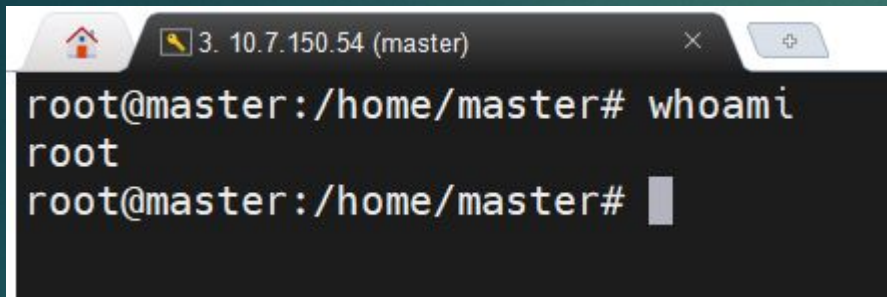


## Task1 Part1

1) Log in to the system as root.

Logged in as user master:

`sudo su`

A terminal window titled '3. 10.7.150.54 (master)' showing a user logged in as 'root' at 'master' in the directory '/home/master'. The user has entered the command 'whoami' and the output is 'root'.

```
root@master:/home/master# whoami
root
root@master:/home/master#
```

2) Use the passwd command to change the password.

Examine the basic parameters of the command. What system file does it change \*?

`/etc/shadow`

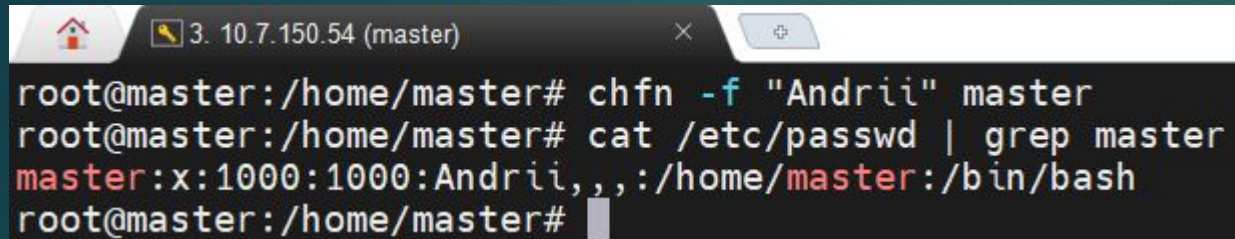
A terminal window titled '3. 10.7.150.54 (master)' showing the output of the 'passwd' command. The output is a long string of characters representing the password and its parameters.

```
root:$y$j9T$TQigeIgRSyYbGr1aVhMq30$ts.chSahbNV2kexltv1kznZUU3XuDJwTCE4xsa1tMh8:19584:0:99999:7:::
```

3) Determine the users registered in the system, as well as what commands they execute. What additional information can be gleaned from the command execution?

```
root@master:/home/master# cut -d: -f1 /etc/passwd | uniq
root
daemon
bin
sys
sync
games
man
lp
mail
news
uucp
proxy
www-data
backup
list
irc
gnats
nobody
_apt
systemd-network
systemd-resolve
messagebus
systemd-timesync
pollinate
sshd
syslog
uidd
tcpdump
tss
landscape
usbmux
master
lxd
```

#### 4) Change personal information about yourself.



```
3. 10.7.150.54 (master)
root@master:/home/master# chfn -f "Andrii" master
root@master:/home/master# cat /etc/passwd | grep master
master:x:1000:1000:Andrii,,,:/home/master:/bin/bash
root@master:/home/master#
```

#### 5) Become familiar with the Linux help system and the man and info commands. Get help on the previously discussed commands, define and describe any two keys for these commands. Give examples.

For example: in passwd command key `-n, --mindays MIN_DAYS`  
Set the minimum number of days between password changes to MIN\_DAYS. A value of zero for this field indicates that the user may change their password at any time.



6) Explore the more and less commands using the help system. View the contents of files .bash\* using commands.

less .bashrc

cd ~ & more .bash\_history

```
# ~/.bashrc: executed by bash(1) for non-login shells.
# See /usr/share/doc/bash/examples/startup-files (in the package bash-doc)
# for examples

# If not running interactively, don't do anything
case $- in
  *) ;;
  *) return;;
esac

# don't put duplicate lines or lines starting with space in the history.
# See bash(1) for more options
HISTCONTROL=ignoreboth

# append to the history file, don't overwrite it
shopt -s histappend

# for setting history length see HISTSIZE and HISTFILESIZE in bash(1)
HISTSIZE=1000
HISTFILESIZE=2000

# check the window size after each command and, if necessary,
# update the values of LINES and COLUMNS.
shopt -s checkwinsize

# If set, the pattern "*" used in a pathname expansion context will
# match all files and zero or more directories and subdirectories.
#shopt -s globstar

# make less more friendly for non-text input files, see lesspipe(1)
[ -x /usr/bin/lesspipe ] && eval "$(SHELL=/bin/sh lesspipe)"

# set variable identifying the chroot you work in (used in the prompt below)
if [ -z "${debian_chroot:-}" ] && [ -r /etc/debian_chroot ]; then
  debian_chroot=$(cat /etc/debian_chroot)
fi

.bashrc
```

```
clear
less /etc/passwd
less /etc/shadow
passwd root
less /etc/shadow
less /etc/passwd
less /etc/passwdfinger
finger
apt install finger
clear
finger
finger master
finger -bfilpqsw master
finger
finger master
man
finger master
finger -lmsp master
locale traceroute
locale tracert
traceroute
apt install traceroute
locale tracert
locale traceroute
locale tracelocate
locale
locale
locale traceroute
locale
apt install plocate
locale traceroute
squid
find /etc -type f -name '*host*' -print
find /etc -type f -name '*host*'
ls -lt --time=atime /etc | head -6
ls -l /etc | head -6
```

