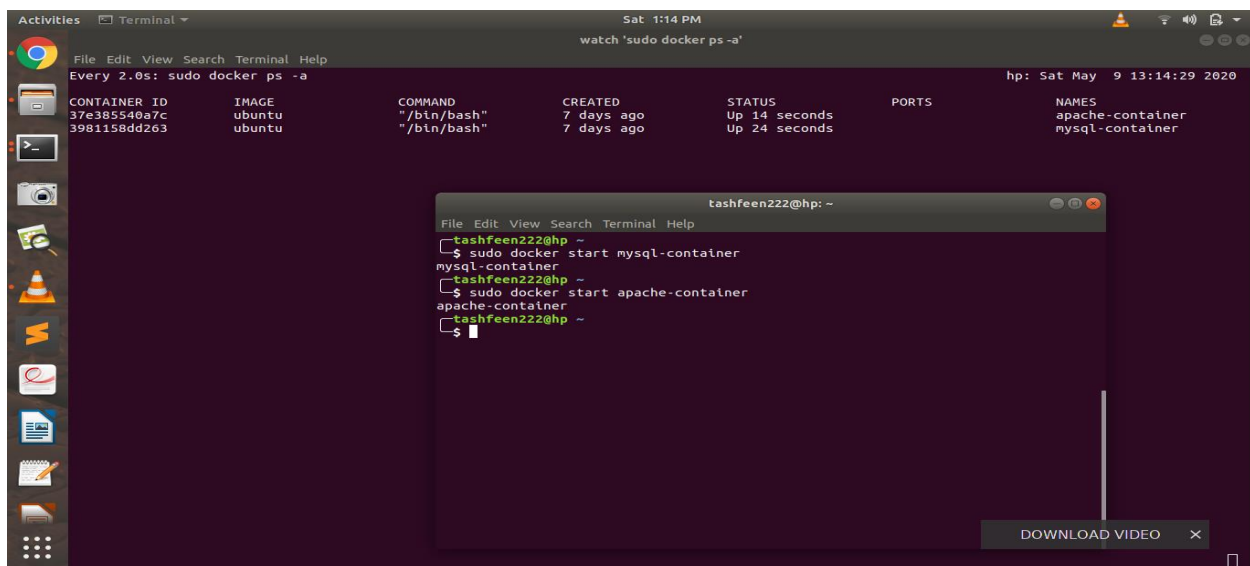


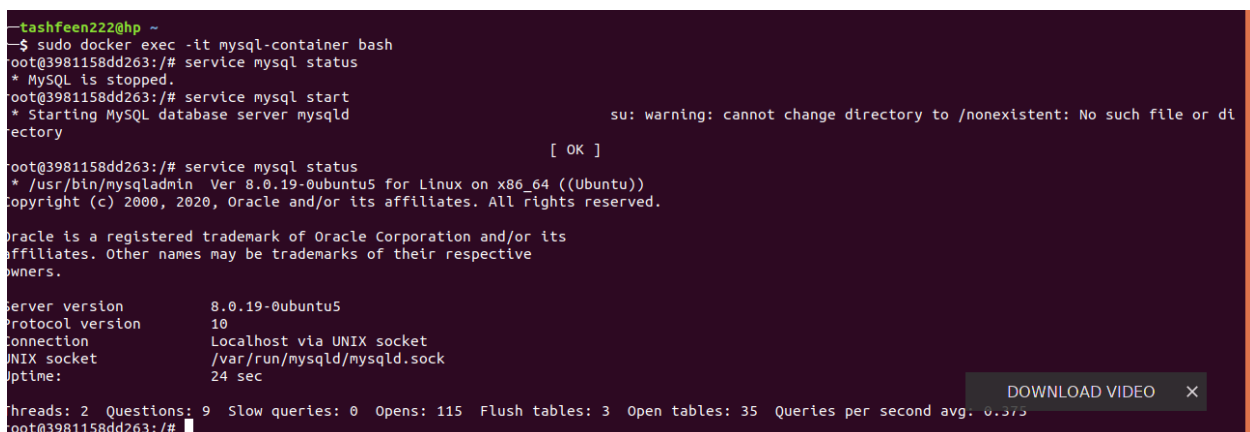
NAME	TASHFEEN LATIF
ROLL NO	17P-6035(CS-A)
COURSE	Operating System Lab
Professor	Sir Usman Wajid Sahab

