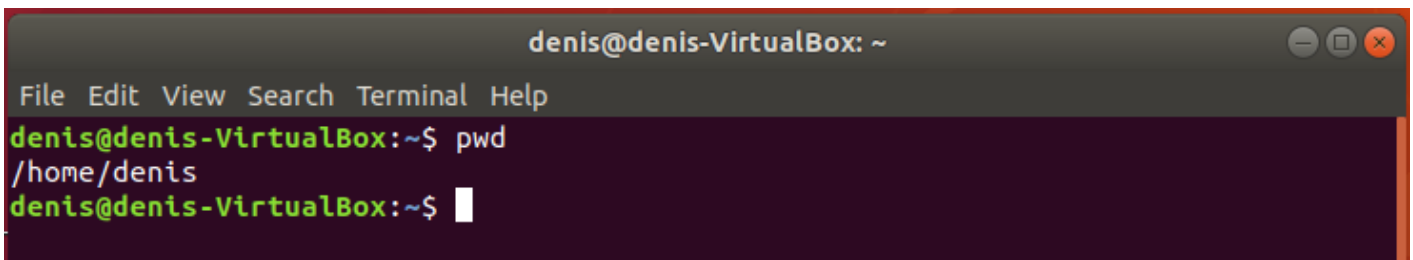


TASK 4.3

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).

A terminal window titled 'denis@denis-VirtualBox: ~' with a menu bar (File, Edit, View, Search, Terminal, Help). The prompt is 'denis@denis-VirtualBox:~\$'. The command 'pwd' has been entered, and the output is '/home/denis'. The prompt is now 'denis@denis-VirtualBox:~\$' with a cursor.

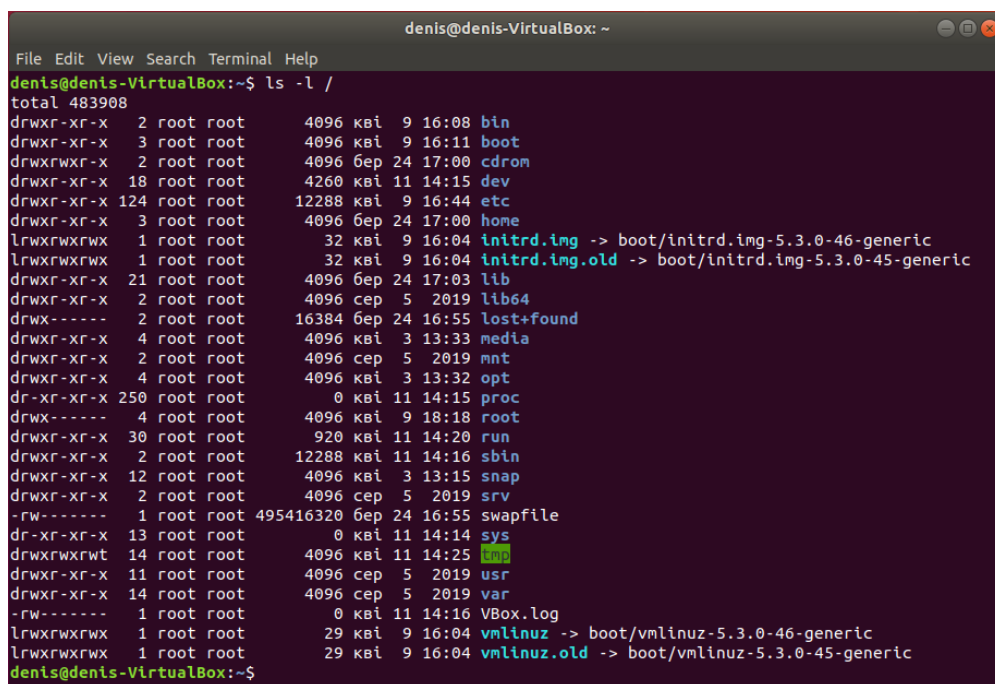
```
denis@denis-VirtualBox: ~
File Edit View Search Terminal Help
denis@denis-VirtualBox:~$ pwd
/home/denis
denis@denis-VirtualBox:~$
```

