

## 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).

```
oleksii@oleksii-vm1:~$ pwd
/home/oleksii
```

2. Collect output of these commands

**ls -l /** - to show content of / directory

**ls** – to show content of current directory, without any additional info about files

**ls ~** - to show content of home directory, without any additional info about files

**ls -l** – to show content of current directory at long format.

**ls -a** - to show content of current directory including hidden files

**ls -la** - to show content of current directory at long format with hidden files

**ls -lda ~** -to show folders of home directory at long format with hidden files

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

```
oleksii@oleksii-vm1:~$ ls -l
total 52
drwxr-xr-x 3 oleksii oleksii 4096 6ep 29 00:03 Desktop
drwxrwxr-x 2 oleksii oleksii 4096 6ep 31 19:39 Dockerfile
drwxr-xr-x 2 oleksii oleksii 4096 6ep 28 16:10 Documents
drwxr-xr-x 2 oleksii oleksii 4096 6ep 28 16:10 Downloads
-rw-r--r-- 1 oleksii oleksii 8980 6ep 28 16:01 examples.desktop
drwxr-xr-x 2 oleksii oleksii 4096 6ep 28 16:10 Music
drwxr-xr-x 2 oleksii oleksii 4096 kbi 10 23:35 Pictures
drwxr-xr-x 2 oleksii oleksii 4096 6ep 28 16:10 Public
drwxr-xr-x 3 oleksii oleksii 4096 6ep 31 18:33 snap
drwxr-xr-x 2 oleksii oleksii 4096 6ep 28 16:10 Templates
drwxr-xr-x 2 oleksii oleksii 4096 6ep 28 16:10 Videos
oleksii@oleksii-vm1:~$ ls -a
.          Desktop      .kube      .sudo_as_admin_successful
..         Dockerfile   .local     Templates
.bash_history Documents    Music      .vboxclient-display.pid
.bash_logout Downloads   Pictures   .vboxclient-draganddrop.pid
.bashrc    examples.desktop .profile   .vboxclient-seamless.pid
.cache     .gnupg      Public     Videos
.config    .ICEauthority snap
```

```

oleksii@oleksii-vm1:~$ ls -l /
total 1232144
drwxr-xr-x  2 root root      4096 беп 31 18:28 bin
drwxr-xr-x  3 root root      4096 кбі  8 23:27 boot
drwxrwxr-x  2 root root      4096 беп 28 16:00 cdrom
drwxr-xr-x 18 root root      4240 кбі 10 23:31 dev
drwxr-xr-x 126 root root    12288 кбі  8 23:27 etc
drwxr-xr-x  3 root root      4096 беп 28 16:01 home
lrwxrwxrwx  1 root root        32 беп 31 18:34 initrd.img -> boot/initrd.img-5.3.0-45-g
eneric
lrwxrwxrwx  1 root root        32 беп 31 18:34 initrd.img.old -> boot/initrd.img-5.3.0-
42-generic
drwxr-xr-x 22 root root      4096 беп 31 19:29 lib
drwxr-xr-x  2 root root      4096 лют  3 20:22 lib64
drwx----- 2 root root    16384 беп 28 15:57 lost+found
drwxr-xr-x  3 root root      4096 беп 28 23:36 media
drwxr-xr-x  2 root root      4096 лют  3 20:22 mnt
drwxr-xr-x  4 root root      4096 беп 31 18:30 opt
dr-xr-xr-x 217 root root        0 кбі 10 23:27 proc
drwx----- 4 root root      4096 беп 31 18:29 root
drwxr-xr-x 31 root root      980 кбі 10 23:33 run
drwxr-xr-x  2 root root    12288 кбі 10 23:31 sbin
drwxr-xr-x 12 root root      4096 беп 31 18:29 snap
drwxr-xr-x  2 root root      4096 лют  3 20:22 srv
-rw-----  1 root root 1261608960 беп 28 15:57 swapfile
dr-xr-xr-x 13 root root        0 кбі 10 23:27 sys
drwxrwxrwt 14 root root      4096 кбі 10 23:35 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 кбі 10 23:31 VBox.log
lrwxrwxrwx  1 root root        29 беп 31 18:34 vmlinuz -> boot/vmlinuz-5.3.0-45-generic
lrwxrwxrwx  1 root root        29 беп 31 18:34 vmlinuz.old -> boot/vmlinuz-5.3.0-42-gen
eric
oleksii@oleksii-vm1:~$ ls
Desktop    Documents  examples.desktop  Pictures  snap        Videos
Dockerfile Downloads  Music            Public    Templates
oleksii@oleksii-vm1:~$ ls ~
Desktop    Documents  examples.desktop  Pictures  snap        Videos
Dockerfile Downloads  Music            Public    Templates

