Q1. Create a directory "exercise" inside your home directory and create nested(dir1/dir2/dir3) directory structure inside "excerise" with single command.

```
sandeep@Sandeep-Verma:~$ mkdir exercise
sandeep@Sandeep-Verma:~$ cd exercise
sandeep@Sandeep-Verma:~/exercise$ mkdir -p dir1/dir2/dir3
```

Q2. Create two empty files inside dir2 directory: emptyFile1,emptyFile2 in single command

```
sandeep@Sandeep-Verma:~$ touch  exercise/dir1/dir2/emptyFile1 exercise/dir1/dir2/emptyFile2
sandeep@Sandeep-Verma:~$ cd dir1/dir2
bash: cd: dir1/dir2: No such file or directory
sandeep@Sandeep-Verma:~$ cd exercise/dir1/dir2
sandeep@Sandeep-Verma:~/exercise/dir1/dir2$ ls -l
total 4
drwxr-xr-x 2 sandeep sandeep 4096 Feb  3 14:33 dir3
-rw-r--r-- 1 sandeep sandeep    0 Feb  3 15:23 emptyFile1
-rw-r--r-- 1 sandeep sandeep    0 Feb  3 15:23 emptyFile2
sandeep@Sandeep-Verma:~/exercise/dir1/dir2$
```

Q3.Create one file file1.txt containing text "hello world" and save it.

```
sandeep@Sandeep-Verma:~/exercise$ cat > file.txt
hello world
sandeep@Sandeep-Verma:~/exercise$ cat file.txt
hello world
```

Q4. Find a "passwd" file using find command inside /etc. copy this files as passwd_copy and then rename this file as passwd_backup.

```
sandeep@Sandeep-Verma:~$ sudo find /etc -name passwd | cat > passwd_copy| mv passwd_copy passwd_backup
sandeep@Sandeep-Verma:~$ ls -l
total 52
drwxr-xr-x 2 sandeep sandeep 4096 Jan 29 21:15 Desktop
drwxr-xr-x 3 sandeep sandeep 4096 Feb  2 13:42 Documents
drwxr-xr-x 2 sandeep sandeep 4096 Jan 29 21:14 Downloads
-rw-r--r-- 1 sandeep sandeep 8980 Jan 29 21:10 examples.desktop
drwxr-xr-x 3 sandeep sandeep 4096 Feb  3 15:31 exercise
drwxr-xr-x 2 sandeep sandeep 4096 Jan 29 21:14 Music
-rw-r--r-- 1 sandeep sandeep   53 Feb  3 15:47 passwd_backup
drwxr-xr-x 2 sandeep sandeep 4096 Feb  3 15:32 Pictures
drwxr-xr-x 2 sandeep sandeep 4096 Jan 29 21:14 Public
drwxr-xr-x 2 sandeep sandeep 4096 Jan 29 21:14 Templates
drwxr-xr-x 2 sandeep sandeep 4096 Jan 29 21:14 Videos
sandeep@Sandeep-Verma:~$ cat passwd_backup
/etc/cron.daily/passwd
/etc/pam.d/passwd
/etc/passwd
```

Q5. Try reading passwd_backup file in multiple tools: less,more,cat,strings etc and find the difference in

their usage.

Cat:

```
sandeep@Sandeep-Verma:~$ cat passwd_backup
/etc/cron.daily/passwd
/etc/pam.d/passwd
/etc/passwd
```

less:

```
/etc/cron.daily/passwd
/etc/pam.d/passwd
/etc/passwd
(END)
```

more:

```
sandeep@Sandeep-Verma:~$ cat passwd_backup|more
/etc/cron.daily/passwd
/etc/pam.d/passwd
/etc/passwd
sandeep@Sandeep-Verma:~$
```

strings:

```
sandeep@Sandeep-Verma:~$ strings passwd_backup
/etc/cron.daily/passwd
/etc/pam.d/passwd
/etc/passwd
```

Q6. Find out the number of line in password_backup containing "/bin/false".

```
sandeep@Sandeep-Verma:~$ grep -c "/bin/false" passwd_backup
0
```

