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

1. To discover files with active sticky bits, use the following version of the **find** command:
sudo find / -perm /6000 -type f -exec ls -ld {} \;>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).

```
felexa@aku-ПК:~$ cat setuid.txt
-rwsr-xr-x 1 root root 30800 Aug 11  2016 /bin/fusermount
-rwsr-xr-x 1 root root 43088 Oct 15  2018 /bin/mount
-rwsr-xr-x 1 root root 64424 Mar 10  2017 /bin/ping
-rwsr-xr-x 1 root root 44664 Mar 22  2019 /bin/su
-rwsr-xr-x 1 root root 26696 Oct 15  2018 /bin/umount
-rwxr-sr-x 1 root shadow 34816 Feb 27  2019 /sbin/pam_extrausers_chkpwd
-rwxr-sr-x 1 root shadow 34816 Feb 27  2019 /sbin/unix_chkpwd
-rwsr-sr-x 1 daemon daemon 51464 Feb 20  2018 /usr/bin/at
-rwxr-sr-x 1 root tty 14328 Jan 17  2018 /usr/bin/bsd-write
-rwxr-sr-x 1 root shadow 71816 Mar 22  2019 /usr/bin/chage
-rwsr-xr-x 1 root root 76496 Mar 22  2019 /usr/bin/chfn
-rwsr-xr-x 1 root root 44528 Mar 22  2019 /usr/bin/chsh
-rwxr-sr-x 1 root crontab 39352 Nov 16  2017 /usr/bin/crontab
-rwxr-sr-x 1 root shadow 22808 Mar 22  2019 /usr/bin/expiry
-rwsr-xr-x 1 root root 75824 Mar 22  2019 /usr/bin/gpasswd
-rwxr-sr-x 1 root mlocate 43088 Mar  1  2018 /usr/bin/mlocate
-rwsr-xr-x 1 root root 37136 Mar 22  2019 /usr/bin/newgidmap
-rwsr-xr-x 1 root root 40344 Mar 22  2019 /usr/bin/newgrp
-rwsr-xr-x 1 root root 37136 Mar 22  2019 /usr/bin/newuidmap
-rwsr-xr-x 1 root root 59640 Mar 22  2019 /usr/bin/passwd
-rwsr-xr-x 1 root root 22520 Mar 27  2019 /usr/bin/pkexec
-rwxr-sr-x 1 root ssh 362640 Mar  4  2019 /usr/bin/ssh-agent
-rwsr-xr-x 1 root root 149080 Jan 18  2018 /usr/bin/sudo
-rwsr-xr-x 1 root root 18448 Mar 10  2017 /usr/bin/traceroute6.iputils
-rwxr-sr-x 1 root tty 30800 Oct 15  2018 /usr/bin/wall
-rwsr-xr-- 1 root messagebus 42992 Nov 16  2017 /usr/lib/dbus-1.0/dbus-daemon-launch-helper
-rwsr-xr-x 1 root root 10232 Mar 28  2017 /usr/lib/eject/dmcrypt-get-device
-rwxr-sr-x 1 root tty 10232 Aug  5  2017 /usr/lib/mc/cons.saver
-rwsr-xr-x 1 root root 436552 Mar  4  2019 /usr/lib/openssh/ssh-keysign
-rwsr-xr-x 1 root root 14328 Mar 27  2019 /usr/lib/policykit-1/polkit-agent-helper-1
-rwsr-sr-x 1 root root 105336 Mar 21  2019 /usr/lib/snapd/snap-confine
-rwsr-xr-x 1 root root 100760 Nov 23  2018 /usr/lib/x86_64-linux-gnu/lxc/lxc-user-nic
-rwxr-sr-x 1 root utmp 10232 Mar 11  2016 /usr/lib/x86_64-linux-gnu/utempter/utempter
felexa@aku-ПК:~$
```

This command is used to search files (-type f) with a permission mask of 6000 (-perm /6000) and then writes an information about the found files

(-exec ls -ld {} \) to file (>setuid.txt)

2. Discovering soft and hard links.
Comment on results of these commands (place the output into your report):
cd – change directory command
mkdir test - create directory test
cd test - go to test directory
touch test1.txt - create file test1.txt
echo “test1.txt” > test1.txt - paste some text “test1.txt” to file test1.txt
ls -l . – list all files from directly with key -long
(a hard link)
ln test1.txt test2.txt - create hard link from test1.txt to text2.txt
ls -l . - list all files from directly with key -long
(pay attention to the number of links to test1.txt and test2.txt)
echo “test2.txt” > test2.txt - paste some text “test2.txt” to file test2.txt
cat test1.txt test2.txt - show text from test1.txt and test2.txt
rm test1.txt – delete file test1.txt
ls -l . -- list all files from directly with key -long

```
felexa@aku-ПК:~$ cd
felexa@aku-ПК:~$ mkdir test
felexa@aku-ПК:~$ cd test
felexa@aku-ПК:~/test$ touch test1.txt
felexa@aku-ПК:~/test$ echo test1.txt > test1.txt
felexa@aku-ПК:~/test$ ls -l
total 0
-rw-rw-rw- 1 felexa felexa 10 Apr 21 23:20 test1.txt
felexa@aku-ПК:~/test$ ln test1.txt test2.txt
felexa@aku-ПК:~/test$ ls -l
total 0
-rw-rw-rw- 2 felexa felexa 10 Apr 21 23:20 test1.txt
-rw-rw-rw- 2 felexa felexa 10 Apr 21 23:20 test2.txt
felexa@aku-ПК:~/test$ echo test2.txt > test2.txt
felexa@aku-ПК:~/test$ cat test1.txt test2.txt
test2.txt
test2.txt
felexa@aku-ПК:~/test$ rm test1.txt
felexa@aku-ПК:~/test$ ls -l
total 0
-rw-rw-rw- 1 felexa felexa 10 Apr 21 23:22 test2.txt
felexa@aku-ПК:~/test$
```

