```

Q119: How do you list all available updates for an Ubuntu system?

Answer:

```
sudo apt list --upgradable
```

Q120: How do you install a package from a `.rpm` file in CentOS?

Answer:

```
sudo rpm -ivh package.rpm
```

Q121: How do you shut down a running VM in KVM?

Answer:

```
virsh shutdown <vm_name>
```

Q122: How do you configure a network bridge for a VM in KVM?

- **Answer:**

Edit the network configuration file:

```
sudo vi /etc/sysconfig/network-scripts/ifcfg-br0
```

Add bridge configuration:

makefile

```
DEVICE=br0
TYPE=Bridge
BOOTPROTO=dhcp
ONBOOT=yes
```

Q123: How do you check the logs of a specific Docker container?

Answer:

```
docker logs <container_id>
```

Q124: How do you delete all stopped Docker containers?

Answer:

```
docker container prune
```

Q125: How do you display the currently logged-in users?

Answer:

```
who
```

Q126: How do you set an environment variable permanently for a user?

- **Answer:**

Add the variable to the user's `.rc` file:

```
echo "export VAR_NAME=value" >> ~/.rc
```

Reload the shell:

```
source ~/.rc
```

Q127: How do you troubleshoot if a specific port is not accessible on a server?

- Answer:

Check if the service is running:

```
sudo systemctl status <service_name>
```

Verify if the port is open:

```
sudo netstat -tuln | grep <port>
```

Check firewall rules:

```
sudo ufw status
```

Test connectivity using `telnet` or `nc`:

```
telnet <server_ip> <port>
```

1. Inspect logs for errors in `/var/log`.

Q128: How do you configure DNS resolution in Linux?

- Answer:

Edit the `/etc/resolv.conf` file:

```
nameserver 8.8.8.8
nameserver 8.8.4.4
```

Save and test using:

```
nslookup google.com
```

Q129: How do you restart a service automatically if it crashes?

- **Answer:**

Create a systemd service file or edit an existing one:

```
sudo vi /etc/systemd/system/<service_name>.service
```

Add the following lines under `[Service]`**:**
makefile

```
Restart=always
RestartSec=5
```

Reload systemd and enable the service:

```
sudo systemctl daemon-reload
sudo systemctl enable <service_name>
```

Q130: How do you check all processes owned by a specific user?

Answer:

```
ps -u <username>
```

Q131: How do you monitor network bandwidth usage in real-time?

Answer:

```
iftop -i <interface>
```

Or:

```
nload <interface>
```

Q132: How do you generate a CPU usage report for the past hour?

Answer:

```
sar -u -s HH:MM -e HH:MM
```

- Replace `HH:MM` with the time range.

Q133: Write a script to check if a website is reachable.

Answer:

```
#!/bin/
WEBSITE=$1
if curl -Is $WEBSITE | grep "200 OK"; then
    echo "$WEBSITE is reachable."
else
    echo "$WEBSITE is not reachable."
fi
```

Q134: Write a script to back up a directory and log the output.

Answer:

```
#!/bin/
DIR=$1
BACKUP_DIR="/backup/$(date +%F)"
```

```
mkdir -p $BACKUP_DIR
tar -czf $BACKUP_DIR/backup.tar.gz $DIR >
/var/log/backup.log 2>&1
echo "Backup completed. Log available at
/var/log/backup.log."
```

Q135: How do you add a new disk to an existing Linux system without rebooting?

- **Answer:**

Scan for new disks:

```
sudo partprobe
```

Create a partition:

```
sudo fdisk /dev/sdX
```

Create a filesystem:

```
sudo mkfs.ext4 /dev/sdX1
```

Mount the partition:

```
sudo mount /dev/sdX1 /mnt
```

Q136: How do you increase the size of an existing filesystem?

- **Answer:**

Extend the logical volume:

```
sudo lvextend -L +10G /dev/vol_group/lv_name
```

Resize the filesystem:

```
sudo resize2fs /dev/vol_group/lv_name
```

Q137: How do you enable auditing on a file?

- **Answer:**

Install `auditd` if not already available:

