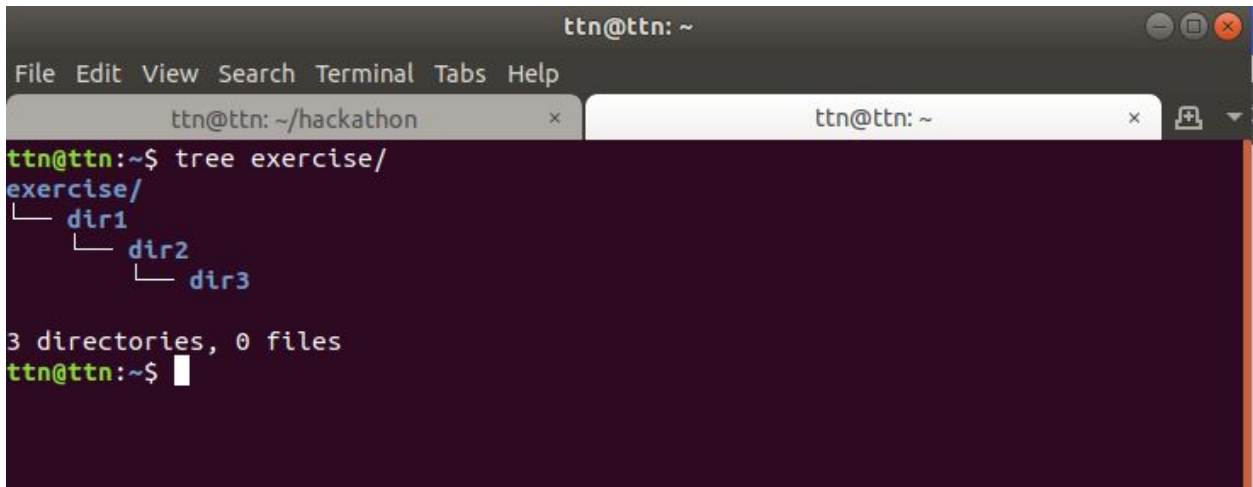


Linux Exercise 4th Feb

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

Ans-> Nested directories can be created using mkdir command with a -p switch in a single command.

```
mkdir -p exercise/dir1/dir2/dir3
```

A terminal window titled 'ttn@ttn: ~' with a menu bar (File, Edit, View, Search, Terminal, Tabs, Help) and two tabs. The active tab shows the command 'tree exercise/' and its output, which displays a tree structure of the 'exercise' directory containing 'dir1', which contains 'dir2', which contains 'dir3'. Below the tree, it says '3 directories, 0 files'. The prompt 'ttn@ttn:~\$' is followed by a cursor.

```
ttn@ttn:~$ tree exercise/
exercise/
├── dir1
│   └── dir2
│       └── dir3
3 directories, 0 files
ttn@ttn:~$
```

Q.2 Create two empty files inside dir2 directory: empty File1,empty File2 in single command ?

Ans->

```
cd exercise/dir1/dir2
touch file1 file2
```

```
ttn@ttn: ~/exercise/dir1/dir2
File Edit View Search Terminal Tabs Help
ttn@ttn: ~/hackathon x ttn@ttn: ~/exercise/dir1/dir2 x
ttn@ttn:~/exercise$ cd dir2
bash: cd: dir2: No such file or directory
ttn@ttn:~/exercise$ cd dir1/dir2/
ttn@ttn:~/exercise/dir1/dir2$ ls
dir3
ttn@ttn:~/exercise/dir1/dir2$ touch file1 file2
ttn@ttn:~/exercise/dir1/dir2$ ls
dir3 file1 file2
ttn@ttn:~/exercise/dir1/dir2$ cat file1
ttn@ttn:~/exercise/dir1/dir2$ cat file2
ttn@ttn:~/exercise/dir1/dir2$
```

