➢ Vendor: Red Hat

➢ Exam Code: EX200

➢ Exam Name: Red Hat Certified System Administrator (RHCSA) (v6+v7 version)

➢ Part B – V6 Exam A Questions

---------- For v6 Exam A ----------

Exam Environment:

Take examinations on a real system with a pre-installed virtual machine.

All exams must be completed in the virtual machine.

Network must be well configured. If the network cannot be accessed, you will not pass the exam.

In the iptables configuration, if you need to refuse the access, please use “Reject”. (the default is set as ACCEPT.)

Note:

1. All the software package is stored at http://ip/dir/cdom.

2. You can use the real machine to verify whether the examination experiment is correctly completed in the virtual machine.

3. The network environment:

```
Host name: station.domainX0.example.com

IP Address: 172.24.X0.5/24 (If your machine is No.1, X0 is 10.)

Gateway: 172.24.10.254
```

4. You can use a real machine to verify the configuration of the virtual machine is properly completed: (different exam not the same Network domain, please look the situation)

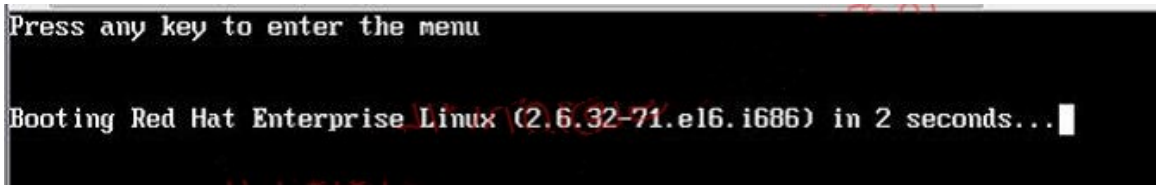
```
dn10.ws.com domain is 172.28.10.0/24 network.

tk.com domain is 172.18.0.0/16 network.
```

Generally, the network is required to be rejected in exam.

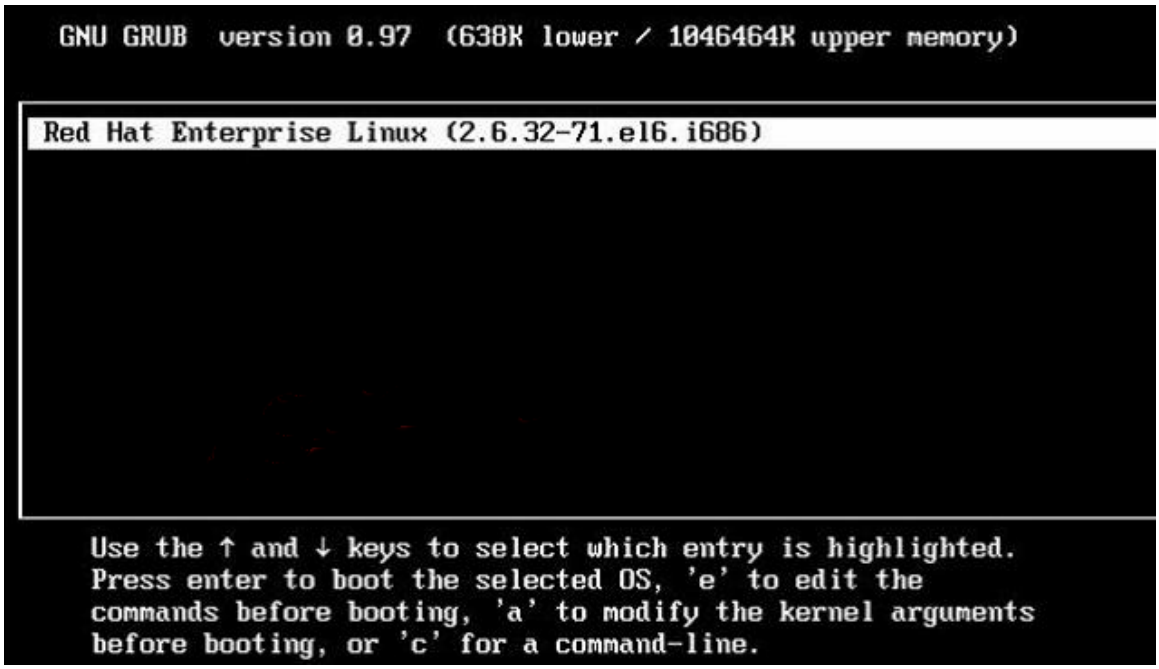
Complete the task before the exam:

