

# User and Group management

To login as root user and add user.

```
Activities Terminal Apr 18 15:28
root@hitendra-VM: ~/snap

hitendra@hitendra-VM:~$ useradd Hits
useradd: Permission denied.
useradd: cannot lock /etc/passwd; try again later.
hitendra@hitendra-VM:~$ sudo su -
root@hitendra-VM:~# useradd Hits
```

To check user ID , Group ID

```
Activities Terminal Apr 18 15:31
root@hitendra-VM: ~/snap

root@hitendra-VM:~# id Hits
uid=1001(Hits) gid=1001(Hits) groups=1001(Hits)
root@hitendra-VM:~/snap# id hitendra
uid=1000(hitendra) gid=1000(hitendra) groups=1000(hitendra),4(adm),24(cdrom),27(sudo),30(dip),46(plugdev),122(lpadmin),134(lxd),135(sambashare)
```

To add user into existing group and create a directory for user.

```
root@hitendra-VM:~/snap# useradd -g Hits -s /bin/bash -c "Added user in Hits group" -m -d /snap/Hits2 Hits2
root@hitendra-VM:~/snap# id Hits2
uid=1002(Hits2) gid=1001(Hits) groups=1001(Hits)
```

To check all available users

```
Activities Terminal Apr 18 15:36
root@hitendra-VM: ~/snap

root@hitendra-VM:~/snap# cat /etc/passwd
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/bin/sync
games:x:5:60:games:/usr/games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
list:x:38:38:Mailng List Manager:/var/list:/usr/sbin/nologin
irc:x:39:39:ircd:/run/ircd:/usr/sbin/nologin
gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologin
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
systemd-network:x:100:102:systemd Network Management,,:/run/systemd:/usr/sbin/nologin
systemd-resolve:x:101:103:systemd Resolver,,:/run/systemd:/usr/sbin/nologin
messagebus:x:102:105:/:nonexistent:/usr/sbin/nologin
systemd-timesync:x:103:106:systemd Time Synchronization,,:/run/systemd:/usr/sbin/nologin
syslog:x:104:111:/:home/syslog:/usr/sbin/nologin
_apt:x:105:65534:/:nonexistent:/usr/sbin/nologin
tss:x:106:112:TPM software stack,,:/var/lib/tpm:/bin/false
uidd:x:107:115:/:run/uidd:/usr/sbin/nologin
systemd-oom:x:108:116:systemd Userspace OOM Killer,,:/run/systemd:/usr/sbin/nologin
tcpdump:x:109:117:/:nonexistent:/usr/sbin/nologin
avahi-autoipd:x:110:119:Avahi autoip daemon,,:/var/lib/avahi-autoipd:/usr/sbin/nologin
usbmux:x:111:46:usbmux daemon,,:/var/lib/usbmux:/usr/sbin/nologin
dnsmasq:x:112:65534:dnsmasq,,:/var/lib/misc:/usr/sbin/nologin
kernoops:x:113:65534:Kernel Oops Tracking Daemon,,:/usr/sbin/nologin
avahi:x:114:121:Avahi mDNS daemon,,:/run/avahi-daemon:/usr/sbin/nologin
cups-pk-helper:x:115:122:user for cups-pk-helper service,,:/home/cups-pk-helper:/usr/sbin/nologin
rtkit:x:116:123:RealtimeKit,,:/proc:/usr/sbin/nologin
Hits:x:1001:1001:/:home/Hits:/bin/sh
Hits2:x:1002:1001:Added user in Hits group:/snap/Hits2:/bin/bash
root@hitendra-VM:~/snap#
```

Delete user and its directory

```
Activities Terminal Apr 18 15:39
root@hitendra-VM: ~/snap

root@hitendra-VM:~/snap# userdel -r Hits2
userdel: Hits2 mail spool (/var/mail/Hits2) not found
root@hitendra-VM:~/snap# id Hits2
id: 'Hits2': no such user
root@hitendra-VM:~/snap#
```