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

Ans->

```
touch file1.txt
echo "hello world"> file1.txt
cat file1.txt
```

```
ttn@ttn: ~/exercise/dir1/dir2
File Edit View Search Terminal Tabs Help
ttn@ttn: ~/hackathon x ttn@ttn: ~/exercise/dir1/dir2 x
ttn@ttn:~/exercise/dir1/dir2$ ls
dir3 file1 file2
ttn@ttn:~/exercise/dir1/dir2$ touch file1.txt
ttn@ttn:~/exercise/dir1/dir2$ echo "hello world"> file1.txt
ttn@ttn:~/exercise/dir1/dir2$ cat file1.txt
hello world
ttn@ttn:~/exercise/dir1/dir2$ ^C
ttn@ttn:~/exercise/dir1/dir2$
```

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.

Ans ->

```
cd /etc
find passwd
cp passwd passwd_copy
mv passwd_copy passwd_backup
```

```
ttn@ttn: /etc
File Edit View Search Terminal Help
ttn@ttn:~$ find /etc/passwd
/etc/passwd
ttn@ttn:~$ cp /etc/passwd /etc/passwd_copy
cp: cannot create regular file '/etc/passwd_copy': Permission denied
ttn@ttn:~$ sudo cp /etc/passwd /etc/passwd_copy
ttn@ttn:~$ ls | grep passwd
ttn@ttn:~$ cd /etc/
ttn@ttn:/etc$ ls | grep passwd
passwd
passwd-
passwd_copy
ttn@ttn:/etc$ sudo passwd_copy passwd_backup
sudo: passwd_copy: command not found
ttn@ttn:/etc$ sudo mv passwd_copy passwd_backup
ttn@ttn:/etc$ ls | grep passwd
passwd
passwd-
passwd_backup
ttn@ttn:/etc$
```

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

Ans ->

Less-> less outputs the file in a paginated way unlike cat and strings, also in less i'm able to search the text and jump to the specific line and can scroll backward unlike more command According to linux man command and observations.

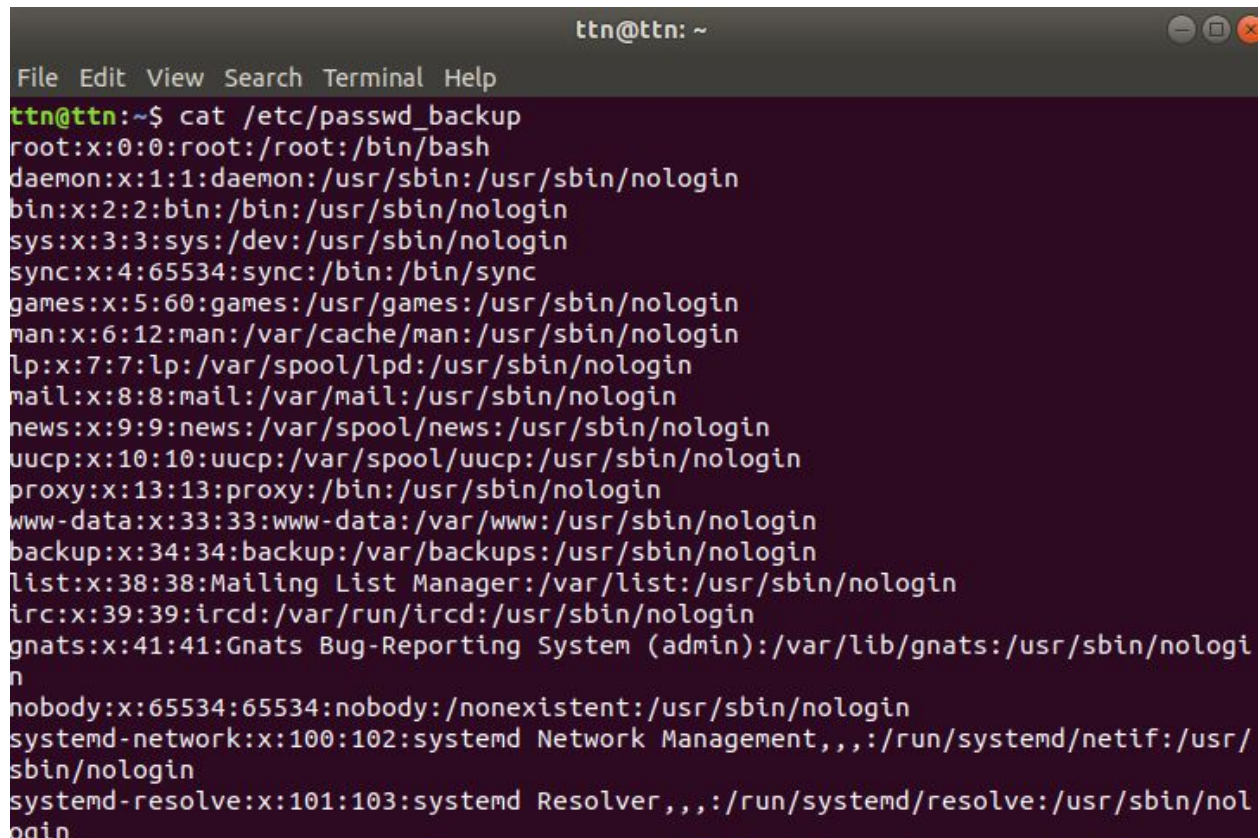
```
less /etc/passwd_backup
```

```
ttn@ttn: ~
File Edit View Search Terminal Help
uuidd:x:105:111::/run/uuidd:/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/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
ttn:x:1000:1000:TTN,,,:/home/ttn:/bin/bash
varnit:x:1001:1001::/home/varnit:/bin/sh
(END)
```

