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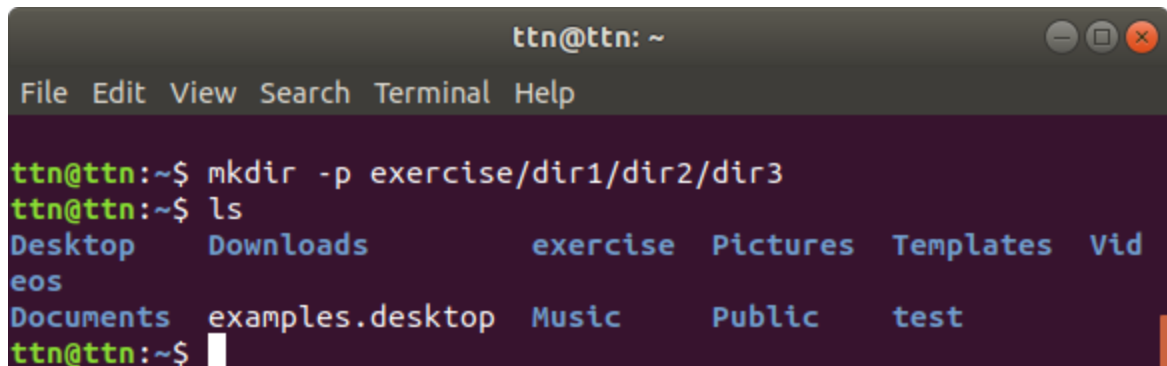Create a directory "exercise" inside your home directory and create nested(dir1/dir2/dir3) directory structure inside "exercise" with single command.**
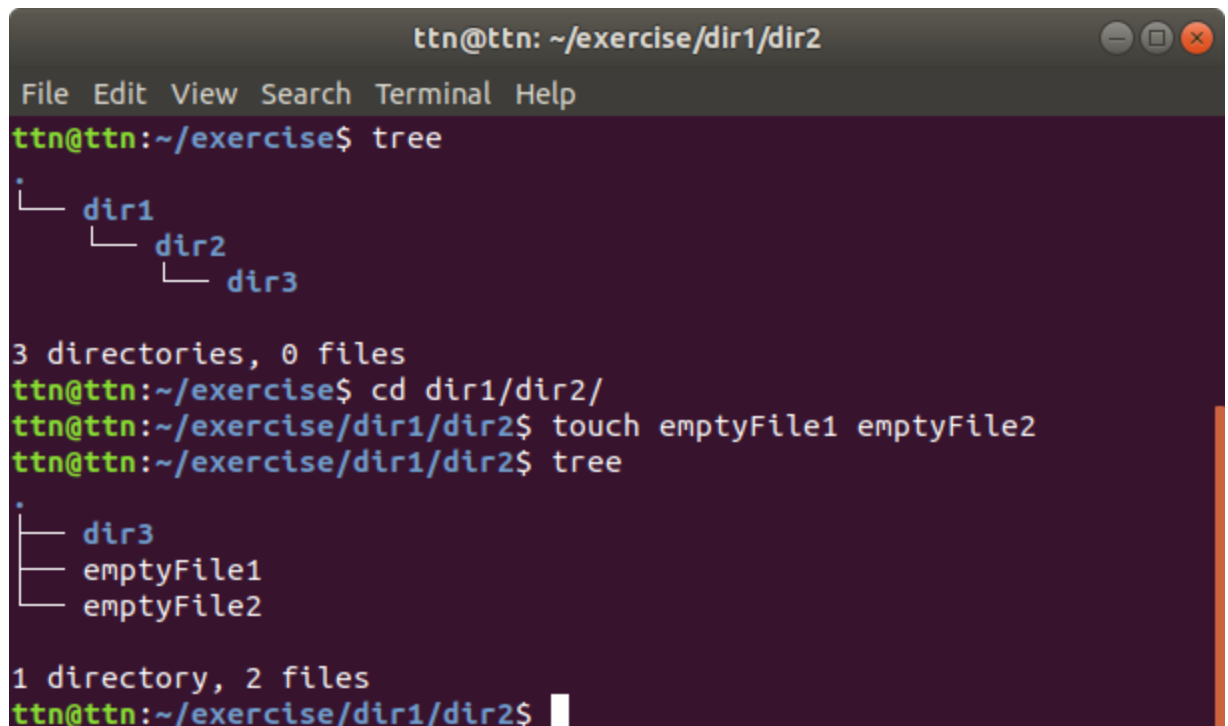
Soln.

```
                            ttn@ttn: ~                        ─ ▢ ✕

 File  Edit  View  Search  Terminal  Help

ttn@ttn:~$ mkdir -p exercise/dir1/dir2/dir3
ttn@ttn:~$ ls
Desktop     Downloads            exercise  Pictures  Templates  Vid
eos
Documents  examples.desktop  Music       Public     test
ttn@ttn:~$ █
```

