

# Task 1

- 1) Log in to the system as root.

```
student@CsnKhai:~$ sudo su
[sudo] password for student:
root@CsnKhai:/home/student#
|                                     find
```

- 2) Use the passwd command to change the password. Examine the basic parameters of the command. What system file does it change \*?

```
| Файл  Машина  Вид  Ввод  Устройства  С
student@CsnKhai:~$ passwd student
Changing password for student.
(current) UNIX password:
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
student@CsnKhai:~$ _
```

etc/passwd and etc/shadow

- 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?

We can use less /etc/passwd for list of users

```
| Файл  Машина  Вид  Ввод  Устройства  Справка
student@CsnKhai:~$ less /etc/passwd
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/bin/sync
games:x:5:60:games:/usr/games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin
irc:x:39:39:ircd:/var/run/ircd:/usr/sbin/nologin
gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologin
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
libuuid:x:101:101::/var/lib/libuuid:
syslog:x:101:104::/home/syslog:/bin/false
messagebus:x:102:105::/var/run/dbus:/bin/false
sshd:x:103:65534::/var/run/sshd:/usr/sbin/nologin
student:x:1000:1000:student of Jersy:/home/student:/bin/bash
anoly:x:1001:1001:Anoly,404,+731 21 41 14,:/home/anoly:/bin/bash
/etc/passwd (END)
```

For check their bash history we can check .bash\_history in their home catalog under root

**sudo less /home/username/.bash\_history**

```

Файл  Инструменты  Вид  Помощь  Устройства  Справка
student@CsnKhai:~$ sudo less /home/anoly/.bash_history
[sudo] password for student:
exit
/home/anoly/.bash_history (END)

```

#### 4) Change personal information about yourself

chfn username

```

Файл  Машина  Вид  Ввод  Устройства  Справка
student@CsnKhai:~$ chfn student
Password:
Changing the user information for student
Enter the new value, or press ENTER for the default
      Full Name: student of Jersy
      Room Number []: 220
      Work Phone []:
      Home Phone []:
student@CsnKhai:~$ _

```

#### 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

Using man for ls command

-a key – do not ignore entries starting with .

-r key – reverse order while sorting

Using man for passwd:

-d (--delete) – delete user's password

-l (--lock) - lock the password of the named account

```

LS(1)          User Commands          LS(1)

NAME
    ls - list directory contents

SYNOPSIS
    ls [OPTION]... [FILE]...

DESCRIPTION
    List information about the FILES (the current directory by default).
    Sort entries alphabetically if none of -cftuvSUX nor --sort is specified.

    Mandatory arguments to long options are mandatory for short options too.

    -a, --all
        do not ignore entries starting with .

    -A, --almost-all
        do not list implied . and ..

    --author
        with -i, print the author of each file

    --b, --escape
        print C-style escapes for nongraphic characters

    --block-size=BLOCK_SIZE
        set the size of the blocks used for output

    -B
    --ignore-backups
        In directories, ignore files that end with ~. This option is equivalent to --ignore='*' --ignore=',*~'.

    -d
    --directory
        List just the names of directories, as with other types of files, rather than listing their contents. Do not follow symbolic links listed on the command line unless the --dereference-command-line ('-H'), --dereference ('-L'), or --dereference-command-line-symlink-to-dir options are specified.

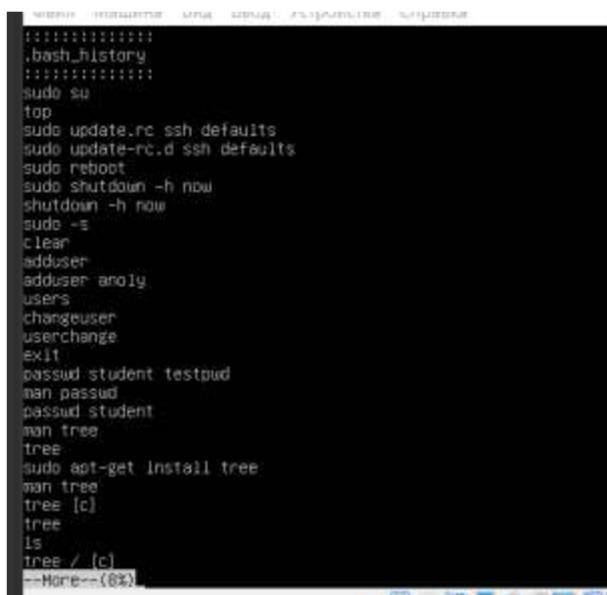
    -H
    --dereference-command-line
        If a command line argument specifies a symbolic link, show information for the file the link references rather than for the link itself.

    --dereference-command-line-symlink-to-dir
        Do not dereference symbolic links, with one exception: if a command line argument specifies a symbolic link that refers to a directory, show information for that directory rather than for the link itself. This is the default behavior when no other dereferencing-related option has been specified ('--classify' ('-F'), --directory ('-d'), ('-i'), --dereference ('-L'), or --dereference-command-line ('-H')).

--zz-Info: (coreutils.info)which_files_are_listed, 94 lines --zz-
Unknown command (EBBC 0).

