

# **RedHat System Administration**



**Shenouda Nabil Lamei**

**RedHat Final Exam**

**Supervised by.  
Eng / Romany Nageh**

# 1- Configure the network

## a) Assign Hostname and Ip address for your virtual machine.

Hostname **sh-nabil710**

IP Address **192.168.10.10**

Net-mask: **255.255.255.0**

Gateway: **192.168.10.2**

Name-server **192.168.10.2**

```
shnouda@localhost:~$  
shnouda@localhost:~$  
shnouda@localhost:~$ sudo hostnamectl hostname sh-nabil710  
shnouda@localhost:~$  
shnouda@localhost:~$ hostname  
sh-nabil710  
shnouda@localhost:~$ bash  
shnouda@sh-nabil710:~$  
shnouda@sh-nabil710:~$
```

```
root@sh-nabil710:~#  
root@sh-nabil710:~#  
root@sh-nabil710:~#  
root@sh-nabil710:~# nmcli connection add con-name eth2 ipv4.addresses 192.168.10.10/24 gw4 192.168.10.2 ipv4.dns 192.168.10.2  
ipv4.method manual type ethernet  
Connection 'eth2' (d6b95e13-f50c-468e-80f8-2a51f02b7810) successfully added.  
root@sh-nabil710:~#  
root@sh-nabil710:~# nmcli connection show  
NAME      UUID                                  TYPE      DEVICE  
ens33     3a7b68c6-55d2-31f6-84e9-2c69cb019492 ethernet  ens33  
lo        2fac7f85-ab8b-411a-9ebf-81f30db38010 loopback  lo  
eth2      d6b95e13-f50c-468e-80f8-2a51f02b7810 ethernet  --  
root@sh-nabil710:~# nmcli connection up eth2
```

```
root@sh-nabil710:~# nmcli connection up eth2  
Connection successfully activated (D-Bus active path: /org/freedesktop/NetworkManager/ActiveConnection/5)  
root@sh-nabil710:~#
```

```
shnouda@sh-nabil710:~$  
shnouda@sh-nabil710:~$  
shnouda@sh-nabil710:~$  
shnouda@sh-nabil710:~$ nmcli connection show  
NAME      UUID                                  TYPE      DEVICE  
eth2      d6b95e13-f50c-468e-80f8-2a51f02b7810 ethernet  ens33  
lo        2fac7f85-ab8b-411a-9ebf-81f30db38010 loopback  lo  
ens33     3a7b68c6-55d2-31f6-84e9-2c69cb019492 ethernet  --  
shnouda@sh-nabil710:~$ ip addr  
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000  
    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 noprefixroute  
        valid_lft forever preferred_lft forever  
2: ens33: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000  
    link/ether 00:0c:29:ae:21:f5 brd ff:ff:ff:ff:ff:ff  
    altname enp2s1  
    altname enx00c29ae21f5  
    inet 192.168.10.10/24 brd 192.168.10.255 scope global noprefixroute ens33  
        valid_lft forever preferred_lft forever  
    inet6 fe80::ac2c:d208:8962:3d3d/64 scope link noprefixroute  
        valid_lft forever preferred_lft forever  
shnouda@sh-nabil710:~$
```

## 2- Create a repository file → Create a repository file

```
root@sh-nabil710:~# nano /etc/yum.repos.d/google-chrome.repo
[google-chrome]
name=Google Chrome Repository
baseurl=http://dl.google.com/linux/chrome/rpm/stable/\$basearch
enabled=1
gpgcheck=1
```

```
root@sh-nabil710:~# yum install google-chrome-stable
Google Chrome Repository                                4.3 kB/s | 1.9 kB    00:00
Dependencies resolved.
=====
Package                Architecture      Version           Repository        Size
=====
Installing:
google-chrome-stable    x86_64            141.0.7390.65-1   google-chrome     118 M
Installing dependencies:
liberation-fonts        noarch            1:2.1.5-11.el10   appstream         4.5 k
liberation-sans-fonts   noarch            1:2.1.5-11.el10   appstream         606 k
liberation-serif-fonts  noarch            1:2.1.5-11.el10   appstream         605 k
xdg-utils               noarch            1.2.0-3.el10      appstream          81 k

Transaction Summary
=====
Install 5 Packages

Total download size: 119 M
Installed size: 382 M
Is this ok [y/N]:
```

## Configure the Selinux

The webserver is running on non-standard port 82 having a issue serve the web content. Debug and fix the issue:

