

q-1 Create a directory "exercise" inside your home directory and create nested (dir1/dir2/dir3) directory structure inside "exercise" with single command.

```
siddharth@siddharth: ~  
File Edit View Search Terminal Help  
siddharth@siddharth:~$ mkdir -p exercise/dir1/dir2/dir3  
siddharth@siddharth:~$ ls -l  
total 48  
drwxr-xr-x 2 siddharth siddharth 4096 Feb  3  2020 Desktop  
drwxr-xr-x 2 siddharth siddharth 4096 Feb  3  2020 Documents  
drwxr-xr-x 2 siddharth siddharth 4096 Feb  3  2020 Downloads  
-rw-r--r-- 1 siddharth siddharth 8980 Feb  3  2020 examples.desktop  
drwxr-xr-x 3 siddharth siddharth 4096 Feb  3 14:18 exercise  
drwxr-xr-x 2 siddharth siddharth 4096 Feb  3  2020 Music  
drwxr-xr-x 2 siddharth siddharth 4096 Feb  3  2020 Pictures  
drwxr-xr-x 2 siddharth siddharth 4096 Feb  3  2020 Public  
drwxr-xr-x 2 siddharth siddharth 4096 Feb  3  2020 Templates  
drwxr-xr-x 2 siddharth siddharth 4096 Feb  3  2020 Videos  
siddharth@siddharth:~$
```

q-2 Create two empty files inside dir2 directory: emptyFile1,emptyFile2 in single command

```
siddharth@siddharth:~/exercise$ echo "Hello World" >xyz.txt  
siddharth@siddharth:~/exercise$ ls -l  
total 8  
drwxr-xr-x 3 siddharth siddharth 4096 Feb  3 14:18 dir1  
-rw-r--r-- 1 siddharth siddharth  12 Feb  3 14:45 xyz.txt  
siddharth@siddharth:~/exercise$ cat xyz.txt  
Hello World  
siddharth@siddharth:~/exercise$  
drwxr-xr-x 2 siddharth siddharth 4096 Feb  3 14:18 dir3  
-rw-r--r-- 1 siddharth siddharth   0 Feb  3 14:25 emptyfil1  
-rw-r--r-- 1 siddharth siddharth   0 Feb  3 14:25 emptyfile2  
siddharth@siddharth:~/exercise/dir1/dir2$
```

q-3 Create one file file1.txt containing text "hello world" and save it.

```
siddharth@siddharth:~/exercise$ echo "Hello World" >xyz.txt  
siddharth@siddharth:~/exercise$ ls -l  
total 8  
drwxr-xr-x 3 siddharth siddharth 4096 Feb  3 14:18 dir1  
-rw-r--r-- 1 siddharth siddharth  12 Feb  3 14:45 xyz.txt  
siddharth@siddharth:~/exercise$ cat xyz.txt  
Hello World  
siddharth@siddharth:~/exercise$
```