2. Collect output of these commands

ls -l /

/ means that **ls** must be execute in *root directory*

-l allows to see long information about directories and files (for example: owner; groupowner; size; permissions; date, month and time of the last change; number of hard links to the file)

A terminal window titled 'denis@denis-VirtualBox: ~' with a menu bar (File, Edit, View, Search, Terminal, Help). The prompt is 'denis@denis-VirtualBox:~\$'. The command 'ls -l /' has been entered, and the output is a long list of files and directories in the root directory. The prompt is now 'denis@denis-VirtualBox:~\$'.

```
denis@denis-VirtualBox: ~
File Edit View Search Terminal Help
denis@denis-VirtualBox:~$ ls -l /
total 483908
drwxr-xr-x  2 root root    4096  16:08 bin
drwxr-xr-x  3 root root    4096  16:11 boot
drwxrwxr-x  2 root root    4096  17:00 cdrom
drwxr-xr-x 18 root root    4260  11:14:15 dev
drwxr-xr-x 124 root root   12288  16:44 etc
drwxr-xr-x  3 root root    4096  17:00 home
lrwxrwxrwx  1 root root     32  16:04 initrd.img -> boot/initrd.img-5.3.0-46-generic
lrwxrwxrwx  1 root root     32  16:04 initrd.img.old -> boot/initrd.img-5.3.0-45-generic
drwxr-xr-x 21 root root    4096  17:03 lib
drwxr-xr-x  2 root root    4096  2019 lib64
drwx----- 2 root root   16384  16:55 lost+found
drwxr-xr-x  4 root root    4096  13:33 media
drwxr-xr-x  2 root root    4096  2019 mnt
drwxr-xr-x  4 root root    4096  13:32 opt
dr-xr-xr-x 250 root root      0  11:14:15 proc
drwx----- 4 root root    4096  18:18 root
drwxr-xr-x 30 root root     920  11:14:20 run
drwxr-xr-x  2 root root   12288  11:14:16/sbin
drwxr-xr-x 12 root root    4096  13:15 snap
drwxr-xr-x  2 root root    4096  2019 srv
-rw-----  1 root root 495416320  16:55 swapfile
dr-xr-xr-x 13 root root      0  11:14:14 sys
drwxrwxrwt 14 root root    4096  11:14:25 tmp
drwxr-xr-x 11 root root    4096  2019 usr
drwxr-xr-x 14 root root    4096  2019 var
-rw-----  1 root root      0  11:14:16 VBox.log
lrwxrwxrwx  1 root root     29  16:04 vmlinuz -> boot/vmlinuz-5.3.0-46-generic
lrwxrwxrwx  1 root root     29  16:04 vmlinuz.old -> boot/vmlinuz-5.3.0-45-generic
denis@denis-VirtualBox:~$
```

ls

Shows files and directories in current directory.

```
denis@denis-VirtualBox: ~
File Edit View Search Terminal Help
denis@denis-VirtualBox:~$ ls
Desktop      Downloads      Music          nginx.tar      Public          textfile.txt    ubuntu.tar
Documents    examples.desktop my_mind.tar    Pictures        Templates        txt.tar          Videos
denis@denis-VirtualBox:~$
```

ls ~

~ means that ls must be execute in *home directory*

```
denis@denis-VirtualBox: ~
File Edit View Search Terminal Help
denis@denis-VirtualBox:~$ ls ~
Desktop      Downloads      Music          nginx.tar      Public          textfile.txt    ubuntu.tar
Documents    examples.desktop my_mind.tar    Pictures        Templates        txt.tar          Videos
denis@denis-VirtualBox:~$
```