2. **Create two empty files inside dir2 directory: emptyFile1,emptyFile2 in single command**
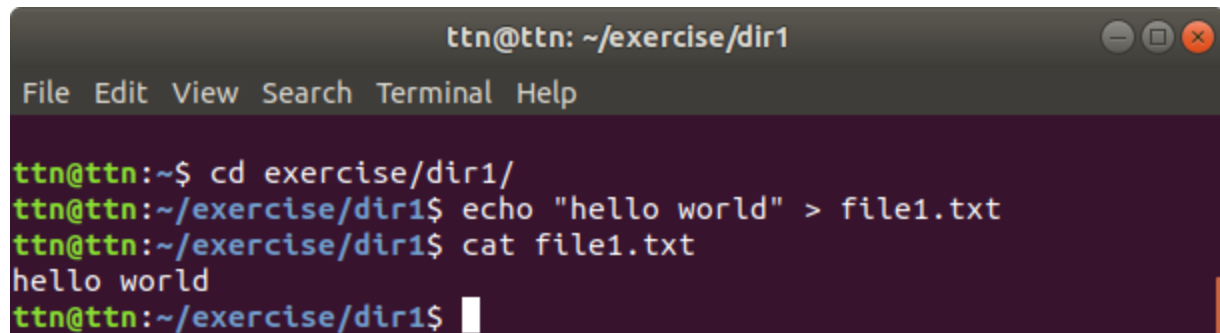
Soln.

```
                      ttn@ttn: ~/exercise/dir1/dir2                  ─ ▢ ✕

 File  Edit  View  Search  Terminal  Help
ttn@ttn:~/exercise$ tree
.
└── dir1
    └── dir2
        └── dir3

3 directories, 0 files
ttn@ttn:~/exercise$ cd dir1/dir2/
ttn@ttn:~/exercise/dir1/dir2$ touch emptyFile1 emptyFile2
ttn@ttn:~/exercise/dir1/dir2$ tree
.
├── dir3
├── emptyFile1
└── emptyFile2

1 directory, 2 files
ttn@ttn:~/exercise/dir1/dir2$ █
```

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

Soln.

```
ttn@ttn: ~/exercise/dir1

File  Edit  View  Search  Terminal  Help

ttn@ttn:~$ cd exercise/dir1/
ttn@ttn:~/exercise/dir1$ echo "hello world" > file1.txt
ttn@ttn:~/exercise/dir1$ cat file1.txt
hello world
ttn@ttn:~/exercise/dir1$
```

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

Soln.


```
ttn@ttn: ~/exercise/dir1

File  Edit  View  Search  Terminal  Help
ttn@ttn:~/exercise/dir1$ sudo find /etc -name "passwd"
/etc/cron.daily/passwd
/etc/passwd
/etc/pam.d/passwd
ttn@ttn:~/exercise/dir1$ cp /etc/passwd passwd_copy
ttn@ttn:~/exercise/dir1$ tree
.
├── dir2
│   ├── dir3
│   ├── emptyFile1
│   └── emptyFile2
├── file1.txt
└── passwd_copy

2 directories, 4 files
ttn@ttn:~/exercise/dir1$ mv passwd_copy passwd_backup
ttn@ttn:~/exercise/dir1$ tree
.
├── dir2
│   ├── dir3
│   ├── emptyFile1
│   └── emptyFile2
├── file1.txt
└── passwd_backup

2 directories, 4 files
ttn@ttn:~/exercise/dir1$ 
```

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

**Soln.   less passwd
        more passwd
        cat passwd
        strings passwd**

less:
we can navigate the page up/down using the less command and not possible in more command.

more: to view a text file one page at a time, press spacebar to go to the next page

Cat, however, is not a dedicated file reader. Cat is short for "concatenate", which means exactly that. Cat, by default, outputs the result to standard output, which is normally the command line.