1. Reset root password

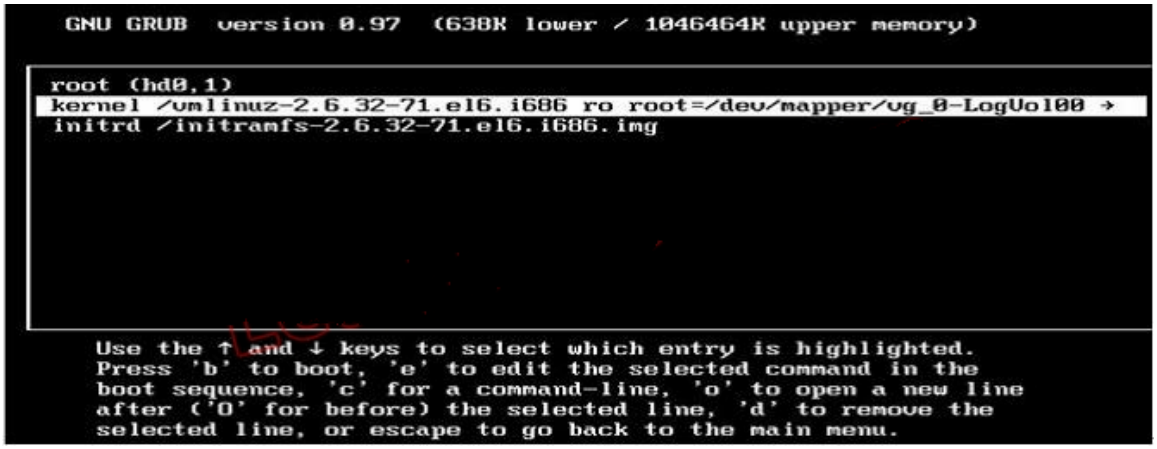
(1) Press any key to enter the menu within 5 seconds



