

Module 4 Linux Essentials

TASK 4.3

After you have logged into the system, do the following.

1. Invoke **pwd** to see your current working directory (there should be your home directory).

2. Collect output of these commands

ls -l /

```

user@user-VirtualBox:~$ ls -l /
total 771796
drwxr-xr-x  2 root root    4096 кві  6 06:30 bin
drwxr-xr-x  3 root root    4096 кві 16 22:55 boot
drwxrwxr-x  2 root root    4096 бер 31 12:43 cdrom
drwxr-xr-x 19 root root   4280 кві 14 23:52 dev
drwxr-xr-x 126 root root  12288 кві 14 23:49 etc
drwxr-xr-x  4 root root    4096 бер 31 15:27 home
lrwxrwxrwx  1 root root     32 кві 14 23:55 initrd.img -> boot/initrd.img-5.3.0-46-generic
lrwxrwxrwx  1 root root     32 кві 14 23:55 initrd.img.old -> boot/initrd.img-5.3.0-45-generic
drwxr-xr-x 22 root root    4096 кві  5 15:34 lib
drwxr-xr-x  2 root root    4096 лют  3 20:22 lib64
drwx----- 2 root root   16384 бер 31 12:35 lost+found
drwxr-xr-x  3 root root    4096 бер 31 15:07 media
drwxr-xr-x  2 root root    4096 лют  3 20:22 mnt
drwxr-xr-x  4 root root    4096 кві  5 16:41 opt
dr-xr-xr-x 268 root root      0 кві 14 23:39 proc
drwx----- 7 root root    4096 кві  6 13:50 root
drwxr-xr-x 33 root root   1140 кві 16 22:56 run
drwxr-xr-x  2 root root   12288 кві 14 23:40/sbin
drwxr-xr-x 13 root root    4096 кві  6 12:31 snap
drwxr-xr-x  2 root root    4096 лют  3 20:22 srv
-rw-----  1 root root 790210560 бер 31 12:35 swapfile
dr-xr-xr-x 13 root root      0 кві 14 23:39 sys
drwxrwxrwt 14 root root    4096 кві 16 22:59 tmp
drwxr-xr-x 11 root root    4096 лют  3 20:25 usr
drwxr-xr-x 14 root root    4096 лют  3 20:30 var
-rw-----  1 root root      0 кві 14 23:40 VBox.log
lrwxrwxrwx  1 root root     29 кві 14 23:55 vmlinuz -> boot/vmlinuz-5.3.0-46-generic
lrwxrwxrwx  1 root root     29 кві 14 23:55 vmlinuz.old -> boot/vmlinuz-5.3.0-45-generic
user@user-VirtualBox:~$

```

```

user@user-VirtualBox:~$ ls -l /
total 771796
drwxr-xr-x  2 root root    4096 кві  6 06:30 bin
drwxr-xr-x  3 root root    4096 кві 16 22:55 boot
drwxrwxr-x  2 root root    4096 бер 31 12:43 cdrom
drwxr-xr-x 19 root root   4280 кві 14 23:52 dev
drwxr-xr-x 126 root root  12288 кві 14 23:49 etc
drwxr-xr-x  4 root root    4096 бер 31 15:27 home
lrwxrwxrwx  1 root root     32 кві 14 23:55 initrd.img -> boot/initrd.img-5.3.0-46-generic
lrwxrwxrwx  1 root root     32 кві 14 23:55 initrd.img.old -> boot/initrd.img-5.3.0-45-generic
drwxr-xr-x 22 root root    4096 кві  5 15:34 lib
drwxr-xr-x  2 root root    4096 лют  3 20:22 lib64
drwx----- 2 root root   16384 бер 31 12:35 lost+found
drwxr-xr-x  3 root root    4096 бер 31 15:07 media
drwxr-xr-x  2 root root    4096 лют  3 20:22 mnt
drwxr-xr-x  4 root root    4096 кві  5 16:41 opt
dr-xr-xr-x 268 root root      0 кві 14 23:39 proc
drwx----- 7 root root    4096 кві  6 13:50 root
drwxr-xr-x 33 root root   1140 кві 16 22:56 run
drwxr-xr-x  2 root root   12288 кві 14 23:40/sbin
drwxr-xr-x 13 root root    4096 кві  6 12:31 snap
drwxr-xr-x  2 root root    4096 лют  3 20:22 srv
-rw-----  1 root root 790210560 бер 31 12:35 swapfile
dr-xr-xr-x 13 root root      0 кві 14 23:39 sys
drwxrwxrwt 14 root root    4096 кві 16 22:59 tmp
drwxr-xr-x 11 root root    4096 лют  3 20:25 usr
drwxr-xr-x 14 root root    4096 лют  3 20:30 var
-rw-----  1 root root      0 кві 14 23:40 VBox.log
lrwxrwxrwx  1 root root     29 кві 14 23:55 vmlinuz -> boot/vmlinuz-5.3.0-46-generic
lrwxrwxrwx  1 root root     29 кві 14 23:55 vmlinuz.old -> boot/vmlinuz-5.3.0-45-generic
user@user-VirtualBox:~$