## System Administration :-> Lab Task #4

First of all start both the container. Here is the ScreenShot



Then I exec mysql-container and check the status of mysql.  
Currently mysql is stopped .so Then I start this



Then I check addresses using ifconfig but couldn't find. So for that I have to install two libraries

```
File Edit View Search Terminal Help
root@3981158dd263: /
mysql> \q
Bye
root@3981158dd263: /# ifconfig
bash: ifconfig: command not found
root@3981158dd263: /# apt install inetutils-ping net-tools -y
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  libidn11
The following NEW packages will be installed:
  inetutils-ping libidn11 net-tools
0 upgraded, 3 newly installed, 0 to remove and 0 not upgraded.
Need to get 303 kB of archives.
After this operation, 1478 kB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu focal/main amd64 libidn11 amd64 1.33-2.2ubuntu2 [46.2 kB]
Get:2 http://archive.ubuntu.com/ubuntu focal/universe amd64 inetutils-ping amd64 2:1.9.4-11 [60.8 kB]
Get:3 http://archive.ubuntu.com/ubuntu focal/main amd64 net-tools amd64 1.60+git20180626.aebd88e-1ubuntu1 [196 kB]
Fetched 303 kB in 6s (50.0 kB/s)
debconf: delaying package configuration, since apt-utils is not installed
Selecting previously unselected package libidn11:amd64.
(Reading database ... 9767 files and directories currently installed.)
Preparing to unpack .../libidn11_1.33-2.2ubuntu2_amd64.deb ...
Unpacking libidn11:amd64 (1.33-2.2ubuntu2) ...
Selecting previously unselected package inetutils-ping.
Preparing to unpack .../inetutils-ping_2%3a1.9.4-11_amd64.deb ...
Unpacking inetutils-ping (2:1.9.4-11) ...
Selecting previously unselected package net-tools.
Preparing to unpack .../net-tools_1.60+git20180626.aebd88e-1ubuntu1_amd64.deb ...
Unpacking net-tools (1.60+git20180626.aebd88e-1ubuntu1) ...
Setting up net-tools (1.60+git20180626.aebd88e-1ubuntu1) ...
Setting up libidn11:amd64 (1.33-2.2ubuntu2) ...
Setting up inetutils-ping (2:1.9.4-11) ...
Processing triggers for libc-bin (2.31-0ubuntu9) ...
root@3981158dd263: /# ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 172.17.0.2 netmask 255.255.0.0 broadcast 172.17.255.255
    ether 02:42:ac:11:00:02 txqueuelen 0 (Ethernet)
```

Then again I check addresses using ifconfig

```
root@3981158dd263: /# ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 172.17.0.2 netmask 255.255.0.0 broadcast 172.17.255.255
    ether 02:42:ac:11:00:02 txqueuelen 0 (Ethernet)
    RX packets 269 bytes 330349 (330.3 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 176 bytes 14895 (14.8 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    loop txqueuelen 1000 (Local Loopback)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

root@3981158dd263: /#
```