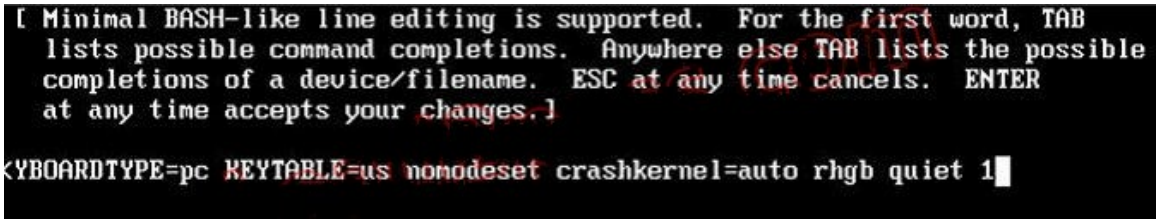
(2) Enter “e” to edit the commands



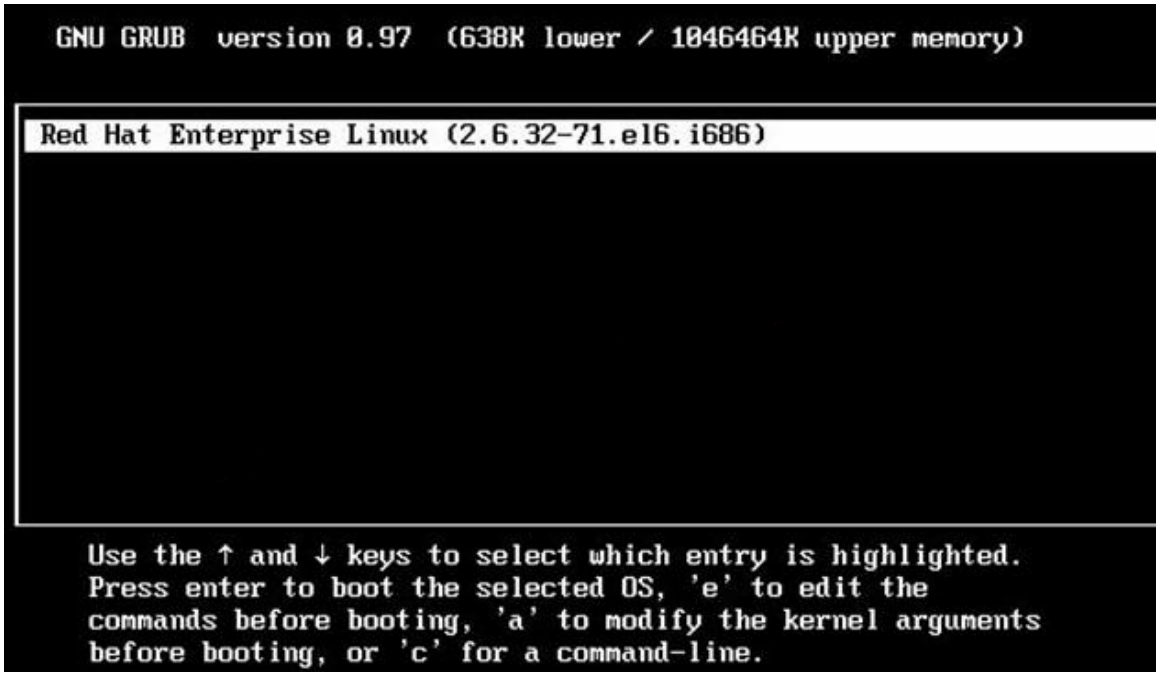
(3) Choose the line of begin with “kernel 1/……”



(4) Select the kernel and sends a parameter: "1", "s", or " single". These parameters are means that the system will start to enter single-user mode

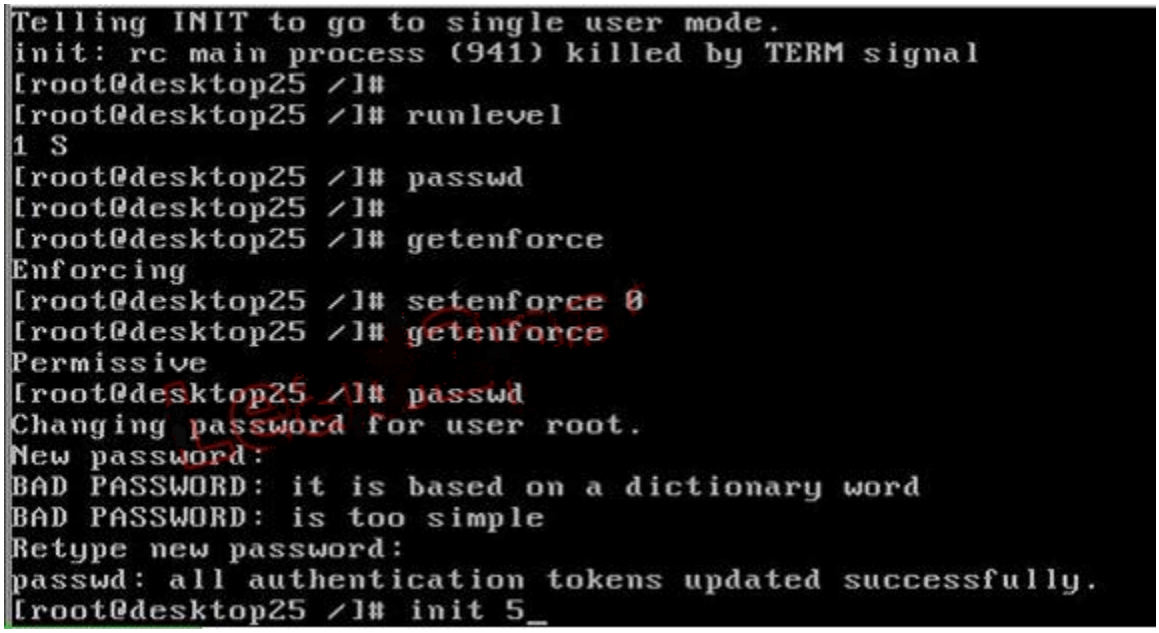


(5) Press the "Enter" key, return to the start menu. Now press the letter "b" key to boot the system



