REPUBLIKA E SHQIPËRISË
UNIVERSITETI POLITEKNIK I TIRANËS
FAKULTETI I TEKNOLOGJISË SË INFORMACIONIT
DEGA: INXHINIERI INFORMATIKE

LABORATOR 1

LENDA: SISTEME OPERATIVE

PUNOI: ADELA AGALLIU   **GRUPI**: B

PRANOI: MSC. MEGI TARTARI

Instalimi i sistemit operativ Linux Ubuntu (ne VirtualBox). Ambjentimi me komandat kryesore te linux-it ne terminal. Si material referojuni dokumentave unix_tutorial.pdf, abs-guide.pdf dhe Tutorial_shell_scripting.pdf

1. Hap terminal ne Linux dhe shtyp komandat me poshte:
$ echo Hello World

```
osc@ubuntu:~$ echo "hello world"
hello world
```

$ man echo   *(man online manual per komandat)*

```
ECHO(1)                          User Commands                          ECHO(1)

NAME
       echo - display a line of text

SYNOPSIS
       echo [SHORT-OPTION]... [STRING]...
       echo LONG-OPTION

DESCRIPTION
       Echo the STRING(s) to standard output.

       -n     do not output the trailing newline

       -e     enable interpretation of backslash escapes

       -E     disable interpretation of backslash escapes (default)

       --help display this help and exit

       --version
              output version information and exit

       If -e is in effect, the following sequences are recognized:

       \\     backslash

       \a     alert (BEL)

       \b     backspace

       \c     produce no further output

       \e     escape

       \f     form feed
 Manual page echo(1) line 1 (press h for help or q to quit)
```

$ echo $ SHELL   *(printon shell-in qe po perdor)*

```
osc@ubuntu:~$ echo $SHELL
/bin/bash
```

Studio komandat ne vijim referuar dokumentit unix_tutorial.pdf si dhe ane te konandes man:
man, who, cat, cd, cp, ps, ls, mv, rm, mkdir, rmdir, echo, more, date, time, kill, history, chmod, chown, pwd, cal, logout, shutdown
Studio komanden **grep** dhe perdore per te kerkuar sa rreshta te nje file mbajne nje fjale kyce

Verifikoni ne cilen direkto jeni aktualisht:pwd

```
osc@ubuntu:~$ pwd
/home/osc
```

Shkoni tek home directory: cd ~ dhe krijoni nje nendirektori.

```
osc@ubuntu:~$ cd ~
osc@ubuntu:~$ mkdir lab1
osc@ubuntu:~$ cd lab1
osc@ubuntu:~/lab1$
```

Krijoni nje text file me nje paragraph cfaredo.

```
osc@ubuntu:~/lab1$ echo "hello">file.txt
osc@ubuntu:~/lab1$ ls
file.txt
```

Beni rename te tij

```
osc@ubuntu:~/lab1$ mv file.txt file1.txt
osc@ubuntu:~/lab1$ ls
file1.txt
```

Kopjojeni kete file dhe kalojeni ne nje direktori me siper:cp

```
osc@ubuntu:~/lab1$ cp file1.txt ..
osc@ubuntu:~/lab1$ cd ..
osc@ubuntu:~$ _
```

Fshijeni nendirektorine:rmdir

```
osc@ubuntu:~/lab1$ rm file1.txt
rm: remove regular file 'file1.txt'? y
osc@ubuntu:~/lab1$ ls
```

```
osc@ubuntu:~$ rmdir lab1
```

Cekoni konfigurimin e kartave te rrjetit: ip a ose tek /etc/netplan

```
osc@ubuntu:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
       valid_lft forever preferred_lft forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1
000
    link/ether 08:00:27:d1:83:5d brd ff:ff:ff:ff:ff:ff
    inet 10.0.2.15/24 brd 10.0.2.255 scope global enp0s3
       valid_lft forever preferred_lft forever
    inet6 fd17:625c:f037:2:a00:27ff:fed1:835d/64 scope global mngtmpaddr dynamic
       valid_lft 85978sec preferred_lft 13978sec
    inet6 fe80::a00:27ff:fed1:835d/64 scope link
       valid_lft forever preferred_lft forever
```