- The webserver can serve all the existing HTML file located at /var/www/html directory  
(Don't alter or remove any files in this directory)
- The webserver can serve the content on port 82.
- Make the content accessible.

```
Select root@sh-nabil710:~
GNU nano 8.1 /etc/httpd/conf/httpd.conf Modified
# configuration, error, and log files are kept.
#
# Do not add a slash at the end of the directory path. If you point
# ServerRoot at a non-local disk, be sure to specify a local disk on the
# Mutex directive, if file-based mutexes are used. If you wish to share the
# same ServerRoot for multiple httpd daemons, you will need to change at
# least PidFile.
#
ServerRoot "/etc/httpd"
#
# Listen: Allows you to bind Apache to specific IP addresses and/or
# ports, instead of the default. See also the <VirtualHost>
# directive.
#
# Change this to Listen on a specific IP address, but note that if
# httpd.service is enabled to run at boot time, the address may not be
# available when the service starts. See the httpd.service(8) man
# page for more information.
#
#Listen 12.34.56.78:80
Listen 82
#
# Dynamic Shared Object (DSO) Support
#
```

```
Select root@sh-nabil710:~
root@sh-nabil710:~#
root@sh-nabil710:~#
root@sh-nabil710:~# nano /etc/httpd/conf/httpd.conf
root@sh-nabil710:~#
root@sh-nabil710:~# systemctl restart httpd
Job for httpd.service failed because the control process exited with error code.
See "systemctl status httpd.service" and "journalctl -xeu httpd.service" for details.
root@sh-nabil710:~#
```

```
Select root@sh-nabil710:~
root@sh-nabil710:~#
root@sh-nabil710:~#
root@sh-nabil710:~# #add port 82 to context of httpd server
root@sh-nabil710:~#
root@sh-nabil710:~# semanage port -l | grep "http"
http_cache_port_t      tcp      8080, 8118, 8123, 10001-10010
http_cache_port_t      udp      3130
http_port_t            tcp      80, 81, 443, 488, 8008, 8009, 8443, 9000
http_port_t            udp      80, 443
pegasus_http_port_t    tcp      5988
pegasus_https_port_t   tcp      5989
root@sh-nabil710:~#
```

```

root@sh-nabil710:~#
root@sh-nabil710:~# semanage port -a -t http_port_t -p tcp 82
root@sh-nabil710:~#
root@sh-nabil710:~# semanage port -l | grep "http"
http_cache_port_t          tcp      8080, 8118, 8123, 10001-10010
http_cache_port_t          udp      3130
http_port_t                 tcp      82, 80, 81, 443, 488, 8008, 8009, 8443, 9000
http_port_t                 udp      80, 443
pegasus_http_port_t        tcp      5988
pegasus_https_port_t       tcp      5989
root@sh-nabil710:~#

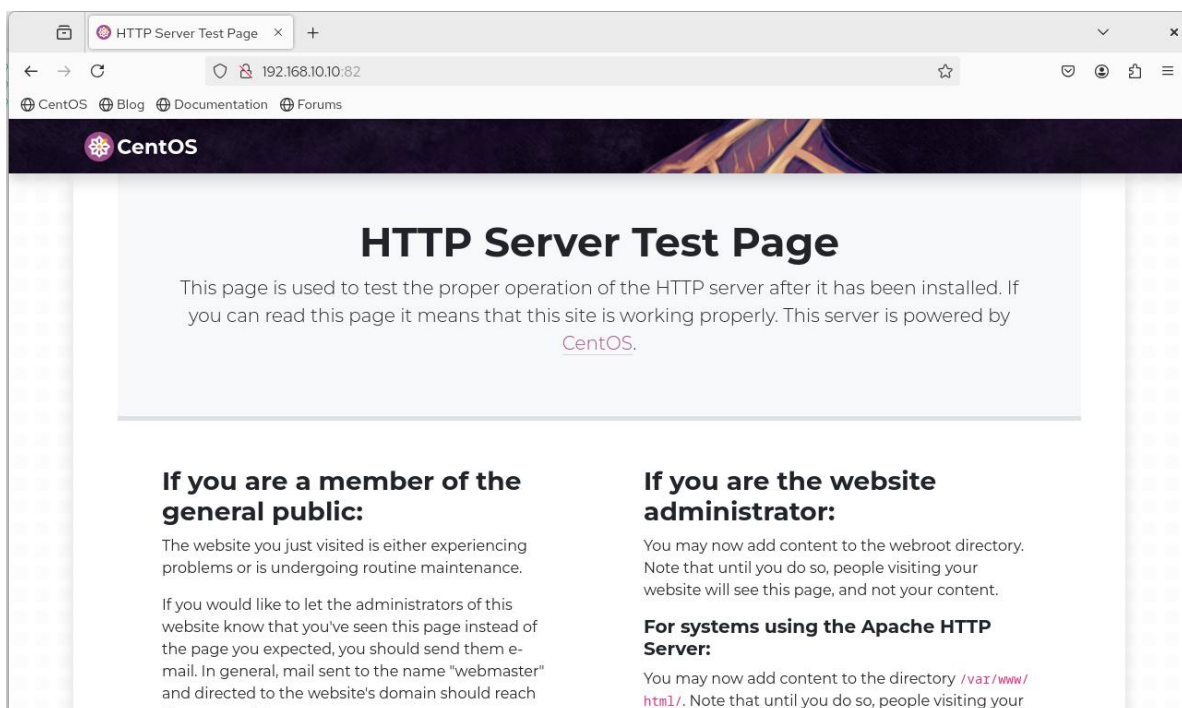
```

```

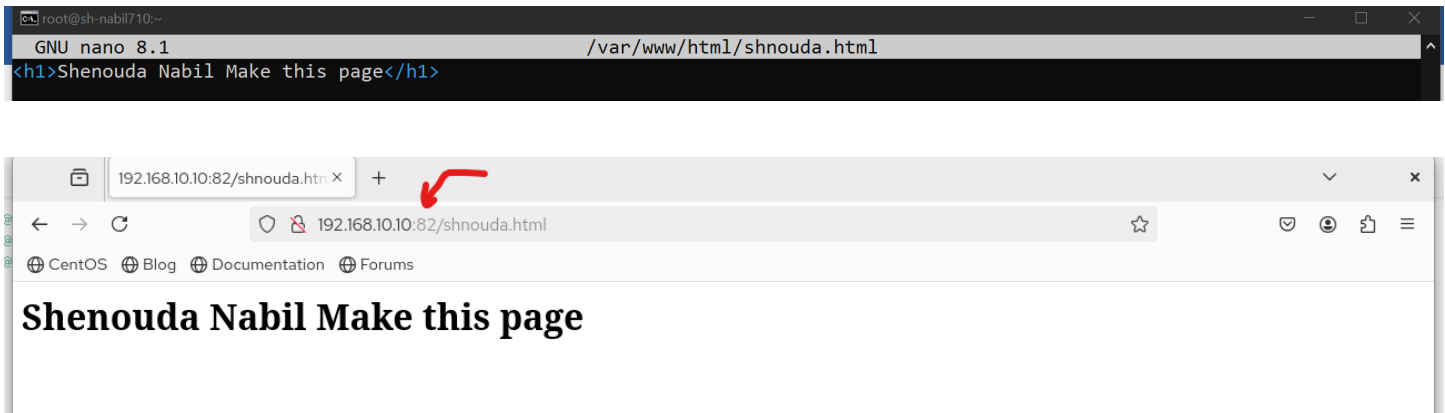
Select root@sh-nabil710:~
root@sh-nabil710:~#
root@sh-nabil710:~#
root@sh-nabil710:~# systemctl restart httpd
root@sh-nabil710:~#
root@sh-nabil710:~# systemctl status httpd
● httpd.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/httpd.service; disabled; preset: disabled)
   Active: active (running) since Thu 2025-10-09 12:17:04 EEST; 9s ago
 Invocation: 441a7e3e6ad84ec1be510c0a81379e1f
    Docs: man:httpd.service(8)
  Main PID: 4760 (httpd)
   Status: "Total requests: 0; Idle/Busy workers 100/0; Requests/sec: 0; Bytes served/sec: 0 B/sec"
    Tasks: 178 (limit: 10474)
   Memory: 19.5M (peak: 19.8M)
     CPU: 140ms
   CGroup: /system.slice/httpd.service
           └─4760 /usr/sbin/httpd -DFOREGROUND
             └─4761 /usr/sbin/httpd -DFOREGROUND
               └─4762 /usr/sbin/httpd -DFOREGROUND
                 └─4763 /usr/sbin/httpd -DFOREGROUND
                   └─4764 /usr/sbin/httpd -DFOREGROUND
                     └─4858 /usr/sbin/httpd -DFOREGROUND

Oct 09 12:17:00 sh-nabil710 systemd[1]: Starting httpd.service - The Apache HTTP Server.
Oct 09 12:17:00 sh-nabil710 (httpd)[4760]: httpd.service: Referenced but unset environment variable evaluates to an empty st
Oct 09 12:17:02 sh-nabil710 httpd[4760]: AH00558: httpd: Could not reliably determine the server's fully qualified domain na
Oct 09 12:17:04 sh-nabil710 httpd[4760]: Server configured, listening on: port 443, port 82
Oct 09 12:17:04 sh-nabil710 systemd[1]: Started httpd.service - The Apache HTTP Server.
lines 1-23/23 (END)

```



- I will make my page under /var/www/html .



