INSTRUCTION

* You will be given by 2 VMs
    -hostname: **servera.lab.example.com** (172.24.10.10)
    -hostname: **serverb.lab.example.com** (172.24.10.11)
* Total number of Questions will be arround 22.
* In one system root password is already set (no need to reset) but in second system password need to be recovered.
* In one system Network configuration is required but in another one networking is already done
* NTP need to be configured in only one system (not in both)
* YUM Repo need to configured in both systems.
* Firewall and SELinux both will be pre-enabled.

NODE1

Q1.Configure network and set the static hostname.

IP ADDRESS = 172.25.250.10
NETMASK = 255.255.255.0
GATEWAY = 172.25.250.254
DNS/Nameserver = 172.25.250.254
Domain name = lab.example.com
HostName = servera.lab.example.com

Q2. Configure YUM repos with the given link || (2repos: 1st is BaseOS and 2nd is AppStream)

baseurl = http://content.example.com/rhel9.0/x86_64/dvd/BaseOS (for baseos)
baseurl = http://content.example.com/rhel9.0/x86_64/dvd/AppStream (for appstream)

ANS:-

```
# vim /etc/yum.repos.d/rhel.repo
        [BaseOs]
        name=BaseOs
        baseurl=http://content.example.com/rhel8.0/x86_64/dvd/BaseOS/
        enabled=true
        gpgcheck=false

        [AppStream]
        name=AppStream
        baseurl=http://content.example.com/rhel8.0/x86_64/dvd/AppStream/
        enabled=true
        gpgcheck=false
:wq!
# yum clean all
# yum repolist all
```

```
# yum install httpd -y (verify)
```

Q3. Debug SELinux.

- A web server running on non standard port 82 is having issues serving content,Debug and fix the issues.

- The web server on your system can server all the existing HTML files from /var/www/html

- Web service should automatically start at boot time.

NOTE: Do not make any changes to these files

ANS:-

```
# yum install httpd -y (if it's not there)
# systemctl status httpd.service
# systemctl enable httpd.service
# systemctl status httpd.service
# vim /etc/httpd/conf/httpd.conf
        Listen 82        ("Listen" parameter already there)
:wq!
# firewall-cmd --permanent --add-port=82/tcp
# firewall-cmd --reload
# firewall-cmd --list-all
# semanage port -l | grep "http"       (to verify 82 port has added in semanage or not)
# semange port -a -t httpd_port_t -p tcp 82
# semanage port -l | grep "http"       (verify it again)
# systemctl restart httpd.service
# curl localhost:82 (verify)
```

Q4. Create User accounts with supplementry group.

- create the group a named "sysadms"

- create users as named "natasha" and "harry", will be the supplementry group "sysadms".

- cerate a user as named "sarah", should have non-interactive shell and it should be not the member of "sysadms"

- password for all users should be "trootent"

ANS:-

```
# groupadd sysadmin
# useradd -G sysadmin natasha
# useradd -G sysadmin harry
# id natasha  (verify)
# id harry      (verify)
```

```
# useradd -s /sbin/nologin sarah
# tail /etc/passwd      (verify)
# chpasswd  (to set the password for multiple user)
  natasha:trootent
  harry:trootent
  sarah:trootent
```

Q5. Configure a cron job that runs every 1 minutes and executes logger "EX200 in progress" as the user natasha.

ANS:-

```
# systemctl status crond.service (verify)
# yum install cronie -y (if the package is not there)
# systemctl enable --now crond.service
# crontab -eu natasha
  */1 * * * * logger "EX200 in progress
  wq!
# tail -f /var/log/message | grep "EX200" (verify)
```

Q6. Create a collaborative Directory.

- Create the Directory "/home/manager" with the following characteristics.

- Group ownership of "/home/manager" should go to "sysadms" group.

- The directory should have full permission for all members of "sysadms" group but not to the other users except "root".

- Files created in future under "/home/manager" should get the same group ownership.

ANS:-

```
# mkdir /home/manager
# chgrp sysadms /home/manager
# ls -ld /home/manager (verify)
# chmod g+rwx,o-rwx /home/manager
# ls -ld /home/manager (verify)
# chmod g+s /home/manager (apply sgid permission)
# touch /home/sysadms/file1.txt (verify)
# ls -l /home/sysadms/file1.txt (verify)
```

Q7. Configure NTP.

- Synchronize time of your system with the server 'classroom.example.com'

ANS:-

```
# systemctl status chronyd.service
# yum install chrony -y ( if it is not there )
# systemctl enable --now chronyd.service
# systemctl status chronyd.service (verify)
# timedatectl (Make sure your system clock syncronize yes and ntp service should be active )
# timedatectl set-ntp true
# vim /etc/chrony.service
  server classroom.example.com iburst
  :wq!
# systemctl restart chronyd.service
# chronyc sources (verify)
```

Q8. Configure AutoFS

- All ldapuserX home directory is exported via NFS, which is available on classroom.example.com(172.25.250.254) and your NFS-exports directory is /home/guests for ldaouserX.

