# **Complete Linux Notes for DevOps**

## **1. Introduction to Linux**

Linux is an open-source, Unix-like operating system widely used in DevOps for server management, containerization, automation, and CI/CD pipelines.

### **Why Linux for DevOps?**

✅ Open-source and cost-effective  
✅ Highly secure and customizable  
✅ Extensive CLI support for automation  
✅ Popular for hosting Docker, Kubernetes, and Jenkins  
✅ Supports scripting (Bash, Python, etc.)

## **2. Basic Linux Commands**

### **File & Directory Management**

ls # List files in a directory

pwd # Print working directory

cd /path # Change directory

mkdir dir1 # Create a new directory

rm file1 # Remove a file

rmdir dir1 # Remove an empty directory

rm -rf dir1 # Remove a directory and its contents recursively

### **File Operations**

touch file1.txt # Create an empty file

echo "Hello" > file.txt # Write to a file

cat file.txt # View file contents

tac file.txt # View file in reverse

head -5 file.txt # View first 5 lines

tail -5 file.txt # View last 5 lines

cp file1.txt /tmp/ # Copy file

mv file1.txt /tmp/ # Move/Rename file

## **3. User & Permission Management**

### **User Management**

whoami # Check current user

id username # Display user ID and group ID

adduser devops # Add a new user

deluser devops # Delete a user

usermod -aG sudo devops # Add user to sudo group

### **File Permissions**

chmod 755 file # Change file permissions

chown user:group file # Change file owner

groups username # Show user groups

## **4. Process Management**

top # Display running processes

ps aux # Show all running processes

kill PID # Terminate a process

kill -9 PID # Force kill a process

systemctl restart nginx # Restart a service

## **5. Networking Commands**

ip a # Show IP addresses

ifconfig # Show network interfaces (deprecated)

ping 8.8.8.8 # Test network connectivity

netstat -tulnp # Show open ports

ss -tulnp # Show listening ports

curl -I example.com # Fetch HTTP headers

## **6. Package Management**

### **Debian-based (Ubuntu, Debian)**

apt update # Update package list

apt upgrade # Upgrade installed packages

apt install package-name # Install a package

apt remove package-name # Remove a package

### **RHEL-based (CentOS, Fedora)**

yum update # Update package list

yum install package-name # Install a package

yum remove package-name # Remove a package

## **7. Disk Management**

df -h # Show disk usage

lsblk # List block devices

mount /dev/sdb1 /mnt # Mount a partition

umount /mnt # Unmount a partition

## **8. Log Management**

tail -f /var/log/syslog # View system logs in real-time

dmesg | less # View boot messages

journalctl -u nginx.service # View logs for a specific service

## **9. SSH & Remote Access**

ssh user@remote\_host # Connect to remote host

scp file user@remote\_host:/path # Copy file to remote host

rsync -av /src/ user@remote:/dest/ # Sync files

## **10. Bash Scripting for Automation**

### **Simple Script**

#!/bin/bash

echo "Hello, DevOps!"

### **Loop Example**

#!/bin/bash

for i in {1..5}; do

echo "Iteration $i"

done

## **11. Docker Commands**

docker ps # List running containers

docker images # List available images

docker run -d -p 8080:80 nginx # Run Nginx container

docker stop container\_id # Stop a container

## **12. Kubernetes Commands**

kubectl get nodes # List cluster nodes

kubectl get pods # List running pods

kubectl apply -f deployment.yaml # Deploy an application

## **Conclusion**

Linux is a must-know skill for DevOps! Mastering commands, scripting, and automation will help streamline operations in DevOps workflows. 🚀 Let me know if you need additional topics! 😊