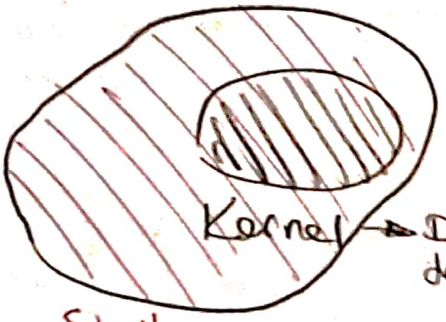
Linux Unhatched

İşletim sistemleri = Donanımı, insanların kullanabileceği hale getiren araçlardır

Linux aslında işletim sisteminin çekirdeğinin adıdır
İşletim sisteminin tam adı GNU/Linux'dür



Kernel → Donanım ile haberleşen donanımı yöneten yazılım parçası

Shell → Kullanıcının kullanabileceği seviyeye çıkarmak

GUI (Graphical User Interface)
CLI (Command Line Interface)

CLI terminal is a powerfull tool; that is often the primary method used to administer small low-power devices, extremely capable cloud computing servers and everything in between.

Command = Command is a software programme that when execute on the CLI, performs an action on the computer.

ls → display a listing of information about files

Note: Every part of the command is normally case sensitive

```
command [options...] [arguments...]
```

Soru: CLI'ya yazdığımız komutlar bir yerde tutuluyor mu? Komutu yazdığımız zaman arkada dönen şey ne?

```
command [options...] [arguments...]
```

options → alter the behavior of the command

arguments → are items or values for the command to act upon.

```
ls Documents
```

ls → command, Documents → argument

{ listing files in the Document folder }

```
ls -l
```

ls → command, -l → option (long display)

{ long listing files }

```
ls -r
```

ls → command, -r → option (reverse)

{ reverse listing files }

Note: Multiple options can be used at once

```
ls -lr
```

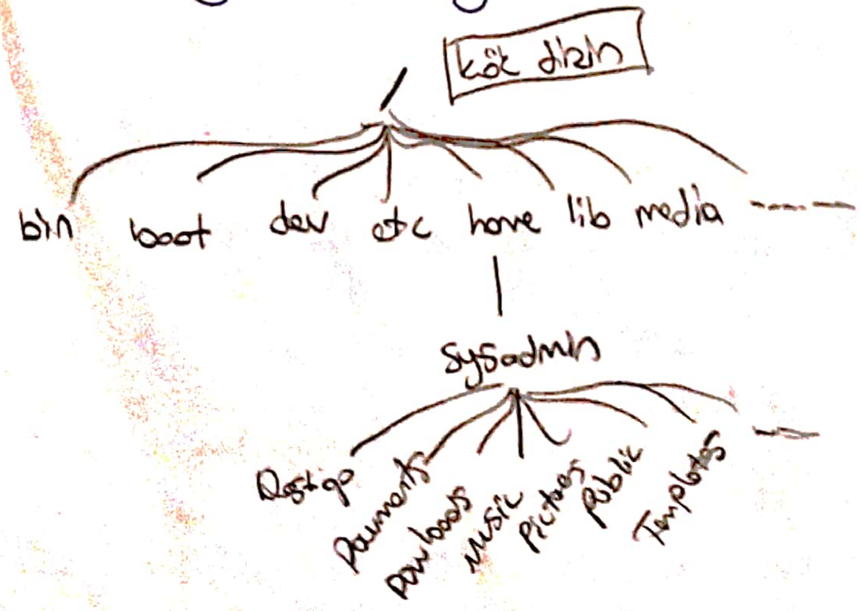
or

```
ls -l -r
```

or

```
ls -rl
```

Working Directory


kök dizin
/
bin
boot
dev
etc
home
lib
media
sysadmin
Desktop
Documents
Downloads
Music
Pictures
Public
Templates

~ tilda

/ slash / kök

```
kullanıcı adı@bilgisayar adı:/$
```

→ promt deniyor. şuan kök dizininde

```
username@comname:~$
```

→ promt, kök dışında bir yerde.

pwd → prints the working directory
your current location within the file system
→ print working directory (pwd)
pwd [options]

username@computer name : current directory $
→ prompt

~ → home directory (sysadmin/home)
/ → kök dizin
cd → change directory (cd)
cd [options] [path]

~ path = /home/sysadmin

```
cd Documents
cd /
cd ~
```

.. → parent directory
. → now (current) directory
~ → home directory
/ → root directory

-	rw-r--r--	1	root	root	18047	Dec 20 2017	musa.log
d	rwx r-x---	2	root	adm	4096	Dec 20 2017	apache
file type	permissions	hard link count	user owner	group owner	file size byte	timestamp	file name

File type
d → directory
- → regular file
l → symbolic link
s → socket
p → pipe
b → block file
c → character file