ls -l

-l allows to see long information about directories and files (for example: owner; groupowner; size; permissions; date, month and time of the last change; number of hard links to the file)

```
denis@denis-VirtualBox: ~
File Edit View Search Terminal Help
denis@denis-VirtualBox:~$ ls -l
total 309096
drwxr-xr-x 2 denis denis      4096 6ep 24 17:09 Desktop
drwxr-xr-x 2 denis denis      4096 6ep 24 17:09 Documents
drwxr-xr-x 2 denis denis      4096 kbi  3 13:44 Downloads
-rw-r--r-- 1 denis denis      8980 6ep 24 17:00 examples.desktop
drwxr-xr-x 2 denis denis      4096 6ep 24 17:09 Music
-rw-rw-r-- 1 denis denis 119212032 kbi  3 13:43 my_mind.tar
-rw-rw-r-- 1 denis denis 130618880 kbi  3 13:44 nginx.tar
drwxr-xr-x 2 denis denis      4096 6ep 24 19:24 Pictures
drwxr-xr-x 2 denis denis      4096 6ep 24 17:09 Public
drwxr-xr-x 2 denis denis      4096 6ep 24 17:09 Templates
-rw-r--r-- 1 denis denis        42 kbi  9 19:02 textfile.txt
-rw-r--r-- 1 denis denis     10240 kbi  9 19:05 txt.tar
-rw-rw-r-- 1 denis denis 66612224 kbi  3 13:43 ubuntu.tar
drwxr-xr-x 2 denis denis      4096 6ep 24 17:09 Videos
denis@denis-VirtualBox:~$
```

ls -a

-a allows to see hidden directories and files

```
denis@denis-VirtualBox: ~
File Edit View Search Terminal Help
denis@denis-VirtualBox:~$ ls -a
.          Documents      Music          textfile.txt
..         Downloads      my_mind.tar    txt.tar
.bash_history  examples.desktop  nginx.tar      ubuntu.tar
.bash_logout  .gnupg            Pictures       .vboxclient-display.pid
.bashrc       .ICEauthority     .profile      .vboxclient-draganddrop.pid
.cache        .kube             Public         .vboxclient-seamless.pid
.config       .local            .sudo_as_admin_successful  Videos
Desktop       .mozilla          Templates      .viminfo
denis@denis-VirtualBox:~$
```