```

6) more .bash\*

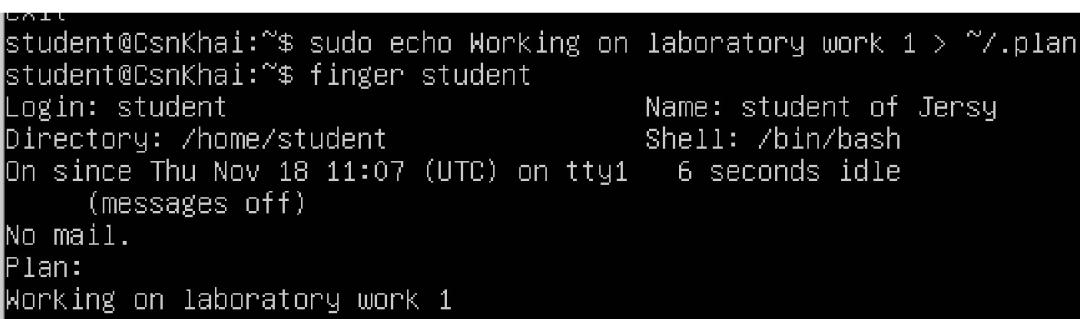


A screenshot of a terminal window showing the history of commands entered. The history includes various system administration commands such as sudo, top, shutdown, reboot, passwd, adduser, userchange, exit, apt-get, and tree. The terminal window has a dark background with white text.

```
...  
.bash_history  
:::  
sudo su  
top  
sudo update-rc.d ssh defaults  
sudo update-rc.d ssh defaults  
sudo reboot  
sudo shutdown -h now  
shutdown -h now  
sudo -E  
clear  
adduser  
adduser andy  
users  
changeuser  
userchange  
exit  
passwd student testpwd  
man passwd  
passwd student  
man tree  
tree  
sudo apt-get install tree  
man tree  
tree [c]  
tree  
ls  
tree / (c)  
--More--(8%)
```

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

echo Working on laboratory work 1 > ~/.plan



A screenshot of a terminal window showing the output of the finger command for the user 'student'. The output provides information about the user's login, directory, idle time, messages, mail status, and plan. The terminal window has a dark background with white text.

```
student@CsnKhai:~$ sudo echo Working on laboratory work 1 > ~/.plan  
student@CsnKhai:~$ finger student  
Login: student                                     Name: student of Jersy  
Directory: /home/student                           Shell: /bin/bash  
On since Thu Nov 18 11:07 (UTC) on tty1   6 seconds idle  

```

8) 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.

