Laborator 1

```
liveuser@localhost-live:~/Documents/SO/lab1$ sudo su -
root@localhost-live:~# exit
logout
liveuser@localhost-live:~/Documents/SO/lab1$
```

Intrare si iesire din modul root(cel mai privilegiat user din system)

```
liveuser@localhost-live:~/Documents/SO/lab1$ sudo dnf update
Updating and loading repositories:
Repositories loaded.
Package                                                Arch     Version
              Repos        Size
Upgrading:
 ImageMagick                                           x86_64   1:7.1.1
.43-1.fc41  updat  88.4 KiB
   replacing ImageMagick                               x86_64   1:7.1.1
.38-1.fc41  anaco  88.4 KiB
 ImageMagick-libs                                      x86_64   1:7.1.1
.43-1.fc41  updat  9.1 MiB
   replacing ImageMagick-libs                          x86_64   1:7.1.1
.38-1.fc41  anaco  9.1 MiB
 NetworkManager                                        x86_64   1:1.50.
2-1.fc41    updat  5.7 MiB
   replacing NetworkManager                            x86_64   1:1.50.
0-1.fc41    anaco  5.7 MiB
 NetworkManager-adsl                                   x86_64   1:1.50.
2-1.fc41    updat  40.0 KiB
   replacing NetworkManager-adsl                       x86_64   1:1.50.
0-1.fc41    anaco  40.0 KiB
 NetworkManager-bluetooth                              x86_64   1:1.50.
2-1.fc41    updat 105.2 KiB
   replacing NetworkManager-bluetooth                  x86_64   1:1.50.
0-1.fc41    anaco 105.2 KiB
 NetworkManager-config-connectivity-fedora             noarch   1:1.50.
```

Update sistemului

```
liveuser@localhost-live:~/Documents/SO/lab1$ sudo rpm -q kernel-core
kernel-core-6.11.4-301.fc41.x86_64
```

(nu am alte versiuni pe care le pot sterge cu comanda: sudo dfn remove `version`)

Task 1: ierarhia de directoare (pornesc din root)

```
liveuser@localhost-live:~/Documents/SO/lab1$ man hier
```

```
liveuser@localhost-live:~$ cd Documents
liveuser@localhost-live:~/Documents$ cd SO
liveuser@localhost-live:~/Documents/SO$ ls -l lab1
total 0
-rw-r--r--. 1 liveuser liveuser 0 Feb 19 04:36 file1.txt
```

Afisare sub forma de lista a fisierelor din directorul /Documents/SO/Lab1

Se obersva un fisier cu permisiuni: owner – read and write; group – read; others – read

```
liveuser@localhost-live:~$ ls -l /dev/* | grep ^b
brw-rw----. 1 root     disk      7,   0 Feb 19 09:01 /dev/loop0
brw-rw----. 1 root     disk      8,   0 Feb 19 09:01 /dev/sda
brw-rw----+ 1 root     cdrom    11,   0 Feb 19 09:01 /dev/sr0
brw-rw----. 1 root     disk    252,   0 Feb 19 09:01 /dev/zram0
```

Toate fisierele din dev cu proprietatea ca sunt fisiere associate unui I/O de tip block (b)

Grep – gaseste cele care incep cu "b" – grep este metoda de cautare

"*" – filtreaza fifisre cu orice nume din folderul specificat

Piping – pentru a lega comanada ls de grep

Task 2:

```
Anchoring
       The caret ^ and the dollar sign $ are meta-characters that
       respectively match the empty string at the beginning and end of
       a line.

The Backslash Character and Special Expressions
       The symbols \< and \> respectively match the empty string at
       the beginning and end of a word. The symbol \b matches the
       empty string at the edge of a word, and \B matches the empty
       string provided it's not at the edge of a word. The symbol \w
       is a synonym for [_[:alnum:]] and \W is a synonym for
       [^_[:alnum:]].

Repetition
       A regular expression may be followed by one of several
       repetition operators:
       ?       The preceding item is optional and matched at most once.
       *       The preceding item will be matched zero or more times.
       +       The preceding item will be matched one or more times.
       {n}     The preceding item is matched exactly n times.
       {n,}    The preceding item is matched n or more times.
       {,m}    The preceding item is matched at most m times. This is
               a GNU extension.
       {n,m}   The preceding item is matched at least n times, but not
               more than m times.
Manual page grep(1) line 422 (press h for help or q to quit)
```

Manualul pentru comanda grep -> /anchoring in manual

```
liveuser@localhost-live:~/Documents/SO/lab1$ touch file1.txt
liveuser@localhost-live:~/Documents/SO/lab1$ ls -al file1.txt
-rw-r--r--. 1 liveuser liveuser 0 Feb 19 10:55 file1.txt
liveuser@localhost-live:~/Documents/SO/lab1$ chmod 400 file1.txt
```

```
liveuser@localhost-live:~/Documents/SO/lab1$ ls -al file1.txt
-r--------. 1 liveuser liveuser 0 Feb 19 10:55 file1.txt
```