`ls -l -t` → zamana göre listeler
↳ (time)

`ls -l -s` → boyuta göre listeler
↳ (size)

Administrative Access

su [options] [USER] — allows you to temporarily act as a different user. It does this by a creating new shell
↳ switch user (su)

sudo [options] command — allows a user to execute a command as another user without creating a new shell

PERMISSIONS

- - -	- - -	- - -
first 3 permissions	second three permissions	third three permission
(OWNER) user	(GROUP) users	(OTHER) users

NOTE:

r-- rw- rwx

override permissions
grubun yetkisi olsa bile kullanıcı yetkilerini onu geçersiz kılar override eder

	Files	Directories
r (read)	Allows for file contents to be read and copy	+ without execute allows non-detailed listing + with execute allows `ls -l` detailed listing
w (write)	allows modified and overwritten added or remove	
x (executable)	Allows for a file to be run as a process, although script thus required read permission as well	Allows a user to change to the directory have execute permission as well

Chaging Permission

chmod → chage the mods (permission)

There are two techniques for chaging permission with the chmod command.
→ symbolic
→ octal

Symbolic method

chmod [<set><action><permission>] file

(r) read
(w) write
(x) execute

+ (add)
= (equal all permission)
- (remove)

u → user : the user who owns the file
g → group : the group who owns the file
o → others : Anyone other
a → all : all of them

Chaging Owner

chown → chage the ownership

NOTE: Chaging a owner requires administrative access. A regular user cannot use this command.

chown [options] [owner] file

Viewing Files Content

There are a few Linux command available to view the content of files

cat → concatenate is often used to quickly view the contents small files.

cat [options] [file]

head → yazının başını gösterir(10)   head [options] [file]
tail → yazının sonunu gösterir(10)   tail [options] [file]

head -n 5 filename → display the specify amount lines
tail -n 5 filename → display the pecify amount lines

Copying Files

- If a copy of a file is created before changes are made, then it is possible to revert back to the original
- A copy of a file can be used to transfer a file to removable media devices
- A copy an existing document can be used as a template for a new documents

```
cp [options] SOURCE DESTINATION
```

```
dd [options OPERAND
```

The dd command is a utility for copying files or entire partitions at the bit level.

- It can be used the clone or delete(wipe) entire disk or partition.
- It can be used to copy raw data to removable devices such as flash disk, CD roms
- It can backup and restore the MBR (Master boot record)
- It can be used to create a file of a specific size that is filled with binary zeros, which can then be used as a swap file (virtual RAM)

```
dd if=/dev/zero of=/tmp/swapex bs=1M count=50
```

if → input file read from

of → output file written place

count → The number of blocks to be read from the input file

bs → Block size

K kilobayt
M megabayt
G gigabayt
T terabayt

Moving Files

The mv command used to move a file from one location in the filesystem to another.

mv SOURCE DESTINATION

↳ hedef dosya yolu

↳ kaynak dosya yolu

↳ komut

NOTE: Birden çok kaynak dosyayı taşıyabilir

NOTE: Eğer hedef dosya konumunda öyle bir dosya yoksa, o isminde bir dosya oluşturulur ve eski dosya kaybolur

- The mv command is able to move multiple files as long as the final argument destination.
- It can be used like rename function.

PERMISSION FOR MOVING: Read and execute permission on both the origin and destination directory

Removing Files

The rm command is used to delete files or directories

DO NOT TRASH-CAN (PERMANANTLY GONE)

rm [options] FILE

rm linux.txt } it will delete
↳ file

rm Work } it can't delete
↳ directory
Folder

rm -r Work } it will delete
↳ Folder
↳ (recursive)

PERMISSION FOR DELETE

To delete a file within a directory, user must have write and execute permission

Filtering Inputs

The grep command is a text filter that will search input and return lines which contain a match to given pattern

`grep [options] PATTERN [FILE]`

```
grep sysadmin passwd
```

} passwd dosyasının içerisinde sysadmin geçen yerleri bana göster

sysadmin → PATTERN
passwd → FILE

Regular Expressions

→ BASIC REGEX
→ EXTENTED REGEX (with egrep / with grep -E)

BASIC REGEX

- `.` Any one single character
- `[ ]` Any one specified character
- `*` Zero or more of the previous character
- `^` If first character in the pattern the pattern must be at beginning of the line to match, otherwise just a literal
- `$` If last character in the pattern the pattern must be at the end of line to match, otherwise just a literal.

