

LINUX ADMIN,



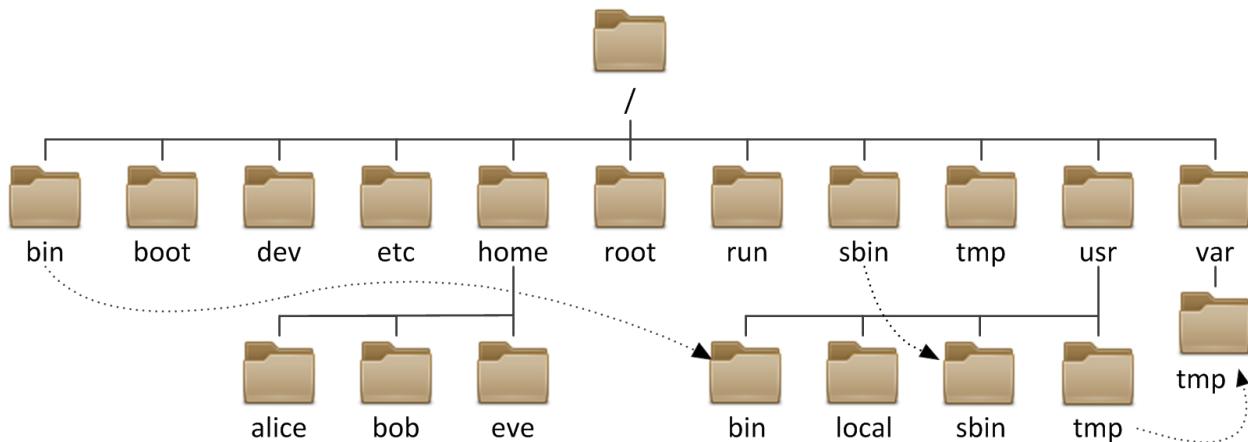
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السلام عليكم دا تلخیص کورس 1 Linux Admin للبشهندس علاء محمد وهو عباره 18 فيديو بيتم
شرح admin1 فيهم والتلخیص دا بترتيب الفيديوهات

تلخیص: م مصطفی محمود بهجت

1-Install



كل الملفات دي اسمها

/ = file system

root بيتخزن فيها ال home بتاع ال Root

user home بيتخزن فيها ال Home بتاع ال user

etc : بيتخزن فيها كل ال config الخاصة بالجهاز والuser مثلًا لو عامل dhcp فال config بتاعه ه تكون هنا

grub بيكون فيها ال boot loader ال هي ال Boot

Drivers بيكون فيها كل ال Dev

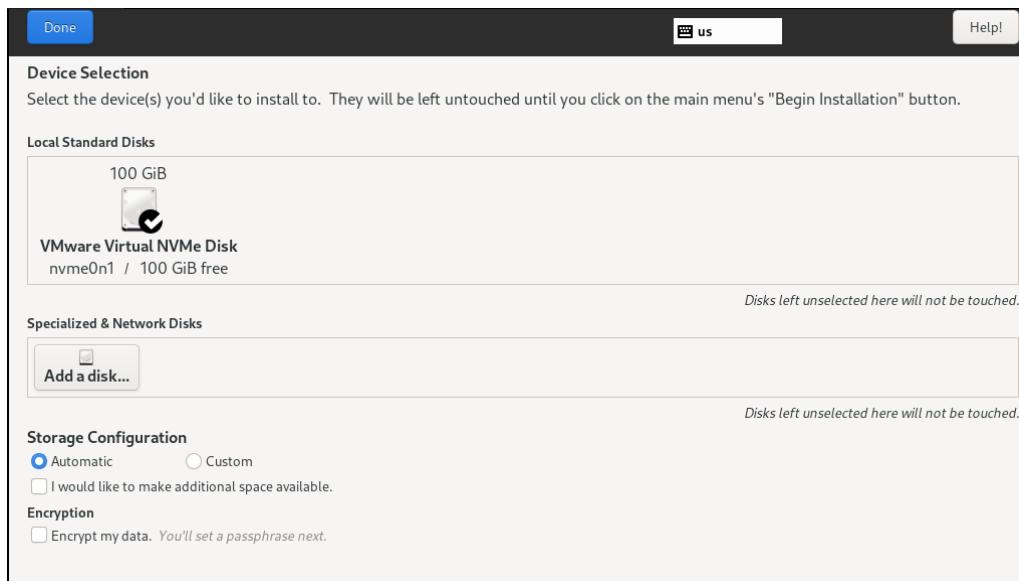
ال tmp دا مقابل ال temp في الويندوز بتخزن الملفات ال Crash ال هي الملفات ال بتخزنها Application

usr: اختصار user و بتخزن فيها ال shear بين ال users زي ال shear

bin: اختصار ل Binary و بتخزن فيها كل اوامر ال user

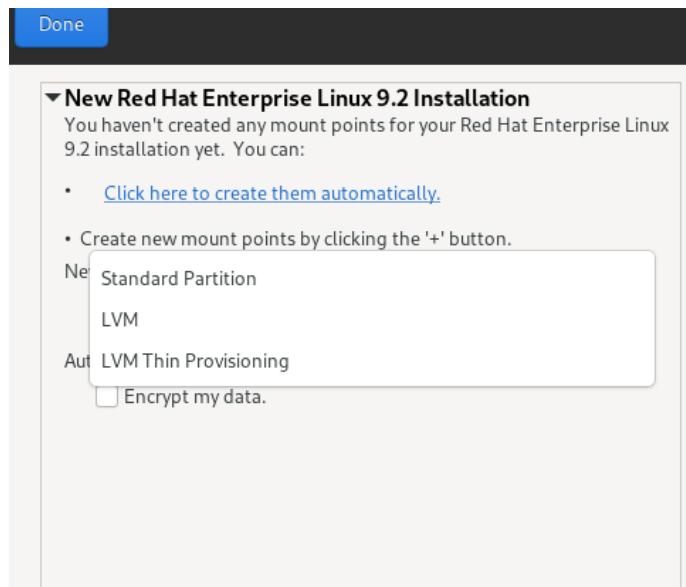
Sbin: بتخزن كل اوامر ال root

Var: بتخزن كل المتغيرات بتاع ال system زي ال log-file-mail



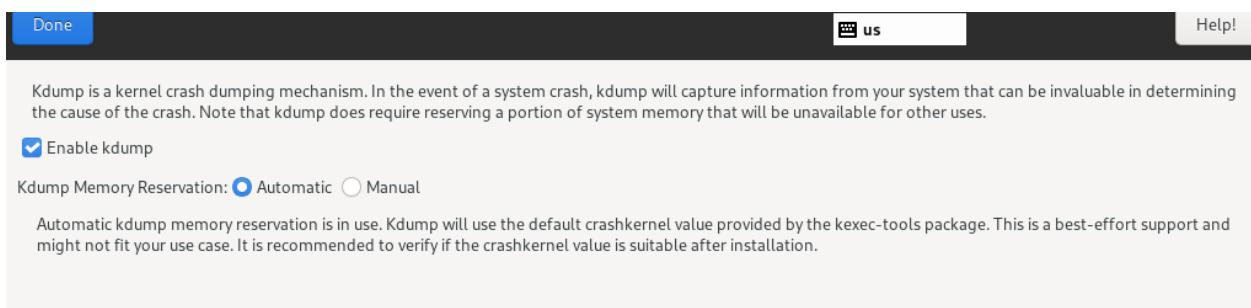
لو اخترت Auto فالهارد هي تقسم بحاجه اسمها Logical Volume Management(LVM) وهذا المساحه كلها هتروح لل Swap اي ال Swap طيب اي ال Swap دي هي virtual memory وهي ان RAM لما بتوصل لنسبة معينه بتبدا تنقل ال Process بتاعتها لل Swap

طب لو اخترت Custom فعنديك 3 حاجات



ودي بتبقا Static يعني بعد كدا مقدرش اعمل Extended Disk-1 LVM-2 دي بحدد مساحه معينه وليكن 20 جيجا فخلاص بيحجز من ال Disk الاصلي 20 سواء استخدمها او لا

LVM Thin Provisioning-3 2 جيجا بس ف دي المستخدمه فعليه ويفضل يزود داتا لحد ميوصل لـ 20



ال KUDMP دى عشان لو ال Crash حصله Recover اقدر اعمل System

ال Anaconda File دا عبارة عن File بيتخزن فيه كل Configuration الخاصه بال Install عشان لو هتعمل اكتر من نسخه بنفس الموصفات تقدر تستخدم ال File دا
لو عاوز افتح اكتر من TTY هعمل alt+crtl+fn حيث n بتساوي رقم ال tty ونقدر نفتح لحد 6 tty نفس الوقت

الامر w هيعرضلي مين داخل ع ال system دلوقت

```
[root@mostafa ~]# w
16:28:19 up 11:07, 4 users, load average: 0.00, 0.00, 0.00
USER     TTY      LOGIN@    IDLE   JCPU   PCPU WHAT
root     seat0    Tue14    0.00s  0.00s  0.00s /usr/libexec/gdm-wayland-sessio
mostafa  tty2     Mon20   45:04m  0.12s  0.11s /usr/libexec/gnome-session-bina
test     tty3     Tue14   26:20m  0.01s  0.01s -bash
root     tty4     Tue14   45:04m  0.04s  0.04s /usr/libexec/gnome-session-bina
```

في ال tty ال root login بيكون بالشكل دا

```
[root@localhost ~]#
[root@localhost ~]#
[root@localhost ~]#
```

ال usre login

```
[mostafa@localhost ~]$_
[mostafa@localhost ~]$_
[mostafa@localhost ~]$ _
```

user-1

hostname-2

working directory-3

```
[mostafa@localhost home]$ pwd  
/home  
[mostafa@localhost home]$ _
```

Pwd الامر دا لو هتطبع المكان ال واقف فيه حاليا وهو اختصار الي print working directory.

```
[mostafa@localhost ~]$ ls -l /  
total 24  
dr-xr-xr-x. 2 root root 6 Aug 10 2021 afs  
lrwxrwxrwx. 1 root root 7 Aug 10 2021 bin -> usr/bin  
dr-xr-xr-x. 5 root root 4096 Jan 1 09:58 boot  
drwxr-xr-x. 20 root root 3440 Jan 1 10:27 dev  
drwxr-xr-x. 133 root root 8192 Jan 1 09:58 etc  
drwxr-xr-x. 3 root root 21 Jan 1 09:53 home  
lrwxrwxrwx. 1 root root 7 Aug 10 2021 lib -> usr/lib  
lrwxrwxrwx. 1 root root 9 Aug 10 2021 lib64 -> usr/lib64  
drwxr-xr-x. 2 root root 6 Aug 10 2021 media  
drwxr-xr-x. 3 root root 18 Jan 1 09:41 mnt  
drwxr-xr-x. 2 root root 6 Aug 10 2021 opt  
dr-xr-xr-x. 377 root root 0 Jan 1 09:58 proc  
dr-xr-x---. 4 root root 159 Jan 1 10:13 root  
drwxr-xr-x. 46 root root 1240 Jan 1 10:26 run  
lrwxrwxrwx. 1 root root 8 Aug 10 2021 sbin -> usr/sbin  
drwxr-xr-x. 2 root root 6 Aug 10 2021 srv  
dr-xr-xr-x. 13 root root 0 Jan 1 09:58 sys  
drwxrwxrwt. 17 root root 4096 Jan 1 13:31 tmp  
drwxr-xr-x. 12 root root 144 Jan 1 09:35 usr  
drwxr-xr-x. 20 root root 4096 Jan 1 09:55 var  
[mostafa@localhost ~]$ _
```

ls بيعرضلي الملفات بتاعتي

ال بيبدا بحرف ال d بيكون directory

حرف ال l بيكون link

ال . بيكون dot hidden

```
[root@localhost ~]# cat anaconda-ks.cfg  
# Generated by Anaconda 34.25.2.10  
# Generated by pykickstart v3.32  
#version=RHEL9  
# Use graphical install  
graphical  
repo --name="AppStream" --baseurl=file:///run/install/sc  
  
%addon com_redhat_kdump --disable  
  
%end  
  
# Keyboard layouts  
keyboard --xlayouts='us'  
# System language  
lang en_US.UTF-8
```

