Task1:

Part1: LVM: <u>Tuesday</u>

1. Create disk from vm
2. Create partition

   # fdisk /dev/sdb

3. Intitailize partition as physical volume

   # pvcreate /dev/sdb1

4. Create volume group (VG) with 16M extend size from physical volume (/dev/sdb1)

   # vgcreate –s 16M vg /dev/sdb1

5. Create logical volume (lv) on volume group with extend size 50

   # lvcreate –l 50 vg –n lv

6. Format logical volume as ext4 file system

   # mkfs –t ext4 /dev/vg/lv

7. Go to mnt directory (directory for mount file system)

   # cd /mnt

8. Create data directory

   mnt# mkdir data

9. Go to fstab file

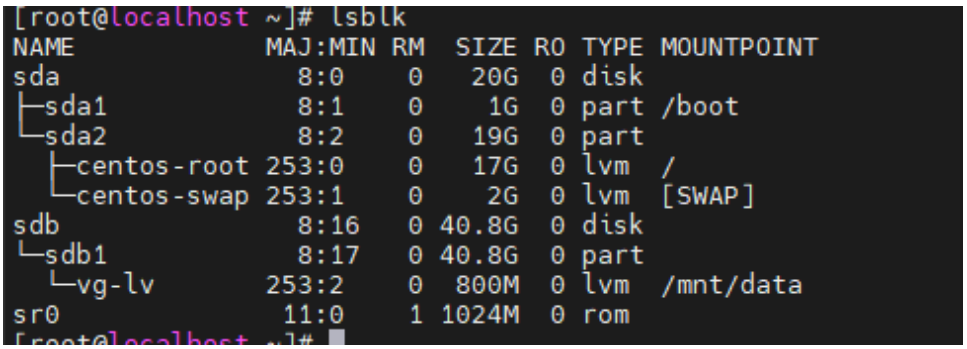
   # vi /etc/fstab

10. Add this on the last line in fstab file to make mount

    /dev/vg/lv /mnt/data ext4 defaults 0 0

11. Mount the logical volume under /mnt/data

    # mount -a



Part2: Users, groups and permissions: cd Tuesday

2.1)

1. Create user1

   # useradd user1

2. Change uid for user1

   # usermod –u 601 user1

3. Set password: redhat to user1

   # Passwd user1

4. Make the user non-interactive (no ssh access to server)

   # usermod -s /sbin/nologin user1

```
user1:x:601:1003::/home/user1:/sbin/nologin
user2:x:1002:1004::/home/user2:/bin/bash
user3:x:1003:1004::/home/user3:/bin/bash
```

```
[root@localhost ~]# usermod -s /sbin/nologin user1
[root@localhost ~]# usermod -s /sbin/nologin user1
usermod: no changes
[root@localhost ~]# su user1
This account is currently not available.
[root@localhost ~]#
```

2.2)

1. Create TrainingGroup

   # groupadd TrainingGroup

2. Add user1 to TrainingGroup

   # usermod -g TrainingGroup user1

```
[root@localhost ~]# groups user1
user1 : TrainingGroup
[root@localhost ~]#
```

```
[root@localhost ~]# id user1
uid=601(user1) gid=1003(TrainingGroup) groups=1003(TrainingGroup)
```

2.3)

1. Create adminGroup

   # groupadd adminGroup

2. Create user2

   # useradd user2

3. Set password to user2 (password: redhat)

   # passwd user2

4. add user2 in group

   # usermod –g adminGroup user2

5. Create user3

   # useradd user3

6. Set passwoed to user3 (password: redhat)

   # passwd user3

7. add user3 in group

   # usermod –g adminGroup user3

```
[root@localhost ~]# groups user2 user3
user2 : adminGroup
user3 : adminGroup
```

8. Give user3 root permission:
   8.1. Open visudo file

      # visudo

   8.2. add in this file:

      #user3 ALL=(ALL) ALL

      Note:

      The first ALL => user3 can execute commands from any machine in the network.

      The second (ALL) => user3 can run command as any user on the system.