To modify default group or add more groups for a user

```
Activities Terminal Apr 18 15:44
root@hitendra-VM: ~/snap

root@hitendra-VM:~/snap# id hitendra
uid=1000(hitendra) gid=1000(hitendra) groups=1000(hitendra),4(adm),24(cdrom),27(sudo),30(dip),46(plugdev),122(lpadmin),134(lxd),135(sambashare)
root@hitendra-VM:~/snap# usermod hitendra Hits
Usage: usermod [options] LOGIN

Options:
  -b, --badnames          allow bad names
  -c, --comment COMMENT   new value of the GECOS field
  -d, --home HOME_DIR     new home directory for the user account
  -e, --expiredate EXPIRE_DATE set account expiration date to EXPIRE_DATE
  -f, --inactive INACTIVE set password inactive after expiration
                           to INACTIVE
  -g, --gid GROUP         force use GROUP as new primary group
  -G, --groups GROUPS     new list of supplementary GROUPS
  -a, --append            append the user to the supplemental GROUPS
                           mentioned by the -G option without removing
                           the user from other groups
  -h, --help             display this help message and exit
  -l, --login NEW_LOGIN   new value of the login name
  -L, --lock             lock the user account
  -m, --move-home        move contents of the home directory to the
                           new location (use only with -d)
  -o, --non-unique        allow using duplicate (non-unique) UID
  -p, --password PASSWORD use encrypted password for the new password
  -R, --root CHROOT_DIR   directory to chroot into
  -P, --prefix PREFIX_DIR prefix directory where are located the /etc/* files
  -s, --shell SHELL       new login shell for the user account
  -u, --uid UID           new UID for the user account
  -U, --unlock            unlock the user account
  -v, --add-subuids FIRST-LAST add range of subordinate uids
  -V, --del-subuids FIRST-LAST remove range of subordinate uids
  -w, --add-subgids FIRST-LAST add range of subordinate gids
  -W, --del-subgids FIRST-LAST remove range of subordinate gids
  -Z, --selinux-user SEUSER new SELinux user mapping for the user account

root@hitendra-VM:~/snap# usermod hitendra Hits
```

```
Activities Terminal Apr 18 15:46
root@hitendra-VM: ~/snap

root@hitendra-VM:~/snap# usermod -g hitendra Hits
root@hitendra-VM:~/snap# id Hits
uid=1001(Hits) gid=1000(hitendra) groups=1000(hitendra)
```

Lock/Unlock user

```
Activities Terminal Apr 18 15:51
root@hitendra-VM: ~/snap

root@hitendra-VM:~/snap# usermod -L Hits
root@hitendra-VM:~/snap# usermod -U Hits
usermod: unlocking the user's password would result in a passwordless account.
You should set a password with usermod -p to unlock this user's password.
```

Create password for user

```
Activities Terminal Apr 18 15:53
root@hitendra-VM: ~/snap

root@hitendra-VM:~/snap# passwd Hits
New password:
BAD PASSWORD: The password fails the dictionary check - it is based on a dictionary word
Retype new password:
passwd: password updated successfully
root@hitendra-VM:~/snap#
```

Switching users from user to root and then from root to other user

```
Activities Terminal Apr 18 15:58
root@hitendra-VM: ~

hitendra@hitendra-VM:~$ sudo su -
[sudo] password for hitendra:
root@hitendra-VM:~# su - Hits
su: warning: cannot change directory to /home/Hits: No such file or directory
$ whoami
Hits
$
```