7) \* Describe in plans that you are working on laboratory work 1. Tip: You should read the documentation for the finger command.

```
master@master:~$ sudo su
[sudo] password for master:
root@master:/home/master# finger
Login      Name      Tty      Idle      Login Time   Office      Office Phone
master     Andrii    *tty1    15:58     Aug 15 13:36
master     Andrii    pts/0     2:48     Aug 16 06:59 (10.7.150.50)
master     Andrii    pts/1     52       Aug 16 06:59 (10.7.150.50)
master     Andrii    pts/2     Aug 16 09:48 (10.7.150.50)
master     Andrii    pts/3     Aug 16 09:48 (10.7.150.50)
root@master:/home/master#
```

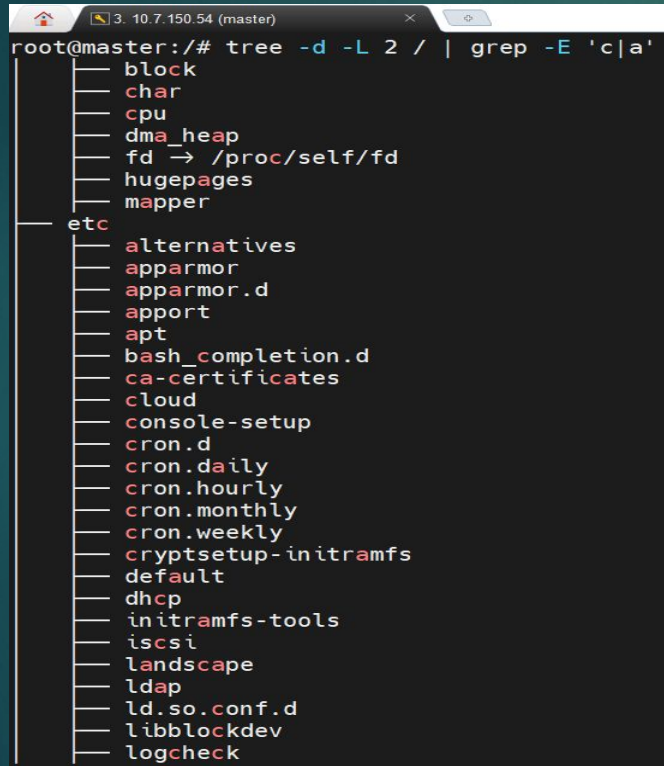
7) \* List the contents of the home directory using the ls command, define its files and directories. Hint: Use the help system to familiarize yourself with the ls command.

```
root@master:/home/master# ls -la ~
total 32
drwx----- 4 root root 4096 Aug 16 08:52 .
drwxr-xr-x 19 root root 4096 Aug 15 13:19 ..
-rw----- 1 root root  677 Aug 15 17:31 .bash_history
-rw-r--r-- 1 root root 3106 Oct 15  2021 .bashrc
-rw----- 1 root root   20 Aug 16 08:52 .lessht
-rw-r--r-- 1 root root  161 Jul  9  2019 .profile
drwx----- 3 root root 4096 Aug 15 13:35 snap
drwx----- 2 root root 4096 Aug 15 13:35 .ssh
root@master:/home/master#
```

## Task1 Part 2

1) Examine the tree command. Master the technique of applying a template, for example, display all files that contain a character c, or files that contain a specific sequence of characters. List subdirectories of the root directory up to and including the second nesting level.

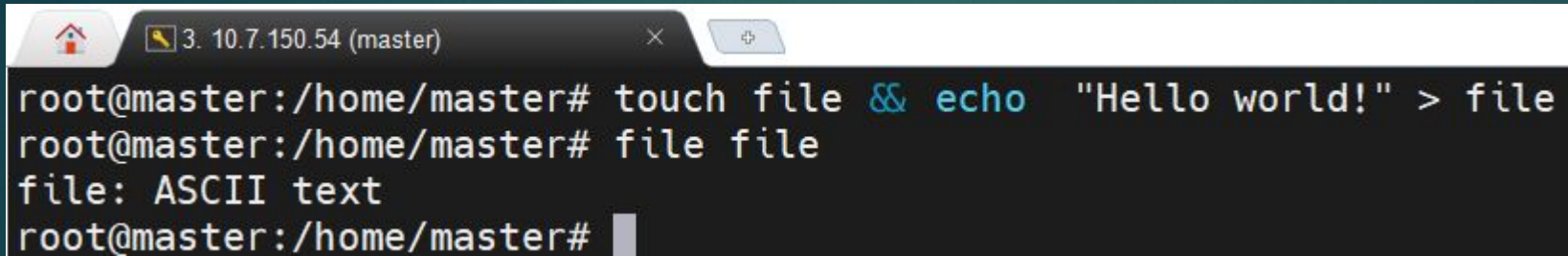
```
root@master:/# tree -d -L 2 / | grep -E 'c|a'
```



- block
- char
- cpu
- dma\_heap
- fd → /proc/self/fd
- hugepages
- mapper
- etc
  - alternatives
  - apparmor
  - apparmor.d
  - apport
  - apt
  - bash\_completion.d
  - ca-certificates
  - cloud
  - console-setup
  - cron.d
  - cron.daily
  - cron.hourly
  - cron.monthly
  - cron.weekly
  - cryptsetup-initramfs
  - default
  - dhcp
  - initramfs-tools
  - iscsi
  - landscape
  - ldap
  - ld.so.conf.d
  - libblockdev
  - logcheck

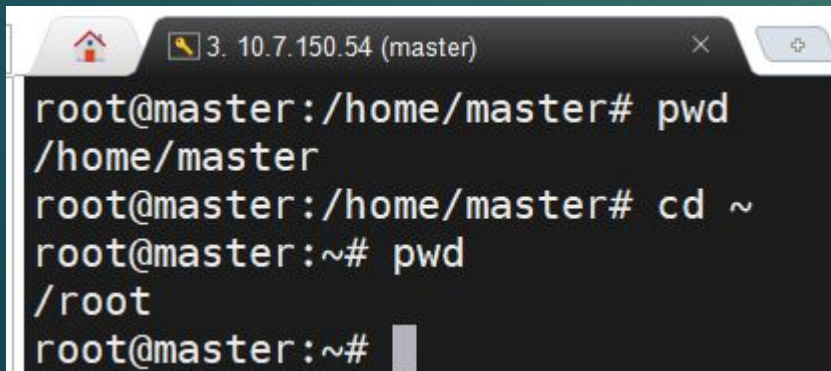


2) What command can be used to determine the type of file (for example, text or binary)? Give an example.