امر cat بيعرضلي محتويات ال file

```
[root@localhost ~]# tail anaconda-ks.cfg
# Partition clearing information
clearpart --none --initlabel

# System timezone
timezone Africa/Cairo --utc

# Root password
rootpw --iscrypted --allow-ssh $6$3Eb0IkevRT-
/4i3hHyQ6FX0
user --name=mostafa --password=$6$d56TL60cZou-
B2T4tcS5BnL0 --iscrypted --gecos="mostafa"

[root@localhost ~]#
```

امر tail بعرضي اخر 10 سطور

```
[root@localhost ~]# head anaconda-ks.cfg
# Generated by Anaconda 34.25.2.10
# Generated by pykickstart v3.32
#version=RHEL9
# Use graphical install
graphical
repo --name="AppStream" --baseurl=file:///run/install/sources/mount-0

%addon com_redhat_kdump --disable

%end
[root@localhost ~]#
```

امر head بعرضي اول 10 سطور

Head -n2 anaconda-ks.cfg بقوله اعرضي اول سطرين

```
[root@localhost ~]# less anaconda-ks.cfg
```

```
[1]+  Stopped                  less anaconda-ks.cfg
[root@localhost ~]# less anaconda-ks.cfg
```

امر less بعرضي الملف ويفضل مستني داخل الملف

G هيوديني لأول الصفحة

g هيوديني لآخر الصفحة

q هيخرجي من الملف

```
[root@mostafa ~]# wc file1  
1 1 6 file1  
[root@mostafa ~]#
```

Wc اختصار الي word count بيعرضلي الملف دا كام سطر وحرف وكلمه

```
[root@mostafa ~]# passwd  
Changing password for user root.  
New password:
```

Passwd بيعتبر الباسورد

useradd test هعمل يوزر اسمه test

passwd test هعمل باسورد لليوزر ال اسمه test

```
[root@mostafa-ntech-com ~]# history  
1 ls -l  
2 id  
3 exit  
4 history  
5 history  
[root@mostafa-ntech-com ~]# history > mycomm.txt  
[root@mostafa-ntech-com ~]# cat mycomm.txt  
1 ls -l  
2 id  
3 exit  
4 history  
5 history  
6 history > mycomm.txt  
[root@mostafa-ntech-com ~]#
```

history commands كنت كاتبها وممكن اطبعها في file.txt من history

Ctrl+a من اخر السطر لاوله بيعمل jump

Ctrl+e من اول السطر لآخره بيعمل jump

Ctrl+u هيسح السطر كله

```
[root@mostafa-ntech-com ~]# touch file1
```

Touch دا ب الامر create

```
[root@mostafa ~]# mkdir /home/mostafa/test
```

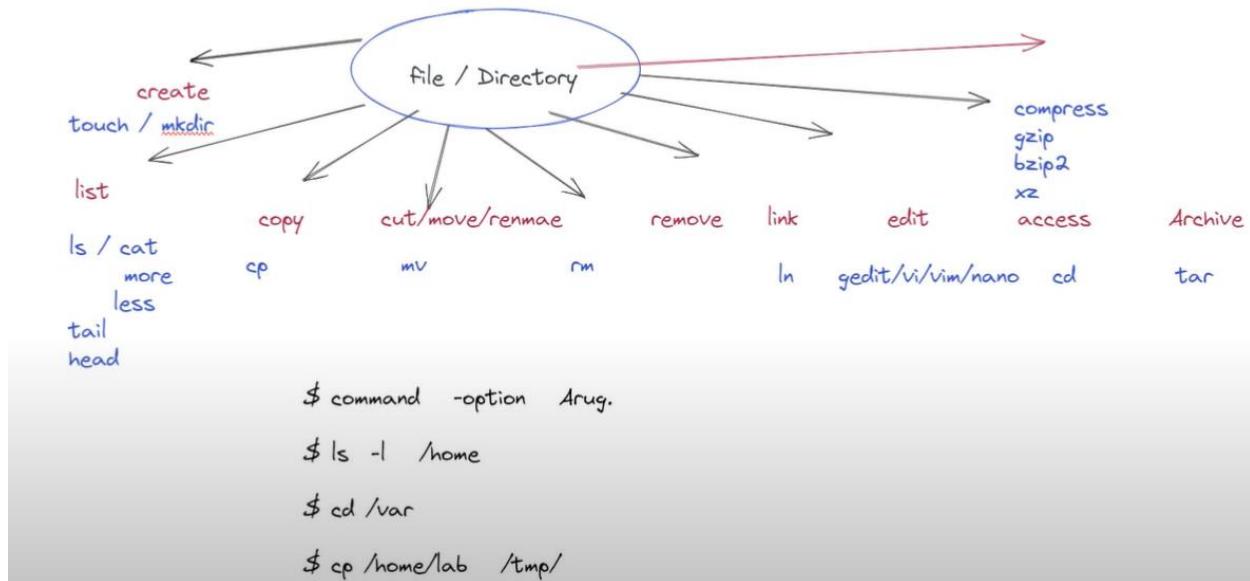
/home/mostafa/test اسمه dir و هنا عملت create dir mkdir

cp هنسخ من مكان لمكان تاني

Cp -option source destination

cp -r dir1 /tmp هاخد نسخه من ال dir1 الى tmp

تحته من files



mv كله من مكانه وهوديه مكان تاني

Download dir1 هنقل ال dir1 الى اسمه mv dir1 Download/

filetest و اخلي اسمه file1 rename لـ file1 بعمل mv file1 filetest

```
[root@mostafa ~]# ls  
anaconda-ks.cfg Documents file1 mycomm.txt Public Videos  
Desktop Downloads Music Pictures Templates  
[root@mostafa ~]# mv file1 filetest  
[root@mostafa ~]# ls  
anaconda-ks.cfg Documents filetest mycomm.txt Public Videos  
Desktop Downloads Music Pictures Templates  
[root@mostafa ~]#
```

mv filetest .filetest بخفي الملف دا

```
[root@mostafa ~]# mv filetest .filetest  
[root@mostafa ~]# ls  
anaconda-ks.cfg Documents Music Pictures Templates  
Desktop Downloads mycomm.txt Public Videos  
[root@mostafa ~]#
```

ls -a بيعرضلي كل الملفات حتى ال hidden

```
[root@mostafa ~]# rm -r -f dir1/
```

بقوله احذفي ال dir ال اسمه dir1 و -r عشان هو dir و -f بقوله احذفه من غير م تسالني
أنواع ال link فيه نوعين ال hard وال symbolic

hard link-1 : ودي عندي file خد منه copy في مكان تاني هنا لو عدلت ف أي file فيهم التعديل
هيسمع في التاني هيكون فيه Replica بينهم لأن الاثنين بيشاوروا نفس ال inode number

```
ln file1 /tmp/file2
```

```
[root@mostafa ~]# touch file50
[root@mostafa ~]#
[root@mostafa ~]#
[root@mostafa ~]# ln file50 /tmp/file100
[root@mostafa ~]#
[root@mostafa ~]#
[root@mostafa ~]# ls -li file50 /tmp/file100
68359373 -rw-r--r--. 2 root root 0 Jan  3 13:53 file50
68359373 -rw-r--r--. 2 root root 0 Jan  3 13:53 /tmp/file100
[root@mostafa ~]# echo "hello" > file50
[root@mostafa ~]#
[root@mostafa ~]#
[root@mostafa ~]# cat file50
hello
[root@mostafa ~]# cat /tmp/file100
hello
[root@mostafa ~]#
```

symbolic link-2 : داب يعبر عن inode number بتاع ملف معين (زي ال short cut) ولو عملت أي تعديل مش هيكون في أي replica لأن الاثنين مش بيشاورو ع نفس ال inode وهذا يفضل اكتبه ال full path

```
[root@mostafa ~]# ln -s /home/test1 Desktop/file11
[root@mostafa ~]# ls -l Desktop/
total 0
lrwxrwxrwx. 1 root root 11 Jan  3 14:23 file10 -> /home/test1
lrwxrwxrwx. 1 root root 11 Jan  3 14:38 file11 -> /home/test1
[root@mostafa ~]#
```

ال help عندي اكتر من tool زي

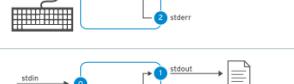
man-1 man بتعرضلي معلومات عن الامر مثلا ls

info-2 زي ال info man بس بتجبلي معلومات اكتر ls

ls -help (--help)-3

4- المسار دا بيكون تحته doc للنظام /usr/share/doc

Output Redirection Operators

Usage	Explanation	Visual aid
> file	Redirect stdout to overwrite a file.	
>> file	Redirect stdout to append to a file.	
2> file	Redirect stderr to overwrite a file.	
2>/dev/null	Discard stderr error messages by redirecting them to /dev/null.	
> file 2>&l &> file	Redirect stdout and stderr to overwrite the same file.	
>> file 2>&l &>> file	Redirect stdout and stderr to append to the same file.	

```
[user@host ~]$ cat step1.sh step2.log step3 step4 > /tmp/all-four-steps-in-one
```

عرض اكتر من ملف وكمان احطهم ف ملف واحد

الامر داب يبحث داخل ال system عن ال file -dir find

هنا بقوله ابحثي عن أي file or dir داخل السيسitem

```
[root@mostafa ~]# find / -iname passwd
find: '/run/user/1000/gvfs': Permission denied
/sys/fs/selinux/class/passwd
/sys/fs/selinux/class/passwd/perms/passwd
/etc/pam.d/passwd
/etc/passwd
/usr/bin/passwd
/usr/share/licenses/passwd
/usr/share/doc/passwd
/usr/share/bash-completion/completions/passwd
[root@mostafa ~]#
```

file ببحث داخل محتوي ال grep

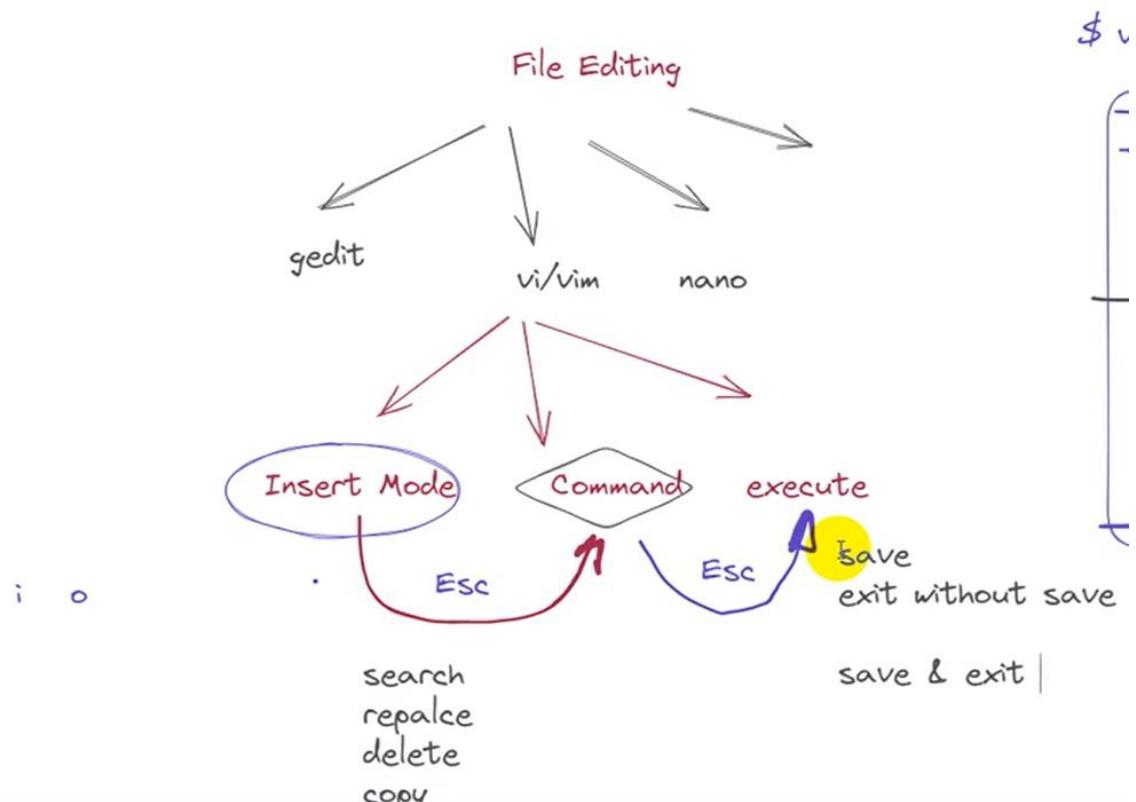
هنا بقوله ابحثي دا الملف ال تحت /etc واسمه passwd عن كلمه اسمها mostafa