ls -la

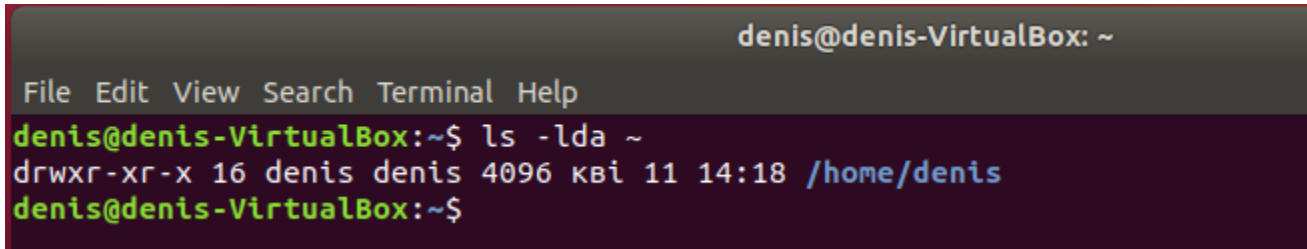
-la allows to see long information about all (hidden and visible) directories and files in current directory

```
denis@denis-VirtualBox: ~
File Edit View Search Terminal Help
denis@denis-VirtualBox:~$ ls -la
total 309168
drwxr-xr-x 16 denis denis      4096 Kbi 11 14:18 .
drwxr-xr-x  3 root  root      4096 Bep 24 17:00 ..
-rw-r--r--  1 denis denis      2340 Kbi  9 19:10 .bash_history
-rw-r--r--  1 denis denis        220 Bep 24 17:00 .bash_logout
-rw-r--r--  1 denis denis     3771 Bep 24 17:00 .bashrc
drwx----- 16 denis denis      4096 Kbi  9 18:52 .cache
drwx----- 13 denis denis      4096 Kbi  9 16:36 .config
drwxr-xr-x  2 denis denis      4096 Bep 24 17:09 Desktop
drwxr-xr-x  2 denis denis      4096 Bep 24 17:09 Documents
drwxr-xr-x  2 denis denis      4096 Kbi  3 13:44 Downloads
-rw-r--r--  1 denis denis     8980 Bep 24 17:00 examples.desktop
drwx-----  3 denis denis      4096 Bep 24 17:09 .gnupg
-rw-r--r--  1 denis denis     6086 Kbi 11 14:17 .ICEauthority
drwxr-xr-x  4 root  root      4096 Kbi  3 13:20 .kube
drwx-----  3 denis denis      4096 Bep 24 17:09 .local
drwx-----  5 denis denis      4096 Kbi  3 13:37 .mozilla
drwxr-xr-x  2 denis denis      4096 Bep 24 17:09 Music
-rw-rw-r--  1 denis denis  119212032 Kbi  3 13:43 my_mind.tar
-rw-rw-r--  1 denis denis  130618880 Kbi  3 13:44 nginx.tar
drwxr-xr-x  2 denis denis      4096 Bep 24 19:24 Pictures
-rw-r--r--  1 denis denis        807 Bep 24 17:00 .profile
drwxr-xr-x  2 denis denis      4096 Bep 24 17:09 Public
-rw-r--r--  1 denis denis         0 Bep 24 19:05 .sudo_as_admin_successful
drwxr-xr-x  2 denis denis      4096 Bep 24 17:09 Templates
-rw-r--r--  1 denis denis         42 Kbi  9 19:02 textfile.txt
-rw-r--r--  1 denis denis     10240 Kbi  9 19:05 txt.tar
-rw-rw-r--  1 denis denis    66612224 Kbi  3 13:43 ubuntu.tar
-rw-r--r--  1 denis denis         5 Kbi 11 14:17 .vboxclient-display.pid
-rw-r--r--  1 denis denis         5 Kbi 11 14:17 .vboxclient-draganddrop.pid
-rw-r--r--  1 denis denis         5 Kbi 11 14:17 .vboxclient-seamless.pid
drwxr-xr-x  2 denis denis      4096 Bep 24 17:09 Videos
-rw-r--r--  1 root  root        848 Kbi  9 16:44 .viminfo
denis@denis-VirtualBox:~$
```

ls -lda ~

~ means that **ls** must be execute in *home directory*

-lda allows to see long information about current directory (even if it's hidden)

A terminal window titled 'denis@denis-VirtualBox: ~' with a menu bar (File, Edit, View, Search, Terminal, Help). The prompt is 'denis@denis-VirtualBox:~\$'. The command 'ls -lda ~' has been entered, and the output is 'drwxr-xr-x 16 denis denis 4096 Kbi 11 14:18 /home/denis'. The prompt is now 'denis@denis-VirtualBox:~\$'.

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

Explanation of commands:

mkdir – makes a directory in current directory

cd – change current directory to another that written after **cd**

pwd – shows the name of the current directory

touch – creates empty file

mv – moves file or directory to chosen directory or renames file

cp – copies file or directory to chosen directory or copies content from the file to another file