EXTENTED REGEX

- `+` One or more of the previous pattern
- `?` The preceding pattern is optional
- `{ }` Specify minimum, maximum or exact match of the previous pattern
- `|` Alternation (a logical "or")
- `( )` Used to create groups

```
grep 'root' passwd
```
→ passwd dosyasında root geçen yerler

```
grep '^root' passwd
```
→ passwd dosyasında başında 'root' geçen yerler

```
grep 'r$' animal.txt
```
→ animal dosyası içinde sonunda 'r' olan yerler

```
grep 'r..f' red.txt
```
→ red dosyası için r ile başlayıp, sonraki iki karakter ne olursa olsun f ile biten yerler.

→ reaf
roof
roef
rrrf

```
grep '....' red.txt
```
→ red dosyasının içinde en az 4 harfli tüm geçen yerleri gösterir.

`grep '[0-9]' profile.txt` → profil dosyasının içinde sayı içeren yerleri göster.

`grep '[^0-9]' profile.txt` → profil dosyası içinde sayı ile başlamayan tüm satırları göster.

`grep '[.]' profile.txt` → profil dosyası içindeki nokta içeren satırları gösterir.

`grep 're*d' red.txt` → başında r harfi olan, sonunda d harfi olan, arasında da ya hiç olmayan yada istediği kadar e olan satırlar

↳ rd
red
reed
⋮

`grep 'r[oe]*d' red.txt` → başında r sonunda d harfi olan ortasında da o veya e harfi olsa da olur olmasa da olur.

↳ rd
rod
red
reed
roed
⋮

Also grep command can work on the same time, when you writing.

Shutting Down

`shutdown [OPTIONS] TIME [MESSAGE]`

The shutdown command requires administrative access.

`shutdown now` → şimdi hemen kapatır.
`shutdown 01:51` → 01:51 de kapatır
`shutdown +1 "Good Bye"` → 1 dakika sonra kapatır ve mesaje verir

NETWORK CONFIGURATION

The ifconfig command stands for "interface configuration" and is used to display network configuration

`ifconfig [options]`

NOTE: iwconfig command is similar to ifconfig but it is dedicated to wireless network interface.

The ping command is used to verify connectivity between two computers

`ping [options] address`

sending packages

VIEWING PROCESSES

The ps command can be used to list processes

`ps [options]`

`ps`

PID TTY TIME CMD

CMD → command name

TIME → working time → komutun çalışırken aldığı süreyi gösterir

TTY → The name of the terminal → eğer başka kullanıcılar o sırada işlem yapıyorsa, hangi terminalden yapıldığını gösterir.

PID → Process identifier → her işleme bir numara atanmıştır bu sayede hangi işlem hangi sırada gerçekleşti görebiliriz.

`ps -e` → display every process

`ps -ef` → daha detaylı şekilde tüm işlemleri gösterir

UPDATING USER PASSWORD

The passwd command is used to update a users password

USERS CAN ONLY CHANGE THEIR OWN PASWORDS

ROOT USER CAN UPDATE FOR ANY USER

`passwd [options] [USER]`

passwd → changing passwords

passwd -S username → status information about password

`sysadmin P 12/20/2017 0 99999 7 -1`

sysadmin → user name

P →
- P → usable
- L → locked (potlamış)
- NP → no password

12/20/2017 → last changed date

0 → The minimum number of days that must pass before the current password can be changed by the user

Bir kere değiştirildikten sonra kaç gün sonra değiştirilebilir

99999 → Maximum expiry days for password

7 → The number of days prior the password expiry that the user is warned

warning alarm

7 gün önceden haber, uyarı veriliyor

-1 → The number of days after password expiry that the user accounts remains active

pasaporta patladıkta 1 gün sonra kullan yine girebilir

REDIRECTION

> → çıktıyı büyüktür işaretinden sonra gelen dosya konumuna yazar ama dosyanın içeriğini baştan siler.

>> → çıktıyı dosyaya yazar ama dosyayı silmez ucuna ekleme yapar.

PACKAGE MANAGEMENT.

The package management is a system by which software can be installed, update, queried or removed from a file system.

Two most populer for Debian — dpkg — for master users
apt-get → for more easy

NOTE: Many of the package management commands require administrative access

⊕ Installing packages

apt-get update → package files are commonly installed by downloading the directly from repositories located on Internet servers

Search packages

apt-cache search [keyword] → aradığınız kelimeli içeren paketler önbelleğinden arar ve gösterir

apt-get install [package name] → önbellekte bulduğu bir paketi ismini yazarak kurabilirsiniz.

⊕ Updating Packages

apt-get install zaten kurulu olan bir paketi günceller fakat tüm paketleri güncellemek istiyorsak önce apt-get update yazıp tüm paketleri önbelleğe çekeriz sonra; apt-get upgrade ile var olan tüm paketleri güncelleriz.

⊕ Removing Packages

remove
purge

apt-get remove [package name] → paketi siler ama eğer config dosyaları varsa onlara dokunmaz

apt-get purge [package name] → her şeyiyle birlikte siler