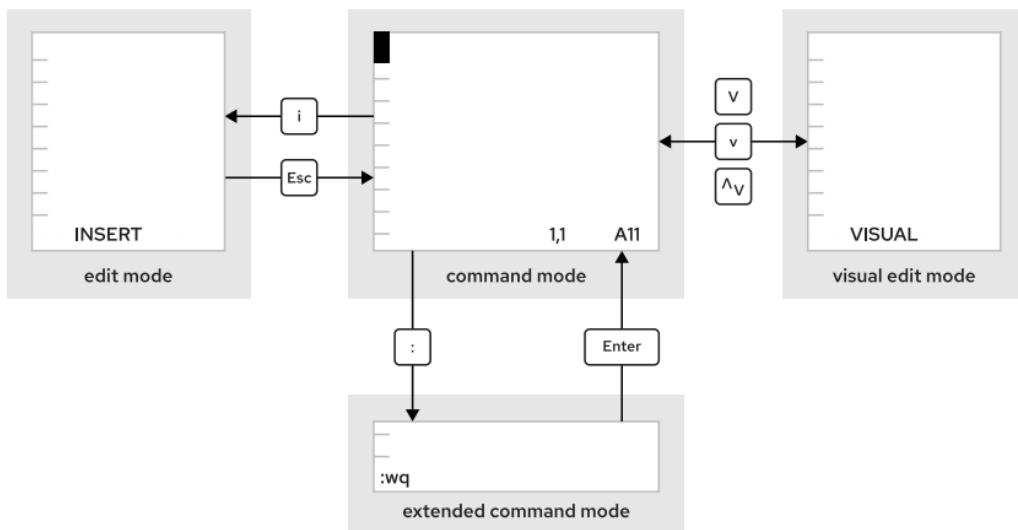
```
[root@mostafa ~]# grep mostafa /etc/passwd
mostafa:x:1000:1000:mostafa:/home/mostafa:/bin/bash
[root@mostafa ~]#
```

هنا بقوله ابحثي دا الملف ال تحت /etc واسمه passwd عن كلمه اسمها test او mostafa

```
[root@mostafa ~]# grep 'mostafa\|test' /etc/passwd
mostafa:x:1000:1000:mostafa:/home/mostafa:/bin/bash
test:x:1001:1001::/home/test:/bin/bash
[root@mostafa ~]#
```

vim





```
:%s/mostafa/test
```

تعديل كل الكلمات ال اسمها mostafa ال اسم test

```
1 mostafa
2 tset
3 mostafa
~
: set number
```

برقم الصفحة بتاتي Set number

p	d	y	wq!	wq	g	G	O	o	d	x
هي عمل past	هي يأخذ cut	هي يأخذ copy	هيخرج ويحفظ التعديلات	هيخرج ويحفظ	هيطلعني لأول سطر	هينزلني لآخر سطر	هيطلعني سطر فوق	هينزل سطر جديد	هيحذف السطر كله	هيحذف حرف بحرف

Users Types

Services users	Local users	System users
ID=1-199	ID=1000 +	ID=200-999

Group Types

Secondary Group	Primary Group
دا لما اعمل custom واحلي اكتر من user ف group معين	عند انشاء أي user يتم انشاء Primary Group بيكون هو فقط ال موجود فيها

Command

option	add	modify	remove	Permission
User	useradd	usermod	userdel	Chmod
group	groupadd	groupmod	groupdel	Chage chown

دي المسارات /etc/group /etc/passwd /etc/shadow /etc/login.defs
users and groups فيها معلومات ال

hr اسمها group بنشا groupadd hr

hr الجروب بحذف groupdel

```
[root@mostafa ~]# groupadd -g 4000 it
```

بعمل جروب اسمها it بس بعدد الرقم بتاعها

```
[root@mostafa ~]# usermod -aG it test
[root@mostafa ~]# grep test /etc/group
it:x:4000:test
```

بقوله ضيف ال user ال اسمه test ال جروب ال اسمه it

```
[root@mostafa ~]# usermod -L ahmed
[root@mostafa ~]# grep ahmed /etc/shadow
ahmed:!$6$x5gZvob8wzMAqEPH$VbMVX8MzTyQDuaVs
[root@mostafa ~]#
```

عمل lock لليوزر دا يعني مش هيقدر يدخل تاني ع الاكونت بتاعه . والباسورد بيبيقي قدامها علامه !

```
[root@mostafa ~]# usermod -U ahmed
[root@mostafa ~]# grep ahmed /etc/shadow
ahmed:$6$x5gZvob8wzMAqEPH$VbMVX8MzTyQDuaVs
EYfkY53lu.Ew2p6aDQ7wctuuqgON.vC1:19726:0:9
[root@mostafa ~]#
```

عمل unlock عشان يرجع يستخدم الاكونت بتاعه وهنا العلامه ! بتنشال

تعديل ال parameter الخاصة بالليوزر

```
[root@mostafa ~]# chage -m 0 -M 90 -W 5 -I 2 mostafa
[root@mostafa ~]# grep mostafa /etc/shadow
mostafa:$6$0Gpoqt2RpPEsuorG$IIw.TE6WjeB4AUUh5vgZrQ1BesXxu9RmtZ9g/BFBaFgPxw7pWRUCDxVCL3KNxybGd
b5uWYJTpNejgHEbQXQt/:19726:0:90:5:2::
[root@mostafa ~]# chage -m 0 -M 120 -W 8 -I 10 mostafa
[root@mostafa ~]# grep mostafa /etc/shadow
mostafa:$6$0Gpoqt2RpPEsuorG$IIw.TE6WjeB4AUUh5vgZrQ1BesXxu9RmtZ9g/BFBaFgPxw7pWRUCDxVCL3KNxybGd
b5uWYJTpNejgHEbQXQt/:19726:0:120:8:10::
[root@mostafa ~]#
```

```
[root@mostafa ~]# vim /etc/login.defs
```

أي المسار دا بيكون فيه ال parameters الخاصة بالليوزر مثلاً الباسورد هتفضل معه كام يوم ويفيرها
بعد اد أي وهكذا

```
[root@mostafa ~]# vim /etc/sudoers
```

المسار دا بيكون فيه ال command permission كل ال يقدر ينفذها ال users ع السيسن

```

##      user      MACHINE=COMMANDS
##
## The COMMANDS section may have other options added to it.
##
## Allow root to run any commands anywhere
root      ALL=(ALL)          ALL

## Allows members of the 'sys' group to run networking, software,
## service management apps and more.
# %sys ALL = NETWORKING, SOFTWARE, SERVICES, STORAGE, DELEGATING, PROCESSES, LOCATE, DRIVERS

## Allows people in group wheel to run all commands
%wheel    ALL=(ALL)          ALL

## Same thing without a password
# %wheel      ALL=(ALL)      NOPASSWD: ALL

## Host Aliases
## Groups of machines. You may prefer to use hostnames (perhaps using
## wildcards for entire domains) or IP addresses instead.
# Host_Alias      FILESERVERS = fs1, fs2
# Host_Alias      MAILSERVERS = smtp, smtp2

## User Aliases
## These aren't often necessary, as you can use regular groups
## (ie, from files, LDAP, NIS, etc) in this file - just use %groupname
## rather than USERALIAS
# User_Alias ADMINS = jsmith, mikem

## Command Aliases
## These are groups of related commands...

## Networking
# Cmnd_Alias NETWORKING = /sbin/route, /sbin/ifconfig, /bin/ping, /sbin/dhclient, /usr/bin/net, /sbin/ip
tables, /usr/bin/rfcomm, /usr/bin/wvdial, /sbin/iwconfig, /sbin/mii-tool

```

106.1
22,0-1 7%

[root@mostafa ~]# cat /var/log/secure

المسار دا هيتخزن فيه كل ال command ال هتحصل من ال suer super على الجهاز

عرض معلومات عن ال user mostafa ال اسمه

```

[root@mostafa ~]# chage -l mostafa
Last password change : Jan 04, 2024
Password expires       : May 03, 2024
Password inactive     : May 13, 2024
Account expires        : never
Minimum number of days between password change : 0
Maximum number of days between password change : 120
Number of days of warning before password expires : 8
[root@mostafa ~]#

```

```
[root@mostafa ~]# chage -d 0 mostafa
```

بقوله اجباري بعد اول login لليوزر ال اسمه mostafa تجبره يغير ال password بقاعدته

وأول م اعمل login هيظهرلي الشكل دا ولازم اغير الباسورد

```
mostafa login: mostafa
Password:
You are required to change your password immediately (administrator enforced).
Current password:
```

```
[root@mostafa ~]# gpasswd -d test2 it
Removing user test2 from group it
[root@mostafa ~]#
```

بحذف اليوزر ال اسمه test2 من الجروب ال اسمه it

```
[root@mostafa ~]# useradd -u 3000 -c "local user" -d /users/ahmed -s /bin/sh ahmed
[root@mostafa ~]#
[root@mostafa ~]#
[root@mostafa ~]# grep ahemd /etc/passwd
[root@mostafa ~]# grep ahmed /etc/passwd
ahmed:x:3000:3000:local user:/users/ahmed:/bin/sh
[root@mostafa ~]#
```

بنشا يوزر جديد بخصائص معينة

```
[root@mostafa ~]# cat /etc/group | grep wheel
wheel:x:10:
[root@mostafa ~]# usermod -aG wheel mostafa
[root@mostafa ~]# cat /etc/group | grep wheel
wheel:x:10:mostafa
[root@mostafa ~]#
```

الا wheel دا جروب بيكون فيه ال super users

wheel بقوله ضع اليوزر ال اسمه mostafa ف الجروب ال اسمه wheel وبعد اليوزر داه يبقى super user

access file an dir

target=file or dir

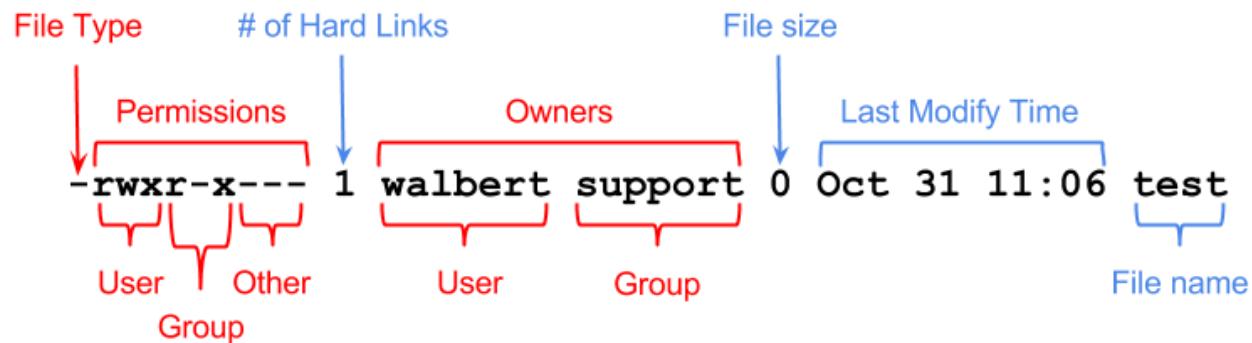
object=user-group-other

permission=read-write-execute

Permissions	Files	Directories
r=read	يعني أقدر اعمل cat-less more-tail-head	يعني أقدر اعمل ls
w=write	يعني أقدر افتح ال file سواء ب vim-vi-nano يعني أقدر اعمل edit لـ file	يعني أقدر اعمل cp-rmdir-mkdir-touch اعمل dir – modify
x=execute	دا بيكون مع ال file او special file او ال file ال عاوز اخليه يكون execute file	يعني أقدر اعمل cd لـ dir

user	group	other
u	g	o

ودا أي حد غير ال owner وال group owner



ال permission عندي نوعين

basic-1

special-2

Basic

Numeric	Symbolic
r=4,w=2,x=1 all =7 dir1 بتابع ال chmod 754 dir1	r w x chmod 754 dir1 = Chmod rwxr-xr—dir1

```
drwxr-xr-x. 2 mostafa mostafa 6 Jan  1 10:00 Videos  
[mostafa@mostafa ~]$ chmod 777 Videos
```

