User and group management

useradd ines
passwd ines (dodavanje ili promjena password-a)
tail /etc/passwd

usermod -L ines (zaključati user-ov account)
usermod -U ines (otključati user-ov account)
usermod -d /home/nova_datoteja (postavljanje novog home direktorija)

userdel ines

id ines

groupadd grupa1
groupadd -g 10000 grupa1 (-g stvara željeni GID)
groupadd -r grupa2 (stvara system grupe)
tail /etc/group

groupmod -n grupa22 grupa2 (promjena imena grupe)
groupmod -g 20000 grupa2 (promjena GID-a grupe)

groupdel group22

usermod -g primarna grupa ines
usermod -aG suplementarna grupa ines

chage -m 0 -M 90 -W 7 -I 14 ines
- minimum age (`-m`)
- maximum age (`-M`)
- a warning period (`-W`)
- inactivity period (`-I`)

chage -E $(date -d "+30 days" +%F) ines (postavlja datum insticanja passwords - expiry date)
chage -d 0 ines (promjena passwords kod sljedećeg login-a)

/etc/login.defs
- -promjena parametara passworda za nove korisnike
- -promjena umaska
- -parametri za automatsku dodjelu UID-a i GID-a

Permissions - dopuštenja/ovlasti

Enable the dbadmin1 user to use the sudo command to run any command as the superuser
vim /etc/sudoers.d/*naziv -usera*
naziv-usera ALL=(ALL) ALL
su - *naziv -usera*
echo "umask 007" >> .bashrc
source ~/.bashrc

echo "%*naziv-grupe* ALL=(ALL) ALL" >> /etc/sudoers.d/*naziv -grupe* (members of the admin group have full administrative privileges)

chmod ugo(a)+-=rwxX *ime direktorija ili filea*
chmod -R ugo(a)+-=rwxX *ime direktorija ili filea*
chmod 770 /home/consultants (Forbid others from accessing file)

chmod 2770 /home/consultants (dodavanje specijalnih premisija -prvi broj)
chmod 0770 /home/consultants (oduzimanje specijalnih premisija)

chown *ime usera* *ime datoteke ili direk*
chown :*ime grupe* *ime datoteke ili direk*

umask 027 (promjena umaska za tog usera na br 027, gubi se nakon log outa)

echo "umask 007" >> ~/.bashrc (trajna promjena, ne gubi se nakon log outa)

SSH s ključevima

1. Na remote mašini napraviti private i public ključ
2. Kopirati private ključ na radnu mašinu

vim /home/ines/.ssh/id_rsa

3. Kopirati public ključ na radnu mašinu

vim /home/ines/.ssh/id_rsa.pub

4. Izmjeniti permissije
   chmod 400 /home/ines/.ssh/id_rsa
   chmod 400 /home/ines/.ssh/id_rsa.pub

5. ssh ubuntu@141.144.201.16

Ishod učenja 3

servera
(root)
adduser ishod3
su ishod3
ssh-keygen
ls -la /home/ishod3/.ssh (~/.ssh)
ssh-copy-id student@serverb
	*password od students: student
Provjera ssh student@serverb
(ako zelimo da se svaki put zatrazi lozinka ne kopirati id kod usera kod kojeg se zelimo spojiti)

(root)
crontab -e
	*/10 * * * * echo “nesto” >> /var/log/custom-log.log
	1-31/2 neparni dani
	2-30/2 parni
crontab -l

(root)
vim /etc/rsyslog.d/info.conf (proizvoljno ime datoteke)
	*.info /var/log/info-log.log
systemctl restart rsyslog
logger -p user.info “poruka”
tail -n 5 /var/log/info-log.log
---

journalctl -n 25
journalctl | grep root
journalctl -f
journalctl -p err
journalctl -p warning
journalctl -b
journalctl -u sshd.service
journalctl - -list-boots
journalctl - -since=10:00 - -until=’10 min ago’
journalctl - -since=2024-11-02 -- utc
journalctl -o verbose
journalctl --disk-usage

Ishod učenja 4

ip a
ip route
Serverb
(Root)
hostnamectl hostname primjer-ispita
Hostname
Workstation
Sudo vim /etc/hosts
*172.25.250.11 serverb primjer-ispita