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

Soln.

```
ttn@ttn:~/exercise/dir1$ grep "/bin/false" passwd_backup | wc -l
5
ttn@ttn:~/exercise/dir1$
```

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

```
ttn@ttn:~/exercise/dir1$ head -5 passwd_backup > output.txt
ttn@ttn:~/exercise/dir1$ 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
ttn@ttn:~/exercise/dir1$
```
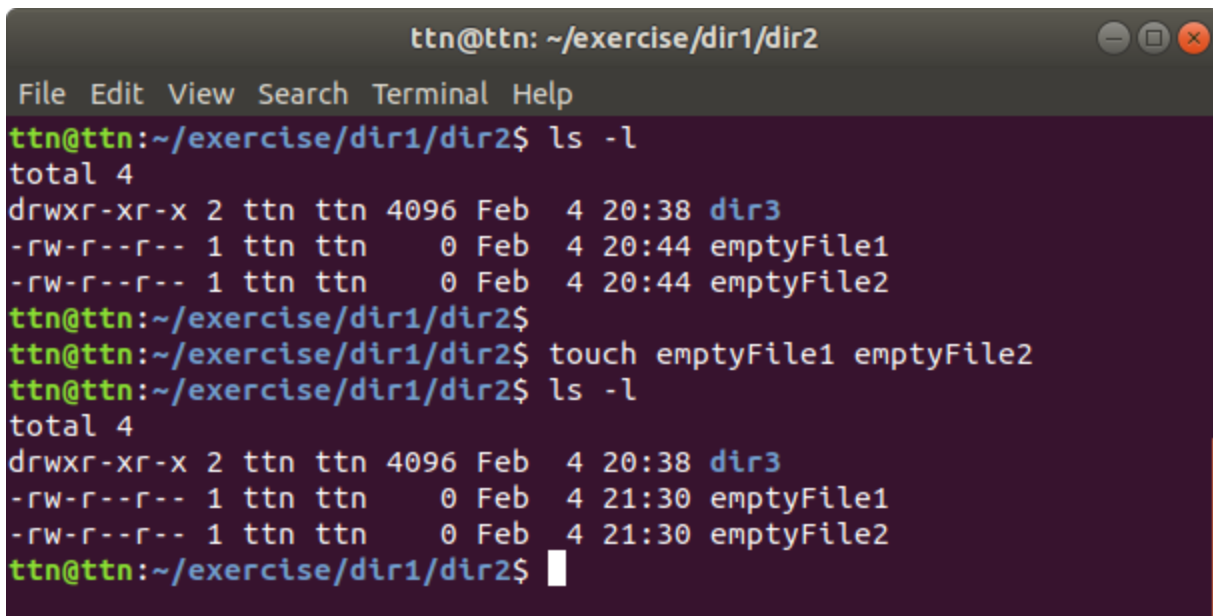
8. Create a "test" user,create its password and find out its uid and gid.

```
ttn@ttn:exercise (master)$ sudo adduser abhi
Adding user `abhi' ...
Adding new group `abhi' (1002) ...
Adding new user `abhi' (1003) with group `abhi' ...
Creating home directory `/home/abhi' ...
Copying files from `/etc/skel' ...
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
Changing the user information for abhi
Enter the new value, or press ENTER for the default
        Full Name []: abhi
        Room Number []:
        Work Phone []:
        Home Phone []:
        Other []:
Is the information correct? [Y/n] y
ttn@ttn:exercise (master)$ su abhi
Password:
abhi@ttn:/home/ttn/exercise$ 
```

