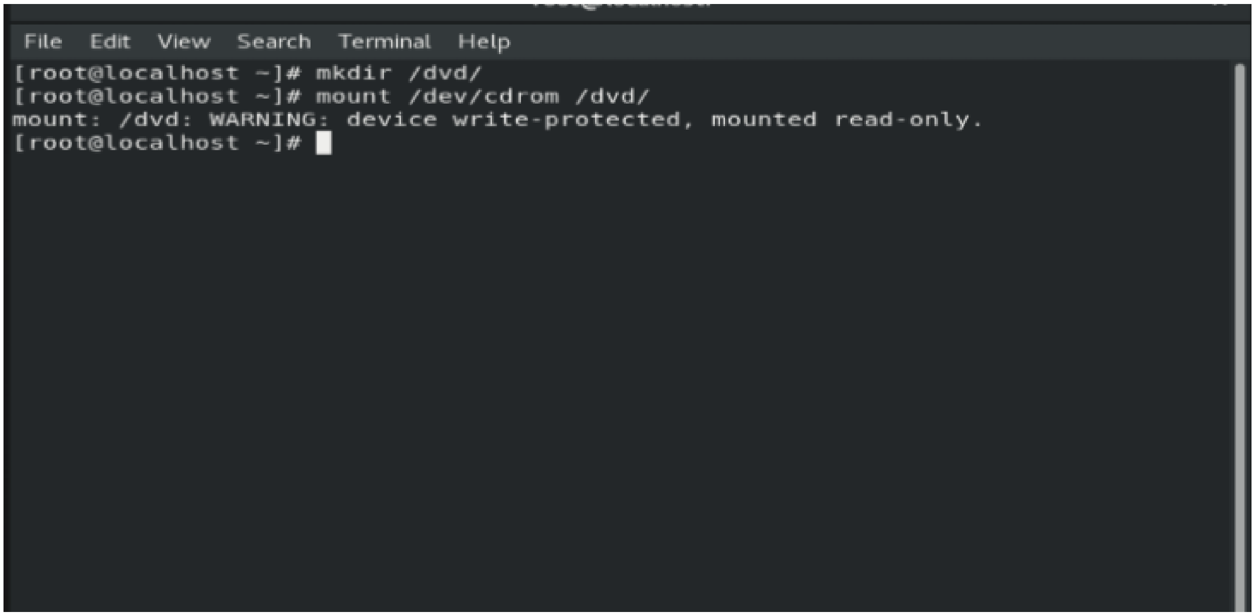
DOCKER PROJECT

Contents

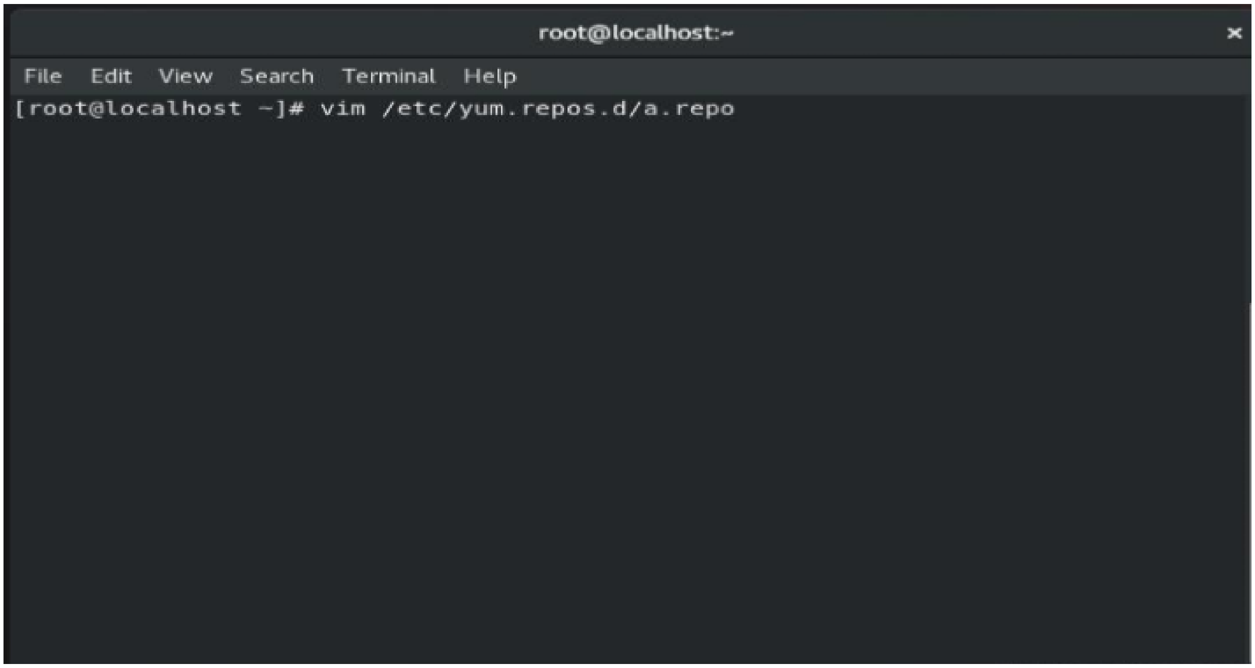
1. CONFIGURATION OF YUM:

Steps to configure yum:

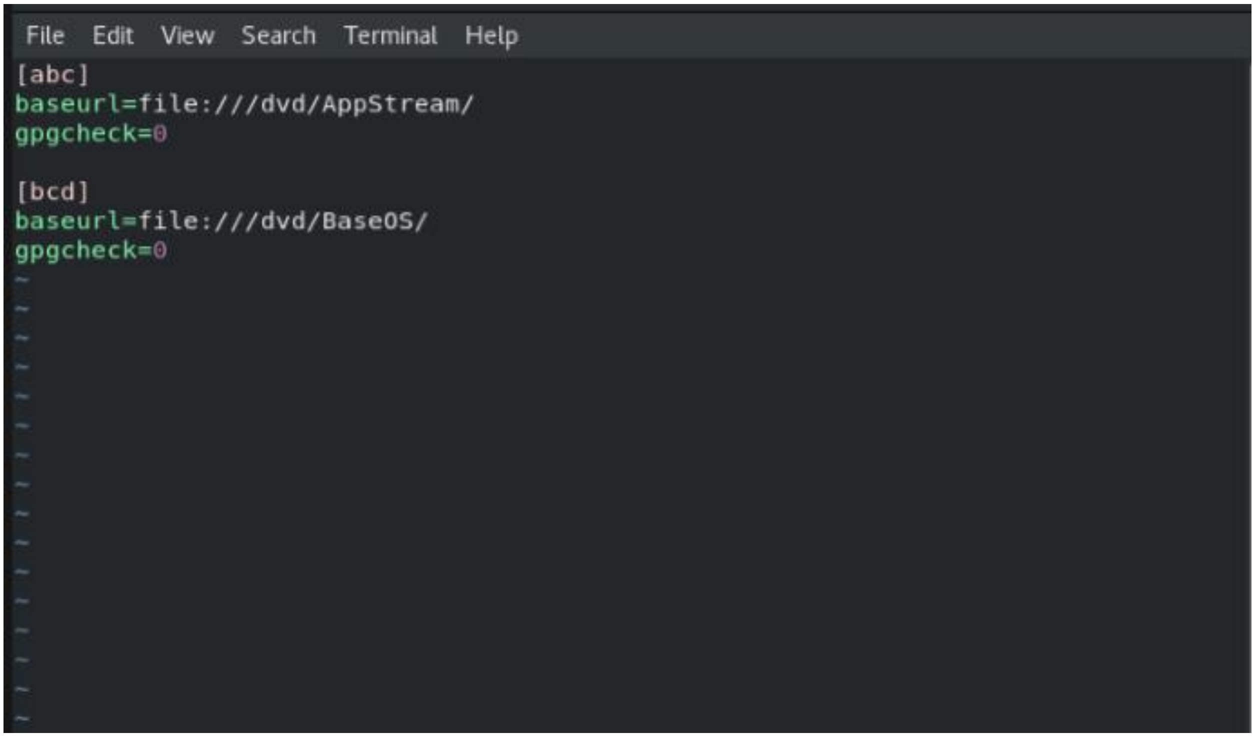
1.) Create a directory called /dvd/
2.) Mount dvd
3.) Create a file a.repo inside /etc/yum.repos.d/
4.) Edit the file and save it .



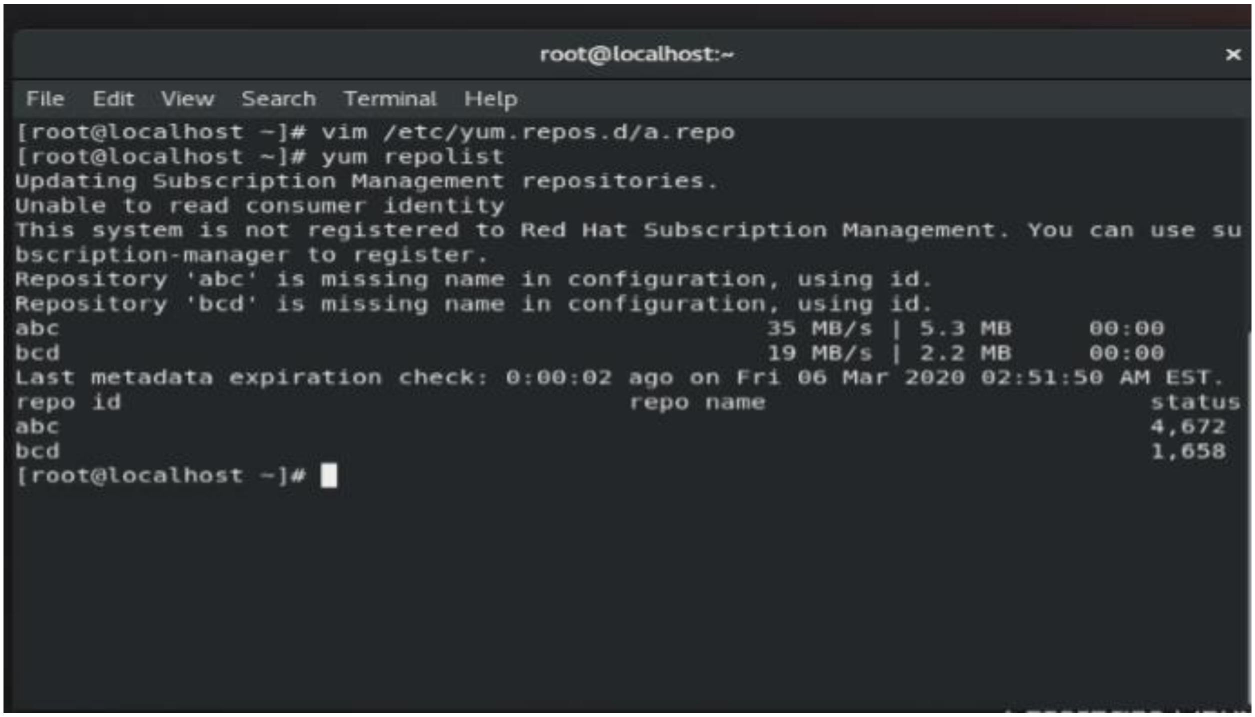
```
[root@localhost ~]# mkdir /dvd/
[root@localhost ~]# mount /dev/cdrom /dvd/
mount: /dvd: WARNING: device write-protected, mounted read-only.
[root@localhost ~]# 
```



```
[root@localhost ~]# vim /etc/yum.repos.d/a.repo
```