Fisier nou -> schimbam modul in 4(read only) pentru owner si nici o alta permisiune pentru group si others

```
liveuser@localhost-live:~/Documents/SO/lab1$ mkdir temp
liveuser@localhost-live:~/Documents/SO/lab1$ touch temp/file2.txt
liveuser@localhost-live:~/Documents/SO/lab1$ ls -al temp/
total 0
drwxr-xr-x. 2 liveuser liveuser 60 Feb 19 10:58 .
drwxr-xr-x. 3 liveuser liveuser 80 Feb 19 10:58 ..
-rw-r--r--. 1 liveuser liveuser  0 Feb 19 10:58 file2.txt
```

```
liveuser@localhost-live:~/Documents/SO/lab1$ chmod 100 temp
liveuser@localhost-live:~/Documents/SO/lab1$ ls -al temp/
ls: cannot open directory 'temp/': Permission denied
```

Similar, schimbam modul unui director in execite only pentru owner, si nu se mai poate citii, dar putem accesa fisierele (daca era in schimb 400, le puteam citii, dar nu afisa)
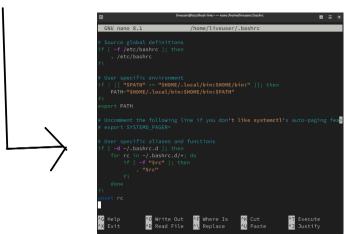
```
liveuser@localhost-live:~/Documents/SO/lab1$ chmod 500 temp/
liveuser@localhost-live:~/Documents/SO/lab1$ ls -l temp/
total 0
-rw-r--r--. 1 liveuser liveuser 0 Feb 19 10:58 file2.txt
liveuser@localhost-live:~/Documents/SO/lab1$ touch temp/file3.txt
touch: cannot touch 'temp/file3.txt': Permission denied
liveuser@localhost-live:~/Documents/SO/lab1$ chmod +w temp/
liveuser@localhost-live:~/Documents/SO/lab1$ ls -l temp/
total 0
-rw-r--r--. 1 liveuser liveuser 0 Feb 19 10:58 file2.txt
liveuser@localhost-live:~/Documents/SO/lab1$ rm temp/file2.txt
liveuser@localhost-live:~/Documents/SO/lab1$ ls -l temp/
total 0
liveuser@localhost-live:~/Documents/SO/lab1$ rm temp/
rm: cannot remove 'temp/': Is a directory
liveuser@localhost-live:~/Documents/SO/lab1$ rm temp/
rm: cannot remove 'temp/': Is a directory
liveuser@localhost-live:~/Documents/SO/lab1$ rm -r temp/
```

In modul read and execute (5) nu se poate scrie sau sterge din director/fisier

Pentru a sterge un director ne trebuie "-r" dupa rm

```
liveuser@localhost-live:~$ echo $PATH
/home/liveuser/.local/bin:/home/liveuser/bin:/usr/local/bin:/usr/local/sbin:/
usr/bin:/usr/sbin
liveuser@localhost-live:~$ export PATH=$PATH:/home/user/comenzi
liveuser@localhost-live:~$ echo $PATH
/home/liveuser/.local/bin:/home/liveuser/bin:/usr/local/bin:/usr/local/sbin:/
usr/bin:/usr/sbin:/home/user/comenzi
```

Includere calea comenzi in directorul home


```
liveuser@localhost-live:~$ sudo dnf -y install nano
Updating and loading repositories:
 Fedora 41 - x86_64 - Updates      100% |   1.7 MiB/s |  10.8 MiB |  00m06s
 Fedora 41 openh264 (From Cisco) - x 100% |   5.0 KiB/s |   4.8 KiB |  00m01s
 Fedora 41 - x86_64                100% |   2.9 MiB/s |  35.5 MiB |  00m12s
Repositories loaded.
Package "nano-8.1-1.fc41.x86_64" is already installed.

Nothing to do.
liveuser@localhost-live:~$ nano ~/.bashrc
```


Pentru a salva calea adaugata trebuie schimbat fisierul .bashrc (se executa la pornire)

(~ - in home/user; nano – editor de text)


```
liveuser@localhost-live:~$ cat > file.txt
un text scurt
liveuser@localhost-live:~$ wc < file.txt
 1  3 14
liveuser@localhost-live:~$ od -t x1a file.txt
0000000  75  6e  20  74  65  78  74  20  73  63  75  72  74  0a
          u   n  sp   t   e   x   t  sp   s   c   u   r   t  nl
0000016
```

Simbolul ">" – redirectarea output; "<" – redirectare intput; "|" – preia si da mai
departe
"wc" – word count; "od" – octal dump -> pentru rerpezentare in hexazecimal;