**4. Create the following users, groups and group memberships:**

**a) A group named admin.**

```
root@sh-nabil710:~#  
root@sh-nabil710:~#  
root@sh-nabil710:~# groupadd admin  
root@sh-nabil710:~#  
root@sh-nabil710:~# grep "^admin" /etc/group  
admin:x:1003:  
root@sh-nabil710:~#
```

**b) A user harry who belongs to admin as a secondary group.**

```
root@sh-nabil710:~#  
root@sh-nabil710:~# useradd -G admin -m harry  
root@sh-nabil710:~#  
root@sh-nabil710:~# id harry  
uid=1002(harry) gid=1004(harry) groups=1004(harry),1003(admin)  
root@sh-nabil710:~#
```

**c) A user natasha who belongs to admin as a secondary group.**

```
root@sh-nabil710:~# useradd -G admin -m natasha
root@sh-nabil710:~#
root@sh-nabil710:~# id natasha
uid=1003(natasha) gid=1005(natasha) groups=1005(natasha),1003(admin)
root@sh-nabil710:~#
```

**d) A user sarah who does not have access to an interactive shell on the system and who is not member of admin.**

```
root@sh-nabil710:~# useradd -s /sbin/nologin -m sarah
root@sh-nabil710:~# id sarah
uid=1004(sarah) gid=1006(sarah) groups=1006(sarah)
root@sh-nabil710:~# grep "^sarah" /etc/passwd
sarah:x:1004:1006::/home/sarah:/sbin/nologin
root@sh-nabil710:~#
```

**e) harry, natasha and sarah should have password of password.**

```
root@sh-nabil710:~#
root@sh-nabil710:~# passwd harry
New password:
BAD PASSWORD: The password fails the dictionary check - it is based on a dictionary word
Retype new password:
passwd: password updated successfully
root@sh-nabil710:~# passwd natasha
New password:
BAD PASSWORD: The password fails the dictionary check - it is based on a dictionary word
Retype new password:
passwd: password updated successfully
root@sh-nabil710:~# passwd sarah
New password:
BAD PASSWORD: The password fails the dictionary check - it is based on a dictionary word
Retype new password:
passwd: password updated successfully
root@sh-nabil710:~#
```

## 5. Create a collaborative directory /common/admin with the following characteristics:

```
root@sh-nabil710:~#  
root@sh-nabil710:~#  
root@sh-nabil710:~# mkdir /common/  
root@sh-nabil710:~# mkdir /common/admin  
root@sh-nabil710:~# ls -ld /common/admin/  
drwxr-xr-x. 2 root root 6 Oct  9 12:41 /common/admin/  
root@sh-nabil710:~#
```

a) Group ownership of /common/admin is admin.

```
root@sh-nabil710:~#  
root@sh-nabil710:~# chgrp admin /common/  
root@sh-nabil710:~# chgrp admin /common/admin/  
root@sh-nabil710:~# ls -ld /common/admin/  
drwxr-xr-x. 2 root admin 6 Oct  9 12:41 /common/admin/  
root@sh-nabil710:~#
```

b) The directory should be readable, writable and accessible to members of admin, but not to any other user.  
(It is understood that root has access to all files and directories on the system.)

```
root@sh-nabil710:~#  
root@sh-nabil710:~# chmod 770 /common/admin/  
root@sh-nabil710:~# ls -ld /common/admin/  
drwxrwx---. 2 root admin 6 Oct  9 12:41 /common/admin/  
root@sh-nabil710:~#
```

c) Files created in /common/admin automatically have group ownership set to the admin group

```
root@sh-nabil710:~#  
root@sh-nabil710:~# chmod g+s /common/admin/  
root@sh-nabil710:~# ls -ld /common/admin/  
drwxrws---. 2 root admin 6 Oct  9 12:41 /common/admin/  
root@sh-nabil710:~#
```



```
root@sh-nabil710:~#  
root@sh-nabil710:~# touch /common/admin/shnouda  
root@sh-nabil710:~#  
root@sh-nabil710:~# ls -l /common/admin/shnouda  
-rw-r--r--. 1 root admin 0 Oct  9 12:47 /common/admin/shnouda  
root@sh-nabil710:~#
```

**7. The user harry must configure cron job that runs daily at 12:30 local time and execute /bin/echo "hello".**

```
root@sh-nabil710:~# crontab -e -u hurry  
crontab: installing new crontab  
crontab: installing new crontab  
Backup of hurry's previous crontab saved to /root/.cache/crontab/crontab.hurry.bak  
root@sh-nabil710:~#
```

```
root@sh-nabil710:~#  
30 12 * * * /bin/echo "hello" >/home/hurry/hurriycron.log  
~  
~  
~
```

```
root@sh-nabil710:~# crontab -l -u hurry  
30 12 * * * /bin/echo "hello" >/home/hurry/hurriycron.log  
root@sh-nabil710:~#
```

**Verify the cron job → I will change the time.**

```
hurry@sh-nabil710:~  
root@sh-nabil710:~#  
root@sh-nabil710:~# timedatectl set-time "12:29:00"  
root@sh-nabil710:~# date  
Thu Oct  9 12:29:05 PM EEST 2025  
root@sh-nabil710:~# su -l hurry  
Last login: Thu Oct  9 12:30:41 EEST 2025 on pts/2  
hurry@sh-nabil710:~$  
hurry@sh-nabil710:~$ date  
Thu Oct  9 12:29:30 PM EEST 2025
```

```
root@sh-nabil710:~# cat /home/hurry/hurriycron.log  
hello  
root@sh-nabil710:~#
```

## 9. Locate the Files

a) Locate all the files owned by sarah and make a copy of them in the given path /root/find.user

```
root@sh-nabil710:~#  
root@sh-nabil710:~# mkdir /root/find.user  
root@sh-nabil710:~#  
root@sh-nabil710:~# find / -user sarah -type f -exec cp -pfrv {} /root/find.user \;  
'/home/sarah/.bash_logout' -> '/root/find.user/.bash_logout'  
'/home/sarah/.bash_profile' -> '/root/find.user/.bash_profile'  
'/home/sarah/.bashrc' -> '/root/find.user/.bashrc'  
find: '/proc/7327/task/7327/fd/5': No such file or directory  
find: '/proc/7327/task/7327/fdinfo/5': No such file or directory  
find: '/proc/7327/fd/6': No such file or directory  
find: '/proc/7327/fdinfo/6': No such file or directory  
find: '/run/user/1001/gvfs': Permission denied  
find: '/run/user/1001/doc': Permission denied  
cp: '/root/find.user/.bash_logout' and '/root/find.user/.bash_logout' are the same file  
cp: '/root/find.user/.bash_profile' and '/root/find.user/.bash_profile' are the same file  
cp: '/root/find.user/.bashrc' and '/root/find.user/.bashrc' are the same file  
'/var/spool/mail/sarah' -> '/root/find.user/sarah'  
root@sh-nabil710:~#
```

```
root@sh-nabil710:~#  
root@sh-nabil710:~#  
root@sh-nabil710:~# ls -la /root/find.user/  
total 16  
drwxr-xr-x. 2 root root 75 Oct 9 12:35 .  
dr-xr-x---. 15 root root 4096 Oct 9 12:35 ..  
-rw-r--r--. 1 sarah sarah 18 Oct 29 2024 .bash_logout  
-rw-r--r--. 1 sarah sarah 144 Oct 29 2024 .bash_profile  
-rw-r--r--. 1 sarah sarah 522 Oct 29 2024 .bashrc  
-rw-rw----. 1 sarah mail 0 Oct 9 12:35 sarah  
root@sh-nabil710:~#
```

