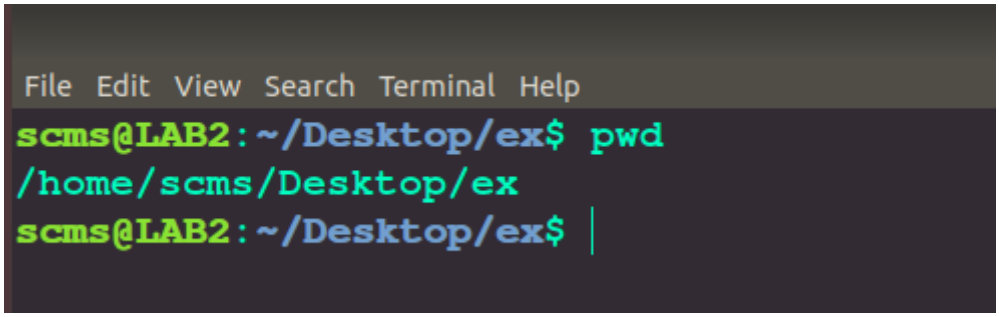
# Working with Directories

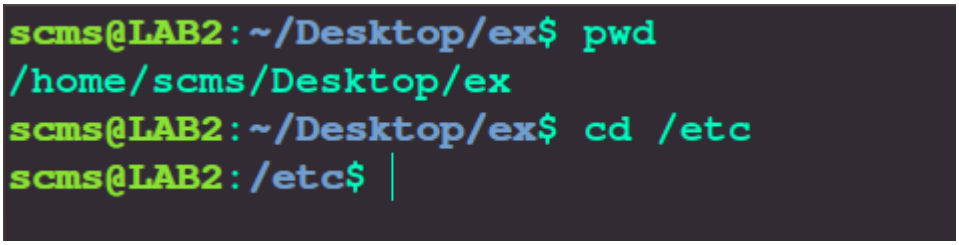
1. Display the current directory

COMMAND: pwd



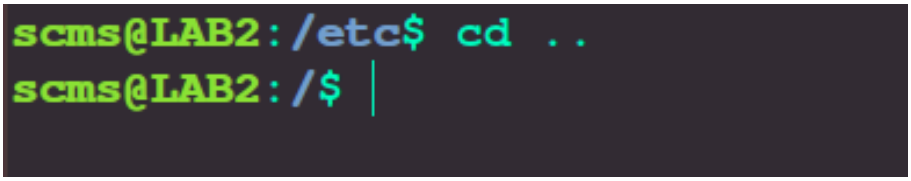

2. Change to /etc directory

COMMAND: cd /etc




3. Go to the parent directory of the current directory

COMMAND: cd ..




4. Go to the root directory

COMMAND: cd /

5. List the long listing of the root directory [detailed list of files]

COMMAND: ls -l

```
scms@LAB2:/etc$ ls -l
total 1200
drwxr-xr-x  3 root root     4096 Sep 16  2021 acpi
-rw-r--r--  1 root root     3028 Sep 16  2021 adduser.conf
drwxr-xr-x  2 root root    20480 Feb 21  2023 alternatives
-rw-r--r--  1 root root      401 May 29  2017 anacrontab
drwxr-xr-x  8 root root     4096 Oct 17 11:10 apache2
-rw-r--r--  1 root root      433 Oct  2  2017 apg.conf
drwxr-xr-x  6 root root     4096 Sep 16  2021 apm
drwxr-xr-x  3 root root     4096 Oct 17 11:01 apparmor
drwxr-xr-x  8 root root     4096 Oct 17 11:12 apparmor.d
drwxr-xr-x  4 root root     4096 Oct 17 11:07 apport
-rw-r--r--  1 root root      769 Apr  4  2018 appstream.conf
drwxr-xr-x  7 root root     4096 Feb 21  2023 apt
drwxr-xr-x  5 root root     4096 Feb 21  2023 authbind
drwxr-xr-x  3 root root     4096 Feb 21  2023 avahi
-rw-r--r--  1 root root     2319 Apr  5  2018 bash.bashrc
-rw-r--r--  1 root root       45 Apr  2  2018 bash_completion
drwxr-xr-x  2 root root     4096 Oct 17 11:07 bash_completion.d
-rw-r--r--  1 root root      367 Jan 27  2016 bindresvport.blacklist
drwxr-xr-x  2 root root     4096 Apr 20  2018 binfmt.d
drwxr-xr-x  2 root root     4096 Feb 21  2023 bluetooth
-rw-r-----  1 root root       33 Sep 16  2021 brlapi.key
drwxr-xr-x  7 root root     4096 Sep 16  2021 brltty
-rw-r--r--  1 root root    25341 Aug 29  2018 brltty.conf
```

6. From the current directory list the contents of the /etc

COMMAND: ls *

```
scms@LAB2:/etc$ cd
scms@LAB2:~$ cd /etc
scms@LAB2:/etc$ cd /home
scms@LAB2:/home$ ls ~
AdbeRdr9.5.5-1_i386linux_enu.deb  Documents        Music                          num       users
comfile                           Downloads        mysql-apt-config_0.8.15-1_all.deb  Pictures  Videos
count.txt                         etcbackup        names                          Public
course                            examples.desktop newcount.txt                   snap
Desktop                           hohb             newfile.txt                    Templates
```

7. List all the files in your home directory including hidden

COMMAND: ls -a ~

```
scms@LAB2:/home$ ls -a ~
.                                Downloads                        newfile.txt
..                               etcbackup                        num
AdbeRdr9.5.5-1_i386linux_enu.deb examples.desktop                 Pictures
.adobe                           .gnupg                           .pki
.bash_history                    .gvfs                            .profile
.bash_logout                     hohb                             Public
.bashrc                          .ICEauthority                    snap
.cache                           .java                            .ssh
comfile                          .local                           .sudo_as_admin_successful
.config                          .mongorc.js                      Templates
count.txt                        .mozilla                         .thunderbird
course                           Music                            users
.dbshell                         mysql-apt-config_0.8.15-1_all.deb Videos
.dbus                            .mysql_history                   .wget-hsts
Desktop                          names
Documents                        newcount.txt
```

8. Create a directory testdir in your home directory

COMMAND: mkdir testdir

```
scms@LAB2:~/Desktop/ex$ mkdir testdir
scms@LAB2:~/Desktop/ex$ pwd
/home/scms/Desktop/ex
scms@LAB2:~/Desktop/ex$
```

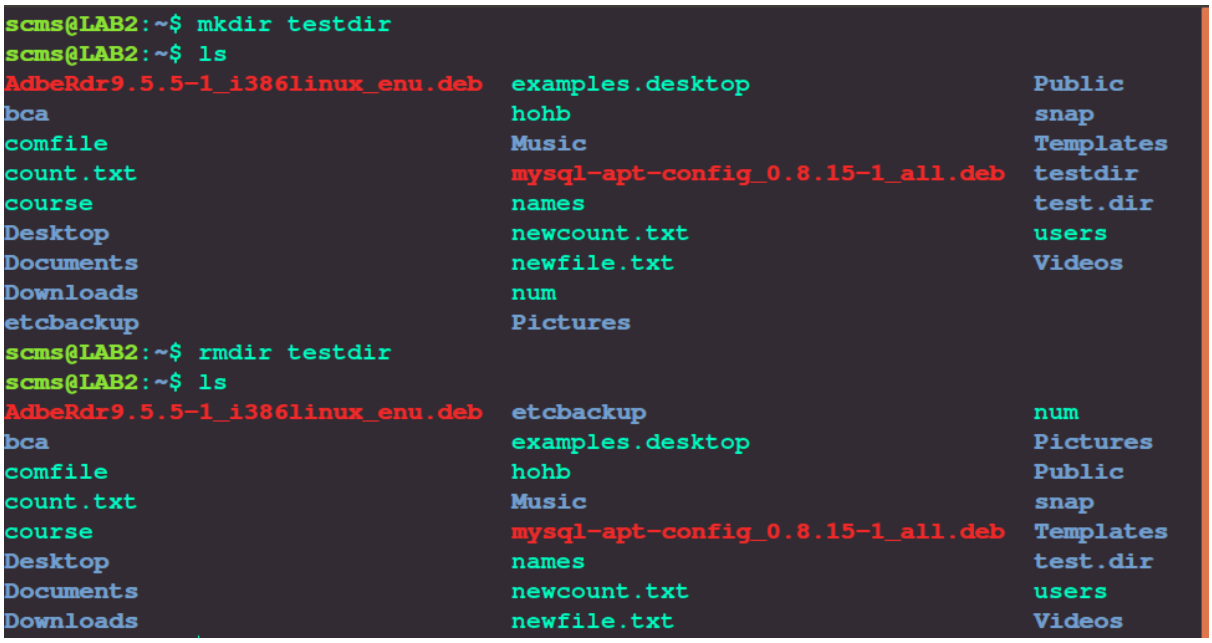
9. Create dir1/dir2/dir3 in one command in your home directory [create several subdirectories at one time]

COMMAND: mikdir -p /home/scms/Desktop/dir1/dir2/dir3

```
scms@LAB2:~$ mkdir -p /home/scms/Desktop/dir1/dir2/dir3
scms@LAB2:~$ cd Desktop
scms@LAB2:~/Desktop$ cd dir1
scms@LAB2:~/Desktop/dir1$ cd dir2
scms@LAB2:~/Desktop/dir1/dir2$ ls
dir3
scms@LAB2:~/Desktop/dir1/dir2$
```

10. Remove directory testdir

COMMAND: rmdir testdir



# II. Working with Files

1. Create a directory named sample

COMMAND: mkdir sample

```
scms@LAB2:~$ mkdir sample
scms@LAB2:~$ ls
AdbeRdr9.5.5-1_i386linux_enu.deb  examples.desktop                 Pictures
bca                               fileserv                         Public
comfile                           hohb                             sample
count.txt                         Music                            snap
course                            mysql-apt-config_0.8.15-1_all.deb  Templates
Desktop                           names                            test.dir
Documents                         newcount.txt                     users
Downloads                         newfile.txt                      Videos
etcbackup                         num
```

2. Create an empty file file1.txt

COMMAND: touch file1.txt

```
scms@LAB2:~$ touch file1.txt
scms@LAB2:~$ ls
AdbeRdr9.5.5-1_i386linux_enu.deb  examples.desktop                 num
bca                               file1.txt                        Pictures
comfile                           fileserv                         Public
count.txt                         hohb                             sample
course                            Music                            snap
Desktop                           mysql-apt-config_0.8.15-1_all.deb  Templates
Documents                         names                            test.dir
Downloads                         newcount.txt                     users
etcbackup                         newfile.txt                      Videos
```

3. Move file1.txt to sample directory

COMMAND: mv file1.txt sample

```
scms@LAB2:~$ mv file1.txt sample
scms@LAB2:~$ cd sample
scms@LAB2:~/sample$ ls
file1.txt
```

4. Create a file file2.txt with content “hello” in sample directory

COMMAND: cat>file2.txt

hello

```
scms@LAB2:~/sample$ cat>file2.txt
hello
scms@LAB2:~/sample$
```

5. Copy file2.txt to file1.txt

COMMAND: cp file2.txt file1.txt

```
student@LAB2:~/sample$ cp file2.txt file1.txt
student@LAB2:~/sample$ cat file1.txt
hello
```