Then I see ping in mysql-container that either it is communicate with other container or not

```
root@3981158dd263: /  
File Edit View Search Terminal Help  
tashfeen222@hp ~  
$ sudo docker exec -it mysql-container bash  
root@3981158dd263:/# ping 172.17.0.3  
PING 172.17.0.3 (172.17.0.3): 56 data bytes  
64 bytes from 172.17.0.3: icmp_seq=0 ttl=64 time=0.208 ms  
64 bytes from 172.17.0.3: icmp_seq=1 ttl=64 time=0.127 ms  
64 bytes from 172.17.0.3: icmp_seq=2 ttl=64 time=0.127 ms  
64 bytes from 172.17.0.3: icmp_seq=3 ttl=64 time=0.125 ms  
64 bytes from 172.17.0.3: icmp_seq=4 ttl=64 time=0.110 ms  
64 bytes from 172.17.0.3: icmp_seq=5 ttl=64 time=0.128 ms  
64 bytes from 172.17.0.3: icmp_seq=6 ttl=64 time=0.154 ms  
64 bytes from 172.17.0.3: icmp_seq=7 ttl=64 time=0.113 ms  
64 bytes from 172.17.0.3: icmp_seq=8 ttl=64 time=0.097 ms  
64 bytes from 172.17.0.3: icmp_seq=9 ttl=64 time=0.126 ms  
64 bytes from 172.17.0.3: icmp_seq=10 ttl=64 time=0.126 ms  
64 bytes from 172.17.0.3: icmp_seq=11 ttl=64 time=0.126 ms  
64 bytes from 172.17.0.3: icmp_seq=12 ttl=64 time=0.136 ms  
64 bytes from 172.17.0.3: icmp_seq=13 ttl=64 time=0.142 ms  
64 bytes from 172.17.0.3: icmp_seq=14 ttl=64 time=0.128 ms  
64 bytes from 172.17.0.3: icmp_seq=15 ttl=64 time=0.126 ms  
64 bytes from 172.17.0.3: icmp_seq=16 ttl=64 time=0.134 ms  
64 bytes from 172.17.0.3: icmp_seq=17 ttl=64 time=0.289 ms  
64 bytes from 172.17.0.3: icmp_seq=18 ttl=64 time=0.127 ms  
64 bytes from 172.17.0.3: icmp_seq=19 ttl=64 time=0.125 ms  
64 bytes from 172.17.0.3: icmp_seq=20 ttl=64 time=0.126 ms  
64 bytes from 172.17.0.3: icmp_seq=21 ttl=64 time=0.127 ms  
64 bytes from 172.17.0.3: icmp_seq=22 ttl=64 time=0.167 ms  
64 bytes from 172.17.0.3: icmp_seq=23 ttl=64 time=0.100 ms  
64 bytes from 172.17.0.3: icmp_seq=24 ttl=64 time=0.127 ms  
64 bytes from 172.17.0.3: icmp_seq=25 ttl=64 time=0.129 ms  
64 bytes from 172.17.0.3: icmp_seq=26 ttl=64 time=0.128 ms  
64 bytes from 172.17.0.3: icmp_seq=27 ttl=64 time=0.260 ms  
64 bytes from 172.17.0.3: icmp_seq=28 ttl=64 time=0.133 ms  
64 bytes from 172.17.0.3: icmp_seq=29 ttl=64 time=0.083 ms  
64 bytes from 172.17.0.3: icmp_seq=30 ttl=64 time=0.126 ms  
64 bytes from 172.17.0.3: icmp_seq=31 ttl=64 time=0.125 ms  
64 bytes from 172.17.0.3: icmp_seq=32 ttl=64 time=0.129 ms
```

Then I see ping in apache-container that either it is communicate with other container or not

```
tashfeen222@hp ~  
$ sudo docker exec -it apache-container bash  
root@37e385540a7c:/# ping 172.17.0.2  
PING 172.17.0.2 (172.17.0.2): 56 data bytes  
64 bytes from 172.17.0.2: icmp_seq=0 ttl=64 time=0.153 m  
64 bytes from 172.17.0.2: icmp_seq=1 ttl=64 time=0.126 m  
64 bytes from 172.17.0.2: icmp_seq=2 ttl=64 time=0.128 m  
64 bytes from 172.17.0.2: icmp_seq=3 ttl=64 time=0.279 m  
64 bytes from 172.17.0.2: icmp_seq=4 ttl=64 time=0.110 m  
^C--- 172.17.0.2 ping statistics ---  
5 packets transmitted, 5 packets received, 0% packet los  
round-trip min/avg/max/stddev = 0.110/0.159/0.279/0.061  
root@37e385540a7c:/# ping 172.17.0.3  
PING 172.17.0.3 (172.17.0.3): 56 data bytes  
64 bytes from 172.17.0.3: icmp_seq=0 ttl=64 time=0.107 m  
64 bytes from 172.17.0.3: icmp_seq=1 ttl=64 time=0.112 m  
64 bytes from 172.17.0.3: icmp_seq=2 ttl=64 time=0.095 m  
64 bytes from 172.17.0.3: icmp_seq=3 ttl=64 time=0.115 m  
^C--- 172.17.0.3 ping statistics ---  
4 packets transmitted, 4 packets received, 0% packet los  
round-trip min/avg/max/stddev = 0.095/0.107/0.115/0.000  
root@37e385540a7c:/#
```

