69. Configure and demonstrate the use of NIS and NFS. (on centOS/redhatcontainer)
Show the imp steps and file name of configurations. (on answer sheet)
Create 5 users and make two groups, demonstrate the NIS and NFS concepts by example on LAN connected linux os.

NIS configuration Centos
Commands:
Open terminal and run server container:
docker run --name nisserver --privileged -it centos:centos6 /bin/bash

In another terminal, run client container:
docker run --name nisclient --privileged -it centos:centos6 /bin/bash

NOTE: Inside both client and server containers, first run below 2 commands, else you will not be able to install packages:
sed -i 's/mirrorlist/#mirrorlist/g' /etc/yum.repos.d/CentOS-*
sed -i 's|#baseurl=http://mirror.centos.org|baseurl=http://vault.centos.org|g' /etc/yum.repos.d/CentOS-*

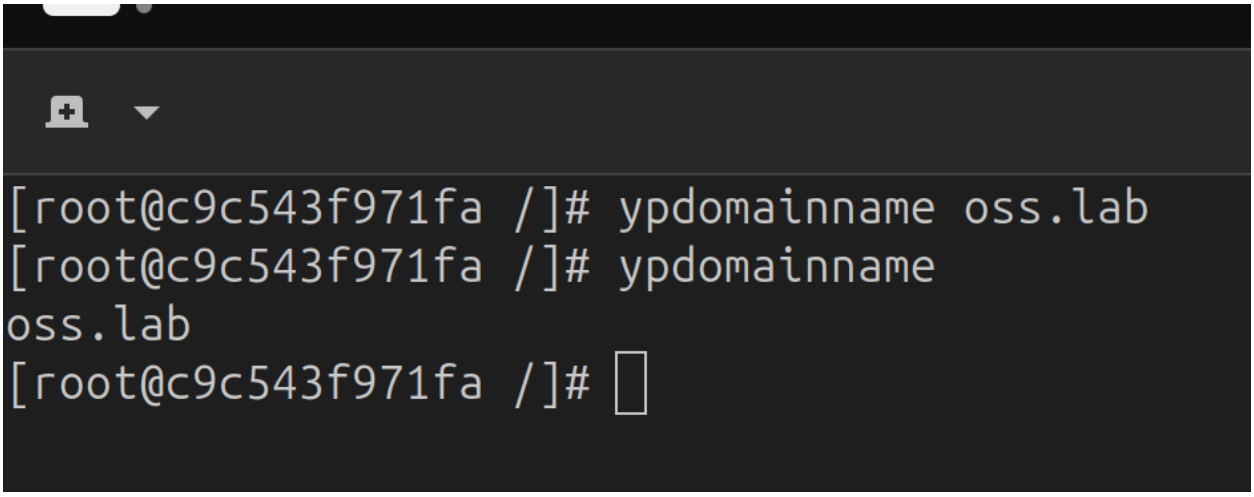
Server container configuration
(inside container)
yum -y update
yum -y install rpcbind ypserv nano passwd

```
root@g14:/home/aaditya# docker run --name nisserver --privileged -it centos:centos6 /bin/bash
[root@c9c543f971fa /]# sed -i 's/mirrorlist/#mirrorlist/g' /etc/yum.repos.d/CentOS-*
[root@c9c543f971fa /]# sed -i 's|#baseurl=http://mirror.centos.org|baseurl=http://vault.centos.org|g' /etc/yum.repos.d/CentOS-*
[root@c9c543f971fa /]# yum update -y && yum -y install ypserv rpcbind
```