6. Rename file2.txt to myfile

COMMAND: mv file2.txt myfile

```
scms@LAB2:~/sample$ mv file2.txt myfile
scms@LAB2:~/sample$ ls
file1.txt  myfile
scms@LAB2:~/sample$
```

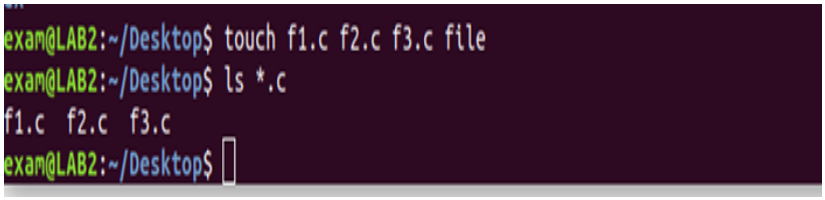
7. Create a directory backup in the home folder and copy a few files from /etc

COMMAND: mkdir backup, cd backup, cp /etc/*.conf .

```
exam@LAB2:~$ mkdir backup
exam@LAB2:~$ cd backup
exam@LAB2:~/backup$ cp /etc/*.conf .
exam@LAB2:~/backup$ ls
adduser.conf          inetd.conf       nsswitch.conf
apg.conf              kernel-img.conf  pam.conf
appstream.conf        kerneloops.conf  pnm2ppa.conf
brltty.conf           ld.so.conf       popularity-contest.conf
ca-certificates.conf  libao.conf       resolv.conf
debconf.conf          libaudit.conf    rsyslog.conf
deluser.conf          logrotate.conf   sensors3.conf
fuse.conf             ltrace.conf      sysctl.conf
gai.conf              mke2fs.conf      ucf.conf
hdparm.conf           mongod.conf      updatedb.conf
host.conf             mtools.conf      usb_modeswitch.conf
exam@LAB2:~/backup$
```

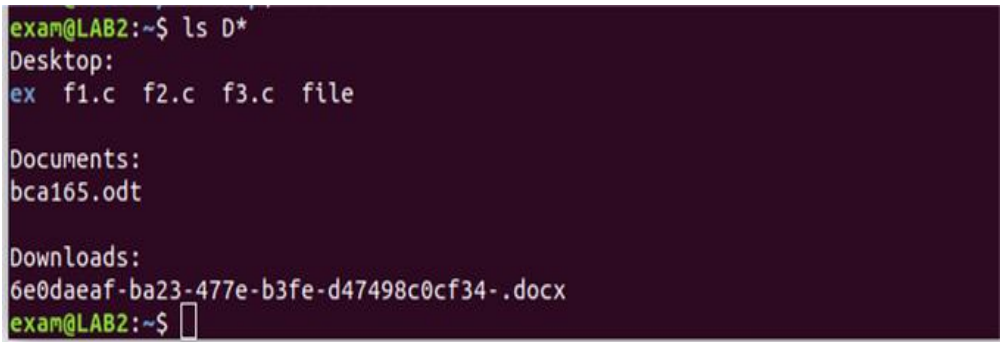
8. Display all c files from the current directory

COMMAND: ls *.c




9. Display all files beginning with letter d.

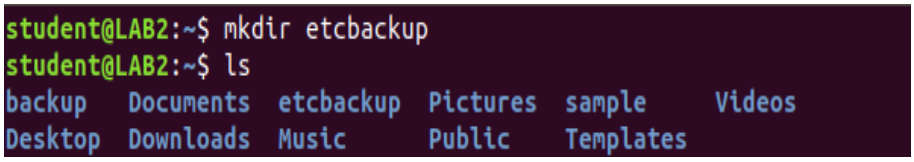
COMMAND: ls D*




10. Create a directory etcbackup and copy all the files *.conf from /etc

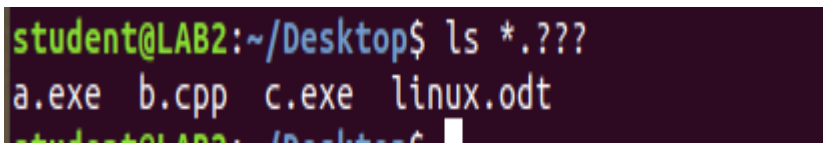
COMMAND: mkdir ecbackup

cp /etc/*.conf .



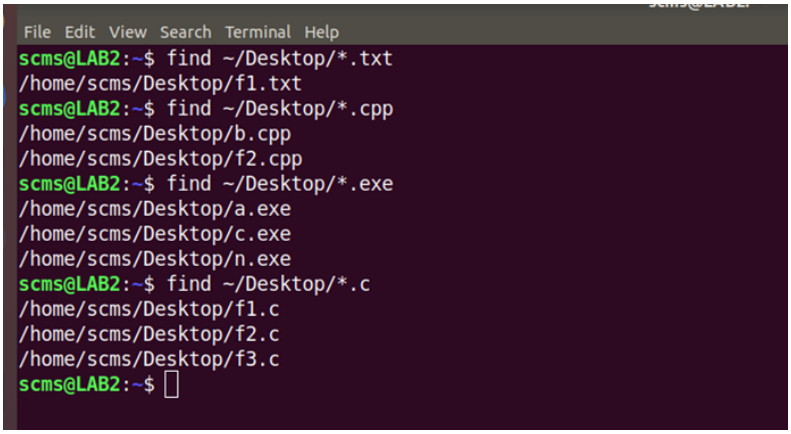

11. Display all files having three letter extension.

COMMAND: ls *.???



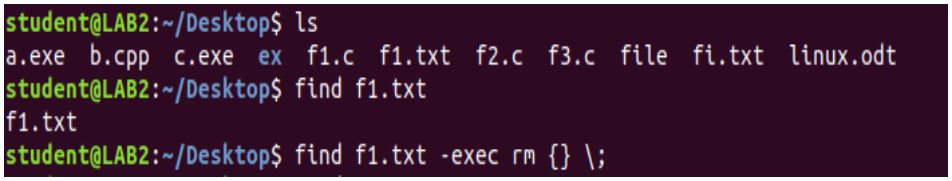
12. Locate files using find command

COMMAND: find ~/Desktop/*.txt




13. Find and remove a file from current directory

COMMAND: find f1.txt -exec rm {} \;



## III. File contents

1. Display first 12 lines of /etc/services

COMMAND: head -12  /etc/services

```
scms@LAB2:~$ head -12 /etc/services
# Network services, Internet style
#
# Note that it is presently the policy of IANA to assign a single well-known
# port number for both TCP and UDP; hence, officially ports have two entries
# even if the protocol doesn't support UDP operations.
#
# Updated from http://www.iana.org/assignments/port-numbers and other
# sources like http://www.freebsd.org/cgi/cvsweb.cgi/src/etc/services .
# New ports will be added on request if they have been officially assigned
# by IANA and used in the real-world or are needed by a debian package.
# If you need a huge list of used numbers please install the nmap package.
```

2. Display the last line of /etc/services

COMMAND: tail -1  /etc/services

```
scms@LAB2:~$ tail  -1 /etc/services
# Local services
```

3. Use cat to create a file count.txt that looks like
    a. one
    b. two
    c. three
    d. four
    e. five

COMMAND: cat>count.txt

```
scms@LAB2:~$ cat>count.txt
a) one
b) two
c) three
d) four
e) five
scms@LAB2:~$ cat count.txt
a) one
b) two
c) three
d) four
e) five
scms@LAB2:~$
```

4. Use cp to make a backup of the file

COMMAND: cp count.txt newfile.txt

```
scms@LAB2:~$ cp count.txt newfile.txt
scms@LAB2:~$ cat newfile.txt
a) one
b) two
c) three
d) four
e) five
scms@LAB2:~$
```

5. Use cat to create a backup of the file

COMMAND: cat newfile.txt > newcount.txt

```
scms@LAB2:~$ cat newfile.txt > newcount.txt
scms@LAB2:~$ cat newcount.txt
a) one
b) two
c) three
d) four
e) five
scms@LAB2:~$
```

6. Display catcount.txt in the reverse order

COMMAND: tac count.txt

```
scms@LAB2:~$ tac count.txt
e) five
d) four
c) three
b) two
a) one
scms@LAB2:~$
```

7. Use more to display  /etc/services [ Display page wise]

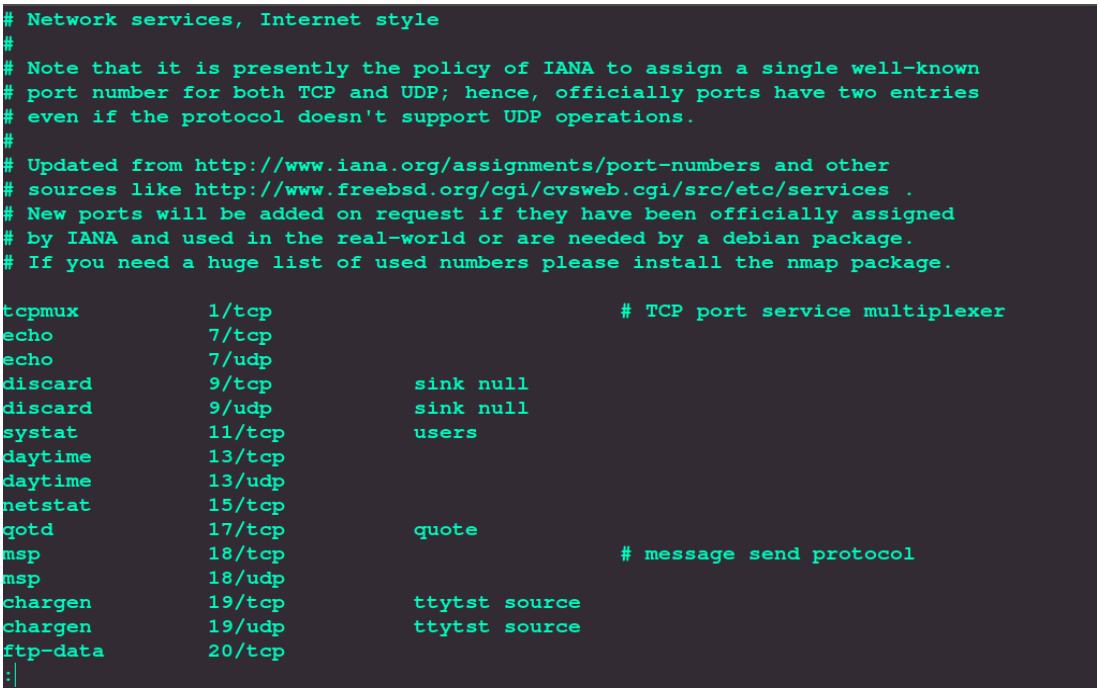
COMMAND: more /etc/services

```
scms@LAB2:~$ more /etc/services
# Network services, Internet style
#
# Note that it is presently the policy of IANA to assign a single well-known
# port number for both TCP and UDP; hence, officially ports have two entries
# even if the protocol doesn't support UDP operations.
#
# Updated from http://www.iana.org/assignments/port-numbers and other
# sources like http://www.freebsd.org/cgi/cvsweb.cgi/src/etc/services .
# New ports will be added on request if they have been officially assigned
# by IANA and used in the real-world or are needed by a debian package.
# If you need a huge list of used numbers please install the nmap package.

tcpmux          1/tcp                           # TCP port service multiplexer
echo            7/tcp
echo            7/udp
discard         9/tcp           sink null
discard         9/udp           sink null
systat          11/tcp          users
daytime         13/tcp
daytime         13/udp
netstat         15/tcp
qotd            17/tcp          quote
msp             18/tcp                          # message send protocol
msp             18/udp
chargen         19/tcp          ttytst source
chargen         19/udp          ttytst source
ftp-data        20/tcp
```

8. Use less to display /etc/services

COMMAND:  less /etc/servies



# IV. Calculations in Shell

1. Using shell as calculator.

COMMAND: bc

```
scms@LAB2:~$ bc
bc 1.07.1
Copyright 1991-1994, 1997, 1998, 2000, 2004, 2006, 2008, 2012-2017 Free Software Foundation, Inc.
This is free software with ABSOLUTELY NO WARRANTY.
For details type `warranty'.
c=10
j=20
i=c+j*20
i
410
if(i>400)
print(i)
410
```

2. Usage of expr command

COMMAND: expr

```
scms@LAB2:~$ expr 8 + 8
16
scms@LAB2:~$ expr 20 \* 8
160
scms@LAB2:~$ expr 20 \/ 8
2
```

3. Usage of factor command

COMMAND: factor

```
scms@LAB2:~$ factor
89
89: 89
80
80: 2 2 2 2 5
45
45: 3 3 5
```

# V. Filters, Redirection and Pipes

1.Store the list of current logged in users as file **users**.