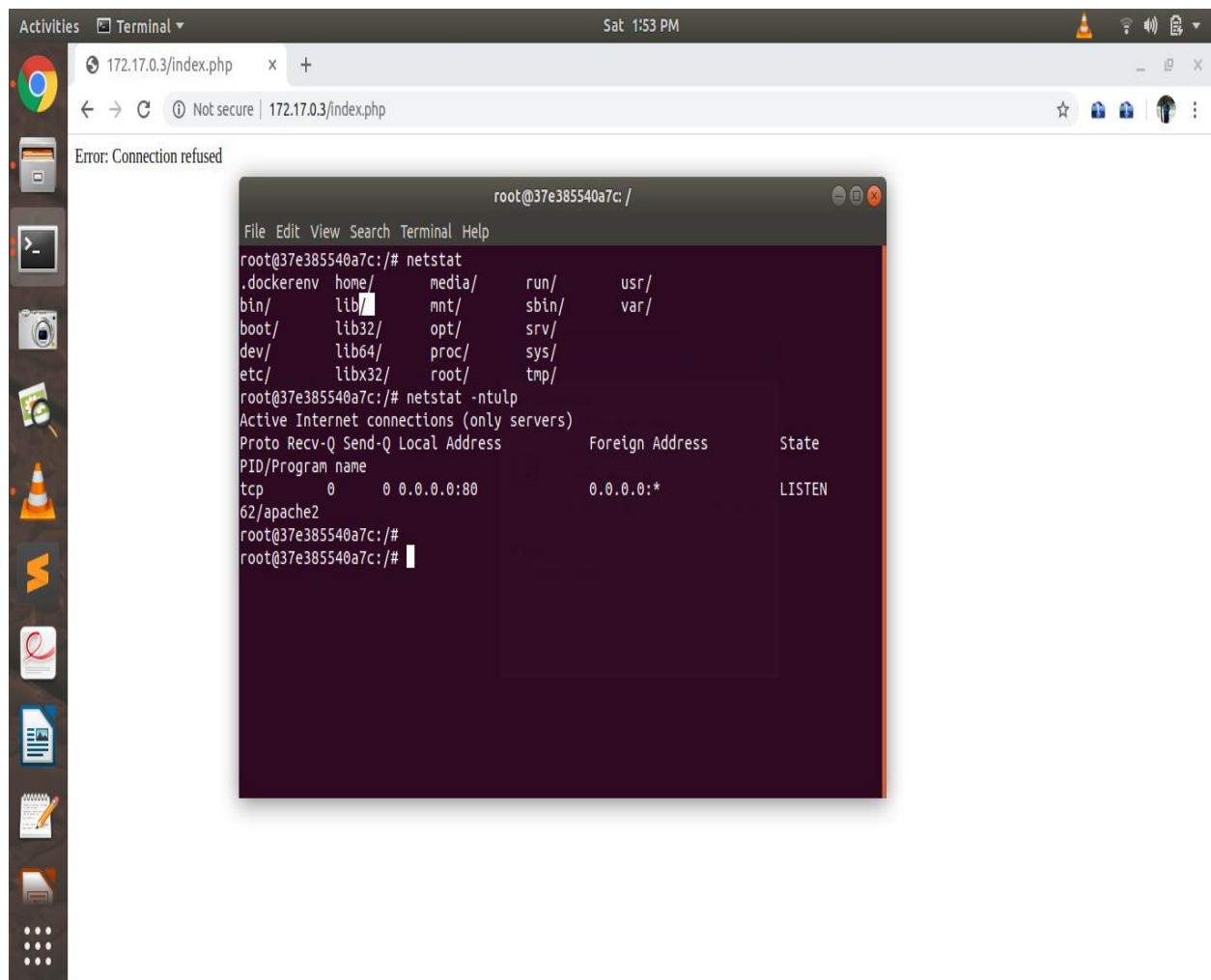
Then I go into apache container and open index.php using this whole command and start apache2

```
tashfeen222@hp ~  
$ sudo docker exec -it apache-container bash  
[sudo] password for tashfeen222:  
root@37e385540a7c:/# vi /var/  
backups/ lib/ lock/ mail/ run/ tmp/  
cache/ local/ log/ opt/ spool/ www/  
root@37e385540a7c:/# vi /var/  
backups/ lib/ lock/ mail/ run/ tmp/  
cache/ local/ log/ opt/ spool/ www/  
root@37e385540a7c:/# vi /var/www/html/index.php  
root@37e385540a7c:/# netstat -ntulp  
Active Internet connections (only servers)  
Proto Recv-Q Send-Q Local Address Foreign Address State PID/Program name  
root@37e385540a7c:/# service apache2 start  
* Starting Apache httpd web server apache2 AH00558: apache2: Could not reliably determine the server's fully qualif  
ied domain name, using 172.17.0.3. Set the 'ServerName' directive globally to suppress this message  
*  
root@37e385540a7c:/#
```