More -> In more command i can see the percentage of file i have already completed reading but i could not scroll backward.

```
ttn@ttn: ~
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/nologin
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/nologin
--More-- (43%)
```


Cat -> cat command printed the whole file as it is without pagination

A terminal window titled 'ttn@ttn: ~' with a menu bar (File, Edit, View, Search, Terminal, Help). The command 'cat /etc/passwd_backup' has been executed, displaying the contents of the file. The output lists system and regular users with their IDs, names, shells, and home directories. The users listed are root, daemon, bin, sys, sync, games, man, lp, mail, news, uucp, proxy, www-data, backup, list, irc, gnats, nobody, systemd-network, and systemd-resolve. The terminal text is as follows:

```
ttn@ttn:~$ cat /etc/passwd_backup
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/nologin
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/nologin
```

Strings -> Strings command work similarly to cat command i have checked with **diff** command the output of both does not differ in this case but from previous experience i can say cat command also print non printable characters while strings command does not.

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

Ans ->

```
cat /etc/passwd_backup |grep -n '/bin/false'
```

```
ttn@ttn: ~  
File Edit View Search Terminal Help  
ttn@ttn:~$ cat /etc/passwd_backup |grep -n '/bin/false'  
30:speech-dispatcher:x:111:29:Speech Dispatcher,,,:/var/run/speech-dispatcher:/b  
in/false  
31:whoopsie:x:112:117::/nonexistent:/bin/false  
37:hplip:x:118:7:HPLIP system user,,,:/var/run/hplip:/bin/false  
39:gnome-initial-setup:x:120:65534:/:/run/gnome-initial-setup:/bin/false  
40:gdm:x:121:125:Gnome Display Manager:/var/lib/gdm3:/bin/false  
ttn@ttn:~$
```

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

Ans->

```
head -n 5 /etc/passwd_backup > /home/ttn/output
```

```
ttn@ttn:~/exercise/dir1/dir2$ head -n 5 /etc/passwd_backup > /home/ttn/ouput  
ttn@ttn:~/exercise/dir1/dir2$ cat /home/ttn/ouput  
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/dir2$
```