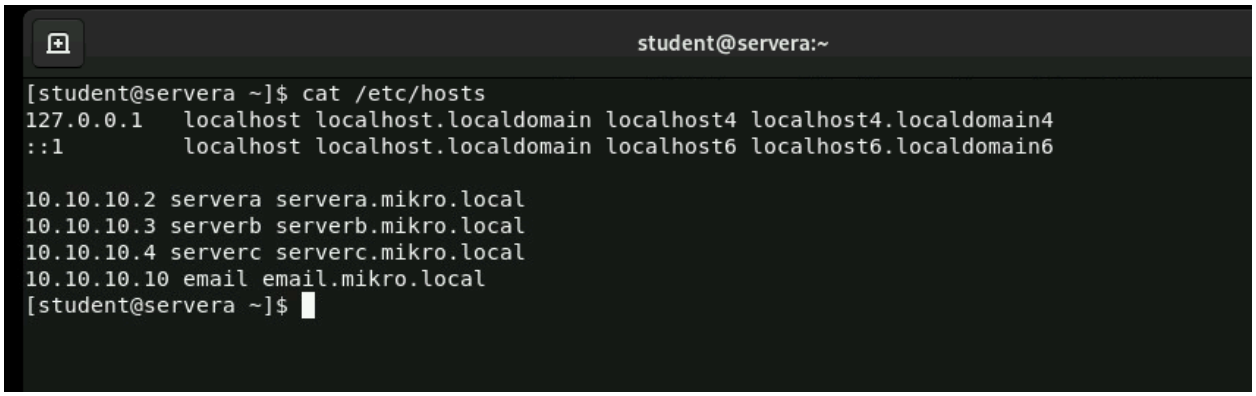
Provjera
ping -c 4 primjer-ispita

timedatectl
timedatectl list-timezones
timedatectl set-timezone America/Phoenix
timedatectl set-time 9:00:00
timedatectl set-ntp false

Ishod učenja 5

DNSMASQ

Servera
(Root)
systemctl stop firewalld
dnf install dnsmasq
systemctl enable –now dnsmasq
systemctl status dnsmasq
netstat -tulnp
vim /etc/hosts



vim /etc/dnsmasq.conf
---
domain -needed
bogus -priv
no -resolv
interface=eth0
expand-hosts
domain=*mikro.local*
---
*dodatak za email
listen address=172.25.250.10 (IP od servera)
mx-host=mikro.local, mail.mikro.local, 10
---
systemctl restart dnsmasq
systemctl status dnsmasq
netstat -tulnp

Workstation

sudo chattr -i /etc/resolv.conf
vim /etc/resolv.conf

#
#
search mikro.local
nameserver 172.25.250.10 (IP od servera)
---
nslookup servera.mikro.local
nslookup serverb.mikro.local
nslookup -type=mx mikro.local
nslookup email

POSTFIX

Serverb

dnf install postfix
systemctl enable –now postfix.service
netstat -tulnp

vim /etc/postfix/main.cf
---
myhostname=mail.mikro.local
mydomain=mikro.local
myorigin=$mydomain
inet_interfaces=all
inet_protocols=all
mydestination=_____ ,$mydomain(dodati)
mynetworks= 127.0.0.0/8, 172.25.250.0/24(dodati potrebnu)
mail_spool_dirctory= /var/spool/mail
---
systemctl restart postfix.service
systemctl status postfix.service
netstat -tulnp

useradd admin
ls -la /var/spool/mail

cat /var/spool/mail/admin (procitati mail)