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

```
                    ttn@ttn: ~/exercise/dir1/dir2              ⊖ ⊡ ⊗

File  Edit  View  Search  Terminal  Help
ttn@ttn:~/exercise/dir1/dir2$ ls -l
total 4
drwxr-xr-x 2 ttn ttn 4096 Feb  4 20:38 dir3
-rw-r--r-- 1 ttn ttn    0 Feb  4 20:44 emptyFile1
-rw-r--r-- 1 ttn ttn    0 Feb  4 20:44 emptyFile2
ttn@ttn:~/exercise/dir1/dir2$
ttn@ttn:~/exercise/dir1/dir2$ touch emptyFile1 emptyFile2
ttn@ttn:~/exercise/dir1/dir2$ ls -l
total 4
drwxr-xr-x 2 ttn ttn 4096 Feb  4 20:38 dir3
-rw-r--r-- 1 ttn ttn    0 Feb  4 21:30 emptyFile1
-rw-r--r-- 1 ttn ttn    0 Feb  4 21:30 emptyFile2
ttn@ttn:~/exercise/dir1/dir2$ 
```
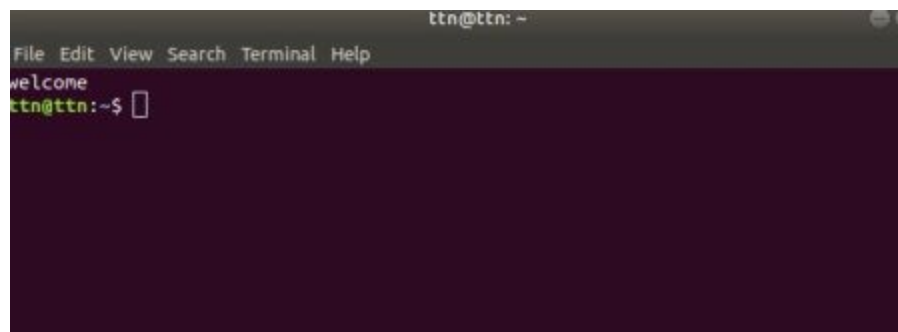
10.

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

```
ttn@ttn:new (master)$ alias abhi="mkdir -p tmp/aliastesting"
ttn@ttn:new (master)$ abhi
ttn@ttn:new (master)$ ls
tmp
ttn@ttn:new (master)$ cd tmp/
ttn@ttn:tmp (master)$ ls
aliastesting
ttn@ttn:tmp (master)$ ▯
```

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

```
ttn@ttn: ~

File  Edit  View  Search  Terminal  Help
welcome
ttn@ttn:~$ ▯
```

13. Install "zip" package.

```
ttn@ttn:~/exercise$ sudo apt install zip
[sudo] password for ttn:
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 0 not upgraded.
ttn@ttn:~/exercise$ ▯
```

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

```
ttn@ttn:~/exercise/dir1$ ls
abc.tar  dir2  file1.txt  output.txt  passwd_backup
ttn@ttn:~/exercise/dir1$ tar -cvf abc.tar output.txt passwd_backup

output.txt
passwd_backup
ttn@ttn:~/exercise/dir1$ ls
abc.tar  dir2  file1.txt  output.txt  passwd_backup
ttn@ttn:~/exercise/dir1$ tar -f abc.tar
tar: You must specify one of the '-Acdtrux', '--delete' or '--test
-label' options
Try 'tar --help' or 'tar --usage' for more information.
ttn@ttn:~/exercise/dir1$ tar -tf abc.tar
output.txt
passwd_backup
ttn@ttn:~/exercise/dir1$
```

15. Scp this file test user


```
ttn@ttn:~/exercise$ scp /home/ttn/exercise/test.tar  test@localhost:/home/test/
test@localhost's password:
test.tar                                          100%   20KB  12.8MB/s   00:00
ttn@ttn:~/exercise$
```