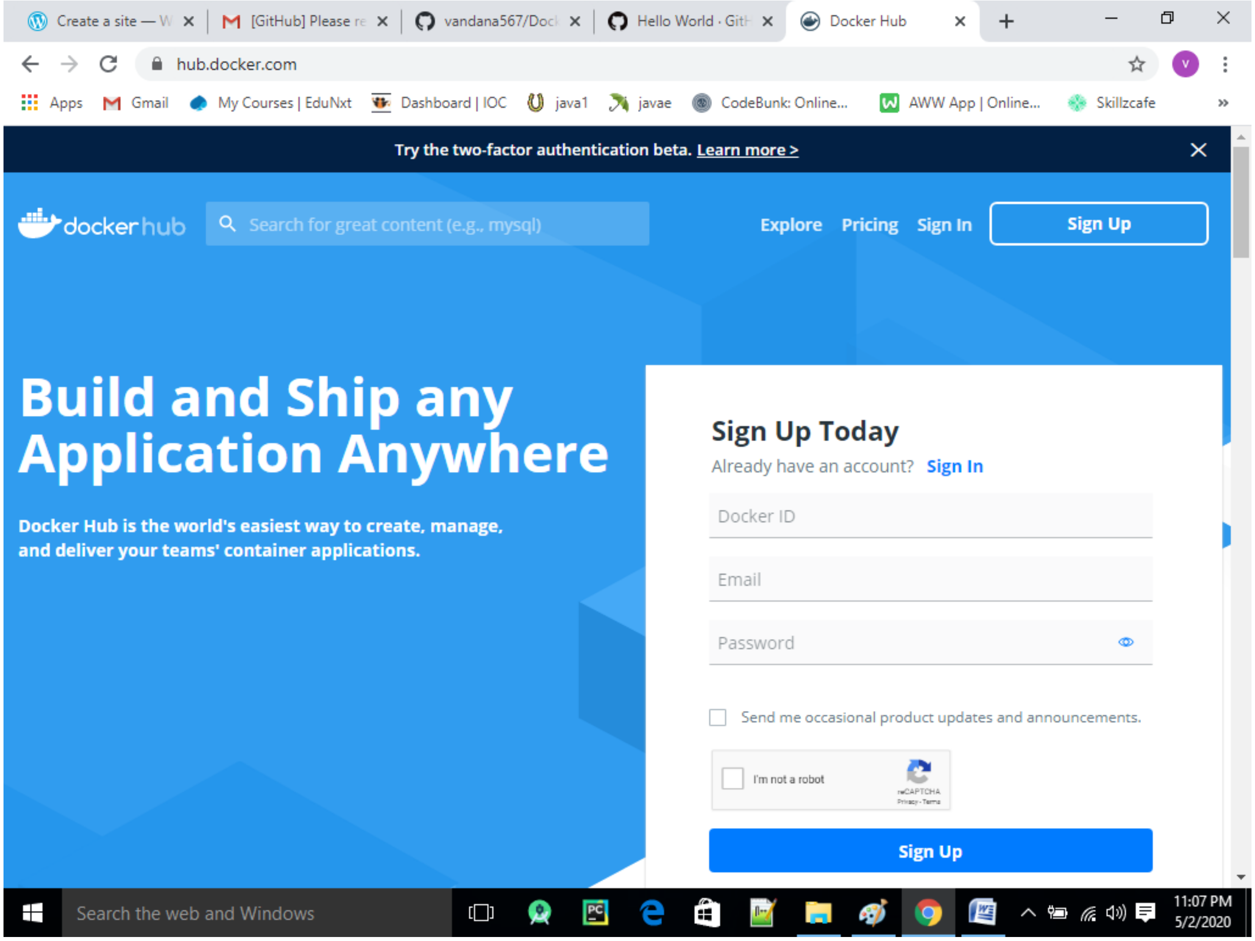
```
[abc]
baseurl=file:///dvd/AppStream/
gpgcheck=0

[bcd]
baseurl=file:///dvd/BaseOS/
gpgcheck=0
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
```



```
[root@localhost ~]# vim /etc/yum.repos.d/a.repo
[root@localhost ~]# yum repolist
Updating Subscription Management repositories.
Unable to read consumer identity
This system is not registered to Red Hat Subscription Management. You can use su
bscription-manager to register.
Repository 'abc' is missing name in configuration, using id.
Repository 'bcd' is missing name in configuration, using id.
abc                                                35 MB/s | 5.3 MB     00:00
bcd                                                19 MB/s | 2.2 MB     00:00
Last metadata expiration check: 0:00:02 ago on Fri 06 Mar 2020 02:51:50 AM EST.
repo id                                 repo name                         status
abc                                                                        4,672
bcd                                                                        1,658
[root@localhost ~]# 
```