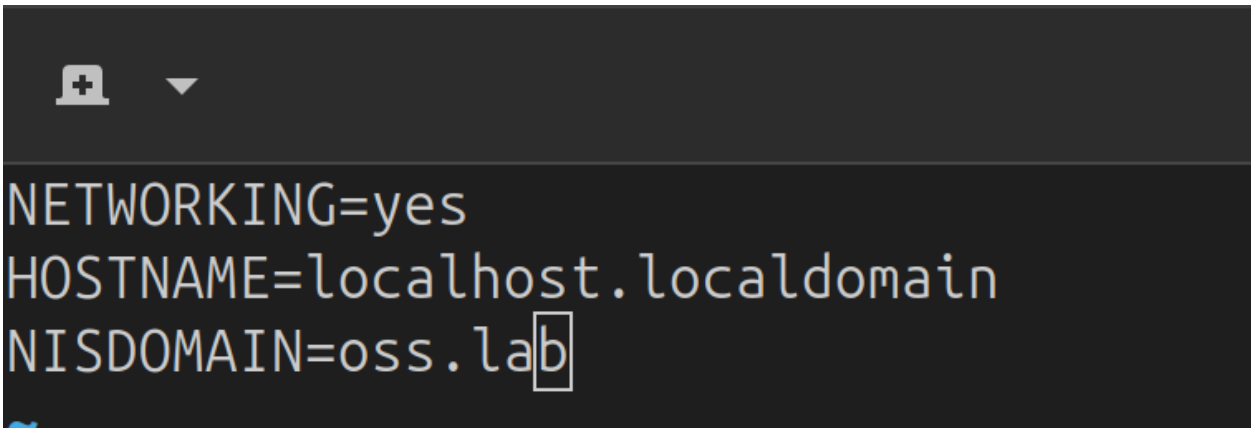
Set hostname:
hostname srvr

```
[root@c9c543f971fa /]# hostname srvr
[root@c9c543f971fa /]# hostname
srvr
[root@c9c543f971fa /]#
```

Now run:
ypdomainname oss.lab (can be anything but make sure it is unique. if domain exists already, it may create problems)



Open /etc/sysconfig/network file - nano /etc/sysconfig/network
Add following line at the end:
NISDOMAIN=oss.lab

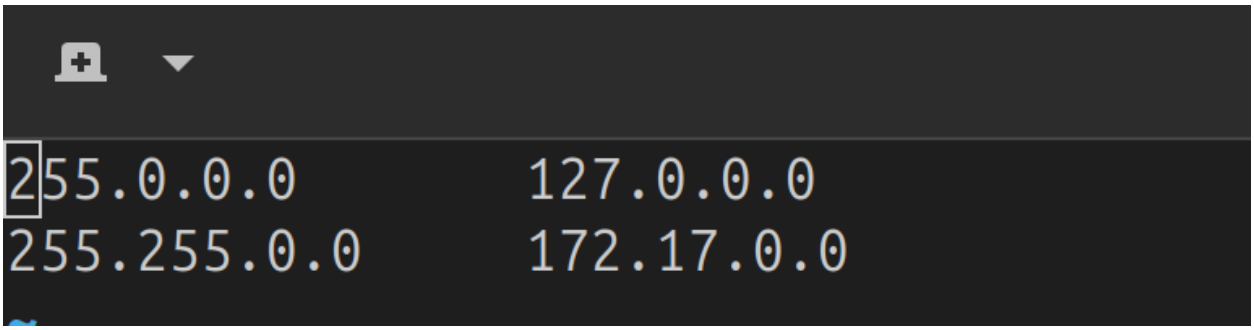


For docker containers, the IP address will look something like: 172.17.0.x
Check it using ifconfig command.
To use ifconfig, run command: yum install net-tools -y

```
[root@c9c543f971fa /]# ifconfig
eth0      Link encap:Ethernet  HWaddr 02:42:AC:11:00:02
          inet addr:172.17.0.2  Bcast:172.17.255.255  Mask:255.255.0.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:40696 errors:0 dropped:0 overruns:0 frame:0
          TX packets:23096 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:78267666 (74.6 MiB)  TX bytes:1776908 (1.6 MiB)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:65536  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 b)  TX bytes:0 (0.0 b)
```

nano /var/yp/securenets
Add IP network range you want to allow to access NIS server. Since subnet mask is 255.255.0.0, just add first two octets ie. 172.17.0.0