## 10. Find the string

a) Find a string "home" in /etc/passwd and searching string as been stored in /root/search.txt

```
root@sh-nabil710:~#  
root@sh-nabil710:~# grep "home" /etc/passwd >> /root/search.txt  
root@sh-nabil710:~# cat /root/search.txt  
shnouda:x:1001:1001:~/home/shnouda:/bin/bash  
hurry:x:1002:1004:~/home/hurry:/bin/bash  
natasha:x:1003:1005:~/home/natasha:/bin/bash  
sarah:x:1004:1006:~/home/sarah:/sbin/nologin  
root@sh-nabil710:~#
```

## 11. Create an user account

a) Create an user account with Userid 1326 and user name as alies

```
root@sh-nabil710:~  
root@sh-nabil710:~#  
root@sh-nabil710:~# useradd alias -u 1326  
root@sh-nabil710:~# id alias  
uid=1326(alias) gid=1326(alias) groups=1326(alias)  
root@sh-nabil710:~#
```

## 12. Create a tar archive file

a) Backup the /var/tmp as /root/test.tar.gz

```
root@sh-nabil710:~#  
root@sh-nabil710:~# tar -czf /root/test.tar.gz /var/tmp  
tar: Removing leading `/' from member names  
root@sh-nabil710:~# ls -lh /root/test.tar.gz  
-rw-r--r--. 1 root root 1.7K Oct  9 14:50 /root/test.tar.gz  
root@sh-nabil710:~#
```

## 15.1 Set the Permission

- All new creating files for user natasha as -r----- as default permission.
- All new creating directories for user natasha as dr-x----- as default permission.

```
root@sh-nabil710:~# nano /home/natasha/.bashrc
```

```
GNU nano 8.1 /home/natasha/.bashrc Modified
# Source global definitions
if [ -f /etc/bashrc ]; then
    . /etc/bashrc
fi

# User specific environment
if ! [[ "$PATH" =~ "$HOME/.local/bin:$HOME/bin:" ]]; then
    PATH="$HOME/.local/bin:$HOME/bin:$PATH"
fi
export PATH

# Uncomment the following line if you don't like systemctl's auto-paging feature:
# export SYSTEMD_PAGER=

# User specific aliases and functions
if [ -d ~/.bashrc.d ]; then
    for rc in ~/.bashrc.d/*; do
        if [ -f "$rc" ]; then
            . "$rc"
        fi
    done
fi
unset rc

umask 266      #for Files
umask 377      #for Directories
```

```
root@sh-nabil710:~# touch /home/natasha/file1
root@sh-nabil710:~# ls -l /home/natasha/file1
-r-----. 1 root root 0 Oct  9 12:47 /home/natasha/file1
root@sh-nabil710:~#
```

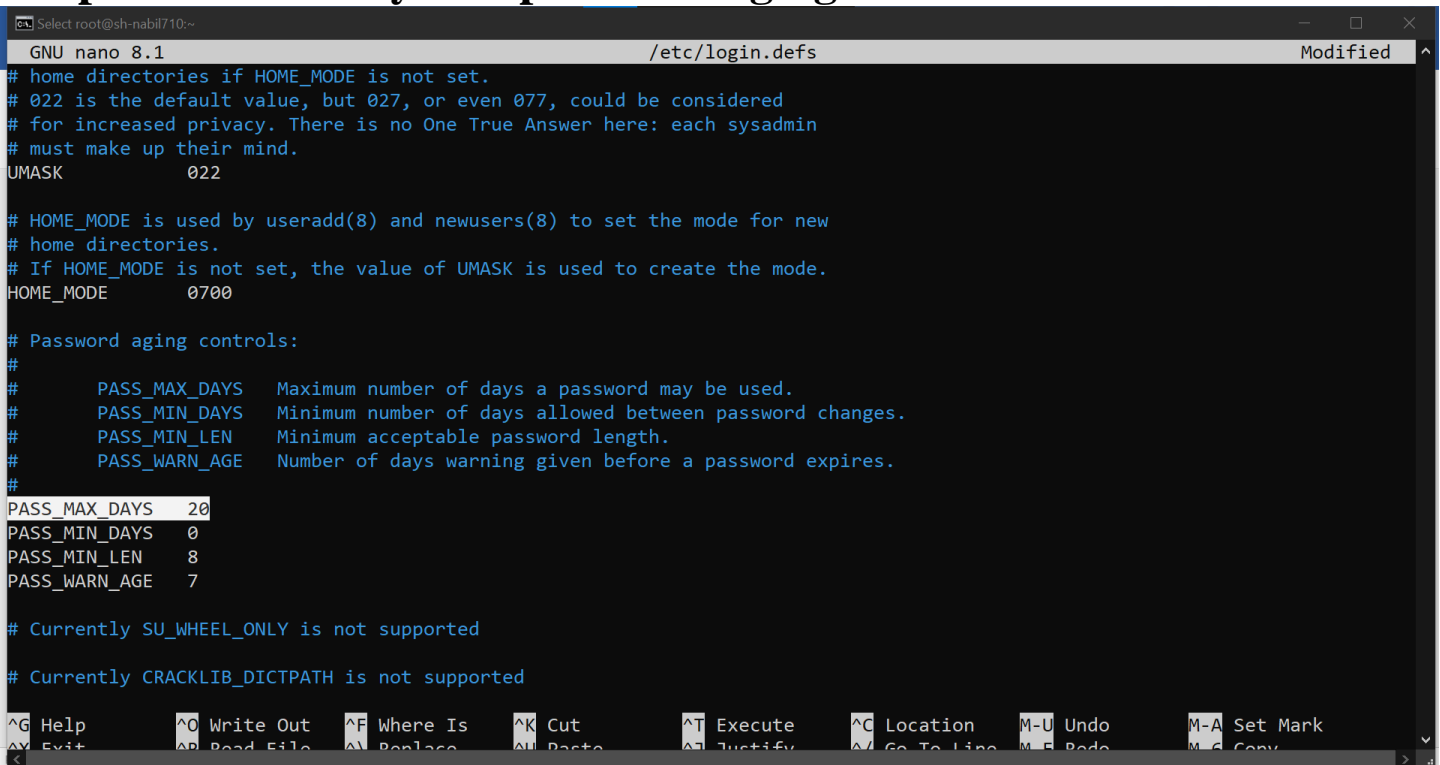
```
root@sh-nabil710:~# mkdir /home/natasha/dir1
root@sh-nabil710:~#
root@sh-nabil710:~# ls -ld /home/natasha/dir1/
dr-----. 2 root root 6 Oct  9 12:48 /home/natasha/dir1/
root@sh-nabil710:~#
```

## 15.2 Set the Password expire date

a) The password for all new users in serverb.lab.example.com should expires after 20 days.

```
root@sh-nabil710:~#  
root@sh-nabil710:~# nano /etc/login.defs  
root@sh-nabil710:~#
```