- ldapuserX's home directory is classroom.example.com:/home/guests/ldapuserX, Where 'X' is the station number.

- ldapuserX's home directory should be automount autofs service.

- home directories must be writtable by their users.

NOTE: While you are able to loginas any of user ldapuser1 to ldapuser20 the only home directory that is accessible from your system.

ANS:-

```
# yum install autofs -y
# systemctl enable --now autofs.service
# systemctl status autofs.service
# vim /etc/auto.master
  /home/guests    /etc/auto.misc
  :wq!
# vim /etc/auto.misc
 ldapuserX    -fstype=nfs,rw,sync  classroom.example.com:/home/guests/&
 :wq!
# systemctl restart autofs.service
# ls -ld /home/guests (verify)
```

Q9. Create user 'alex' with 3456 uid and set the password 'trootent'

ANS:-
```
# useradd -u 3456 alex
# passwd --stdin alex
  trootent
# id alex (verify)
```

Q10. Locate all files owned by user "harry" and copy it under /root/harry-files.

ANS:-
```
# mkdir /root/harry-files
# find / -user harry -exec cp -rpvf {} /root/harry-files \;
# ls -la /root/harry-files (verify)
```

Q12. Find a string 'ich' from "/usr/share/dict/words" and put it into /root/lines file.

ANS:-
```
# grep 'ich' /usr/share/dict/words > /root/lines
# cat /root/lines (verify)
```

Q13. create an archive '/root/backup.tar.bz2' of /usr/local directory and compress it with bzip2.

ANS:-
```
# tar cfj /root/backup.tar.bz2 /usr/local
# ls -l /root/backup.tar.bz2 (verify)
```

NOTE:- If it's asking you on gzip then # tar cfz /root/backup.tar.gz /usr/local
If it's asking you on xzip then # tar cfJ /root/backup.tar.xz /usr/local

---

Q14. Script file
- create a script file with the name 'script.sh' inside the '/bin' and locate all files from '/usr/local' directory which has more than 30k and lessthan 50k copy under '/root/d1'.
- set the sgid permission for this directory.

ANS:-
```
# vim /bin/script.sh
```

```
    #!/bin/bash

    mkdir  /root/d1
    find /usr/local -size +30k -size -50k -exec cp -rpvf {} /root/d1 \;
    chmod g+s /root/d1
     :wq
  # chmod a+x /bin/script.sh
  # sh /bin/script.sh
```

Q15. Create a container image from the provided link.
- create a container image from "http://utility.example.com/container/Containerfile" name it as 'process_files'.
- Login to 'registry.lab.example.com' through "admin" and "redhat321"
NOTE:- Find the registry from Instruction page. || container should be create by one regular user 'athena' will get in ques.

ANS:-

```
  # id athena
  # ssh athena@localhost
  $ podman -u admin
    password: redhat
  $ wget http://utility.example.com/container/Containerfile   (from given url)
  $ podman build -t process_files -f <filename>    (which you have downloaded from top link)
  $ podman images (verify)
   localhost/process_files (output will get)
  $ exit
```

Q16. Create rootless container and do volume mapping which they asked you in the question and run container as a service from normal
user account, the service must be enable so it could start automatically after reboot.
- Create a container named as 'ascii2pdf' using the previously created container image from previous question 'process_files'
- Map the '/opt/files' to container '/opt/incoming'
- Map the '/opt/processed' to container '/opt/outgoing'
- Create systemd service as container-ascii2pdf.service
- Make service active after all server reboots.

ANS:-

```
  # mkdir /opt/files  /opt/processed
  # chown -R athena:athena /opt/files
```

```
# chown -R athena:athena /opt/processed
# ssh athena@localhost
$ podman run -d --name ascii2pdf -v /opt/files:/opt/incoming:Z -v
/opt/processed:/opt/outgoing:Z localhost/process_files
$  podman ps
$ mkdir /home/athena/.config/systemd/user/
$ cd /home/william/.config/systemd/user/
$ podman generate systemd --name ascii2pdf --files --new
$ ls -lrt
  container-ascii2pdf.service  (output will get)
$ loginctl enable-linger athena
$ loginctl show-user athena
$ systemctl --user daemon-reload
$ systemctl --user enable container-ascii2pdf.service
$ systemctl --user start container-ascii2pdf.service
$ systemctl --user status container-ascii2pdf.service
```

INSTRUCTION:-

In this server 3 disks will be given.