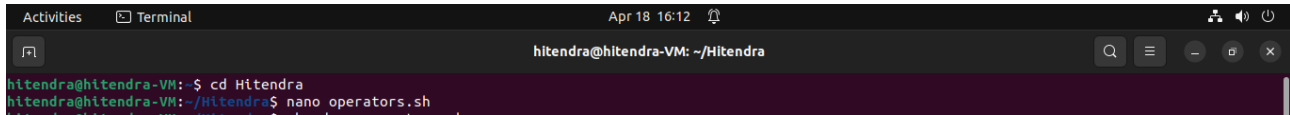
## Creating group and adding user into multiple groups

```
Activities Terminal Apr 18 16:02 root@hitendra-VM: ~
hitendra@hitendra-VM:~$ sudo su -
[sudo] password for hitendra:
root@hitendra-VM:~# groupadd Test
root@hitendra-VM:~# usermod -g Test Hits
root@hitendra-VM:~# id Hits
uid=1001(Hits) gid=1003(Test) groups=1003(Test)
root@hitendra-VM:~# usermod -G hitendra Hits
root@hitendra-VM:~# id Hits
uid=1001(Hits) gid=1003(Test) groups=1003(Test),1000(hitendra)
root@hitendra-VM:~#
```

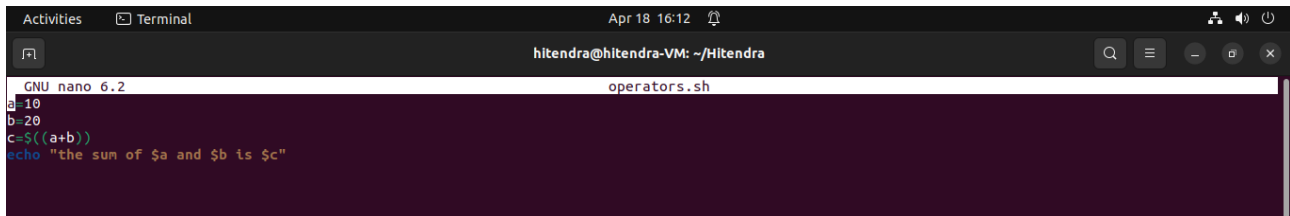
# Shell Scripting

## a. Use of operators- Arithmetic operators (program 1)

1. create .sh file and write code using nano editor.

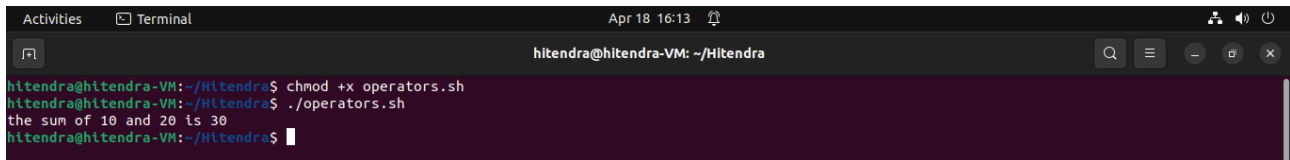


```
hitendra@hitendra-VM: ~/Hitendra
hitendra@hitendra-VM: ~/Hitendra$ cd Hitendra
hitendra@hitendra-VM: ~/Hitendra$ nano operators.sh
```