rm – removes files

.. – symbolic link to previous (parent) directory

rmdir – removes empty folder

```
denis@denis-VirtualBox: ~/test
File Edit View Search Terminal Help
denis@denis-VirtualBox:~$ mkdir test
denis@denis-VirtualBox:~$ cd test
denis@denis-VirtualBox:~/test$ pwd
/home/denis/test
denis@denis-VirtualBox:~/test$ touch test.txt
denis@denis-VirtualBox:~/test$ ls -l test.txt
-rw-r--r-- 1 denis denis 0 Kbi 11 15:35 test.txt
denis@denis-VirtualBox:~/test$ mkdir test2
denis@denis-VirtualBox:~/test$ mv test.txt test2
denis@denis-VirtualBox:~/test$ cd test2
denis@denis-VirtualBox:~/test/test2$ ls
test.txt
denis@denis-VirtualBox:~/test/test2$ mv test.txt test2.txt
denis@denis-VirtualBox:~/test/test2$ ls
test2.txt
denis@denis-VirtualBox:~/test/test2$ cp test2.txt ..
denis@denis-VirtualBox:~/test/test2$ cd ..
denis@denis-VirtualBox:~/test$ ls
test2  test2.txt
denis@denis-VirtualBox:~/test$ rm test2.txt
denis@denis-VirtualBox:~/test$
```

```
denis@denis-VirtualBox:~/test$ rmdir test2
rmdir: failed to remove 'test2': Directory not empty
denis@denis-VirtualBox:~/test$
```

Way to avoid:

```
denis@denis-VirtualBox: ~/test
File Edit View Search Terminal Help
denis@denis-VirtualBox:~/test$ rm -r test2
denis@denis-VirtualBox:~/test$ ls
denis@denis-VirtualBox:~/test$
```

4. Execute and describe the difference

cat /etc/fstab

less /etc/fstab

more /etc/fstab

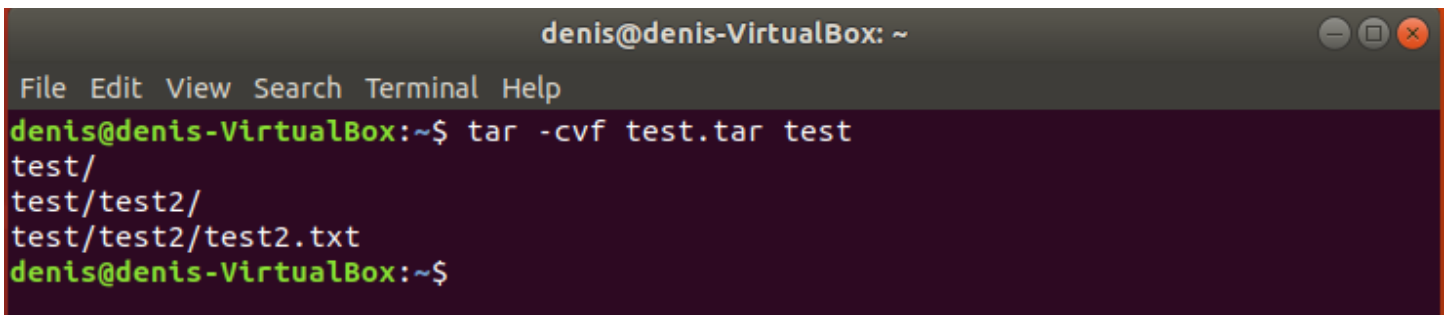
cat - outputs the content of the file to the terminal, it also can show a few files in one usage (they will be shown one by one).

less shows one page of file at a time and don't reads the whole file at a time, so it works faster then **cat** in cases when it's needed to read big files.

more – shows pages one by one like **less**, but before it reads a whole file.

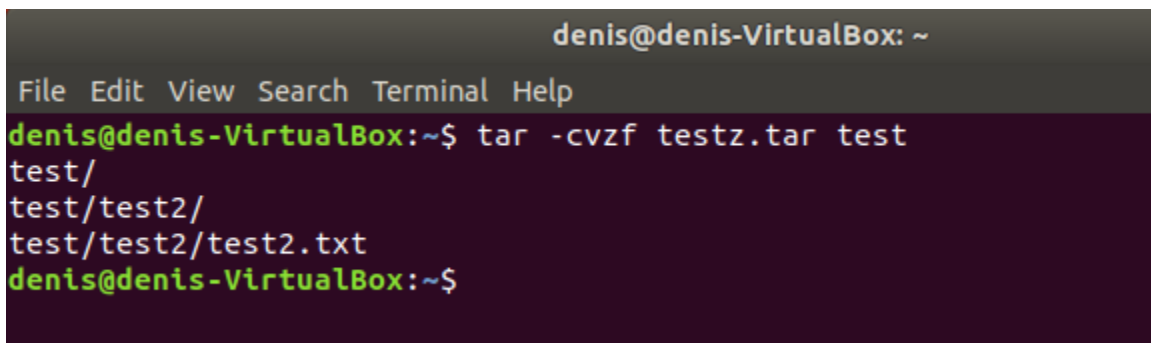
5. Add to archive all 'test' directories.