*** /dev/vda : For root filesystem (don't do anything under this disk).**

*** /dev/vdb : You need to use swap or lvm.**

*** /dev/vdc** :

Q17. Reset root user password and make it 'trootent'

ANS:-

STEP_1: Find alt+ctrl+del

STEP_2: Interrupt the boot-loader countdown by pressing any key, except Enter (press uparrow and downarrow)

STEP_3: Move the cursor to the rescue kernel entry to boot (the one with the word rescue in its name)

STEP_4: Press e to edit the selected entry

STEP_5: Move the cursor to the kernel command line (the line that starts with linux)

STEP_6: In that line end Append "rd.break console=tty1"

STEP_7: Press Ctrl+x to boot with the changes

STEP_8: Press Enter to perform maintenance when prompted

sh-5.1# mount -o remount,rw /sysroot (Remount /sysroot as read/write)

sh-5.1# chroot /sysroot (Switch into a chroot jail, where /sysroot is treated as the root of the file-system tree)

sh-5.1# passwd root (Set a new root password)

sh-5.1# touch /.autorelabel (to relebl all files)
sh-5.1# exit (twice)

Q18. Configure YUM repos with the given link || (2repos: 1st is BaseOS and 2nd is AppStream)

baseurl = http://content.example.com/rhel9.0/x86_64/dvd/BaseOS (for baseos)
baseurl = http://content.example.com/rhel9.0/x86_64/dvd/AppStream (for appstream)

ANS:-

```
# vim /etc/yum.repos.d/rhel.repo
        [BaseOs]
        name=BaseOs
        baseurl=http://content.example.com/rhel8.0/x86_64/dvd/BaseOS/
        enabled=true
        gpgcheck=false

        [AppStream]
        name=AppStream
        baseurl=http://content.example.com/rhel8.0/x86_64/dvd/AppStream/
        enabled=true
        gpgcheck=false
:wq!
# yum clean all
# yum repolist all
```

Q19. Resize a logical Volume

- Resize the logical volume "mylv" so that after reboot size should be in between 290MB to 330MB.

NOTE:- Already lvm got cretaed in Exam.

ANS:-

```
# lvs
# lsblk
# lvextend -L 310M /dev/myvg/mylv
# resize2fs /dev/mapper/myvg-mylv
# lsblk (verify)
# df -Th (verify)
```

Q20. Add a swap partition of 512MB and mount it permanently.

ANS:- # gdisk /dev/vdb
Command (? for help): n
Partition number (2-128, default 2):
First sector (34-2047, default = 34) or {+-}size{KMGTP}: Press Enter
Last sector (34-2047, default = 2047) or {+-}size{KMGTP}: +512M
Hex code or GUID (L to show codes, Enter = 8300): Press Enter
Command (? for help): t
Partition number (1-2): 2
Current type is 8300 (Linux filesystem)
Hex code or GUID (L to show codes, Enter = 8300): 8200
Changed type of partition to 'Linux swap'
Command (? for help): w
udevadm settle
lsblk
mkswap /dev/vdb2
blkid (copy the path which you have cretaed for swap partition)
vim /etc/fstab
/dev/vdb2 swap swap defaults 0 0
:wq!
swapon -a
lsblk (verify)
reboot
lsblk

Q21. Create a logical volume of name "wshare" from a volume group name "wgroup" physical extents of 16M and logical volume should have size of 50extents.Formate with vfat filesystem and permanently mounted to /mnt/wshare.

ANS:-
gdisk /dev/vdb
Command (? for help): n
Partition number (3-128, default 3): 3
First sector (34-2047, default = 34) or {+-}size{KMGTP}: Press Enter
Last sector (34-2047, default = 2047) or {+-}size{KMGTP}: +1024M
Hex code or GUID (L to show codes, Enter = 8300): Press Enter
Command (? for help): t
Partition number (1-3): 3
Current type is 8300 (Linux filesystem)
Hex code or GUID (L to show codes, Enter = 8300): 8e00

```
Changed type of partition to 'Linux lvm'
Command (? for help): w
# udevadm settle
# pvcreate /dev/vdb3
# vgcreate -s 16M wgroup /dev/vdb3
# vgs / vgdisplay (verify)
# lvcreate -n wshare -l +50 wgroup /dev/vdb3
# lvdisplay (verify)
# mkfs vfat /dev/mapper/wgroup-wshare
# blkid
# mkdir /mnt/wshare
# vim /etc/fstab
  /dev/mapper/wgroup-wshare /mnt/wshare vfat defaults 0 0
 :wq
# mount -a
# lsblk (verify)
# reboot
# lsblk / df -Th (verify)
```

Q22. Configure System Tuning.

- Choose the recommended 'tuned' profile for your system and set it as the default.

ANS:-

```
# systemctl status tuned.service
# yum install tuned -y (If it's not installed)
# systemctl enable --now tuned.service
# tuned-adm recommend
   virtul-guest (output)
# tuned-adm profile virtul-guest
# tuned-adm active
  Current active profile: virtual-guest (output)
```

BEST OF LUCK