```

```

oleksii@oleksii-vm1:~$ ls -la
total 112
drwxr-xr-x 17 oleksii oleksii 4096 кбі 10 23:33 .
drwxr-xr-x  3 root    root    4096 беп 28 16:01 ..
-rw-----  1 oleksii oleksii  719 кбі  8 23:29 .bash_history
-rw-r--r--  1 oleksii oleksii  220 беп 28 16:01 .bash_logout
-rw-r--r--  1 oleksii oleksii 3771 беп 28 16:01 .bashrc
drwx----- 15 oleksii oleksii 4096 беп 29 12:22 .cache
drwx----- 14 oleksii oleksii 4096 беп 29 00:04 .config
drwxr-xr-x  3 oleksii oleksii 4096 беп 29 00:03 Desktop
drwxrwxr-x  2 oleksii oleksii 4096 беп 31 19:39 Dockerfile
drwxr-xr-x  2 oleksii oleksii 4096 беп 28 16:10 Documents
drwxr-xr-x  2 oleksii oleksii 4096 беп 28 16:10 Downloads
-rw-r--r--  1 oleksii oleksii 8980 беп 28 16:01 examples.desktop
drwx----- 3 oleksii oleksii 4096 беп 28 16:09 .gnupg
-rw-----  1 oleksii oleksii 3706 кбі 10 23:32 .ICEauthority
drwxr-xr-x  4 oleksii oleksii 4096 беп 31 18:33 .kube
drwx----- 3 oleksii oleksii 4096 беп 28 16:09 .local
drwxr-xr-x  2 oleksii oleksii 4096 беп 28 16:10 Music
drwxr-xr-x  2 oleksii oleksii 4096 кбі 10 23:35 Pictures
-rw-r--r--  1 oleksii oleksii  807 беп 28 16:01 .profile
drwxr-xr-x  2 oleksii oleksii 4096 беп 28 16:10 Public
drwxr-xr-x  3 oleksii oleksii 4096 беп 31 18:33 snap
-rw-r--r--  1 oleksii oleksii    0 беп 28 23:40 .sudo_as_admin_successful
drwxr-xr-x  2 oleksii oleksii 4096 беп 28 16:10 Templates
-rw-r----- 1 oleksii oleksii   5 кбі 10 23:32 .vboxclient-display.pid
-rw-r----- 1 oleksii oleksii   5 кбі 10 23:32 .vboxclient-draganddrop.pid
-rw-r----- 1 oleksii oleksii   5 кбі 10 23:32 .vboxclient-seamless.pid
drwxr-xr-x  2 oleksii oleksii 4096 беп 28 16:10 Videos
oleksii@oleksii-vm1:~$ ls -lda ~
drwxr-xr-x 17 oleksii oleksii 4096 кбі 10 23:33 /home/oleksii