Then using netstat -ntulp to check how any server listen and it shows that all the server are listen of port 80

```
root@37e385540a7c:/# netstat
.dockergen  home/      media/     run/       usr/
bin/        lib/       mnt/       sbin/      var/
boot/       lib32/     opt/       srv/
dev/        lib64/     proc/      sys/
etc/        libx32/    root/      tmp/
root@37e385540a7c:/# netstat -ntulp
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State       PID/Program name
tcp        0      0 0.0.0.0:80              0.0.0.0:*               LISTEN      62/apache2
root@37e385540a7c:/#
```

Then I connect this with database using code in index.php but this show error



Then I solve the issue using this that is listen to all the server because its listen just two and then I did changes in this

```
root@3981158dd263:/# netstat -ntulp
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State       PID/Program name
tcp        0      0 127.0.0.1:3306          0.0.0.0:*               LISTEN      -
tcp6       0      0 :::33060               :::*                   LISTEN      -
root@3981158dd263:/# grep -r "bind-address" /etc/mysql/
/etc/mysql/mysql.conf.d/mysqld.cnf:bind-address            = 127.0.0.1
root@3981158dd263:/# vi /etc/mysql/mysql.conf.d/mysqld.cnf
mysql.cnf  mysql.cnf
root@3981158dd263:/# vi /etc/mysql/mysql.conf.d/mysqld.cnf
2 files to edit
root@3981158dd263:/# vi /etc/mysql/mysql.conf.d/mysqld.cnf
2 files to edit
root@3981158dd263:/# vi ^Cc/mysql/mysql.conf.d/mysqld.cnf
root@3981158dd263:/# vi /etc/mysql/mysql.conf.d/mysqld.cnf
root@3981158dd263:/#
```

Now I solve this issues and it shows now that all the servers are listening

```
root@3981158dd263:/# service mysql restart
* Stopping MySQL database server mysqld          [ OK ]
* Starting MySQL database server mysqld           su: warning: cannot change directory to /nonexistent: No such file or di
rectory
[ OK ]
root@3981158dd263:/# netstat -ntulp
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State       PID/Program name
tcp        0      0 0.0.0.0:3306           0.0.0.0:*               LISTEN      -
tcp6       0      0 :::33060               :::*                   LISTEN      -
root@3981158dd263:/#
```