بیغرا full permission باتع ال dir ال اسمه videos او دی لکل permission

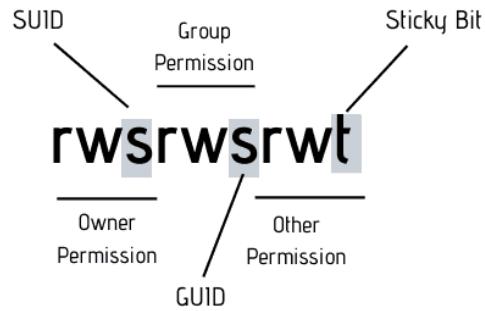
```
[mostafa@mostafa ~]$ chmod 700 Downloads -R
```

بغير ال permission بتاع ال dir ال اسمه Downlaod و-R- عشان ال subdir ال تحته برضة تغير

```
chmod a+rwx dir2
```

rwx عندي 3 بروژي فال basic کان ال 3 ال هما special

لا هنا ه تكون $s+s$



تطبق فقط على ال users كلهم هيقدرولي execute filr (set user id) u+s

```
[mostafa@mostafa ~]$ chmod u+s file1
[mostafa@mostafa ~]$ ls -l
total 4
drwxr-xr-x. 2 mostafa mostafa 16 Jan  3 11:07 d1
drwxr-xr-x. 2 mostafa mostafa  6 Jan  1 10:00 Desktop
drwxr-xr-x. 3 mostafa mostafa 16 Jan  3 11:10 dir1
drwxr-xr-x. 2 mostafa mostafa  6 Jan  1 10:00 Documents
drwx-----. 2 mostafa mostafa  6 Jan  1 10:00 Downloads
-rw-----. 1 mostafa mostafa  0 Jan  3 11:07 f1
-r-sr-xr-x. 1 mostafa mostafa 29 Jan  6 11:01 file1
```

وهيكون في حرف ال s نهايه اول 3Car الخاصين بالبليوزر

تطبق فقط على ال directory وهي عشان لو عندي dir غيرت ال group بتاعته
وعاوز كل ال sub dir تحت ال dir دا تأخذ نفس ال group اال غيرته

```
[mostafa@mostafa ~]$ chmod g+s Downloads/
[mostafa@mostafa ~]$ ls -l
total 4
drwxr-xr-x. 2 mostafa mostafa 16 Jan  3 11:07 d1
drwxr-xr-x. 2 mostafa mostafa  6 Jan  1 10:00 Desktop
drwxr-xr-x. 3 mostafa mostafa 16 Jan  3 11:10 dir1
drwxr-xr-x. 2 mostafa mostafa  6 Jan  1 10:00 Documents
drwxr-sr-x. 4 mostafa it      30 Jan  6 13:03 Downloads
```

حرف ال s هنا هيكون فالمكان الخاص بال group

تطبق فقط ع ال directory ودي عشان لو عامل share directory محدش يقدر
يمسح ملفات مش هو ال عملها create حتى لو معه r+w عليها

```
[root@mostafa ~]# chmod o+t data10/  
[root@mostafa ~]# ls -ld data10/  
drwsrws-T. 2 root root 6 Jan 6 13:40 data10/
```

هنا بيكون حرف t مش s

لو الملف دا كان عليه permission execute ال هو x الحرف هيكون small

لو مش واحد ال x الحرف هيكون capital

basic او حرف بيمثل ال special والباقي ال chmod 4777 data

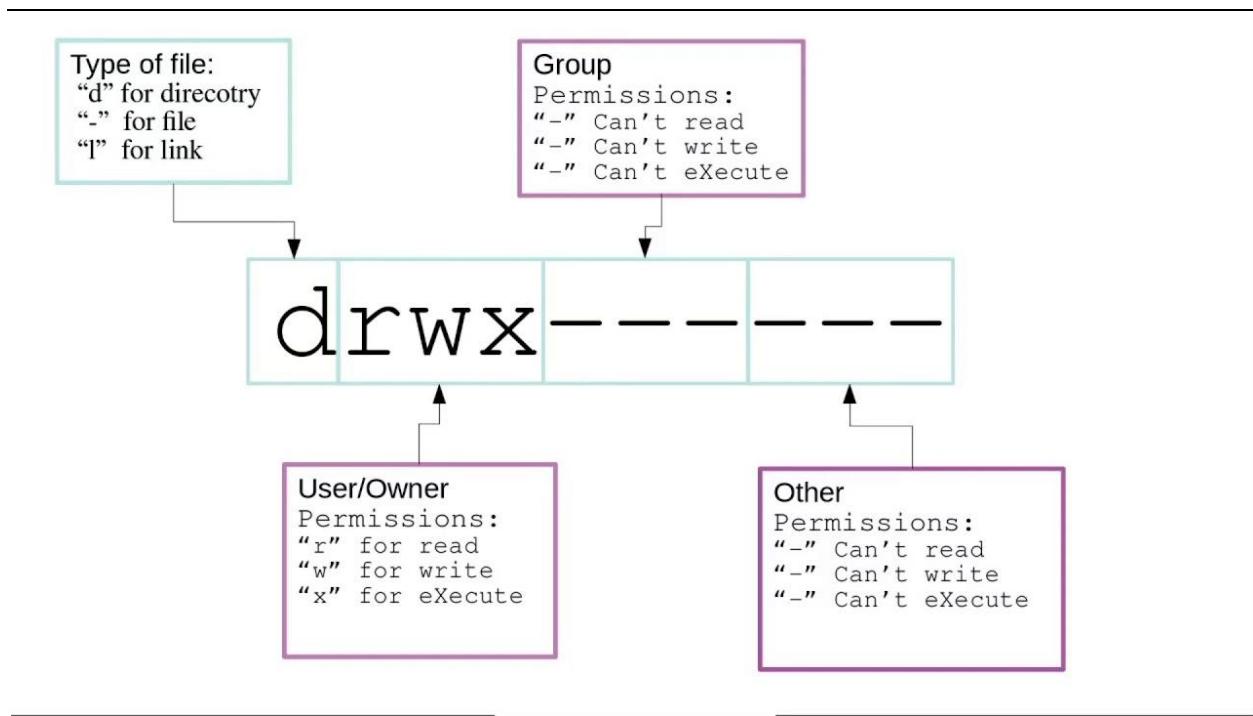
```
[mostafa@mostafa ~]$ chown mostafa:it Downloads  
[mostafa@mostafa ~]$ ls -l  
total 4  
drwxr-xr-x. 2 mostafa mostafa 16 Jan 3 11:07 d1  
drwxr-xr-x. 2 mostafa mostafa 6 Jan 1 10:00 Desktop  
drwxr-xr-x. 3 mostafa mostafa 16 Jan 3 11:10 dir1  
drwxr-xr-x. 2 mostafa mostafa 6 Jan 1 10:00 Documents  
drwxrwxrwx. 2 mostafa it 6 Jan 1 10:00 Downloads
```

بقوله غير لياليوزر والجروب بتوع ال dir ال اسمه Download وخليلاليوزر يكون mostafa و الجروب يكون it لو عاوز اخلي كل ال sub يخد نفس التغيير دا هضيع R-ف اخر السطر

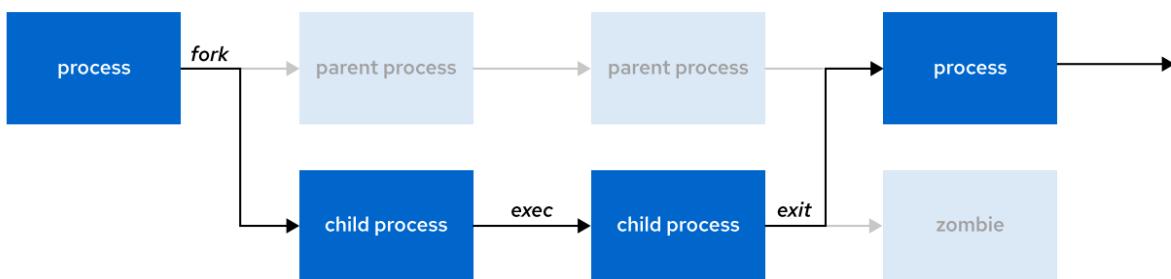
ال user – root لما ينشاو أي file-dir ال system permission بيضع افتراضيه

File	644
directory	755

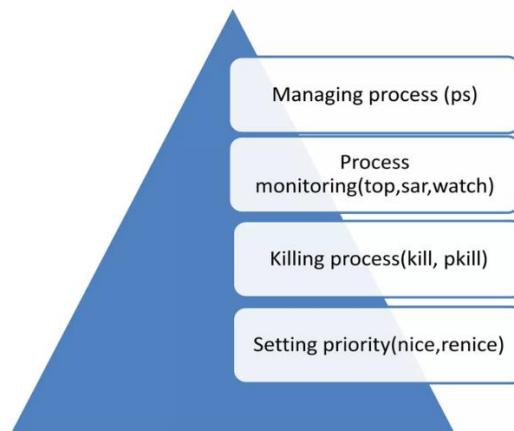
طب دي جت ازاي من حاجه اسمها umask وهو رقم السيسitem وضعه افتراضي بالقيمه دي 0022
تعال نحسب أي file عاوز اديله full بيكون 666 لانه file full (0666-(umask)0022=0644=rw-r--r--)
directory full (0777-(umask)0022=0755=rw-rxr-x)
وقدر اعدل قيمه ال umask من المسار /etc/bashrc

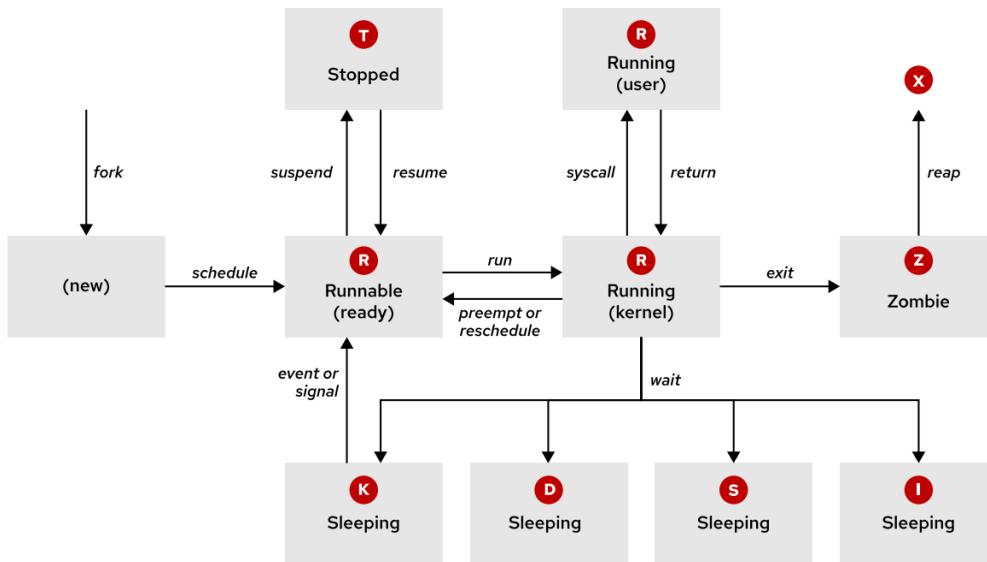


Process



Process





Running	R		
Sleeping	S تكون interruptible D تكون uninterruptible ف حالة انتظار مثلاً		
Stopped			
zombie	Z,X		