COMMAND: who>users

```
scms@LAB2:~$ who>users
scms@LAB2:~$ cat users
scms      :0           2023-12-19 10:05 (:0)
scms@LAB2:~$
```

2. Count the number of lines, words, and characters in file **users.**

COMMAND: wc users

```
scms@LAB2:~$ wc users
 1  5 44 users
scms@LAB2:~$
```

3. Retrieve the first 2 columns from file **users.**

COMMAND: cut -d ":" -f 1-2 users

```
scms@LAB2:~$ cut -d ":"  -f 1-2 users
scms      :0           2023-12-19 10
scms@LAB2:~$
```

4. Retrieve 3rd and 4th columns from /etc/passwd (delimeter ":")

COMMAND: cut -d ":" -f 3-4 /ect/passwd

```
scms@LAB2:~$ cut -d ":" -f 3-4 /etc/passwd
0:0
1:1
2:2
3:3
4:65534
5:60
6:12
7:7
8:8
9:9
10:10
13:13
33:33
34:34
38:38
39:39
41:41
65534:65534
100:102
101:103
102:106
103:107
104:65534
105:111
106:112
107:46
108:65534
```

5. Join 2 files horizontally.

COMMAND: paste num names

```
scms@LAB2:~$ paste num names
1       Manoj
2       Cera
3       Samantha
4       Kylie
scms@LAB2:~$
```

6.Sort the file /etc/passwd in reverse order.

COMMAND: sort -r /etc/passwd

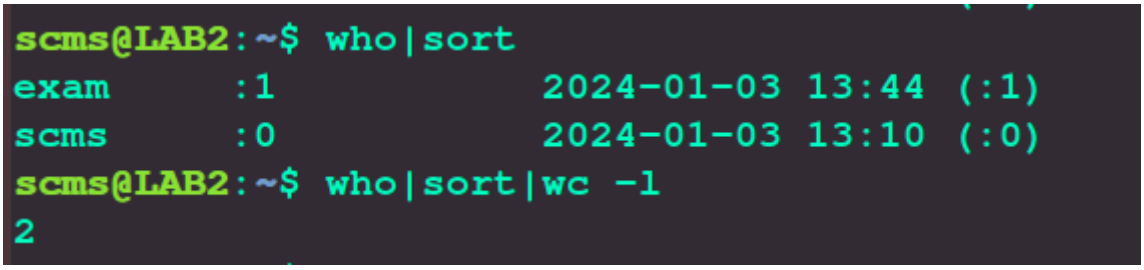
```
scms@LAB2:~$ sort -r /etc/passwd
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
whoopsie:x:112:117::/nonexistent:/bin/false
uuidd:x:105:111::/run/uuidd:/usr/sbin/nologin
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
usbmux:x:107:46:usbmux daemon,,,:/var/lib/usbmux:/usr/sbin/nologin
tomcat8:x:123:128:Apache Tomcat,,,:/var/lib/tomcat8:/bin/false
sys:x:3:3:sys:/dev:/usr/sbin/nologin
systemd-resolve:x:101:103:systemd Resolver,,,:/run/systemd/resolve:/usr/sbin/nologin
systemd-network:x:100:102:systemd Network Management,,,:/run/systemd/netif:/usr/sbin/nologin
syslog:x:102:106::/home/syslog:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/bin/sync
student:x:1003:1003:,,,:/home/student:/bin/bash
speech-dispatcher:x:111:29:Speech Dispatcher,,,:/var/run/speech-dispatcher:/bin/false
scms:x:1000:1000:SCMS,,,:/home/scms:/bin/bash
saned:x:114:119::/var/lib/saned:/usr/sbin/nologin
rtkit:x:109:114:RealtimeKit,,,:/proc:/usr/sbin/nologin
root:x:0:0:root:/root:/bin/bash
pulse:x:119:123:PulseAudio daemon,,,:/var/run/pulse:/usr/sbin/nologin
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
postgres:x:124:129:PostgreSQL administrator,,,:/var/lib/postgresql:/bin/bash
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
mysql:x:122:127:MySQL Server,,,:/nonexistent:/bin/false
mongodb:x:125:65534::/home/mongodb:/usr/sbin/nologin
messagebus:x:103:107::/nonexistent:/usr/sbin/nologin
```

7.Print sorted list of contents of a directory.
COMMAND: ls|sort

```
scms@LAB2:~$ ls|sort
AdbeRdr9.5.5-1_i386linux_enu.deb
comfile
count.txt
course
Desktop
Documents
Downloads
etcbackup
examples.desktop
hohb
Music
mysql-apt-config_0.8.15-1_all.deb
names
newcount.txt
newfile.txt
num
Pictures
Public
snap
Templates
users
Videos
```

8. Print sorted list of all currently logged in users.

COMMAND: who|sort



# VI. Change File Permissions

1. Create a directory ~/bca. Create 2 files a, b in bca directory and check ownership details.

COMMAND: mkdir bca

touch a b

ls -l

```
scms@LAB2:~$ mkdir bca
scms@LAB2:~$ cd bca
scms@LAB2:~/bca$ touch a b
scms@LAB2:~/bca$ ls -l
total 0
-rw-rw-r-- 1 scms scms 0 Jan  4 15:27 a
-rw-rw-r-- 1 scms scms 0 Jan  4 15:27 b
scms@LAB2:~/bca$
```

2. Copy a file owned by root from /etc/hosts to bca directory. Who owns this file now?

COMMAND: cp hosts ~/bca

cat hosts

ls -l

```
scms@LAB2:/etc$ cp hosts ~/bca
scms@LAB2:/etc$ cd
scms@LAB2:~$ cd bca
scms@LAB2:~/bca$ ls
a  b  hosts
scms@LAB2:~/bca$ cat hosts
127.0.0.1       localhost
127.0.1.1       LAB2

# The following lines are desirable for IPv6 capable hosts
::1     ip6-localhost ip6-loopback
fe00::0 ip6-localnet
ff00::0 ip6-mcastprefix
ff02::1 ip6-allnodes
ff02::2 ip6-allrouters
scms@LAB2:~/bca$ ls -l
total 4
-rw-rw-r-- 1 scms scms   0 Jan  4 15:27 a
-rw-rw-r-- 1 scms scms   0 Jan  4 15:27 b
-rw-r--r-- 1 scms scms 219 Jan  4 15:31 hosts
scms@LAB2:~/bca$
```

3. Give write permission to group owner on the file /etc/hosts.

COMMAND: chmod g+w hosts

```
scms@LAB2:~/bca$ ls -l
total 4
-rw-rw-r-- 1 scms scms   0 Jan  4 15:27 a
-rw-rw-r-- 1 scms scms   0 Jan  4 15:27 b
-rw-r--r-- 1 scms scms 219 Jan  4 15:31 hosts
scms@LAB2:~/bca$ chmod g+w hosts
scms@LAB2:~/bca$ ls -l
total 4
-rw-rw-r-- 1 scms scms   0 Jan  4 15:27 a
-rw-rw-r-- 1 scms scms   0 Jan  4 15:27 b
-rw-rw-r-- 1 scms scms 219 Jan  4 15:31 hosts
scms@LAB2:~/bca$
```

4. Give execute permission to other users on the file a.

COMMAND: chmod o+x a

```
scms@LAB2:~/bca$ chmod o+x a
scms@LAB2:~/bca$ ls -l
total 4
-rw-rw-r-x 1 scms scms   0 Jan  4 15:27 a
-rw-rw-r-- 1 scms scms   0 Jan  4 15:27 b
-rw-rw-r-- 1 scms scms 219 Jan  4 15:31 hosts
scms@LAB2:~/bca$
```

5. Make sure you have all rights and others can only read on file a.

COMMAND: chmod 744 a

```
scms@LAB2:~/bca$ chmod 744 a
scms@LAB2:~/bca$ ls -l
total 4
-rwxr--r-- 1 scms scms   0 Jan  4 15:27 a
-rw-rw-r-- 1 scms scms   0 Jan  4 15:27 b
-rw-rw-r-- 1 scms scms 219 Jan  4 15:31 hosts
scms@LAB2:~/bca$
```

6. Change to another user.

COMMAND: su student

```
scms@LAB2:~$ su student
Password:
student@LAB2:/home/scms$
```

7. As other user create a file f1.txt in the users ~/bca directory and check its permission.

COMMAND: su student

cd bca

ls -l

```
scms@LAB2:~$ su student
Password:
student@LAB2:/home/scms$ cd bca
student@LAB2:/home/scms/bca$ ls
a  b  hosts
student@LAB2:/home/scms/bca$ cd
student@LAB2:~$ cd bca
student@LAB2:~/bca$ ls -l
total 4
-rw-rw-r-- 1 student student 6 Jan  5 11:43 f1.txt
student@LAB2:~/bca$
```

8. Return back to user scms

COMMAND: su scms

```
student@LAB2:~/bca$ su scms
Password:
scms@LAB2:/home/student/bca$
```