A terminal window with a title bar showing a home icon, a yellow lightning bolt icon, and the text '3. 10.7.150.54 (master)'. The terminal content shows a user at the root prompt in the directory /home/master. They create a file named 'file' using the 'touch' command and write 'Hello world!' to it using the 'echo' command. Then, they run the 'file' command to check the file's type, which returns 'ASCII text'.

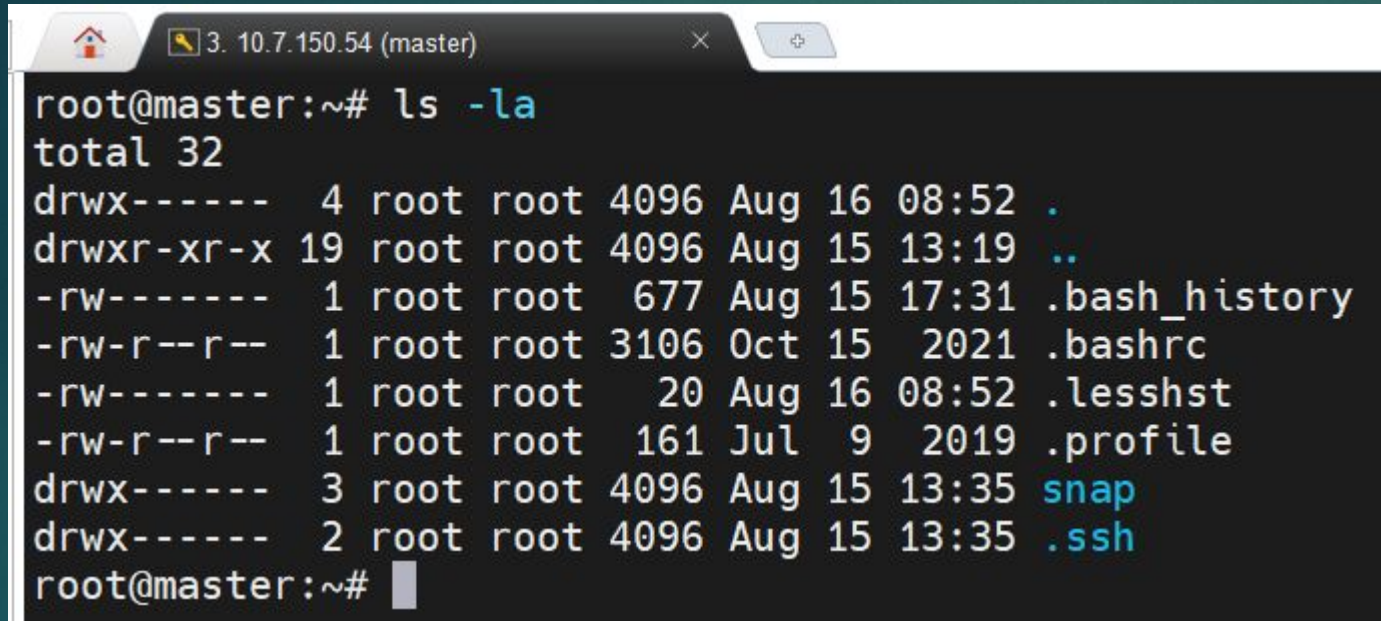
```
root@master:/home/master# touch file && echo "Hello world!" > file
root@master:/home/master# file file
file: ASCII text
root@master:/home/master#
```

3) Master the skills of navigating the file system using relative and absolute paths. How can you go back to your home directory from anywhere in the filesystem?

A terminal window with a title bar showing a home icon, a yellow lightning bolt icon, and the text '3. 10.7.150.54 (master)'. The terminal content shows a user at the root prompt in the directory /home/master. They run the 'pwd' command, which outputs '/home/master'. Then, they run the 'cd ~' command to change to their home directory. Finally, they run 'pwd' again, which outputs '/root'.

```
root@master:/home/master# pwd
/home/master
root@master:/home/master# cd ~
root@master:~# pwd
/root
root@master:~#
```

4) Become familiar with the various options for the ls command. Give examples of listing directories using different keys. Explain the information displayed on the terminal using the -l and -a switches.

A terminal window with a dark background and light text. The title bar shows a home icon, a yellow icon, and the text '3. 10.7.150.54 (master)'. The terminal content shows the command 'root@master:~# ls -la' and its output. The output lists the current directory and its contents in long format, including permissions, owner, group, size, date, and filename. Hidden files are shown with a leading dot. The command prompt 'root@master:~#' is followed by a cursor.

```
root@master:~# ls -la
total 32
drwx----- 4 root root 4096 Aug 16 08:52 .
drwxr-xr-x 19 root root 4096 Aug 15 13:19 ..
-rw----- 1 root root  677 Aug 15 17:31 .bash_history
-rw-r--r-- 1 root root 3106 Oct 15  2021 .bashrc
-rw----- 1 root root   20 Aug 16 08:52 .lessht
-rw-r--r-- 1 root root  161 Jul  9  2019 .profile
drwx----- 3 root root 4096 Aug 15 13:35 snap
drwx----- 2 root root 4096 Aug 15 13:35 .ssh
root@master:~#
```

Show all files and directories in list style includes hidden.