(6) Into single-user mode and reset the root password

P.S.: In the in RHEL6 system, modify root password directly is invalid, you need to temporarily turn off SELinux. This is a bug in RHEL6 system.



Here the detail of commands:

runlevel: View the current run level, check whether on the single-user mode

passwd: Change the root password

getenforce: Check whether to enable SELinux, forced mode (Enforcing)

setenforce 0: temporary disable SELinux protection, to change the root password

init 5: Restart, and direct into run level 5, the graphical interface

2. Configure your Host Name, IP Address, Gateway and DNS

```
Host name: dtop5.dn.ws.com

IP Address: 172.28.10.5/24

Gateway: 172.28.10.1

DNS: 172.28.10.1
```

Answers:

(1) Configure Host Name

```
# vim /etc/sysconfig/network

NETWORKING=yes
```

```
HOSTNAME=dtop5.dn.ws.com

GATEWAY=172.28.10.1
```

(2) Configure IP Address, Gateway and DNS

Configure the network by Network Manager:

Note: Please remember to choose two options:

* Connect automatically

* Available to all users

Click "Apply", save and exit, and restart your network services:

```
# Service network restart
```

(3) Validate these profiles:

a) Check gateway: `# vim / etc / sysconfig / network`

```
NETWORKING=yes
HOSTNAME=dtop5.dn.ws.com
GATEWAY=172.28.10.1
```

b) Check Host Name: `# vim /etc/hosts`

```
172.28.10.5     dtop5.dn.ws.com dtop5   # Added by NetworkManager
127.0.0.1       localhost.localdomain   localhost
::1     dtop5.dn.ws.com dtop5   localhost6.localdomain6 localhost6
```

c) Check DNS: `# vim /etc/resolv.conf`

```
# Generated by NetworkManager
search dn.ws.com
nameserver 172.28.10.1
```

d) Check Gateway: `# vim /etc/sysconfig/network-scripts/ifcfg-eth0`

```
DEVICE="eth0"
NM_CONTROLLED="yes"
ONBOOT=yes
TYPE=Ethernet
BOOTPROTO=none
IPADDR=172.28.10.5
PREFIX=24
GATEWAY=172.28.10.1
DNS1=172.28.10.1
DOMAIN=dn.ws.com
DEFROUTE=yes
IPV4_FAILURE_FATAL=yes
IPV6INIT=no
NAME="System eth0"
UUID=5fb06bd0-0bb0-7ffb-45f1-d6edd65f3e03
HWADDR=00:0C:29:0E:A6:C8
```

Part 1

Question 1

Add 3 users: harry, natasha, tom. The requirements: The Additional group of the two users: harry, Natasha is the admin group. The user: tom's login shell should be non-interactive.

Answers:

```
# useradd -G admin harry

# useradd -G admin natasha

# useradd -s /sbin/nologin tom

# id harry;id Natasha     (Show additional group)

# cat /etc/passwd     (Show the login shell)
```

OR

```
# system-config-users
```

Question 2

Create a catalog under /home named admins. Its respective group is requested to be the admin group. The group users could read and write, while other users are not allowed to access it. The files created by users from the same group should also be the admin group.

Answers:

```
# cd /home/

 # mkdir admins /

 # chown admin admins/

 # chmod 770 admins/

 # chmod g+s admins/
```

Question 3

Configure a task: plan to run echo hello command at 14:23 every day.