2. INSTALLATION OF DOCKER AND LAUNCH CENTOS IMAGE FORM DOCKER HUB REPOSITORY

Step 1: create docker hub account on hub.docker.com



Try the two-factor authentication beta. Learn more >

Build and Ship any Application Anywhere

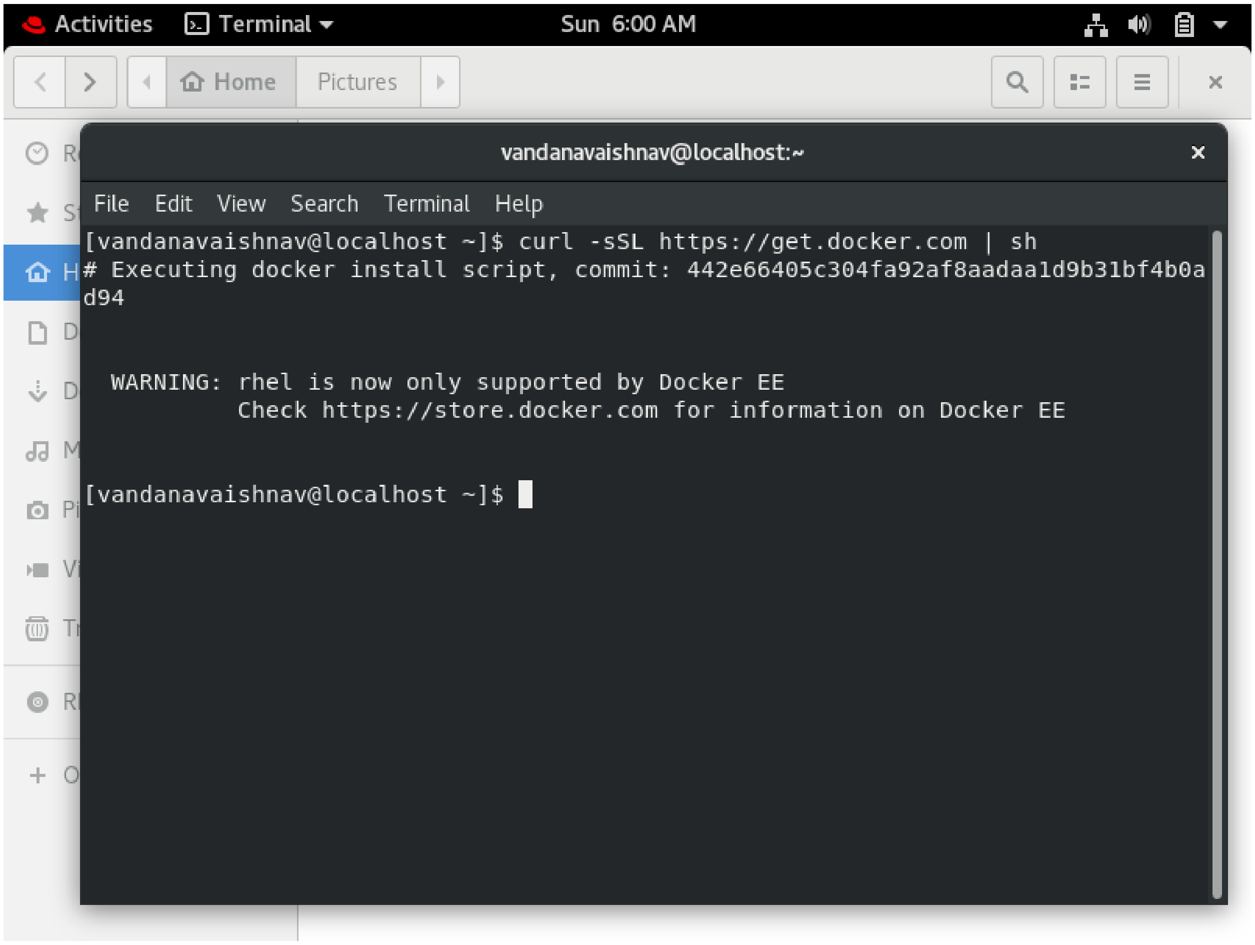
Docker Hub is the world's easiest way to create, manage, and deliver your teams' container applications.

Sign Up Today

Already have an account? Sign In

□ Send me occasional product updates and announcements.