5) Perform the following sequence of operations:

- create a subdirectory in the home directory;
- in this subdirectory create a file containing information about directories located in the root directory (using I/O redirection operations);
- view the created file;
- copy the created file to your home directory using relative and absolute addressing.
- delete the previously created subdirectory with the file requesting removal;
- delete the file copied to the home directory.

```
mkdir /home/master/demo && touch /home/master/demo/info && ls -l /  
> /home/master/demo/info && cat /home/master/demo/info
```

Screenshot in a next page.

```

root@master:~# mkdir /home/master/demo && touch /home/master/demo/info && ls -l / > /home/master/demo/info && cat /home/master/demo/info
total 409268
lrwxrwxrwx 1 root root 7 Aug 9 2022 bin -> usr/bin
drwxr-xr-x 3 root root 4096 Aug 15 13:13 boot
drwxr-xr-x 19 root root 4020 Aug 15 17:50 dev
drwxr-xr-x 97 root root 4096 Aug 16 08:36 etc
drwxr-xr-x 3 root root 4096 Aug 15 13:35 home
lrwxrwxrwx 1 root root 7 Aug 9 2022 lib -> usr/lib
lrwxrwxrwx 1 root root 9 Aug 9 2022 lib32 -> usr/lib32
lrwxrwxrwx 1 root root 9 Aug 9 2022 lib64 -> usr/lib64
lrwxrwxrwx 1 root root 10 Aug 9 2022 libx32 -> usr/libx32
drwx----- 2 root root 16384 Aug 15 12:59 lost+found
drwxr-xr-x 2 root root 4096 Aug 9 2022 media
drwxr-xr-x 2 root root 4096 Aug 9 2022 mnt
drwxr-xr-x 2 root root 4096 Aug 9 2022 opt
dr-xr-xr-x 180 root root 0 Aug 15 13:35 proc
drwx----- 4 root root 4096 Aug 16 08:52 root
drwxr-xr-x 29 root root 860 Aug 16 09:48 run
lrwxrwxrwx 1 root root 8 Aug 9 2022 sbin -> usr/sbin
drwxr-xr-x 6 root root 4096 Aug 9 2022 snap
drwxr-xr-x 2 root root 4096 Aug 9 2022 srv
-rw----- 1 root root 4115660800 Aug 15 13:01 swap.img
dr-xr-xr-x 13 root root 0 Aug 15 13:35 sys
drwxrwxrwt 12 root root 4096 Aug 16 08:21 tmp
drwxr-xr-x 14 root root 4096 Aug 9 2022 usr
drwxr-xr-x 13 root root 4096 Aug 9 2022 var
root@master:~#

```

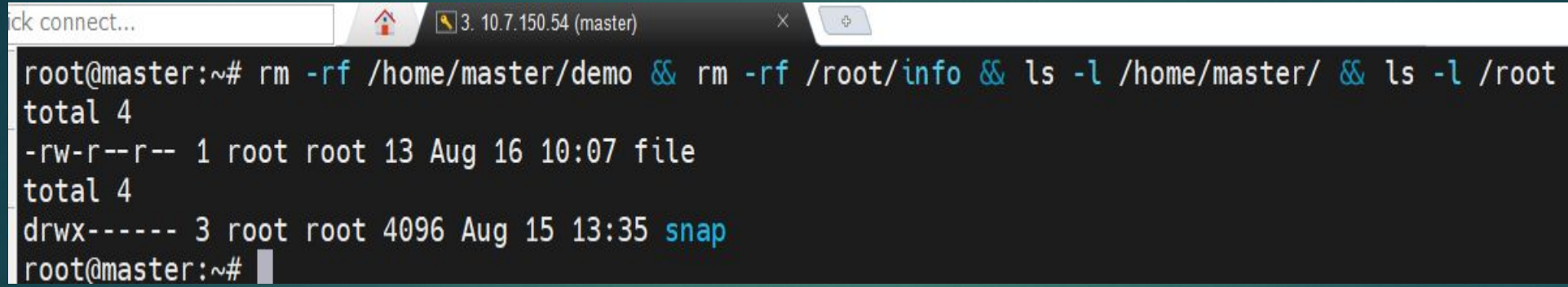
Copy:

```

root@master:~# cp /home/master/demo/info ~ && ls -l ~
total 8
-rw-r--r-- 1 root root 1387 Aug 16 10:25 info
drwx----- 3 root root 4096 Aug 15 13:35 snap
root@master:~#

```

Delete:



A terminal window titled "3. 10.7.150.54 (master)" with a home icon and a close button. The terminal shows the execution of a command to delete directories and files, followed by two directory listings. The first listing shows a file in /home/master/. The second listing shows a directory in /root/. The prompt returns to root@master:~#.

```
root@master:~# rm -rf /home/master/demo && rm -rf /root/info && ls -l /home/master/ && ls -l /root
total 4
-rw-r--r-- 1 root root 13 Aug 16 10:07 file
total 4
drwx----- 3 root root 4096 Aug 15 13:35 snap
root@master:~#
```



6) Perform the following sequence of operations:

- create a subdirectory test in the home directory;
- copy the .bash\_history file to this directory while changing its name to labwork2;
- create a hard and soft link to the labwork2 file in the test subdirectory;
- how to define soft and hard link, what do these concepts;
- change the data by opening a symbolic link. What changes will happen and why
- rename the hard link file to hard\_Ink\_labwork2;
- rename the soft link file to symb\_Ink\_labwork2 file;
- then delete the labwork2. What changes have occurred and why?

```
ck connect... 3. 10.7.150.54 (master) x +
root@master:~# mkdir /home/test
root@master:~# cp /root/.bash_history /home/test/
root@master:~# ls -la /home/test/
total 12
drwxr-xr-x 2 root root 4096 Aug 16 10:44 .
drwxr-xr-x 4 root root 4096 Aug 16 10:44 ..
-rw----- 1 root root 677 Aug 16 10:44 .bash_history
```

## Rename:

```
ck connect... 3. 10.7.150.54 (master)
root@master:~# mv /home/test/.bash_history /home/test/labwork2
root@master:~# ls -la /home/test/
total 12
drwxr-xr-x 2 root root 4096 Aug 16 10:51 .
drwxr-xr-x 4 root root 4096 Aug 16 10:44 ..
-rw----- 1 root root 677 Aug 16 10:50 labwork2
```