And Then I solve the second issues using running mysql and do some changes. And now the issues is solved and it is connect with database

```
root@3981158dd263:/#
root@3981158dd263:/#
root@3981158dd263:/# mysql -u root -pcadet6035!
mysql: [Warning] Using a password on the command line interface can be insecure.
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 11
Server version: 8.0.19-0ubuntu5 (Ubuntu)

Copyright (c) 2000, 2020, Oracle and/or its affiliates. All rights reserved.

Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> create user 'root'@'%' identified by 'cadet6035!';
Query OK, 0 rows affected (0.62 sec)

mysql> grant all on *.* to 'root'@'%';
Query OK, 0 rows affected (0.08 sec)

mysql> exit
Bye
root@3981158dd263:/#
root@3981158dd263:/#
root@3981158dd263:/# ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
    inet 172.17.0.2  netmask 255.255.0.0  broadcast 172.17.255.255
    ether 02:42:ac:11:00:02  txqueuelen 0  (Ethernet)
    RX packets 705  bytes 405713 (405.7 KB)
    RX errors 0  dropped 0  overruns 0  frame 0
    TX packets 275  bytes 24149 (24.1 KB)
    TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
    inet 127.0.0.1  netmask 255.0.0.0
    loop  txqueuelen 1000  (Local Loopback)
    RX packets 0  bytes 0 (0.0 B)
```

Now my goal is to shift the container

So first I make the template of images of both the container and save them in .tar file

```
tashfeen222@hp ~  
$ sudo docker images  
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE  
ubuntu               latest             1d622ef86b13       2 weeks ago        73.9MB  
tashfeen222@hp ~  
$ sudo docker commit apache-container ubuntu-apache  
sha256:edd70fb0bfc12470b9cd80ac965b05236220ddd9c1fcf19f7e9a3313d87488e0  
tashfeen222@hp ~  
$ sudo docker images  
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE  
ubuntu-apache       latest             edd70fb0bfc1       About a minute ago 283MB  
<none>              <none>             a5dec0100cf4       2 minutes ago      283MB  
ubuntu              latest             1d622ef86b13       2 weeks ago        73.9MB  
tashfeen222@hp ~  
$ sudo docker save ubuntu-apache -o ubuntu-apache.tar  
tashfeen222@hp ~  
$ ls -lh | grep ubuntu  
-rw----- 1 root      root      279M May  9 16:32 ubuntu-apache.tar  
tashfeen222@hp ~
```

So first I make the template of images of both the container and save them in .tar file

```
tashfeen222@hp ~  
$ sudo docker commit mysql-container ubuntu-mysql  
sha256:b9159eaff4de3f7ead45f74b3f4707160bdb686e5055fb681f3a9f5b7a9d6b0a  
tashfeen222@hp ~  
$ sudo docker images  
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE  
ubuntu-mysql        latest             b9159eaff4de       16 seconds ago     722MB  
ubuntu-apache       latest             edd70fb0bfc1       5 minutes ago      283MB  
<none>              <none>             a5dec0100cf4       6 minutes ago      283MB  
ubuntu              latest             1d622ef86b13       2 weeks ago        73.9MB  
tashfeen222@hp ~  
$ sudo docker save ubuntu-mysql -o ubuntu-mysql.tar  
tashfeen222@hp ~  
$  
tashfeen222@hp ~  
$  
tashfeen222@hp ~  
$ sudo docker images  
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE  
ubuntu-mysql        latest             b9159eaff4de       3 minutes ago      722MB  
ubuntu-apache       latest             edd70fb0bfc1       9 minutes ago      283MB  
<none>              <none>             a5dec0100cf4       10 minutes ago     283MB  
ubuntu              latest             1d622ef86b13       2 weeks ago        73.9MB
```



Then I stop both the container

```
tashfeen222@hp ~  
$ sudo docker images  
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE  
ubuntu-mysql         latest             b9159eaff4de       4 minutes ago      722MB  
ubuntu-apache        latest             edd70fb0bfc1       10 minutes ago     283MB  
<none>               <none>            a5dec0100cf4       10 minutes ago     283MB  
ubuntu               latest             1d622ef86b13       2 weeks ago        73.9MB  
  
tashfeen222@hp ~  
$  
tashfeen222@hp ~  
$  
tashfeen222@hp ~  
$ sudo docker stop apache-container  
apache-container  
tashfeen222@hp ~  
$ sudo docker stop mysql-container  
mysql-container  
tashfeen222@hp ~
```