q-4 Find a "passwd" file using find command inside /etc. copy this files as passwd_copy and then rename this file as passwd_backup.

```
siddharth@siddharth: ~  
File Edit View Search Terminal Help  
siddharth@siddharth:~$ find /etc/passwd  
/etc/passwd  
siddharth@siddharth:~$ sudo cp /etc/passwd /home/siddharth/passwd_copy  
[sudo] password for siddharth:  
siddharth@siddharth:~$ ls -l  
total 52  
drwxr-xr-x 2 siddharth siddharth 4096 Feb  3 14:46 Desktop  
drwxr-xr-x 2 siddharth siddharth 4096 Feb  3 2020 Documents  
drwxr-xr-x 2 siddharth siddharth 4096 Feb  3 2020 Downloads  
-rw-r--r-- 1 siddharth siddharth 8980 Feb  3 2020 examples.desktop  
drwxr-xr-x 3 siddharth siddharth 4096 Feb  3 14:45 exercise  
drwxr-xr-x 2 siddharth siddharth 4096 Feb  3 2020 Music  
-rw-r--r-- 1 root      root      2423 Feb  3 16:51 passwd_copy  
drwxr-xr-x 2 siddharth siddharth 4096 Feb  3 14:44 Pictures  
drwxr-xr-x 2 siddharth siddharth 4096 Feb  3 2020 Public  
drwxr-xr-x 2 siddharth siddharth 4096 Feb  3 2020 Templates  
drwxr-xr-x 2 siddharth siddharth 4096 Feb  3 2020 Videos  
siddharth@siddharth:~$ sudo mv home/siddharth/passwd_copy passwd_backup  
mv: cannot stat 'home/siddharth/passwd_copy': No such file or directory  
siddharth@siddharth:~$ sudo mv /home/siddharth/passwd_copy passwd_backup  
siddharth@siddharth:~$ ls -l  
total 52  
drwxr-xr-x 2 siddharth siddharth 4096 Feb  3 14:46 Desktop  
drwxr-xr-x 2 siddharth siddharth 4096 Feb  3 2020 Documents
```

```
siddharth@siddharth: ~  
File Edit View Search Terminal Help  
drwxr-xr-x 3 siddharth siddharth 4096 Feb  3 14:45 exercise  
drwxr-xr-x 2 siddharth siddharth 4096 Feb  3 2020 Music  
-rw-r--r-- 1 root      root      2423 Feb  3 16:51 passwd_copy  
drwxr-xr-x 2 siddharth siddharth 4096 Feb  3 14:44 Pictures  
drwxr-xr-x 2 siddharth siddharth 4096 Feb  3 2020 Public  
drwxr-xr-x 2 siddharth siddharth 4096 Feb  3 2020 Templates  
drwxr-xr-x 2 siddharth siddharth 4096 Feb  3 2020 Videos  
siddharth@siddharth:~$ sudo mv home/siddharth/passwd_copy passwd_backup  
mv: cannot stat 'home/siddharth/passwd_copy': No such file or directory  
siddharth@siddharth:~$ sudo mv /home/siddharth/passwd_copy passwd_backup  
siddharth@siddharth:~$ ls -l  
total 52  
drwxr-xr-x 2 siddharth siddharth 4096 Feb  3 14:46 Desktop  
drwxr-xr-x 2 siddharth siddharth 4096 Feb  3 2020 Documents  
drwxr-xr-x 2 siddharth siddharth 4096 Feb  3 2020 Downloads  
-rw-r--r-- 1 siddharth siddharth 8980 Feb  3 2020 examples.desktop  
drwxr-xr-x 3 siddharth siddharth 4096 Feb  3 14:45 exercise  
drwxr-xr-x 2 siddharth siddharth 4096 Feb  3 2020 Music  
-rw-r--r-- 1 root      root      2423 Feb  3 16:51 passwd_backup  
drwxr-xr-x 2 siddharth siddharth 4096 Feb  3 14:44 Pictures  
drwxr-xr-x 2 siddharth siddharth 4096 Feb  3 2020 Public  
drwxr-xr-x 2 siddharth siddharth 4096 Feb  3 2020 Templates  
drwxr-xr-x 2 siddharth siddharth 4096 Feb  3 2020 Videos  
siddharth@siddharth:~$
```

q-5 Try reading passwd_backup file in multiple tools: less,more,cat,strings etc and find the difference in their usage.

Less command

```
siddharth@siddharth: ~  
File Edit View Search Terminal Help  
_apt:x:104:65534::/nonexistent:/usr/sbin/nologin  
uidd:x:105:111::/run/uidd:/usr/sbin/nologin  
avahi-autoipd:x:106:112:Avahi autoip daemon,,,:/var/lib/avahi-autoipd:/usr/sbin/  
nologin  
usbmux:x:107:46:usbmux daemon,,,:/var/lib/usbmux:/usr/sbin/nologin  
dnsmasq:x:108:65534:dnsmasq,,,:/var/lib/misc:/usr/sbin/nologin  
rtkit:x:109:114:RealtimeKit,,,:/proc:/usr/sbin/nologin  
cups-pk-helper:x:110:116:user for cups-pk-helper service,,,:/home/cups-pk-helper  
:/usr/sbin/nologin  
speech-dispatcher:x:111:29:Speech Dispatcher,,,:/var/run/speech-dispatcher:/bin/  
false  
whoopsie:x:112:117::/nonexistent:/bin/false  
kernoops:x:113:65534:Kernel Oops Tracking Daemon,,,:/usr/sbin/nologin  
saned:x:114:119::/var/lib/saned:/usr/sbin/nologin  
pulse:x:115:120:PulseAudio daemon,,,:/var/run/pulse:/usr/sbin/nologin  
avahi:x:116:122:Avahi mDNS daemon,,,:/var/run/avahi-daemon:/usr/sbin/nologin  
colord:x:117:123:colord colour management daemon,,,:/var/lib/colord:/usr/sbin/no  
login  
hplip:x:118:7:HPLIP system user,,,:/var/run/hplip:/bin/false  
geoclue:x:119:124::/var/lib/geoclue:/usr/sbin/nologin  
gnome-initial-setup:x:120:65534::/run/gnome-initial-setup:/bin/false  
gdm:x:121:125:Gnome Display Manager:/var/lib/gdm3:/bin/false  
siddharth:x:1000:1000:Siddharth Bhatia,,,:/home/siddharth:/bin/bash  
(END)
```