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

Ans->

```
sudo adduser test  
  
cat /etc/passwd | grep test  
  
sudo passwd test
```

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

```
ttn@ttn: ~  
File Edit View Search Terminal Help  
ttn@ttn:~$ cat /etc/passwd | grep test  
test:x:1002:1002:test,,,:/home/test:/bin/bash  
ttn@ttn:~$ whoami  
ttn  
ttn@ttn:~$ sudo passwd test  
Enter new UNIX password:  
Retype new UNIX password:  
passwd: password updated successfully  
ttn@ttn:~$
```

```
ttn@ttn:~$ cat /etc/passwd | grep test
test:x:1002:1002:test,,,:/home/test:/bin/bash
```

UID and GID for user is -> 1002

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

Ans ->

```
touch emptyFile1
```

```
touch emptyFile2
```

```
ttn@ttn:~/exercise/dir1/dir2$ ls -l
total 8
drwxr-xr-x 2 ttn ttn 4096 Feb  4 13:16 dir3
-rw-r--r-- 1 ttn ttn   0 Feb  4 13:25 emptyFile1
-rw-r--r-- 1 ttn ttn   0 Feb  4 13:25 emptyFile2
-rw-r--r-- 1 ttn ttn  12 Feb  4 13:28 file1.txt
ttn@ttn:~/exercise/dir1/dir2$ touch emptyFile1
ttn@ttn:~/exercise/dir1/dir2$ touch emptyFile2
ttn@ttn:~/exercise/dir1/dir2$ ls -l
total 8
drwxr-xr-x 2 ttn ttn 4096 Feb  4 13:16 dir3
-rw-r--r-- 1 ttn ttn   0 Feb  4 15:34 emptyFile1
-rw-r--r-- 1 ttn ttn   0 Feb  4 15:35 emptyFile2
-rw-r--r-- 1 ttn ttn  12 Feb  4 13:28 file1.txt
ttn@ttn:~/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.

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.

Ans->