a. to the pure 'tar';

A terminal window titled 'denis@denis-VirtualBox: ~' with a menu bar (File, Edit, View, Search, Terminal, Help). The command 'tar -cvf test.tar test' is entered. The output shows the directory structure: 'test/', 'test/test2/', and 'test/test2/test2.txt'.

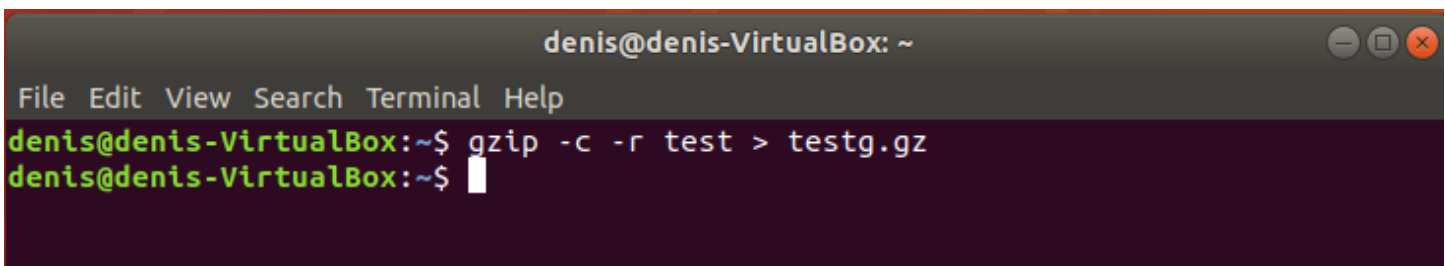
```
denis@denis-VirtualBox: ~  
File Edit View Search Terminal Help  
denis@denis-VirtualBox:~$ tar -cvf test.tar test  
test/  
test/test2/  
test/test2/test2.txt  
denis@denis-VirtualBox:~$
```

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

A terminal window titled 'denis@denis-VirtualBox: ~' with a menu bar (File, Edit, View, Search, Terminal, Help). The command 'tar -cvzf testz.tar test' is entered. The output shows the directory structure: 'test/', 'test/test2/', and 'test/test2/test2.txt'.