More Command

```
siddharth@siddharth: ~  
File Edit View Search Terminal Help  
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:Mailing List Manager:/var/list:/usr/sbin/nologin  
irc:x:39:39:ircd:/var/run/ircd:/usr/sbin/nologin  
gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologi  
n  
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin  
systemd-network:x:100:102:systemd Network Management,,,:/run/systemd/netif:/usr/  
sbin/nologin  
systemd-resolve:x:101:103:systemd Resolver,,,:/run/systemd/resolve:/usr/sbin/nol  
ogin  
--More-- (43%)
```


cat command

```
siddharth@siddharth: ~  
File Edit View Search Terminal Help  
dnsmasq:x:108:65534:dnsmasq,,,:/var/lib/misc:/usr/sbin/nologin  
rtkit:x:109:114:RealtimeKit,,,:/proc:/usr/sbin/nologin  
cups-pk-helper:x:110:116:user for cups-pk-helper service,,,:/home/cups-pk-helper:/usr/sbin/nologin  
speech-dispatcher:x:111:29:Speech Dispatcher,,,:/var/run/speech-dispatcher:/bin/false  
whoopsie:x:112:117::/nonexistent:/bin/false  
kernoops:x:113:65534:Kernel Oops Tracking Daemon,,,:/usr/sbin/nologin  
saned:x:114:119::/var/lib/saned:/usr/sbin/nologin  
pulse:x:115:120:PulseAudio daemon,,,:/var/run/pulse:/usr/sbin/nologin  
avahi:x:116:122:Avahi mDNS daemon,,,:/var/run/avahi-daemon:/usr/sbin/nologin  
colord:x:117:123:colord colour management daemon,,,:/var/lib/colord:/usr/sbin/nologin  
hplip:x:118:7:HPLIP system user,,,:/var/run/hplip:/bin/false  
geoclue:x:119:124::/var/lib/geoclue:/usr/sbin/nologin  
gnome-initial-setup:x:120:65534::/run/gnome-initial-setup:/bin/false  
gdm:x:121:125:Gnome Display Manager:/var/lib/gdm3:/bin/false  
siddharth:x:1000:1000:Siddharth Bhatia,,,:/home/siddharth:/bin/bash  
siddharth@siddharth:~$
```

Strings command

```
siddharth@siddharth: ~  
File Edit View Search Terminal Help  
dnsmasq:x:108:65534:dnsmasq,,,:/var/lib/misc:/usr/sbin/nologin  
rtkit:x:109:114:RealtimeKit,,,:/proc:/usr/sbin/nologin  
cups-pk-helper:x:110:116:user for cups-pk-helper service,,,:/home/cups-pk-helper:/usr/sbin/nologin  
speech-dispatcher:x:111:29:Speech Dispatcher,,,:/var/run/speech-dispatcher:/bin/false  
whoopsie:x:112:117::/nonexistent:/bin/false  
kernoops:x:113:65534:Kernel Oops Tracking Daemon,,,:/usr/sbin/nologin  
saned:x:114:119::/var/lib/saned:/usr/sbin/nologin  
pulse:x:115:120:PulseAudio daemon,,,:/var/run/pulse:/usr/sbin/nologin  
avahi:x:116:122:Avahi mDNS daemon,,,:/var/run/avahi-daemon:/usr/sbin/nologin  
colord:x:117:123:colord colour management daemon,,,:/var/lib/colord:/usr/sbin/nologin  
hplip:x:118:7:HPLIP system user,,,:/var/run/hplip:/bin/false  
geoclue:x:119:124::/var/lib/geoclue:/usr/sbin/nologin  
gnome-initial-setup:x:120:65534::/run/gnome-initial-setup:/bin/false  
gdm:x:121:125:Gnome Display Manager:/var/lib/gdm3:/bin/false  
siddharth:x:1000:1000:Siddharth Bhatia,,,:/home/siddharth:/bin/bash  
siddharth@siddharth:~$
```