- I put the Max days for password aging is 20 .



```
GNU nano 8.1 /etc/login.defs Modified  
# home directories if HOME_MODE is not set.  
# 022 is the default value, but 027, or even 077, could be considered  
# for increased privacy. There is no One True Answer here: each sysadmin  
# must make up their mind.  
UMASK 022  
  
# HOME_MODE is used by useradd(8) and newusers(8) to set the mode for new  
# home directories.  
# If HOME_MODE is not set, the value of UMASK is used to create the mode.  
HOME_MODE 0700  
  
# Password aging controls:  
#  
# PASS_MAX_DAYS Maximum number of days a password may be used.  
# PASS_MIN_DAYS Minimum number of days allowed between password changes.  
# PASS_MIN_LEN Minimum acceptable password length.  
# PASS_WARN_AGE Number of days warning given before a password expires.  
#  
PASS_MAX_DAYS 20  
PASS_MIN_DAYS 0  
PASS_MIN_LEN 8  
PASS_WARN_AGE 7  
  
# Currently SU_WHEEL_ONLY is not supported  
  
# Currently CRACKLIB_DICTPATH is not supported  
  
^G Help ^O Write Out ^F Where Is ^K Cut ^T Execute ^C Location M-U Undo M-A Set Mark  
^Y Exit ^R Read File ^A Replace ^U Paste ^J Justify ^_ Go To Line M-E Redo M-G Copy
```

```
root@sh-nabil710:~# useradd -m sameh  
root@sh-nabil710:~# chage -l sameh  
Last password change : Oct 09, 2025  
Password expires : Oct 29, 2025  
Password inactive : never  
Account expires : never  
Minimum number of days between password change : 0  
Maximum number of days between password change : 20  
Number of days of warning before password expires : 7  
root@sh-nabil710:~#
```

## 15.3 Assign Sudo Privilege

Assign the Sudo Privilege for Group "admin" and Group members can administrate without any password

```
natasha@sh-nabil710:~  
root@sh-nabil710:~#  
root@sh-nabil710:~#  
root@sh-nabil710:~# nano /etc/sudoers  
root@sh-nabil710:~#
```

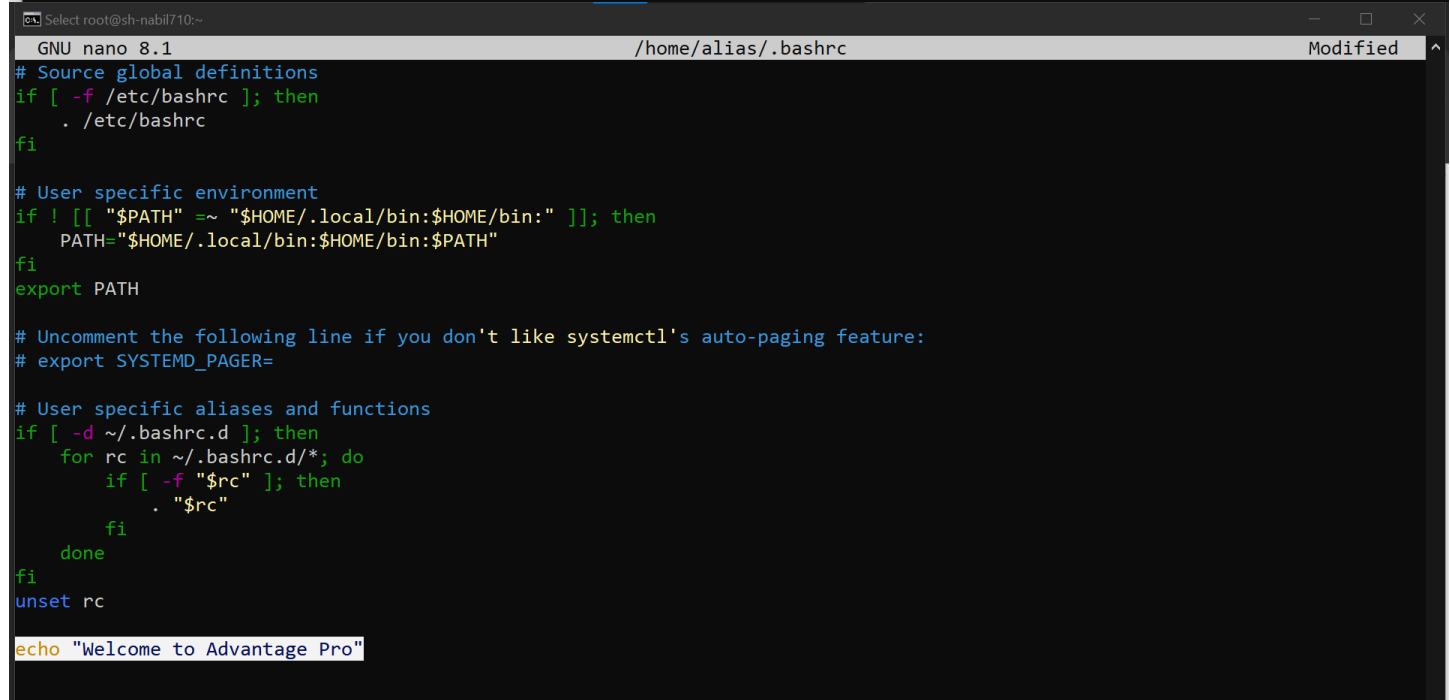
```
Select root@sh-nabil710:~  
GNU nano 8.1 /etc/sudoers Modified  
## Allow root to run any commands anywhere  
root    ALL=(ALL)    ALL  
  
## Allows members of the 'sys' group to run networking, software,  
## service management apps and more.  
# %sys ALL = NETWORKING, SOFTWARE, SERVICES, STORAGE, 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  
  
%admin  ALL=(ALL)    NOPASSWD: ALL  
  
shnouda ALL=(ALL)    ALL  
  
## Allows members of the users group to mount and unmount the  
## cdrom as root  
# %users ALL=/sbin/mount /mnt/cdrom, /sbin/umount /mnt/cdrom  
  
## Allows members of the users group to shutdown this system  
# %users localhost=/sbin/shutdown -h now
```

- To verify.

```
natasha@sh-nabil710:~  
root@sh-nabil710:~#  
root@sh-nabil710:~#  
root@sh-nabil710:~# nano /etc/sudoers  
root@sh-nabil710:~#  
root@sh-nabil710:~# su -l natasha  
natasha@sh-nabil710:~$ sudo systemctl restart httpd  
natasha@sh-nabil710:~$
```

## 15.4 Configure the application RHCSA as an alies user, When login it will show the message "Welcome to Advantage Pro"

```
root@sh-nabil710:~#
root@sh-nabil710:~# nano /home/alias/.bashrc
root@sh-nabil710:~#
root@sh-nabil710:~#
```



```
GNU nano 8.1 /home/alias/.bashrc Modified
# Source global definitions
if [ -f /etc/bashrc ]; then
    . /etc/bashrc
fi

# User specific environment
if ! [[ "$PATH" =~ "$HOME/.local/bin:$HOME/bin:" ]]; then
    PATH="$HOME/.local/bin:$HOME/bin:$PATH"
fi
export PATH

# Uncomment the following line if you don't like systemctl's auto-paging feature:
# export SYSTEMD_PAGER=

# User specific aliases and functions
if [ -d ~/.bashrc.d ]; then
    for rc in ~/.bashrc.d/*; do
        if [ -f "$rc" ]; then
            . "$rc"
        fi
    done
fi
unset rc

echo "Welcome to Advantage Pro"
```

