

1. Configure and demonstrate the use of NIS and NFS. (on Ubuntu container)

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 Config:

```
# First, create a Docker network for our containers
docker network create nisnet
```

```
# Create Dockerfile for NIS Server
cat << 'EOF' > Dockerfile.nis-server
FROM ubuntu:22.04
```

```
RUN apt-get update && \
    DEBIAN_FRONTEND=noninteractive apt-get install -y \
    nis \
    nfs-kernel-server \
    rpcbind \
    vim \
    net-tools \
    procps \
    supervisor
```

```
# Create necessary directories
RUN mkdir -p /var/run/sshd /run/rpcbind /home/shared
```

```
# Create startup script
RUN echo '#!/bin/bash\n\
rpcbind\n\
/usr/sbin/rpc.nfsd\n\
/usr/sbin/rpc.mountd\n\
/usr/sbin/ypserv\n\
/usr/sbin/yppasswd\n\
tail -f /dev/null' > /start.sh && \
    chmod +x /start.sh
```

```
CMD ["/start.sh"]
EOF
```

```
# Create Dockerfile for NIS Client
cat << 'EOF' > Dockerfile.nis-client
FROM ubuntu:22.04
```

```
RUN apt-get update && \
    DEBIAN_FRONTEND=noninteractive apt-get install -y \
    nis \
    nfs-common \
    rpcbind \
    vim \
    net-tools \
```

procps

```
# Create startup script
RUN echo '#!/bin/bash\n\
rpcbind\n\
service nis start\n\
tail -f /dev/null' > /start.sh && \
    chmod +x /start.sh
```

```
CMD ["/start.sh"]
EOF
```

```
# Build the images
docker build -t nis-server -f Dockerfile.nis-server .
docker build -t nis-client -f Dockerfile.nis-client .
```

```
# Start NIS Server
docker run -d --name nis-server \
    --network nisnet \
    --hostname nis-server \
    --privileged \
    nis-server
```

```
# Start NIS Client
docker run -d --name nis-client \
    --network nisnet \
    --hostname nis-client \
    --privileged \
    nis-client
```

```
# Configure NIS Server
docker exec -it nis-server bash
echo "nisserver" > /etc/defaultdomain
domainname nisserver
```

```
# Configure NIS maps directory
/usr/lib/yp/ypinit -m
```

```
# Create groups
groupadd developers
groupadd operations
```

```
# Create users
useradd -m -s /bin/bash -G developers user1
useradd -m -s /bin/bash -G developers user2
useradd -m -s /bin/bash -G developers user3
useradd -m -s /bin/bash -G operations user4
useradd -m -s /bin/bash -G operations user5
```

```
# Set passwords (change these in production)
echo "user1:password1" | chpasswd
echo "user2:password2" | chpasswd
```

```
echo "user3:password3" | chpasswd
echo "user4:password4" | chpasswd
echo "user5:password5" | chpasswd
```

```
# Update NIS maps
cd /var/yp
make
```

```
# Configure NIS Client
docker exec -it nis-client bash
echo "nisserver" > /etc/defaultdomain
domainname nisserver
```

```
# Configure NIS client
echo "domain nisserver server nis-server" > /etc/yp.conf
echo "ypserver nis-server" >> /etc/yp.conf
```

```
# Verify Setup
echo "Verifying NIS setup..."
List Users on the NIS Server
```

```
docker exec nis-server bash -c 'getent passwd'
```

List Users on the NIS Client

```
docker exec nis-client bash -c 'getent passwd'
```

Check Group Memberships

```
docker exec nis-client bash -c 'getent group'
```

```

root@pranav-Aspire-A715-41G:/home/pk# docker exec nis-client bash -c 'getent passwd'
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/bin/sync
games:x:5:60:games:/usr/games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin
irc:x:39:39:ircd:/run/ircd:/usr/sbin/nologin
gnats:x:41:41:Gnats Bug-Reporting System (admin)/var/lib/gnats:/usr/sbin/nologin
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
_apt:x:100:65534::/nonexistent:/usr/sbin/nologin
_rpc:x:101:65534::/run/rpcbind:/usr/sbin/nologin
statd:x:102:65534::/var/lib/nfs:/usr/sbin/nologin
root@pranav-Aspire-A715-41G:/home/pk# docker exec nis-server bash -c 'getent passwd'
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/bin/sync
games:x:5:60:games:/usr/games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
statd:x:102:65534::/var/lib/nfs:/usr/sbin/nologin

```

```

root@pranav-Aspire-A715-41G:/home/pk# docker exec nis-server bash -c 'getent passwd'
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/bin/sync
games:x:5:60:games:/usr/games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin
irc:x:39:39:ircd:/run/ircd:/usr/sbin/nologin
gnats:x:41:41:Gnats Bug-Reporting System (admin)/var/lib/gnats:/usr/sbin/nologin
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
_apt:x:100:65534::/nonexistent:/usr/sbin/nologin
_rpc:x:101:65534::/run/rpcbind:/usr/sbin/nologin
statd:x:102:65534::/var/lib/nfs:/usr/sbin/nologin
user1:x:1000:1002::/home/user1:/bin/bash
user2:x:1001:1003::/home/user2:/bin/bash
user3:x:1002:1004::/home/user3:/bin/bash
user4:x:1003:1005::/home/user4:/bin/bash
user5:x:1004:1006::/home/user5:/bin/bash

```

```

root@pranav-Aspire-A715-41G:/home/pk# docker exec nis-client bash -c 'getent group'
root:x:0:
daemon:x:1:
bin:x:2:
sys:x:3:
adm:x:4:
tty:x:5:
disk:x:6:
lp:x:7:
mail:x:8:
news:x:9:
uucp:x:10:
man:x:12:
proxy:x:13:
kmem:x:15:
dialout:x:20:
fax:x:21:
voice:x:22:
cdrom:x:24:
floppy:x:25:
tape:x:26:
sudo:x:27:
audio:x:29:
dip:x:30:
www-data:x:33:
backup:x:34:
operator:x:37:
list:x:38:
irc:x:39:
src:x:40:
gnats:x:41:
shadow:x:42:
utmp:x:43:
video:x:44:
sasl:x:45:
plugdev:x:46:
staff:x:50:
games:x:60:
users:x:100:
nogroup:x:65534:
root@pranav-Aspire-A715-41G:/home/pk#

```

Switching to a user

```

root@pranav-Aspire-A715-41G:/home/pk# docker exec nis-server bash -c 'echo "user1:password1" | chpasswd'
root@pranav-Aspire-A715-41G:/home/pk# docker exec -it nis-server bash -c 'su - user1'
user1@nis-server:~$ whoami
user1
user1@nis-server:~$ exit
logout

```

NFS Config:

In server container:

```

echo "/home/shared *(rw,sync,no_subtree_check)" >> /etc/exports
exportfs -a

```

In client container:

```

mkdir -p /home/shared
mount -t nfs nis-server:/home/shared /home/shared

```