```

ls

ls ~

ls -l

ls -a

```
user@user-VirtualBox:~$ ls
Desktop  Documents  Downloads  Music  Pictures  Public  snap  Templates  Videos
user@user-VirtualBox:~$ ls ~
Desktop  Documents  Downloads  Music  Pictures  Public  snap  Templates  Videos
user@user-VirtualBox:~$ ls -l
total 68
drwxr-xr-x 2 user user 4096 6ep 31 14:47 Desktop
drwxr-xr-x 2 user user 4096 6ep 31 14:47 Documents
drwxr-xr-x 2 user user 4096 6ep 31 14:47 Downloads
drwxr-xr-x 2 user user 4096 6ep 31 14:47 Music
drwxr-xr-x 2 user user 36864 kbi 15 00:09 Pictures
drwxr-xr-x 2 user user 4096 6ep 31 14:47 Public
drwxr-xr-x 3 user user 4096 kbi 6 11:53 snap
drwxr-xr-x 2 user user 4096 6ep 31 14:47 Templates
drwxr-xr-x 2 user user 4096 6ep 31 14:47 Videos
user@user-VirtualBox:~$ ls -a
.          .bashrc  Documents .kube    .profile  Templates
..         .cache   Downloads .local   Public    .vboxclient-display.pid
.bash_history .config  .gnupg   Music    snap      .vboxclient-draganddrop.pid
.bash_logout Desktop  .ICEauthority Pictures  .sudo_as_admin_successful .vboxclient-seamless.pid
user@user-VirtualBox:~$
```

```
user@user-VirtualBox:~$ ls
Desktop  Documents  Downloads  Music  Pictures  Public  snap  Templates  Videos
user@user-VirtualBox:~$ ls ~
Desktop  Documents  Downloads  Music  Pictures  Public  snap  Templates  Videos
user@user-VirtualBox:~$ ls -l
total 68
drwxr-xr-x 2 user user 4096 6ep 31 14:47 Desktop
drwxr-xr-x 2 user user 4096 6ep 31 14:47 Documents
drwxr-xr-x 2 user user 4096 6ep 31 14:47 Downloads
drwxr-xr-x 2 user user 4096 6ep 31 14:47 Music
drwxr-xr-x 2 user user 36864 kbi 15 00:09 Pictures
drwxr-xr-x 2 user user 4096 6ep 31 14:47 Public
drwxr-xr-x 3 user user 4096 kbi 6 11:53 snap
drwxr-xr-x 2 user user 4096 6ep 31 14:47 Templates
drwxr-xr-x 2 user user 4096 6ep 31 14:47 Videos
user@user-VirtualBox:~$ ls -a
.          .bashrc  Documents .kube    .profile  Templates
..         .cache   Downloads .local   Public    .vboxclient-display.pid
.bash_history .config  .gnupg   Music    snap      .vboxclient-draganddrop.pid
.bash_logout Desktop  .ICEauthority Pictures  .sudo_as_admin_successful .vboxclient-seamless.pid
user@user-VirtualBox:~$
```