- To verify

```
root@sh-nabil710:~#
root@sh-nabil710:~# su -l alias
Welcome to Advantage Pro
alias@sh-nabil710:~$
```

## 15.5 Create the script file

a) Create a mysearch script file under /usr/local/bin to locate files under /usr/share directory having size less than 1M.

```
root@sh-nabil710:~  
root@sh-nabil710:~#  
root@sh-nabil710:~# nano mysearch  
root@sh-nabil710:~# chmod +x mysearch  
root@sh-nabil710:~#  
root@sh-nabil710:~# mv mysearch /usr/bin/
```

```
GNU nano 8.1 mysearch  
#!/bin/bash  
  
find /usr/share -type f -size -1M
```

```
root@sh-nabil710:~  
root@sh-nabil710:~# mv mysearch /bin/  
root@sh-nabil710:~# mysearch  
/usr/share/doc/python3-urwid/docs/tools/static/.placeholder  
/usr/share/X11/locale/C/Compose  
/usr/share/X11/locale/am_ET.UTF-8/XI18N_OBJS  
/usr/share/X11/locale/am_ET.UTF-8/XLC_LOCALE  
/usr/share/X11/locale/cs_CZ.UTF-8/XI18N_OBJS  
/usr/share/X11/locale/cs_CZ.UTF-8/XLC_LOCALE  
/usr/share/X11/locale/el_GR.UTF-8/XI18N_OBJS  
/usr/share/X11/locale/el_GR.UTF-8/XLC_LOCALE  
/usr/share/X11/locale/fi_FI.UTF-8/XI18N_OBJS  
/usr/share/X11/locale/fi_FI.UTF-8/XLC_LOCALE  
/usr/share/X11/locale/iscii-dev/Compose  
/usr/share/X11/locale/isiri-3342/Compose  
/usr/share/X11/locale/iso8859-11/Compose  
/usr/share/X11/locale/km_KH.UTF-8/XLC_LOCALE  
/usr/share/X11/locale/microsoft-cp1251/Compose  
/usr/share/X11/locale/microsoft-cp1255/Compose  
/usr/share/X11/locale/microsoft-cp1256/Compose  
/usr/share/X11/locale/nokhchi-1/Compose  
/usr/share/X11/locale/sr_RS.UTF-8/XLC_LOCALE  
/usr/share/X11/locale/tatar-cyr/Compose  
/usr/share/X11/locale/th_TH/Compose  
/usr/share/X11/locale/tscii-0/Compose  
/usr/share/cups/templates/da/help-trailer.tpl  
/usr/share/cups/templates/de/help-trailer.tpl  
/usr/share/cups/templates/es/help-trailer.tpl  
/usr/share/cups/templates/fr/help-trailer.tpl  
/usr/share/cups/templates/ja/help-trailer.tpl  
/usr/share/cups/templates/pt_BR/help-trailer.tpl  
/usr/share/cups/templates/ru/help-trailer.tpl  
/usr/share/cups/templates/help-trailer.tpl  
/usr/share/alsa/ucm2/conf.virt.d/.gitignore  
/usr/share/mime/icons  
/usr/share/pki/ca-trust-legacy/ca-bundle.legacy.default.crt  
/usr/share/pki/ca-trust-legacy/ca-bundle.legacy.disable.crt  
/usr/share/xml/iso-codes/iso_3166-3.xml  
root@sh-nabil710:~#
```

**b) After executing the mysearch script file and listed(searched) files has to be copied under /root/myfiles**



```
root@sh-nabil710:~  
GNU nano 8.1 /bin/mysearch  
#!/bin/bash  
  
find /usr/share -type f -size -1M -exec cp -pfrv {} /root/myfiles/ \; &>/dev/null
```

```
root@sh-nabil710:~  
root@sh-nabil710:~#  
root@sh-nabil710:~# mkdir /root/myfiles  
root@sh-nabil710:~# nano /bin/mysearch  
root@sh-nabil710:~# root@sh-nabil710:~#  
root@sh-nabil710:~#  
root@sh-nabil710:~# mysearch  
root@sh-nabil710:~#
```

## - To Verify

```
root@sh-nabil710:~  
root@sh-nabil710:~#  
root@sh-nabil710:~#  
root@sh-nabil710:~# ls -lh /root/myfiles/  
total 0  
-rw-r--r--. 1 root root 0 Oct 29 2024 ca-bundle.legacy.default.crt  
-rw-r--r--. 1 root root 0 Oct 29 2024 ca-bundle.legacy.disable.crt  
-rw-r--r--. 1 root root 0 Dec 5 2024 Compose  
-r--r--r--. 1 root root 0 Jan 7 2025 help-trailer.tmpl  
-rw-r--r--. 1 root root 0 Jul 30 12:54 icons  
-rw-r--r--. 1 root root 0 Oct 29 2024 iso_3166-3.xml  
-rw-r--r--. 1 root root 0 Jul 28 2024 XI18N_OBJS  
-rw-r--r--. 1 root root 0 Dec 5 2024 XLC_LOCALE  
root@sh-nabil710:~#
```

## 16. Create a swap partition 512MB size.

In this question I will add another hard drive to my machine.

```

root@sh-nabil710:~# fdisk /dev/sdb

Welcome to fdisk (util-linux 2.40.2).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.

Device does not contain a recognized partition table.
Created a new DOS (MBR) disklabel with disk identifier 0x6a143e80.

Command (m for help): n
Partition type
   p   primary (0 primary, 0 extended, 4 free)
   e   extended (container for logical partitions)
Select (default p): p
Partition number (1-4, default 1):
First sector (2048-33554431, default 2048):
Last sector, +/-sectors or +/-size{K,M,G,T,P} (2048-33554431, default 33554431): +512M

Created a new partition 1 of type 'Linux' and of size 512 MiB.

Command (m for help): t

```

```

Aliases:
  linux      - 83
  swap       - 82
  extended   - 05
  uefi       - EF
  raid       - FD
  lvm        - 8E
  linuxex    - 85
Hex code or alias (type L to list all): 82
Changed type of partition 'Linux' to 'Linux swap / Solaris'.

Command (m for help):

```

```

root@sh-nabil710:~#
root@sh-nabil710:~#
root@sh-nabil710:~# mkswap /dev/sdb1
Setting up swspace version 1, size = 512 MiB (536866816 bytes)
no label, UUID=19e66f0e-7d37-4a2e-b6d7-c7ee00fe7f77
root@sh-nabil710:~#
root@sh-nabil710:~# swapon /dev/sdb1
root@sh-nabil710:~# swapon -s

```

Filename	Type	Size	Used	Priority
/dev/sda3	partition	4102140	524	-2
/dev/sdb1	partition	524284	0	-3

```

root@sh-nabil710:~#