q-6 Find out the number of line in password_backup containing "/bin/false".

```
siddharth@siddharth:~$ grep -n "/bin/false" passwd_backup| wc -l  
5  
siddharth@siddharth:~$
```

q-7 Get the first 5 lines of a file "password_backup" and Redirect the output of the above commands into file "output".

```
siddharth@siddharth:~$ head -n 5 passwd_backup > /home/siddharth/output.txt
siddharth@siddharth:~$ cat /home/siddharth/output.txt
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
siddharth@siddharth:~$
```

q-8 Create a "test" user, create its password and find out its uid and gid.

```
siddharth@siddharth:~$ sudo useradd -m test
useradd: warning: the home directory already exists.
Not copying any file from skel directory into it.
siddharth@siddharth:~$ sudo passwd test
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
siddharth@siddharth:~$ sudo tail -n 1 /etc/passwd
sudo: tail -n: command not found
siddharth@siddharth:~$ sudo tail -n 1 /etc/passwd
test:x:1001:1001::/home/test:/bin/sh
siddharth@siddharth:~$
```

q-9 Change the timestamp of emptyFile1, emptyFile2 which are exist in dir2

```
siddharth@siddharth:~$ cd exercise
siddharth@siddharth:~/exercise$ cd dir1
siddharth@siddharth:~/exercise/dir1$ cd dir2
siddharth@siddharth:~/exercise/dir1/dir2$ touch -c emptyfile1 emptyfile2
siddharth@siddharth:~/exercise/dir1/dir2$ ls -l
total 4
drwxr-xr-x 2 siddharth siddharth 4096 Feb  3 14:18 dir3
-rw-r--r-- 1 siddharth siddharth    0 Feb  3 14:25 emptyfil1
-rw-r--r-- 1 siddharth siddharth    0 Feb  3 18:02 emptyfile2
siddharth@siddharth:~/exercise/dir1/dir2$
```

q-10 Login as test user and edit the "output" file created above. Since the permission wont allow you to save the changes. Configure such that test user can edit it.

```
siddharth@siddharth: ~
File Edit View Search Terminal Help
siddharth@siddharth:~$ su test
Password:
$ pwd
/home/siddharth
$ ls
bashrc          exercise        Pictures        'url?sa=i'
Desktop         Music           Public          Videos
Documents       my_file.tar    Sample-jpg-image-50kb.jpg  wget-log
Downloads       output.txt     sidd            xyz
examples.desktop  passwd_backup  Templates
$ su siddharth
Password:
siddharth@siddharth:~$ echo "changes" >> output.txt
siddharth@siddharth:~$ cat output.txt
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
changes
siddharth@siddharth:~$
```

Add group owner of the "output" file as the secondary group of testuser and check/change the "output" file permission if it is editable by group. Once done revert the changes

q-11 Create alias with your name so that it creates a file as "/tmp/aliastesting".

```
siddharth@siddharth:~$ alias siddharth123="touch /tmp/aliastesting"
siddharth@siddharth:~$ siddharth123
siddharth@siddharth:~$ ls
Desktop      examples.desktop  output.txt      Public        Videos
Documents    excercise         passwd_backup   sidd          xyz
Downloads    Music            Pictures        Templates
siddharth@siddharth:~$ ls -l /tmp/
total 44
-rw-r--r-- 1 siddharth siddharth  0 Feb  4 16:28 aliastesting
-rw----- 1 siddharth siddharth  0 Feb  4 09:44 config-err-P4IbPz
drwx----- 2 siddharth siddharth 4096 Feb  4 16:16 lu166827qflvl.tmp
srwxrwxr-x 1 siddharth siddharth  0 Feb  4 15:50 OSL_PIPE_1000_SingleOfficeIPC
554589d26a11165ead81a3a64215503b
```