      The third ALL => user3 can run any command (sudo commands).

```
## Allows members of the users group to mount and unmount the
## cdrom as root
# %users  ALL=/sbin/mount /mnt/cdrom, /sbin/umount /mnt/cdrom
user3   ALL=(ALL)       ALL
## Allows members of the users group to shutdown this system
# %users  localhost=/sbin/shutdown -h now
```

Part3: SSH: Wednesday

1. In the first server:
    1.1. Generate the ssh key

        # ssh-keygen

    1.2. Copy the value of key in the id_rsa.pub file in second server

        # ssh-copy-id - i ~/.ssh/id_rsa.pub root@172.20.10.4

        Note: where the 172.20.10.4 is ip address for second server

    1.3. Make connection to with second server

        # ssh root@172.20.10.4

Part4: Permission: Tuesday

1. To copy fstab file to admin:

    # cp /etc/fstab /var/tmp/

2. To change the owner of fstab file to adminGroup group to control permissiom and access for the fstab file

    # chgrp adminGroup /var/tmp/fstab

3. Set user1 could read, write and modify it

    # setfacl –m u:user1:rwx /var/tmp/fstab

4. Set user2 can't do any permission.

    # setfacl –m u:user2:--- /var/tmp/fstab

```
[root@localhost tmp]# getfacl /var/tmp/fstab
getfacl: Removing leading '/' from absolute path names
# file: var/tmp/fstab
# owner: root
# group: adminGroup
user::rw-
user:user1:rwx
user:user2:---
group::r--
mask::rwx
other::r--
```

Part5: Permission: Tuesday

1. Change the mode to enforcing from config file
    1.1. Open the selinux config file

        # vi /etc/selinux/config

    1.2. Change the SELINUX value to enforcing

```
# This file controls the state of SELinux on the system.
# SELINUX= can take one of these three values:
#     enforcing - SELinux security policy is enforced.
#     permissive - SELinux prints warnings instead of enforcing.
#     disabled - No SELinux policy is loaded.
SELINUX=enforcing
# SELINUXTYPE= can take one of three values:
#     targeted - Targeted processes are protected,
#     minimum - Modification of targeted policy. Only selected processes are protected.
#     mls - Multi Level Security protection.
SELINUXTYPE=targeted
```

Part6: Bash script and processes: Wednesday

1. go to tmp directory

    # cd tmp

2. Open crontab and edit on it

    2.1. tmp# crontab –e

    2.2. Write in file:

    */10 * * * * /tmp/myscript.sh

    Note: this means the /tmp/myscript.sh file run every 10 min

3. Open myscript file to write on it the code I need to run

    3.1. tmp# vi myscript.sh

    3.2. Write this code:

        #!/bin/bash

        sleep 120& **Note**: this line used to sleep this process 2min in the background

        date

        cat /root/file.txt

4. Change mode of script file to allowing you to run it as a script by executing

    tmp# chmod +x myscript.sh

5. Run myscript file in the background

tmp# ./myscript.sh &

6. To show the process details

   tmp# ps –u

7. To kill the process

   tmp# Kill <PID for this process>

```
[root@localhost tmp]# ./myscript.sh
Sun Jun 18 17:47:21 EDT 2023
anasNimer
[root@localhost tmp]# ps -u
USER       PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root       441  0.0  0.1 191988  2388 tty1     S    17:23   0:00 su -
root       448  0.0  0.1 115548  2112 tty1     S    17:23   0:00 -bash
root       608  0.0  0.1 192036  2456 tty1     S    17:26   0:00 su - user2
root       756  0.0  0.1 191988  2392 tty1     S    17:27   0:00 su -
root       763  0.0  0.1 115544  2084 tty1     S    17:27   0:00 -bash
root       835  0.0  0.1 192036  2456 tty1     S    17:28   0:00 su - user1
root      1131  0.0  0.1 191988  2388 tty1     S    17:34   0:00 su -
root      1139  0.0  0.1 115548  2120 tty1     S    17:34   0:00 -bash
root      1600  0.0  0.0 115544  1484 tty1     Ss   Jun15   0:00 -bash
root      1835  0.0  0.0 108056   360 tty1     S    17:47   0:00 sleep 120
root      1844  0.0  0.0 155452  1872 tty1     R+   17:47   0:00 ps -u
root     31378  0.0  0.1 192036  2460 tty1     S    16:57   0:00 su - user2
root     31749  0.0  0.1 191988  2392 tty1     S    17:03   0:00 su -
root     31760  0.0  0.1 115544  2096 tty1     S    17:03   0:00 -bash
root     31910  0.0  0.1 192036  2456 tty1     S    17:06   0:00 su - user2
root     32285  0.0  0.1 191988  2388 tty1     S    17:12   0:00 su - user3
root     32506  0.0  0.1 191988  2392 tty1     S    17:16   0:00 su -
root     32512  0.0  0.1 115544  2084 tty1     S    17:16   0:00 -bash
root     32554  0.0  0.1 192036  2456 tty1     S    17:17   0:00 su - user3
[root@localhost tmp]# kill 1835
```

