

Embedded Systems

Week 3: Linux Fundamentals II



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Fundamental Linux Commands

- ln: Creates a link

ln -s [Source_Directory_Path] [Symbolic_Link_Destination_Path]

```
emre@emre-VirtualBox:~/Documents$ ln -s testX /home/emre/Desktop/testLink
emre@emre-VirtualBox:~/Documents$ ls -al /home/emre/Desktop
total 28
drwxr-xr-x  2 emre emre 4096 Oca 22 17:44  .
drwxr-xr-x 41 emre emre 4096 Oca 22 17:02  ..
-rwxr--r--  1 emre emre  206 Ara 16 20:48  'Documentation Navigator.desktop'
lrwxrwxrwx  1 emre emre    5 Oca 22 17:44  testLink -> testX
-rw-rw-r--  1 emre emre    0 Oca 22 17:40  testX
-rwxr--r--  1 emre emre  212 Ara 16 20:47  'Vitis HLS 2021.2.desktop'
-rwxr--r--  1 emre emre  244 Ara 16 20:48  'Vitis Model Composer 2021.2.desktop'
-rwxr-xr-x  1 emre emre  194 Ara 16 20:47  'Vivado 2021.2.desktop'
-rwxr--r--  1 emre emre  200 Ara 16 20:47  'Xilinx Vitis 2021.2.desktop'
```

Fundamental Linux Commands

- kill: Kills specified process

kill processID

```
emre      17366  0.0  0.0  18376   952 pts/0    T   16:55   0:00  pager
emre      17376  0.0  0.0  29908  4252 pts/0    T   16:57   0:00  man ls
emre      17386  0.0  0.0  18376  1040 pts/0    T   16:57   0:00  pager
emre      17426  0.0  0.1  35420  9812 pts/1    Ss  17:03   0:00  bash
root      17474  0.0  0.0      0      0 ?      I   17:09   0:00  [kworker/1:1-cg
root      17486  0.0  0.0      0      0 ?      I   17:14   0:00  [kworker/3:1-cg
root      17487  0.0  0.0      0      0 ?      I   17:14   0:00  [kworker/u12:3+
root      17506  0.0  0.0      0      0 ?      I   17:24   0:00  [kworker/u12:1-
root      18366  0.0  0.0      0      0 ?      I   17:34   0:00  [kworker/5:0-cg
emre      18399  0.5  0.5 680340 46736 pts/0    Sl+ 17:38   0:02  gedit x.txt
root      18412  0.0  0.0      0      0 ?      I   17:39   0:00  [kworker/0:2-cg
emre      18441  0.0  0.0  45896  3640 pts/1    R+  17:46   0:00  ps aux
emre@emre-VirtualBox:~/Documents$ kill 18399
```

kill -9 processID -> kill immediately the process



Fundamental Linux Commands

- `shutdown -h now`: Shuts down the system

Fundamental Linux Commands

- df: List current filesystems sizes and area usages

```
emre@emre-VirtualBox:~/Documents$ df
Filesystem      1K-blocks      Used Available Use% Mounted on
udev            4051084          0   4051084   0% /dev
tmpfs           815236          1484    813752   1% /run
/dev/sda1       308585280 216447108  76393252  74% /
tmpfs           4076180          0   4076180   0% /dev/shm
tmpfs           5120             4        5116   1% /run/lock
tmpfs           4076180          0   4076180   0% /sys/fs/cgroup
```

- df -Bg: shows as gigabit

```
emre@emre-VirtualBox:~/Documents$ df -Bg
Filesystem      1G-blocks      Used Available Use% Mounted on
udev            4G             0G         4G    0% /dev
tmpfs           1G             1G         1G    1% /run
/dev/sda1       295G          207G       73G   74% /
tmpfs           4G             0G         4G    0% /dev/shm
tmpfs           1G             1G         1G    1% /run/lock
tmpfs           4G             0G         4G    0% /sys/fs/cgroup
```

Fundamental Linux Commands

- more: Shows file content

```
emre@emre-VirtualBox:~/Documents$ more testX  
merhaba
```

Fundamental Linux Commands

- mv: Moving and renaming

```
emre@emre-VirtualBox:~/Documents$ ls
testX
emre@emre-VirtualBox:~/Documents$ mv testX testY
emre@emre-VirtualBox:~/Documents$ ls
testY
```


Fundamental Linux Commands

- Write or append a file

Write

```
emre@emre-VirtualBox:~/Documents$ echo merhaba > testY
emre@emre-VirtualBox:~/Documents$ more testY
merhaba
```

