Linux Commands Cheat Sheet for DevOps & DevSecOps

1. System Information & Monitoring

```
uname -a                    # Show system information
cat /etc/os-release         # OS version details
uptime                      # Show system uptime
whoami                      # Current logged-in user
hostname                    # Display hostname
top                         # Real-time process monitoring
htop                        # Interactive process viewer (if installed)
vmstat 1                    # System performance (CPU, memory, IO)
free -h                     # Memory usage
df -h                       # Disk space usage
du -sh *                    # Directory size summary
iostat -xz 1                # CPU, I/O statistics (requires sysstat)
sar -u 1 3                  # CPU utilization over time
lscpu                       # CPU architecture details
lsblk                       # List block storage devices
lsusb                       # List USB devices
lspci                       # List PCI devices
```

2. User & Permission Management

```
id                          # Display current user ID and groups
who                         # Show logged-in users
w                           # Detailed user activity
adduser <username>          # Create new user
passwd <username>           # Set/Change user password
usermod -aG <group> <user># Add user to group
groups <username>           # Show groups of a user
chmod 755 file              # Change file permissions
chown user:group file       # Change file owner and group
sudo -l                     # List sudo privileges
visudo                      # Edit sudoers file securely
```

3. File & Directory Management

```
pwd                         # Print working directory
ls -l                       # List files with details
ls -lh                      # Human-readable sizes
ls -a                       # Show hidden files
tree                        # Directory tree (if installed)
cd /path/to/dir             # Change directory
cp file1 file2              # Copy file
mv file1 file2              # Move/Rename file
rm file                     # Remove file
rm -rf dir                  # Remove directory recursively
mkdir dir                   # Create directory
touch file                  # Create empty file
find / -name file.txt       # Find file by name
locate file.txt             # Find file (needs updatedb run)
```

4. Text Viewing & Editing

```
cat file                    # Show file contents
tac file                    # Show file contents in reverse
less file                   # View file with navigation
more file                   # View file page by page
head -n 20 file             # First 20 lines
tail -n 50 file             # Last 50 lines
tail -f logfile             # Stream logs in real-time
nano file                   # Edit file with nano editor
vi file                     # Edit file with vi/vim
```

5. Networking

```
ip a                    # Show IP addresses
ifconfig                # Show network interfaces (legacy)
ping google.com         # Test connectivity
curl http://example.com # Send HTTP request
wget http://example.com # Download file
netstat -tulnp          # Active listening ports
ss -tulwn               # Socket statistics
traceroute google.com   # Show network route
dig example.com         # DNS lookup
nslookup example.com    # DNS resolution
telnet host port        # Test port connectivity
nc -zv host port        # Netcat test port connectivity
iptables -L             # List firewall rules
ufw status              # Check UFW firewall status
```

6. Process & Job Control

```
ps aux                  # Show all processes
ps -ef | grep nginx     # Find specific process
kill -9 <pid>           # Kill process
jobs                    # Show background jobs
fg %1                   # Bring job to foreground
bg %1                   # Resume job in background
nohup command &         # Run command immune to hangups
systemctl status nginx  # Check service status
systemctl start nginx   # Start service
systemctl stop nginx    # Stop service
systemctl restart nginx # Restart service
systemctl enable nginx  # Enable service at boot
```

7. Package Management (Debian/Ubuntu)

```
apt update && apt upgrade -y  # Update system
apt install nginx -y          # Install package
apt remove nginx -y           # Remove package
dpkg -l | grep nginx          # List installed package
```

7. Package Management (RHEL/CentOS)

```
yum update -y                 # Update system
yum install nginx -y          # Install package
yum remove nginx -y           # Remove package
rpm -qa | grep nginx          # List installed package
```

8. Logs & Troubleshooting

```
journalctl -xe                # View system logs
journalctl -u nginx           # Logs for nginx service
dmesg | tail -20              # Kernel ring buffer
cat /var/log/syslog           # System logs (Debian/Ubuntu)
cat /var/log/messages         # System logs (RHEL/CentOS)
cat /var/log/auth.log         # Auth logs
cat /var/log/secure           # Security logs (RHEL)
```

9. Archiving & Compression

```
tar -cvf archive.tar file1 file2  # Create tar archive
tar -xvf archive.tar              # Extract tar archive
tar -czvf archive.tar.gz dir/     # Create compressed archive
tar -xzvf archive.tar.gz          # Extract compressed archive
gzip file                         # Compress file
gunzip file.gz                    # Decompress file
zip -r archive.zip dir/           # Create zip archive
unzip archive.zip                 # Extract zip
```

10. SSH & Secure Copy

```
ssh user@host                      # Connect to remote host
ssh -i key.pem user@host           # Connect with key
scp file user@host:/path/          # Copy file to remote
scp user@host:/path/file ./        # Copy file from remote
rsync -avz file user@host:/path/   # Sync files efficiently
```

11. Disk & Storage

```
df -h                              # Disk usage
du -sh *                           # Size of each directory
mount /dev/sdb1 /mnt               # Mount disk
umount /mnt                        # Unmount disk
lsblk                              # Show block devices
fdisk -l                           # List partitions
mkfs.ext4 /dev/sdb1                # Format disk
```

12. Security (DevSecOps Focus)

```
cat /etc/passwd                    # List users
cat /etc/shadow                    # User password hashes
chmod 600 file                     # Strict file permissions
find / -perm 4000                  # Find SUID files
grep "password" /etc/ssh/sshd_config   # Check SSH settings
sshd -t                            # Test SSH config
fail2ban-client status             # Check Fail2Ban
gpg --gen-key                      # Generate GPG key
openssl version                    # Check OpenSSL version
openssl s_client -connect host:443    # Test SSL/TLS connection
nmap -sV host                      # Scan services and versions
clamdscan file                     # Virus scan (if ClamAV installed)
```

13. Shell Scripting Essentials

```
#!/bin/bash
# Example script
echo "Hello DevOps"
for i in {1..5}; do
  echo "Iteration $i"
done
```

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

14. Performance & Debugging

```
strace -p <pid>                    # Trace system calls of process
lsof -i :8080                      # List process using port 8080
tcpdump -i eth0 port 80            # Capture network packets
dstat                              # System resource stats
iotop                              # Disk IO usage
```

15. Containers (Docker Basics)

```
docker ps                          # List running containers
docker images                      # List images
docker run -d nginx                # Run container
docker exec -it <id> bash          # Enter container
docker logs <id>                   # View logs
```

16. Kubernetes Basics

```
kubectl get pods                   # List pods
kubectl get svc                    # List services
kubectl describe pod <pod>         # Pod details
kubectl logs <pod>                 # Pod logs
kubectl exec -it <pod> -- bash     # Enter pod
```