## Links:

```
3. 10.7.150.54 (master)
root@master:~# ln -s /home/test/labwork2 /home/test/labwork2_soft
root@master:~# ln /home/test/labwork2 /home/test/labwork2_hard
root@master:~# ls -la /home/test/
total 16
drwxr-xr-x 2 root root 4096 Aug 16 10:57 .
drwxr-xr-x 4 root root 4096 Aug 16 10:44 ..
-rw----- 2 root root 677 Aug 16 10:50 labwork2
-rw----- 2 root root 677 Aug 16 10:50 labwork2_hard
lrwxrwxrwx 1 root root 19 Aug 16 10:56 labwork2_soft -> /home/test/labwork2
```



## Inode info:

```
ck connect... 3. 10.7.150.54 (master)
root@master:~# stat /home/test/labwork2
  File: /home/test/labwork2
  Size: 677          Blocks: 8          IO Block: 4096   regular file
Device: 802h/2050d   Inode: 399234       Links: 2
Access: (0600/-rw-----)  Uid: (  0/   root)   Gid: (  0/   root)
Access: 2023-08-16 10:50:41.187141277 +0000
Modify: 2023-08-16 10:50:41.187141277 +0000
Change: 2023-08-16 10:57:32.657071884 +0000
 Birth: 2023-08-16 10:50:41.187141277 +0000
root@master:~#
```

## Hard link:

```
ck connect... 3. 10.7.150.54 (master)
root@master:~# find /home/ -inum 399234
/home/test/labwork2
/home/test/labwork2_hard
root@master:~#
```



Rename hard link:

```
root@master:~# mv /home/test/labwork2_hard /home/test/hard_lnk_labwork2
root@master:~# ls -la /home/test/
total 16
drwxr-xr-x 2 root root 4096 Aug 16 11:15 .
drwxr-xr-x 4 root root 4096 Aug 16 10:44 ..
-rw----- 2 root root 677 Aug 16 10:50 hard_lnk_labwork2
-rw----- 2 root root 677 Aug 16 10:50 labwork2
lrwxrwxrwx 1 root root 19 Aug 16 10:56 labwork2_soft → /home/test/labwork2
root@master:~#
```

Rename soft link:

```
root@master:~# mv /home/test/labwork2_soft /home/test/symb_lnk_labwork2
root@master:~# ls -la /home/test/
total 16
drwxr-xr-x 2 root root 4096 Aug 16 11:19 .
drwxr-xr-x 4 root root 4096 Aug 16 10:44 ..
-rw----- 2 root root 677 Aug 16 10:50 hard_lnk_labwork2
-rw----- 2 root root 677 Aug 16 10:50 labwork2
lrwxrwxrwx 1 root root 19 Aug 16 10:56 symb_lnk_labwork2 → /home/test/labwork2
root@master:~#
```

Delete main file:

```
rk connect... 3. 10.7.150.54 (master) ×
root@master:~# rm /home/test/labwork2
root@master:~# ls -la /home/test/
total 12
drwxr-xr-x 2 root root 4096 Aug 16 11:20 .
drwxr-xr-x 4 root root 4096 Aug 16 10:44 ..
-rw----- 1 root root  677 Aug 16 10:50 hard_lnk_labwork2
lrwxrwxrwx 1 root root   19 Aug 16 10:56 symb_lnk_labwork2 → /home/test/labwork2
root@master:~#
```

Hard Link :

A hard link acts as a copy (mirrored) of the selected file. It accesses the data available in the original file.

If the earlier selected file is deleted, the hard link to the file will still contain the data of that file.

Soft Link :

A soft link (also known as Symbolic link) acts as a pointer or a reference to the file name. It does not access the data available in the original file. If the earlier file is deleted, the soft link will be pointing to a file that does not exist anymore.



Remove all hard links:

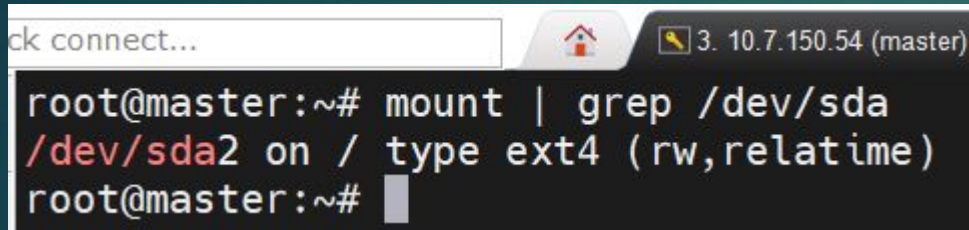
```
ck connect... 3. 10.7.150.54 (master) ×
root@master:~# find /home/ -inum 399234 -exec rm -i {} +
rm: remove regular file '/home/test/hard_lnk_labwork2'? y
root@master:~# ls -la /home/test/
total 8
drwxr-xr-x 2 root root 4096 Aug 16 11:30 .
drwxr-xr-x 4 root root 4096 Aug 16 10:44 ..
lrwxrwxrwx 1 root root   19 Aug 16 10:56 symb_lnk_labwork2 → /home/test/labwork2
root@master:~#
```



7) Using the locate utility, find all files that contain the squid and traceroute sequence.