Answers:

```
# which echo

 # crontab -e
```

```
23 14 * * * /bin/echo hello

# crontab -l    (Verify)
```

Question 4

Find the files owned by harry, and copy it to catalog: /opt/dir

Answers:

```
# cd /opt/

# mkdir dir

# find  / -user harry -exec cp -rfp {} /opt/dir/ \;
```

Question 5

Find the rows that contain abcde from file /etc/testfile, and write it to the file/tmp/testfile, and the sequences requested as the same as /etc/testfile.

Answers:

```
# cat /etc/testfile | while read line;

do

echo $line | grep abcde | tee -a /tmp/testfile

done
```

OR

```
grep 'abcde' /etc/testfile > /tmp/testfile
```

Question 6

Create a 2G swap partition which take effect automatically at boot-start, and it should not affect the original swap partition.

Answers:

```
# fdisk /dev/sda
  p      (check Partition table)
  n      (create new partition: press e to create extended partition, press p to create the main partition,
and the extended partition is further divided into logical partitions)
```

```
  Enter
  +2G
  t
  8
  l
  82
  W
partx -a /dev/sda
partprobe
mkswap /dev/sda8

Copy UUID
swapon -a
vim /etc/fstab
UUID=XXXXX swap swap defaults 0 0
```

(swapon -s)

Question 7

Create a user named alex, and the user id should be 1234, and the password should be alex111.

Answers:

```
# useradd -u 1234 alex
 # passwd alex
  alex111
  alex111
```

OR

```
echo alex111|passwd -stdin alex
```

Question 8

Install a FTP server, and request to anonymous download from /var/ftp/pub catalog. (it needs you to configure yum direct to the already existing file server)

Answers:

```
# cd /etc/yum.repos.d
 #vim local.repo
    [local]
    name=local.repo

    baseurl=file:///mnt
    enabled=1
```

```
    gpgcheck=0

 # yum makecache

# yum install -y vsftpd

# service vsftpd restart

# chkconfig vsftpd on

# chkconfig --list vsftpd

# vim /etc/vsftpd/vsftpd.conf

anonymous_enable=YES
```

Question 9

Configure a HTTP server, which can be accessed through:

http://station.domain40.example.com.

Please download the released page from http://ip/dir/example.html.

Answers:

```
# yum install -y httpd
  # chkconfig httpd on
    # cd /var/www/html
    # wget http://ip/dir/example.html
    # cp example.com index.html
    # vim /etc/httpd/conf/httpd.conf
      NameVirtualHost 192.168.0.254:80
      <VirtualHost 192.168.0.254:80>
      DocumentRoot /var/www/html/
      ServerName station.domain40.example.com
      </VirtualHost>
```

Question 10

Configure the verification mode of your host account and the password as LDAP. And it can login successfully through ldapuser40. the password is set as “password”. And the certificate can be downloaded from http://ip/dir/ldap.crt. After the user logs on the user has no host directory unless you configure the autofs in the following questions.

Answers:

```
system-config-authentication
LDAP Server: ldap: //instructor.example.com     (In domain form, not write IP)
```

OR

```
# yum groupinstall directory-client     (1.krb5-workstation  2.pam-krb5  3.sssd)

# system-config-authentication

1.User Account Database: LDAP

2.LDAP Search Base DN: dc=example,dc=com

3.LDAP Server: ldap://instructor.example.com     (In domain form, not write IP)

4.Download CA Certificate

5.Authentication Method: LDAP password

6.Apply

getent passwd ldapuser40
```

Question 11

Configure autofs to make sure after login successfully, it has the home directory autofs, which is shared as /rhome/ldapuser40 at the ip: 172.24.40.10. and it also requires that, other ldap users can use the home directory normally.

Answers:

```
# chkconfig autofs on

# cd /etc/
 # vim /etc/auto.master
    /rhome /etc/auto.ldap
 # cp auto.misc  auto.ldap

# vim auto.ladp
   ldapuser40    -rw,soft,intr    172.24.40.10:/rhome/ldapuser40
       *    -rw,soft,intr    172.16.40.10:/rhome/&
   # service autofs stop
   # server autofs start

# showmount -e 172.24.40.10

# su - ladpuser40
```

Question 12

Configure the system synchronous as 172.24.40.10.