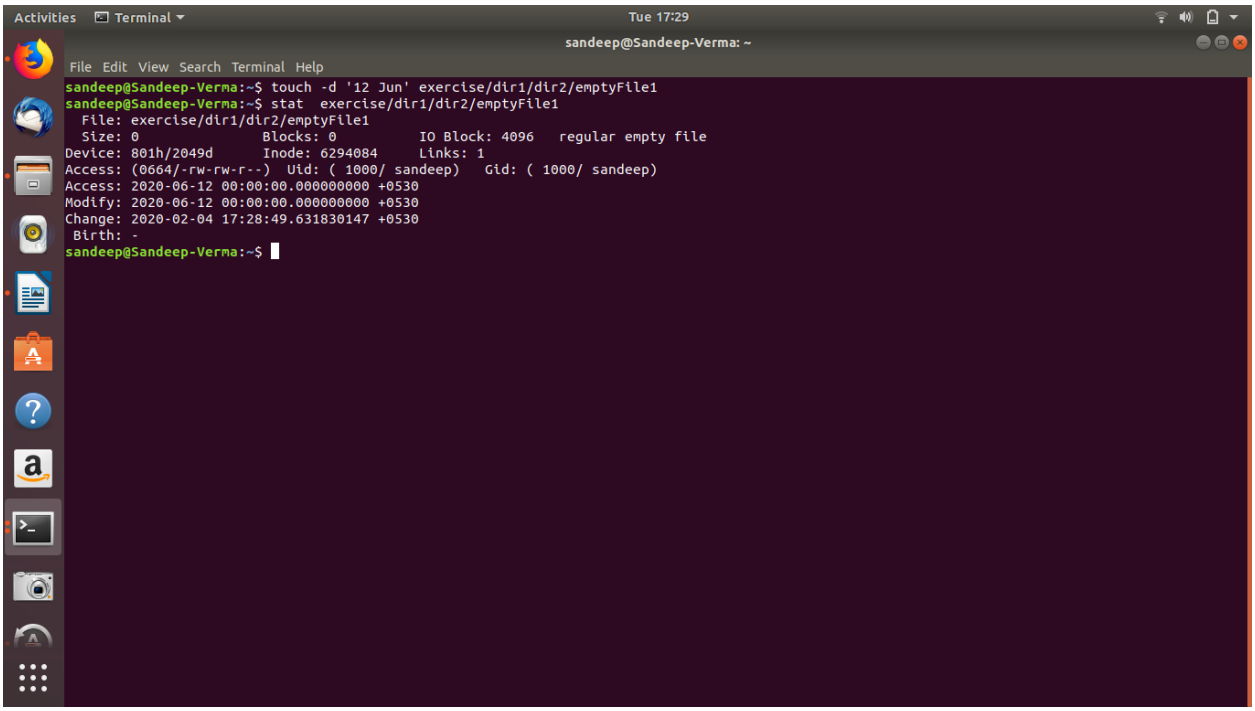
Q7. Get the first 5 lines of a file “password_backup” and Redirect the output of the above commands into file "output".

```
sandeep@Sandeep-Verma:~$ cat passwd_backup
/etc/cron.daily/passwd
/etc/pam.d/passwd
/etc/passwd
this is intentially created lines
second one
third one
forth one
sandeep@Sandeep-Verma:~$ head -5 passwd_backup | cat > output
sandeep@Sandeep-Verma:~$ cat output
/etc/cron.daily/passwd
/etc/pam.d/passwd
/etc/passwd
this is intentially created lines
second one
sandeep@Sandeep-Verma:~$
```

Q8. Create a "test" user,create its password and find out its uid and gid.

```
sandeep@Sandeep-Verma:~$ sudo useradd test
sandeep@Sandeep-Verma:~$ sudo passwd test
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
sandeep@Sandeep-Verma:~$ id -u test
1001
sandeep@Sandeep-Verma:~$ id -g test
1001
sandeep@Sandeep-Verma:~$
```

Q9. Change the timestamp of emptyFile1,emptyFile2 which are exist in dir2



Q10. 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.

1. 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

2. Make the file editable to the world so that test user can access it. Revert the changes after verification

3. Change the ownership to edit the file.

Adding test in form of secondary group and giving group excute and write permission

```
sandeep@Sandeep-Verma:~$ ls -l output.txt
-rw-r--r-- 1 sandeep sandeep 37 Feb  4 16:50 output.txt
sandeep@Sandeep-Verma:~$ sudo usermod -G sandeep test
[sudo] password for sandeep:
sandeep@Sandeep-Verma:~$ groups test
test : test sandeep
sandeep@Sandeep-Verma:~$ sudo chmod g+wx output.txt
sandeep@Sandeep-Verma:~$ ls -l output
ls: cannot access 'output': No such file or directory
sandeep@Sandeep-Verma:~$ ls -l output.txt
-rw-rwxr-- 1 sandeep sandeep 37 Feb  4 16:50 output.txt
sandeep@Sandeep-Verma:~$ su test
Password:
welcome
test@Sandeep-Verma:/home/sandeep$ vim output.txt
test@Sandeep-Verma:/home/sandeep$
```