ls /home -Rla

```

Файл  Машина  Вид  Ввод  Устройства  Справка
-rw-r--r-- 1 student student 220 Sep 15 2015 .bash_logout
-rw-r--r-- 1 student student 3637 Sep 15 2015 .bashrc
drwx----- 2 student student 4096 Sep 15 2015 .cache
-rw-rw-r-- 1 student student 5022 Nov 15 15:36 find
drwxrwxr-x 2 student student 4096 Nov 15 15:00 hometask
-rw----- 1 student student 35 Nov 15 17:14 .lesshst
-rw-r--r-- 1 student student 675 Sep 15 2015 .profile
drwxrwxr-x 2 student student 4096 Nov 16 07:31 test

/home/student/.cache:
total 8
drwx----- 2 student student 4096 Sep 15 2015 .
drwxr-xr-x 5 student student 4096 Nov 16 14:26 ..
-rw-r--r-- 1 student student 0 Sep 15 2015 motd.legal-displayed

/home/student/hometask:
total 12
drwxrwxr-x 2 student student 4096 Nov 15 15:00 .
drwxr-xr-x 5 student student 4096 Nov 16 14:26 ..
-rw-rw-r-- 1 student student 19 Nov 15 18:58 lab1

/home/student/test:
total 20
drwxrwxr-x 2 student student 4096 Nov 16 07:31 .
drwxr-xr-x 5 student student 4096 Nov 16 14:26 ..
-rw----- 1 student student 2929 Nov 16 07:30 .bash_history
-rw----- 1 student student 2929 Nov 16 07:31 labwork2
-rw-rw-r-- 1 student student 578 Nov 15 15:24 labwork2_hardlink
lrwxrwxrwx 1 student student 8 Nov 15 15:28 labwork2_softlink -> labwork2
student@CsnKhai:~$
```

## 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

Display all files that contain a character c in root directory: tree -P '\*c\*' /

```

tree -P '*c*' /
.
├── catalog
│   └── xml-core
├── dev
├── etc
├── home
├── lib
├── lib64
├── media
├── mnt
├── opt
├── proc
│   ├── console-setup.log
│   ├── container-detect.log
│   ├── network-interface-eth0.log
│   ├── procps-static-network-up.log
│   └── procps-virtual-filesystems.log
├── run
├── selinux
└── var
    ├── cache
    │   └── [error opening dir]
    ├── lib
    │   └── [error opening dir]
    └── log
        ├── cron
        └── cronab
10580 directories, 26038 files
```

List subdirectories of the root directory up to and including the second nesting level: tree -L 2 -d /

```
student@CsnKhai:~$ ls -lR
.
├── fs
├── hypervisor
├── kernel
├── module
└── power
.
├── tmp
├── usr
│   ├── bin
│   ├── games
│   ├── include
│   ├── lib
│   ├── local
│   ├── sbin
│   ├── share
│   └── src
└── var
    ├── backups
    ├── cache
    ├── lib
    ├── locale
    ├── lock -> /run/lock
    ├── log
    ├── mail
    ├── opt
    ├── run -> /run
    └── spool
.
253 directories
```

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

For 1 file we can use command “file” and for several files we can use ls with -l switch. The first symbol will show us type of the file (-,d,l,c,s,p,b)

```
student@CsnKhai:~$ ls -l
total 568
-rw-rw-r-- 1 student student 109 Nov 15 14:59 aboutroot
-rw-rw-r-- 1 student student 5022 Nov 15 15:36 find
drwxrwxr-x 2 student student 4096 Nov 15 15:00 hometask
-rw-rw-r-- 1 student student 560105 Nov 16 14:54 -L
drwxrwxr-x 2 student student 4096 Nov 16 07:31 test
student@CsnKhai:~$ file find
find: ASCII text
student@CsnKhai:~$
```

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

using cd ~

```
student@CsnKhai:/tmp$ pwd
/tmp
student@CsnKhai:/tmp$ cd ~
student@CsnKhai:~$ pwd
/home/student
student@CsnKhai:~$ _
```

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.

flag -l displays details about files like: access rights, creator, owner. -a switch displays also hidden files

```
total 600
drwxr-xr-x 5 student student 4096 Nov 16 15:08 .
drwxr-xr-x 4 root root 4096 Nov 15 14:42 ..
-rw-rw-r-- 1 student student 109 Nov 15 14:59 aboutroot
-rw-r----- 1 student student 3921 Nov 16 13:16 .bash_history
-rw-r--r-- 1 student student 220 Sep 15 2015 .bash_logout
-rw-r--r-- 1 student student 3637 Sep 15 2015 .bashrc
drwx----- 2 student student 4096 Sep 15 2015 .cache
-rw-rw-r-- 1 student student 5022 Nov 15 15:36 find
drwxrwxr-x 2 student student 4096 Nov 15 15:00 hometask
-rw-rw-r-- 1 student student 560105 Nov 16 14:54 -L
-rw-r----- 1 student student 35 Nov 15 17:14 .lessht
-rw-r--r-- 1 student student 675 Sep 15 2015 .profile
drwxrwxr-x 2 student student 4096 Nov 16 07:31 test
student@CsnKhai:~$ _
```