```
su - test
sudo usermod -a -G ttn test
```



```
Sudo chmod 664 output
```

```
vim output
```

```
Sudo chmod 644 output
```

Sudo chown test output

[illegible]

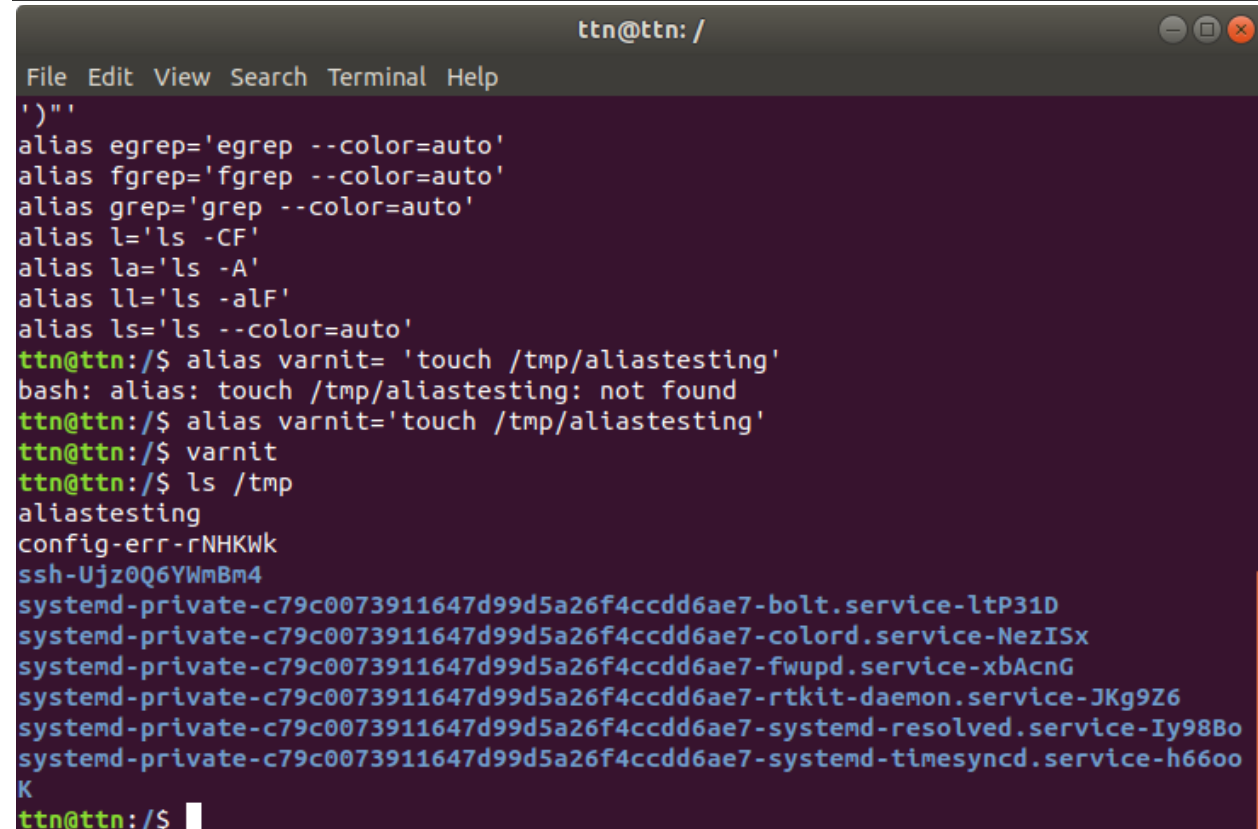
```
ttn@ttn: ~  
File Edit View Search Terminal Help  
ttn@ttn:~$ su - test  
Password:  
test@ttn:~$ cd /home/ttn/  
test@ttn:/home/ttn$ vim output  
test@ttn:/home/ttn$ cat output  
root:x:0:0:root:/root:/bin/bash  
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin  
bin:x:2:2:bin:/bin:/usr/sbin/nologin  
sys:x:3:3:sys:/dev:/usr/sbin/nologin  
sync:x:4:65534:sync:/bin:/bin/sync  
  
changed  
test@ttn:/home/ttn$ chmod 644 output  
chmod: changing permissions of 'output': Operation not permitted  
test@ttn:/home/ttn$ exit  
logout  
ttn@ttn:~$ sudo chmod 644 output  
[sudo] password for ttn:  
ttn@ttn:~$ chown test output  
chown: changing ownership of 'output': Operation not permitted  
ttn@ttn:~$ sudo chown test output  
ttn@ttn:~$
```

```
test@ttn: /home/ttn  
File Edit View Search Terminal Help  
ttn@ttn:~$ su - test  
Password:  
test@ttn:~$ cd /home/ttn/  
test@ttn:/home/ttn$ vim output  
test@ttn:/home/ttn$ cat output  
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  
  
changed  
test@ttn:/home/ttn$
```

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

Ans- >

```
alias varnit='touch /tmp/aliastesting'
```



The screenshot shows a terminal window titled 'ttn@ttn: /'. The terminal has a menu bar with 'File', 'Edit', 'View', 'Search', 'Terminal', and 'Help'. The prompt is 'ttn@ttn:/\$'. The user enters the command 'alias varnit= 'touch /tmp/aliastesting'', which is echoed. Then, the user enters 'varnit', which results in the error 'bash: alias: touch /tmp/aliastesting: not found'. The user then enters 'alias varnit='touch /tmp/aliastesting'', which is also echoed. Finally, the user enters 'varnit', which successfully creates the file '/tmp/aliastesting'. The user then enters 'ls /tmp', which lists the contents of the /tmp directory, including 'aliastesting', 'config-err-rNHKwk', 'ssh-Ujz0Q6YWmBm4', and several systemd-private directories.

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

Ans->