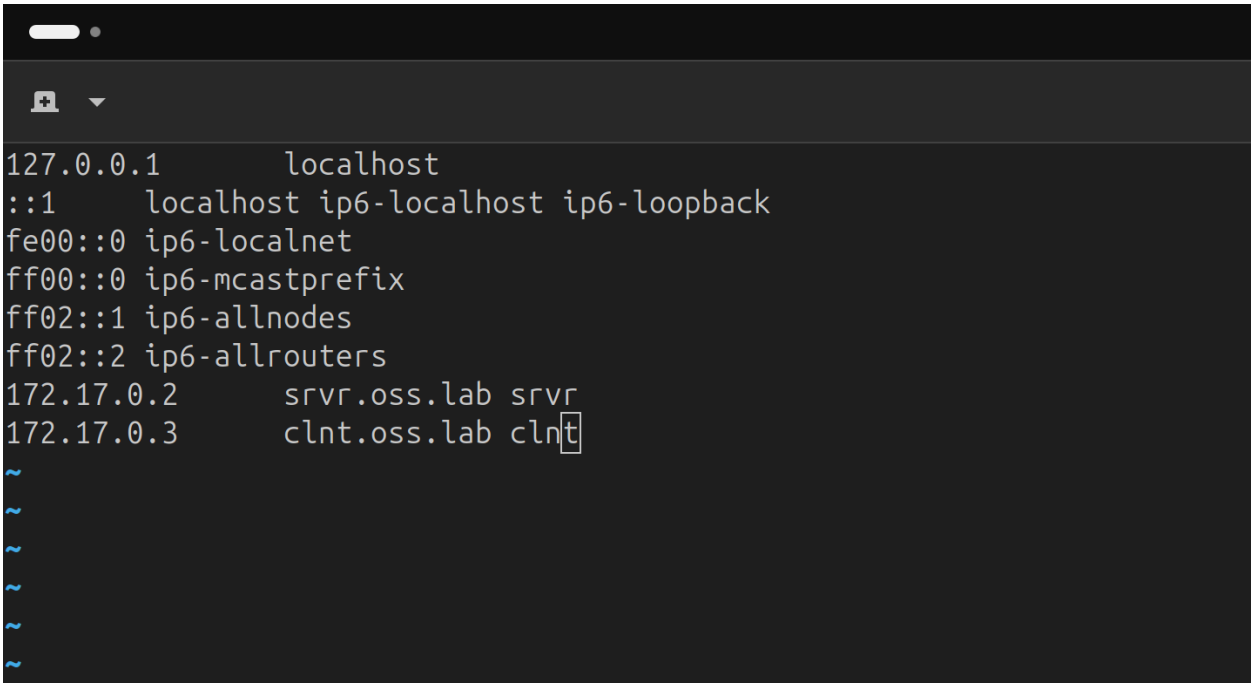


In the **client container**, set the hostname as “clnt” or something of your choice and note its IP address using ifconfig command.

```
[root@81de9d04472c /]# hostname clnt
[root@81de9d04472c /]# hostname
clnt
```