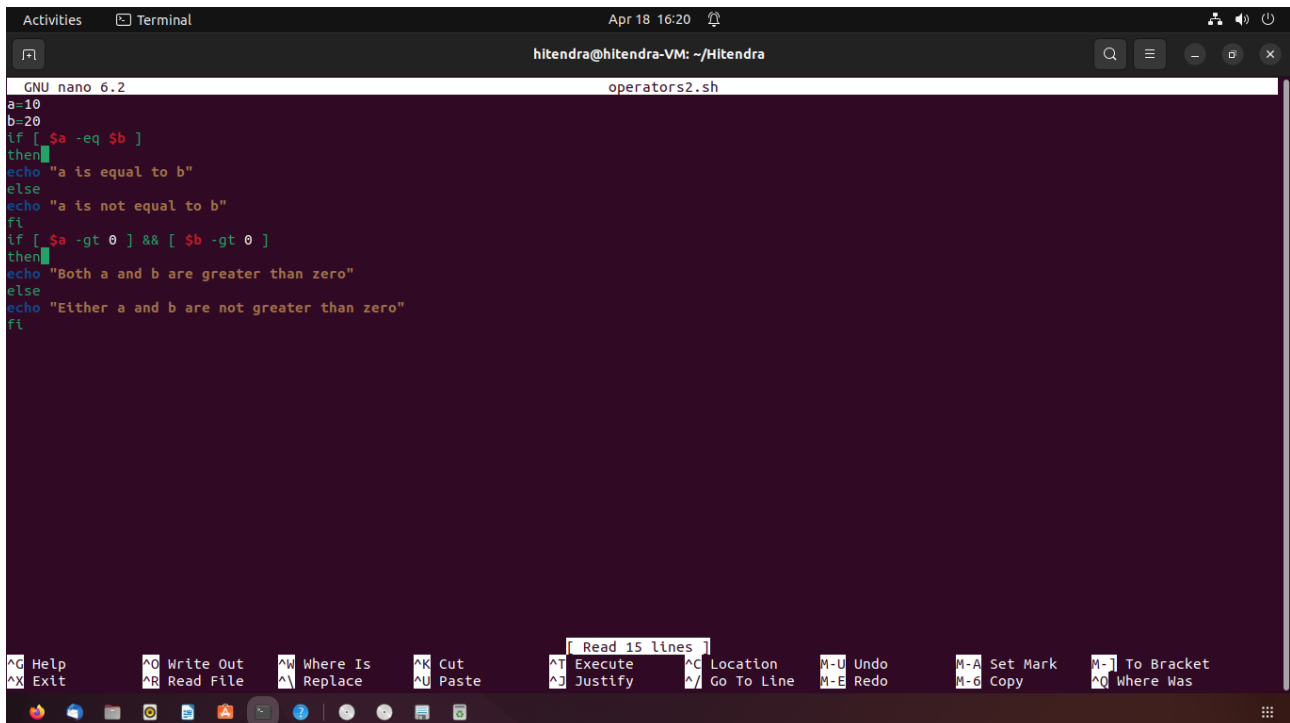
```
GNU nano 6.2 operators.sh
a=10
b=20
c=$((a+b))
echo "the sum of $a and $b is $c"
```

2. Make the operators.sh file executable and run the program



```
hitendra@hitendra-VM: ~/Hitendra$ chmod +x operators.sh
hitendra@hitendra-VM: ~/Hitendra$ ./operators.sh
the sum of 10 and 20 is 30
hitendra@hitendra-VM: ~/Hitendra$
```

## b. use of operator – Comparison operator (Program 2)



```
GNU nano 6.2 operators2.sh
a=10
b=20
if [ $a -eq $b ]
then
echo "a is equal to b"
else
echo "a is not equal to b"
fi
if [ $a -gt 0 ] && [ $b -gt 0 ]
then
echo "Both a and b are greater than zero"
else
echo "Either a and b are not greater than zero"
fi
```

Output:

```
Activities Terminal Apr 18 16:21 hitendra@hitendra-VM: ~/Hitendra
hitendra@hitendra-VM:~/Hitendra$ chmod +x operators2.sh
hitendra@hitendra-VM:~/Hitendra$ ./operators2.sh
a is not equal to b
Both a and b are greater than zero
hitendra@hitendra-VM:~/Hitendra$
```

c. Use of loops factorial calculation- For loop (Program - 3)

```
Activities Terminal Apr 18 16:31 hitendra@hitendra-VM: ~/Hitendra
GNU nano 6.2 factorial.sh
echo "Enter number to calculate its factorial "
read num
factorial=1
if [ $num -lt 0 ]
then
    echo "Please enter valid number"
elif [ $num -eq 0 ]
then
    echo "Factorial is 1"
else
    for ((i=1;i<=num;i++))
    do
        factorial=$((factorial * i))
    done
    echo "Factorial of $num is $factorial"
fi
```

Output

```
Activities Terminal Apr 18 16:31 hitendra@hitendra-VM: ~/Hitendra
hitendra@hitendra-VM:~/Hitendra$ nano factorial.sh
hitendra@hitendra-VM:~/Hitendra$ chmod +x factorial.sh
hitendra@hitendra-VM:~/Hitendra$ ./factorial.sh
Enter number to calculate its factorial
5
Factorial of 5 is 120
hitendra@hitendra-VM:~/Hitendra$
```