Reverting permissions and at the same time make the file accessible to world

```
sandeep@Sandeep-Verma:~$ sudo chmod g-wx output.txt
[sudo] password for sandeep:
sandeep@Sandeep-Verma:~$ ls -l output.txt
-rw-r--r-- 1 sandeep sandeep 41 Feb  4 16:53 output.txt
sandeep@Sandeep-Verma:~$ chmod 777 output.txt
sandeep@Sandeep-Verma:~$ ls -l output.txt
-rwxrwxrwx 1 sandeep sandeep 41 Feb  4 16:53 output.txt
sandeep@Sandeep-Verma:~$
```

Further, giving ownership to test

```
sandeep@Sandeep-Verma:~$ sudo chmod g-wx output.txt
[sudo] password for sandeep:
sandeep@Sandeep-Verma:~$ ls -l output.txt
-rw-r--r-- 1 sandeep sandeep 41 Feb  4 16:53 output.txt
sandeep@Sandeep-Verma:~$ chmod 777 output.txt
sandeep@Sandeep-Verma:~$ ls -l output.txt
-rwxrwxrwx 1 sandeep sandeep 41 Feb  4 16:53 output.txt
sandeep@Sandeep-Verma:~$ sudo chown test output.txt
sandeep@Sandeep-Verma:~$ ls -l output.txt
-rwxrwxrwx 1 test sandeep 41 Feb  4 16:53 output.txt
sandeep@Sandeep-Verma:~$
```

Q11. Create alias with your name so that it creates a file as "/tmp/aliastesting".

```
sandeep@Sandeep-Verma:~$ alias sandeep='mkdir -p tmp/aliastesting'
sandeep@Sandeep-Verma:~$ sandeep
sandeep@Sandeep-Verma:~$ ls -l
```

Q12. Edit ~/.bashrc file such that when you change to "test" user it should clear the screen and print "Welcome".

```
# ~/.bashrc: executed by bash(1) for non-login shells.
# see /usr/share/doc/bash/examples/startup-files (in the package bas
# for examples

# 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 hist
# See bash(1) for more options
HISTCONTROL=ignoreboth

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

```
sandeep@Sandeep-Verma:~$ su - test
Password:
welcome
test@Sandeep-Verma:~$
```

Q13.Install “zip” package.

```
sandeep@Sandeep-Verma:~$ sudo apt-get install zip unzip
[sudo] password for sandeep:
Reading package lists... Done
Building dependency tree
Reading state information... Done
unzip is already the newest version (6.0-21ubuntu1).
zip is already the newest version (3.0-11build1).
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
sandeep@Sandeep-Verma:~$
```

Q14. Compress "output" and "password_backup" files into a tar ball. List the files present inside the tar created

```
sandeep@Sandeep-Verma:~$ sudo tar -cvf it.tar output passwd_backup
[sudo] password for sandeep:
output
passwd_backup
sandeep@Sandeep-Verma:~$ tar -tvf it.tar
-rwx------ test/sandeep     44 2020-02-03 22:57 output
-rwxrwxrwx sandeep/sandeep 119 2020-02-03 16:53 passwd_backup
sandeep@Sandeep-Verma:~$
```

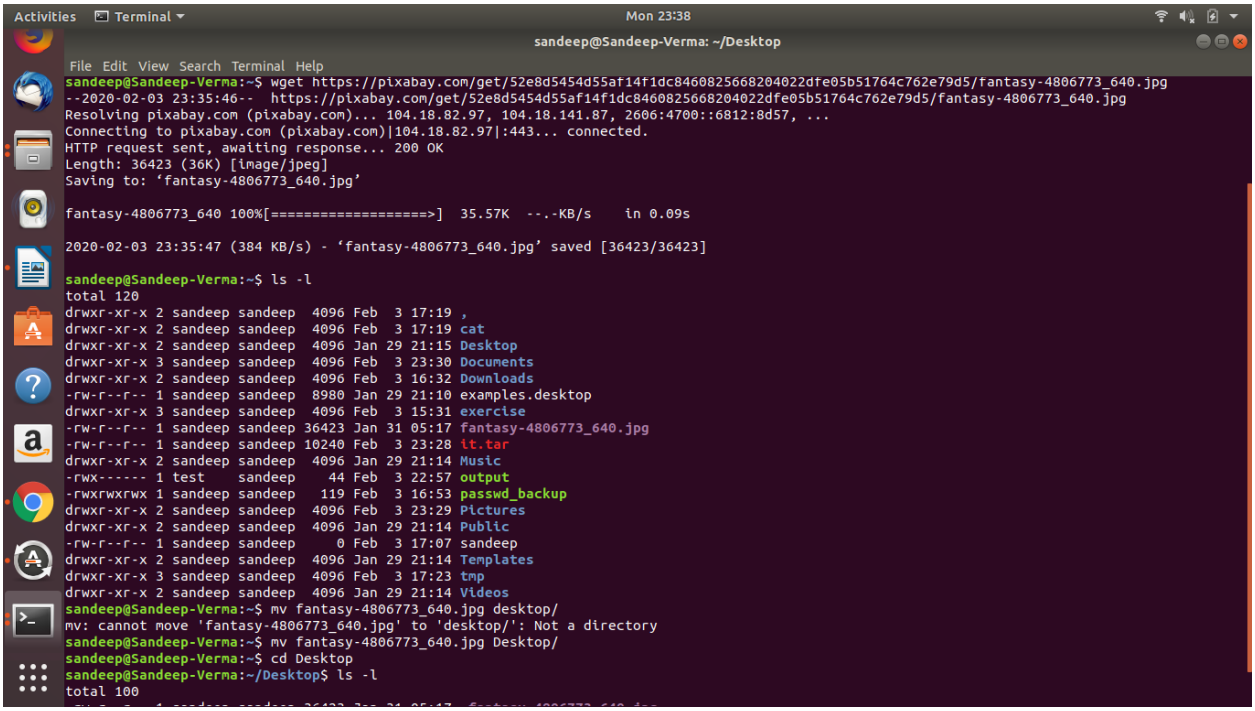
Q15.scp this file to test user