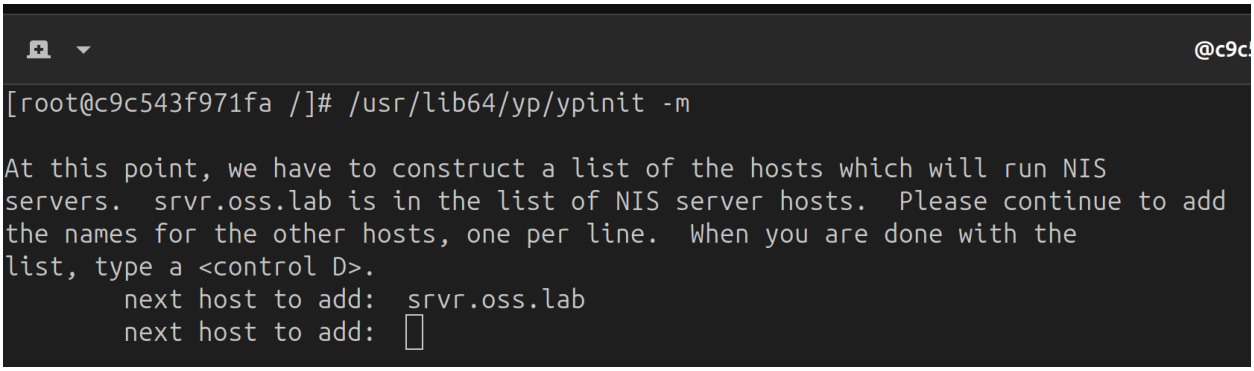
Also in **client container**, set the domain name.
ypdomainname oss.lab (same domain name as before)

Going back to server container..
nano /etc/hosts
Add following lines in the given format:
Format ->
<server Ip address> <server-hostname.domainname> <server-hostname>
<client Ip address> <client-hostname.domainname> <client-hostname>