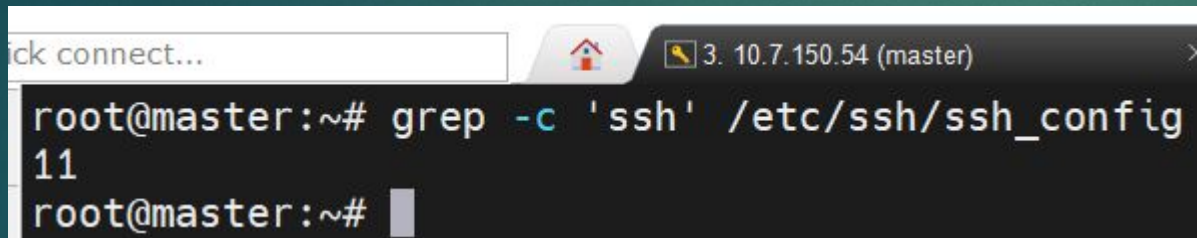
```
k connect... 3. 10.7.150.54 (master)
root@master:~# locate squid && locate traceroute
/usr/lib/python3/dist-packages/sos/report/plugins/squid.py
/usr/lib/python3/dist-packages/sos/report/plugins/__pycache__/squid.cpython-310.pyc
/usr/share/vim/vim82/syntax/squid.vim
/etc/alternatives/tcptraceroute
/etc/alternatives/tcptraceroute.8.gz
/etc/alternatives/traceroute
/etc/alternatives/traceroute.1.gz
/etc/alternatives/traceroute.sbin
/etc/alternatives/traceroute6
/etc/alternatives/traceroute6.1.gz
/usr/bin/traceroute
/usr/bin/traceroute-nanog
/usr/bin/traceroute.db
/usr/bin/traceroute6
/usr/bin/traceroute6.db
/usr/sbin/tcptraceroute
/usr/sbin/tcptraceroute.db
/usr/sbin/traceroute
/usr/share/doc/traceroute
/usr/share/doc/traceroute/CREDITS
/usr/share/doc/traceroute/README
/usr/share/doc/traceroute/TODO
/usr/share/doc/traceroute/changelog.Debian.gz
/usr/share/doc/traceroute/copyright
/usr/share/man/man1/traceroute-nanog.1.gz
/usr/share/man/man1/traceroute.1.gz
/usr/share/man/man1/traceroute.db.1.gz
/usr/share/man/man1/traceroute6.1.gz
/usr/share/man/man1/traceroute6.db.1.gz
/usr/share/man/man8/tcptraceroute.8.gz
/usr/share/man/man8/tcptraceroute.db.8.gz
/usr/src/linux-headers-5.15.0-79/tools/testing/selftests/net/traceroute.sh
```

8) Determine which partitions are mounted in the system, as well as the types of these partitions.



```
root@master:~# mount | grep /dev/sda
/dev/sda2 on / type ext4 (rw,relatime)
root@master:~#
```

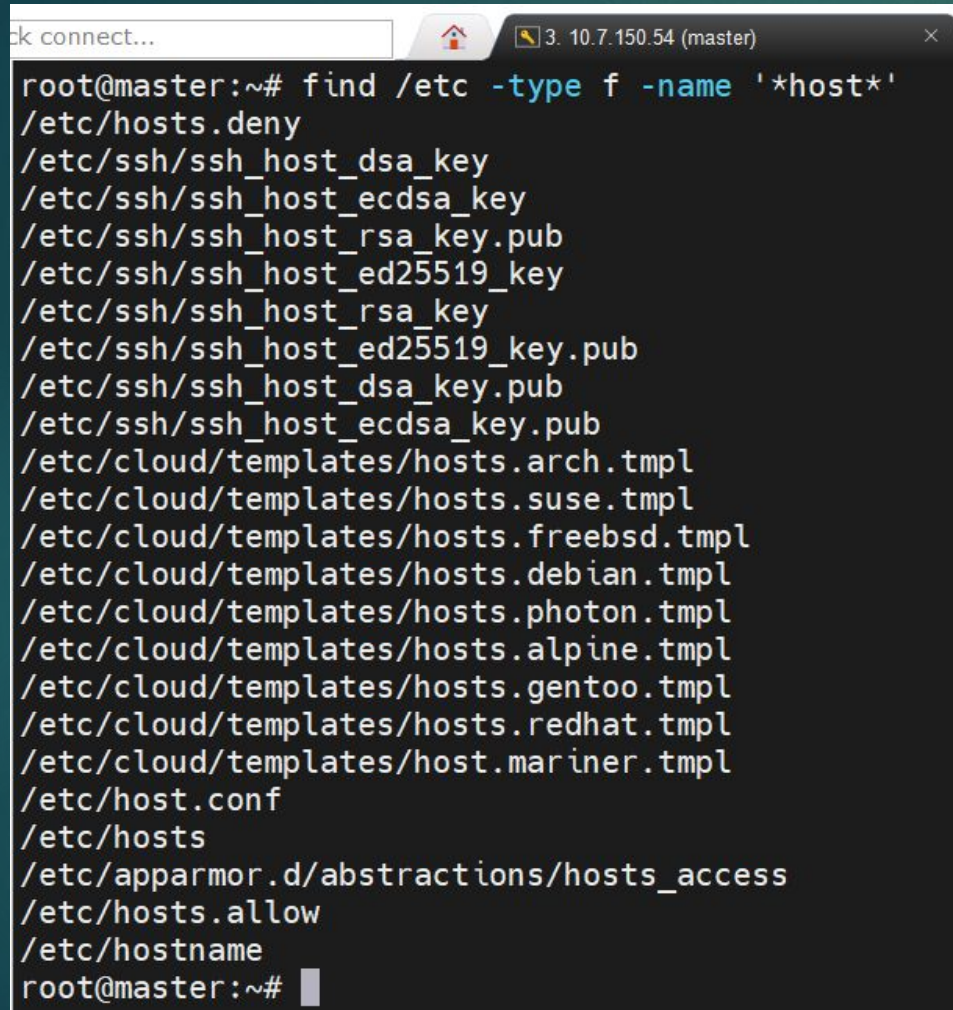
9) Count the number of lines containing a given sequence of characters in a given file.



```
root@master:~# grep -c 'ssh' /etc/ssh/ssh_config
11
root@master:~#
```



10) Using the find command, find all files in the /etc directory containing the host character sequence.

A terminal window titled "3. 10.7.150.54 (master)" showing the execution of the command `find /etc -type f -name '*host*'`. The output lists various files in the /etc directory, including host keys, templates, and configuration files.