```
sandeep@Sandeep-Verma:~$ scp sandeep@localhost:it.tar /home/sandeep/tmp
sandeep@localhost's password:
it.tar                                        100%   10KB   9.3MB/s   00:00
sandeep@Sandeep-Verma:~$
```

Q16. Unzip this tar bar by logging into the remote server

```
sandeep@Sandeep-Verma:~$ ssh sandeep@localhost tar -xvf 'it.tar'
sandeep@localhost's password:
output
passwd_backup
sandeep@Sandeep-Verma:~$
```

Q17. Download any image from web and move to desktop.



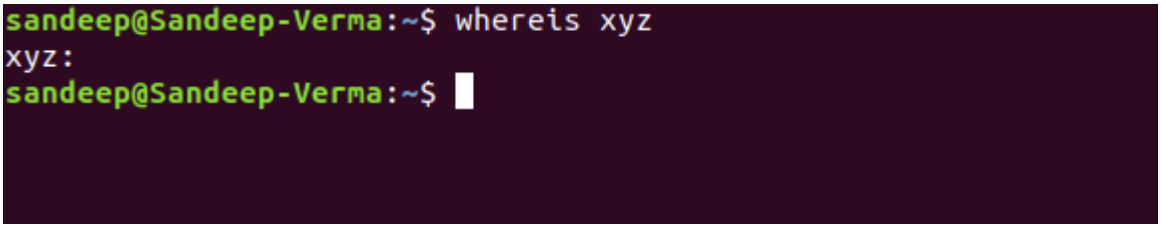
Q18.How to get help Download any image from web and move to desktop.

```
sandeep@Sandeep-Verma:~$ wc --help
Usage: wc [OPTION]... [FILE]...
  or:  wc [OPTION]... --files0-from=F
Print newline, word, and byte counts for each FILE, and a total line if
more than one FILE is specified.  A word is a non-zero-length sequence of
characters delimited by white space.

With no FILE, or when FILE is -, read standard input.

The options below may be used to select which counts are printed, always in
the following order: newline, word, character, byte, maximum line length.
  -c, --bytes            print the byte counts
  -m, --chars            print the character counts
  -l, --lines            print the newline counts
      --files0-from=F    read input from the files specified by
                           NUL-terminated names in file F;
                           If F is - then read names from standard input
  -L, --max-line-length  print the maximum display width
  -w, --words            print the word counts
      --help     display this help and exit
      --version  output version information and exit

GNU coreutils online help: <http://www.gnu.org/software/coreutils/>
Full documentation at: <http://www.gnu.org/software/coreutils/wc>
or available locally via: info '(coreutils) wc invocation'
sandeep@Sandeep-Verma:~$
```

Q19. Create a symlink of /etc/services into /tmp/ports-info

```
sandeep@Sandeep-Verma:~$ ln -s  /etc/services tmp/ports-info
sandeep@Sandeep-Verma:~$ cd tmp
sandeep@Sandeep-Verma:~/tmp$ ls -l
total 4
drwxr-xr-x 2 sandeep sandeep 4096 Feb  3 17:23 aliastesting
lrwxrwxrwx 1 sandeep sandeep   13 Feb  4 09:48 ports-info -> /etc/services
sandeep@Sandeep-Verma:~/tmp$
```

Q20. 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?


sandeep@Sandeep-Verma:~$ whereis xyz
xyz:
sandeep@Sandeep-Verma:~$