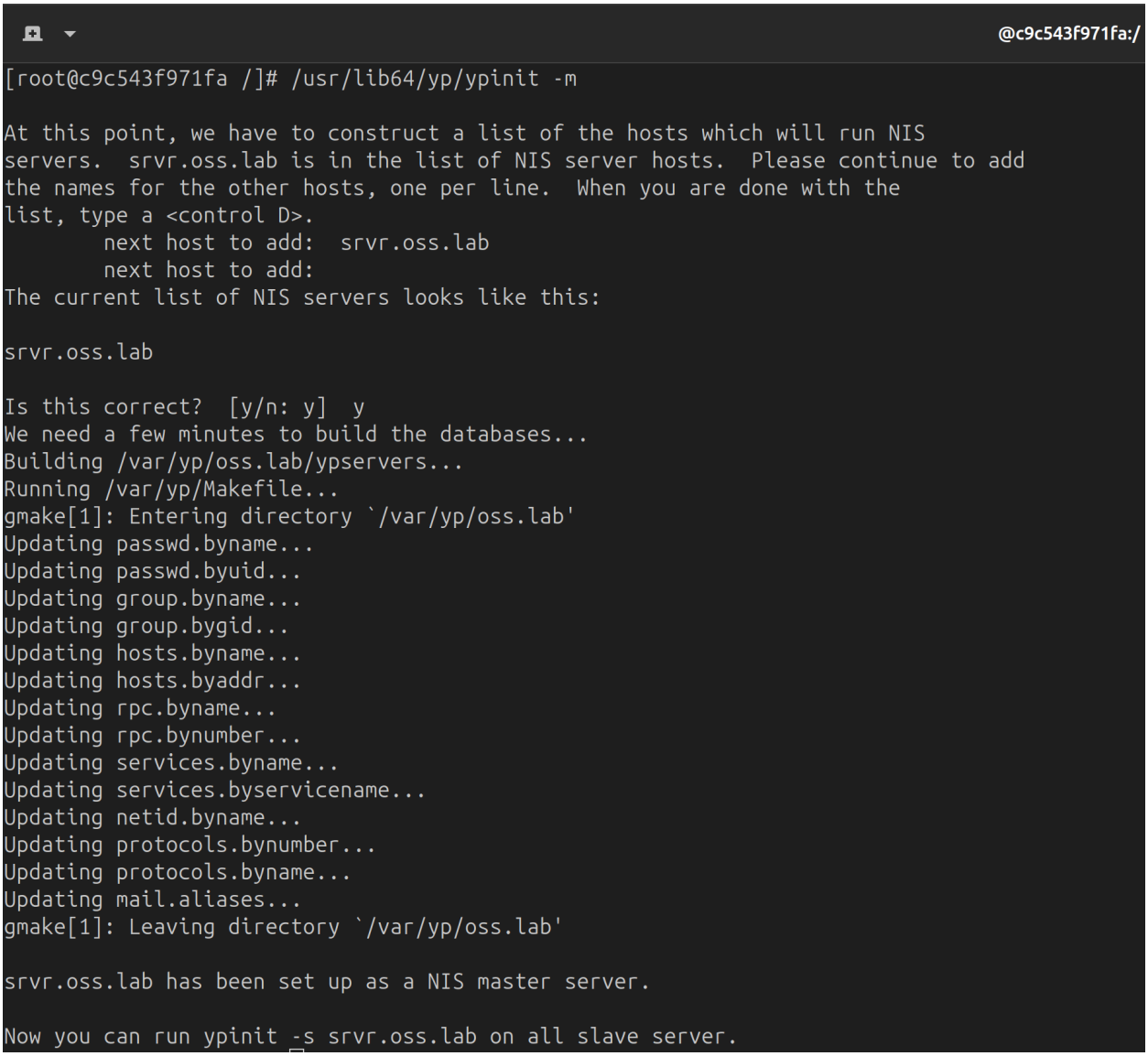


Now run commands:
service rpcbind start
service ypserv start
service ypxfrd start
service yppasswdd start

/usr/lib64/yp/ypinit -m



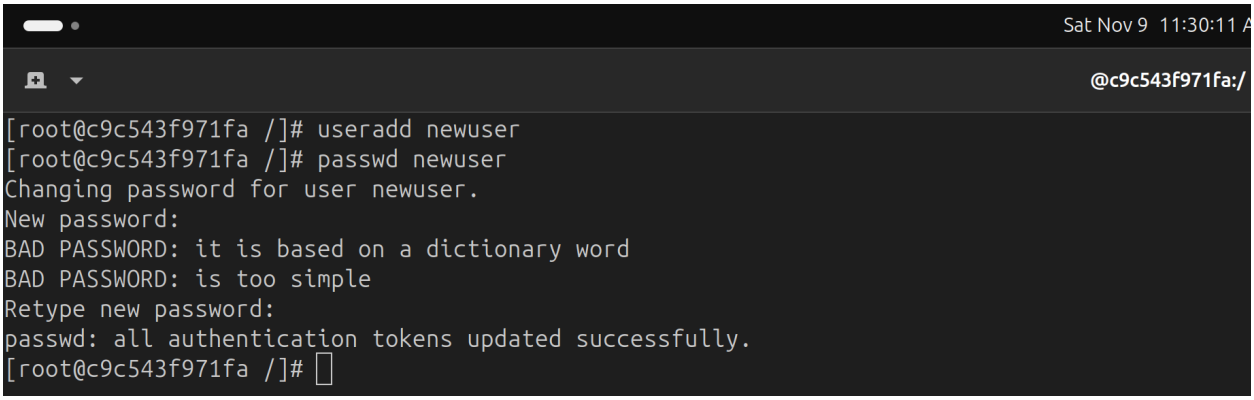
Verify that the name is correct and press Ctrl+D, then press y.