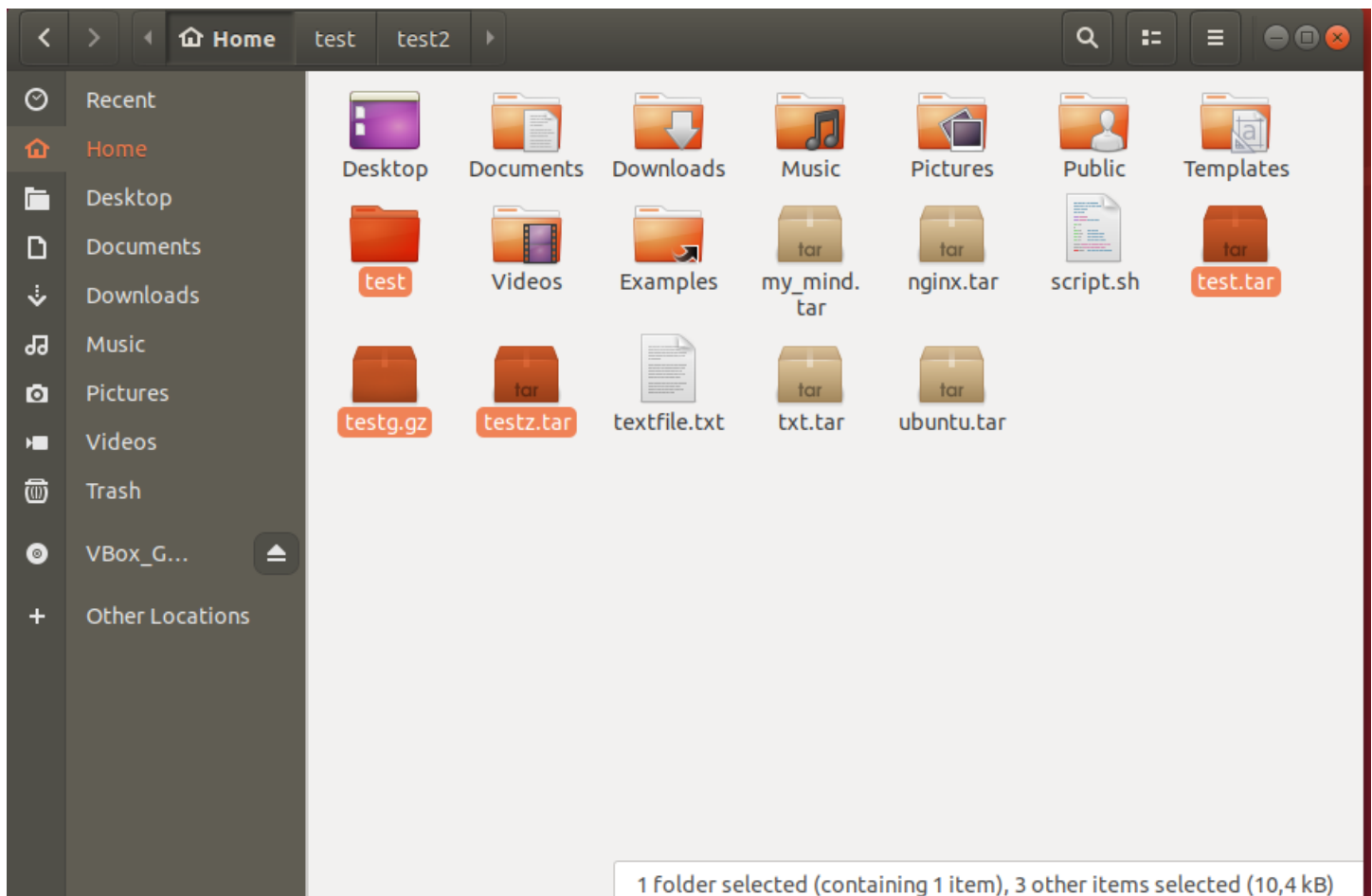
```
denis@denis-VirtualBox: ~  
File Edit View Search Terminal Help  
denis@denis-VirtualBox:~$ tar -cvzf testz.tar test  
test/  
test/test2/  
test/test2/test2.txt  
denis@denis-VirtualBox:~$
```