Part7: Yum Repo

1. Install tmux

   # yum install tmux

2. Install httpd & mysql

   2.1. # yum install httpd

   2.2. # yum install mysql-server

3. Create local yum repository

   3.1 . # yum install createrepo

   3.2. # yum install yum-utils

   3.3. # cd /var/www/html

   3.4. # mkdir repo

   3.5. # vi /etc/yum.repos.d/local.repo

   and write on it:

   [local]

   name= local repo

baseurl=file:/// root/repo

enabled=1

gpgcheck=0

4. Install the packages from url

wget https:/repo.zabbix.com/zabbix/4.4/rehl/7/x86_64/zabbix-agent-4.4.10-1.el7.x86_64.rpm

Note: install all type of packages 4.4.10-1.el7

5. Create repository

createrepo .

6. Disable all other repositories and keep only the new repo

6.1. # yum-config-manager –disable /*

6.2. #yum-config-manager –enable repo

7. Install zabbix rpms from the new repo

yum install zabbix zabbix-web php zabbix-server zabbix-agent

Part8: Network management: **Wednesday**

1. Add port 443,80 and make the changes permanent (active every time not temporary)

1.1. firewall-cmd –zone=public –add-port=443 –permanent

1.2. firewall-cmd –zone=public –add-port=80 –permanent

2. you need to reload firewall to make the permanent active

firewall-cmd --reload

3. Add ssh service

firewall-cmd –zone=public –add-service=ssh

4. Reload the changes

firewall-cmd --reload

5. Block ssh connection

firewall-cmd --add-rich-rule='rule family=ipv4 source address=”172.20.10.4” service name=”ssh” reject'

6. **In another VM test the ssh block connection**

ssh 172.20.10.3

Note: the output is connection refused

```
ssh: connect to host 172.20.10.3 port 22: Connection refused
You have new mail in /var/spool/mail/root
```

Part9: Cronjob: <u>Wednesday</u>

1. Go to tmp directory

   # cd tmp

2. Open crontab and edit on it

   2.1. tmp# crontab –e

   2.2. Write in file:

   30 1 * * * /tmp/filescript.sh

   Note: this means the /tmp/filescript.sh file run at 1:30 AM every day

3. Create filescript.sh file

   tmp# touch filescript.sh

4. Open filescript file to write on it the code I need to run

   3.1. tmp# vi filescript.sh

   3.2. Write this code:

   ```
   #!/bin/bash
   time=$(date)
   user=$(who)
   echo "${time} - ${user}" >> file.txt
   ```

5. Change mode of script file to allowing you to run it as a script by executing

   tmp# chmod +x filescript.sh

6. Run filescript file in the background

   tmp# ./filescript.sh

7. cat file.txt

```
Wed Jun 14 07:58:32 EDT 2023 - root
Wed Jun 14 08:00:00 EDT 2023 - root
```

Part10 Mariadb:

1. install mariadb from the local repo that was created in yum Repo section

   1.1. yum install zabbix-proxy-mysql.x86_64

   1.2. yum install zabbix-server-mysql.x86_64

   1.3. yum install mariadb

2. Start and enable mariadb server

   # systemctl start mariadb

   # systemctl enable mariadb

3. open ports in iptables from mariadb

   # iptables -A INPUT -p tcp --dport 3306 -j ACCEPT

4. To change login password in mariadb

   mysqladmin –u root password

   Note: Write my password anas**@1234**

5. Open mariadb

   5.1. mysql –u root –p

   5.2. Enter the password **anas@1234**

6. Create user and database

   6.1. sudo mysql -u root - p

   6.2. to create database and user write:

   CREATE DATABASE mydb;

   // create user set name is anas and set password password

   CREATE USER 'anas'@'localhost' IDENTIFIED BY 'password';

   // give all privileges on the "mydb" database to the user "anas" when connecting from the "localhost" host. The privileges include the ability to create tables, insert data...