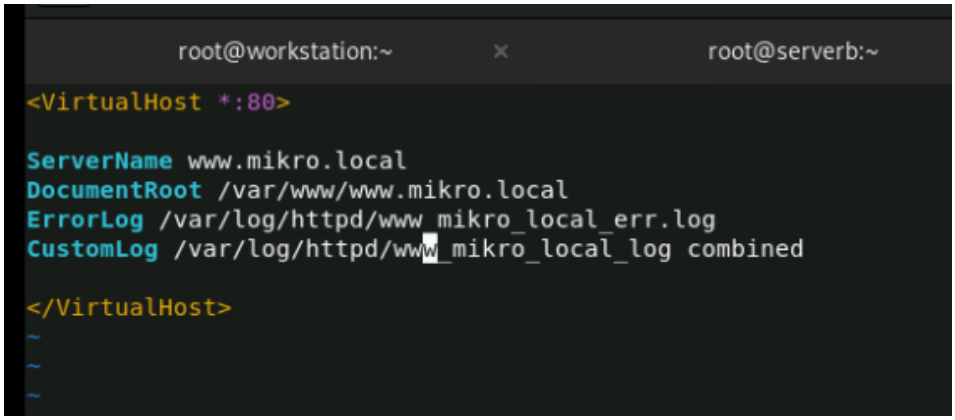
Workstation

telnet mail.mikro.local 25
MAIL FROM: student@workstation.mikro.local
RCPT TO: admin@mikro.local
DATA
Text emaila
.
quit

Ishod učenja 6

Apache

Servera
(root)
systemctl stop firewalld
setenforce 0 (provjera getenforce)
dnf install httpd
systemctl enable –now httpd
systemctl status httpd
netstat -tulnp
mkdir -p /var/www/www.mikro.local/
mkdir -p /var/www/web.mikro.local/
vim /var/www/www.mikro.local/html/index.html
vim /var/www/web.mikro.local/html/index.html
chown -R apache:apache /var/www/www.mikro.local/
chown -R apache.apache /var/www/web.mikro.local/
ls -la /var/www
vim /etc/httpd/conf.d/www.mikro.local.conf
vim /etc/httpd/conf.d/web.mikro.local.conf
***mkdir -p /etc/httpd/sites-available
mkdir -p /etc/httpd/sites-enabled
vim /etc/httpd/sites-available/web.mikro.local.conf
vim /etc/httpd/sites-available/www.mikro.local.conf***

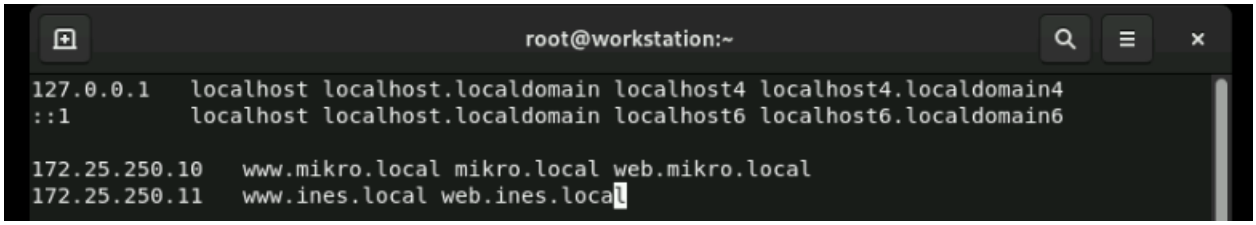


ln -s /etc/httpd/sites-available/web.ines.local.conf /etc/httpd/sites-enabled/web.mikro.local.conf
ln -s /etc/httpd/sites-available/www.ines.local.conf /etc/httpd/sites-enabled/www.mikro.local.conf
vim /etc/httpd/conf/httpd.conf