```
sudo apt install auditd
```

Add a rule:

```
sudo auditctl -w /path/to/file -p rwxa -k file_audit
```

Check logs:

```
sudo ausearch -k file_audit
```

Q138: How do you disable password-based SSH authentication?

- **Answer:**

Edit `/etc/ssh/sshd_config`:

```
PasswordAuthentication no
```

Restart the SSH service:

```
sudo systemctl restart sshd
```

Q139: How do you take an incremental backup with `rsync`?

Answer:

```
rsync -av --delete /source /destination
```

Q140: How do you restore a specific file from a tar archive?

Answer:

```
tar -xvzf backup.tar.gz path/to/file
```

Q141: How do you find the most frequent error in a log file?

Answer:

```
grep "ERROR" /var/log/syslog | awk '{print $NF}' | sort |
uniq -c | sort -nr | head -n 1
```

Q142: How do you configure centralized log management using `rsyslog`?

- **Answer:**

On the client, edit `/etc/rsyslog.conf`:

```
*.* @logserver_ip:514
```

Restart the `rsyslog` service:

```
sudo systemctl restart rsyslog
```

Q143: How do you verify kernel parameters in Linux?

Answer:

```
sysctl -a
```

Q144: How do you temporarily modify a kernel parameter?

Answer:

```
sudo sysctl -w net.ipv4.ip_forward=1
```

Q145: How do you search for a package using `yum`?

Answer:

```
sudo yum search <package_name>
```

Q146: How do you install a package from a `.deb` file?

Answer:

```
sudo dpkg -i package.deb
sudo apt-get install -f
```

Q147: How do you clone a virtual machine in KVM?

Answer:

```
virt-clone --original <vm_name> --name <new_vm_name> --file
/var/lib/libvirt/images/new_vm.img
```

Q148: How do you check the virtualized environment of a Linux system?

Answer:

```
sudo dmidecode -s system-product-name
```

Q149: How do you delete unused Docker images?

Answer:

```
docker image prune
```

Q150: How do you deploy a Kubernetes pod using a YAML file?

Answer:

```
kubectl apply -f pod.yaml
```

Q151: How do you find the IP address of your Linux machine?

Answer:

```
ip addr show
```

Or for a specific interface:

```
ip addr show eth0
```

Q152: How do you capture network packets on a specific interface?

Answer:

```
sudo tcpdump -i eth0
```

Q153: How do you list all active and inactive services?

Answer:

```
systemctl list-units --type=service
```

Q154: How do you view the startup services and their statuses?

Answer:

```
sudo systemctl list-unit-files --type=service
```

Q155: How do you analyze disk I/O performance?

Answer:

```
iostat -d -x 2
```

- `-d`: **Displays device utilization.**
- `-x`: **Displays extended statistics.**

Q156: How do you display a summary of system performance?

Answer:

```
vmstat 1 5
```

- `1 5`: **Collects data every second for 5 iterations.**

Q157: Write a script to count the number of users currently logged in.

Answer:

```
#!/bin/
echo "Number of logged-in users: $(who | wc -l)"
```

Q158: Write a script to check disk usage and send an email alert if it exceeds 90%.

Answer:

```
#!/bin/
THRESHOLD=90
USAGE=$(df -h / | grep / | awk '{print $5}' | sed 's/%//')
if [ "$USAGE" -gt "$THRESHOLD" ]; then
    echo "Disk usage is at ${USAGE}% on $(hostname)" | mail
-s "Disk Usage Alert" admin@example.com
fi
```

Q159: How do you remove a mount point that is in use?

- **Answer:**

Identify processes using the mount point:

```
lsof | grep /mount/point
```

Kill the processes:

```
kill -9 <PID>
```

Unmount:

```
sudo umount /mount/point
```

Q160: How do you find disk partitions and their usage?

Answer:

```
lsblk
```

Q161: How do you add a user to the `sudo` group?

Answer:

```
sudo usermod -aG sudo username
```

Q162: How do you check for open ports on your system?

Answer:

```
sudo netstat -tuln
```

Or:

```
sudo ss -tuln
```

Q163: How do you set up an automatic daily backup using `cron`?

- **Answer:**

Create a script:

```
vi /usr/local/bin/daily_backup.sh
```

Add:

```
#!/bin/
tar -czf /backup/$(date +%F).tar.gz /data
```

Make it executable:

```
chmod +x /usr/local/bin/daily_backup.sh
```

Add to cron:

```
crontab -e
```

Add:

```
0 3 * * * /usr/local/bin/daily_backup.sh
```

Q164: How do you restore files from an incremental backup?

- **Answer:**

Extract the full backup first:

```
tar -xvzf full_backup.tar.gz -C /restore_path
```

Extract the incremental backups in order:

```
tar -xvzf incremental_backup.tar.gz -C /restore_path
```

Q165: How do you monitor log files in real-time for multiple files?

Answer:

```
multitail /var/log/file1 /var/log/file2
```

Q166: How do you rotate logs for a specific application?

- **Answer:**

Create a logrotate config:

```
sudo vi /etc/logrotate.d/app_name
```

Add:

```
/var/log/app_name/*.log {
    daily
    rotate 5
    compress
    missingok
    notifempty
}
```

Test:

```
sudo logrotate -d /etc/logrotate.d/app_name
```

Q167: How do you enable IP forwarding temporarily?

Answer:

```
sudo sysctl -w net.ipv4.ip_forward=1
```

Q168: How do you list loaded kernel modules with descriptions?

Answer:

```
lsmod | column -t
```

Q169: How do you remove a package and its dependencies in Ubuntu?

Answer:

```
sudo apt-get autoremove --purge <package_name>
```

Q170: How do you upgrade a specific package in CentOS?

Answer:

```
sudo yum update <package_name>
```

Q171: How do you create a snapshot of a virtual machine in KVM?

Answer:

```
virsh snapshot-create-as <vm_name> <snapshot_name>
```

Q172: How do you configure networking for a VM to use NAT in KVM?

- **Answer:**

Edit the `virsh` network configuration:

```
virsh net-edit default
```

1. **Ensure the `<forward mode='nat'/>` tag is present.**

Q173: How do you restart a Kubernetes deployment?

Answer:

```
kubectl rollout restart deployment <deployment_name>
```

Q174: How do you inspect the Docker network?

Answer:

```
docker network inspect <network_name>
```

Q175: How do you set a default editor for the terminal?

Answer:

```
export EDITOR=vim
```

To make it persistent:

```
echo "export EDITOR=vim" >> ~/.rc
source ~/.rc
```

Q176: How do you schedule a one-time job using `at`?

Answer:

```
echo "shutdown -h now" | at 23:00
```

Q177: How do you add a static route in Linux?

- **Answer:**

Add a temporary route:

```
sudo ip route add 192.168.2.0/24 via 192.168.1.1 dev eth0
```

1. **Add a persistent route:**

For RHEL/CentOS, edit `/etc/sysconfig/network-scripts/route-eth0` and add:

```
192.168.2.0/24 via 192.168.1.1
```

Q178: How do you troubleshoot high network latency?

- **Answer:**

Check connectivity with `ping`:

```
ping <destination>
```

Trace the network path with `traceroute`:

```
traceroute <destination>
```

Inspect network traffic:

```
sudo tcpdump -i eth0
```

Monitor interface statistics:

```
ifconfig eth0
```

Q179: How do you set CPU affinity for a process?

Answer:

```
taskset -c 0,1 <PID>
```

- This assigns the process to CPUs 0 and 1.

Q180: How do you view the system logs of a specific service?

Answer:

```
journalctl -u <service_name>
```

Q181: How do you check the uptime of a system?

Answer:

```
Uptime
```

Q182: How do you monitor disk throughput in real-time?

Answer:

```
iotop
```

Q183: Write a script to monitor a directory and log changes.

Answer:

```
#!/bin/
inotifywait -m /path/to/directory -e create -e delete -e
modify |
while read path action file; do
    echo "[$(date)] $file was $action in $path" >>
/var/log/dir_changes.log
done
```

Q184: Write a script to send an email alert if a service is down.

Answer:

```
#!/bin/
SERVICE=nginx
if ! systemctl is-active --quiet $SERVICE; then
    echo "$SERVICE is down on $(hostname)" | mail -s
"Service Alert" admin@example.com
fi
```

Q185: How do you mount a filesystem at boot?

- **Answer:**

Add an entry in `/etc/fstab`:

```
/dev/sdX1  /mnt/data  ext4  defaults  0  2
```

Test the entry:

```
sudo mount -a
```

Q186: How do you increase the size of a swap file?

- **Answer:**

Turn off the current swap file:

```
sudo swapoff /swapfile
```

Resize the swap file:

```
sudo dd if=/dev/zero of=/swapfile bs=1G count=4
```

Set it up again:

```
sudo mkswap /swapfile
sudo swapon /swapfile
```

Q187: How do you configure SSH key-based authentication?

- **Answer:**

Generate a key pair:

```
ssh-keygen -t rsa
```

Copy the public key to the remote server:

```
ssh-copy-id user@remote_server
```

Verify login:

```
ssh user@remote_server
```

Q188: How do you block an IP address using `iptables`?

Answer:

```
sudo iptables -A INPUT -s <IP_ADDRESS> -j DROP
```

Q189: How do you create a snapshot of an LVM volume?

- **Answer:**

Create the snapshot:

```
sudo lvcreate --size 1G --snapshot --name snap_name
/dev/vol_group/lv_name
```

Mount the snapshot:

```
sudo mount /dev/vol_group/snap_name /mnt
```

Q190: How do you restore a system from a tar backup?

Answer:

```
tar -xvzf backup.tar.gz -C /
```

Q191: How do you configure remote logging using `rsyslog`?

- **Answer:**

On the client machine, edit `/etc/rsyslog.conf`:

```
*.* @<log_server_ip>:514
```

Restart the `rsyslog` service:

```
sudo systemctl restart rsyslog
```

Q192: How do you analyze logs for the most common HTTP errors?

Answer:

```
cat /var/log/httpd/access.log | awk '{print $9}' | sort |
uniq -c | sort -nr
```

Q193: How do you persist kernel parameter changes?

- **Answer:**

Add the parameter to `/etc/sysctl.conf`:

```
net.ipv4.ip_forward=1
```

Apply the changes:

```
sudo sysctl -p
```

Q194: How do you display CPU information?

Answer:

```
cat /proc/cpuinfo
```

Q195: How do you verify the integrity of a package in CentOS?

Answer:

```
rpm -V <package_name>
```

Q196: How do you list dependencies for a package in Ubuntu?

Answer:

```
apt-cache depends <package_name>
```

Q197: How do you migrate a VM to another host in KVM?

Answer:

```
virsh migrate --live <vm_name>
qemu+ssh://<destination_host>/system
```

Q198: How do you resize a virtual disk in KVM?

- **Answer:**

Resize the disk:

```
qemu-img resize /path/to/disk.img +10G
```

1. **Extend the filesystem inside the VM.**

Q199: How do you update an image in a Kubernetes deployment?

Answer:

```
kubectl set image deployment/<deployment_name>
<container_name>=<new_image>
```

Q200: How do you clean up unused volumes in Docker?

Answer:

```
docker volume prune
```

Q201: How do you configure a bonded network interface in Linux?

- **Answer:**

Install the bonding module:

```
sudo modprobe bonding
```

1. **Configure the bond in `/etc/network/interfaces` (Debian/Ubuntu) or `/etc/sysconfig/network-scripts/ifcfg-bond0` (RHEL/CentOS).**

Q202: How do you troubleshoot DNS resolution issues?

- **Answer:**
    1. **Check `/etc/resolv.conf` for DNS server entries.**

Test resolution:

```
nslookup google.com
```

Use `dig` for detailed DNS queries:

```
dig google.com
```

Q203: How do you debug a hung process in Linux?

- Answer:

Check the state of the process:

```
ps -o stat= -p <PID>
```

Use `strace` to trace system calls:

```
strace -p <PID>
```

Q204: How do you enable a service to start on boot?

Answer:

```
sudo systemctl enable <service_name>
```

Q205: How do you analyze system load averages?

Answer: Use the `uptime` or `top` command:

```
uptime
```

  - Load averages represent the number of processes waiting for CPU over 1, 5, and 15 minutes.

Q206: How do you find disk latency using `iostat`?

Answer:

```
iostat -x
```

  - Check `await` and `svctm` columns for latency.

Q207: Write a script to find the largest file in a directory.

Answer:

```
#!/bin/
find $1 -type f -exec du -h {} + | sort -rh | head -n 1
```

Q208: Write a script to list all installed packages and save them to a file.

Answer:

```
#!/bin/
dpkg --get-selections > installed_packages.txt
```

Q209: How do you check the health of a hard drive?

Answer:

```
sudo smartctl -H /dev/sdX
```

Q210: How do you enable quotas on a filesystem?

- **Answer:**

Mount the filesystem with quota options:

```
sudo mount -o remount,usrquota,grpquota /dev/sdX /mnt
```

Create quota files:

```
sudo touch /mnt/aquota.user /mnt/aquota.group
sudo chmod 600 /mnt/aquota.*
sudo quotacheck -cug /mnt
```

Enable quotas:

```
sudo quotaon /mnt
```

Q211: How do you monitor failed login attempts?

Answer:

```
sudo grep "Failed password" /var/log/auth.log
```

Q212: How do you lock a user account?

Answer:

```
sudo passwd -l <username>
```

Q213: How do you verify the integrity of a backup file?

- **Answer:**

Generate a checksum:

```
md5sum backup.tar.gz
```

1. Compare it with the original checksum.

Q214: How do you back up a MySQL database with compression?

Answer:

```
mysqldump -u root -p database_name | gzip > backup.sql.gz
```

Q215: How do you set up log rotation for custom application logs?

- **Answer:**

Create a custom configuration file:

```
sudo vi /etc/logrotate.d/custom_app
```

Add:

```
/var/log/custom_app/*.log {
    daily
    rotate 7
    compress
    missingok
    notifempty
}
```

Q216: How do you clear logs securely?

Answer:

```
sudo shred -u /var/log/<logfile>
```

Q217: How do you view active IRQs in Linux?

Answer:

```
cat /proc/interrupts
```

Q218: How do you list the system's block devices?

Answer:

```
lsblk
```

Q219: How do you downgrade a package in Ubuntu?

Answer:

```
sudo apt-get install <package_name>=<version>
```

Q220: How do you check the changelog of an installed package?

Answer:

```
apt changelog <package_name>
```

Q221: How do you start a VM using `virsh`?

Answer:

```
virsh start <vm_name>
```

Q222: How do you display the console output of a VM?

Answer:

```
virsh console <vm_name>
```

Q223: How do you view resource usage of a Kubernetes pod?

Answer:

```
kubectl top pod <pod_name>
```

Q224: How do you build a Docker image from a Dockerfile?

Answer:

```
docker build -t <image_name>:<tag> .
```

Q225: How do you display system architecture?

Answer:

```
uname -m
```

Q226: How do you display the last reboot time of the system?

Answer:

```
who -b
```

Q227: How do you configure a VLAN in Linux?

Answer:

```
sudo ip link add link eth0 name eth0.100 type vlan id 100
sudo ip addr add 192.168.1.2/24 dev eth0.100
sudo ip link set dev eth0.100 up
```

Q228: How do you test the MTU size of a network?

Answer:

```
ping -M do -s 1472 <destination>
```

Q229: Write a script to monitor a process and restart it if it stops.

Answer:

```
#!/bin/
PROCESS="nginx"
if ! pgrep $PROCESS > /dev/null; then
    echo "$PROCESS is not running. Restarting..."
    sudo systemctl restart $PROCESS
fi
```

Q230: How do you migrate data from one disk to another?

Answer:

```
rsync -av /source/ /destination/
```

Q231: How do you prioritize a process using `nice`?

Answer:

```
nice -n 10 <command>
```

Q232: How do you set up incremental backups with `rsync`?

Answer:

```
rsync -av --link-dest=/previous/backup /source/ /new/backup/
```

Q233: How do you configure a Linux server as a router?

- **Answer:**

Enable IP forwarding:

```
sudo sysctl -w net.ipv4.ip_forward=1
```

Make it persistent:

```
echo "net.ipv4.ip_forward=1" | sudo tee -a /etc/sysctl.conf
```

Add routing rules using `iptables`:

```
sudo iptables -t nat -A POSTROUTING -o eth0 -j MASQUERADE
```

Q234: How do you capture only HTTP traffic using `tcpdump`?

Answer:

```
sudo tcpdump -i eth0 port 80
```

Q235: How do you set a process to run at a specific nice level permanently?

- **Answer:**

Use `nice` while starting the process:

```
nice -n 10 <command>
```

Use `renice` for running processes:

```
renice 10 -p <PID>
```

Q236: How do you restart all failed services?

Answer:

```
sudo systemctl list-units --failed | awk '{print $1}' |
xargs sudo systemctl restart
```

Q237: How do you monitor real-time system statistics?

Answer: Use the `dstat` command:

```
dstat
```

- It provides real-time statistics for CPU, memory, disk I/O, and more.

Q238: How do you monitor user activity on a Linux system?

Answer: Use the `w` command:

```
w
```

- It shows logged-in users and their activity.

Q239: Write a script to list all files modified in the last 7 days.

Answer:

```
#!/bin/
find $1 -type f -mtime -7
```

Q240: Write a script to backup logs and delete the originals after backup.

Answer:

```
#!/bin/
LOG_DIR="/var/log"
```

```
BACKUP_DIR="/backup"
mkdir -p $BACKUP_DIR
tar -czf $BACKUP_DIR/logs_$(date +%F).tar.gz $LOG_DIR/*.log
rm $LOG_DIR/*.log
```

Q241: How do you move a partition to a new disk?

- **Answer:**

Copy data using `dd`:

```
sudo dd if=/dev/sdX1 of=/dev/sdY1 bs=64K conv=noerror,sync
```

1. **Update `/etc/fstab` to reflect the new disk.**

Q242: How do you defragment a filesystem?

- **Answer:**

For `ext4` filesystems:

```
sudo e4defrag /path/to/filesystem
```

Q243: How do you list all open files by a specific process?

Answer:

```
lsof -p <PID>
```

Q244: How do you block specific IP ranges using `iptables`?

Answer:

```
sudo iptables -A INPUT -m iprange --src-range
192.168.1.0-192.168.1.255 -j DROP
```

Q245: How do you create a differential backup using `rsync`?

Answer:

```
rsync -av --compare-dest=/path/to/previous/backup /source/
/path/to/current/backup/
```

Q246: How do you restore permissions from a backup?

- **Answer:** Use `getfacl` and `setfacl`:

Backup permissions:

```
getfacl -R /path/to/directory > permissions.acl
```

Restore permissions:

```
setfacl --restore=permissions.acl
```

Q247: How do you filter logs for a specific date range?

Answer:

```
awk '/2025-01-20/,/2025-01-21/' /var/log/syslog
```

Q248: How do you monitor changes to a log file?

Answer: Use `tail` with `-f`:

```
tail -f /var/log/syslog
```

Q249: How do you list all currently loaded kernel modules with their sizes?

Answer:

```
lsmod
```

Q250: How do you remove a kernel module that’s in use?

- **Answer:**

Identify dependent processes:

```
lsmod | grep <module_name>
```

Stop dependent processes or unload dependencies first:

```
sudo modprobe -r <module_name>
```