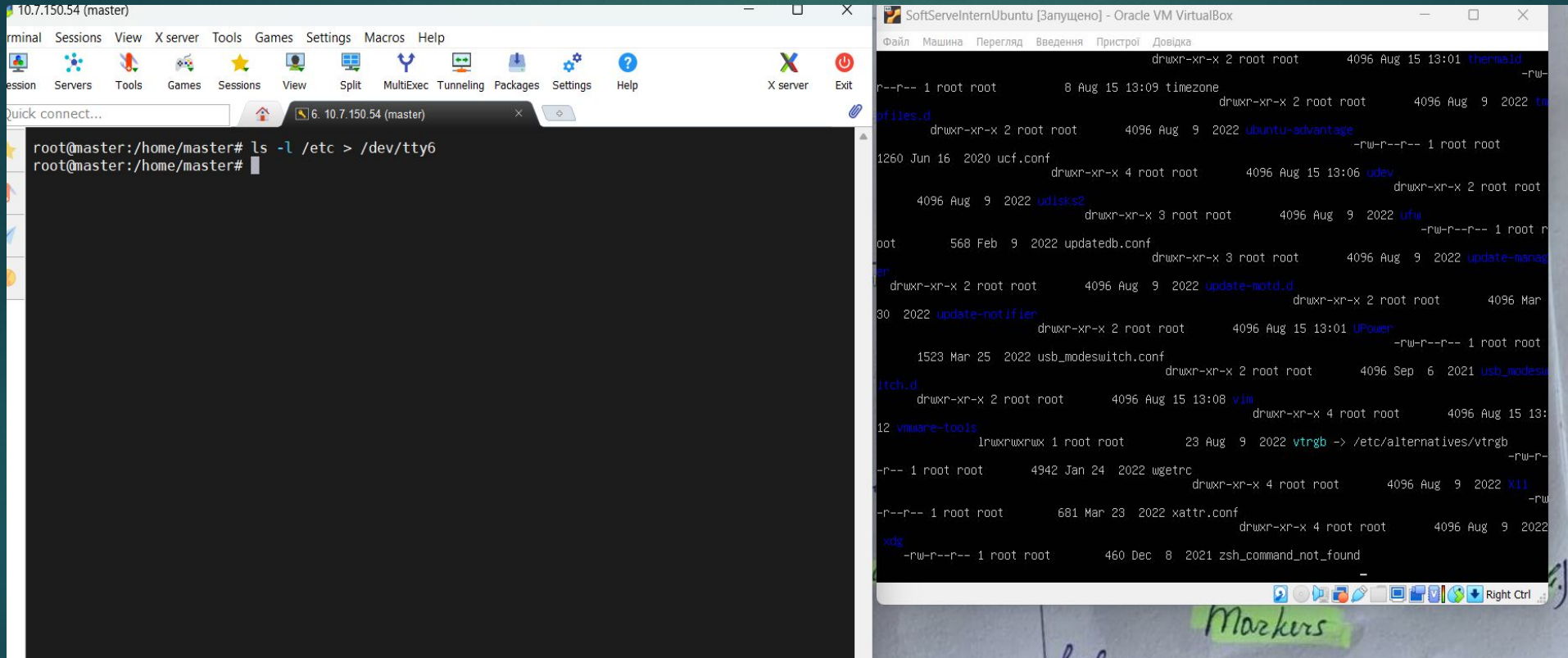
```
root@master:~# find /etc -type f -name '*host*'
/etc/hosts.deny
/etc/ssh/ssh_host_dsa_key
/etc/ssh/ssh_host_ecdsa_key
/etc/ssh/ssh_host_rsa_key.pub
/etc/ssh/ssh_host_ed25519_key
/etc/ssh/ssh_host_rsa_key
/etc/ssh/ssh_host_ed25519_key.pub
/etc/ssh/ssh_host_dsa_key.pub
/etc/ssh/ssh_host_ecdsa_key.pub
/etc/cloud/templates/hosts.arch.tpl
/etc/cloud/templates/hosts.suse.tpl
/etc/cloud/templates/hosts.freebsd.tpl
/etc/cloud/templates/hosts.debian.tpl
/etc/cloud/templates/hosts.photon.tpl
/etc/cloud/templates/hosts.alpine.tpl
/etc/cloud/templates/hosts.gentoo.tpl
/etc/cloud/templates/hosts.redhat.tpl
/etc/cloud/templates/host.mariner.tpl
/etc/host.conf
/etc/hosts
/etc/apparmor.d/abstractions/hosts_access
/etc/hosts.allow
/etc/hostname
root@master:~#
```



11) List all objects in /etc that contain the ss character sequence.  
How can I duplicate a similar command using a bunch of grep?

```
root@master:~# grep -rF 'ss' /
/usr/share/apport/apport:import sys, os, os.path, subprocess, time, traceback, pwd, io
/usr/share/apport/apport:    # unhandled exceptions on missing or invalidly formatted files are okay
/usr/share/apport/apport:    # determine UID and GID of the target process; do *not* use the owner of
/usr/share/apport/apport:    assert crash_uid is not None, 'failed to parse Uid'
/usr/share/apport/apport:    assert crash_gid is not None, 'failed to parse Gid'
/usr/share/apport/apport:def get_process_starttime():
/usr/share/apport/apport:    '''Get the starttime of the process using proc_pid_fd'''
/usr/share/apport/apport:    '''Get the Apport process starttime'''
/usr/share/apport/apport:    assert os.getgroups() == []
/usr/share/apport/apport:    assert os.getegid() == crash_gid
/usr/share/apport/apport:    assert os.geteuid() == crash_uid
/usr/share/apport/apport:    assert os.getegid() == os.getgid()
/usr/share/apport/apport:    assert os.geteuid() == os.getuid()
/usr/share/apport/apport:    pass # if group adm doesn't exist, just leave it as root
/usr/share/apport/apport:    except OSError: # on a permission error, don't touch stderr
/usr/share/apport/apport:    pass
/usr/share/apport/apport:    # limit nonzero: crashed process' core size ulimit in bytes
/usr/share/apport/apport:    # changed to the crashed process' uid
/usr/share/apport/apport:    assert pidstat, 'pidstat not initialized'
/usr/share/apport/apport:    '''Run command like subprocess.run() but with output limit and timeout.
/usr/share/apport/apport:    process = subprocess.Popen(args, stdout=subprocess.PIPE, stderr=subprocess.PIPE,
/usr/share/apport/apport:    os.set_blocking(process.stdout.fileno(), False)
/usr/share/apport/apport:    os.set_blocking(process.stderr.fileno(), False)
/usr/share/apport/apport:    alive = process.poll() is None
/usr/share/apport/apport:    tempout = process.stdout.read(100)
/usr/share/apport/apport:    temperr = process.stderr.read(100)
/usr/share/apport/apport:    process.kill()
/usr/share/apport/apport:def is_closing_session():
/usr/share/apport/apport:    '''Check if pid is in a closing user session.
/usr/share/apport/apport:    During that, crashes are common as the session D-BUS and X.org are going
/usr/share/apport/apport:    # Sanity check, don't do anything for root processes
/usr/share/apport/apport:    error_log('is_closing_session(): no DBUS_SESSION_BUS_ADDRESS in environment')
```