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 hometask

ls / > hometask/dirinfo

cat hometask/dirinfo

```
student@CsnKhai:~$ mkdir hometask
student@CsnKhai:~$ ls / > hometask/dirinfo
student@CsnKhai:~$ cat hometask/dirinfo
bin
boot
dev
etc
home
initrd.img
lib
lost+found
media
mnt
opt
proc
root
run
sbin
srv
sys
tmp
usr
var
vmlinuz
student@CsnKhai:~$
```

cp hometask/dirinfo ~

cp /home/student/hometask/dirinfo /home/student

```
student@CsnKhai:~$ cp hometask/dirinfo ~  
student@CsnKhai:~$ cp /home/student/hometask/dirinfo /home/student  
student@CsnKhai:~$
```

rm -rfi hometask

```
e student@CsnKhai:~$ rm -rfi hometask/  
orm: descend into directory 'hometask/'? yes  
rm: remove regular file 'hometask/dirinfo'? yes  
rm: remove directory 'hometask/'? yes  
student@CsnKhai:~$ _
```

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\_lnk\_labwork2;
- rename the soft link file to symb\_lnk\_labwork2 file;
- then delete the labwork2. What changes have occurred and why

```
Файл  Машина  Вид  Ввод  Устройства  Справка  
student@CsnKhai:~$ mkdir newdir  
student@CsnKhai:~$ cp .bash_history newdir/labwork2  
student@CsnKhai:~$ cd newdir  
student@CsnKhai:~/newdir$ ln labwork2 hardlink_labwork2  
student@CsnKhai:~/newdir$ ln -s labwork2 hardlink_labwork2  
ln: failed to create symbolic link 'hardlink_labwork2': File exists  
student@CsnKhai:~/newdir$ ln -s labwork2 softlink_labwork2  
student@CsnKhai:~/newdir$ _
```

mkdir newdir

cp .bash\_history newdir/labwork2

cd newdir

ln labowrk2 hardlink\_labwork2

ln -s softlink\_labwork2

nano softlink\_labwork2

```
testedit
sudo su
top
sudo update-rc.d ssh defaults
sudo update-rc.d ssh defaults
sudo reboot
sudo shutdown -h now
shutdown -h now
sudo -s
clear
adduser
adduser anoly
users
changeuser
userchange
exit
passwd student testpwd
man passwd
passwd student
man tree
tree
sudo apt-get install tree
man tree
tree [c]
tree
[ Wrote 259 lines ]
```

student@CsnKhai:~/newdir\$

mv hardlink\_labwork2 hard\_lnk\_labwork2

mv softlink\_labwork2 symb\_lnk\_labwork2

rm labwork2

```
student@CsnKhai:~/newdir$ mv hardlink_labwork2 hard_lnk_labwork2
student@CsnKhai:~/newdir$ mv softlink_labwork2 symb_lnk_labwork2
student@CsnKhai:~/newdir$ rm labwork2
student@CsnKhai:~/newdir$ ls -la
total 12
drwxrwxr-x 2 student student 4096 Nov 16 15:53 .
drwxr-xr-x 5 student student 4096 Nov 16 15:39 ..
-rw----- 1 student student 3980 Nov 16 15:47 hard_lnk_labwork2
lrwxrwxrwx 1 student student     8 Nov 16 15:44 symb_lnk_labwork2 -> labwork2
student@CsnKhai:~/newdir$
```