Answers:

Graphical Interfaces:

```
System-->Administration-->Date & Time
```

OR

```
# system-config-date
```

Question 13

Change the logical volume capacity named vo from 190M to 300M. and the size of the floating range should set between 280 and 320. (This logical volume has been mounted in advance.)

Answers:

```
# vgdisplay     (Check the capacity of vg, if the capacity is not enough, need to create pv , vgextend , lvextend)
  # lvdisplay     (Check lv)
  # lvextend -L +110M /dev/vg2/lv2

# resize2fs /dev/vg2/lv2

mount -a     (Verify)
```

(Decrease lvm)

```
# umount /media

# fsck -f /dev/vg2/lv2

# resize2fs -f /dev/vg2/lv2 100M

# lvreduce -L 100M /dev/vg2/lv2

# mount -a

# lvdisplay     (Verify)
```

OR

```
# e2fsck -f /dev/vg1/lvm02
# resize2fs -f /dev/vg1/lvm02
```

```
# mount /dev/vg1/lvm01 /mnt
# lvreduce -L 1G -n /dev/vg1/lvm02
# lvdisplay    (Verify)
```

Question 14

Create a volume group, and set 16M as a extends. And divided a volume group containing 50 extends on volume group lv, make it as ext4 file system, and mounted automatically under /mnt/data.

Answers:

```
# pvcreate /dev/sda7 /dev/sda8
  # vgcreate -s 16M vg1 /dev/sda7 /dev/sda8
  # lvcreate -l 50 -n lvm02
  # mkfs.ext4 /dev/vg1/lvm02

# blkid /dev/vg1/lv1
  # vim /etc/fstab
  # mkdir -p /mnt/data

UUID=xxxxxxxx /mnt/data ext4 defaults 0 0
  # vim /etc/fstab

# mount -a
  # mount    (Verify)
```

Question 15

Upgrading the kernel as 2.6.36.7.1, and configure the system to Start the default kernel, keep the old kernel available.

Answers:

```
# cat /etc/grub.conf
  # cd /boot
  # lftp it
  # get dr/dom/kernel-xxxx.rpm
  # rpm -ivh kernel-xxxx.rpm
  # vim /etc/grub.conf
      default=0
```

Question 16

Create a 512M partition, make it as ext4 file system, mounted automatically under /mnt/data and which take effect automatically at boot-start.

Answers:

```
# fdisk /dev/vda

n

+512M

w

# partprobe /dev/vda

# mkfs -t ext4 /dev/vda5

# mkdir -p /data

# vim /etc/fstab

/dev/vda5 /data ext4 defaults 0 0

# mount -a
```

Question 17

Create a volume group, and set 8M as a extends. Divided a volume group containing 50 extends on volume group lv (lvshare), make it as ext4 file system, and mounted automatically under /mnt/data. And the size of the floating range should set between 380M and 400M.

Answers:

```
# fdisk

# partprobe

# pvcreate /dev/vda6

# vgcreate -s 8M vg1 /dev/vda6 -s

# lvcreate -n lvshare -l 50 vg1 -l

# mkfs.ext4 /dev/vg1/lvshare

# mkdir -p /mnt/data

# vim /etc/fstab/dev/vg1/lvshare /mnt/data ext4 defaults 0 0

# mount -a
```

```
# df -h
```

Question 18

Download ftp://192.168.0.254/pub/boot.iso to /root, and mounted automatically under /media/cdrom and which take effect automatically at boot-start.

Answers:

```
# cd /root; wget ftp://192.168.0.254/pub/boot.iso

# mkdir -p /media/cdrom

# vim /etc/fstab/root/boot.iso /media/cdrom iso9660 defaults,loop 0 0

# mount -a

mount [-t vfstype] [-o options] device dir
```

Question 19

Add admin group and set gid=600

Answers:

```
# groupadd -g 600 admin
```

Question 20

Add user: user1, set uid=601

Password: redhat

The user's login shell should be non-interactive.