أي Process بيكون ليها

Process ID(PID)

Parent Process ID(PPID)

```
[root@mostafa ~]# ps aux
USER      PID %CPU %MEM      VSZ      RSS TTY      STAT START      TIME COMMAND
root      1  0.2  0.2 172648 16572 ?      Ss   10:30  0:04 /usr/lib/syst
root      2  0.0  0.0      0      0 ?      S    10:30  0:00 [kthreadd]
root      3  0.0  0.0      0      0 ?      I<  10:30  0:00 [rcu_gp]
root      4  0.0  0.0      0      0 ?      I<  10:30  0:00 [rcu_par_gp]
root      5  0.0  0.0      0      0 ?      I<  10:30  0:00 [slub_flushwq]
```

عشان اعمل list بكل ال process ال عندي

```
[root@mostafa ~]# ps -ef
UID      PID    PPID   C STIME TTY          TIME CMD
root      1        0  0 10:30 ?
root      2        0  0 10:30 ?
root      3        2  0 10:30 ?
root      4        2  0 10:30 ?
root      5        2  0 10:30 ?
root      6        2  0 10:30 ?
root      8        2  0 10:30 ?
root     10       2  0 10:30 ?
root     11       2  0 10:30 ?
root     13       2  0 10:30 ?
```

زی امر ps aux لکن بیعرض ال PPID

```
[root@mostafa ~]# top
```

```
top - 11:09:41 up 39 min,  2 users,  load average: 0.15, 0.05, 0.07
Tasks: 298 total,  2 running, 296 sleeping,  0 stopped,  0 zombie
%Cpu(s): 1.2 us, 1.0 sy, 0.0 ni, 97.1 id, 0.0 wa, 0.5 hi, 0.2 si, 0.0 st
MiB Mem : 5553.0 total, 3654.9 free, 1484.8 used, 679.1 buff/cache
MiB Swap: 5684.0 total, 5684.0 free, 0.0 used. 4068.2 avail Mem
```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
1985	root	20	0	3976544	353880	128412	S	7.9	6.2	0:49.34	gnome-shell
2523	root	20	0	774624	56752	40884	S	1.3	1.0	0:06.92	gnome-terminal-
2708	root	20	0	226016	4276	3392	R	1.0	0.1	0:00.08	top
2212	root	20	0	537096	43160	34064	S	0.7	0.8	0:03.89	vmtoolsd
889	root	20	0	456248	8964	7532	S	0.3	0.2	0:05.49	vmtoolsd
1845	root	20	0	0	0	0	I	0.3	0.0	0:00.63	kworker/1:2-events_freeze+ 2143
root		20	0	271252	40404	8416	S	0.3	0.7	0:01.97	sssd_kcm

top بیجبلی list بکل ال – کام login user عامل – ال uptime – ال – معلومات عن ال swap Memory وال zombie – معلومات عن ال موجوده ولا .

لوضغط ع حرف h هیجبلک help بسیطه لكل حرف ممکن تعمل بيه أي وانت عامل run لامر top زی اال task manger في ال windows

ال process ممکن تتعرض ف 1 goreground (fg)-2 Background(bg)-2

```
[root@mostafa ~]# sleep 1000
^Z
[3]+  Stopped                  sleep 1000
[root@mostafa ~]# jobs
[1]-  Stopped                  top
[2]  Running                   sleep 1000 &
[3]+  Stopped                  sleep 1000
[root@mostafa ~]# bg %3
[3]+ sleep 1000 &
[root@mostafa ~]# jobs
[1]+  Stopped                  top
[2]  Running                   sleep 1000 &
[3]-  Running                   sleep 1000 &
[root@mostafa ~]# █
```

بقوله وقف ال prompt 1000 ثانية في ال

jobs بعرض ال الحالي

bg %3 بقوله شغلي ال job ال رقمها 3 في ال BG

لو من البداية عاوز أقوله run الامر ف ال BG هقوله &

```
[root@mostafa ~]# sleep 100 &
[4] 2815
```

لو عاوز أوقف أي process شغاله هيكون بامر kill-pkill

```
[root@mostafa ~]# kill -l
 1) SIGHUP      2) SIGINT      3) SIGQUIT      4) SIGILL      5) SIGTRAP
 6) SIGABRT     7) SIGBUS      8) SIGFPE       9) SIGKILL     10) SIGUSR1
11) SIGSEGV     12) SIGUSR2     13) SIGPIPE     14) SIGALRM     15) SIGTERM
16) SIGSTKFLT   17) SIGCHLD    18) SIGCONT     19) SIGSTOP     20) SIGTSTP
21) SIGTTIN     22) SIGTTOU    23) SIGURG      24) SIGXCPU    25) SIGXFSZ
26) SIGVTALRM   27) SIGPROF    28) SIGWINCH   29) SIGIO      30) SIGPWR
31) SIGSYS      34) SIGRTMIN   35) SIGRTMIN+1 36) SIGRTMIN+2 37) SIGRTMIN+3
38) SIGRTMIN+4  39) SIGRTMIN+5 40) SIGRTMIN+6 41) SIGRTMIN+7 42) SIGRTMIN+8
43) SIGRTMIN+9  44) SIGRTMIN+10 45) SIGRTMIN+11 46) SIGRTMIN+12 47) SIGRTMIN+13
48) SIGRTMIN+14 49) SIGRTMIN+15 50) SIGRTMAX-14 51) SIGRTMAX-13 52) SIGRTMAX-12
53) SIGRTMAX-11 54) SIGRTMAX-10 55) SIGRTMAX-9 56) SIGRTMAX-8 57) SIGRTMAX-7
58) SIGRTMAX-6  59) SIGRTMAX-5 60) SIGRTMAX-4 61) SIGRTMAX-3 62) SIGRTMAX-2
63) SIGRTMAX-1  64) SIGRTMAX
[root@mostafa ~]# █
```

```
[root@mostafa ~]# kill SIGTERM 2790
bash: kill: SIGTERM: arguments must be process or job IDs
[3]-  Terminated                  sleep 1000
[root@mostafa ~]#
```

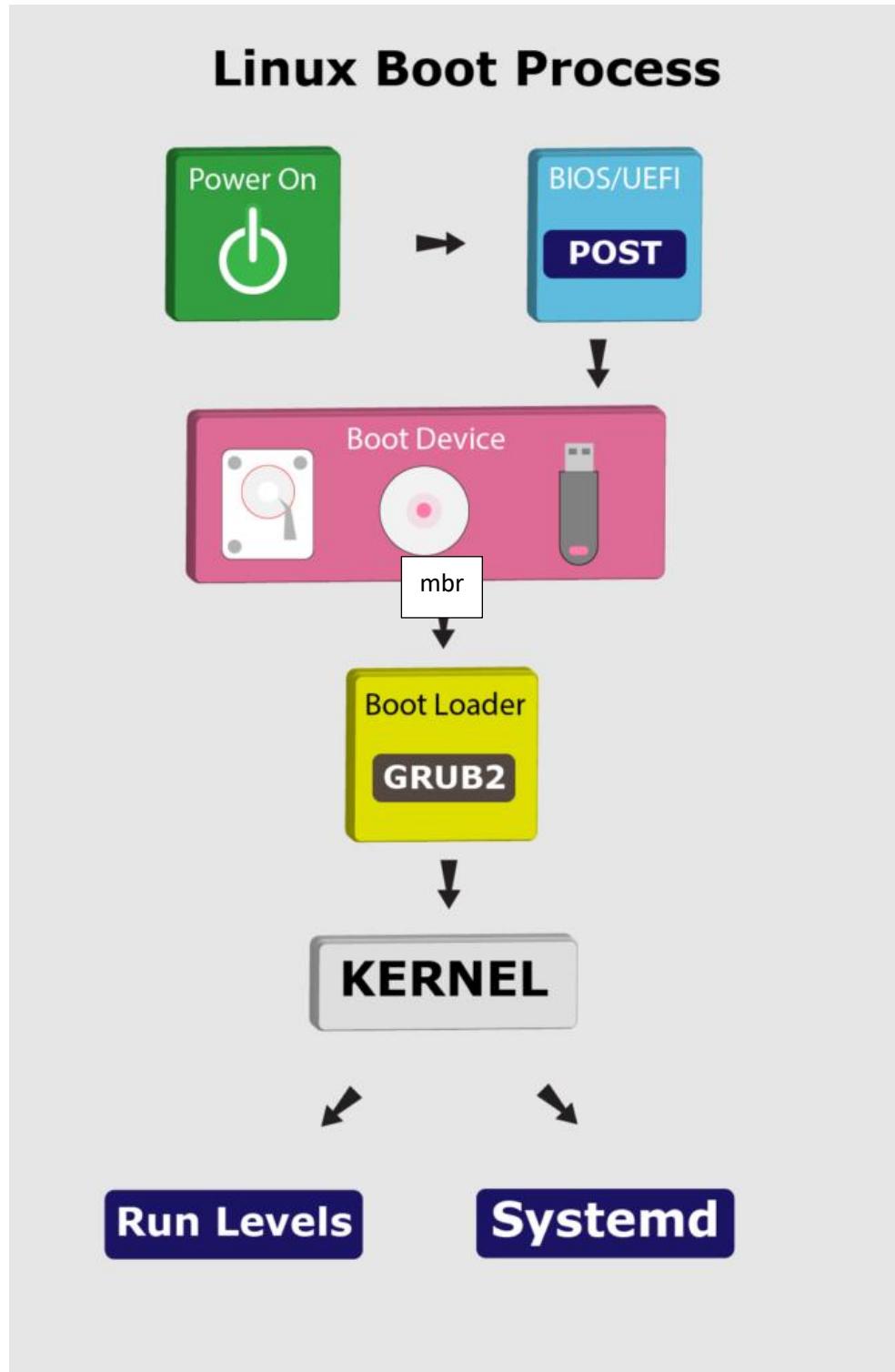
دي كل ال signal ال ممكن تستخدمها مع امر kill وعشان تعرف كل واحد وظيفتها اي ممكن تكتب
[man 7 signal](#)

```
[root@mostafa ~]# pidof sshd
1090
[root@mostafa ~]#
```

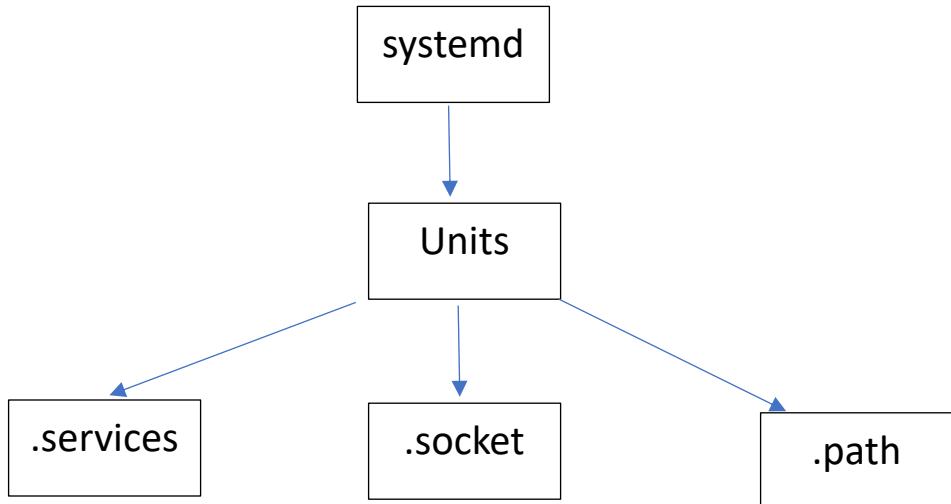
لو عاوز اعرف ال id بتاع ال process

```
[root@mostafa ~]# lscpu
Architecture:           x86_64
CPU op-mode(s):         32-bit, 64-bit
Address sizes:          45 bits physical, 48 bits virtual
Byte Order:              Little Endian
CPU(s):                 2
On-line CPU(s) list:   0,1
Vendor ID:              GenuineIntel
BIOS Vendor ID:         GenuineIntel
Model name:             Intel(R) Core(TM) i7-8650U CPU @ 1.90GHz
BIOS Model name:        Intel(R) Core(TM) i7-8650U CPU @ 1.90GHz
CPU family:              6
Model:                  142
Thread(s) per core:     1
Core(s) per socket:      1
Socket(s):              2
Stepping:                10
BogoMIPS:                4224.00
```

