



Placement Empowerment Program
Cloud Computing and DevOps Centre

60 Days of DevOps Challenge

Day 1: Linux Basics - Commands, File System & Permissions

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This Proof of Concept (PoC) demonstrates the Linux Basics - Commands, File System & Permissions.

Challenge 1: List all files (including hidden ones) in your home directory and sort them by modification time.

```
monisha@linux-mint:~$ ls -laht ~
total 19M
-rw----- 1 monisha monisha 8.4K Jul  6 18:11 .xsession-errors
drwxr-x-- 18 monisha monisha 4.0K Jul  6 18:10 .
-rw----- 1 monisha monisha  55 Jul  6 18:10 .Xauthority
-rw----- 1 monisha monisha 9.6K Jul  5 16:30 .xsession-errors.old
drwxr-xr-x 2 monisha monisha 4.0K Jul  5 16:30 Pictures
drwxr-xr-x 6 monisha monisha 4.0K Jul  5 16:28 Downloads
-rw-rw-r-- 1 monisha monisha  66 Jul  5 15:39 .selected_editor
-rw----- 1 monisha monisha 4.0K Jul  5 15:39 .bash_history
-rw-rw-r-- 1 monisha monisha 26K Jul  5 15:33 disk_usage.png
drwx----- 17 monisha monisha 4.0K Jul  5 15:33 .cache
-rw-rw-r-- 1 monisha monisha 557 Jul  5 15:31 disk_pie.py
drwxr-xr-x 21 monisha monisha 4.0K Jul  5 15:26 .config
drwxrwxr-x 3 monisha monisha 4.0K Jul  5 12:37 LinuxExp
-rw-rw-r-- 1 monisha monisha 667 Jul  5 12:36 sysinfo.py
-rw-rw-r-- 1 monisha monisha 19M Jul  5 12:35 logs_backup.tar.gz
drwxr-xr-x 2 monisha monisha 4.0K Jul  5 11:31 Videos
-rw-rw-r-- 1 monisha monisha 2.8K Jul  5 11:21 sys_monitor_output.txt
drwxrwxr-x 4 monisha monisha 4.0K Jun 17 16:22 .linuxmint
-rw-rw-r-- 1 monisha monisha 245 Jun 17 16:12 .gtkrc-2.0
drwxrwxr-x 2 monisha monisha 4.0K Jun 17 16:12 .icons
drwxrwxr-x 2 monisha monisha 4.0K Jun 17 16:12 .themes
drwx----- 4 monisha monisha 4.0K Jun 17 16:06 .mozilla
-rw-rw-r-- 1 monisha monisha  27 Feb 26 08:00 .dmrc
-rw-rw-r-- 1 monisha monisha  10 Feb 24 14:55 .sudo_as_admin_successful
-rw-rw-r-- 1 monisha monisha 3.7K Feb 24 13:07 .bashrc
-rw-rw-r-- 1 monisha monisha 516 Feb 24 13:07 .gtkrc-xfce
-rw-rw-r-- 1 monisha monisha 807 Feb 24 13:07 .profile
-rw-rw-r-- 1 monisha monisha 220 Feb 24 13:07 .bash_logout
drwxr-xr-x 3 root root 4.0K Feb 24 13:07 ..
drwxr-xr-x 2 monisha monisha 4.0K Feb 24 07:44 Desktop
drwxr-xr-x 2 monisha monisha 4.0K Feb 24 07:44 Documents
drwxr-xr-x 2 monisha monisha 4.0K Feb 24 07:44 Music
drwxr-xr-x 2 monisha monisha 4.0K Feb 24 07:44 Public
drwxr-xr-x 2 monisha monisha 4.0K Feb 24 07:44 Templates
drwxr-xr-x 4 monisha monisha 4.0K Feb 24 07:44 .local
monisha@linux-mint:~$
```

Challenge 2: Create a directory named devops_challenge_day_1, navigate into it, and create an empty file named day1.txt.

```
monisha@linux-mint:~$ mkdir devops_challenge_day_1
monisha@linux-mint:~$ cd devops_challenge_day_1
monisha@linux-mint:~/devops_challenge_day_1$ touch day1.txt
monisha@linux-mint:~/devops_challenge_day_1$ cat day1.txt
monisha@linux-mint:~/devops_challenge_day_1$
```

Challenge 3: Change the permissions of day1.txt to allow only the owner to read and write, but no permissions for others.