Answers:

```
# useradd -u 601 -s /sbin/nologin user1

# passwd user1

redhat
```

Question 21

……

Part 2

Question 29

There are two different networks, 192.168.0.0/24 and 192.168.1.0/24. Your System is in 192.168.0.0/24 Network. One RHEL6 Installed System is going to use as a Router. All required configuration is already done on Linux Server. Where 192.168.0.254 and 192.168.1.254 IP Address are assigned on that Server. How will make successfully ping to 192.168.1.0/24 Network's Host?

Answers:

```
1. vi /etc/sysconfig/network

GATEWAY=192.168.0.254

OR

vi /etc/sysconf/network-scripts/ifcfg-eth0

DEVICE=eth0

BOOTPROTO=static

ONBOOT=yes

IPADDR=192.168.0.?

NETMASK=255.255.255.0

GATEWAY=192.168.0.254

2. service network restart

Gateway defines the way to exit the packets. According to question System
working as a router for two networks have IP Address 192.168.0.254 and
192.168.1.254.
```

Question 30

Make a swap partition having 100MB. Make Automatically Usable at System Boot Time.

Answers:

```
1. Use fdisk /dev/hda ->To create new partition

2. Type n-> For New partition
```

3. It will ask for Logical or Primary Partitions. Press l for logical

4. It will ask for the Starting Cylinder: Use the Default by pressing Enter Key

5. Type the Size: +100M ->You can Specify either Last cylinder of Size here

6. Press P to verify the partitions lists and remember the partitions name. Default System ID is 83 that means Linux Native

7. Type t to change the System ID of partition

8. Type Partition Number

9. Type 82 that means Linux Swap

10. Press w to write on partitions table

11. Either Reboot or use partprobe command

12. mkswap /dev/hda? ->To create Swap File system on partition

13. swapon /dev/hda? ->To enable the Swap space from partition

14. free -m ->Verify Either Swap is enabled or not

15. vi /etc/fstab/dev/hda? swap swap defaults 0 0

16. Reboot the System and verify that swap is automatically enabled or not

Question 31

There are two different networks 192.168.0.0/24 and 192.168.1.0/24. Where 192.168.0.254 and 192.168.1.254 IP Address are assigned on Server. Verify your network settings by pinging 192.168.1.0/24 Network's Host.

Answers:

1. vi /etc/sysconfing/network

NETWORKING=yes

HOSTNAME=station?.example.com

GATEWAY=192.168.0.254

2. service network restart

Or

```
1. vi /etc/sysconfig/network-scripts/ifcfg-eth0

DEVICE=eth0

ONBOOT=yes

BOOTPROTO=static

IPADDR=X.X.X.X

NETMASK=X.X.X.X

GATEWAY=192.168.0.254

2. ifdown eth0

3. ifup eth0
```

Question 32

One Logical Volume is created named as myvol under vo volume group and is mounted. The Initial Size of that Logical Volume is 400MB. Make successfully that the size of Logical Volume 200MB without losing any data. The size of logical volume 200MB to 210MB will be acceptable.

Answers:

```
1. First check the size of Logical Volume: lvdisplay /dev/vo/myvol

2. Make sure that the filesystem is in a consistent state before reducing:

# fsck -f /dev/vo/myvol

3. Now reduce the filesystem by 200MB

# resize2fs /dev/vo/myvol 200M

4. It is now possible to reduce the logical volume

# lvreduce /dev/vo/myvol -L 200M

4. Verify the Size of Logical Volume: lvdisplay /dev/vo/myvol

5. Verify that the size comes in online or not: df -h
```

Question 33

One Logical Volume named /dev/test0/testvolume1 is created. The initial Size of that disk is 100MB now you required more 200MB. Increase the size of Logical Volume, size should be increase on online.

Answers:

```
1. lvextend -L+200M /dev/test0/testvolume1

Use lvdisplay /dev/test0/testvolume1)

2. ext2online -d /dev/test0/testvolume1
```

lvextend command is used the increase the size of Logical Volume. Other command lvresize command also here to resize. And to bring increased size on online we use the ext2online command.