9. Change permissions for f1.txt by giving read,write all permissions to all users

COMMAND: sudo chmod 666 f1.txt

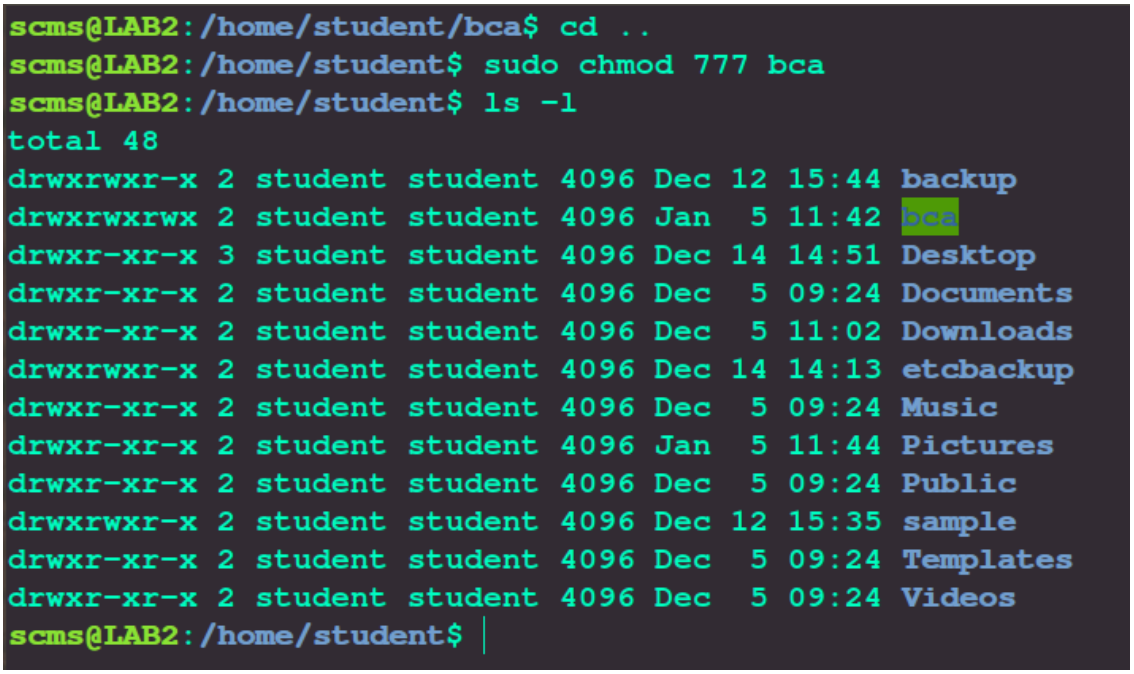
ls -l

```
scms@LAB2:/home/student/bca$ sudo chmod 666 f1.txt
[sudo] password for scms:
scms@LAB2:/home/student/bca$ ls -l
total 4
-rw-rw-rw- 1 student student 6 Jan  5 11:43 f1.txt
scms@LAB2:/home/student/bca$
```

10. Give all permissions to all users on directory bca.

COMMAND: cd ..

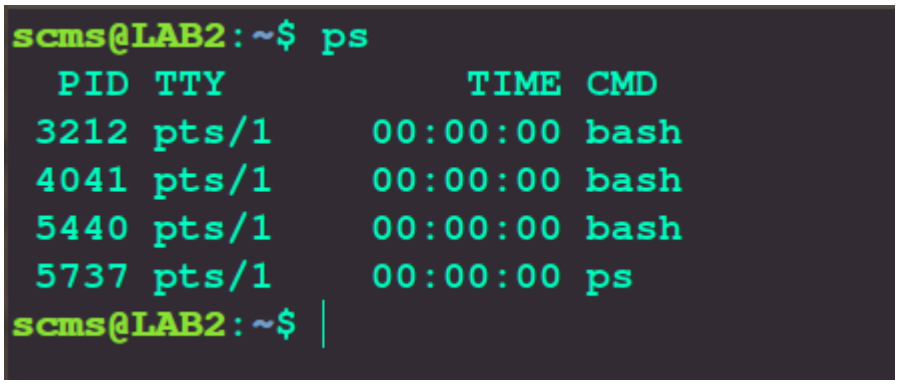
sudo chmod 777 bca


scms@LAB2:/home/student/bca$ cd ..
scms@LAB2:/home/student$ sudo chmod 777 bca
scms@LAB2:/home/student$ ls -l
total 48
drwxrwxr-x 2 student student 4096 Dec 12 15:44 backup
drwxrwxrwx 2 student student 4096 Jan 5 11:42 bca
drwxr-xr-x 3 student student 4096 Dec 14 14:51 Desktop
drwxr-xr-x 2 student student 4096 Dec 5 09:24 Documents
drwxr-xr-x 2 student student 4096 Dec 5 11:02 Downloads
drwxrwxr-x 2 student student 4096 Dec 14 14:13 etcbackup
drwxr-xr-x 2 student student 4096 Dec 5 09:24 Music
drwxr-xr-x 2 student student 4096 Jan 5 11:44 Pictures
drwxr-xr-x 2 student student 4096 Dec 5 09:24 Public
drwxrwxr-x 2 student student 4096 Dec 12 15:35 sample
drwxr-xr-x 2 student student 4096 Dec 5 09:24 Templates
drwxr-xr-x 2 student student 4096 Dec 5 09:24 Videos
scms@LAB2:/home/student$

## VII. Process Related commands

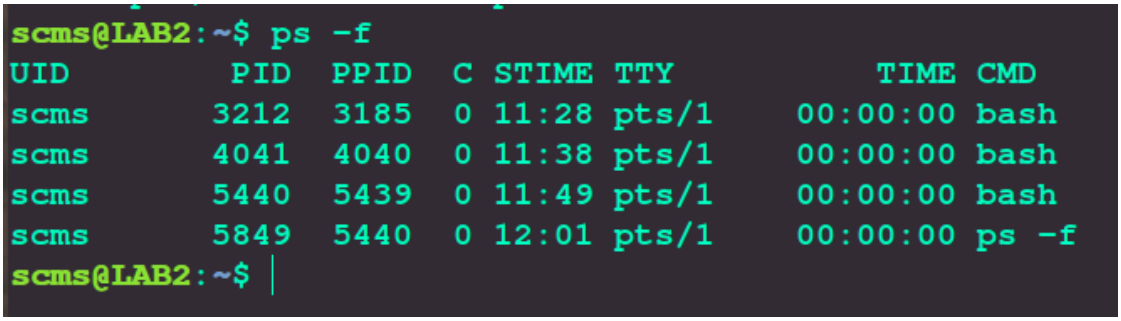
1. Display all running processes

COMMAND: ps



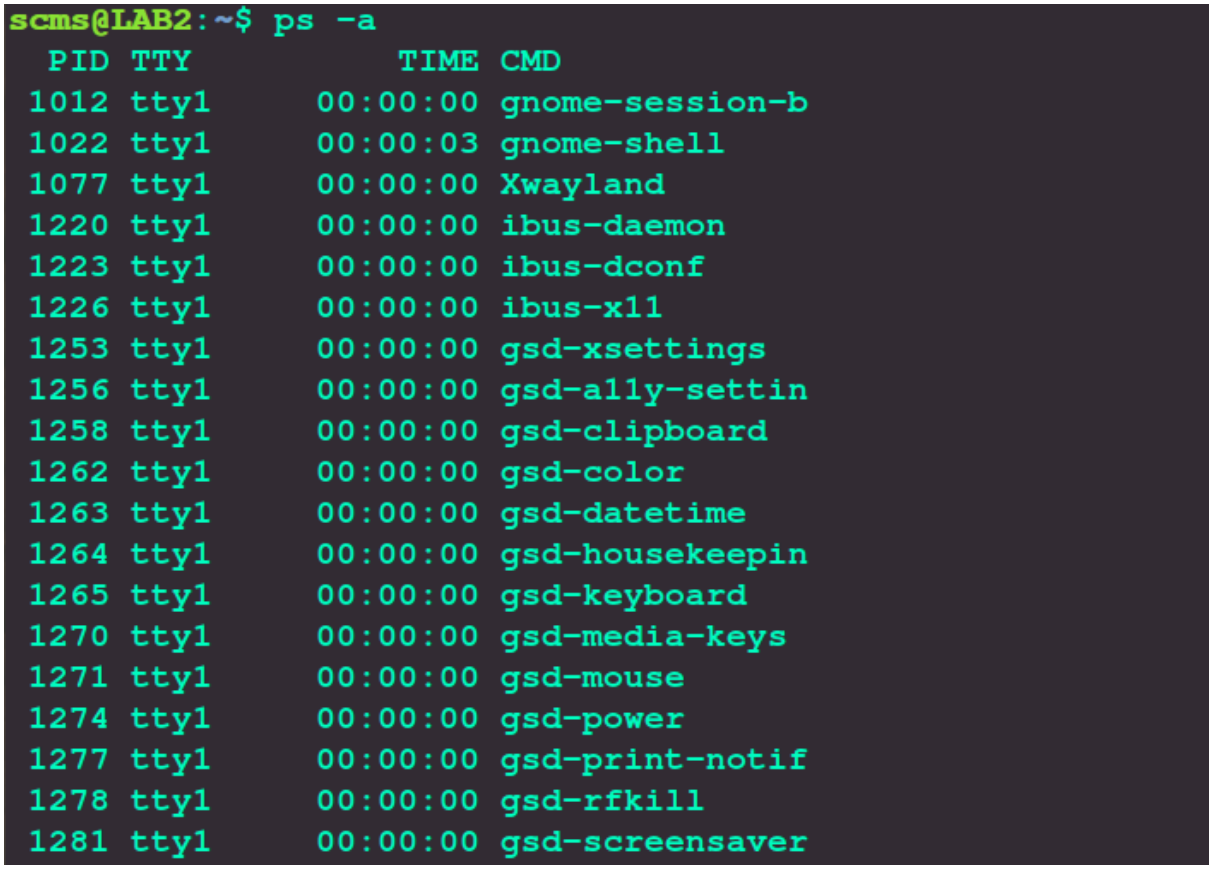

2. Display additional information of running processes.

COMMAND: ps -f



3. Display all processes of individual users.

COMMAND: ps -a




4. Display all processes including system processes running at this instant.

COMMAND: ps -e

```
scms@LAB2:~$ ps -e
  PID TTY          TIME CMD
    1 ?        00:00:03 systemd
    2 ?        00:00:00 kthreadd
    3 ?        00:00:00 rcu_gp
    4 ?        00:00:00 rcu_par_gp
    6 ?        00:00:00 kworker/0:0H-kb
    8 ?        00:00:00 mm_percpu_wq
    9 ?        00:00:00 ksoftirqd/0
   10 ?        00:00:04 rcu_sched
   11 ?        00:00:00 migration/0
   12 ?        00:00:00 idle_inject/0
   14 ?        00:00:00 cpuhp/0
   15 ?        00:00:00 cpuhp/1
   16 ?        00:00:00 idle_inject/1
   17 ?        00:00:00 migration/1
   18 ?        00:00:00 ksoftirqd/1
   20 ?        00:00:00 kworker/1:0H-kb
   21 ?        00:00:00 cpuhp/2
   22 ?        00:00:00 idle_inject/2
   23 ?        00:00:00 migration/2
   24 ?        00:00:00 ksoftirqd/2
   26 ?        00:00:00 kworker/2:0H-kb
   27 ?        00:00:00 cpuhp/3
   28 ?        00:00:00 idle_inject/3
   29 ?        00:00:00 migration/3
```

5. To kill a running process.

Command: kill -9 6331

```
scms@LAB2:~$ ps
  PID TTY          TIME CMD
 6348 pts/1    00:00:00 bash
 6356 pts/1    00:00:00 ps
scms@LAB2:~$ kill -9 6331
scms@LAB2:~$
```

6. Show the usage of nohup command

COMMAND: nohup sort /etc/services>fileserv

```
scms@LAB2:~$ nohup sort /etc/services>fileserv
nohup: ignoring input and redirecting stderr to stdout
scms@LAB2:~$ cat fileserv
#
#
#
#
#
#
#
#
#
#
```