httpd -t
systemctl restart httpd

Workstation

sudo chattr -i /etc/resolv.conf
vim /etc/hosts

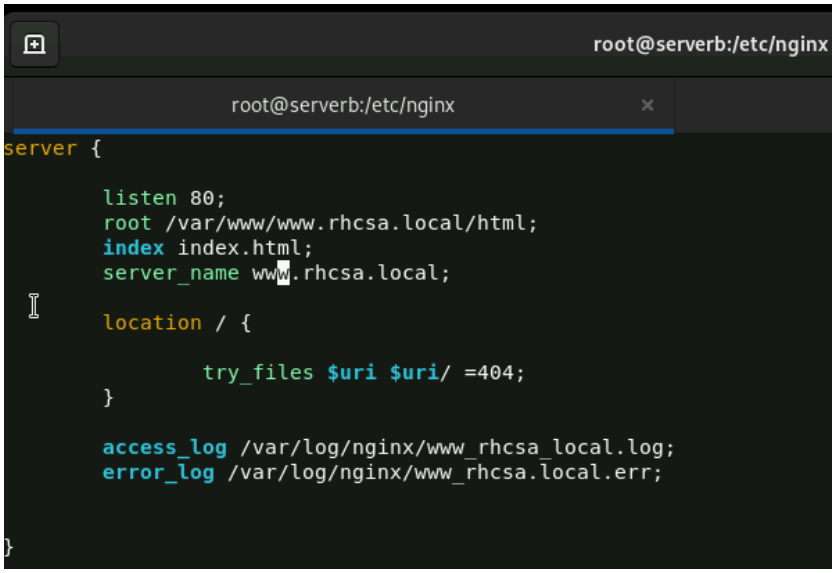


Nginx

Serverb

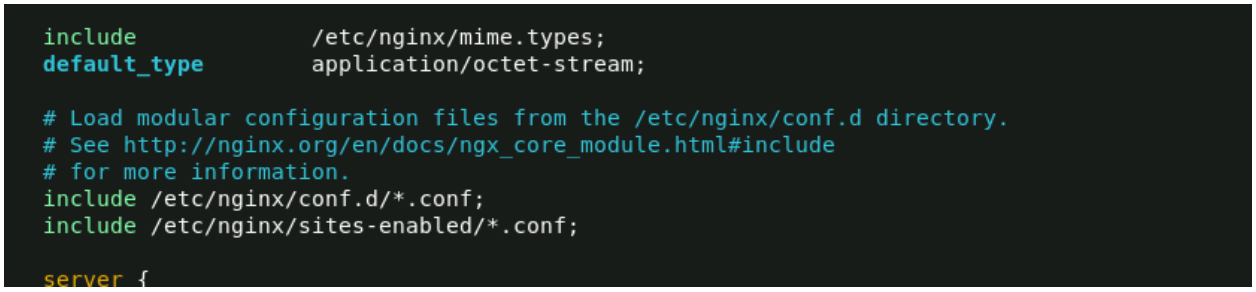
(root)
systemctl stop firewalld
setenforce 0 (provjera getenforce)
dnf install nginx

systemctl enable –now nginx
systemctl status nginx
netstat -tulnp
mkdir -p /var/www/www.ines.local/html
mkdir -p /var/www/web.ines.local/html
vim /var/www/www.ines.local/html/index.html
vim /var/www/web.ines.local/html/index.html
chown -R nginx:nginx /var/www/www.ines.local/
chown -R nginx:nginx /var/www/web.ines.local/
ls -la /var/www
vim /etc/nginx/conf.d/web.ines.local.conf
vim /etc/nginx/conf.d/www.ines.local.conf
***mkdir -p /etc/ngnix/sites-available
mkdir -p /etc/ngnix/sites-enabled
vim /etc/nginx/sites-available/web.ines.local.conf
vim /etc/nginx/sites-available/www.ines.local.conf***



***Ln -s /etc/nginx/sites-available/web.ines.local.conf
/etc/nginx/sites-enabled/web.ines.local.conf
Ln -s /etc/nginx/sites-available/www.ines.local.conf /etc/nginx/sites-enabled/www.ines.local.conf
***

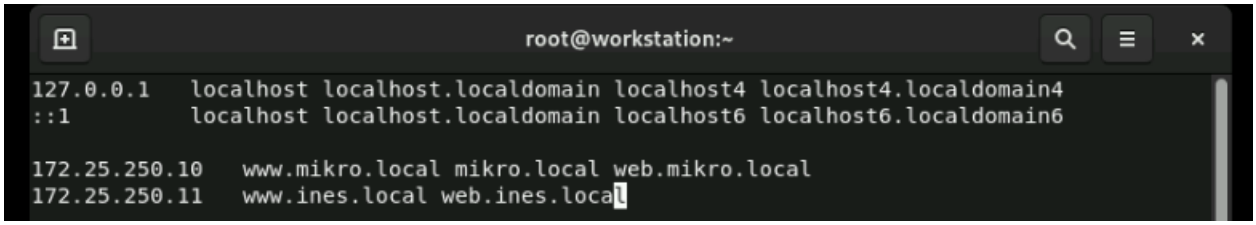
vim /etc/nginx/nginx.conf



nginx -t
systemctl restart nginx

Workstation

sudo chattr -i /etc/resolv.conf
vim /etc/hosts



Ishod učenja 7

LVM

Servera
(root)
fdisk /dev/vdb
N-new
W-write new partion

fdisk /dev/vdc

partprobe
lsblk
pvcreate /dev/vdb1
pvcreate /dev/vdc1
pvdisplay
vgcreate ime-vg -s 512B /dev/vdb1 /dev/vdc1
vgdisplay
lvcreate -L 3G -n ime-lv ime-vg
lvdisplay
lsblk