12) Organize a screen-by-screen print of the contents of the /etc directory. Hint: You must use stream redirection operations.



The image displays two terminal windows side-by-side. The left window, titled '10.7.150.54 (master)', shows a terminal session where the command `ls -l /etc > /dev/tty6` is entered. The right window, titled 'SoftServeInternUbuntu [Запущено] - Oracle VM VirtualBox', shows the output of this command, which is a long list of files and directories in the /etc directory, including `thermald`, `timezone`, `ubuntu-advantage`, `udev`, `udisks2`, `ufw`, `updatedb.conf`, `update-manag`, `update-notd.d`, `update-notifier`, `UPower`, `usb_modeswitch.conf`, `usb_modesu`, `via`, `vmware-tools`, `vtmgb`, `wgetrc`, `xattr.conf`, and `zsh_command_not_found`. The output is formatted with permissions, owner, group, size, date, and filename.

```
root@master:/home/master# ls -l /etc > /dev/tty6
root@master:/home/master#
```

```
drwxr-xr-x 2 root root 4096 Aug 15 13:01 thermald
-rw-r--r-- 1 root root 8 Aug 15 13:09 timezone
drwxr-xr-x 2 root root 4096 Aug 9 2022 ubuntu-advantage
drwxr-xr-x 2 root root 4096 Aug 9 2022 udev
drwxr-xr-x 3 root root 4096 Aug 9 2022 udisks2
drwxr-xr-x 3 root root 4096 Aug 9 2022 ufw
-rw-r--r-- 1 root root 568 Feb 9 2022 updatedb.conf
drwxr-xr-x 3 root root 4096 Aug 9 2022 update-manag
drwxr-xr-x 2 root root 4096 Aug 9 2022 update-notd.d
-rw-r--r-- 1 root root 30 2022 update-notifier
drwxr-xr-x 2 root root 4096 Aug 15 13:01 UPower
-rw-r--r-- 1 root root 1523 Mar 25 2022 usb_modeswitch.conf
drwxr-xr-x 2 root root 4096 Sep 6 2021 usb_modesu
drwxr-xr-x 2 root root 4096 Aug 15 13:08 via
drwxr-xr-x 4 root root 4096 Aug 15 13:
12 vmware-tools
lrwxrwxrwx 1 root root 23 Aug 9 2022 vtmgb -> /etc/alternatives/vtmgb
-rw-r--r-- 1 root root 4942 Jan 24 2022 wgetrc
drwxr-xr-x 4 root root 4096 Aug 9 2022 x11
-rw-r--r-- 1 root root 681 Mar 23 2022 xattr.conf
drwxr-xr-x 4 root root 4096 Aug 9 2022
xdg
-rw-r--r-- 1 root root 460 Dec 8 2021 zsh_command_not_found
```



13) What are the types of devices and how to determine the type of device? Give examples.

```
ck connect... 6. 10.7.150.54 (master) x
root@master:/home/master# lsblk
NAME        MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
loop0        7:0      0   62M  1 loop /snap/core20/1587
loop1        7:1      0  79.9M  1 loop /snap/lxd/22923
loop2        7:2      0   47M  1 loop /snap/snapd/16292
loop3        7:3      0  63.5M  1 loop /snap/core20/2015
loop4        7:4      0 111.9M  1 loop /snap/lxd/24322
sda          8:0      0   25G  0 disk
├─sda1       8:1      0    1M  0 part
└─sda2       8:2      0   25G  0 part /
sr0         11:0      1 1024M  0 rom
root@master:/home/master#
```



14) How to determine the type of file in the system, what types of files are there?

```
ck connect... 6. 10.7.150.54 (master)
root@master:/home/master# lsblk
NAME        MAJ:MIN RM   SIZE RO TYPE MOUNTPOINTS
loop0        7:0      0    62M  1 loop /snap/core20/1587
loop1        7:1      0   79.9M  1 loop /snap/lxd/22923
loop2        7:2      0    47M  1 loop /snap/snapd/16292
loop3        7:3      0   63.5M  1 loop /snap/core20/2015
loop4        7:4      0  111.9M  1 loop /snap/lxd/24322
sda          8:0      0    25G  0 disk
├─sda1       8:1      0     1M  0 part
└─sda2       8:2      0    25G  0 part /
sr0         11:0      1  1024M  0 rom
root@master:/home/master#
```

15) \* List the first 5 directory files that were recently accessed in the /etc directory.

```
ck connect... 6. 10.7.150.54 (master)
root@master:/home/master# ls -l /etc | head -6
total 848
-rw-r--r-- 1 root root      3028 Aug  9  2022 adduser.conf
drwxr-xr-x 2 root root     4096 Aug 15 13:47 alternatives
drwxr-xr-x 3 root root     4096 Aug  9  2022 apparmor
drwxr-xr-x 8 root root     4096 Aug 15 13:13 apparmor.d
drwxr-xr-x 3 root root     4096 Aug 15 13:11 apport
root@master:/home/master#
```