7. Create a file named filelist that contains the list of all files currently in bca directory at ___ time.

COMMAND: at 14:37

ls -l

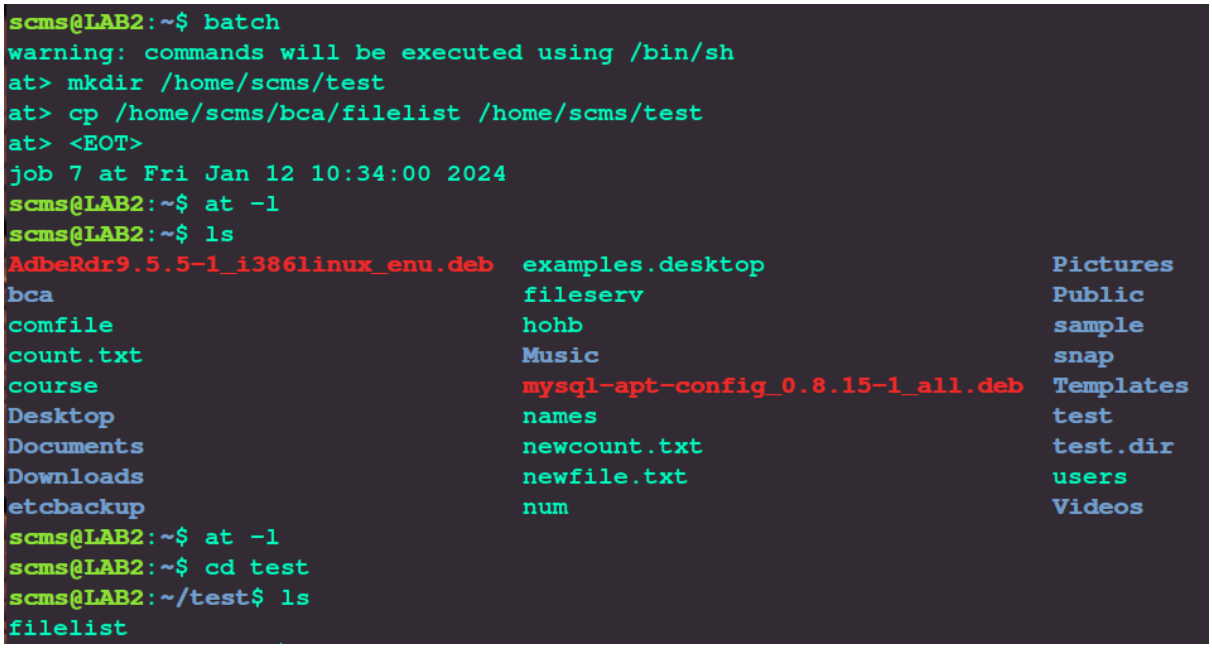
```
scms@LAB2:~/bca$ at 14:37
warning: commands will be executed using /bin/sh
at> ls -l>newfile
at> <EOT>
job 1 at Wed Jan 10 14:37:00 2024
```

```
scms@LAB2:~/bca$ ls -l
total 36
-rwx------ 1 scms scms     0 Jan  4 15:27 a
---x--x--x 1 scms scms     0 Jan  4 15:27 b
-rw-rw-r-- 1 scms scms   219 Jan  4 15:31 hosts
-rw-rw-r-- 1 scms scms     0 Jan 10 14:36 i
-rw-rw-r-- 1 scms scms     0 Jan 10 14:36 k
-rw-rw-r-- 1 scms scms   240 Jan 10 14:26 list
-rw-rw-r-- 1 scms scms     0 Jan 10 14:36 m
-rw-rw-r-- 1 scms scms   468 Jan 10 14:37 newfile
-rw-rw-r-- 1 scms scms 19183 Jan 10 14:22 sfile
-rw-rw-r-- 1 scms scms    53 Jan 10 14:28 two
```

8. Use batch command to create a directory named testdir and copy the file filelist from bca directory to testdir.

COMMAND: batch

at -1



# VIII. vi Editor

1. Creating with vi

(a) Start vi with the filename test. Insert your name into the file and then save it and leave vi.

COMMAND: vi test


(b) Open the file again. Add some more names to the file, one on each line.

COMMAND: vi test

(c) Go to a name roughly half way down your list. Check you can insert a name on the line above, and on the line below.

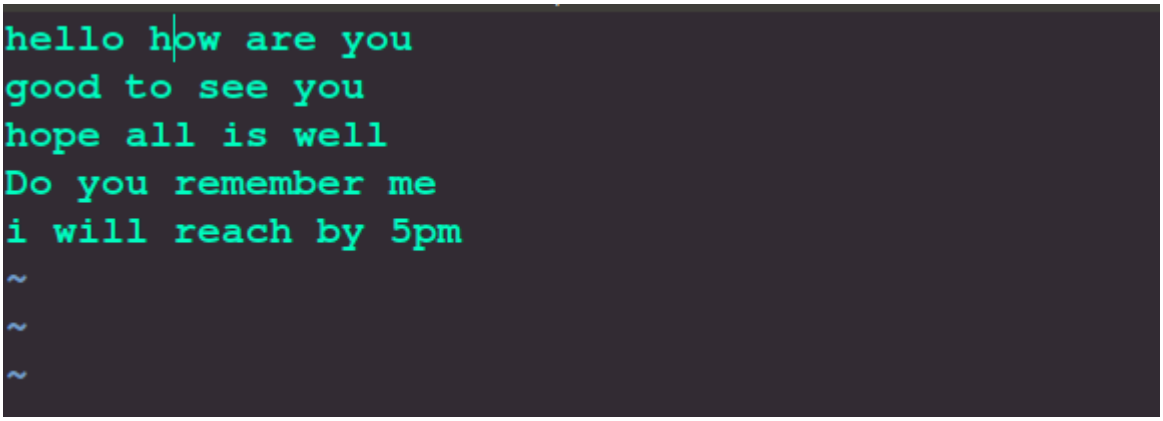
COMMAND: j

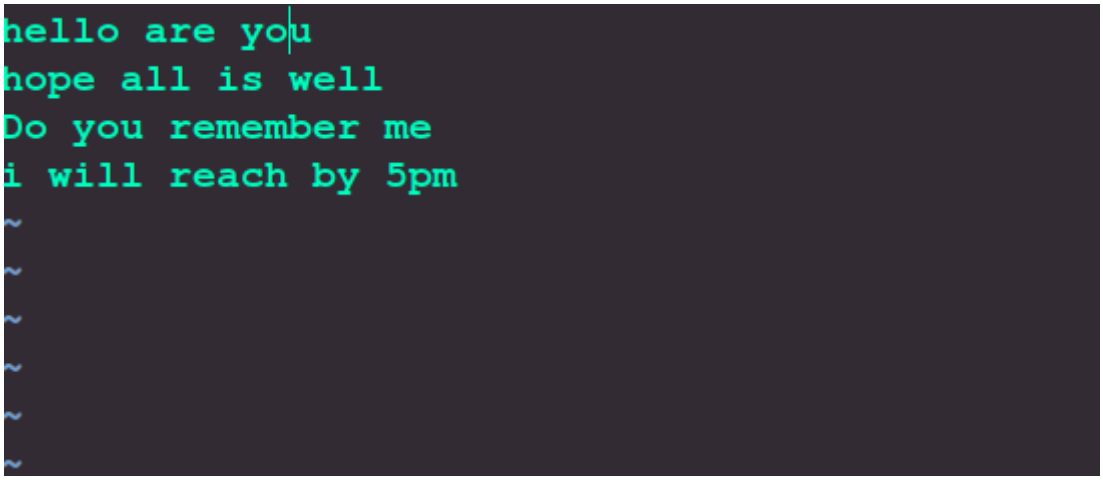

2. Deleting with vi

(a) Try deleting various entities (Words, lines, characters) from your file

i. Delete a character and a word:

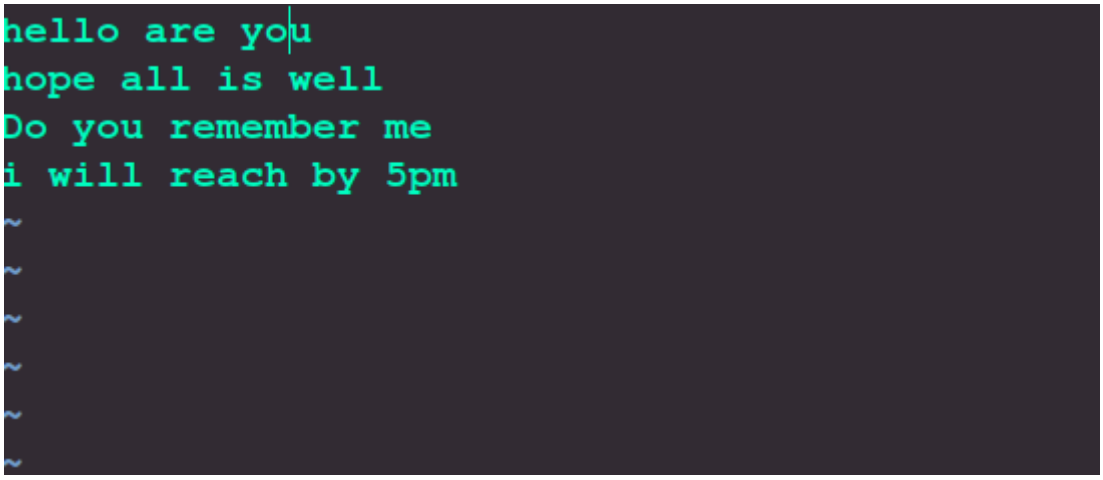
COMMAND: dw, dc




ii Delete the whole line.