```
vim /home/test/.bashrc
Edit the .bashrc
And save it
Then
su - test
```

```
ttn@ttn: /home/test
File Edit View Search Terminal Help
welcome varnit
test@ttn:~$ exit
logout
ttn@ttn:/home/test$ head -n 5 .bashrc
# ~/.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 varnit"
ttn@ttn:/home/test$
```

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

Q.13 Install “zip” package.

Ans-> `apt install zip`


```
ttn@ttn: /home/test
File Edit View Search Terminal Help
ttn@ttn:/home/test$ apt install ttn
E: Could not open lock file /var/lib/dpkg/lock - open (13: Permission denied)
E: Unable to lock the administration directory (/var/lib/dpkg/), are you root?
ttn@ttn:/home/test$ sudo apt install zip
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 426 not upgraded.
ttn@ttn:/home/test$
```

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

Ans->

```
sudo tar -cvzf backup.tar output passwd_backup
sudo tar -tvf backup.tar
```

```
ttn@ttn: ~  
File Edit View Search Terminal Help  
ttn@ttn:~$ sudo tar -cvzf backup.tar output passwd_backup  
output  
passwd_backup  
ttn@ttn:~$ sudo tar -tvf backup.tar  
-rw-r--r-- test/ttn      1005 2019-02-04 16:54 output  
-rw-r--r-- ttn/ttn       2439 2019-02-04 16:49 passwd_backup  
ttn@ttn:~$
```

Q.15 scp this file to test user ?

Ans ->

```
sudo scp backup.tar test@localhost:/home/test
```

```
ttn@ttn: ~  
File Edit View Search Terminal Tabs Help  
ttn@ttn: ~ x ttn@ttn: /home/test x  
ttn@ttn:/home/test$ ls  
examples.desktop  
ttn@ttn:/home/test$ cd /home/ttn  
ttn@ttn:~$ ls  
amazon-kinesis-video-streams-producer-sdk-cpp  examples.desktop  passwd_backup  
backup.tar                                       exercise          Pictures  
cat_output                                     hackathon         Public  
Desktop                                         id               strings_output  
Documents                                     Music            Templates  
Downloads                                     output          Videos  
ttn@ttn:~$ scp backup.tar test@localhost:/home/test  
test@localhost's password:  
welcome varnit  
ttn@ttn:~$ sudo scp backup.tar test@localhost:/home/test  
The authenticity of host 'localhost (127.0.0.1)' can't be established.  
ECDSA key fingerprint is SHA256:xKlj+GS6ap8k7oBIm/f663A9ZSgvztOLHDEVv4ttDQg.  
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:  
welcome varnit  
ttn@ttn:~$ sudo scp backup.tar test@localhost:/home/test  
test@localhost's password:  
welcome varnit  
ttn@ttn:~$
```

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

Ans ->

```
ssh test@localhost  
tar -xvf backup.tar
```

```
test@ttn: ~  
File Edit View Search Terminal Help  
ttn@ttn:~$ ssh test@localhost  
test@localhost's password:  
Welcome to Ubuntu 18.04.1 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  
  
* 'snap info' now shows the freshness of each channel.  
  Try 'snap info microk8s' for all the latest goodness.  
  
* Canonical Livepatch is available for installation.  
  - Reduce system reboots and improve kernel security. Activate at:  
    https://ubuntu.com/livepatch  
  
405 packages can be updated.  
189 updates are security updates.  
  