mkdir /*mount-direktorij*

---
mount /dev/ime-vg/ime-lv /mount-direktorij
vim /etc/mtab (zadnju liniju kopirati u fstab)
mount -av
---
mkfs.xfs /dev/ime-vg/ime-lv
vim /etc/fstab

mount /*mount-direktorij*
mount -av

Stratis

Serverb
(root)

dnf install stratis-cli stratisd
systemctl enable --now stratisd

stratis pool create ime-poola /dev/vdb
stratis pool add-data ime-poola /dev/vdc
lsblk
mkdir -p /*mount-direktorij*/fs
stratis filesystem create ime-poola ime-fs
stratis filesystem list
vim /etc/fstab
systemctl daemon-reload
mount /*mount-direktorij*
mount -av

touch /*mount-direktorij*/fs/file.txt
stratis filesystem snapshot ime-poola ime-fs ime-snapshota
stratis filesystem list
Rm -r /*mount-direktorij*/fs/file.txt
Mkdir /*mount-direktorij*/fs-recovery
vim /etc/fstab

```
UUID=1a1dfc2f-7ac0-4e9e-b4f5-7da0a25faf05 /lab-05/stratis/fs2 xfs defaults,x-systemd.requires=str
atisd.service 0 0
UUID=26acdb9c-9f61-48e4-9e7e-0879ac6d6af9 /lab-05/stratis/fs1 xfs defaults,x-systemd.requires=str
atisd.service 0 0
UUID=d79c45ea-ad70-41c0-8fa8-8e26b00cdc69 /lab-05/stratis/fs1-recovery xfs defaults,x-systemd.req
uires=stratisd.service 0 0
```

mount -av
rsync -a /*mount-direktorij*/fs-recovery /*mount-direktorij*/fs

NFS

Servera

(Root)

Systemctl stop firewalld
Setenforce 0
systemctl enable –now nfs-server
(ako nije instaliran dnf install nfs-service)
Mkdir -p /data/nfs/share{1,2,3,4}
echo “text” >> /data/nfs/share1/novi.txt
 vim /etc/exports

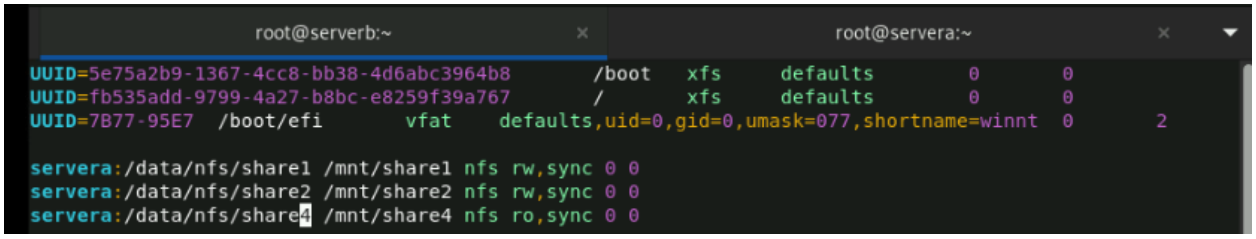
```
/data/nfs/share1        172.25.250.0/24(rw,no_root_squash)
/data/nfs/share2        172.25.250.11(rw,no_root_squash)
/data/nfs/share3        172.25.250.9(rw,no_root_squash)
/data/nfs/share4        *(ro)
```