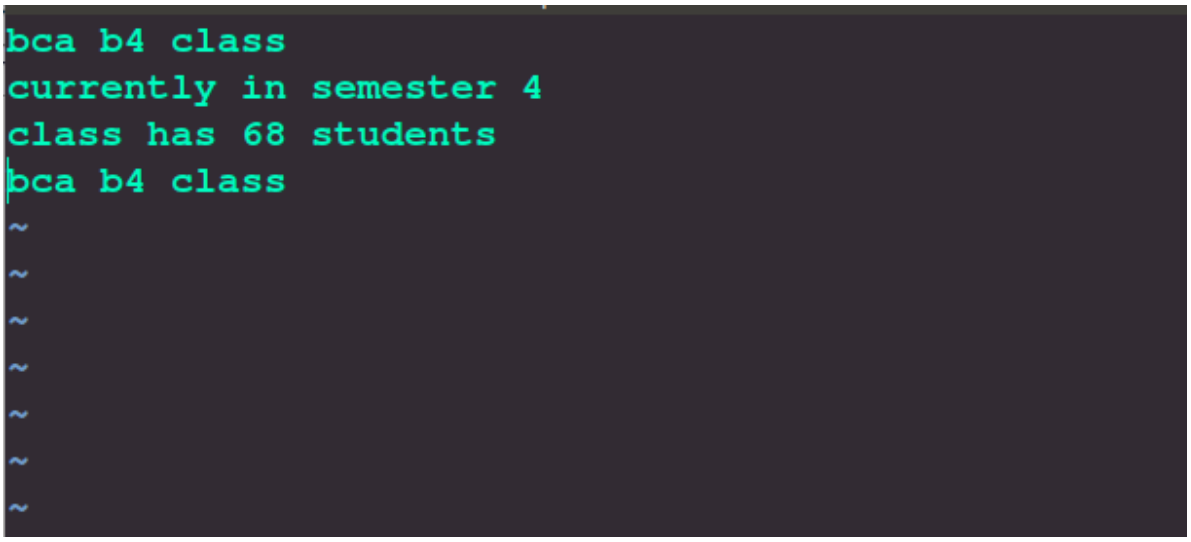
COMMAND: dd

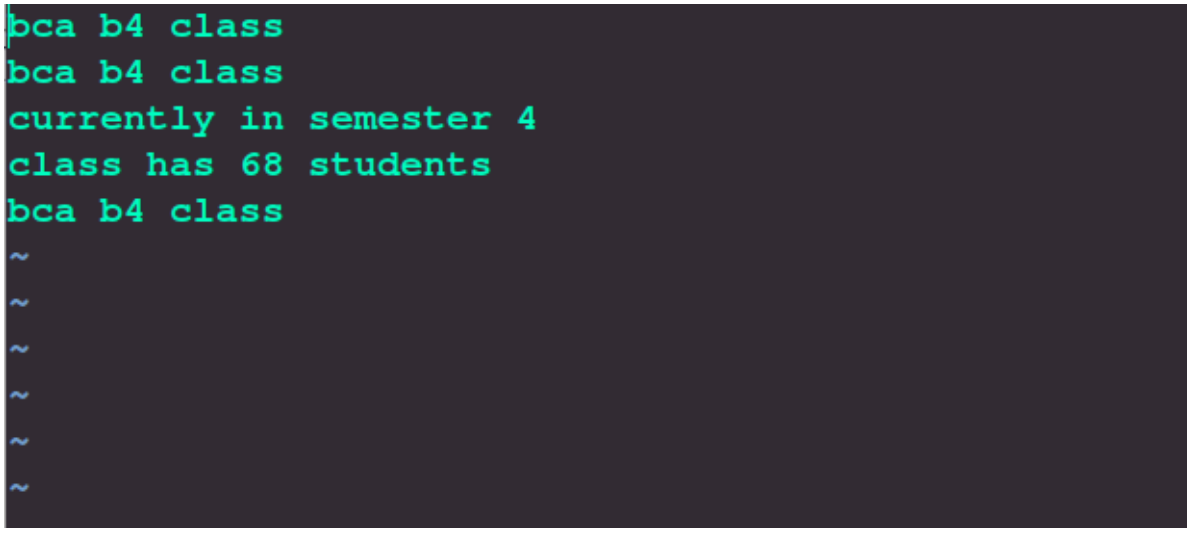


3. Yanking and Pasting

(a) Copy the first line of your file and paste it so that it becomes the last line

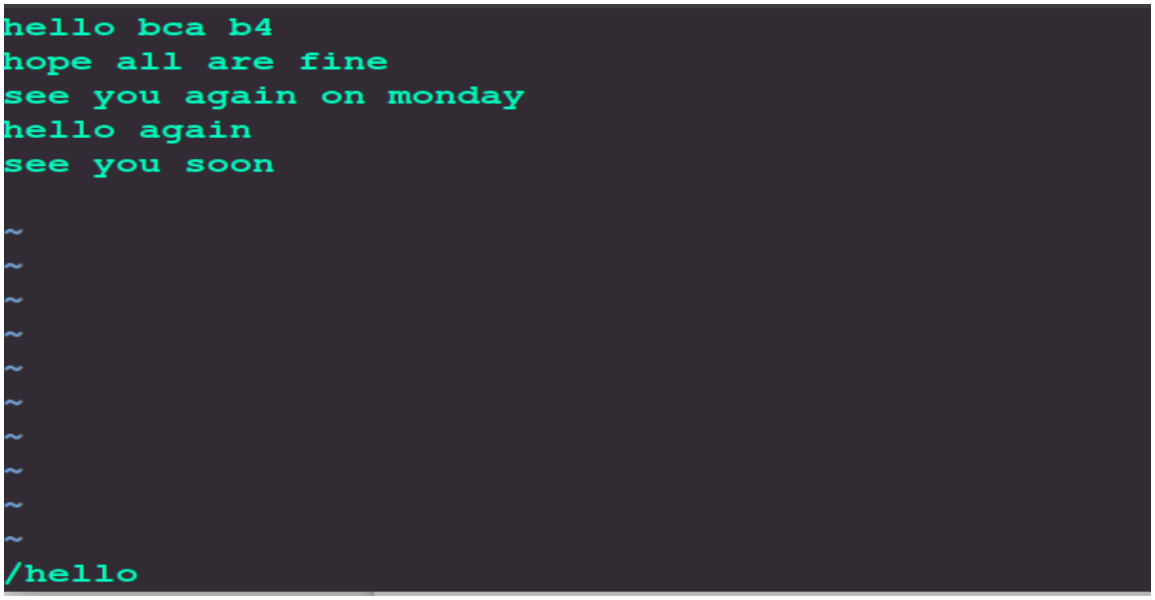
COMMAND: yy and pp



(b) Paste it back at the top of the file

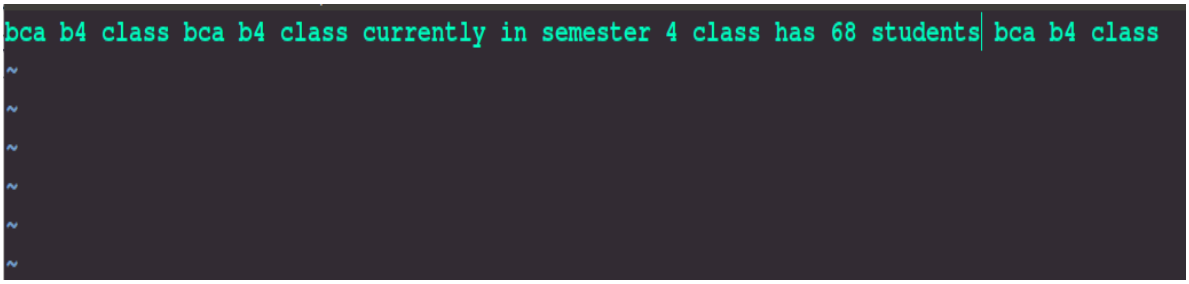
COMMAND: P




4. Miscellaneous

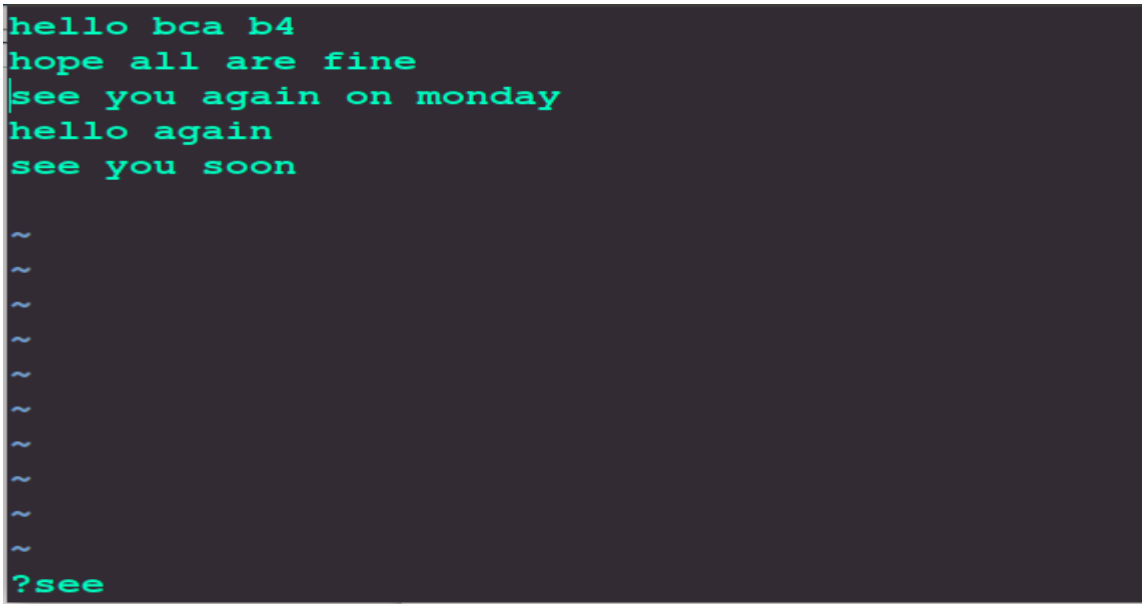
(a ) Join all the lines of your file into one long line

COMMAND: j




(b) Find a pattern before current position and Find a pattern after current position.

COMMAND: /?


hello bca b4
hope all are fine
see you again on monday
hello again
see you soon
?see

# IX. Shell Programming

1. Write a shell script to display current directory path and contents of current working directory.

```
#!/bin/bash
echo "present working directory"
pwd
echo "contents of current directory"
ls
```

```
scms@LAB2:~/Desktop$ cd bca
scms@LAB2:~/Desktop/bca$ bash q1.sh
present working directory
/home/scms/Desktop/bca
contents of current directory
q1.sh
scms@LAB2:~/Desktop/bca$
```

2. Write a shell script to create a directory test and copy the file of /etc/passwd to test.

```
#!/bin/bash
echo "creating directory test"
mkdir test
echo "copying files"
cp /etc/passwd test
```

```
scms@LAB2:~$ cd Desktop
scms@LAB2:~/Desktop$ cd bca
scms@LAB2:~/Desktop/bca$ bash q2.sh
creating directory test
copying files
scms@LAB2:~/Desktop/bca$
```

3. Write a shell script to perform operations like create, display and delete file

```
#!/bin/bash
#program to create a flie
echo "enter name: "
read nm
echo "enter age: "
read age
echo "name = $nm age = $age">>studentresume
cat studentresume
rm studentresume
```

```
scms@LAB2:~/Desktop/bca$ bash q3.sh
enter name:
hannah
enter age:
18
scms@LAB2:~/Desktop/bca$ ls
q1.sh  q2.sh  q3.sh  shell1.png  shell2.png  studentresume  test
scms@LAB2:~/Desktop/bca$ cat studentresume
name = hannah age = 18
```

4. Write a shell script to read any 2 integer values and find the sum, difference, quotient, and remainder.

```
#/bin/bash
echo "Enter the first number:"
read a
echo "Enter the second number:"
read b
add=$(echo " $a + $b "|bc)
sub=$(echo " $a - $b "|bc)
rem=$(echo " $a % $b "|bc)
quot=$(echo " $a / $b "|bc)
echo "the sum of the numbers is: $add"
echo "the sum of the numbers is: $sub"
echo "the sum of the numbers is: $rem"
echo "the sum of the numbers is: $quot"
```

```
scms@LAB2:~/Desktop$ bash shell4.sh
Enter the first number:
2
Enter the second number:
2
The sum of the numbers is: 4
The difference of the numbers is: 0
The remanider value of the numbers is: 0
The quotient of the numbers is: 1
scms@LAB2:~/Desktop$
```

5. Write a script to read any 2 floating values and find the sum, difference, quotient, and remainder.

```
#/bin/bash
echo "Enter the first number:"
read a
echo "Enter the second number:"
read b
add=$(echo " $a + $b "|bc)
sub=$(echo " $a - $b "|bc)
rem=$(echo " $a % $b "|bc)
quot=$(echo " $a / $b "|bc)
echo "the sum of the numbers is: $add"
echo "the sum of the numbers is: $sub"
echo "the sum of the numbers is: $rem"
echo "the sum of the numbers is: $quot"
```

```
scms@LAB2:~/Desktop$ bash shell5.sh
Enter the first number:
22.5
Enter the second number:
2.5
The sum of the numbers is: 25.0
The difference of the numbers is: 20.0
The remanider value of the numbers is: 0
The quotient of the numbers is: 9
scms@LAB2:~/Desktop$
```