لو عاوز اعرف معلومات عن ال CPU



عملية ال boot في linux



Services status

Disable	enable	inactive	active
يعني ان الجهاز لو عمل restart ال service دی مش هشتغل automatic	يعني ان الجهاز لو عمل restart ال service دی هشتغل automatic	يعني ان ال service دي stop حاليا	يعني ان ال service دي running حاليا

```
[root@mostafa ~]# systemctl list-units
 _UNIT
proc-sys-fs-binfmt_misc.automount
sys-devices-pci0000:00-0000:00:11.0-0000:02:01.0-sound-card0-controlC0.device
sys-devices-pci0000:00-0000:00:11.0-0000:02:03.0-ata4-host3-target3:0:0-3:0:0-block-sr0.device
sys-devices-pci0000:00-0000:00:15.0-0000:03:00.0-net-ens160.device
sys-devices-pci0000:00-0000:00:16.0-0000:0b:00.0-nvme-nvme0-nvme0n1-nvme0n1p1.device
sys-devices-pci0000:00-0000:00:16.0-0000:0b:00.0-nvme-nvme0-nvme0n1-nvme0n1p2.device
sys-devices-pci0000:00-0000:00:16.0-0000:0b:00.0-nvme-nvme0-nvme0n1.device
sys-devices-platform-serial8250-tty-ttys1.device
sys-devices-platform-serial8250-tty-ttys2.device
sys-devices-platform-serial8250-tty-ttys3.device
sys-devices-pnp0-00:05-tty-ttys0.device
sys-devices-virtual-block-dm\x2d0.device
sys-devices-virtual-block-dm\x2d1.device
sys-devices-virtual-block-dm\x2d2.device
sys-devices-virtual-misc-rfkill.device
sys-module-configfs.device
sys-module-fuse.device
sys-subsystem-net-devices-ens160.device
LOAD ACTIVE SUB DESCRIPTI
loaded active plugged /sys/devi>
loaded active plugged VMware_V<
loaded active plugged VMXNET3_E>
loaded active plugged VMware_V>
loaded active plugged VMware_V>
loaded active plugged VMware_V>
loaded active plugged VMware_V>
loaded active plugged /sys/devi>
loaded active waiting Arbitrary
```

عمل list بکل ال units ال عندي من نوع active

```
[root@mostafa ~]# systemctl list-units -all
|INTT
```

عمل list بکل ال units ال active وال inactive

```
[root@mostafa ~]# systemctl list-units --type=service
 _UNIT LOAD ACTIVE SUB DESCRIPTION
accounts-daemon.service loaded active running Accounts Service
alsa-state.service loaded active running Manage Sound Card State (restore and store)
atd.service loaded active running Deferred execution scheduler
audited.service loaded active running Security Auditing Service
avahi-daemon.service loaded active running Avahi mDNS/DNS-SD Stack
chronyd.service loaded active running NTP client/server
colord.service loaded active running Manage, Install and Generate Color Profiles
crond.service loaded active running Command Scheduler
cups.service loaded active running CUPS Scheduler
dbus-broker.service loaded active running D-Bus System Message Bus
dracut-shutdown.service loaded active exited Restore /run/initramfs on shutdown
firewalld.service loaded active running firewalld - dynamic firewall daemon
gdm.service loaded active running GNOME Display Manager
irqbalance.service loaded active running irqbalance daemon
kmod-static-nodes.service loaded active exited Create List of Static Device Nodes
libstoragemgmt.service loaded active running libstoragemgmt plug-in server daemon
```

عمل list بكل ال units من نوع services

```
[root@mostafa ~]# systemctl list-unit-files
UNIT FILE STATE PRESET
proc-sys-fs-binfmt_misc.automount static -
-.mount generated -
boot.mount generated -
dev-hugepages.mount static -
dev-mqueue.mount static -
home.mount generated -
proc-sys-fs-binfmt_misc.mount disabled disabled
run-vmblock\x2dfuse.mount enabled disabled
sys-fs-fuse-connections.mount static -
sys-kernel-config.mount static -
sys-kernel-debug.mount static -
sys-kernel-tracing.mount static -
tmp.mount disabled disabled
cups.path enabled enabled
insights-client-results.path disabled disabled
ostree-finalize-staged.path disabled disabled
```

هي عمل list بكل ال units ال علىها access static – disable وال enable ملыш kernel

```
[root@mostafa ~]# systemctl list-dependencies sshd
sshd.service
● └─system.slice
● └─sshda-keygen.target
○ └─sshd-keygen@ecdsa.service
○ └─sshd-keygen@ed25519.service
○ └─sshd-keygen@rsa.service
● └─sysinit.target
● └─dev-hugepages.mount
● └─dev-mqueue.mount
```

عرض كل ال dependencies ال تبع services ال هي

```
[root@mostafa ~]# systemctl status sshd
● sshd.service - OpenSSH server daemon
  Loaded: loaded (/usr/lib/systemd/system/sshd.service; enabled; preset: enabled)
  Active: active (running) since Sun 2024-01-07 10:30:32 EET; 3h 8min ago
    Docs: man:sshd(8)
          man:sshd_config(5)
   Main PID: 1090 (sshd)
      Tasks: 1 (limit: 35137)
     Memory: 2.7M
        CPU: 61ms
      CGroup: /system.slice/sshd.service
              └─1090 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"

Jan 07 10:30:32 mostafa systemd[1]: Starting OpenSSH server daemon...
Jan 07 10:30:32 mostafa sshd[1090]: main: sshd: ssh-rsa algorithm is disabled
Jan 07 10:30:32 mostafa sshd[1090]: Server listening on 0.0.0.0 port 22.
Jan 07 10:30:32 mostafa sshd[1090]: Server listening on :: port 22.
Jan 07 10:30:32 mostafa svstemd[1]: Started OpenSSH server daemon.
```

عرض ال service بتات

```
[root@mostafa ~]# systemctl stop sshd
[root@mostafa ~]# systemctl status sshd
● sshd.service - OpenSSH server daemon
  Loaded: loaded (/usr/lib/systemd/system/sshd.service; enabled; preset: enabled)
  Active: inactive (dead) since Sun 2024-01-07 13:46:38 EET; 3s ago
    Duration: 3h 16min 6.155s
      Docs: man:sshd(8)
            man:sshd_config(5)
   Process: 1090 ExecStart=/usr/sbin/sshd -D $OPTIONS (code=exited, status=0/SUCCESS)
  Main PID: 1090 (code=exited, status=0/SUCCESS)
     CPU: 62ms
```

عمل لـ stop يعني تكون inactive

```
[root@mostafa ~]# systemctl start sshd
[root@mostafa ~]# systemctl status sshd
● sshd.service - OpenSSH server daemon
  Loaded: loaded (/usr/lib/systemd/system/sshd.service; enabled; preset: enabled)
  Active: active (running) since Sun 2024-01-07 13:48:57 EET; 8s ago
    Docs: man:sshd(8)
          man:sshd_config(5)
   Main PID: 3328 (sshd)
      Tasks: 1 (limit: 35137)
     Memory: 1.4M
        CPU: 13ms
      CGroup: /system.slice/sshd.service
              └─3328 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"
```

عمل لـ start يعني تكون active

```
[root@mostafa ~]# systemctl restart sshd  
[root@mostafa ~]#
```

عمل start stop يعني لـ rsetart service

```
[root@mostafa ~]# systemctl enable sshd  
Created symlink /etc/systemd/system/multi-user.target.wants/sshd.service → /usr/lib/systemd/sy  
stem/sshd.service.  
[root@mostafa ~]# systemctl status sshd  
● sshd.service - OpenSSH server daemon  
    Loaded: loaded (/usr/lib/systemd/system/sshd.service; enabled; preset: enabled)  
    Active: active (running) since Sun 2024-01-07 13:48:57 EET; 3min 32s ago  
      Docs: man:sshd(8)  
            man:sshd_config(5)  
     Main PID: 3328 (sshd)  
        Tasks: 1 (limit: 35137)  
       Memory: 1.4M  
         CPU: 13ms  
      CGroup: /system.slice/sshd.service  
              └─3328 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"
```

ال service تكون enable يعني لما اشغل الجهاز تاني تشتعل لوحدها

```
[root@mostafa ~]# systemctl disable sshd  
Removed "/etc/systemd/system/multi-user.target.wants/sshd.service".  
[root@mostafa ~]# systemctl status sshd  
● sshd.service - OpenSSH server daemon  
    Loaded: loaded (/usr/lib/systemd/system/sshd.service; disabled; preset: enabled)  
    Active: active (running) since Sun 2024-01-07 13:48:57 EET; 1min 42s ago  
      Docs: man:sshd(8)  
            man:sshd_config(5)  
     Main PID: 3328 (sshd)  
        Tasks: 1 (limit: 35137)  
       Memory: 1.4M  
         CPU: 13ms  
      CGroup: /system.slice/sshd.service  
              └─3328 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"
```

ال service تكون disable يعني لما الجهاز يشتغل تاني مش هتشتعل

```
[root@mostafa ~]# systemctl reload sshd  
[root@mostafa ~]#
```

عمل reload لـ service زي ال config file مثلًا لو عدلت حاجه في ال service بتاع ال reload فممكن اعمل ال reload

```
[root@mostafa ~]# ls /etc/systemd/system/multi-user.target.wants/
atd.service          irqbalance.service      rsyslog.service
auditd.service       kdump.service          'run-vmblock\x2dfuse.mount'
avahi-daemon.service libstoragemgmt.service smartd.service
chronyd.service     mcelog.service         sshd.service
crond.service        mdmonitor.service      sssd.service
cups.path            ModemManager.service   tuned.service
cups.service         NetworkManager.service vmtoolsd.service
firewalld.service   remote-fs.target
insights-client-boot.service rhsmcertd.service
```

[root@mostafa ~]# █

المسار دا بيكون تحته كل ال services ال معمولها enable يعني ال هتشغل لو الجهاز اتعمله

```
[root@mostafa ~]# systemctl is-active sshd
active
[root@mostafa ~]#
```

لو عاوز اعرض الحاله بتاع ال service فقط هل active او inactive

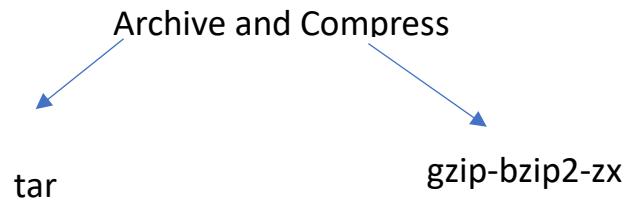


ومثلا مش عاوز sv1 تاني بس مينفعش امسحها ممكن تاثر على sv2 فبدل م تعمل remove ممكن هنا تستخدم ال mask