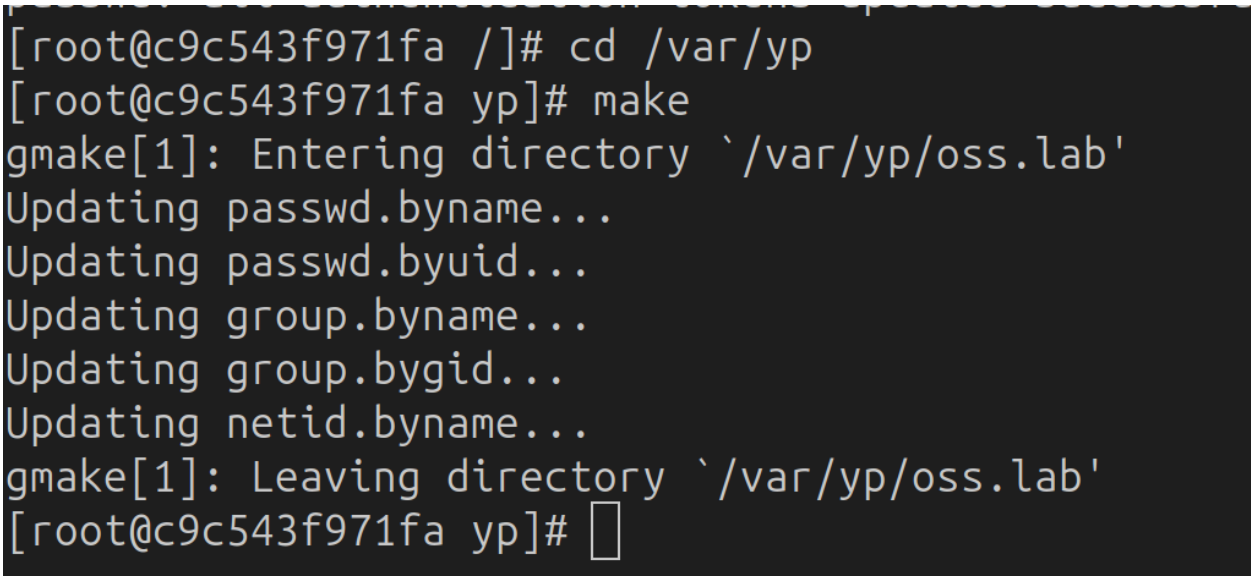
According to problem statement, you need to create 5 users and 2 groups. To add a newuser:
useradd newuser
passwd newuser

Then add any password of your choice.
To create a group:
groupadd groupname

To add user to a group:
usermod -aG <groupname> <username>



To apply this to NIS database:
cd /var/yp/
make



Client container configuration:
(inside container)
yum -y update
yum -y install ypbind rpcbind authconfig nano

nano /etc/hosts
Add IP addresses of server and client as done before

```
127.0.0.1       localhost
::1     localhost ip6-localhost ip6-loopback
fe00::0 ip6-localnet
ff00::0 ip6-mcastprefix
ff02::1 ip6-allnodes
ff02::2 ip6-allrouters
172.17.0.3      clnt.oss.lab clnt
172.17.0.2      srvr.oss.lab srvr
```

authconfig --enablenis --nisdomain=<domain> --nisserver=<server> --enablemkhomedir --update
Refer screenshot

```
[root@81de9d04472c /]# authconfig --enablenis --nisdomain=oss.lab --nisserver=srvr.oss.lab --enablemkhomedir --update
[root@81de9d04472c /]#
```

Try switching to ‘newuser’ that we created on NIS server.
su - newuser

```
[root@81de9d04472c /]# service ypbind restart
Shutting down NIS service:                                 [  OK  ]
Starting NIS service:                                      [  OK  ]
Binding NIS service: .                                     [  OK  ]
[root@81de9d04472c /]# su - newuser
Creating directory '/home/newuser'.
[newuser@clnt ~]$
```

If directory is created as shown, you have configured everything correctly.

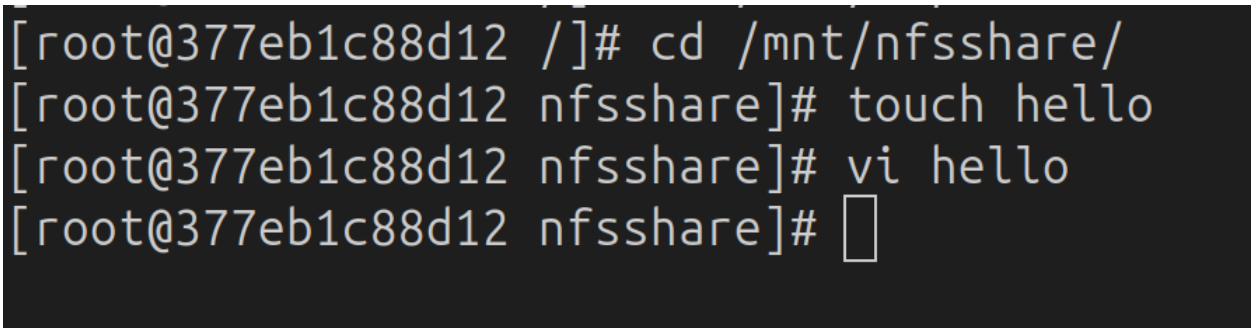
NFS configuration Centos

Run the container:
In centos docker containers, NFS does not work because the filesystem is not supported. Instead, you need to mount a directory from the host machine.