```

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

**mkdir** test – to make directory which is called “test”

**cd** test - to change current directory to “test”

**pwd** - to show working directory

**touch** test.txt – to make new text file

**ls -l** test.txt – to show info in a long type about “test.txt” file.

**mkdir** test2 – to make directory which is called “test2”

**mv** test.txt test2 – to replace file “test.txt” from current directory to test2 directory

**cd** test2 - to change current directory to “test2”

**ls** – to list files of current directory

**mv** test.txt test2.txt – to rename file “test.txt” to “test2.txt”

**ls** – to list files of current directory

**cp** test2.txt .. – to copy file “test2.txt” to the directory which one level up (~ /test)

**cd** .. –to change working directory to ~ /test

**ls** – to list files of current directory

**rm** test2.txt - to delete file “test2.txt”

**rmdir** test2 – to delete directory “test2” but its not gonna be, because directory is not empty, so directory hasn’t deleted. But if I add the –R option it deletes empty or directory with files

```
oleksii@oleksii-vm1:~$ mkdir test
oleksii@oleksii-vm1:~$ cd test
oleksii@oleksii-vm1:~/test$ pwd
/home/oleksii/test
oleksii@oleksii-vm1:~/test$ touch test.txt
oleksii@oleksii-vm1:~/test$ ls -l test.txt
-rw-r--r-- 1 oleksii oleksii 0 Kbi 10 23:54 test.txt
oleksii@oleksii-vm1:~/test$ mkdir test2
oleksii@oleksii-vm1:~/test$ mv test.txt test2
oleksii@oleksii-vm1:~/test$ cd test2
oleksii@oleksii-vm1:~/test/test2$ ls
test.txt
oleksii@oleksii-vm1:~/test/test2$ mv test.txt test2.txt
oleksii@oleksii-vm1:~/test/test2$ ls
test2.txt
oleksii@oleksii-vm1:~/test/test2$ cp test2.txt ..
oleksii@oleksii-vm1:~/test/test2$ cd ..
oleksii@oleksii-vm1:~/test$ ls
test2  test2.txt
oleksii@oleksii-vm1:~/test$ rm test2.txt
oleksii@oleksii-vm1:~/test$ rmdir test2
rmdir: failed to remove 'test2': Directory not empty
```

#### 4. Execute and describe the difference

**cat /etc/fstab** – I can see content of this file in a terminal window. This pager is good for small files. Because if my entire screen is not enough to read all file, I see only that part without beginning or head of file.

```
oleksii@oleksii-vm1:~/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=b271c5b1-5baa-4c4e-9f06-2683c8a4880c /          ext4      errors=remount-ro 0
1
/swapfile                                none      swap      sw              0
0
```

**less /etc/fstab** – I can see content of this file in clear window without previous command that I wrote in terminals. This pager is more extending than cat, because it has embedded keys for comfort viewing. For instance, H – for help or q – to quit. Regardless cat pager, I can scroll down content of the file.

```
# /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=b271c5b1-5baa-4c4e-9f06-2683c8a4880c /          ext4      errors=remount-ro 0
1
/swapfile                                none      swap      sw              0
0
/etc/fstab (END)
```

**more /etc/fstab** – I can see content of this file in a terminal window. Regardless cat pager, I can scroll down content of the file.

```
oleksii@oleksii-vm1:~/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=b271c5b1-5baa-4c4e-9f06-2683c8a4880c /          ext4      errors=remount-ro 0
1
/swapfile                                none      swap      sw              0
0
```

5. Add to archive all 'test' directories.

a. to the pure 'tar';

```
oleksii@oleksii-vm1:~$ tar -cvf mein.tar ~/test
tar: Removing leading `/' from member names
/home/oleksii/test/
/home/oleksii/test/test2/
/home/oleksii/test/test2/test2.txt
oleksii@oleksii-vm1:~$ tar -tvf mein.tar
drwxr-xr-x oleksii/oleksii  0 2020-04-10 23:56 home/oleksii/test/
drwxr-xr-x oleksii/oleksii  0 2020-04-10 23:56 home/oleksii/test/test2/
-rw-r--r-- oleksii/oleksii  0 2020-04-10 23:54 home/oleksii/test/test2/test2.txt
oleksii@oleksii-vm1:~$ ls -l
total 92
drwxr-xr-x 3 oleksii oleksii  4096 6ep 29 00:03 Desktop
drwxrwxr-x 2 oleksii oleksii  4096 6ep 31 19:39 Dockerfile
drwxr-xr-x 2 oleksii oleksii  4096 6ep 28 16:10 Documents
drwxr-xr-x 2 oleksii oleksii  4096 6ep 28 16:10 Downloads
-rw-r--r-- 1 oleksii oleksii  8980 6ep 28 16:01 examples.desktop
-rw-r--r-- 1 oleksii oleksii 10240 kbi 11 00:34 mein.tar
drwxr-xr-x 2 oleksii oleksii  4096 6ep 28 16:10 Music
-rw-r--r-- 1 oleksii oleksii 10240 kbi 11 00:31 my.
-rw-r--r-- 1 oleksii oleksii 10240 kbi 11 00:31 my.tar
drwxr-xr-x 2 oleksii oleksii  4096 kbi 10 23:35 Pictures
drwxr-xr-x 2 oleksii oleksii  4096 6ep 28 16:10 Public
drwxr-xr-x 3 oleksii oleksii  4096 6ep 31 18:33 snap
drwxr-xr-x 2 oleksii oleksii  4096 6ep 28 16:10 Templates
drwxr-xr-x 3 oleksii oleksii  4096 kbi 10 23:56 test
drwxr-xr-x 2 oleksii oleksii  4096 6ep 28 16:10 Videos
```