q-12 Edit ~/.bashrc file such that when you change to "test" user it should clear the screen and print "Welcome".

```
siddharth@siddharth: ~
File Edit View Search Terminal Help
# ~/.bashrc: executed by bash(1) for non-login shells.
# see /usr/share/doc/bash/examples/startup-files (in the package bash-doc)
# for examples

clear

echo "Welcome Siddharth"

# If not running interactively, don't do anything
case $- in
    *i*) ;;
    *) return;;
esac

# don't put duplicate lines or lines starting with space in the history.
# See bash(1) for more options
HISTCONTROL=ignoreboth

# append to the history file, don't overwrite it
shopt -s histappend

# for setting history length see HISTSIZE and HISTFILESIZE in bash(1)
HISTSIZE=1000
"~/.bashrc" 121L, 3804C 7,23 Top
```

```
siddharth@siddharth: ~
File Edit View Search Terminal Help
siddharth@siddharth:~$ su test
Password:
$ vim ~/.bashrc
$ su siddharth
Password:
siddharth@siddharth:~$
```

q-13 Install "zip" package.

```
siddharth@siddharth:~$ sudo apt install zip
[sudo] password for siddharth:
Reading package lists... Done
Building dependency tree
Reading state information... Done
zip is already the newest version (3.0-11build1).
0 upgraded, 0 newly installed, 0 to remove and 35 not upgraded.
siddharth@siddharth:~$
```

q-14 Compress "output" and "password_backup" files into a tar ball. List the files present inside the tar created.

```
siddharth@siddharth:~$ tar -cvf my_file.tar output.txt passwd_backup
output.txt
passwd_backup
siddharth@siddharth:~$ tar -tvf my_files.tar
tar: my_files.tar: Cannot open: No such file or directory
tar: Error is not recoverable: exiting now
siddharth@siddharth:~$ tar -tvf my_file.tar
-rw-r--r-- siddharth/siddharth 189 2020-02-03 17:30 output.txt
-rw-r--r-- root/root 2423 2020-02-03 16:51 passwd_backup
siddharth@siddharth:~$
```

q-15 scp this file to test user

```
siddharth@siddharth: ~
File Edit View Search Terminal Help
siddharth@siddharth:~$ sudo apt install openssh-server
[sudo] password for siddharth:
Reading package lists... Done
Building dependency tree
Reading state information... Done
openssh-server is already the newest version (1:7.6p1-4ubuntu0.3).
0 upgraded, 0 newly installed, 0 to remove and 35 not upgraded.
siddharth@siddharth:~$ sudo service ssh start
siddharth@siddharth:~$ sudo scp my_file.tar test@localhost:/tmp/
The authenticity of host 'localhost (127.0.0.1)' can't be established.
ECDSA key fingerprint is SHA256:LpyU7ssycmpzmo4/ePpB/Gc4QvS0RqVLYTq+aVK5wP4.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'localhost' (ECDSA) to the list of known hosts.
test@localhost's password:
my_file.tar 100% 10KB 34.0MB/s 00:00
siddharth@siddharth:~$
```

q16 Unzip this tar bar by logging into the remote server

```
siddharth@siddharth: ~
File Edit View Search Terminal Help
siddharth@siddharth:~$ ssh test@192.168.0.105
The authenticity of host '192.168.0.105 (192.168.0.105)' can't be established.
ECDSA key fingerprint is SHA256:LpyU7ssycmpzmo4/ePpB/Gc4QvS0RqVLYTq+aVK5wP4.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '192.168.0.105' (ECDSA) to the list of known hosts.
test@192.168.0.105's password:
Welcome to Ubuntu 18.04.4 LTS (GNU/Linux 4.15.0-29-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

 * Canonical Livepatch is available for installation.
   - Reduce system reboots and improve kernel security. Activate at:
     https://ubuntu.com/livepatch

66 packages can be updated.
34 updates are security updates.

Last login: Tue Feb  4 21:03:48 2020 from 127.0.0.1
$ tar -xvf my_files.tar
tar: my_files.tar: Cannot open: No such file or directory
```