First create a directory on the host machine (not container)
mkdir /mnt/nfsshare
Now we will mount this onto container when we run the container.
docker run --privileged -it -v /mnt/nfsshare:/mnt/nfsshare centos:centos6 /bin/bash

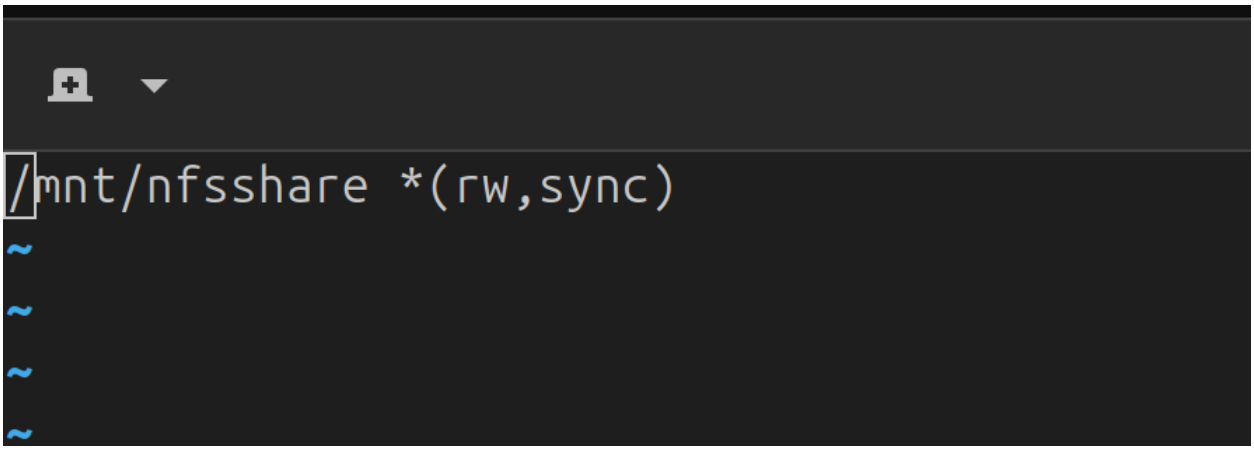
(inside container)
sed -i 's/mirrorlist/#mirrorlist/g' /etc/yum.repos.d/CentOS-*
sed -i 's|#baseurl=http://mirror.centos.org|baseurl=http://vault.centos.org|g' /etc/yum.repos.d/CentOS-*
yum update -y
yum install -y nfs-utils nano net-tools

Go to /mnt/nfsshare folder and add some files.