ls -la

```
user@user-VirtualBox:~$ ls -la
```

```
total 132
```

```
drwxr-xr-x 16 user user 4096 kbì 14 23:43 .
drwxr-xr-x  4 root root 4096 bep 31 15:27 ..
-rw-----  1 user user  714 bep 31 16:45 .bash_history
-rw-r--r--  1 user user  220 bep 31 12:45 .bash_logout
-rw-r--r--  1 user user 3771 bep 31 12:45 .bashrc
drwx----- 10 user user 4096 bep 31 15:06 .cache
drwx----- 12 user user 4096 kbì  5 15:41 .config
drwxr-xr-x  2 user user 4096 bep 31 14:47 Desktop
drwxr-xr-x  2 user user 4096 bep 31 14:47 Documents
drwxr-xr-x  2 user user 4096 bep 31 14:47 Downloads
drwx-----  3 user user 4096 bep 31 14:47 .gnupg
-rw-----  1 user user 1416 kbì 14 23:42 .ICEauthority
drwxr-x---  4 user user 4096 kbì  6 11:53 .kube
drwx-----  3 user user 4096 bep 31 14:47 .local
drwxr-xr-x  2 user user 4096 bep 31 14:47 Music
drwxr-xr-x  2 user user 36864 kbì 16 23:20 Pictures
-rw-r--r--  1 user user  807 bep 31 12:45 .profile
drwxr-xr-x  2 user user 4096 bep 31 14:47 Public
drwxr-xr-x  3 user user 4096 kbì  6 11:53 snap
-rw-r--r--  1 user user    0 bep 31 14:51 .sudo_as_admin_successful
drwxr-xr-x  2 user user 4096 bep 31 14:47 Templates
-rw-r-----  1 user user    5 kbì 14 23:42 .vboxclient-display.pid
-rw-r-----  1 user user    5 kbì 14 23:42 .vboxclient-draganddrop.pid
-rw-r-----  1 user user    5 kbì 14 23:42 .vboxclient-seamless.pid
drwxr-xr-x  2 user user 4096 bep 31 14:47 Videos
-rw-----  1 user user  827 bep 31 16:01 .viminfo
```

```
user@user-VirtualBox:~$
```

```

user@user-VirtualBox:~$ ls -la
total 132
drwxr-xr-x 16 user user 4096 kbi 14 23:43 .
drwxr-xr-x  4 root root 4096 bep 31 15:27 ..
-rw-----  1 user user  714 bep 31 16:45 .bash_history
-rw-r--r--  1 user user  220 bep 31 12:45 .bash_logout
-rw-r--r--  1 user user 3771 bep 31 12:45 .bashrc
drwx----- 10 user user 4096 bep 31 15:06 .cache
drwx----- 12 user user 4096 kbi  5 15:41 .config
drwxr-xr-x  2 user user 4096 bep 31 14:47 Desktop
drwxr-xr-x  2 user user 4096 bep 31 14:47 Documents
drwxr-xr-x  2 user user 4096 bep 31 14:47 Downloads
drwx-----  3 user user 4096 bep 31 14:47 .gnupg
-rw-----  1 user user 1416 kbi 14 23:42 .ICEauthority
drwxr-xr-x  4 user user 4096 kbi  6 11:53 .kube
drwx-----  3 user user 4096 bep 31 14:47 .local
drwxr-xr-x  2 user user 4096 bep 31 14:47 Music
drwxr-xr-x  2 user user 36864 kbi 16 23:20 Pictures
-rw-r--r--  1 user user  807 bep 31 12:45 .profile
drwxr-xr-x  2 user user 4096 bep 31 14:47 Public
drwxr-xr-x  3 user user 4096 kbi  6 11:53 snap
-rw-r--r--  1 user user    0 bep 31 14:51 .sudo_as_admin_successful
drwxr-xr-x  2 user user 4096 bep 31 14:47 Templates
-rw-r-----  1 user user    5 kbi 14 23:42 .vboxclient-display.pid
-rw-r-----  1 user user    5 kbi 14 23:42 .vboxclient-draganddrop.pid
-rw-r-----  1 user user    5 kbi 14 23:42 .vboxclient-seamless.pid
drwxr-xr-x  2 user user 4096 bep 31 14:47 Videos
-rw-----  1 user user  827 bep 31 16:01 .viminfo
user@user-VirtualBox:~$