```

- To make this as a persistence → I will this partition in the /etc/fstab file.

```

root@sh-nabil710:~# blkid
/dev/sdb1: UUID="19e66f0e-7d37-4a2e-b6d7-c7ee00fe7f77" TYPE="swap" PARTUUID="6a143e80-01"
/dev/sda4: UUID="04aa6016-a1fe-4127-b8c4-9ab30ee3be3d" BLOCK_SIZE="512" TYPE="xfs" PARTUUID="b60703a7-f1c6-49b0-bc60-3543807ac234"
/dev/sda2: UUID="c06d2cf5-5503-4be5-b265-229e8b8ed63f" BLOCK_SIZE="512" TYPE="xfs" PARTUUID="b4fa423a-62fd-49f0-820f-89520f5b6b6b"
/dev/sda5: UUID="9f594fa8-6787-48de-98ac-e26aa6148881" BLOCK_SIZE="512" TYPE="xfs" PARTUUID="0995299b-ea43-45a1-aa08-08294dfc242f"
/dev/sda3: UUID="bdf6e16ac-b279-43b8-9fcb-e092fd6dd881" TYPE="swap" PARTUUID="1dd641d0-ce4f-4aa7-9662-a49433a9b219"
/dev/sda1: PARTUUID="9f7d6091-7f06-4193-9ebe-c0659371405a"
root@sh-nabil710:~#

```

```
Select root@sh-nabil710:~
GNU nano 8.1 /etc/fstab Modified
#
# /etc/fstab
# Created by anaconda on Wed Jul 30 09:45:57 2025
#
# Accessible filesystems, by reference, are maintained under '/dev/disk/'.
# See man pages fstab(5), findfs(8), mount(8) and/or blkid(8) for more info.
#
# After editing this file, run 'systemctl daemon-reload' to update systemd
# units generated from this file.
#
UUID=04aa6016-a1fe-4127-b8c4-9ab30ee3be3d / xfs defaults 0 0
UUID=c06d2cf5-5503-4be5-b265-229e8b8ed63f /boot xfs defaults 0 0
UUID=9f594fa8-6787-48de-98ac-e26aa6148881 /home xfs defaults 0 0
UUID=bdfef16ac-b279-43b8-9fcb-e092fd6dd881 none swap defaults 0 0
UUID=19e66f0e-7d37-4a2e-b6d7-c7ee00fe7f77 none swap defaults 0 0
```

```
root@sh-nabil710:~#
root@sh-nabil710:~#
root@sh-nabil710:~# swapoff /dev/sdb1
root@sh-nabil710:~#
root@sh-nabil710:~# #check for presistance
root@sh-nabil710:~# swapon -av
swapon: /dev/sda3: already active -- ignored
swapon: /dev/sdb1: found signature [pagesize=4096, signature=swap]
swapon: /dev/sdb1: pagesize=4096, swappsize=536870912, devsize=536870912
swapon /dev/sdb1
root@sh-nabil710:~# swapon -s
Filename                                Type      Size      Used      Priority
/dev/sda3                              partition 4102140    40        -2
/dev/sdb1                              partition 524284     0         -3
root@sh-nabil710:~#
```

## 17- Create one logical volume named database and it should be on datastore volume group

with size 50 extent and assign the filesystem as ext3.

(i) the datastore volume group extend should be 8MiB. (ii) mount the logical volume under mount point /mnt/database.

```
root@sh-nabil710:~#
Welcome to fdisk (util-linux 2.40.2).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.

Device does not contain a recognized partition table.
Created a new DOS (MBR) disklabel with disk identifier 0xf5ca788c.

Command (m for help): n
Partition type
   p   primary (0 primary, 0 extended, 4 free)
   e   extended (container for logical partitions)
Select (default p): p
Partition number (1-4, default 1): 1
First sector (2048-41943039, default 2048):
Last sector, +/-sectors or +/-size{K,M,G,T,P} (2048-41943039, default 41943039): +1G

Created a new partition 1 of type 'Linux' and of size 1 GiB.

Command (m for help): t
Selected partition 1
Hex code or alias (type L to list all): lvm
Changed type of partition 'Linux' to 'Linux LVM'.

Command (m for help): wq
The partition table has been altered.
Calling ioctl() to re-read partition table.
Syncing disks.
root@sh-nabil710:~#
```

```

root@sh-nabil710:~#
root@sh-nabil710:~# pvcreate /dev/sdb1
Physical volume "/dev/sdb1" successfully created.
Creating devices file /etc/lvm/devices/system.devices
root@sh-nabil710:~# vgcreate -s 8M datastore /dev/sdb1
Volume group "datastore" successfully created
root@sh-nabil710:~# lvcreate -n database -l 50 datastore
Logical volume "database" created.
root@sh-nabil710:~#
root@sh-nabil710:~# mkfs -t ext3 /dev/datastore/database
mke2fs 1.47.1 (20-May-2024)
Creating filesystem with 409600 1k blocks and 102400 inodes
Filesystem UUID: 5a2917d2-64ba-473c-b396-8bd107e580ea
Superblock backups stored on blocks:
    8193, 24577, 40961, 57345, 73729, 204801, 221185, 401409

Allocating group tables: done
Writing inode tables: done
Creating journal (8192 blocks): done
Writing superblocks and filesystem accounting information: done

root@sh-nabil710:~#

```

```

root@sh-nabil710:~# mkdir /mnt/database
root@sh-nabil710:~# mount /dev/datastore/database /mnt/database/
root@sh-nabil710:~#

```

```

root@sh-nabil710:~#
root@sh-nabil710:~# df -hT

```

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
/dev/sda4	xfs	64G	6.0G	58G	10%	/
devtmpfs	devtmpfs	4.0M	0	4.0M	0%	/dev
tmpfs	tmpfs	837M	0	837M	0%	/dev/shm
tmpfs	tmpfs	335M	6.8M	329M	3%	/run
tmpfs	tmpfs	1.0M	0	1.0M	0%	/run/credentials/systemd-journald.service
/dev/sda5	xfs	32G	643M	31G	3%	/home
/dev/sda2	xfs	960M	331M	630M	35%	/boot
tmpfs	tmpfs	168M	72K	168M	1%	/run/user/42
tmpfs	tmpfs	168M	56K	168M	1%	/run/user/1001
/dev/mapper/datastore-database	ext3	365M	47K	345M	1%	/mnt/database

```

root@sh-nabil710:~#

```

```

root@sh-nabil710:~#
root@sh-nabil710:~# blkid
/dev/sdb1: UUID="zTRNyW-19TA-DWgd-Ryu4-IG05-lNRc-RTDAe4" TYPE="LVM2_member" PARTUUID="f5ca788c-01"
/dev/mapper/datastore-database: UUID="5a2917d2-64ba-473c-b396-8bd107e580ea" BLOCK_SIZE="1024" TYPE="ext3"
/dev/sda4: UUID="04aa6016-a1fe-4127-b8c4-9ab30ee3be3d" BLOCK_SIZE="512" TYPE="xfs" PARTUUID="b60703a7-f1c6-49b0-bc60-3543807ac234"