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

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


```
ttn@ttn:/tmp$ wget http://www.bestmediainfo.com/wp-content/uploads/2014/03/TTN-logo.jpg
--2019-02-04 16:22:45--  http://www.bestmediainfo.com/wp-content/uploads/2014/03/TTN-logo.jpg
Resolving www.bestmediainfo.com (www.bestmediainfo.com)... 172.104.48.148
Connecting to www.bestmediainfo.com (www.bestmediainfo.com)|172.104.48.148|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 17212 (17K) [image/jpeg]
Saving to: 'TTN-logo.jpg'

TTN-logo.jpg         100%[===================================================>]  16.81K  --.-KB/s    in 0.08s

2019-02-04 16:22:45 (213 KB/s) - 'TTN-logo.jpg' saved [17212/17212]

ttn@ttn:/tmp$ ls
config-err-DymQxm
lu7000q5r2e4.tmp
OSL_PIPE_1000_SingleOfficeIPC_cfa729fc67be8cf99063327bc0904361
ports-info
ssh-fbFf5VAm6L3J
systemd-private-05c0f51885c84a3ea4a3fc275665e52e-bolt.service-wVbNWv
systemd-private-05c0f51885c84a3ea4a3fc275665e52e-colord.service-LbhOWM
systemd-private-05c0f51885c84a3ea4a3fc275665e52e-fwupd.service-aQMqUl
systemd-private-05c0f51885c84a3ea4a3fc275665e52e-rtkit-daemon.service-9aogeq
systemd-private-05c0f51885c84a3ea4a3fc275665e52e-systemd-resolved.service-3yNLTP
systemd-private-05c0f51885c84a3ea4a3fc275665e52e-systemd-timesyncd.service-JAsH42
Temp-4cc00f16-7bea-449f-b108-1581d11255cb
Temp-99d3511e-386e-4313-924f-95b3c3dd3257
TTN-logo.jpg
ttn@ttn:/tmp$ mv TTN-logo.jpg /home/ttn/Desktop/
ttn@ttn:/tmp$ cd /home/ttn/Desktop/
ttn@ttn:~/Desktop$ ls
TTN-logo.jpg
ttn@ttn:~/Desktop$
```

18. How to get help of commands usages.
Ans. man ls

```
                                            ttn@ttn: /tmp                              ⊖ ⊡ ⊗
 File  Edit  View  Search  Terminal  Help
LS(1)                                      User Commands                                LS(1)

NAME
       ls - list directory contents

SYNOPSIS
       ls [OPTION]... [FILE]...

DESCRIPTION
       List  information  about  the  FILEs  (the current directory by default).  Sort entries
       alphabetically if none of -cftuvSUX nor --sort is specified.

       Mandatory arguments to long options are mandatory for short options too.

       -a, --all
              do not ignore entries starting with .

       -A, --almost-all
              do not list implied . and ..

       --author
              with -l, print the author of each file
 Manual page ls(1) line 1 (press h for help or q to quit)
```

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

```
                                            ttn@ttn: /tmp                              ⊖ ⊡ ⊗
 File  Edit  View  Search  Terminal  Help
ttn@ttn:~/exercise/dir1$ ln -s /etc/services /tmp/ports-info
ttn@ttn:~/exercise/dir1$ ls
abc.tar  dir2  file1.txt  output.txt  passwd_backup
ttn@ttn:~/exercise/dir1$ cd /tmp
ttn@ttn:/tmp$ ls
a1
a2
config-err-ob61om
d1
mozilla_ttn0
ports-info
snap.1000_gnome-calculator_LTgS7d
ssh-U7L5ocmSAko1
systemd-private-5f36e77bfd0e4aecb8cd4679e9572c36-bolt.service-ZSadvV
systemd-private-5f36e77bfd0e4aecb8cd4679e9572c36-colord.service-VXNdGM
systemd-private-5f36e77bfd0e4aecb8cd4679e9572c36-fwupd.service-de2xK6
systemd-private-5f36e77bfd0e4aecb8cd4679e9572c36-rtkit-daemon.service-ovsDYH
systemd-private-5f36e77bfd0e4aecb8cd4679e9572c36-systemd-resolved.service-BuUFed
systemd-private-5f36e77bfd0e4aecb8cd4679e9572c36-systemd-timesyncd.service-GBXTDw
Temp-c7e3b559-ac0b-4652-abf3-008fa056acd5
Temp-d6e501ca-ffd0-40c3-b738-62212915fdcf
test1
ttn@ttn:/tmp$ ▮
```

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?

Ans. locate command_name

```
ttn@ttn:tmp (master)$ locate mkdir
/bin/mkdir
/snap/core/4917/bin/mkdir
/snap/core/4917/usr/lib/klibc/bin/mkdir
/snap/core/6350/bin/mkdir
/snap/core/6350/usr/lib/klibc/bin/mkdir
/usr/bin/gvfs-mkdir
/usr/lib/klibc/bin/mkdir
/usr/share/man/man1/gvfs-mkdir.1.gz
/usr/share/man/man1/mkdir.1.gz
ttn@ttn:tmp (master)$
```