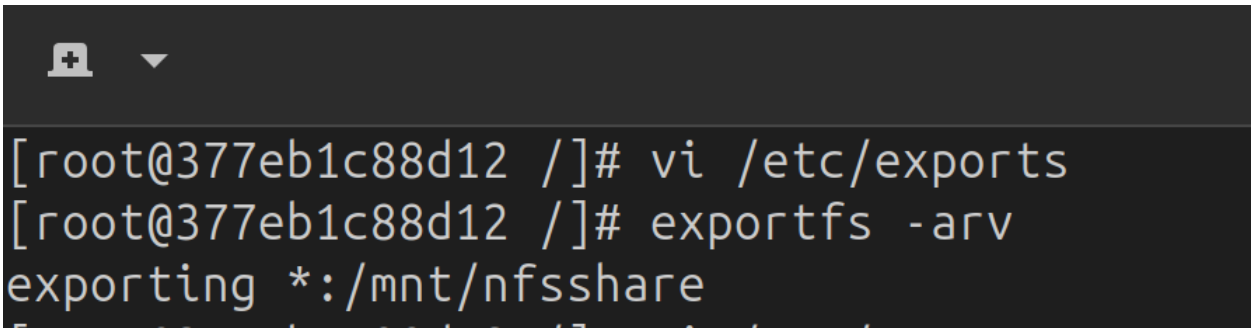


nano /etc/exports

Add folder to export and IP address of clients. You need not create a client container, just use your host machine's IP address.
Format ->
<folder to export> <ip address of client/host machine>(rw,sync)
To allow access to all, you can set * instead of IP address



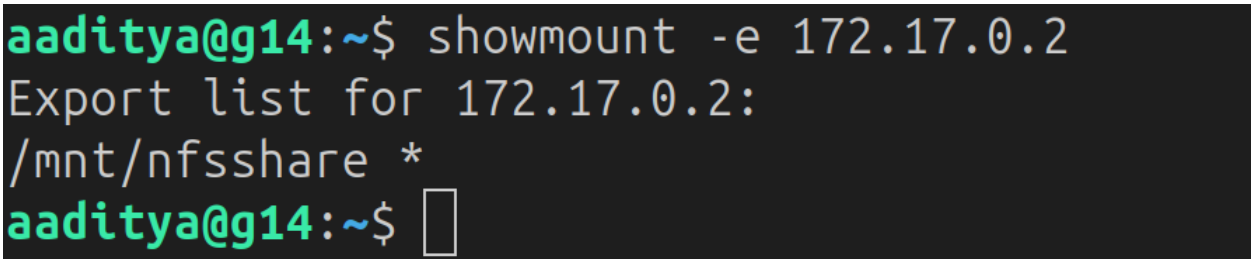
Then run: exportfs -arv



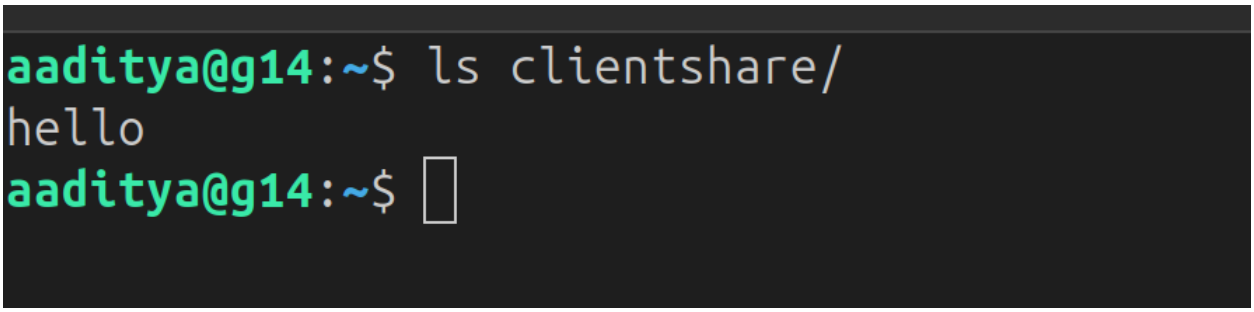
Start NFS service by running commands:
rpcbind
rpc.nfsd
rpc.mountd
rpc.statd

Client configuration:
Create a directory for mounting the nfs directory onto client:
mkdir clientshare

showmount -e <ip address of server container>
You should see something like this:



Then mount this directory onto client:
sudo mount -t nfs 172.17.0.2:/mnt/nfsshare/ clientshare/



Now, you should be able to access the files from /mnt/nfsshare.

For more information, refer these articles:
https://www.tecmint.com/install-nfs-server-on-centos-8/
https://www.server-world.info/en/note?os=CentOS_7&p=nis&f=1