q-17 Download any image from web and move to desktop

```
siddharth@siddharth: ~  
File Edit View Search Terminal Help  
siddharth@siddharth:~$ wget https://sample-videos.com/img/Sample-jpg-image-50kb.jpg -O /home/siddharth/Desktop/flower.jpg  
--2020-02-04 17:07:04-- https://sample-videos.com/img/Sample-jpg-image-50kb.jpg  
Resolving sample-videos.com (sample-videos.com)... 3.6.20.22  
Connecting to sample-videos.com (sample-videos.com)|3.6.20.22|:443... connected.  
HTTP request sent, awaiting response... 200 OK  
Length: 51085 (50K) [image/jpeg]  
Saving to: '/home/siddharth/Desktop/flower.jpg'  
  
/home/siddharth/Des 100%[=====] 49.89K --.-KB/s in 0.05s  
2020-02-04 17:07:05 (994 KB/s) - '/home/siddharth/Desktop/flower.jpg' saved [51085/51085]  
  
siddharth@siddharth:~$ ls -l /home/siddharth/Desktop  
total 1228  
-rw-r--r-- 1 siddharth siddharth 57111 Feb 4 16:30 11.png  
-rw-r--r-- 1 siddharth siddharth 26731 Feb 4 16:34 13.png  
-rw-r--r-- 1 siddharth siddharth 37280 Feb 4 16:45 14.png  
-rw-rw-r-- 1 siddharth siddharth 1077128 Feb 4 10:40 'Assignment 1.odt'  
-rw-r--r-- 1 siddharth siddharth 51085 Sep 12 2017 flower.jpg  
siddharth@siddharth:~$
```

q-18 How to get help of commands usages.

```
siddharth@siddharth: ~  
File Edit View Search Terminal Help  
siddharth@siddharth:~$ help  
GNU bash, version 4.4.20(1)-release (x86_64-pc-linux-gnu)  
These shell commands are defined internally. Type 'help' to see this list.  
Type 'help name' to find out more about the function 'name'.  
Use 'info bash' to find out more about the shell in general.  
Use 'man -k' or 'info' to find out more about commands not in this list.  
  
A star (*) next to a name means that the command is disabled.  
  
job_spec [&  
(( expression ))  
. filename [arguments]  
:  
[ arg... ]  
[[ expression ]]  
alias [-p] [name[=value] ... ]  
bg [job_spec ...]  
bind [-lpsvPSVX] [-m keymap] [-f file>  
break [n]  
builtin [shell-builtin [arg ...]]  
caller [expr]  
case WORD in [PATTERN [| PATTERN]...)>  
cd [-L|[-P [-e]] [-@]] [dir]  
command [-pVv] command [arg ...]  
  
history [-c] [-d offset] [n] or hist>  
if COMMANDS; then COMMANDS; [ elif C>  
jobs [-lnprs] [jobspec ...] or jobs >  
kill [-s sigspec | -n signum | -sigs>  
let arg [arg ...]  
local [option] name[=value] ...  
logout [n]  
mapfile [-d delim] [-n count] [-O or>  
popd [-n] [+N | -N]  
printf [-v var] format [arguments]  
pushd [-n] [+N | -N | dir]  
pwd [-LP]  
read [-ers] [-a array] [-d delim] [->  
readarray [-n count] [-O origin] [-s>  
readonly [-aAf] [name[=value] ...] o>
```

q-19 Create a symlink of /etc/services into /tmp/ports-info


```
siddharth@siddharth:~$ ln -s /etc/services /tmp/port-info
siddharth@siddharth:~$ ls -n /etc/services /tmp/port-info
-rw-r--r-- 1 0 0 19183 Dec 26 2016 /etc/services
lrwxrwxrwx 1 1000 1000 13 Feb 4 17:14 /tmp/port-info -> /etc/services
siddharth@siddharth:~$
```

q-20 You are appointed as a Software/DevOps Engineer in ABC media services. On your first day you need to troubleshoot a problem. There is a command “xyz” somewhere installed in that linux system. But as a new joinee you do not have any idea about where is that Installed. How can you check that?

```
siddharth@siddharth:~$ whereis xyz
xyz:
siddharth@siddharth:~$
```

User add vs adduser