EPAM University Programs
DevOps external course
Module 4 Linux & Bash Essentials
TASK 4.5

1. To discover files with ac=ve s=cky bits, use the following version of the **find** command:
sudo find / -perm /6000 -type f -exec ls -ld {} \;>setuid.txt

sudo – run command as other user (by default as root)
find – find files
/ - start find files from / (root) directory
-perm /6000 – search files with Unix access rights flags 2+4 (sgid + suid)
-type f – search files only
-exec ls -ld – execute command **ls** with **–ld** flag
{} - replacing with the name of the file
\; - terminate of exec
>setuid.txt - redirect stdout to file setuid.txt
Put into your report a fragment of setuid.txt file. Explain meaning of parameters of the above **find** command (hint: use find's man page).

2. Discovering soY and hard links.
Comment on results of these commands (place the output into your report):
cd
mkdir test
cd test
touch test1.txt
echo "test1.txt" > test1.txt && **ls** -l .

```
haviras@ubuntu1804:~/test$ cd && mkdir test  && cd test && touch test1.txt && ec
ho "test1.txt" > test1.txt && ls -l .
total 4
-rw-rw-r-- 1 haviras haviras 16 Apr 15 20:52 test1.txt
haviras@ubuntu1804:~/test$
```

We made the folder with test1.txt
(a hard link)
ln test1.txt test2.txt && **ls** -l .

```
haviras@ubuntu1804:~/test$ ln test1.txt test2.txt && ls -l .
total 8
-rw-rw-r-- 2 haviras haviras 16 Apr 16 20:19 test1.txt
-rw-rw-r-- 2 haviras haviras 16 Apr 16 20:19 test2.txt
```

(pay attention to the number of links to test1.txt and test2.txt)

we made a hard link to text1.txt with text2.txt name

```
haviras@ubuntu1804:~/test$ cat test2.txt
"test1.txt"
```

If we view file text2.txt we can see content of text1.txt

echo "test2.txt" > test2.txt

```
haviras@ubuntu1804:~/test$ echo "test2.txt" > test2.txt
haviras@ubuntu1804:~/test$ cat test2.txt
"test2.txt"
```

We change the content of text2.txt ….

cat test1.txt test2.txt

```
haviras@ubuntu1804:~/test$ cat test1.txt test2.txt
"test2.txt"
"test2.txt"
```

And we see, that content of text1.txt was changed too!

Because it is two names for one file!

rm test1.txt

ls -l .

```
haviras@ubuntu1804:~/test$ rm test1.txt
haviras@ubuntu1804:~/test$ ls -l
total 4
-rw-rw-r-- 1 haviras haviras 16 Apr 16 20:23 test2.txt
haviras@ubuntu1804:~/test$
```

cleaning up….

(now a soft link)

ln -s test2.txt test3.txt

ls -l .

```
haviras@ubuntu1804:~/test$ ls -l .
total 4
-rw-rw-r-- 1 haviras haviras 16 Apr 16 20:23 test2.txt
lrwxrwxrwx 1 haviras haviras  9 Apr 16 20:27 test3.txt -> test2.txt
```

now we made a soft link for file text2.txt – text3.txt

it is look like a link from windows

(pay attention to the number of links to the created files)

```
haviras@ubuntu1804:~/test$ cat test3.txt
"test2.txt"
```

content of text3.txt matching of text2.txt

Because it is soft link!

rm test2.txt; **ls** -l .

```
haviras@ubuntu1804:~/test$ rm test2.txt; ls -l .
total 0
lrwxrwxrwx 1 haviras haviras 9 Apr 16 20:27 test3.txt -> test2.txt
haviras@ubuntu1804:~/test$ cat test3.txt
cat: test3.txt: No such file or directory
```

if we remove base file text2.txt we can see orphaned softlink text3.txt

3. I/O redirect.

Execute these commands; comment on the output.

mount –

there_are_a_big_plane_text.jpg ☺

displays all mounted partitions and file systems

blkid

```
haviras@ubuntu1804:~/test$ blkid
/dev/sda2: UUID="f2b8824f-183c-4d3f-acbb-77ea06c5b464" TYPE="ext4" PARTUUID="2d7e1de9-7a20-4e47-a20b-23a1e8368a84"
```

print attributes about available block devices (HDD, flash, CD\DVD … etc)

mount | grep sda

```
haviras@ubuntu1804:~/test$ mount | grep sda
/dev/sda2 on / type ext4 (rw,relatime,data=ordered)
```

print about mounted sda device – filesystem,

rw - permission

relatime - Update access time only when changing a file or changing access time.

ordered - the file system only logs metadata (Partial logging)

dmesg | grep sda

```
haviras@ubuntu1804:~/test$ dmesg | grep sda
[    1.710777] sd 2:0:0:0: [sda] 33748928 512-byte logical blocks: (17.3 GB/16.1 GiB)
[    1.711905] sd 2:0:0:0: [sda] Write Protect is off
[    1.712126] sd 2:0:0:0: [sda] Mode Sense: 00 3a 00 00
[    1.712157] sd 2:0:0:0: [sda] Write cache: enabled, read cache: enabled, doesn't support DPO or FUA
[    1.760633]  sda: sda1 sda2
[    1.761039] sd 2:0:0:0: [sda] Attached SCSI disk
[    3.386321] EXT4-fs (sda2): INFO: recovery required on readonly filesystem
[    3.386941] EXT4-fs (sda2): write access will be enabled during recovery
[    3.508965] EXT4-fs (sda2): orphan cleanup on readonly fs
[    3.512759] EXT4-fs (sda2): 9 orphan inodes deleted
[    3.513346] EXT4-fs (sda2): recovery complete
[    3.518650] EXT4-fs (sda2): mounted filesystem with ordered data mode. Opts: (null)
[    4.209502] EXT4-fs (sda2): re-mounted. Opts: (null)
```

Hard Disk Partition Information

Also there was an incorrect shutdown of the system. file system broke a little, but everything was fixed

sudo grep -R -e “root” /etc > root_entries.txt

(place only a reasonable fragment of root_entries.txt into your report)

```
/etc/skel/.bashrc:    debian_chroot=$(cat /etc/debian_chroot)
/etc/skel/.bashrc:    PS1='${debian_chroot:+($debian_chroot)}\[\033[01;32m\]\u@\h\[\033[00m\]:\
/etc/skel/.bashrc:    PS1='${debian_chroot:+($debian_chroot)}\u@\h:\w\$ '
/etc/skel/.bashrc:    PS1="\[\e]0;${debian_chroot:+($debian_chroot)}\u@\h: \w\a\]$PS1"
/etc/shadow:root:*:18295:0:99999:7:::
/etc/logrotate.d/alternatives:  create 644 root root
/etc/logrotate.d/dpkg:  create 644 root root
/etc/newt/palette:root=,magenta
/etc/newt/palette:roottext=,magenta
/etc/newt/palette.ubuntu:root=,magenta
/etc/newt/palette.ubuntu:roottext=,magenta
```

for example we can see about root password’s hash

But it is Ubuntu – we don’t have root’s password