Using `chmod 600 day1.txt`

```
monisha@linux-mint:~$ sudo du -sh /var/log
442M /var/log
monisha@linux-mint:~$ sudo du -sh /var/log/* | sort -h
0 /var/log/alternatives.log
0 /var/log/bootstrap.log
0 /var/log/btmp
0 /var/log/btmp.1
0 /var/log/faillog
0 /var/log/lastlog
0 /var/log/README
4.0K /var/log/alternatives.log.1
4.0K /var/log/cups-browsed
4.0K /var/log/dpkg.log.1
4.0K /var/log/gpu-manager.log
4.0K /var/log/mintsystem.log
4.0K /var/log/mintsystem.timestamps
4.0K /var/log/openvpn
4.0K /var/log/private
4.0K /var/log/samba
4.0K /var/log/speech-dispatcher
4.0K /var/log/ubuntu-system-adjustments-adjust-grub-title.log
4.0K /var/log/ubuntu-system-adjustments-start.log
4.0K /var/log/ubuntu-system-adjustments-stop.log
8.0K /var/log/fontconfig.log
8.0K /var/log/hp
24K /var/log/dmesg.1.gz
24K /var/log/dmesg.2.gz
24K /var/log/dmesg.3.gz
24K /var/log/dmesg.4.gz
32K /var/log/dpkg.log
40K /var/log/cups
44K /var/log/Xorg.0.log
44K /var/log/Xorg.0.log.old
52K /var/log/boot.log
60K /var/log/auth.log
76K /var/log/lightdm
88K /var/log/dmesg
88K /var/log/dmesg.0
100K /var/log/wtmp
104K /var/log/apt
124K /var/log/auth.log.1
288K /var/log/boot.log.1
```

Challenge 4: Find all files in /etc that were modified in the last 7 days.

```
monisha@linux-mint:~$ sudo adduser devops_user
info: Adding user 'devops user' ...
info: Selecting UID/GID from range 1000 to 59999 ...
info: Adding new group 'devops user' (1001) ...
info: Adding new user 'devops user' (1001) with group 'devops user (1001)' ...
info: Creating home directory '/home/devops_user' ...
info: Copying files from '/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for devops user
Enter the new value, or press ENTER for the default
  Full Name []: Monisha J R
    Room Number []: 133
    Work Phone []: 9080757884
    Home Phone []: 04326 27274
    Other []: 9965895283
Is the information correct? [Y/n] y
info: Adding new user 'devops user' to supplemental / extra groups 'users' ...
info: Adding user 'devops user' to group 'users' ...
monisha@linux-mint:~$ sudo usermod -aG sudo devops_user
monisha@linux-mint:~$ getent group sudo
sudo:x:27:monisha,devops user
monisha@linux-mint:~$ id devops user
uid=1001(devops user) gid=1001(devops user) groups=1001(devops user),27(sudo),100(users)
monisha@linux-mint:~$
```

Challenge 5: Write a one-liner command to find the most frequently used command in your shell history.

```
monisha@linux-mint:~$ sudo groupadd devops_team
monisha@linux-mint:~$ sudo usermod -aG devops_team devops_user
monisha@linux-mint:~$ groups devops_user
devops_user : devops_user sudo users devops_team
monisha@linux-mint:~$
```

Challenge 6: Change the permissions of day1.txt to allow only the owner to read and write, but no permissions for others.

```
monisha@linux-mint:~$ cd devops_challenge_day_1
monisha@linux-mint:~/devops_challenge_day_1$ chmod 600 day1.txt
monisha@linux-mint:~/devops_challenge_day_1$ ls -l day1.txt
-rw----- 1 monisha monisha 0 Jul  6 18:21 day1.txt
monisha@linux-mint:~/devops_challenge_day_1$ cd ..
monisha@linux-mint:~$
```

Challenge 7: Find all files in /etc that were modified in the last 7 days.

```
monisha@linux-mint:~$ find /etc -type f -mtime -7
/etc/gshadow
/etc/gshadow
/etc/cups/subscriptions.conf.0
/etc/cups/subscriptions.conf
find: '/etc/cups/ssl': Permission denied
find: '/etc/credstore.encrypted': Permission denied
/etc/group
find: '/etc/polkit-1/rules.d': Permission denied
/etc/subgid
/etc/ld.so.cache
/etc/subuid
find: '/etc/ssl/private': Permission denied
/etc/netplan/90-NM-627ac99f-abfd-4347-bad3-b2c05ae219de.yaml
/etc/netplan/90-NM-66b8d0be-b94b-4e31-9240-3186fdd60f89.yaml
/etc/group
/etc/passwd
/etc/mailcap
find: '/etc/credstore': Permission denied
/etc/shadow
/etc/passwd
monisha@linux-mint:~$
```

Challenge 8: Write a one-liner command to find the most frequently used command in your shell history.

```
monisha@linux-mint:~$ history | awk '{CMD[$2]++;} END {for (a in CMD) print CMD[a], a;}' | sort -nr | head -1
36 clear
monisha@linux-mint:~$
```