2-لو عندي مثلا 2services بيعملوا نفس الوظيفة ممكن اعمل لوحده فيهم mask زي مثلا ال iptables وال firewall نفس الوظيفة

```
[root@mostafa ~]# systemctl mask cups
Created symlink /etc/systemd/system/cups.service → /dev/null.
[root@mostafa ~]# systemctl status cups
Warning: The unit file, source configuration file or drop-ins of cups.service changed on c
● cups.service
  Loaded: masked (Reason: Unit cups.service is masked.)
  Drop-In: /usr/lib/systemd/system/cups.service.d
            └─server.conf
    Active: active (running) since Sun 2024-01-07 10:30:32 EET; 3h 47min ago
  TriggeredBy: × cups.path
                • cups.socket
    Main PID: 1088 (cupsd)
    Status: "Scheduler is running..."
           Tasks: 1 (limit: 35137)
    Memory: 3.9M
       CPU: 85ms

[root@mostafa ~]# systemctl unmask cups
Removed "/etc/systemd/system/cups.service".
[root@mostafa ~]# systemctl status cups
● cups.service - CUPS Scheduler
  Loaded: loaded (/usr/lib/systemd/system/cups.service; enabled; preset: enabled)
  Drop-In: /usr/lib/systemd/system/cups.service.d
            └─server.conf
    Active: active (running) since Sun 2024-01-07 10:30:32 EET; 3h 48min ago
  TriggeredBy: × cups.path
                • cups.socket
    Docs: man:cupsd(8)
    Main PID: 1088 (cupsd)
    Status: "Scheduler is running..."
           Tasks: 1 (limit: 35137)
    Memory: 3.9M
       CPU: 85ms
```



tar

```
[root@mostafa ~]# tar -cf test.tar /tmp
tar: Removing leading `/' from member names
tar: /tmp/.X11-unix/X1024: socket ignored
tar: /tmp/.X11-unix/X1025: socket ignored
tar: /tmp/.X11-unix/X0: socket ignored
tar: /tmp/.X11-unix/X1: socket ignored
tar: /tmp/.ICE-unix/1415: socket ignored
tar: /tmp/.ICE-unix/1924: socket ignored
tar: /tmp/dbus-QrvVA95AXo: socket ignored
tar: Removing leading `/' from hard link targets
```

create file= Cf

destination = test.tar

source = /tmp

كدا هيئنا file اسمه test.tar وهيكون فيه محتويات ال /tmp

```
[root@mostafa ~]# tar -tf test.tar
tmp/
tmp/.X11-unix/
tmp/.ICE-unix/
tmp/.XIM-unix/
tmp/.font-unix/
tmp/VMwareDnD/
tmp/VMwareDnD/rdaln8
tmp/systemd-private-29a7b536b0684d20a84b104884e3a3d7-upower.service-fDzsF2/
tmp/systemd-private-29a7b536b0684d20a84b104884e3a3d7-upower.service-fDzsF2/tmp/
tmp/vmware-root_900-2722108090/
tmp/f1
tmp/f2
tmp/f3
```

عمل Extract بمحفوظات ال file من غير م اعمل list

```
[root@mostafa ~]# tar -xf test.tar -C /tmp/
```

هعمل Extract لـ file ال اسمه test.tar تحت /tmp/

```
[root@mostafa ~]# gzip test.tar
[root@mostafa ~]# ls -lh test.tar.gz
-rw-r--r--. 1 root root 1.1K Jan  9 10:07 test.tar.gz
[root@mostafa ~]#
```

عمل zip لـ file ال اسمه test.tar.gz وهيكون اسمه test.tar بعد الضغط

```
[root@mostafa ~]# gunzip test.tar.gz
[root@mostafa ~]# ls -lh test.tar
-rw-r--r--. 1 root root 30K Jan  9 10:07 test.tar
[root@mostafa ~]#
```

عمل Extract لـ file ال اسمه test.tar.gz ويرجع اسمه test.tar

```
[root@mostafa ~]# bzip2 test1.tar
[root@mostafa ~]# ls -lh test1.tar.bz2
-rw-r--r--. 1 root root 1.4K Jan  9 10:34 test1.tar.bz2
[root@mostafa ~]#
```

عمل zip لـ file ال اسمه test1.tar عن طريق ال bzip2

```
[root@mostafa ~]# bunzip2 test1.tar.bz2
[root@mostafa ~]# ls -lh test1
test1      test1.tar
[root@mostafa ~]# ls -lh test1.tar
-rw-r--r--. 1 root root 50K Jan  9 10:34 test1.tar
[root@mostafa ~]#
```

عمل Extract لـ file عن طريق ال bunzip2

```
[root@mostafa ~]# xz test2.tar
[root@mostafa ~]# ls -lh test2.tar.xz
-rw-r--r--. 1 root root 1.2K Jan  9 10:36 test2.tar.xz
[root@mostafa ~]#
```

عمل zip لـ file ال اسمه test2.tar عن طريق ال xz

```
[root@mostafa ~]# unxz test2.tar.xz
[root@mostafa ~]# ls -lh test2.tar
-rw-r--r--. 1 root root 50K Jan  9 10:36 test2.tar
[root@mostafa ~]#
```

عمل Extract لـ file عن طريق ال unxz

```
[root@mostafa ~]# tar -czf arc.tar.gz /tmp/
```

create zip file = czf

هنا بعمل archive و compress file مع بعض ل اسمه arc.tar.gz وهيكون محتواه ال /tmp/

create bzip2 file = cjh

create xz file = cJf

test.tar.gz = test.tgz

test.tar.bz2 = test.tbz2

test.tar.xz = test.txz

```
[root@mostafa ~]# tar -tzf arc.tar.gz
```

عمل Extract لـ file دا

Remote backup

scp

scp test.tar.bz2 mostafa@192.168.1.5:/tmp/

بقوله انقل ال file ال اسمه test.tar.bz2 الى السيرفر ال ip بتاع 192.168.1.5 تحت tmp / وهعمل login بالليوزر ا اسمه mostafa هنا بياخد full backup عطول

sftp

بقوله اعملي login ع السيرفر دا بالليوزر ال اسمه mostafa بعد م upload ال login اقدر استخدم امر git لـ download وامر put لـ upload

rsync

rsync source destination

rsync -av test.tar.gz mostafa@192.168.1.5:/home/lab

بقوله انقل ال file ال اسمه test.tar.gz الى السيرفر 192.168.1.5 تحت /home/lab / وهعمل login بالليوزر ال اسمه mostafa هنا بياخد اول مره full وبعد كدا incremental

logs

```
[root@mostafa ~]# dmesg
[    0.000000] Linux version 5.14.0-284.11.1.el9_2.x86_64 (mockbuild@x86-vm-09.build.eng.bos.redhat.com) (gcc (GCC) 11.3.1 20221121 (Red Hat 11.3.1-4), GNU ld version 2.35.2-37.el9) #1 SMP PREEMPT_DYNAMIC Wed Apr 12 10:45:03 EDT 2023
[    0.000000] The list of certified hardware and cloud instances for Red Hat Enterprise Linux 9 can be viewed at the Red Hat Ecosystem Catalog, https://catalog.redhat.com.
[    0.000000] Command line: BOOT_IMAGE=(hd0,msdos1)/vmlinuz-5.14.0-284.11.1.el9_2.x86_64 root=/dev/mapper/rhel-root ro resume=/dev/mapper/rhel-swap rd.lvm.lv=rhel/root rd.lvm.lv=rhel/swap rhgb quiet
[    0.000000] Disabled fast string operations
[    0.000000] x86/fpu: Supporting XSAVE feature 0x001: 'x87 floating point registers'
[    0.000000] x86/fpu: Supporting XSAVE feature 0x002: 'SSE registers'
[    0.000000] x86/fpu: Supporting XSAVE feature 0x004: 'AVX registers'
[    0.000000] x86/fpu: xstate_offset[2]: 576, xstate_sizes[2]: 256
[    0.000000] x86/fpu: Enabled xstate features 0x7, context size is 832 bytes, using 'compacted' format.
[    0.000000] signal: max sigframe size: 1776
```

هتملي list dmesg بكل ال log ال عندي

```
[root@mostafa ~]# cd /var/
[root@mostafa var]# ls
account cache db ftp kerberos local log nis preserve spool www
adm crash empty games lib lock mail opt run   [mp]  yp
[root@mostafa var]# cd /var/lo
local/ lock/ log/
[root@mostafa var]# cd /var/log
[root@mostafa log]# ls
anaconda cron lastlog speech-dispatcher vmware-network.7.log
audit cron-20240107 maillog spooler vmware-network.8.log
boot.log cups maillog-20240107 spooler-20240107 vmware-network.9.log
boot.log-20240104 dnf.librepo.log messages sssd vmware-network.log
boot.log-20240106 dnf.log messages-20240107 tallylog vmware-vgauthsvc.log.0
boot.log-20240107 dnf.rpm.log private tuned vmware-vmsvc-root.log
boot.log-20240108 firewalld qemu-ga vmware-network.1.log vmware-vmtoolsd-root.log
boot.log-20240109 gdm README vmware-network.2.log vmware-vmusr-root.log
boot.log-20240111 hawkey.log rhsm vmware-network.3.log wtmp
boot.log-20240112 hawkey.log-20240110 samba vmware-network.4.log
btmp httpd secure vmware-network.5.log
chrony insights-client secure-20240107 vmware-network.6.log
[root@mostafa log]#
```

دي مسارات ال log

```
[root@mostafa ~]# journalctl
Jan 11 11:10:48 localhost kernel: Linux version 5.14.0-284.11.1.el9_2.x86_64 (mockbuild@x86-vm-09.build.eng.bo
Jan 11 11:10:48 localhost kernel: The list of certified hardware and cloud instances for Red Hat Enterprise Li
Jan 11 11:10:48 localhost kernel: Command line: BOOT_IMAGE=(hd0,msdos1)/vmlinuz-5.14.0-284.11.1.el9_2.x86_64 r
Jan 11 11:10:48 localhost kernel: Disabled fast string operations
Jan 11 11:10:48 localhost kernel: x86/fpu: Supporting XSAVE feature 0x001: 'x87 floating point registers'
Jan 11 11:10:48 localhost kernel: x86/fpu: Supporting XSAVE feature 0x002: 'SSE registers'
Jan 11 11:10:48 localhost kernel: x86/fpu: Supporting XSAVE feature 0x004: 'AVX registers'
Jan 11 11:10:48 localhost kernel: x86/fpu: xstate_offset[2]: 576 xstate_sizes[2]: 256
```

Journalctl ب Russo بتعرضي ال logs

بس دي بتكون موته بتشغل system reboot لما يحصل remove ليها
لو عاوز تحفظها و ميحصلهاش remove بتعدل ملف ال cong بتاعها وتخلي الكود كدا

```
[Journal]
#Storage=auto
```

Storage = persistent

كدا ال ال log هيتحفظ

```
[root@mostafa ~]# ls -l /etc/systemd/journald.conf
-rw-r--r--. 1 root root 1278 Aug 22 15:49 /etc/systemd/journald.conf
[root@mostafa ~]#
```

دا ال ntp ودا المسار بتاعها chroyd

```
[root@mostafa ~]# ls -l /etc/chrony.conf
-rw-r--r--. 1 root root 1369 Aug 29 2022 /etc/chrony.conf
[root@mostafa ~]#
```

```
[root@mostafa ~]# chronyc sources -v

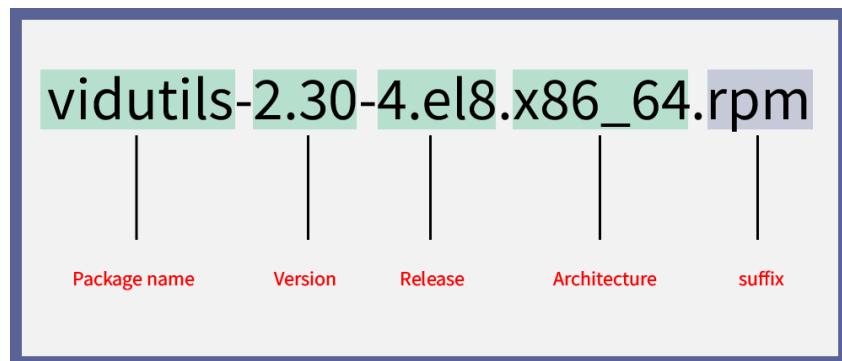
.-- Source mode '^' = server, '=' = peer, '#' = local clock.
/ .- Source state '*' = current best, '+' = combined, '-' = not combined,
| /           'x' = may be in error, '~' = too variable, '?' = unusable.
||           |          .- xxxx [ yyyy ] +/- zzzz
||           |          |          xxxx = adjusted offset,
||           |          |          yyyy = measured offset,
||           |          |          zzzz = estimated error.
||           |          |
||           |          |
||           |          |
MS Name/IP address      Stratum Poll Reach LastRx Last sample
=====
^+ za-ctn-rs01b.dpogroup.com    2 10    77   188  +9269us[+9269us] +/- 254ms
^+ 102.133.180.25             2 10   337   605  +85ms[ +85ms] +/- 220ms
^* ntp3.inx.net.za            2 10   277   309  +1824us[+1698us] +/- 122ms
^+ ntp7.inx.net.za            2 10   137   962  +511us[ +340us] +/- 152ms
```