6. Shell script to find area and perimeter of a rectangle and a circle.

```
#/bin/bash
echo "Enter the radius of the circle:"
read r
ar=$(echo "3.14*$r*$r" |bc)
echo "The area of the circle : $ar"
echo "Enter the perimeter of the circle:"
read s
pr=$(echo "2*3.14*$s" |bc)
echo "The perimeter of the circle : $pr"
```

```
scms@LAB2:~/Desktop$ bash shell6.sh
Enter the radius of the circle:
5
The area of the circle : 78.50
Enter the perimeter of the circle:
10
The perimeter of the circle : 62.80
scms@LAB2:~/Desktop$
```

7. Write a shell script to find if a given number is even or odd.

```
#!/bin/bash
echo "enter a number:"
read n
((r=$n%2))
if [ $r -eq 0 ]
then
        echo "$n is even"
else
        echo "$n is odd"
fi
```

```
scms@LAB2:~$ cd Desktop
scms@LAB2:~/Desktop$ bash eveodd.sh
enter a number:
12
12 is even
scms@LAB2:~/Desktop$
```

8. Write a shell script which reads a filename and lists the files if it's a directory and displays the contents if it is a file.

```
#!/bin/bash
echo "enter a name [file/directory name] "
read n
if [ -d $n ]
then
        echo "directory contents: "
        ls $n
elif [ -f $n ]
then
        echo "file contents: "
        cat $n
fi
```

```
scms@LAB2:~/Desktop$ bash filedir8.sh
enter a name [file/directory name]
bca
directory contents:
97.png  q2.sh  shell1.png  shell3.png     test
q1.sh   q3.sh  shell2.png  studentresume
scms@LAB2:~/Desktop$
```

9. Write a shell script to find the greatest of three numbers.

```
#!/bin/bash
echo "Enter 3 numbers: "
read a
read b
read c
if [ $a -gt $b -a $a -gt $c ]
then
        echo "$a is greatest"
elif [ $b -gt $c -a $b -gt $c ]
then
```

```
        echo "$b is greatest"
else
        echo "$c is greatest"
fi
```

```
scms@LAB2:~/Desktop$ bash great9.sh
Enter 3 numbers:
59
12
32
59 is greatest
scms@LAB2:~/Desktop$
```

10. Write a script to wish the user “Good Morning, Good Afternoon and Good Evening” when he logs in to the system based on the time.

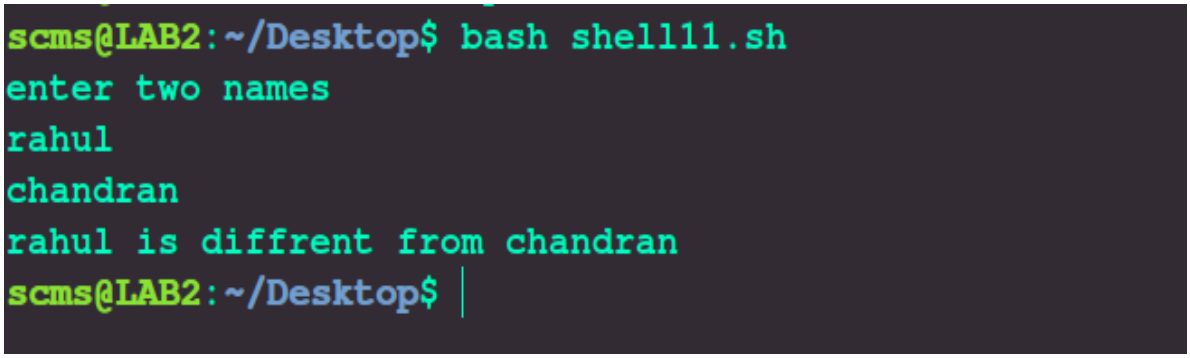
```
#!/bin/bash
echo "current date and time"
date
((hrs=$(date +%H)))
if [ $hrs -le 12 ]
then
        echo "Good morning"
elif [ $hrs -le 15 ]
then
        echo "Good afternoon"
else
        echo "Good evening"
fi
```

```
scms@LAB2:~/Desktop$ bash shell10.sh
current date and time
Mon Feb 12 12:14:18 IST 2024
Good afternoon
scms@LAB2:~/Desktop$
```

11. Write a shell script which checks has user has entered 2 names and check if they are same or not.

```
#!/bin/bash
echo "enter two names"
read a
read b
if [ $a = $b ]
```

```
then
        echo "$a is same as $b"
else
        echo "$a is diffrent from $b"
fi
```




12. Write a shell script to simulate a simple calculator to perform addition, subtraction, multiplication, division and modulus. (use case … esac)

```
#!/bin/bash
echo "enter two numbers"
read a
read b
echo -e "1.Add\n2.Mul\n3.Div\n4.Diff\n5.Mod"
echo "enter choice"
read ch
case $ch in
1) ((s=$a+$b))
        echo "sum is $s";;
2) ((m=$a*$b))
        echo "product is $m";;

3) ((q=$a/$b))
        echo "quotient is $q";;
4) ((d=$a-$b))
        echo "difference is $d";;
5) ((r=$a%$b))
        echo "remainder is $r";;
*) echo "enter valid choice  [1-5]";;
esac
```

```
scms@LAB2:~/Desktop$ bash shell12.sh
enter two numbers
14
2
1.Add
2.Mul
3.Div
4.Diff
5.Mod
enter choice
1
sum is 16
scms@LAB2:~/Desktop$
```

13. Write a script to read a character and to display if it is lowercase, uppercase, digit or special character or not a character.

```
#!/bin/bash
echo "enter a character"
read ch
case $ch in
[[:lower:]]) echo "$ch is lowercase " ;;
[[:upper:]]) echo "$ch is uppercase " ;;
[[:digit:]]) echo "$ch is digits " ;;
*) echo "special characters"
esac
```

```
scms@LAB2:~/Desktop$ bash shell13.sh
enter a character
A
A is uppercase
scms@LAB2:~/Desktop$ bash shell13.sh
enter a character
2
2 is digits
scms@LAB2:~/Desktop$ bash shell13.sh
enter a character
r
r is lowercase
```

14. Write a script to prepare a multiplication table of a given number to any order.

```
#!/bin/bash
echo "enter a number: ";
read n
echo "Multiplication table of $n: ";
for((i=1;i<=10;i++))
do
        ((r=$n*$i))
        echo "$n*$i=$r"
done
```

```
scms@LAB2:~/Desktop$ bash shell14.sh
enter a number:
5
Multiplication table of 5:
5*1=5
5*2=10
5*3=15
5*4=20
5*5=25
5*6=30
5*7=35
5*8=40
5*9=45
5*10=50
scms@LAB2:~/Desktop$
```

15. Write a shell script to find the factorial of a given number.

```
#!/bin/bash
echo "enter the number for factorial: "
read n
f=1
for((i=1;i<=n;i++))
do
        ((f=$f*$i))
done
echo "factorial of $n is $f"
```

```
scms@LAB2:~/Desktop$ bash shell15.sh
enter the number for factorial:
5
factorial of 5 is 120
scms@LAB2:~/Desktop$
```

16.Write a script to check if a given number is prime.

```
#!/bin/bash
echo "enter a num: "
read n
flag=0
for((i=2;i<n;i++))
do
        ((r=n%i))
        if [ $r -eq 0 ]
        then
                flag=1
                break
        fi
done
if [ $flag -eq 0 ]
then
        echo "$n is prime"
else
        echo "$n is not prime"
fi
```

```
scms@LAB2:~/Desktop$ bash shell16.sh
enter a num:
17
17 is prime
scms@LAB2:~/Desktop$
```

17. Write a shell script to accept a number and check whether it is a palindrome

```
#!/bin/bash
echo "enter a num: "
read n
orig=$n
rev=0
```

```
while [ $n -gt 0 ]
do
        ((r=n%10))
        ((rev=$rev*10+$r))
        ((n=$n/10))
done
if [ $rev -eq $orig ]
then
        echo "$orig is palindrome"
else
        echo "$orig is not palindrome"
fi
```

```
scms@LAB2:~/Desktop$ bash shell17.sh
enter a num:
55
55 is palindrome
scms@LAB2:~/Desktop$
```

18. Write a script to generate the following pattern by accepting the limit.
Enter Limit : 5

```
*

* *

* * *

* * * *

* * * * *
```

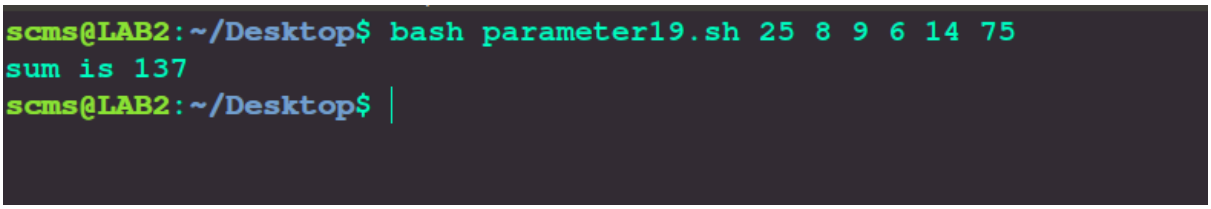
```
#!/bin/bash
echo "enter a num: "
read n
for((i=0;i<n;i++))
do
        for((j=0;j<=i;j++))
        do
        echo -n "*"
        done
echo
done
```

```
scms@LAB2:~/Desktop$ bash shell18.sh
enter a num:
6
*
**
***
****
*****
******
scms@LAB2:~/Desktop$
```

# X. Parameter Handling

19. Write a shell script to add n user given values.

```
#!/bin/bash
s=0
for i in $*
do
((s=$s+$i))
done
echo "sum is $s"
```




20. Write a shell script to print the content of all file names passed as arguments

```
#!bin/bash
display()
{
        for i in $*
        do
        cat $i
        done
}
display $*
```

```
scms@LAB2:~/Desktop$ bash q20.sh student.cpp
#include<iostream>
using namespace std;
class student
{
        char name[20];
        int rno.,mark[5];
        public;
        void enter()
        {cin>>name>>rno;
        for(i=0;i<5;i++)
        cin>>m[i];
}
        void calgrade()
{
        float avg,t=0;
        for(i=0;i<5:i++)
        t=t+m[i];
        avg=t/5:
```

21. Write a function that finds sum of 2 numbers passed as command line parameters and returns the result.

```
#!bin/bash
add()
{
        ((c=$1+$2))
        return $c
}
add $1 $2
echo "sum is: $?"
```

```
scms@LAB2:~$ cd Desktop
scms@LAB2:~/Desktop$ bash q21.sh 45 6
sum is: 51
scms@LAB2:~/Desktop$
```

# XI. Managing User and Groups

22. Create the users Sachin, Virat and Mithali. All of them under the group players. Verify that the users and their home directory are properly created.