-nesmije biti razmak između IP adrese i (rw,...)
Exportfs -av

Serverb

Persistent mount

(root)
Mkdir /mnt/share{1,2,4}
vim /etc/fstab



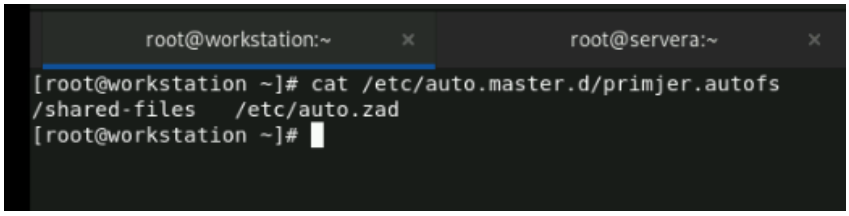
Mount -av
tree /mnt
cat /mnt/share1/novi.txt
echo “11” >> /mnt/share1/novi.txt

Workstation

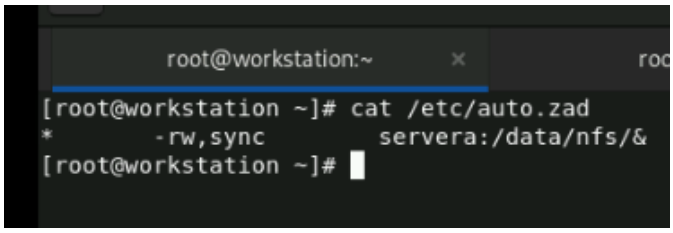
AutoFS

Dnf install autofs
Systemctl enable –now autofs
Mkdir /shared-files

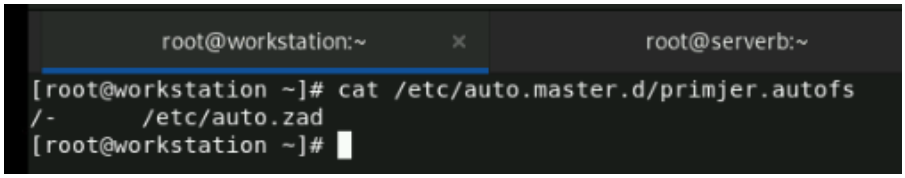
Indirect mount-point mapping
vim /etc/auto.master.d/primjer.autofs



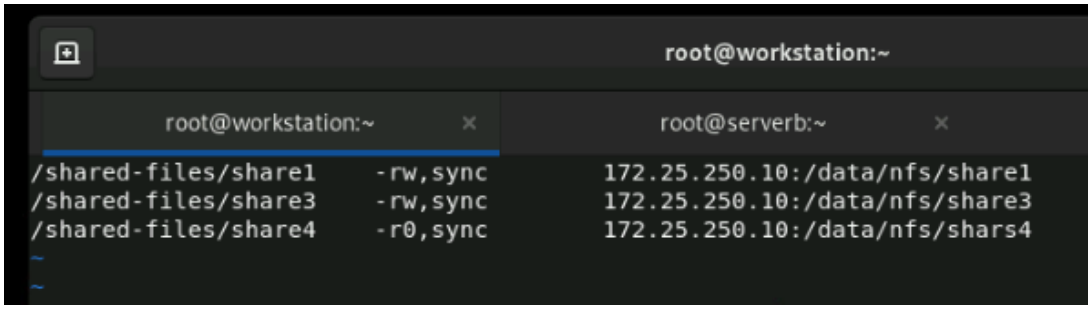
vim /etc/auto.zad



Direct mount-point mapping
vim /etc/auto.master.d/primjer.autofs



vim /etc/auto.zad



systemctl restart autofs
cat /shared-files/share1/novi.txt
vim /shared-files/share1/novi.txt

Ishod učenja 8

Mariadb, PHP, HTTPD, Phpmyadmin

Servera
(root)
systemctl stop firewalld
setenforce 0
dnf update
dnf install httpd
systemctl enable --now httpd
dnf install mariadb-server
systemctl enable – now mariadb
mysql_secure_installation
dnf install php php-mysqlnd php-json php-mbstring
systemctl enable - -now php-fpm.service

cd /var/www/html
wget https://www.phpmyadmin.net/downloads/phpMyAdmin-latest-all-languages.tar.gz
tar -xvzf phpMyAdmin-latest-all-languages.tar.gz
mv phpMyAdmin-*/ phpmyadmin
cp /var/www/html/phpmyadmin/config.sample.inc.php /var/www/html/phpmyadmin/config.inc.php