X – hexazecimal; 1 – 1 byte; a – ascii

```
liveuser@localhost-live:~$ find / -name nano > results
find: '/boot/efi': Permission denied
find: '/boot/grub2': Permission denied
find: '/boot/loader/entries': Permission denied
find: '/etc/audit': Permission denied
find: '/etc/credstore': Permission denied
find: '/etc/credstore.encrypted': Permission denied
find: '/etc/cups/ssl': Permission denied
find: '/etc/dhcp': Permission denied
find: '/etc/firewalld': Permission denied
find: '/etc/grub.d': Permission denied
find: '/etc/libvirt': Permission denied
find: '/etc/lvm/archive': Permission denied
find: '/etc/lvm/backup': Permission denied
```

```
liveuser@localhost-live:~$ cat results
/run/rootfsbase/usr/bin/nano
/run/rootfsbase/usr/share/doc/nano
/run/rootfsbase/usr/share/licenses/nano
/run/rootfsbase/usr/share/nano
/usr/bin/nano
/usr/share/doc/nano
/usr/share/licenses/nano
/usr/share/nano
```

"find" cauta in root si creaza fisierul results unde stocheaza tot ce a gasit

```
liveuser@localhost-live:~$ cat /etc/passwd
root:x:0:0:Super User:/root:/bin/bash
bin:x:1:1:bin:/bin:/usr/sbin/nologin
daemon:x:2:2:daemon:/sbin:/usr/sbin/nologin
adm:x:3:4:adm:/var/adm:/usr/sbin/nologin
lp:x:4:7:lp:/var/spool/lpd:/usr/sbin/nologin
sync:x:5:0:sync:/sbin:/bin/sync
shutdown:x:6:0:shutdown:/sbin:/sbin/shutdown
halt:x:7:0:halt:/sbin:/sbin/halt
mail:x:8:12:mail:/var/spool/mail:/usr/sbin/nologin
operator:x:11:0:operator:/root:/usr/sbin/nologin
games:x:12:100:games:/usr/games:/usr/sbin/nologin
ftp:x:14:50:FTP User:/var/ftp:/usr/sbin/nologin
nobody:x:65534:65534:Kernel Overflow User:/:/usr/sbin/nologin
```

Cautam tot ce este in /etc/passwd

```
liveuser@localhost-live:~$ cat /etc/passwd | cut -d : -f 1,7
root:/bin/bash
bin:/usr/sbin/nologin
daemon:/usr/sbin/nologin
adm:/usr/sbin/nologin
lp:/usr/sbin/nologin
sync:/bin/sync
shutdown:/sbin/shutdown
halt:/sbin/halt
```

Filtram doar coloanele(despartite prin ":") afisand doar coloanele 1 si 7

Fisierele nano... din manual

Zless - filtru care permite examinarea fişierelor comprimate sau text simplu câte un ecran pe un terminal de copie software

Apostroful – de la ` la ` terminalul trateaza ca o singura chestie

```
liveuser@localhost-live:~$ mkdir dir_inv
liveuser@localhost-live:~$ touch dir_inv/file_inv.txt
liveuser@localhost-live:~$ chmod 111 dir_inv
liveuser@localhost-live:~$ cut -d : -f3 /etc/passwd > dir_inv/file_inv.txt
liveuser@localhost-live:~$ chmod 444 dir_inv/file_inv.txt
liveuser@localhost-live:~$ ls dir_inv
ls: cannot open directory 'dir_inv': Permission denied
liveuser@localhost-live:~$ cat dir_inv/file_inv.txt
0
1
2
3
4
5
6
7
```

mkdir: Creează un director

touch: Creează un fişier gol sau actualizează timpul de modificare al unui fişier existent.

chmod: Schimbă permisiunile unui fişier sau director

cut: Cauta in /etc/passwd, unde coloanele sunt despartite prin : si returneaza doar coloanal a 3a(userID urile), iar cu > adauga in fisier

ls: pentru incercarea listarii fisierelor din director
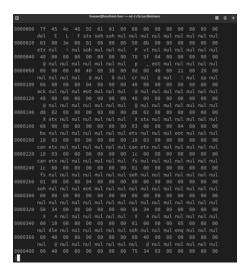
cat: pentru afisarea fisierului

```
liveuser@localhost-live:~$ which nano
/usr/bin/nano
liveuser@localhost-live:~$ od -t x1a /usr/bin/nano | less
```

od - foloseşte **octal dump** pentru afişarea conţinutului binar

-t x1a - afişează fiecare **byte** în două formate:

x1 - hexazecimal (câte un octet pe rând)

a - ASCII, dacă caracterul este imprimabil

| less - permite navigarea rezultatelor

-C - afişează ieşirea într-un format uşor de citit (hex + ASCII).

-s 1205360 - **offset** de la care începe afişarea.

EXERCITIUL 5:

Grep '[0-9]' – cele care au in nume un numar din acsest interval