عشان اشوف ال ntp ال عندي

Install and update packages

```
[root@mostafa ~]# subscription-manager register
```

عشن اعمل redhat system بتعاي مع registered لل



لو ال architecture noarch مكتوبه بيدعم الاتنين ال 32 و 64

```
[root@mostafa Packages]# rpm -pi -p tuned-2.20.0-1.el9.noarch.rpm  
package tuned-2.20.0-1.el9.noarch is already installed
```

بشو夫 معلومات عن ال packg دي

```
[root@mostafa Packages]# rpm -pl -p zstd-1.5.1-2.el9.x86_64.rpm  
RPM version 4.16.1.3  
Copyright (C) 1998-2002 - Red Hat, Inc.  
This program may be freely redistributed under the terms of the GNU GPL  
  
Usage: rpm [-afgplsiv?] [-a|--all] [-f|--file] [--path] [-g|--group]  
        [-p|--package] [--pkgid] [--hdrid] [--triggeredby]  
        [--whatconflicts] [--whatrequires] [--whatobsoletes]  
        [--whatprovides] [--whatrecommends] [--whatsuggests]  
        [--whatsupplements] [--whatenhances] [--nomanifest]
```

بعمل list لمحتويات ال package دي

```
[root@mostafa Packages]# rpm -ivh tuned-2.20.0-1.el9.noarch.rpm  
Verifying... ##### [100%]  
Preparing... ##### [100%]  
    package tuned-2.20.0-1.el9.noarch is already installed  
[root@mostafa Packages]#
```

كدا بعمل install لـ package لـ evh هكتب uninstall لـ ivh عاوز اعمل

ivh = install verbose hashing

evh = uninstall

uvh = upgrade

لكل ال packages ل معمولها install list rpm -qa

```
[root@mostafa Packages]# rpm -qa
libgcc-11.3.1-4.3.el9.x86_64
fonts-filesystem-2.0.5-7.el9.1.noarch
linux-firmware-whence-20230310-133.el9_2.noarch
crypto-policies-20221215-1.git9a18988.el9.noarch
hwdata-0.348-9.7.el9.noarch
xkeyboard-config-2.33-2.el9.noarch
tzdata-2022g-2.el9.noarch
```

ف طريقة غير ال rpm اسمها yum وحاليا اسمها dnf
ودي افضل لان بتعمل dependency update and upgrade ولو ال package معتمده
طيب لما اجي اعمل yum هو هيجب ال package دى منين ؟ هنا بقا فيه file اسمه repo مهمته انه
ب يكون فيه ال servers ال ممكن يبحث فيها عن ال package دى والامتداد بيكون .repo .
ب يكون موجود في المسار دا /etc/yum.repos.d

```
[root@mostafa Packages]# ls /etc/yum.repos.d/
redhat.repo
[root@mostafa Packages]# █
```

```
[root@mostafa Packages]# ls /etc/pki
ca-trust entitlement fwupd-metadata nssdb product-default rsyslog tls
consumer fwupd java product rpm-gpg swid
[root@mostafa Packages]# █
```

المسار دا بيكون تحته dir مهمه زي ال gpg بتاع ال repo وال certification

```
[user@host ~]$ dnf search all 'web server'
=====
Summary & Description Matched: web server =====
nginx.x86_64 : A high performance web server and reverse proxy server
pcp-pmda-weblog.x86_64 : Performance Co-Pilot (PCP) metrics from web server logs
=====
Summary Matched: web server =====
libcurl.x86_64 : A library for getting files from web servers
libcurl.i686 : A library for getting files from web servers
```

يبحث عن ال package ال اسمها web server في ال file repo

```
[user@host ~]$ dnf info httpd
Available Packages
Name        : httpd
Version     : 2.4.51
Release     : 5.el9
Architecture: x86_64
Size        : 1.5 M
Source      : httpd-2.4.51-5.el9.src.rpm
Repository  : rhel-9.0-for-x86_64-appstream-rpms
```

بجيip packg عن ال information دي

```
[root@mostafa ~]# dnf install httpd
Updating Subscription Management repositories.
Last metadata expiration check: 0:07:59 ago on Thu 11 Jan 2024 10:08:13 AM EET.
Package httpd-2.4.57-5.el9.x86_64 is already installed
Dependencies resolved.
Nothing to do.
Complete!
[root@mostafa ~]# █
```

عمل packg لـ install دي

```
[root@mostafa ~]# dnf list kernel
Updating Subscription Management repositories.
Last metadata expiration check: 0:09:27 ago on Thu 11 Jan 2024 10:08:13 AM EET.
Installed Packages
kernel.x86_64          5.14.0-284.11.1.el9_2           @anaconda
Available Packages
kernel.x86_64          5.14.0-362.13.1.el9_3           rhel-9-for-x86_64-baseos-rpms
[root@mostafa ~]#
```

عمل list لـ kernel ال عندي

```
[root@mostafa ~]# cd /etc/yum.repos.d/
[root@mostafa yum.repos.d]# ls
redhat.repo
[root@mostafa yum.repos.d]# vim local.repo
[root@mostafa yum.repos.d]# yum repolist
Updating Subscription Management repositories.
repo id          repo name
AppStream          App
Baseurl          bace
rhel-9-for-x86_64-appstream-rpms Red Hat Enterprise Linux 9 for x86_64 - AppStream
(RPMs)
rhel-9-for-x86_64-baseos-rpms     Red Hat Enterprise Linux 9 for x86_64 - BaseOS (RP
Ms)
[root@mostafa yum.repos.d]#
```

كدا بنشا repo file اسمه local.repo

```
[root@mostafa yum.repos.d]# subscription-manager repos --disable AppStream
```

كدا بعمل disable لـ repo file او remove له او ادخل لـ enabled=0

Accessing file system

```
[root@mostafa ~]# df -h
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        4.0M   0    4.0M  0% /dev
tmpfs          2.8G   0    2.8G  0% /dev/shm
tmpfs          1.1G  9.7M  1.1G  1% /run
/dev/mapper/rhel-root  63G  5.5G  58G  9% /
/dev/nvme0n1p1  1014M 260M  755M  26% /boot
/dev/mapper/rhel-home  31G 257M  31G  1% /home
tmpfs          556M  92K  556M  1% /run/user/0
/dev/sr0         9.0G  9.0G   0 100% /run/media/root/RHEL-9-2-0-BaseOS-x86_
64
[root@mostafa ~]# █
```

file system محتويات ال df = disk file

```
[root@mostafa ~]# fdisk -l
Disk /dev/nvme0n1: 100 GiB, 107374182400 bytes, 209715200 sectors
Disk model: VMware Virtual NVMe Disk
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0x218bb5c9

Device      Boot  Start    End  Sectors  Size Id Type
/dev/nvme0n1p1 *     2048 2099199 2097152   1G 83 Linux
/dev/nvme0n1p2        2099200 209715199 207616000 99G 8e Linux LVM
```

list ال disks بيعرضلي

Block Device Naming

Type of device	Device naming pattern
SATA/SAS/USB-attached storage (SCSI driver)	/dev/sda, /dev/sdb, /dev/sdc, ...
virtio-blk paravirtualized storage (VMs)	/dev/vda, /dev/vdb, /dev/vdc, ...
virtio-scsi paravirtualized storage (VMs)	/dev/sda, /dev/sdb, /dev/sdc, ...
NVMe-attached storage (SSDs)	/dev/nvme0, /dev/nvme1, ...
SD/MMC/eMMC storage (SD cards)	/dev/mmcblk0, /dev/mmcblk1, ...

disks في اللينكس كل نوع أسماء ال

```
[root@mostafa ~]# lsblk
NAME      MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
sr0        11:0    1  8.9G  0 rom   /run/media/root/RHEL-9-2-0-BaseOS-x86_64
nvme0n1   259:0    0 100G  0 disk
└─nvme0n1p1 259:1    0   1G  0 part /boot
└─nvme0n1p2 259:2    0   99G  0 part
  ├─rhel-root 253:0    0 62.8G  0 lvm   /
  ├─rhel-swap 253:1    0  5.6G  0 lvm   [SWAP]
  └─rhel-home 253:2    0 30.7G  0 lvm   /home
[root@mostafa ~]#
```

يعرض لي ال partitions وال disks بقائمة

```
[root@mostafa ~]# blkid
/dev/mapper/rhel-swap: UUID="6a9dce37-4dc5-4870-8cab-af2b8726e740" TYPE="swap"
/dev/nvme0n1p1: UUID="eeba46b7-75ec-42be-9d68-8839c8004821" TYPE="xfs" PARTUUID="21
8bb5c9-01"
/dev/nvme0n1p2: UUID="KB46kk-yFao-Pt60-e0Eo-mzva-BKIS-TmUP33" TYPE="LVM2_member" PA
RTUUID="218bb5c9-02"
/dev/sr0: UUID="2023-04-13-16-58-02-00" LABEL="RHEL-9-2-0-BaseOS-x86_64" TYPE="iso9
660" PTUUID="d3d1f9a5" PTTYPE="dos"
/dev/mapper/rhel-home: UUID="f3145199-cd11-4a13-ba9f-e8a23c13ebca" TYPE="xfs"
/dev/mapper/rhel-root: UUID="f50e044d-0dd8-4d09-98fb-8abde81aa980" TYPE="xfs"
```

يعرض لي UUID

```
[root@mostafa ~]# vgs
  VG #PV #LV #SN Attr   VSize   VFree
  rhel   1   3   0 wz--n- <99.00g     0
[root@mostafa ~]# █
```

يعرض لي logical volume

```
[root@mostafa ~]# du -hs /var/
1.3G   /var/
[root@mostafa ~]# █
```

يعرض لي total size

Search

Loacte	Find
هيعمل search في ال DataBase System	هيعمل real time search في ال

```
[root@node1 ~]# find / -user sarah -type f -exec cp {} /root/find.user \;
```

بقوله اعمل search لكل ال files بتاع اليوزر ال اسمه sarah وخد منها نسخه تحت /root/find.user

```
[root@mostafa ~]# find / -user mostafa  
/home/mostafa  
/home/mostafa/.mozilla  
/home/mostafa/.mozilla/extensions
```

بقوله اعملي search ع كل الملفات بتاع اليوزر ال اسمه mostafa

Analyze Servers

system analyze tool web consol دی بتعملی لل (port9090 بتشغّل ع installation ودي خطوات ال بتاعتها)

```
[root@host ~]# dnf install cockpit
```

```
[root@host ~]# systemctl enable --now cockpit.socket
Created symlink /etc/systemd/system/sockets.target.wants/cockpit.socket -> /usr/
lib/systemd/system/cockpit.socket.
```

```
[root@host ~]# firewall-cmd --add-service=cockpit --permanent
success
[root@host ~]# firewall-cmd --reload
success
```

The image shows two screenshots of a web browser. The top screenshot is a Red Hat Enterprise Linux login page with fields for 'User name' and 'Password', and a 'Log in' button. The bottom screenshot is the Cockpit web interface, showing a dashboard with 'Health' and 'Usage' sections, and links for 'System information' and 'Configuration'. The browser address bar shows the URL as https://192.168.92.7:9090.

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