Vim /var/www/html/phpmyadmin/config.inc.php

```
declare(strict_types=1);

/**
 * This is needed for cookie based authentication to encrypt the cookie.
 * Needs to be a 32-bytes long string of random bytes. See FAQ 2.10.
 */
$cfg['blowfish_secret'] = 'napisatibilosto'; /* YOU MUST FILL IN THIS FOR COOKIE AUTH!
 */

/**
 * Servers configuration
 */
```

systemctl restart httpd

Provjera http://servera/phpmyadmin

(student)
mysql -u root -p
(password od root-a zadan u mysql_secure_installation)

(mariadb)

create database db1;
use db1;
show databases;
create table students(id int, fname varchar(100) ,lname varchar(100));
insert into students (id,fname, lname) values (1,'ivan,'ivic');
select * from students;
delete from students where fname = 'ivan';
Exit

(root)
mysqldump -u root -p db1 > db1_backup_ .sql
(password od root-a zadan u mysql_secure_installation)

Workstation

(root)
Vim /etc/hosts
Dodati server a i naziv domene
172.25.250.10   phpmydomain.rhcsa.local

Postgresql
https://gist.github.com/apolloclark/ea5466d5929e63043dcf

Serverb
(root)
dnf install postgresql-server
dnf module install postgresql:15/server
postgresql-setup --initdb
systemctl enable –now postgresql.service
sudo su - postgres

(postgres)
psql
create database db2;
\l
create table cities (id int, name varchar, postcode int);
insert into cities values (1, 'London', 10090);
select * from cities;

pg_dump db2 > db2_backup_$(date +%F).sql
Exit
Ls -la
LAMP(wordpress)

Servera
(root)
systemctl stop firewalld
setenforce 0
dnf update
dnf install httpd
systemctl enable --now httpd
dnf install mariadb-server
systemctl enable - -now mariadb-server
mysql_secure_installation
dnf install php php-mysqlnd php-json php-mbstring
systemctl enable - -now php-fpm.service

(student)
mysql -u root -p
(password od root-a zadan u mysql_secure_installation)

(mariadb)
create database wordpress;
show databases;
create user ‘wordpress’@’%’ identified by ‘wordpress’;
grant all privileges on wordpress.* to ‘wordpress’@’%’;
grant all privileges on database.tablica to ‘user’@’localhost’;
show grants for ‘user’@’localhost’;
flush privileges;
exit

Servera
(root)
wget https://wordpress.org/latest.tar.gz
tar -xvf latest.tar.gz
cp wordpress/wp-config-sample.php wordpress/wp-config.php
vim wordpress/wp-config.php
cp -R wordpress /var/www/html/
chown -R apache:apache /var/www/html/wordpress
chcon -t httpd_sys_rw_content_t /var/www/html/wordpress -R
chmod -Rf 775 /var/www/html
vim /etc/httpd/conf.d/wordpress.conf
<VirtualHost *:80>
ServerAdmin admin@localhost
DocumentRoot **/var/www/html/wordpress**

<Directory "**/var/www/html/wordpress**">
Options Indexes FollowSymLinks
AllowOverride all
Require all granted
</Directory>

ErrorLog /var/log/httpd/wordpress_error.log
CustomLog /var/log/httpd/wordpress_access.log common
</VirtualHost>

systemctl restart httpd
systemctl restart mariadb

Isprobati http://servera/wp-admin

LAMP(Todo app)

Serverb
(root)
systemctl stop firewalld
setenforce 0
dnf update
dnf install httpd
systemctl enable --now httpd
dnf install mariadb-server
systemctl enable - -now mariadb-server
mysql_secure_installation
dnf install php php-mysqlnd php-json php-mbstring
systemctl enable - -now php-fpm.service
dnf install git
dnf install npm
git clone https://github.com/azjishlay/todo-app.git
Cd todo-app/db/
mysql -u root -p < schema.sql
mysql -u root -p todo < seeds.sql
cd todo-app/
npm install

Workstation

(root)
vim /etc/hosts
Dodati server b i naziv domene
172.25.250.11   todo.rhcsa.local