```

ls -lda ~

```

user@user-VirtualBox:~$
user@user-VirtualBox:~$
user@user-VirtualBox:~$
user@user-VirtualBox:~$ ls -lda ~
drwxr-xr-x 16 user user 4096 kbi 14 23:43 /home/user
user@user-VirtualBox:~$

```

```

user@user-VirtualBox:~$
user@user-VirtualBox:~$
user@user-VirtualBox:~$
user@user-VirtualBox:~$ ls -lda ~
drwxr-xr-x 16 user user 4096 kbi 14 23:43 /home/user
user@user-VirtualBox:~$

```

Note differences between produced outputs. Describe (in few words) purposes of these commands.

Different switches can be used with 'ls' command, for example to show contents of current directory, or any given directory. We can list all files as well, list files with their permissions, etc.

3. Execute and describe the following commands (store the output, if any):

```
mkdir test
```

```
cd test
```

```
pwd
```

```
touch test.txt
```

```
ls -l test.txt
```

```
mkdir test2
```

```
mv test.txt test2
```

```
cd test2
```

```
ls
```

```
mv test.txt test2.txt
```

```
ls
```

```
cp test2.txt ..
```

```
cd ..
```

```
ls
```

```
rm test2.txt
```

```
rmdir test2
```

```
user@user-VirtualBox:~$ mkdir test
user@user-VirtualBox:~$ cd test
user@user-VirtualBox:~/test$ pwd
/home/user/test
user@user-VirtualBox:~/test$ touch test.txt
user@user-VirtualBox:~/test$ ls -l test.txt
-rw-r--r-- 1 user user 0 kbi 16 23:27 test.txt
user@user-VirtualBox:~/test$ mkdir test2
user@user-VirtualBox:~/test$ mv test.txt test2
user@user-VirtualBox:~/test$ cd test2/
user@user-VirtualBox:~/test/test2$ ls
test.txt
user@user-VirtualBox:~/test/test2$ mv test.txt test2.txt
user@user-VirtualBox:~/test/test2$ ls
test2.txt
user@user-VirtualBox:~/test/test2$ cp test2.txt ..
user@user-VirtualBox:~/test/test2$ cd ..
user@user-VirtualBox:~/test$ ls
test2  test2.txt
user@user-VirtualBox:~/test$ rm test2.txt
user@user-VirtualBox:~/test$ rmdir test2/
rmdir: failed to remove 'test2/': Directory not empty
user@user-VirtualBox:~/test$ rm -r test2/
user@user-VirtualBox:~/test$ ls
user@user-VirtualBox:~/test$
```

Mkdir, rmdir – creation & deletion of directories

Cd – navigation within the directories tree

Touch, rm -- creation & deletion of files

Cp, mv- copy & move operations

4. Execute and describe the difference

cat /etc/fstab

```

user@user-VirtualBox:~/test$ cat /etc/fstab
# /etc/fstab: static file system information.
#
# Use 'blkid' to print the universally unique identifier for a
# device; this may be used with UUID= as a more robust way to name devices
# that works even if disks are added and removed. See fstab(5).
#
# <file system> <mount point> <type> <options> <dump> <pass>
# / was on /dev/sda1 during installation
UUID=4acf8985-7b5d-4d43-a671-9743d734105c / ext4 errors=remount-ro 0 1
/swapfile none swap sw 0 0

```

```

user@user-VirtualBox:~/test$ cat /etc/fstab
# /etc/fstab: static file system information.
#
# Use 'blkid' to print the universally unique identifier for a
# device; this may be used with UUID= as a more robust way to name devices
# that works even if disks are added and removed. See fstab(5).
#
# <file system> <mount point> <type> <options> <dump> <pass>
# / was on /dev/sda1 during installation
UUID=4acf8985-7b5d-4d43-a671-9743d734105c / ext4 errors=remount-ro 0 1
/swapfile none swap sw 0 0