Lexoni ose vetem shfaqni permbajtjen e file:cat

```
osc@ubuntu:~$ cat file1.txt
hello
```

Me komanden grep cekoni sa here perseitet x fjale

```
osc@ubuntu:~$ grep -o "l" file1.txt | wc -l
2
```

```
osc@ubuntu:~$ grep -o "hell" file1.txt | wc -l
1
```

Bejeni file readonly.

```
osc@ubuntu:~$ chmod 444 file1.txt
osc@ubuntu:~$ ls -l
total 196
```

```
-r--r--r-- 1 osc osc     6 Jan  2 10:58 file1.txt
```

Cilet user jane te loguar aktualisht:who

```
osc@ubuntu:~$ who
osc     tty1         2026-01-02 10:12
```

ose ne 2 ditet e fundit last -s -2days qe na afishin vetem loget e logineve

```
osc@ubuntu:~$ last -s -2days
osc     tty1                    Fri Jan  2 10:12   still logged in
reboot  system boot  4.4.0-87-generic Fri Jan  2 10:11   still running
osc     tty1                    Fri Jan  2 10:04 - crash  (00:07)
reboot  system boot  4.4.0-87-generic Fri Jan  2 10:03   still running
```

Kete rezultat te logeve ruaje ne nje file.

```
osc@ubuntu:~$ last -s -2days >file_log
osc@ubuntu:~$ cat file_log
osc     tty1                    Fri Jan  2 10:12   still logged in
reboot  system boot  4.4.0-87-generic Fri Jan  2 10:11   still running
osc     tty1                    Fri Jan  2 10:04 - crash  (00:07)
reboot  system boot  4.4.0-87-generic Fri Jan  2 10:03   still running
```

Cilat jane proceset qe po ekzekutohen dhe sa ram cpu po harxhojne?

$ps aux

```
root       386  0.0  0.0      0     0 ?        S<   10:11   0:00 [ib_addr]
root       400  0.0  0.0      0     0 ?        S<   10:11   0:00 [ib_mcast]
root       403  0.0  0.0      0     0 ?        S<   10:11   0:00 [ib_nl_sa_wq]
root       407  0.0  0.0      0     0 ?        S<   10:11   0:00 [ib_cm]
root       408  0.0  0.0      0     0 ?        S<   10:11   0:00 [iw_cm_wq]
root       410  0.0  0.0      0     0 ?        S<   10:11   0:00 [rdma_cm]
root       416  0.0  0.1  94768  3672 ?        Ss   10:11   0:00 /sbin/lvmetad -f
root       423  0.0  0.1  44364  3936 ?        Ss   10:11   0:00 /lib/systemd/systemd-udevd
systemd+   507  0.0  0.1 100320  2584 ?        Ssl  10:11   0:00 /lib/systemd/systemd-timesyncd
root       559  0.0  0.0      0     0 ?        S<   10:11   0:00 [iprt-VBoxWQueue]
root       681  0.0  0.0      0     0 ?        S<   10:11   0:00 [ttm_swap]
root       718  0.0  0.0  16116   852 ?        Ss   10:11   0:00 /sbin/dhclient -1 -v -pf /run/dhcli
root       810  0.0  0.4 275868  8356 ?        Ssl  10:11   0:00 /usr/lib/accountsservice/accounts-c
root       824  0.0  0.1  29004  2980 ?        Ss   10:11   0:00 /usr/sbin/cron -f
syslog     825  0.0  0.1 256388  3252 ?        Ssl  10:11   0:00 /usr/sbin/rsyslogd -n
root       828  0.0  1.3 291788 28100 ?        Ssl  10:11   0:00 /usr/lib/snapd/snapd
root       829  0.0  0.0   4392  1316 ?        Ss   10:11   0:00 /usr/sbin/acpid
message+   833  0.0  0.1  42896  3824 ?        Ss   10:11   0:00 /usr/bin/dbus-daemon --system --add
root       857  0.0  0.1  28672  3032 ?        Ss   10:11   0:00 /lib/systemd/systemd-logind
daemon     859  0.0  0.1  26040  2116 ?        Ss   10:11   0:00 /usr/sbin/atd -f
root       866  0.0  0.0 160900  1520 ?        Ssl  10:11   0:00 /usr/bin/lxcfs /var/lib/lxcfs/
root       883  0.0  0.3 277084  7976 ?        Ssl  10:11   0:00 /usr/lib/policykit-1/polkitd --no-d
root       890  0.0  0.0  13368   164 ?        Ss   10:11   0:00 /sbin/mdadm --monitor --pid-file /r
root       991  0.0  0.2  65504  5252 ?        Ss   10:11   0:00 /usr/sbin/sshd -D
root      1005  0.0  0.0   5216   152 ?        Ss   10:11   0:00 /sbin/iscsid
root      1006  0.0  0.1   5716  3524 ?        S<Ls 10:11   0:00 /sbin/iscsid
root      1068  0.0  0.0  19468   228 ?        Ss   10:11   0:00 /usr/sbin/irqbalance --pid=/var/run
root      1073  0.0  0.1  65828  3384 tty1     Ss   10:11   0:00 /bin/login --
osc       1131  0.0  0.2  45272  4632 ?        Ss   10:12   0:00 /lib/systemd/systemd --user
osc       1133  0.0  0.1  61488  2152 ?        S    10:12   0:00 (sd-pam)
osc       1138  0.0  0.2  22636  5176 tty1     S    10:12   0:00 -bash
root      1179  0.0  0.0      0     0 ?        S    10:29   0:00 [kworker/u4:2]
root      1979  0.0  0.0      0     0 ?        S    10:36   0:00 [kworker/u4:3]
osc       1994 99.9  2.5  55556 52444 tty1     R    10:43  35:51 ./memory_use 50
root      2028  0.0  0.0      0     0 ?        S    10:59   0:00 [kworker/1:0]
osc       2065  0.0  0.1  37360  3236 tty1     R+   11:19   0:00 ps aux
```