```

```
Select root@sh-nabil710:~
GNU nano 8.1 /etc/fstab Modified

#
# /etc/fstab
# Created by anaconda on Wed Jul 30 09:45:57 2025
#
# Accessible filesystems, by reference, are maintained under '/dev/disk/'.
# See man pages fstab(5), findfs(8), mount(8) and/or blkid(8) for more info.
#
# After editing this file, run 'systemctl daemon-reload' to update systemd
# units generated from this file.
#
UUID=04aa6016-a1fe-4127-b8c4-9ab30ee3be3d / xfs defaults 0 0
UUID=c06d2cf5-5503-4be5-b265-229e8b8ed63f /boot xfs defaults 0 0
UUID=9f594fa8-6787-48de-98ac-e26aa6148881 /home xfs defaults 0 0
UUID=bdfe16ac-b279-43b8-9fcb-e092fd6dd881 none swap defaults 0 0
UUID=5a2917d2-64ba-473c-b396-8bd107e580ea /mnt/database ext3 defaults 0 0
```

```
root@sh-nabil710:~#
root@sh-nabil710:~# umount /mnt/database
root@sh-nabil710:~# mount -av
/ : ignored
/boot : already mounted
/home : already mounted
none : ignored
mount: /mnt/database does not contain SELinux labels.
You just mounted a file system that supports labels which does not
contain labels, onto an SELinux box. It is likely that confined
applications will generate AVC messages and not be allowed access to
this file system. For more details see restorecon(8) and mount(8).
mount: (hint) your fstab has been modified, but systemd still uses
the old version; use 'systemctl daemon-reload' to reload.
/mnt/database : successfully mounted
root@sh-nabil710:~#
```

```
Select root@sh-nabil710:~
/dev/sda4 xfs 64G 6.0G 58G 10% /
devtmpfs devtmpfs 4.0M 0 4.0M 0% /dev
tmpfs tmpfs 837M 0 837M 0% /dev/shm
tmpfs tmpfs 335M 6.8M 329M 3% /run
tmpfs tmpfs 1.0M 0 1.0M 0% /run/credentials/systemd-journald.service
/dev/sda5 xfs 32G 643M 31G 3% /home
/dev/sda2 xfs 960M 331M 630M 35% /boot
tmpfs tmpfs 168M 72K 168M 1% /run/user/42
tmpfs tmpfs 168M 56K 168M 1% /run/user/1001
/dev/mapper/datastore-database ext3 365M 47K 345M 1% /mnt/database
root@sh-nabil710:~#
```

```
root@sh-nabil710:~# lvresize -L 100M -r /dev/datastore/database
Rounding size to boundary between physical extents: 104.00 MiB.
New size (13 extents) matches existing size (13 extents).
File system ext3 found on datastore/database mounted at /mnt/database.
Size of logical volume datastore/database unchanged from 104.00 MiB (13 extents).
Extending file system ext3 to 104.00 MiB (109051904 bytes) on datastore/database...
resize2fs /dev/datastore/database
resize2fs 1.47.1 (20-May-2024)
The filesystem is already 106496 (1k) blocks long. Nothing to do!

resize2fs done
Extended file system ext3 on datastore/database.
Logical volume datastore/database successfully resized.
root@sh-nabil710:~#
```

```

root@sh-nabil710:~# df -hT
Filesystem                                Type      Size  Used Avail Use% Mounted on
/dev/sda4                                xfs        64G   6.0G   58G  10% /
devtmpfs                                 devtmpfs   4.0M    0    4.0M   0% /dev
tmpfs                                    tmpfs      837M    0   837M   0% /dev/shm
tmpfs                                    tmpfs      335M   6.8M  329M   3% /run
tmpfs                                    tmpfs      1.0M    0    1.0M   0% /run/credentials/systemd-journald.service
/dev/sda5                                xfs        32G   643M   31G   3% /home
/dev/sda2                                xfs       960M   331M  630M  35% /boot
tmpfs                                    tmpfs      168M    72K   168M   1% /run/user/42
tmpfs                                    tmpfs      168M    56K   168M   1% /run/user/1001
/dev/mapper/datastore-database            ext3        88M    47K    83M   1% /mnt/database
root@sh-nabil710:~#

```

## 18- Set the recommend tuned profile for your system.

```

root@sh-nabil710:~#
root@sh-nabil710:~# root@sh-nabil710:~#
root@sh-nabil710:~#
root@sh-nabil710:~# dnf install tuned -y
Last metadata expiration check: 2:38:20 ago on Thu 09 Oct 2025 12:09:06 PM EEST.
Package tuned-2.25.1-2.el10.noarch is already installed.
Dependencies resolved.
=====
Package                        Architecture      Version           Repository        Size
=====
Upgrading:
tuned                         noarch            2.26.0-1.el10    baseos            560 k
tuned-ppd                     noarch            2.26.0-1.el10    appstream         19 k
=====
Transaction Summary
=====
Upgrade 2 Packages

Total download size: 579 k
Downloading Packages:
(1/2): tuned-ppd-2.26.0-1.el10.noarch.rpm           37 kB/s | 19 kB    00:00
(2/2): tuned-2.26.0-1.el10.noarch.rpm             637 kB/s | 560 kB  00:00
-----
Total                                           202 kB/s | 579 kB  00:02
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing      :                                1/1
  Upgrading      : tuned-2.26.0-1.el10.noarch     1/4
  Running scriptlet: tuned-2.26.0-1.el10.noarch   1/4
  Upgrading      : tuned-ppd-2.26.0-1.el10.noarch 2/4

```

```

root@sh-nabil710:~#
root@sh-nabil710:~#
root@sh-nabil710:~# systemctl enable --now tuned
root@sh-nabil710:~# systemctl status tuned
● tuned.service - Dynamic System Tuning Daemon
   Loaded: loaded (/usr/lib/systemd/system/tuned.service; enabled; preset: enabled)
   Active: active (running) since Thu 2025-10-09 14:47:31 EEST; 42s ago
     Invocation: 80182625a855405ab97342a7adb47ff6
       Docs: man:tuned(8)
            man:tuned.conf(5)
            man:tuned-adm(8)
    Main PID: 6097 (tuned)
      Tasks: 4 (limit: 10474)
     Memory: 15.3M (peak: 16.3M)
        CPU: 165ms
       CGroup: /system.slice/tuned.service
               └─6097 /usr/bin/python3 -Es /usr/sbin/tuned -l -P

Oct 09 14:47:31 sh-nabil710 systemd[1]: Starting tuned.service - Dynamic System Tuning Daemon...
Oct 09 14:47:31 sh-nabil710 systemd[1]: Started tuned.service - Dynamic System Tuning Daemon.
Oct 09 14:48:07 sh-nabil710 systemd[1]: Started tuned.service - Dynamic System Tuning Daemon.
root@sh-nabil710:~#

```

- **To verify:**

```
root@sh-nabil710:~# tuned-adm recommend
virtual-guest
root@sh-nabil710:~#
root@sh-nabil710:~# tuned-adm profile virtual-gues
Unable to switch profile: Requested profile 'virtual-gues' doesn't exist.
root@sh-nabil710:~# tuned-adm active
Current active profile: balanced
root@sh-nabil710:~#
```