```

less /etc/fstab

```

# /etc/fstab: static file system information.
#
# Use 'blkid' to print the universally unique identifier for a
# device; this may be used with UUID= as a more robust way to name devices
# that works even if disks are added and removed. See fstab(5).
#
# <file system> <mount point> <type> <options> <dump> <pass>
# / was on /dev/sda1 during installation
UUID=4acf8985-7b5d-4d43-a671-9743d734105c / ext4 errors=remount-ro 0 1
/swapfile none swap sw 0 0
/etc/fstab (END)

```

```

# /etc/fstab: static file system information.
#
# Use 'blkid' to print the universally unique identifier for a
# device; this may be used with UUID= as a more robust way to name devices
# that works even if disks are added and removed. See fstab(5).
#
# <file system> <mount point> <type> <options> <dump> <pass>
# / was on /dev/sda1 during installation
UUID=4acf8985-7b5d-4d43-a671-9743d734105c / ext4 errors=remount-ro 0 1
/swapfile none swap sw 0 0
/etc/fstab (END)

```

more /etc/fstab

```

user@user-VirtualBox:~/test$ more /etc/fstab
# /etc/fstab: static file system information.
#
# Use 'blkid' to print the universally unique identifier for a
# device; this may be used with UUID= as a more robust way to name devices
# that works even if disks are added and removed. See fstab(5).
#
# <file system> <mount point> <type> <options> <dump> <pass>
# / was on /dev/sda1 during installation
UUID=4acf8985-7b5d-4d43-a671-9743d734105c / ext4 errors=remount-ro 0 1
/swapfile none swap sw 0 0
user@user-VirtualBox:~/test$

```


cat just dumps one or more files, in their entirety to standard output. more dumps them one page at a time, and adds some ability to jump & search forwards. less adds the ability to jump & search backwards

5. Add to archive all 'test' directories.

a. to the pure 'tar';

b. to the zipped 'tar' with only tar command;

```
user@user-VirtualBox:~/test$ cd ..
user@user-VirtualBox:~$ tar -cvf test.tar test/
test/
test/test.txt
test/test2.txt
user@user-VirtualBox:~$ tar -czf compressed.tgz test/
user@user-VirtualBox:~$ ls -la
total 152
drwxr-xr-x 17 user user 4096 kb 16 23:52 .
drwxr-xr-x  4 root root 4096 b  31 15:27 ..
-rw-----  1 user user  714 b  31 16:45 .bash_history
-rw-r--r--  1 user user  220 b  31 12:45 .bash_logout
-rw-r--r--  1 user user 3771 b  31 12:45 .bashrc
drwx----- 10 user user 4096 b  31 15:06 .cache
-rw-r--r--  1 user user  158 kb 16 23:52 compressed.tgz
drwx----- 12 user user 4096 kb  5 15:41 .config
drwxr-xr-x  2 user user 4096 b  31 14:47 Desktop
drwxr-xr-x  2 user user 4096 b  31 14:47 Documents
drwxr-xr-x  2 user user 4096 b  31 14:47 Downloads
drwx-----  3 user user 4096 b  31 14:47 .gnupg
-rw-----  1 user user 1416 kb 14 23:42 .ICEauthority
drwxr-x--  4 user user 4096 kb  6 11:53 .kube
drwx-----  3 user user 4096 b  31 14:47 .local
drwxr-xr-x  2 user user 4096 b  31 14:47 Music
drwxr-xr-x  2 user user 36864 kb 16 23:20 Pictures
-rw-r--r--  1 user user  807 b  31 12:45 .profile
drwxr-xr-x  2 user user 4096 b  31 14:47 Public
drwxr-xr-x  3 user user 4096 kb  6 11:53 snap
-rw-r--r--  1 user user    0 b  31 14:51 .sudo_as_admin_successful
```