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

```
ad Файл Машина Вид Ввод Устройства Справка
/usr/bin/traceroute.db
/usr/bin/traceroute6
cc /usr/bin/traceroute6.db
/usr/bin/traceroute6.iputils
/usr/sbin/tcptraceroute
./usr/sbin/tcptraceroute.db
/usr/sbin/traceroute
/usr/share/doc/traceroute
d /usr/share/doc/traceroute/CREDITS
/usr/share/doc/traceroute/README
/usr/share/doc/traceroute/TODO
e /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
o /usr/share/man/man1/traceroute.db.1.gz
n /usr/share/man/man8/tcptraceroute.8.gz
/usr/share/man/man8/tcptraceroute.db.8.gz
/usr/share/man/man8/traceroute6.8.gz
/usr/share/man/man8/traceroute6.iputils.8.gz
/var/cache/apt/archives/traceroute_1%3a2.0.20-0ubuntu0.1_i386.deb
/var/lib/dpkg/alternatives/tcptraceroute
/var/lib/dpkg/alternatives/traceroute
/var/lib/dpkg/alternatives/traceroute6
/var/lib/dpkg/info/traceroute.list
/var/lib/dpkg/info/traceroute.md5sums
/var/lib/dpkg/info/traceroute.postinst
/var/lib/dpkg/info/traceroute.prerm
student@CsnKhai:~/newdir$
```

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

```
mount
student@CsnKhai:~/newdir$ mount
/dev/sda1 on / type ext4 (rw,errors=remount-ro)
o proc on /proc type proc (rw,noexec,nosuid,nodev)
sysfs on /sys type sysfs (rw,noexec,nosuid,nodev)
none on /sys/fs/cgroup type tmpfs (rw)
none on /sys/fs/fuse/connections type fusectl (rw)
none on /sys/kernel/debug type debugfs (rw)
none on /sys/kernel/security type securityfs (rw)
d udev on /dev type devtmpfs (rw,mode=0755)
devpts on /dev/pts type devpts (rw,noexec,nosuid,gid=5,mode=0620)
tmpfs on /run type tmpfs (rw,noexec,nosuid,size=10%,mode=0755)
none on /run/lock type tmpfs (rw,noexec,nosuid,nodev,size=5242880)
none on /run/shm type tmpfs (rw,nosuid,nodev)
none on /run/user type tmpfs (rw,noexec,nosuid,nodev,size=104857600,mode=0755)
none on /sys/fs/pstore type pstore (rw)
systemd on /sys/fs/cgroup/systemd type cgroup (rw,noexec,nosuid,nodev,none,name=
1 systemd)
student@CsnKhai:~/newdir$
```

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

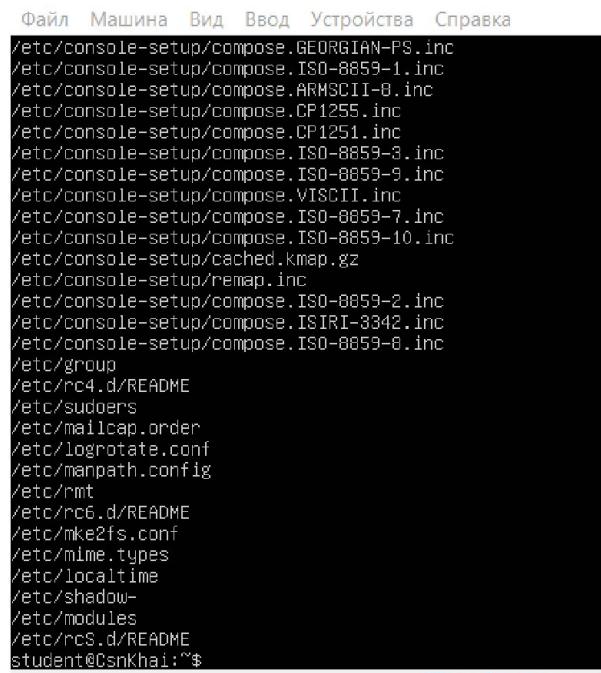
```
grep "cp" newdir/hard_lnk_labwork2 -c
```



```
Файл Машина Вид Ввод Устройства Справка
student@CsnKhai:~$ grep "cp" newdir/hard_lnk_labwork2 -c
13
student@CsnKhai:~$ _
```