(now a soft link)
ln -s test2.txt test3.txt -- create soft link from test2.txt to test3.txt
ls -l . -- list all files from directly with key -long
(pay attention to the number of links to the created files)
rm test2.txt; **ls** -l . – delete file test2.txt and then make list all files from directly with key -long

```
felexa@aku-ПК:~/test$ ln -s test2.txt test3.txt
felexa@aku-ПК:~/test$ ls -l
total 0
-rw-rw-rw- 1 felexa felexa 0 Apr 21 23:28 test2.txt
lrwxrwxrwx 1 felexa felexa 9 Apr 21 23:29 test3.txt -> test2.txt
felexa@aku-ПК:~/test$ rm test2.txt; ls -l
total 0
lrwxrwxrwx 1 felexa felexa 9 Apr 21 23:29 test3.txt -> test2.txt
felexa@aku-ПК:~/test$
```

3. I/O redirect.
Execute these commands; comment on the output.
mount -- display a list of all connected devices

```
felexa@aku-ПК:~/test$ mount
rootfs on / type lxfs (rw,noatime)
none on /dev type tmpfs (rw,noatime,mode=755)
sysfs on /sys type sysfs (rw,nosuid,nodev,noexec,noatime)
proc on /proc type proc (rw,nosuid,nodev,noexec,noatime)
devpts on /dev/pts type devpts (rw,nosuid,noexec,noatime,gid=5,mode=620)
none on /run type tmpfs (rw,nosuid,noexec,noatime,mode=755)
none on /run/lock type tmpfs (rw,nosuid,nodev,noexec,noatime)
none on /run/shm type tmpfs (rw,nosuid,nodev,noatime)
none on /run/user type tmpfs (rw,nosuid,nodev,noexec,noatime,mode=755)
binfmt_misc on /proc/sys/fs/binfmt_misc type binfmt_misc (rw,relatime)
cgroup on /sys/fs/cgroup type tmpfs (rw,relatime,mode=755)
cgroup on /sys/fs/cgroup/devices type cgroup (rw,relatime,devices)
C:\ on /mnt/c type drvfs (rw,noatime,uid=1000,gid=1000,case=off)
```

blkid -- The blkid command without options(keys) displays the information contained in the /etc/blkid.tab file

```
admin1@checkout:~$ blkid
/dev/sda2: UUID="8c2c6de1-c3db-4f0c-be52-2f7c5865af8a" TYPE="ext4" PARTUUID="ca262c28-3db0-41e1-8bf3-c404fe353dc3"
```

mount | **grep** sda – show filtered lists of all connected devices by the word sda.

```
admin1@checkout:~$ mount | grep sda
/dev/sda2 on / type ext4 (rw,relatime,data=ordered)
```

dmesg | **grep** sda -- show filtered list the kernel ring buffer by the word sda.

```
admin1@checkout:~$ dmesg | grep eth0
[1274159.285678] veth53e7927: renamed from eth0
[1274219.812377] eth0: renamed from veth899329e
[1274220.679490] veth899329e: renamed from eth0
[1274281.216312] eth0: renamed from veth26f2bc1
[1274282.095699] veth26f2bc1: renamed from eth0
[1274342.666903] eth0: renamed from vethaab5d43
```

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

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

-- looking for lines with the word "root" in the /etc folder and all subfolders and writes them to a file root_entries.txt

```
admin1@checkout://tmp$ cat root_entries.txt
/etc/systemd/logind.conf:#KillExcludeUsers=root
/etc/systemd/system/sockets.target.wants/docker.socket:SocketUser=root
/etc/systemd/system/sockets.target.wants/snapd.socket:SocketUser=root
/etc/systemd/system/sockets.target.wants/snapd.socket:SocketGroup=root
/etc/overlayroot.conf:# This is the overlayroot config file
/etc/overlayroot.conf:# By default, overlayroot is not enabled.
/etc/overlayroot.conf:# To enable overlayroot:
/etc/overlayroot.conf:#   1) edit the 'overlayroot' definition below
/etc/overlayroot.conf:#  * overlayroot=tmpfs or overlayroot=tmpfs:PARAMETERS
/etc/overlayroot.conf:#     overlayroot=tmpfs
/etc/overlayroot.conf:#     overlayroot=tmpfs:swap=1
/etc/overlayroot.conf:#  * overlayroot=DEVICE or overlayroot=device:PARAMETERS
/etc/overlayroot.conf:#       Note, 'overlayroot=/dev/vdb' is translated to
/etc/overlayroot.conf:#      overlayroot=/dev/xvdb
/etc/overlayroot.conf:#      overlayroot=/dev/vdb
/etc/overlayroot.conf:#      overlayroot=device:dev=/dev/sdb,timeout=180
/etc/overlayroot.conf:#      overlayroot=device:dev=LABEL=my-flashdrive,timeout=180
/etc/overlayroot.conf:#  * overlayroot=crypt:PARAMETERS
```