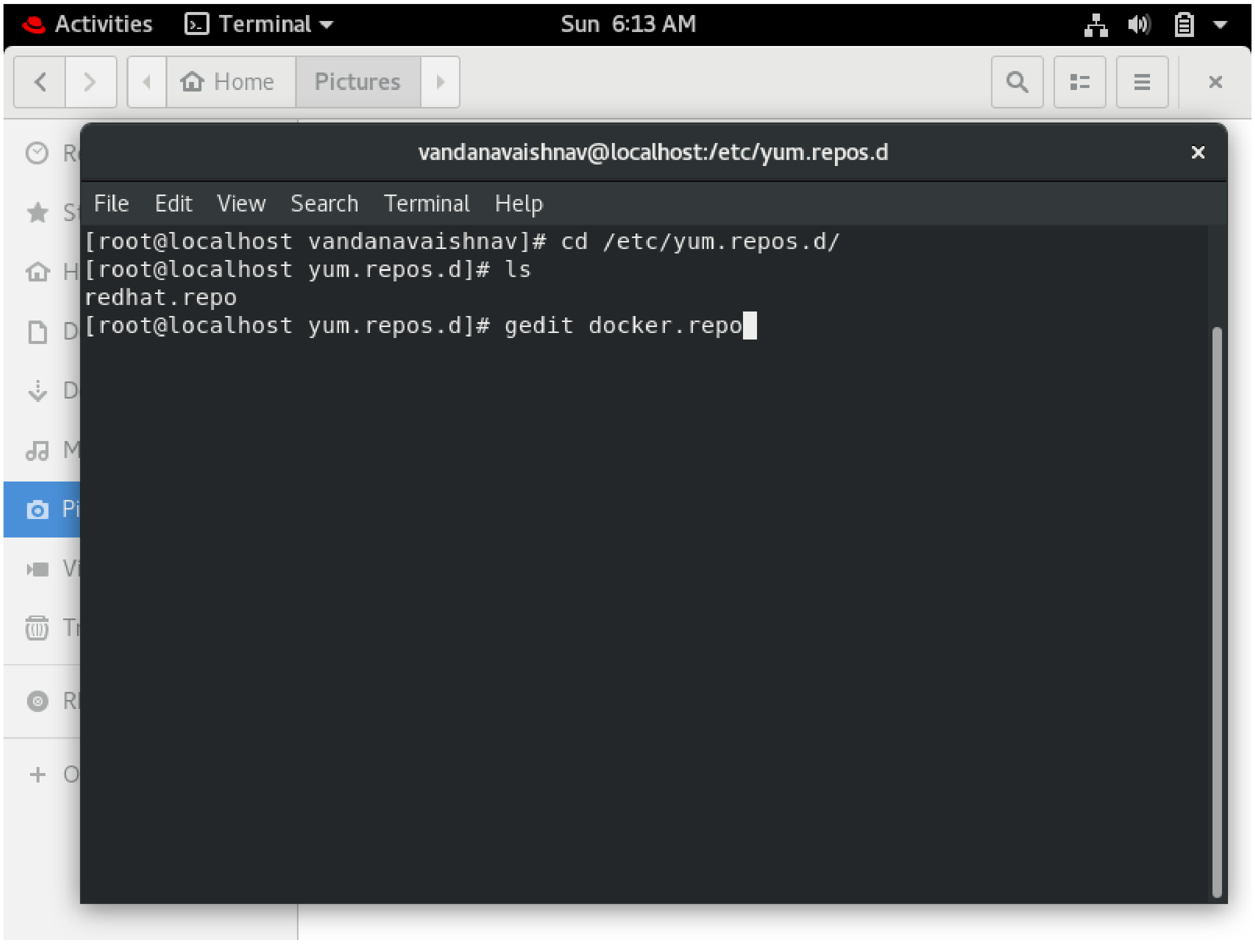
Step 2: use the curl command to install docker. But it shows error.



```
[vandanavaishnav@localhost ~]$ curl -sSL https://get.docker.com | sh
# Executing docker install script, commit: 442e66405c304fa92af8aadaa1d9b31bf4b0a
d94


  WARNING: rhel is now only supported by Docker EE
           Check https://store.docker.com for information on Docker EE


[vandanavaishnav@localhost ~]$ 
```

Step 3: run the following commands:

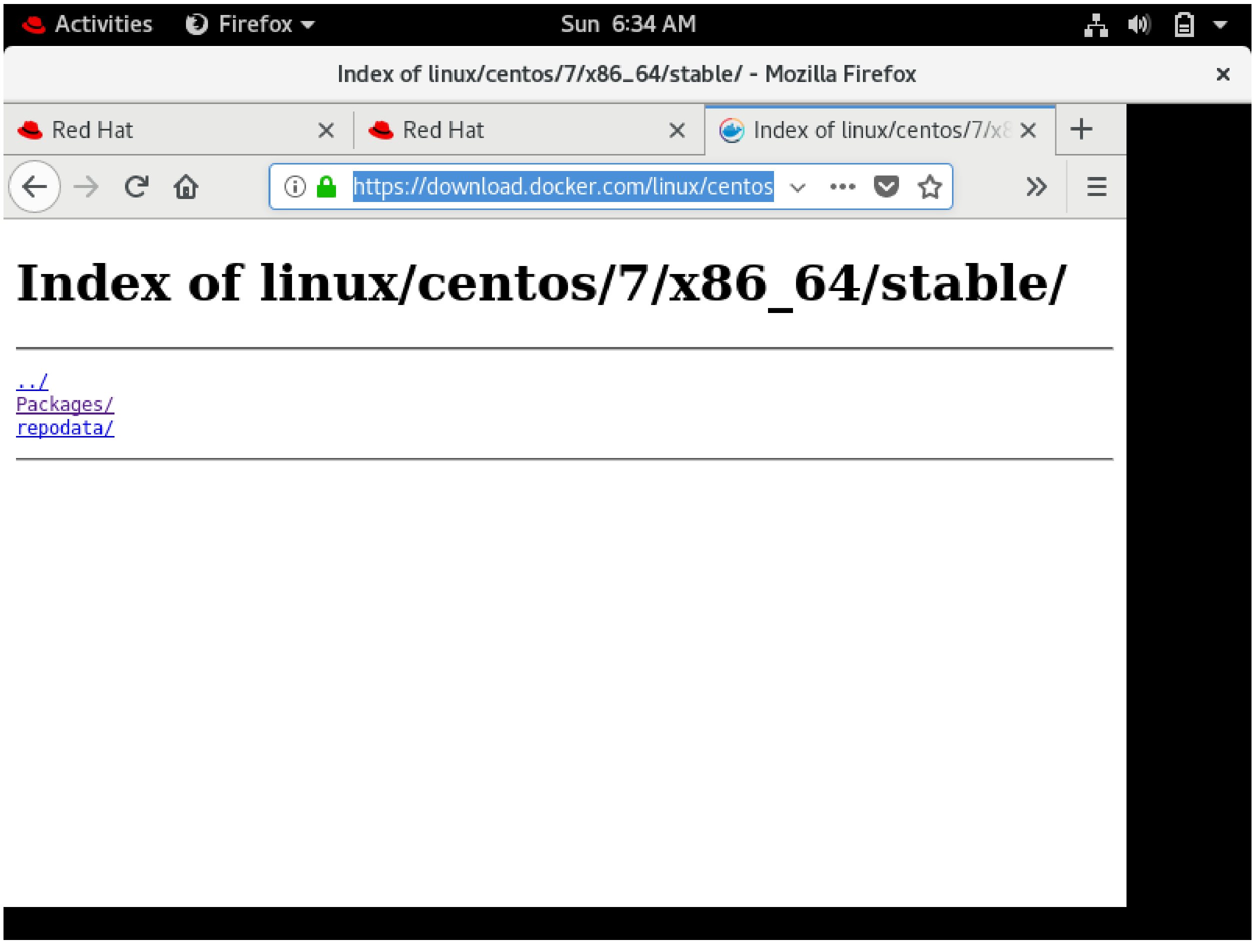
a) cd /etc/yum.repos.d/
b) ls
c) gedit docker.repo


Activities
Terminal
Sun 6:13 AM
Home
Pictures
vandanavaishnav@localhost:/etc/yum.repos.d
File Edit View Search Terminal Help

```
[root@localhost vandanavaishnav]# cd /etc/yum.repos.d/
[root@localhost yum.repos.d]# ls
redhat.repo
[root@localhost yum.repos.d]# gedit docker.repo
```

Step 4: edit the docker.repo .

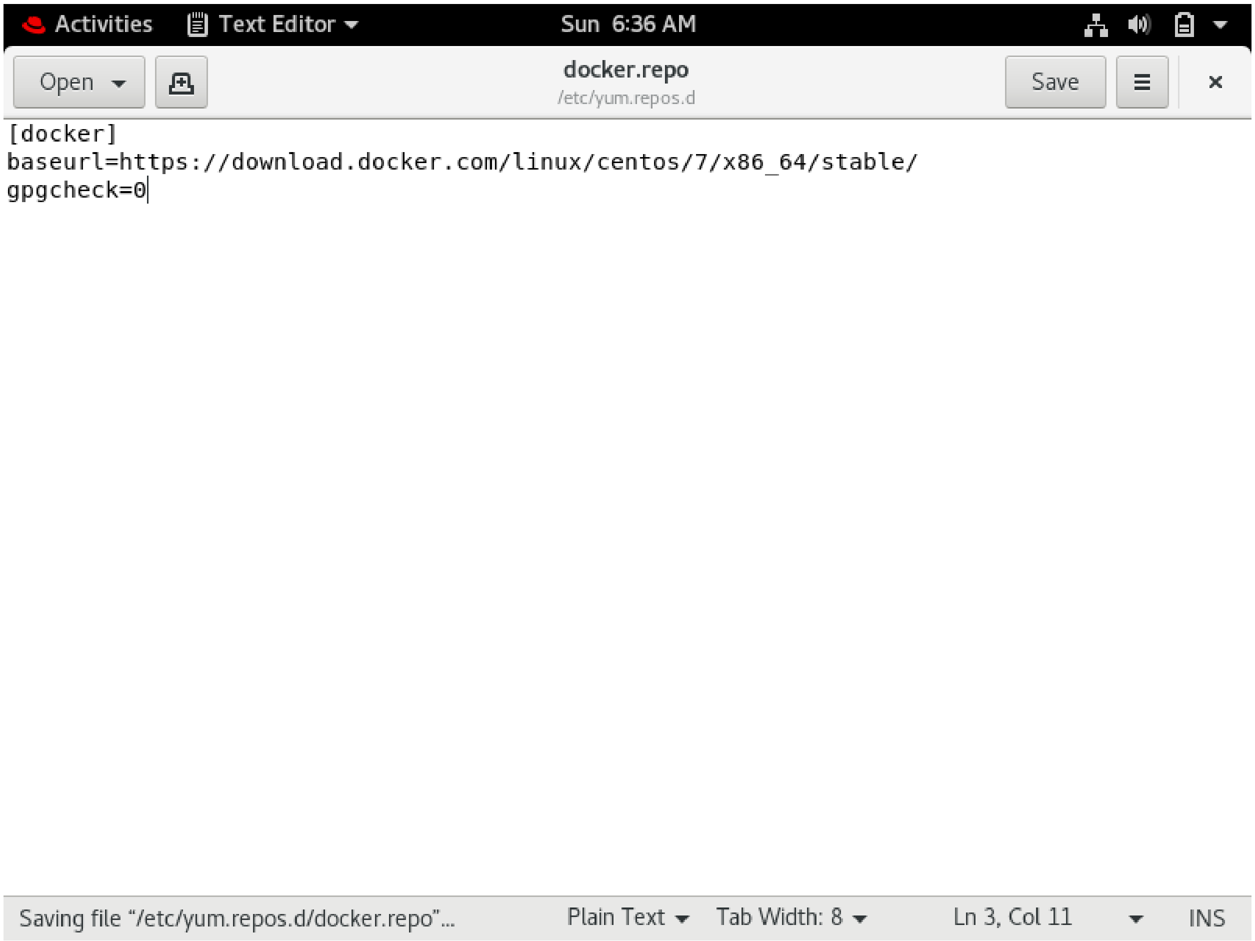
Copy the link from docker rpm download and paste in docker .repo