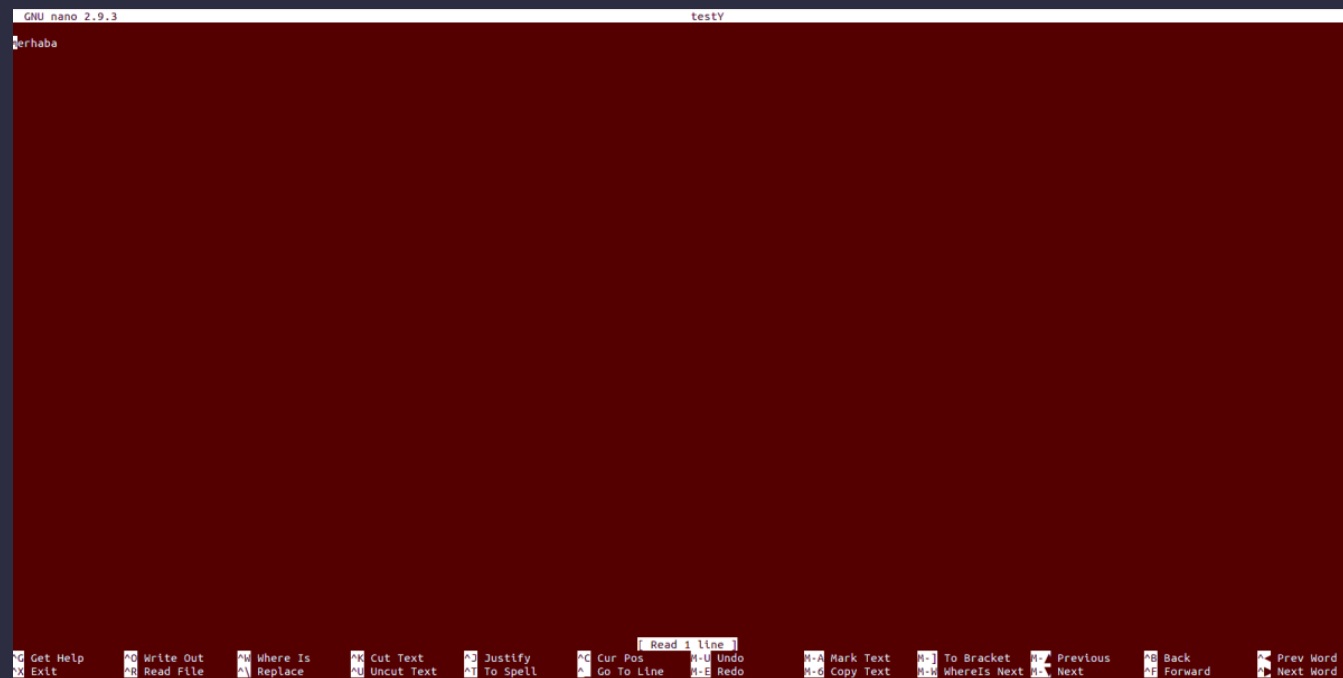
Append

```
emre@emre-VirtualBox:~/Documents$ echo Deneme >> testY
emre@emre-VirtualBox:~/Documents$ more testY
merhaba
Deneme
```

Fundamental Linux Commands

- nano: command line file editor tool

nano fileName



After completing changes press
CTRL + X and type Y and enter

Fundamental Linux Commands

Advanced Package Tool or APT is a package management system used by Debian-based distributions.

Before installing a new package first, you need to update the APT package index:

- `sudo apt-get update`

The APT index is a database that holds records of available packages from the repositories enabled in your system:

- `sudo apt-get upgrade`

Installing packages is as simple as running:

- `sudo apt-get install "package"`

Fundamental Linux Commands

To remove a package

- `sudo apt-get remove "package"`

Fundamental Linux Commands

- To add new user to system

`adduser username`

- To change a user password

`passwd username`

- To remove a user

`userdel username`

Fundamental Linux Commands

- To create a group

```
groupadd newGroup
```

- To remove a group

```
groupdel newGroup
```

Fundamental Linux Commands

- Adding a user to group

```
usermod -a -G mygroup myuser
```

To grant sudo access a user:

```
usermod -a -G sudo myuser
```

Fundamental Linux Commands

- grep: filter specified keyword

```
emre@emre-VirtualBox:~/Documents$ ps aux | grep term
emre      2421  0.1  0.4 806360 39424 ?        Ssl  16:36   0:10 /usr/lib/gnome-terminal/gnome-terminal-server
emre     18513  0.0  0.0  22956  1072 pts/0    S+   18:10   0:00 grep --color=auto term
```


Fundamental Linux Commands

- `chown`: Changes file ownership

To give ownership a user:

```
emre@emre-VirtualBox:~/Documents$ chown emre testY
```

To give ownership to group:

```
emre@emre-VirtualBox:~/Documents$ chown :sudo testY
```

Fundamental Linux Commands

- clear: Clears the terminal

```
emre@emre-VirtualBox:~/Documents$
```

Fundamental Linux Commands

- find: Search the specified file name

find searchStartPath -name fileName

```
emre@emre-VirtualBox:~/Documents$ find . -name testY  
./testY
```

Fundamental Linux Commands

- tail: Prints file content starting from tail with given number of lines

tail -n fileName

```
emre@emre-VirtualBox:~/Documents$ tail -3 testY
askmdkamsd
ewokrokwe
mkfwkm
```

Original File

```
Merhaba
test
deneme
1234
adasd
htkrhoktr
mfskdfmk
askmdkamsd
ewokrokwe
mkfwkm
```

Fundamental Linux Commands

- head: Prints file content starting from head with given number of lines

head -n fileName

```
emre@emre-VirtualBox:~/Documents$ head -3 testY
Merhaba
test
deneme
```

Original File

```
Merhaba
test
deneme
1234
adasd
htkrhoktr
mfskdfmk
askmdkamsd
ewokrokwe
mkfwkm
```

Fundamental Linux Commands

- diff: compares given two files

```
diff file1 file2
```

```
emre@emre-VirtualBox:~/Documents$ diff testX testY
4,6c4,6
< 1234Y
< adaXsd
< htk124rhoktr
---
> 1234
> adasd
> htkrhoktr
```

testX

```
Merhaba
test
deneme
1234Y
adaXsd
htk124rhoktr
mfskdfmk
askmdkamsd
ewokrokwe
mkfwkm|
```

testY

```
Merhaba
test
deneme
1234
adasd
htkrhoktr
mfskdfmk
askmdkamsd
ewokrokwe
mkfwkm
```

Fundamental Linux Commands

- Extract and compress TAR.GZ archives

Extract

```
tar -xf archive.tar.gz
```

Compress a folder

```
tar -czvf name-of-archive.tar.gz /path/to/directory-or-file
```

Fundamental Linux Commands

- date: prints current date

```
emre@emre-VirtualBox:~/Documents$ date  
Cts Oca 22 18:49:53 +03 2022
```