Then I remove both the container

```
tashfeen222@hp ~  
$ sudo docker rmi ubuntu-mysql  
Untagged: ubuntu-mysql:latest  
Deleted: sha256:b9159eaff4de3f7ead45f74b3f4707160bdb686e5055fb681f3a9f5b7a9d6b0a  
Deleted: sha256:f10d1b0fae44f914414a931e6e9c08b31a983509c055c9c44702467be2ce85df  
tashfeen222@hp ~  
$ sudo docker rmi ubuntu-apache  
Untagged: ubuntu-apache:latest  
Deleted: sha256:edd70fb0bfc12470b9cd80ac965b05236220ddd9c1fcf19f7e9a3313d87488e0  
tashfeen222@hp ~  
$ sudo docker rmi ubuntu  
Untagged: ubuntu:latest  
Untagged: ubuntu@sha256:747d2dbbaee995098c9792d99bd333c6783ce56150d1b11e333bbceed5c54d7  
tashfeen222@hp ~  
$
```

Then I see that there is no container now

```
tashfeen222@hp ~  
$ sudo docker images  
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE  
<none>              <none>            a5dec0100cf4       14 minutes ago     283MB  
  
tashfeen222@hp ~  
$ ls -lh | grep ubuntu  
-rw----- 1 root    root    279M May  9 16:32 ubuntu-apache.tar  
-rw----- 1 root    root    695M May  9 16:38 ubuntu-mysql.tar  
tashfeen222@hp ~
```

And Then I load both the container but permission denied then I grant the permissions using chmod

```
tashfeen222@hp ~  
$ sudo docker load < ubuntu-apache.tar  
zsh: permission denied: ubuntu-apache.tar  
tashfeen222@hp ~  
$ sudo chmod 666 ubuntu-apache.tar  
tashfeen222@hp ~  
$  
tashfeen222@hp ~  
$ sudo docker load < ubuntu-apache.tar  
Loaded image: ubuntu-apache:latest  
tashfeen222@hp ~  
$  
tashfeen222@hp ~  
$ sudo chmod 666 ubuntu-mysql.tar  
tashfeen222@hp ~  
$ sudo docker load < ubuntu-mysql.tar  
684457ad87bc: Loading layer [=====] 652.3MB/652.3MB  
Loaded image: ubuntu-mysql:latest
```

Then I see that Ubuntu-apache is working correctly

```
tashfeen222@hp ~  
$ sudo docker images  
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE  
ubuntu-mysql         latest             b9159eaff4de       12 minutes ago     722MB  
ubuntu-apache        latest             edd70fb0bfc1       17 minutes ago     283MB  
<none>               <none>            a5dec0100cf4       18 minutes ago     283MB  
tashfeen222@hp ~  
$ sudo docker run -it ubuntu-apache  
root@60754129c532:/#  
root@60754129c532:/#  
root@60754129c532:/# service apache2 status  
* apache2 is not running  
root@60754129c532:/# service apache2 start  
* Starting Apache httpd web server apache2  
AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 172.17.0.2. Set the 'ServerName' directive globally to suppress this message  
*  
root@60754129c532:/#  
root@60754129c532:/#  
root@60754129c532:/# exit  
exit
```

Then I see that Ubuntu-mysql is working correctly

```
tashfeen222@hp ~  
$ sudo docker run -it ubuntu-mysql  
root@c310ba07e602:/#  
root@c310ba07e602:/#  
root@c310ba07e602:/# service mysql status  
* MySQL is stopped.  
root@c310ba07e602:/# service mysql start  
* Starting MySQL database server mysqld  
su: warning: cannot change directory to /nonexistent: No such file or directory  
  
root@c310ba07e602:/# service mysql service  
Usage: /etc/init.d/mysql start|stop|restart|reload|force-reload|status  
root@c310ba07e602:/# exit  
exit  
tashfeen222@hp ~
```

←-----THE END-----→