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

Find host /etc -type f



```
Файл Машина Вид Ввод Устройства Справка
/etc/console-setup/compose.GEORGIAN-PS.inc
/etc/console-setup/compose.ISO-8859-1.inc
/etc/console-setup/compose.ARMSSCII-8.inc
/etc/console-setup/compose.CP1255.inc
/etc/console-setup/compose.CP1251.inc
/etc/console-setup/compose.ISO-8859-3.inc
/etc/console-setup/compose.ISO-8859-9.inc
/etc/console-setup/compose.VISCII.inc
/etc/console-setup/compose.ISO-8859-7.inc
/etc/console-setup/compose.ISO-8859-10.inc
/etc/console-setup/cached.kmap.gz
/etc/console-setup/remap.inc
/etc/console-setup/compose.ISO-8859-2.inc
/etc/console-setup/compose.ISIRI-3342.inc
/etc/console-setup/compose.ISO-8859-8.inc
/etc/group
/etc/rc4.d/README
/etc/sudoers
/etc/mailcap.order
/etc/logrotate.conf
/etc/manpath.config
/etc/rmt
/etc/rc6.d/README
/etc/mke2fs.conf
/etc/mime.types
/etc/localtime
/etc/shadow-
/etc/modules
/etc/rc5.d/README
student@CsnKhai:~$
```

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

using find: find /etc -exec grep -rlw "ss" {} \;

Using grep: grep -rl "ss" /etc

```

/etc/Emailcap
/etc/kernel/postinst.d/initramfs-tools
/etc/kernel/postrm.d/initramfs-tools
/etc/wgetrc
/etc/gshadow
/etc/sysctl.conf
/etc/initramfs-tools/initramfs.conf
/etc/iproute2/rt_realm
/etc/sysctl.d/10-magic-sysrq.conf
/etc/sysctl.d/10-network-security.conf
/etc/sysctl.d/10-ipv6-privacy.conf
/etc/sysctl.d/10-link-restrictions.conf
/etc/sysctl.d/10-ptrace.conf
/etc/sysctl.d/10-console-messages.conf
/etc/sysctl.d/10-kernel-hardening.conf
/etc/libnl-3/classid
/etc/libnl-3/pktloc
/etc/bash_completion.d/grub
/etc/bash_completion.d/insserv
/etc/bash_completion.d/upstart
/etc/nanorc
/etc/rc1.d/README
/etc/group
/etc/sudoers
/etc/logrotate.conf
/etc/menopath.config
/etc/rc6.d/README
/etc/mime.types
/etc/shadow
student@Cankhai:~$
```

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

`ls /etc -la | less`

Файл	Изменил	Вид	Бауд	Устройства	Справка
total 748					
drwxr-xr-x 88 root root 4096 Nov 16 19:30 .					
drwxr-xr-x 21 root root 4096 Sep 15 2015 ..					
-rw-r--r-- 1 root root 2981 Sep 15 2015 adduser.conf					
drwxr-xr-x 2 root root 4096 Sep 15 2015 alternatives					
drwxr-xr-x 3 root root 4096 Sep 15 2015 aptm					
drwxr-xr-x 3 root root 4096 Sep 15 2015 apparmor					
drwxr-xr-x 8 root root 4096 Sep 15 2015 apparmor.d					
drwxr-xr-x 6 root root 4096 Sep 15 2015 apt					
-rw-r--r-- 1 root root 2177 Apr 9 2014 bash.bashrc					
-rw-r--r-- 1 root root 45 Mar 22 2014 bash_completion					
drwxr-xr-x 2 root root 4096 Sep 15 2015 bash_completion.d					
-rw-r--r-- 1 root root 356 Jan 1 2012 bindresport.blacklist					
t-rw-r--r-- 1 root root 321 Apr 16 2014 blkid.conf					
lrwxrwxrwx 1 root root 15 Aug 5 2015 blkid.tab -> /dev/.blkid.tab					
drwxr-xr-x 3 root root 4096 Sep 15 2015 ca-certificates					
-rw-r--r-- 1 root root 7773 Sep 15 2015 ca-certificates.conf					
drwxr-xr-x 2 root root 4096 Sep 15 2015 calendar					
drwxr-s--- 2 root dip 4096 Sep 15 2015 chatscripts					
drwxr-xr-x 2 root root 4096 Sep 15 2015 console-setup					
drwxr-xr-x 2 root root 4096 Sep 15 2015 cron.d					
drwxr-xr-x 2 root root 4096 Sep 15 2015 cron.daily					
drwxr-xr-x 2 root root 4096 Sep 15 2015 cron.hourly					
drwxr-xr-x 2 root root 4096 Sep 15 2015 cron.monthly					
-rw-r--r-- 1 root root 722 Feb 9 2018 crontab					
drwxr-xr-x 2 root root 4096 Sep 15 2015 cron.weekly					
drwxr-xr-x 4 root root 4096 Sep 15 2015 dbus-1					
-rw-r--r-- 1 root root 2969 Feb 23 2014 debconf.conf					
-rw-r--r-- 1 root root 11 Feb 20 2014 debian_version					
:					

