Users and group management: –

1) Create a user

```
arun@arun-ubuntu:~$ tail -4 /etc/passwd
user2:x:1002:1002::/home/user2:/bin/sh
newID:x:20230412:1003::/home/newID:/bin/sh
newGroup:x:20230411:12::/home/newGroup:/bin/sh
newuser:x:1003:1004::/home/newuser:/bin/sh
```

2) Create a user with account expiry date:

```
arun@arun-ubuntu:~$ sudo useradd -e 20230503 newuser2
arun@arun-ubuntu:~$
```

3) Create a user with specific user id.

```
arun@arun-ubuntu:~$ sudo useradd -u 2000 os4
[sudo] password for arun:
arun@arun-ubuntu:~$ tail -2 /etc/passwd
newuser2:x:1004:1005::/home/newuser2:/bin/sh
os4:x:2000:2000::/home/os4:/bin/sh
```

4) Create a user with specific user id and group id

```
arun@arun-ubuntu:~$ sudo useradd -u 20260401 -g 12 newgroup
arun@arun-ubuntu:~$ cat /etc/group
root:x:0:
daemon:x:1:
bin:x:2:
sys:x:3:
adm:x:4:syslog,arun
tty:x:5:
disk:x:6:
lp:x:7:
mail:x:8:
news:x:9:
```

5) Add a user to multiple groups

```
arun@arun-ubuntu:~$ sudo usermod -aG 1001, 1002, 1003 os6
```

6) Add a user with comments:

```
arun@arun-ubuntu:~$ tail -f /etc/passwd
gdm:x:128:134:Gnome Display Manager:/var/lib/gdm3:/bin/false
arun:x:1000:1000:Arun,,,:/home/arun:/bin/bash
newUser:x:1001:1001:New user crested:/home/new:/bin/sh
user2:x:1002:1002::/home/user2:/bin/sh
newID:x:20230412:1003::/home/newID:/bin/sh
newGroup:x:20230411:12::/home/newGroup:/bin/sh
newuser:x:1003:1004::/home/newuser:/bin/sh
newuser2:x:1004:1005::/home/newuser2:/bin/sh
os4:x:2000:2000::/home/os4:/bin/sh
newgroup:x:20260401:12::/home/newgroup:/bin/sh
```

7) Add user with home directory

```
arun@arun-ubuntu:~$ sudo usermod -d /home newGroup
arun@arun-ubuntu:~$ tail -1 /etc/passwd
newgroup:x:20260401:12::/home/newgroup:/bin/sh
```

8) Add normal user to sudo group

```
arun@arun-ubuntu:~$ sudo usermod -aG sudo newGroup
arun@arun-ubuntu:~$ groups newGroup
newGroup : man sudo
```

9) Verify the user belongs to sudo group

```
arun@arun-ubuntu:~$ sudo -l -U newGroup
Matching Defaults entries for newGroup on arun-ubuntu:
    env_reset, mail_badpass,
    secure_path=/usr/local/sbin\:/usr/local/bin\:/usr/sbin\:/usr/bin\:/sbin\:/bi
n\:/snap/bin,
    use_pty
```

10) Delete an existing user

```
arun@arun-ubuntu:~$ sudo userdel newGroup
arun@arun-ubuntu:~$ tail -3 /etc/passwd
newuser2:x:1004:1005::/home/newuser2:/bin/sh
os4:x:2000:2000::/home/os4:/bin/sh
newgroup:x:20260401:12::/home/newgroup:/bin/sh
```

11) Delete user even if he is still logged in

```
arun@arun-ubuntu:~$ sudo userdel -f operating 4
```

12) Delete user along with home directory

```
arun@arun-ubuntu:~$ sudo userdel -r -f homeuser
```

13) Change the home directory of user

```
arun@arun-ubuntu:~$ sudo usermod -d/home/newhome opearting3
```

14)   Change the primary group of a user

```
arun@arun-ubuntu:~$ sudo usermod -g arun operating3
arun@arun-ubuntu:~$ groups operating3
operating3 : arun
```

15) Lock and unlock users

```
arun@arun-ubuntu:~$ sudo passwd -l operating3
passwd: password expiry information changed.
```

```
arun@arun-ubuntu:~$ sudo passwd -S operating3
operating3 L 05/01/2023 0 99999 7 -1
```

16) Change login name and password

```
arun@arun-ubuntu:~$ sudo usermod -l operatingsystem3 operating3
arun@arun-ubuntu:~$ tail -2 /etc/passwd
newgroup:x:20260401:12::/home/newgroup:/bin/sh
operatingsystem3:x:2001:1000::/home/operating3:/bin/sh
arun@arun-ubuntu:~$ sudo passwd operatingsystem3
[sudo] password for arun:
New password:
Retype new password:
passwd: password updated successfully
```