2. Shkruaj nje shell script qe printon Hello World ne ekran

a. hap nje edit teksti ($vi test.sh)

```
osc@ubuntu:~$ vi test.sh
```

b. shtyp brenda ne file echo Hello World

```
echo Hello World
```

c. dil nga editori

```
:wq!_
```

d. shtyp ne terminal $ sh test.sh

```
osc@ubuntu:~$ sh test.sh
Hello World
```

Ushtrime:

1. Perdor komanden **who** dhe ridrejto outputin ne file-in myfile1 dhe me pas perdor komanden more per te pare permbajtjen e file-it.

```
osc@ubuntu:~$ who > myfile1
osc@ubuntu:~$ more myfile1
osc      tty1         2026-01-02 10:12
```

2. Perdor komanden **date** dhe **who** ne sekuence ne nje rresht ne menyre qe output-i I date te shfaqet ne ekran kurse ai I who te ridrejtohet tek file-i myfile2. Perdor komanden more per te pare permbajtjen e file-it myfile2.

```
osc@ubuntu:~$ date ; who > myfile2 ; more myfile2
Fri Jan  2 11:30:49 MST 2026
osc      tty1         2026-01-02 10:12
```

3. Shkruaj nje shell script dhe nje program ne C qe printojne Hello World dhe krahaso kohet e ekzekutimit me komanden **time**

Shell Script:

```
osc@ubuntu:~$ vi usht3_Shell.sh_
echo Hello World
_
osc@ubuntu:~$ sh usht3_Shell.sh
Hello World
```

Program ne C:

```
osc@ubuntu:~$ nano usht3_C.c_
  GNU nano 2.5.3                    File: usht3_C.c

#include <stdio.h>
int main(){
printf("Hello World\n");
return 0;
}

osc@ubuntu:~$ gcc usht3_C.c -o usht3_C
osc@ubuntu:~$ ./usht3_C
Hello World
```

Kohet e ekzekutimit per te dyja:

```
osc@ubuntu:~$ time ./usht3_Shell.sh
Hello World

real    0m0.005s
user    0m0.004s
sys     0m0.000s
osc@ubuntu:~$ time ./usht3_C
Hello World

real    0m0.001s
user    0m0.000s
sys     0m0.000s
```