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

We can determine which devices are in the system using command mount. First column – type of device:

Example: /dev/sda – ssd drive; dev/fd – floppy disk, dev/had – ide hard disk

```
student@CsnKhai:~$ mount
/dev/sda1 on / type ext4 (rw,errors=remount-ro)
proc on /proc type proc (rw,noexec,nosuid,nodev)
sysfs on /sys type sysfs (rw,noexec,nosuid,nodev)
none on /sys/fs/cgroup type tmpfs (rw)
none on /sys/fs/fuse/connections type fusectl (rw)
none on /sys/kernel/debug type debugfs (rw)
none on /sys/kernel/security type securityfs (rw)
udev on /dev type devtmpfs (rw,mode=0755)
devpts on /dev/pts type devpts (rw,noexec,nosuid,gid=5,
tmpfs on /run type tmpfs (rw,noexec,nosuid,size=10%,mod
none on /run/lock type tmpfs (rw,noexec,nosuid,nodev,si
none on /run/shm type tmpfs (rw,nosuid,nodev)
none on /run/user type tmpfs (rw,noexec,nosuid,nodev,si
none on /sys/fs/pstore type pstore (rw)
systemd on /sys/fs/cgroup/systemd type cgroup (rw,noexe
systemd)
student@CsnKhai:~$
```

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

To determine the type of file we can use command “file”

```
student@CsnKhai:~$ file test
test: directory
student@CsnKhai:~$
```

Or we can use ls -l, first character in the first column will be type of the file

```
student@CsnKhai:~$ ls -la
total 608
drwxr-xr-x 5 student student 4096 Nov 16 15:33 .
drwxr-xr-x 4 root root 4096 Nov 15 14:42 ..
-rw-rw-r-- 1 student student 109 Nov 15 14:59 aboutroot
-rw----- 1 student student 5808 Nov 16 16:23 .bash_history
-rw-r--r-- 1 student student 220 Sep 15 2015 .bash_logout
-rw-r--r-- 1 student student 3637 Sep 15 2015 .bashrc
drwx----- 2 student student 4096 Sep 15 2015 .cache
-rw-rw-r-- 1 student student 109 Nov 16 15:25 dirinfo
-rw-rw-r-- 1 student student 5022 Nov 15 15:36 find
-rw-rw-r-- 1 student student 560105 Nov 16 14:54 -L
-rw----- 1 student student 35 Nov 15 17:14 .lessshst
drwxrwxr-x 2 student student 4096 Nov 16 15:53 newdir
-rw-r--r-- 1 student student 675 Sep 15 2015 .profile
drwxrwxr-x 2 student student 4096 Nov 16 07:31 test
student@CsnKhai:~$
```

File can be: text,directory, block special, symbolled link, hard link, named pipe, character device file, regular file, socket

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

ls -lt /etc | tail -5

```
-rw-r----- 1 root shadow 937 Nov 15 14:43 shadow
student@CsnKhai:~$ ls -lt /etc | tail -5
-rw-r--r-- 1 root root 2584 Oct 10 2012 gai.conf
-rw-r--r-- 1 root root 8453 Oct 1 2012 nanorc
-rw-r--r-- 1 root root 349 Jun 26 2012 zsh_command_not_found
-rw-r--r-- 1 root root 356 Jan 1 2012 bindresvport.blacklist
-rw-r--r-- 1 root root 2570 Aug 5 2010 locale.alias
student@CsnKhai:~$
```