

## Assignment 3 - User & Group Management + File Security

### Part 1: User & Group Setup

1. Create the following users:

- alice
- bob
- charlie

```
ubuntu@ip-172-31-5-27: /home
ubuntu@ip-172-31-5-27:~$ sudo useradd -m alice
ubuntu@ip-172-31-5-27:~$ sudo useradd -m bob
ubuntu@ip-172-31-5-27:~$ sudo useradd -m charlie
ubuntu@ip-172-31-5-27:~$ cd /home
ubuntu@ip-172-31-5-27:/home$ ls
alice bob charlie test1 ubuntu uma
ubuntu@ip-172-31-5-27:/home$
```

2. Create a group called: devteam

```
ubuntu@ip-172-31-5-27:/home$ sudo groupadd devteam
ubuntu@ip-172-31-5-27:/home$ cat /etc/group
root:x:0:
daemon:x:1:
bin:x:2:
```

3. Add users alice and bob to the devteam group.

```
root@ip-172-31-5-27:~# usermod -aG devteam alice
root@ip-172-31-5-27:~# usermod -aG devteam bob
```

4. Set passwords for all users.

```
root@ip-172-31-5-27:~# passwd alice
New password:
Retype new password:
passwd: password updated successfully
root@ip-172-31-5-27:~# passwd bob
New password:
Retype new password:
passwd: password updated successfully
root@ip-172-31-5-27:~# passwd charlie
New password:
Retype new password:
passwd: password updated successfully
```

5. Verify: User IDs and group memberships using id and groups.

```

root@ip-172-31-5-27:~# id alice
uid=1004(alice) gid=1005(alice) groups=1005(alice),1008(devteam)
root@ip-172-31-5-27:~# id bob
uid=1005(bob) gid=1006(bob) groups=1006(bob),1008(devteam)
root@ip-172-31-5-27:~# id charlie
uid=1006(charlie) gid=1007(charlie) groups=1007(charlie)

```

```

root@ip-172-31-5-27:~# groups alice
alice : alice devteam
root@ip-172-31-5-27:~# groups bob
bob : bob devteam

```

## Part 2: File Ownership & Permissions

### 1. Create a directory: /opt/project

```

ubuntu@ip-172-31-5-27: ~/opt
ubuntu@ip-172-31-5-27:~$ mkdir opt
ubuntu@ip-172-31-5-27:~$ cd opt
ubuntu@ip-172-31-5-27:~/opt$ mkdir projectX
ubuntu@ip-172-31-5-27:~/opt$

```

### 2. Change ownership:

- Owner: alice
- Group: devteam

```

ubuntu@ip-172-31-5-27:~$ sudo chown -R alice opt
ubuntu@ip-172-31-5-27:~$ sudo chgrp -R devteam opt
ubuntu@ip-172-31-5-27:~$ ls -l
total 12
drwxrwxr-x 5 ubuntu ubuntu 4096 Jan 14 05:03 linux_lab_day1
drwxrwxr-x 3 ubuntu ubuntu 4096 Jan 13 09:14 linux_practice
drwxrwxr-x 3 alice devteam 4096 Jan 18 14:56 opt
ubuntu@ip-172-31-5-27:~$

```

### 3. Apply permissions such that: ○ Owner & group → full access ○ Others → no access

### 4. Verify permissions using: ls -l

```

ubuntu@ip-172-31-5-27:~$ sudo chmod 770 -R opt
ubuntu@ip-172-31-5-27:~$ ls -l
total 12
drwxrwxr-x 5 ubuntu ubuntu 4096 Jan 14 05:03 linux_lab_day1
drwxrwxr-x 3 ubuntu ubuntu 4096 Jan 13 09:14 linux_practice
drwxrwx--- 3 alice devteam 4096 Jan 18 14:56 opt
ubuntu@ip-172-31-5-27:~$

```

## Part 3: File Attributes (Security Hardening)

### 1. Create a file inside the directory: config.txt

```
ubuntu@ip-172-31-5-27:~$ touch config.txt
ubuntu@ip-172-31-5-27:~$ █
```

2. Make the file immutable so it cannot be deleted or modified accidentally.
3. Verify attributes using: lsattr
4. Attempt to delete or edit the file (observe behavior).

```
ubuntu@ip-172-31-5-27:~$ sudo chattr +i config.txt
ubuntu@ip-172-31-5-27:~$ lsattr config.txt
----i-----e----- config.txt
ubuntu@ip-172-31-5-27:~$ rm config.txt
rm: cannot remove 'config.txt': Operation not permitted
ubuntu@ip-172-31-5-27:~$ █
```