   GRANT ALL PRIVILEGES ON mydb.* TO 'anas'@'localhost';

   //changes made in the previous commands are immediately applied

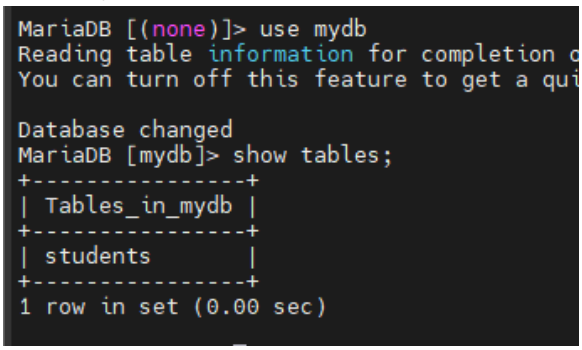
FLUSH PRIVILEGES;
EXIT;

7. Connect to database using the user was created in step 6
   7.1. mysql –u anas –p
   7.2. Write the password **password**
8. Use DataBase that i created
   8.1. use mydb;
   8.2. Write on it:

```
CREATE TABLE students (
    id INT AUTO_INCREMENT PRIMARY KEY,
    firstName VARCHAR(15),
    lastName VARCHAR(15),
    programEnrolled VARCHAR(20),
    expectedGraduationYear INT,
    studentNumber VARCHAR(15)
);

INSERT INTO students (firstName, lastName, programEnrolled, expectedGraduationYear, studentNumber)
VALUES
('Allen', 'Brown', 'mechanical', 2017, '110-001'),
('David', 'Brown', 'mechanical', 2017, '110-002'),
('Mary', 'Green', 'mechanical', 2017, '110-003'),
('Dennis', 'Green', 'electrical', 2018, '110-004'),
('Joseph', 'Black', 'electrical', 2018, '110-005'),
('Dennis', 'Black', 'electrical', 2018, '110-006'),
('Ritchie', 'Salt', 'computer science', 2020, '110-007'),
('Robert', 'Salt', 'computer science', 2020, '110-008'),
('David', 'Suzuki', 'computer science', 2020, '110-009'),
('Mary', 'Chen', 'computer science', 2020, '110-010');
```

9. To show table I have
   9.1. Show tables;



   9.2. Describe students

```
MariaDB [mydb]> describe students;
+-------------------------+-------------+------+-----+---------+----------------+
| Field                   | Type        | Null | Key | Default | Extra          |
+-------------------------+-------------+------+-----+---------+----------------+
| id                      | int(11)     | NO   | PRI | NULL    | auto_increment |
| firstName               | varchar(15) | YES  |     | NULL    |                |
| lastName                | varchar(15) | YES  |     | NULL    |                |
| programEnrolled         | varchar(20) | YES  |     | NULL    |                |
| expectedGraduationYear  | int(11)     | YES  |     | NULL    |                |
| studentNumber           | varchar(15) | YES  |     | NULL    |                |
+-------------------------+-------------+------+-----+---------+----------------+
6 rows in set (0.00 sec)
```

9.3. Select * from students; (to show value that I was insert it)

```
MariaDB [mydb]> select * from students;
+----+-----------+----------+-----------------+------------------------+---------------+
| id | firstName | lastName | programEnrolled | expectedGraduationYear | studentNumber |
+----+-----------+----------+-----------------+------------------------+---------------+
|  1 | Allen     | Brown    | mechanical      |                   2017 | 110-001       |
|  2 | David     | Brown    | mechanical      |                   2017 | 110-002       |
|  3 | Mary      | Green    | mechanical      |                   2017 | 110-003       |
|  4 | Dennis    | Green    | electrical      |                   2018 | 110-004       |
|  5 | Joseph    | Black    | electrical      |                   2018 | 110-005       |
|  6 | Dennis    | Black    | electrical      |                   2018 | 110-006       |
|  7 | Ritchie   | Salt     | computer science |                   2020 | 110-007       |
|  8 | Robert    | Salt     | computer science |                   2020 | 110-008       |
|  9 | David     | Suzuki   | computer science |                   2020 | 110-009       |
| 10 | Mary      | Chen     | computer science |                   2020 | 110-010       |
+----+-----------+----------+-----------------+------------------------+---------------+
10 rows in set (0.00 sec)
```