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

```
oleksii@oleksii-vm1:~$ tar -czf meun.tar ~/test
tar: Removing leading `/' from member names
oleksii@oleksii-vm1:~$ tar -tvf meun.tar
drwxr-xr-x oleksii/oleksii  0 2020-04-10 23:56 home/oleksii/test/
drwxr-xr-x oleksii/oleksii  0 2020-04-10 23:56 home/oleksii/test/test2/
-rw-r--r-- oleksii/oleksii  0 2020-04-10 23:54 home/oleksii/test/test2/test2.txt
oleksii@oleksii-vm1:~$ ls -l
total 96
drwxr-xr-x 3 oleksii oleksii  4096 6ep 29 00:03 Desktop
drwxrwxr-x 2 oleksii oleksii  4096 6ep 31 19:39 Dockerfile
drwxr-xr-x 2 oleksii oleksii  4096 6ep 28 16:10 Documents
drwxr-xr-x 2 oleksii oleksii  4096 6ep 28 16:10 Downloads
-rw-r--r-- 1 oleksii oleksii  8980 6ep 28 16:01 examples.desktop
-rw-r--r-- 1 oleksii oleksii 10240 kbi 11 00:34 mein.tar
-rw-r--r-- 1 oleksii oleksii   179 kbi 11 00:36 meun.tar
drwxr-xr-x 2 oleksii oleksii  4096 6ep 28 16:10 Music
-rw-r--r-- 1 oleksii oleksii 10240 kbi 11 00:31 my.
-rw-r--r-- 1 oleksii oleksii 10240 kbi 11 00:31 my.tar
drwxr-xr-x 2 oleksii oleksii  4096 kbi 10 23:35 Pictures
drwxr-xr-x 2 oleksii oleksii  4096 6ep 28 16:10 Public
drwxr-xr-x 3 oleksii oleksii  4096 6ep 31 18:33 snap
drwxr-xr-x 2 oleksii oleksii  4096 6ep 28 16:10 Templates
drwxr-xr-x 3 oleksii oleksii  4096 kbi 10 23:56 test
drwxr-xr-x 2 oleksii oleksii  4096 6ep 28 16:10 Videos
```



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

```
oleksii@oleksii-vm1:~$ gzip mein.tar
oleksii@oleksii-vm1:~$ ls -l
total 88
drwxr-xr-x 3 oleksii oleksii 4096 6ep 29 00:03 Desktop
drwxrwxr-x 2 oleksii oleksii 4096 6ep 31 19:39 Dockerfile
drwxr-xr-x 2 oleksii oleksii 4096 6ep 28 16:10 Documents
drwxr-xr-x 2 oleksii oleksii 4096 6ep 28 16:10 Downloads
-rw-r--r-- 1 oleksii oleksii 8980 6ep 28 16:01 examples.desktop
-rw-r--r-- 1 oleksii oleksii 188 kbi 11 00:34 mein.tar.gz
-rw-r--r-- 1 oleksii oleksii 179 kbi 11 00:36 meun.tar
drwxr-xr-x 2 oleksii oleksii 4096 6ep 28 16:10 Music
-rw-r--r-- 1 oleksii oleksii 10240 kbi 11 00:31 my.
-rw-r--r-- 1 oleksii oleksii 10240 kbi 11 00:31 my.tar
drwxr-xr-x 2 oleksii oleksii 4096 kbi 10 23:35 Pictures
drwxr-xr-x 2 oleksii oleksii 4096 6ep 28 16:10 Public
drwxr-xr-x 3 oleksii oleksii 4096 6ep 31 18:33 snap
drwxr-xr-x 2 oleksii oleksii 4096 6ep 28 16:10 Templates
drwxr-xr-x 3 oleksii oleksii 4096 kbi 10 23:56 test
drwxr-xr-x 2 oleksii oleksii 4096 6ep 28 16:10 Videos
```

extract from archives all above.

```
oleksii@oleksii-vm1:~$ gunzip mein.tar.gz
oleksii@oleksii-vm1:~$ ls
Desktop    Documents  examples.desktop  mein.tar  my.    Pictures  snap    test
Dockerfile Downloads  mein.tar          Music    my.tar Public    Templates Videos
```

```
oleksii@oleksii-vm1:~$ tar -xvzf meun.tar
home/oleksii/test/
home/oleksii/test/test2/
home/oleksii/test/test2/test2.txt
```

```
oleksii@oleksii-vm1:~$ tar -xvf mein.tar
home/oleksii/test/
home/oleksii/test/test2/
home/oleksii/test/test2/test2.txt
```

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