Serverb
(root)
node app.js

Isprobati http://todo.rhcsa.local:8000/todo

Application backup

servera
(student)

sudo mysqldump -u root -p mediawiki > mediawiki-database-2024-05-24.sql
sudo cp mediawiki-database-2024-05-24.sql /var/www/html
sudo tar -czvf mediawiki-backup-2024-05-24.tar.gz mediawiki-database-2024-05-24.sql mediawiki-1.37.1
du -h mediawiki-backup-2024-05-24.tar.gz

Ishod 9

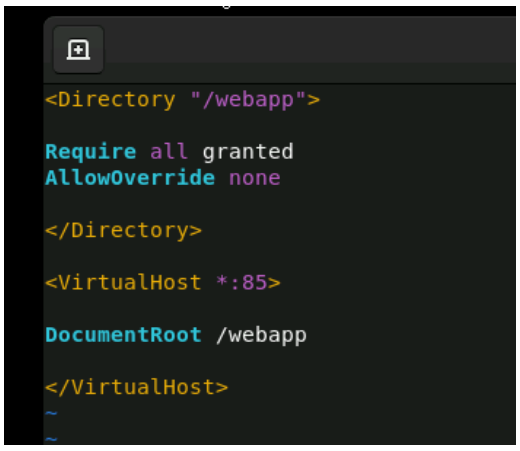
getenforce
setenforce 1
vim /etc/selinux/config
grep ‘SELINUX=’ /etc/selinux/config
systemctl enable –now firewalld

Podešenje firewall-a

Servera
(root)
dnf install nginx
systemctl enable –now nginx
netstat -tulnp
curl servera
firewall-cmd - -list-all-zones (provjera koja je zona aktivan)
firewall-cmd - - add-service http - -zone public - - permanent (zona koja je aktivna)
systemctl reload firewalld

mkdir -p /app
vim /app/index.html
vim /etc/nginx/conf.d/simple.conf

vim /etc/httpd/conf.d/simple.conf



chown -R nginx:nginx /app
nginx -t
systemctl restart nginx

semange fcontext -a -t httpd_sys_content_t '/app(/.*)?'
restorecon -RFvv /app

curl servera
Firefox http://servera

Promjena porta
-promjena porta u /etc/nginx/conf.d/simp.conf
systemctl restart nginx

vim /etc/httpd/conf/httpd.conf
	Listen 82
*** semanage port -a -t http_port_t -p tcp 82***
netstat -tulnp
firewall-cmd - - add-port 82/tcp - -zone public - - permanent

Provjera:
getenforce
systemctl status firewalld
curl servera:82
firewall-cmd - -list-all
netstat -tulnp
Workstation –> curl servera:82 (isto treba raditi)

Workstation

vim /etc/hosts
	172.25.250.10 www.simple.com

curl servera
curl http://www.simple.com

Promjena PRioritiya i NIcnessa
(https://www.tecmint.com/set-linux-process-priority-using-nice-and-renice-commands/)

Izračun : PR = 20 + NI

ps -eo pid,ppid,ni,comm | grep nginx

renice -n -12 -p 1055(PID procesa)

vim /etc/security/limits.conf
	student hard priority 10 (defaultni priority procesa koje pokreće student je 10)
	student soft priority 10
	Student hard nofile 2000 (student moze otvoriti 2000 file-ova)
ulimit -a

How to enable firewalld logging on Linux

vim /etc/firewalld/firewalld.conf file
	LogDenied=all
systemctl restart firewalld.service
curl servera:8
journalctl -exf -n 5

GREP

https://blog.knoldus.com/play-with-text-in-linux-grep-cut-awk-sed/#example

Ps -aux | grep root | sort
Ps -aux | grep root | awk ‘ {print $3, $4}’
Ps -aux | grep root | sed ‘s/#/ /’

grep -E ‘^[a-Z]e|^[0-9]’ /file
-pocinje sa slovom pa slovo e ili riječ počinje s brojem

grep -E -x ‘dog|cat’ /file
-dohvaća samo riječ dog i cat

grep -E -c ‘dog|cat’ /file
-koliko riječi u sebi sadrži dog ili cat

grep -E -n ‘dog|cat’ /file
-riječi koje u sebi sadrži dog ili cat i broj redka

grep -E ‘^.{25}$’ /file
-riječi koje imaju 25 slova

find / -type f -name ‘*pass’
find / -type f -name ‘pass*’
find / -type f -name ‘*pass*’