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

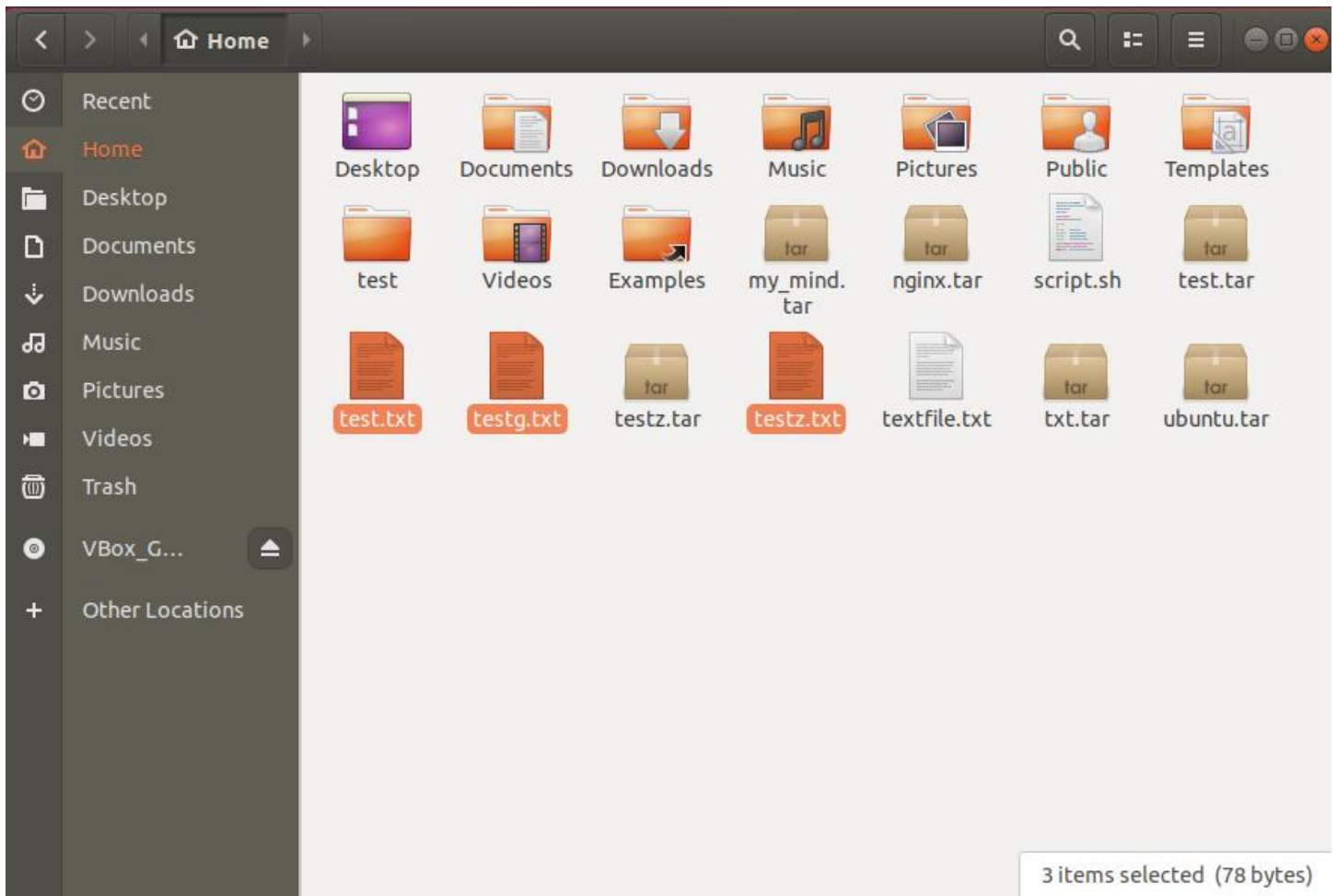
A terminal window titled 'denis@denis-VirtualBox: ~' with a menu bar (File, Edit, View, Search, Terminal, Help). The command 'gzip -c -r test > testg.gz' is entered. The prompt returns.

```
denis@denis-VirtualBox: ~  
File Edit View Search Terminal Help  
denis@denis-VirtualBox:~$ gzip -c -r test > testg.gz  
denis@denis-VirtualBox:~$
```

extract from archives all above.



```
denis@denis-VirtualBox: ~  
File Edit View Search Terminal Help  
denis@denis-VirtualBox:~$ gunzip -d testg.gz > ~/testg.txt  
denis@denis-VirtualBox:~$ tar -xvf testz.tar > ~/testz.txt  
denis@denis-VirtualBox:~$ tar -xvf test.tar > ~/test.txt  
denis@denis-VirtualBox:~$
```



tar allows to create file from directories and files in them

tar + gzip = tar -z allows to create file from directories and files in them using compression from **gzip** by adding option **-z** in tar command

gzip allows to create files with compression from only files, not directories (if it's needed to add directories to **.gz** archive we only can add **-r** option to **gzip** command – it allows **gzip** adding all files from directory and it's subdirectories)

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