Question 34

We are working on /data initially the size is 2GB. The /dev/test0/lvtestvolume is mount on /data. Now you required more space on /data but you already added all disks belong to physical volume. You saw that you have unallocated space around 5 GB on your hard disk. Increase the size of lvtestvolume by 5GB.

Answers:

```
1. Create a partition having size 5 GB and change the syste id '8e'

2. use partprobe command

3. pvcreate /dev/hda9 Suppose your partition number is hda9

4. vgextend test0 /dev/hda9 vgextend command add the physical disk on
volume group

5. lvextend -L+5120M /dev/test0/lvtestvolume

6. verify using lvdisplay /dev/test0/lvtestvolume
```

Question 35

One Domain RHCE is configured in your lab, your domain server is server1.example.com. nisuser2001, nisuser2002, nisuser2003 user are created on your server 192.168.0.254:/rhome/stationx/nisuser2001. Make sure that when NIS user login in your system automatically mount the home directory. Home directory is separately shared on server /rhome/stationx/ where x is your Station number.

Answers:

```
1. use the authconfig --nisserver=<NIS SERVER> --nisdomain=<NIS DOMAIN>
-- update

Example: authconfig --niserver=192.168.0.254 --nisdomain=RHCE --update or
system-config-authentication
```

2. Click on Enable NIS

3. Type the NIS Domain: RHCE

4. Type Server 192.168.0.254 then click on next and ok

5. You will get an ok message

6. Create a Directory /rhome/stationx where x is your station number

6. vi /etc/auto.master and write at the end of file

/rhome/stationx /etc/auto.home --timeout=60

7. vi /etc/auto.home and write

* -rw,soft,intr 192.168.0.254:/rhome/stationx/&

Note: please specify your station number in the place of x

8. Service autofs restart

9. Login as the nisuser2001 or nisuser2002 on another terminal will be Success

According to question, RHCE domain is already configured. We should make a client of RHCE domain and automatically mount the home directory on your system. To make a member of domain, we use the authconfig with option or system-config authentication command. There a are lots of authentication server i.e. NIS, LDAB, SMB etc. NIS is a RPC related Services, no need to configure the DNS, we should specify the NIS server address.

Here Automount feature is available. When user tried to login, home directory will automatically mount. The automount service used the /etc/auto.master file. On /etc/auto.master file we specified the mount point the configuration file for mount point.

Question 36

.....

Part 3

Notes:

NFS: NFS instructor.example.com:/var/ftp/pub/rhel6/dvd

```
YUM: http://instructor.example.com/pub/rhel6/dvd

Ldap: http: //instructor.example.com/pub/EXAMPLE-CA-CERT
```

Question 55

Install dialog package.

Answers:

```
yum install dialog
```

Question 56

SELinux must run in force mode.

Answers:

```
/etc/sysconfig/selinux

SELINUX=enforcing
```

Question 57

The firewall must be open.

Answers:

```
/etc/init.d/iptables start

iptables -F

iptables -X

iptables -Z

/etc/init.d/iptables save

chkconfig iptables on
```

Question 58

In the system, mounted the iso image /root/examine.iso to /mnt/iso directory. And enable automatically mount (permanent mount) after restart system.

Answers:

```
mkdir -p /mnt/iso

/etc/fstab:

/root/examine.iso /mnt/iso iso9660 loop 0 0

mount -a

mount | grep examine
```

Question 59

Configure your NFS services. Share the directory by the NFS Shared services.

Answers:

```
/etc/init.d/rpcbind start

/etc/init.d/nfslock start

/etc/init.d/nfs start

chkconfig rpcbind on

chkconfig nfslock on

chkconfig nfs on

showmount -e localhost
```

Question 60

(1) Find all sizes of 10k file or directory under the /etc directory, and copy to /tmp/findfiles directory.

(2) Find all the files or or directories with Lucy as the owner, and copy to /tmp/findfiles directory.

Answers:

```
(1)find /etc -size 10k -exec cp {} /tmp/findfiles \;

(2)find / -user lucy -exec cp -a {} /tmp/findfiles \;
```

Note: If find users and permissions, you need to use cp - a options, to keep file permissions and user attributes etc.

Question 61

……