COMMAND: sudo useradd Sachin, sudo groupadd players

```
scms@LAB2:~$ sudo useradd sachin
[sudo] password for scms:
scms@LAB2:~$ sudo passwd sachin
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
scms@LAB2:~$ sudo groupadd players
scms@LAB2:~$ sudo usermod -a -G players sachin
scms@LAB2:~$ id sachin
uid=1003(sachin) gid=1003(sachin) groups=1003(sachin),1004(players)
scms@LAB2:~$ tail -2 /etc/group
sachin:x:1003:
players:x:1004:sachin
scms@LAB2:~$ sudo useradd virat
scms@LAB2:~$ sudo passwd virat
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
scms@LAB2:~$ sudo groupadd players
groupadd: group 'players' already exists
scms@LAB2:~$ sudo usermod -a -G players virat
scms@LAB2:~$ id virat
uid=1004(virat) gid=1005(virat) groups=1005(virat),1004(players)
scms@LAB2:~$ tail -2 /etc/group
players:x:1004:sachin,virat
virat:x:1005:
```

```
scms@LAB2:~$ sudo useradd mithali
scms@LAB2:~$ sudo passwd mithali
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
scms@LAB2:~$ sudo usermod -a -G players mithali
scms@LAB2:~$ id mithali
uid=1005(mithali) gid=1006(mithali) groups=1006(mithali),1004(players)
scms@LAB2:~$ tail -2 /etc/group
virat:x:1005:
mithali:x:1006:
scms@LAB2:~$ tail /etc/group
mysql:x:127:
tomcat8:x:128:
postgres:x:129:
mongodb:x:130:mongodb
admin:x:1002:admin
exam:x:1001:
sachin:x:1003:
players:x:1004:sachin,virat,mithali
virat:x:1005:
mithali:x:1006:
scms@LAB2:~$
```

23. Create a user called bourneuser, give him the bourne shell (/bin/sh) as his default shell.

COMMAND: sudo useradd -s /bin/sh bourneuser

```
scms@LAB2:~$ sudo useradd -s /bin/sh bourneuser
scms@LAB2:~$ sudo passwd bourneuser
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
scms@LAB2:~$ tail /etc/passwd
mysql:x:122:127:MySQL Server,,,:/nonexistent:/bin/false
tomcat8:x:123:128:Apache Tomcat,,,:/var/lib/tomcat8:/bin/false
postgres:x:124:129:PostgreSQL administrator,,,:/var/lib/postgresql:/bin/bash
mongodb:x:125:65534::/home/mongodb:/usr/sbin/nologin
admin:x:1002:1002:,,,:/home/admin:/bin/bash
exam:x:1001:1001:,,,:/home/exam:/bin/bash
sachin:x:1003:1003::/home/sachin:/bin/sh
virat:x:1004:1005::/home/virat:/bin/sh
mithali:x:1005:1006::/home/mithali:/bin/sh
bourneuser:x:1006:1007::/home/bourneuser:/bin/sh
scms@LAB2:~$
```

24. Try the commands w, uname, top, hostname, id, echo $USER, echo $UID

COMMAND: w, uname, top, hostname, id

```
scms@LAB2:~$ w
 14:35:42 up 34 min,  1 user,  load average: 0.12, 0.30, 0.25
USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
scms     :0       :0               14:01   ?xdm?   1:25   0.02s /usr/lib/gdm3/gdm-x-session --run-script e
scms@LAB2:~$ uname
Linux
scms@LAB2:~$ top

top - 14:35:53 up 34 min,  1 user,  load average: 0.10, 0.29, 0.25
Tasks: 291 total,   1 running, 242 sleeping,   0 stopped,   0 zombie
%Cpu(s):  0.3 us,  0.2 sy,  0.0 ni, 99.1 id,  0.0 wa,  0.0 hi,  0.3 si,  0.0 st
KiB Mem :  3902440 total,   357472 free,  2103596 used,  1441372 buff/cache
KiB Swap:  2097148 total,  2086140 free,    11008 used.  1063844 avail Mem

  PID USER      PR  NI    VIRT    RES    SHR S  %CPU %MEM     TIME+ COMMAND
  883 mongodb   20   0 1127044  83048  37724 S   0.7  2.1   0:09.65 mongod
 3466 scms      20   0 32.962g 315916 222464 S   0.7  8.1   0:26.00 chrome
 3511 scms      20   0 32.471g 108424  88392 S   0.7  2.8   0:07.82 chrome
   10 root      20   0       0      0      0 I   0.3  0.0   0:05.04 rcu_sched
 1540 scms      20   0 1040988  80180  56172 S   0.3  2.1   1:03.62 Xorg
 1685 scms      20   0 4166172 415432 136864 S   0.3 10.6   1:34.50 gnome-shell
 2561 scms      20   0  794272  37608  28208 S   0.3  1.0   0:09.52 gnome-terminal-
 3855 scms      20   0 1.104t 208348 102636 S   0.3  5.3   0:05.57 chrome
 4001 scms      20   0   44224   4064   3380 R   0.3  0.1   0:00.05 top
    1 root      20   0  225580   8496   6364 S   0.0  0.2   0:02.59 systemd
    2 root      20   0       0      0      0 S   0.0  0.0   0:00.00 kthreadd
    3 root       0 -20       0      0      0 I   0.0  0.0   0:00.00 rcu_gp
```

```
 1540 scms      20   0 1040988  80180  56172 S   0.3  2.1   1:03.62 Xorg
 1685 scms      20   0 4166172 415432 136864 S   0.3 10.6   1:34.50 gnome-shell
 2561 scms      20   0  794272  37608  28208 S   0.3  1.0   0:09.52 gnome-terminal-
 3855 scms      20   0  1.104t 208348 102636 S   0.3  5.3   0:05.57 chrome
 4001 scms      20   0   44224   4064   3380 R   0.3  0.1   0:00.05 top
    1 root      20   0  225580   8496   6364 S   0.0  0.2   0:02.59 systemd
    2 root      20   0       0      0      0 S   0.0  0.0   0:00.00 kthreadd
    3 root       0 -20       0      0      0 I   0.0  0.0   0:00.00 rcu_gp
    4 root       0 -20       0      0      0 I   0.0  0.0   0:00.00 rcu_par_gp
    6 root       0 -20       0      0      0 I   0.0  0.0   0:00.00 kworker/0:0H-kb
    8 root       0 -20       0      0      0 I   0.0  0.0   0:00.00 mm_percpu_wq
    9 root      20   0       0      0      0 S   0.0  0.0   0:00.04 ksoftirqd/0
   11 root      rt   0       0      0      0 S   0.0  0.0   0:00.00 migration/0
   12 root     -51   0       0      0      0 S   0.0  0.0   0:00.00 idle_inject/0
   14 root      20   0       0      0      0 S   0.0  0.0   0:00.00 cpuhp/0
   15 root      20   0       0      0      0 S   0.0  0.0   0:00.00 cpuhp/1
scms@LAB2:~$ hostname
LAB2
scms@LAB2:~$ id
uid=1000(scms) gid=1000(scms) groups=1000(scms),4(adm),24(cdrom),27(sudo),30(dip),46(plugdev),116(lpadmin),
126(sambashare)
scms@LAB2:~$ echo $USER
scms
scms@LAB2:~$ echo $UID
1000
```

25. Create the group cricket, football and sports.

COMMAND: sudo groupadd cricket, football, sports,

tail /etc/group

```
scms@LAB2:~$ sudo groupadd cricket
[sudo] password for scms:
scms@LAB2:~$ sudo groupadd football
scms@LAB2:~$ sudo groupadd sports
scms@LAB2:~$ tail /etc/group
admin:x:1002:admin
exam:x:1001:
sachin:x:1003:
players:x:1004:sachin,virat,mithali
virat:x:1005:
mithali:x:1006:
bourneuser:x:1007:
cricket:x:1008:
football:x:1009:
sports:x:1010:
scms@LAB2:~$
```

26. In one command, make sachin a member of cricket and sports.

COMMAND: sudo usermod -a -G cricket, sports sachin

```
scms@LAB2:~$ sudo usermod -a -G cricket,sports sachin
scms@LAB2:~$ tail /etc/group
admin:x:1002:admin
exam:x:1001:
sachin:x:1003:
players:x:1004:sachin,virat,mithali
virat:x:1005:
mithali:x:1006:
bourneuser:x:1007:
cricket:x:1008:sachin
football:x:1009:
sports:x:1010:sachin
scms@LAB2:~$
```

27. Rename the football group to soccer

COMMAND: sudo groumod -n soccer football

```
scms@LAB2:~$ sudo groupmod -n soccer football
scms@LAB2:~$ tail /etc/group
admin:x:1002:admin
exam:x:1001:
sachin:x:1003:
players:x:1004:sachin,virat,mithali
virat:x:1005:
mithali:x:1006:
bourneuser:x:1007:
cricket:x:1008:sachin
sports:x:1010:sachin
soccer:x:1009:
scms@LAB2:~$
```

28. Use the id command to verify that sachin is a member of cricket

COMMAND: id sachin

```
scms@LAB2:~$ id sachin
uid=1003(sachin) gid=1003(sachin) groups=1003(sachin),1004(players),1008(cricket),1010(sports)
scms@LAB2:~$
```

# XII. Filters

29. Print a sorted list of all bash users.

COMMAND: grep bash /etc/passwd | sort

```
scms@LAB2:~/Desktop$ grep bash /etc/passwd | sort
admin:x:1002:1002:,,,:/home/admin:/bin/bash
exam:x:1001:1001:,,,:/home/exam:/bin/bash
postgres:x:124:129:PostgreSQL administrator,,,:/var/lib/postgresql:/bin/bash
root:x:0:0:root:/root:/bin/bash
scms:x:1000:1000:SCMS,,,:/home/scms:/bin/bash
scms@LAB2:~/Desktop$
```

30. Make a list of all filenames in /etc that contain the string net

COMMAND: ls /etc |grep net

```
scms@LAB2:~$ ls /etc |grep net
inetd.conf
issue.net
netplan
network
networkd-dispatcher
networks
scms@LAB2:~$
```

31. Make a sorted list of files in /etc that contain the case insensitive string net

COMMAND: ls /etc |grep -I net |sort

```
scms@LAB2:~$ ls /etc |grep  -i net |sort
inetd.conf
issue.net
netplan
network
networkd-dispatcher
NetworkManager
networks
scms@LAB2:~$
```

32. Convert all lowercase characters of a file into uppercase

COMMAND: cat r | tr “[a-z]” “[A-Z]”

```
scms@LAB2:~/Desktop$ cat r
hello
hello
hai
hello
good hello\
scms@LAB2:~/Desktop$ cat r | tr "[a-z]" "[A-Z]"
HELLO
HELLO
HAI
HELLO
GOOD HELLO\
scms@LAB2:~/Desktop$
```

33. Write a line that receives a text file and outputs all words on a separate line

COMMAND: cat newfile|tr ‘ ‘ ‘\n’

```
scms@LAB2:~/Desktop$ cat>newfile
hello how are you
scms@LAB2:~/Desktop$ cat newfile
hello how are you
scms@LAB2:~/Desktop$ cat newfile|tr ' ' '\n'
hello
how
are
you
scms@LAB2:~/Desktop$
```

34. Print only unique lines in each file

COMMAND: uniq -u r

uniq -i r

uniq r

uniq -c r

```
scms@LAB2:~/Desktop$ cat > r
hello
hello
hello
hai
hai
i am fine
scms@LAB2:~/Desktop$ uniq -u r
i am fine
scms@LAB2:~/Desktop$ uniq -i r
hello
hai
i am fine
scms@LAB2:~/Desktop$ uniq r
hello
hai
i am fine
scms@LAB2:~/Desktop$ uniq -c r
      3 hello
      2 hai
      1 i am fine
```