Activities
Firefox
Sun 6:34 AM
Index of linux/centos/7/x86_64/stable/ - Mozilla Firefox
Red Hat
Red Hat
Index of linux/centos/7/x8
https://download.docker.com/linux/centos

Index of linux/centos/7/x86_64/stable/

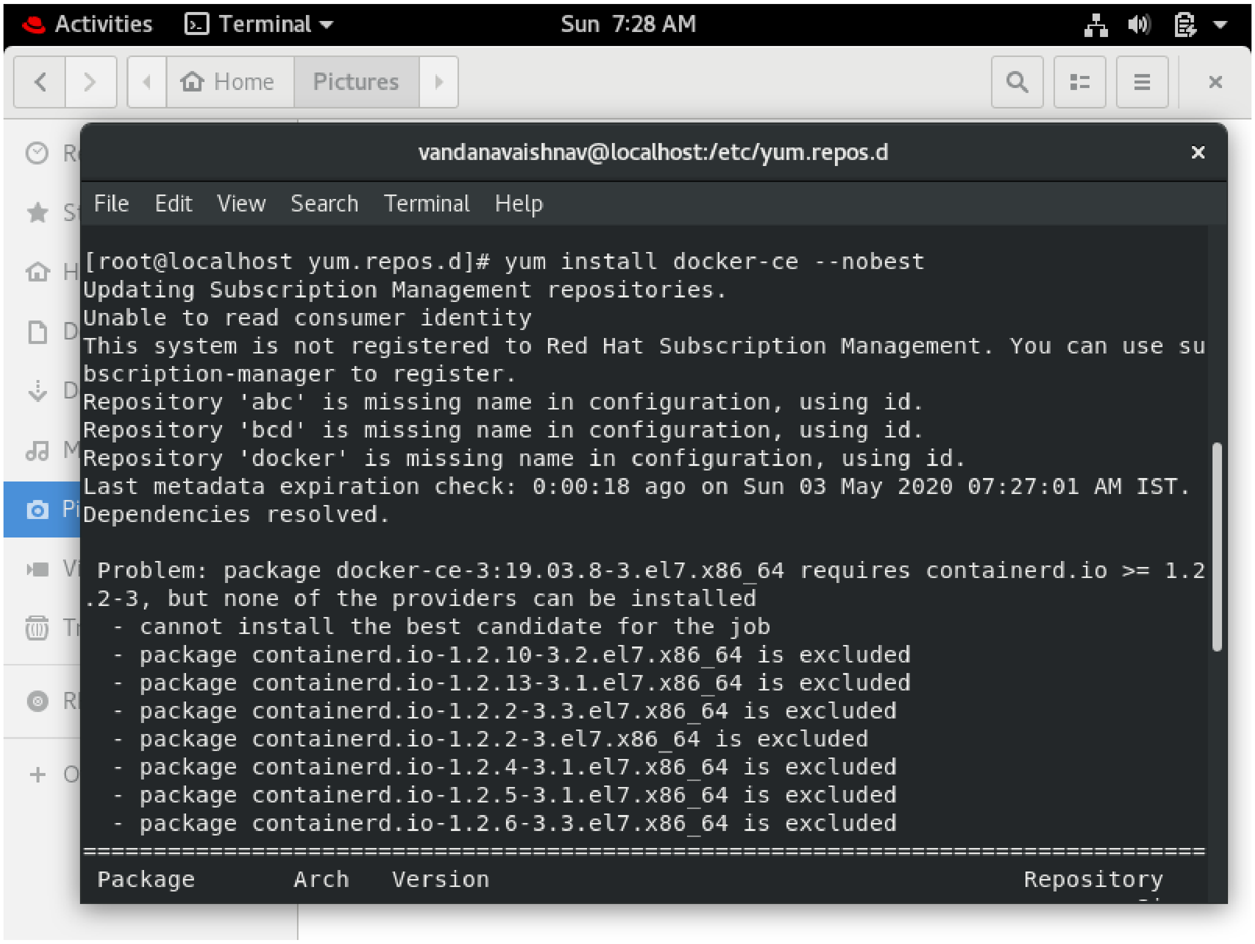
```
../
Packages/
repodata/
```



```
[docker]
baseurl=https://download.docker.com/linux/centos/7/x86_64/stable/
gpgcheck=0
```