Last login: Mon Feb  4 17:06:25 2019 from 127.0.0.1  
welcome varnit  
test@ttn:~$ ls  
backup.tar  examples.desktop  
test@ttn:~$ tar -xvf backup.tar  
  
test@ttn:~$ tar -xvf backup.tar  
output  
passwd_backup  
test@ttn:~$ ls  
backup.tar  examples.desktop  output  passwd_backup  
test@ttn:~$
```

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

Ans ->

```
wget https://media.glassdoor.com/1/a4/af/db/0e/office-odc.jpg
```



```
test@ttn: ~  
File Edit View Search Terminal Help  
test@ttn:~$ wget https://media.glassdoor.com/l/a4/af/db/0e/office-odc.jpg  
--2019-02-04 17:24:51-- https://media.glassdoor.com/l/a4/af/db/0e/office-odc.jpg  
Resolving media.glassdoor.com (media.glassdoor.com)... 104.16.235.151, 104.16.231.151, 104.16.231.151, ...  
Connecting to media.glassdoor.com (media.glassdoor.com)|104.16.235.151|:443... connected.  
HTTP request sent, awaiting response... 200 OK  
Length: 70713 (69K) [image/jpeg]  
Saving to: 'office-odc.jpg'  
  
office-odc.jpg      100%[=====>] 69.06K  --.-KB/s    in 0.02s  
2019-02-04 17:24:51 (2.87 MB/s) - 'office-odc.jpg' saved [70713/70713]  
  
test@ttn:~$
```

Q.18 How to get help of commands usages.

Ans-> Most of the commands provide --help or -h option to view the summary of what are the available options for the given command for example

```
tar --help
```

Other very useful command that can be used as a manual is man command for example

```
man tar
```

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

Ans->

```
ln -s /etc/services /tmp/ports-info
```

```
ttn@ttn: ~  
File Edit View Search Terminal Help  
ttn@ttn:~$ ln -s /etc/services /tmp/ports-info  
ttn@ttn:~$ ls /tmp/ports-info  
/tmp/ports-info  
ttn@ttn:~$ ls /tmp  
aliastesting  
config-err-rNHKwk  
ports-info  
ssh-Ujz0Q6YWmBm4  
systemd-private-c79c0073911647d99d5a26f4ccdd6ae7-bolt.service-ltP31D  
systemd-private-c79c0073911647d99d5a26f4ccdd6ae7-colord.service-NezISx  
systemd-private-c79c0073911647d99d5a26f4ccdd6ae7-fwupd.service-xbAcnG  
systemd-private-c79c0073911647d99d5a26f4ccdd6ae7-rtkit-daemon.service-JKg9Z6  
systemd-private-c79c0073911647d99d5a26f4ccdd6ae7-systemd-resolved.service-Iy98Bo  
systemd-private-c79c0073911647d99d5a26f4ccdd6ae7-systemd-timesyncd.service-h66oo  
K  
ttn@ttn:~$
```

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 joiner you do not have any idea about where is that Installed. How can you check that?

Ans-> For finding the location of binary of a particular command we can use which command

For example ->

```
which man
```

```
ttn@ttn: ~  
File Edit View Search Terminal Help  
ttn@ttn:~$ ln -s /etc/services /tmp/ports-info  
ttn@ttn:~$ ls /tmp/ports-info  
/tmp/ports-info  
ttn@ttn:~$ ls /tmp  
aliastesting  
config-err-rNHKwk  
ports-info  
ssh-Ujz0Q6YWmBm4  
systemd-private-c79c0073911647d99d5a26f4ccdd6ae7-bolt.service-ltP31D  
systemd-private-c79c0073911647d99d5a26f4ccdd6ae7-colord.service-NezISx  
systemd-private-c79c0073911647d99d5a26f4ccdd6ae7-fwupd.service-xbAcnG  
systemd-private-c79c0073911647d99d5a26f4ccdd6ae7-rtkit-daemon.service-JKg9Z6  
systemd-private-c79c0073911647d99d5a26f4ccdd6ae7-systemd-resolved.service-Iy98Bo  
systemd-private-c79c0073911647d99d5a26f4ccdd6ae7-systemd-timesyncd.service-h66oo  
K  
ttn@ttn:~$ which man  
/usr/bin/man  
ttn@ttn:~$
```