c. to the zipped 'tar' with gzip command;

```

user@user-VirtualBox:~$ gzip test.tar
user@user-VirtualBox:~$ ls -la
total 144
drwxr-xr-x 17 user user 4096 kbi 16 23:56 .
drwxr-xr-x  4 root root 4096 bep 31 15:27 ..
-rw-r--r--  1 user user  714 bep 31 16:45 .bash_history
-rw-r--r--  1 user user  220 bep 31 12:45 .bash_logout
-rw-r--r--  1 user user 3771 bep 31 12:45 .bashrc
drwx----- 10 user user 4096 bep 31 15:06 .cache
-rw-r--r--  1 user user  158 kbi 16 23:52 compressed.tgz
drwx----- 12 user user 4096 kbi  5 15:41 .config
drwxr-xr-x  2 user user 4096 bep 31 14:47 Desktop
drwxr-xr-x  2 user user 4096 bep 31 14:47 Documents
drwxr-xr-x  2 user user 4096 bep 31 14:47 Downloads
drwx-----  3 user user 4096 bep 31 14:47 .gnupg
-rw-r--r--  1 user user 1416 kbi 14 23:42 .ICEauthority
drwxr-xr-x  4 user user 4096 kbi  6 11:53 .kube
drwx-----  3 user user 4096 bep 31 14:47 .local
drwxr-xr-x  2 user user 4096 bep 31 14:47 Music
drwxr-xr-x  2 user user 36864 kbi 16 23:20 Pictures
-rw-r--r--  1 user user  807 bep 31 12:45 .profile
drwxr-xr-x  2 user user 4096 bep 31 14:47 Public
drwxr-xr-x  3 user user 4096 kbi  6 11:53 snap
-rw-r--r--  1 user user    0 bep 31 14:51 .sudo_as_admin_successful
drwxr-xr-x  2 user user 4096 bep 31 14:47 Templates
drwxr-xr-x  2 user user 4096 kbi 16 23:50 test
-rw-r--r--  1 user user  167 kbi 16 23:50 test.tar.gz
-rw-r--r--  1 user user    5 kbi 14 23:42 vboxclient-display.pid

```

extract from archives all above.

```

user@user-VirtualBox:~$ gunzip test.tar.gz
user@user-VirtualBox:~$ ls -la
total 152
drwxr-xr-x 17 user user 4096 κbi 17 00:01 .
drwxr-xr-x  4 root root 4096 6ep 31 15:27 ..
-rw-----  1 user user  714 6ep 31 16:45 .bash_history
-rw-r--r--  1 user user  220 6ep 31 12:45 .bash_logout
-rw-r--r--  1 user user 3771 6ep 31 12:45 .bashrc
drwx----- 10 user user 4096 6ep 31 15:06 .cache
-rw-r--r--  1 user user  158 κbi 16 23:52 compressed.tgz
drwx----- 12 user user 4096 κbi  5 15:41 .config
drwxr-xr-x  2 user user 4096 6ep 31 14:47 Desktop
drwxr-xr-x  2 user user 4096 6ep 31 14:47 Documents
drwxr-xr-x  2 user user 4096 6ep 31 14:47 Downloads
drwx-----  3 user user 4096 6ep 31 14:47 .gnupg
-rw-----  1 user user 1416 κbi 14 23:42 .ICEauthority
drwxr-x---  4 user user 4096 κbi  6 11:53 .kube
drwx-----  3 user user 4096 6ep 31 14:47 .local
drwxr-xr-x  2 user user 4096 6ep 31 14:47 Music
drwxr-xr-x  2 user user 36864 κbi 16 23:20 Pictures
-rw-r--r--  1 user user  807 6ep 31 12:45 .profile
drwxr-xr-x  2 user user 4096 6ep 31 14:47 Public
drwxr-xr-x  3 user user 4096 κbi  6 11:53 snap
-rw-r--r--  1 user user    0 6ep 31 14:51 .sudo_as_admin_successful
drwxr-xr-x  2 user user 4096 6ep 31 14:47 Templates
drwxr-xr-x  2 user user 4096 κbi 16 23:50 test
-rw-r--r--  1 user user 10240 κbi 16 23:50 test.tar

user@user-VirtualBox:~$
user@user-VirtualBox:~$ rm -r test
user@user-VirtualBox:~$ tar -xvf compressed.tgz
test/
test/test.txt
test/test2.txt
user@user-VirtualBox:~$ █

```

5. Look through man pages of the listed above commands.

Done