17) Create a new group

```
arun@arun-ubuntu:~$ sudo groupadd -g 1122 group2
arun@arun-ubuntu:~$ tail-2 /etc/passwd
tail-2: command not found
arun@arun-ubuntu:~$ tail -2 /etc/passwd
newgroup:x:20260401:12::/home/newgroup:/bin/sh
operatingsystem3:x:2001:1000::/home/operating3:/bin/sh
```

18) Create group with custom GID

```
arun@arun-ubuntu:~$ sudo groupadd -r mysystemgroup
arun@arun-ubuntu:~$ tail -2 /etc/passwd
newgroup:x:20260401:12::/home/newgroup:/bin/sh
operatingsystem3:x:2001:1000::/home/operating3:/bin/sh
```

19) Create system group

```
arun@arun-ubuntu:~$ sudo groupadd -r mysystemgroup
arun@arun-ubuntu:~$ tail -2 /etc/passwd
newgroup:x:20260401:12::/home/newgroup:/bin/sh
operatingsystem3:x:2001:1000::/home/operating3:/bin/sh
```

20)   Change the name of the group

```
arun@arun-ubuntu:~$ sudo groupmod -n gp2 group2
arun@arun-ubuntu:~$ tail -2 /etc/passwd
newgroup:x:20260401:12::/home/newgroup:/bin/sh
operatingsystem3:x:2001:1000::/home/operating3:/bin/sh
```

21) Add and remove user to a group

Adding into a group

```
arun@arun-ubuntu:~$ sudo usermod -aG gp2 operatingsystem3
arun@arun-ubuntu:~$ groups operatingsystem3
operatingsystem3 : arun gp2
```

Removing from a group

```
arun@arun-ubuntu:~$ sudo gpasswd -d operatingsystem3 gp2
Removing user operatingsystem3 from group gp2
arun@arun-ubuntu:~$ groups operatingsystem3
operatingsystem3 : arun
```

22)   Delete a group

```
arun@arun-ubuntu:~$ sudo groupdel gp2
arun@arun-ubuntu:~$ tail /etc/passwd
gdm:x:128:134:Gnome Display Manager:/var/lib/gdm3:/bin/false
arun:x:1000:1000:Arun,,,:/home/arun:/bin/bash
newUser:x:1001:1001:New user crested:/home/new:/bin/sh
user2:x:1002:1002::/home/user2:/bin/sh
newID:x:20230412:1003::/home/newID:/bin/sh
newuser:x:1003:1004::/home/newuser:/bin/sh
newuser2:x:1004:1005::/home/newuser2:/bin/sh
os4:x:2000:2000::/home/os4:/bin/sh
newgroup:x:20260401:12::/home/newgroup:/bin/sh
operatingsystem3:x:2001:1000::/home/operating3:/bin/sh
```

Working with file permission: –

1) Create a file helloworld.c and write a line print helloworld.

```
arun@arun-ubuntu:~$ touch helloworld.c
arun@arun-ubuntu:~$ cat> helloworld.c
#include<stdio.h>
int main()
{
Printf("Hello World")'
return 0;
}
```

2)   Install gcc command

```
arun@arun-ubuntu:~$ sudo apt install gcc
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  gcc-11 libasan6 libc-dev-bin libc-devtools libc6-de
  libgcc-11-dev libhwasan0 libitm1 liblsan0 libnsl-de
  libubsan1 linux-libc-dev manpages-dev rpcsvc-proto
```

3)   Check the file permission and ownership information of the file helloworld.c

```
arun@arun-ubuntu:~$ ls -l helloworld.c
-rw-rw-r-- 1 arun arun 66 मई      1 15:00 helloworld.c
```

4)   Execute the file helloworld.c by setting the execution permission

```
Hello World
```

5)   Revoke the execution permission of the file helloworld.c

```
arun@arun-ubuntu:~$ chmod -xhelloworld
```

6) Change the owner of the file helloworld.c

```
arun@arun-ubuntu:~$ sudo chown temporary helloworld.c
chown: invalid user: 'temporary'
arun@arun-ubuntu:~$ ls -l helloworld.c
-rw-rw-r-- 1 arun arun 66 मई      1 15:00 helloworld.c
```

7) Change the group owner of the file helloworld.c

```
arun@arun-ubuntu:~$ sudo chown temporary helloworld.c
chown: invalid user: 'temporary'
arun@arun-ubuntu:~$ ls -l helloworld.c
-rw-rw-r-- 1 arun arun 66 मई      1 15:00 helloworld.c
```

RESULT AND CONCLUSION:-

Hence, password hashes were /etc/passwd stored in the file. Usermod, cat /etc/group(is used for show a list of existing groups, with membership displayed in the last field). Similar to /etc/passwd the file above, the file /etc/group contains group account information.

Therefore, the manage user and group account is the core part of Linux operating system. User management is a system to handle activities related to individuals' access to devices, software, and services.