Step 5: install docker using yum command:

Yum install docker-ce –nobest



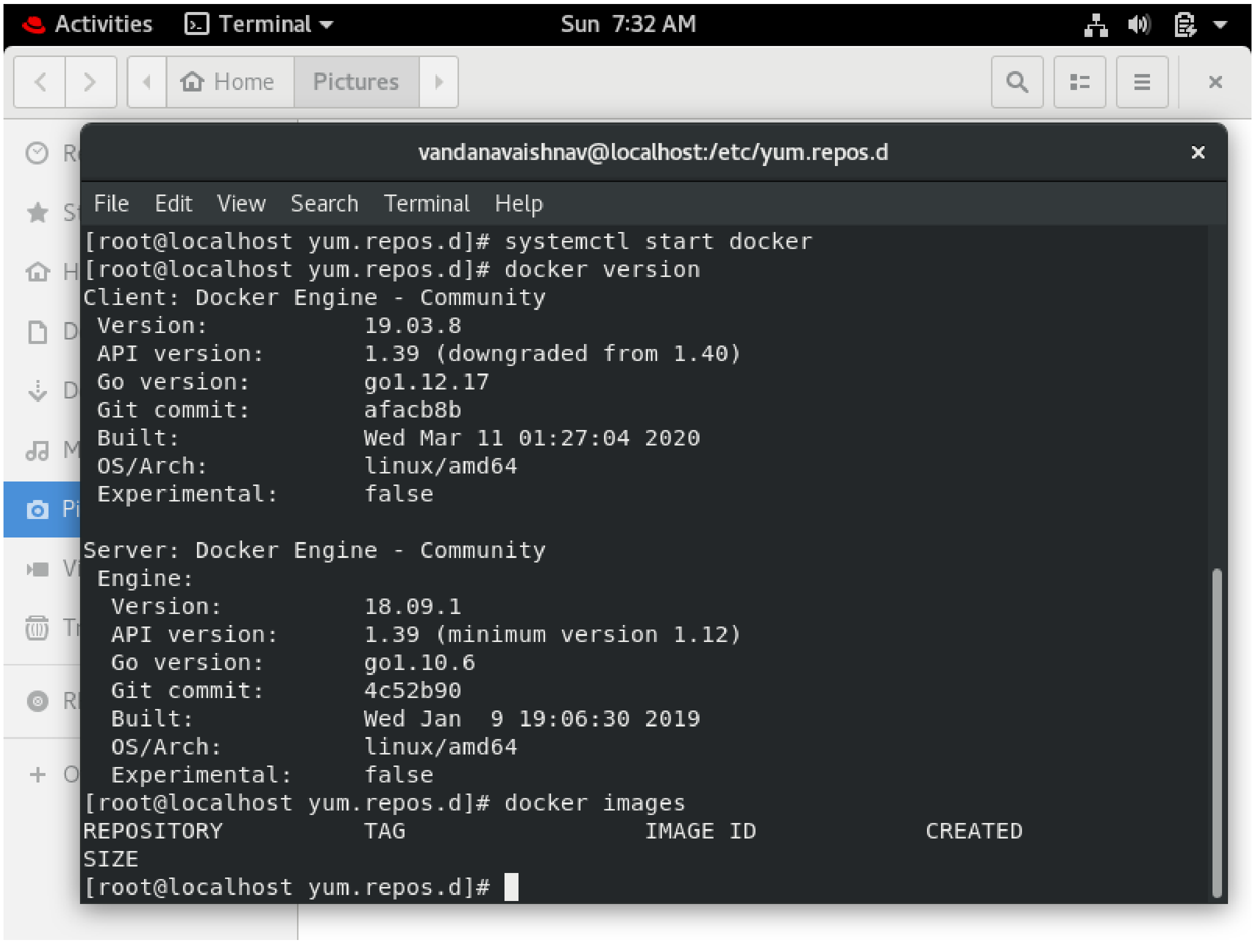
```
[root@localhost yum.repos.d]# yum install docker-ce --nobest
Updating Subscription Management repositories.
Unable to read consumer identity
This system is not registered to Red Hat Subscription Management. You can use su
bscription-manager to register.
Repository 'abc' is missing name in configuration, using id.
Repository 'bcd' is missing name in configuration, using id.
Repository 'docker' is missing name in configuration, using id.
Last metadata expiration check: 0:00:18 ago on Sun 03 May 2020 07:27:01 AM IST.
Dependencies resolved.

 Problem: package docker-ce-3:19.03.8-3.el7.x86_64 requires containerd.io >= 1.2
.2-3, but none of the providers can be installed
  - cannot install the best candidate for the job
  - package containerd.io-1.2.10-3.2.el7.x86_64 is excluded
  - package containerd.io-1.2.13-3.1.el7.x86_64 is excluded
  - package containerd.io-1.2.2-3.3.el7.x86_64 is excluded
  - package containerd.io-1.2.2-3.el7.x86_64 is excluded
  - package containerd.io-1.2.4-3.1.el7.x86_64 is excluded
  - package containerd.io-1.2.5-3.1.el7.x86_64 is excluded
  - package containerd.io-1.2.6-3.3.el7.x86_64 is excluded
================================================================================
 Package           Arch     Version                                    Repository
```

Step 6: start docker services using this command:

systemctl start docker

check the version of docker using docker version

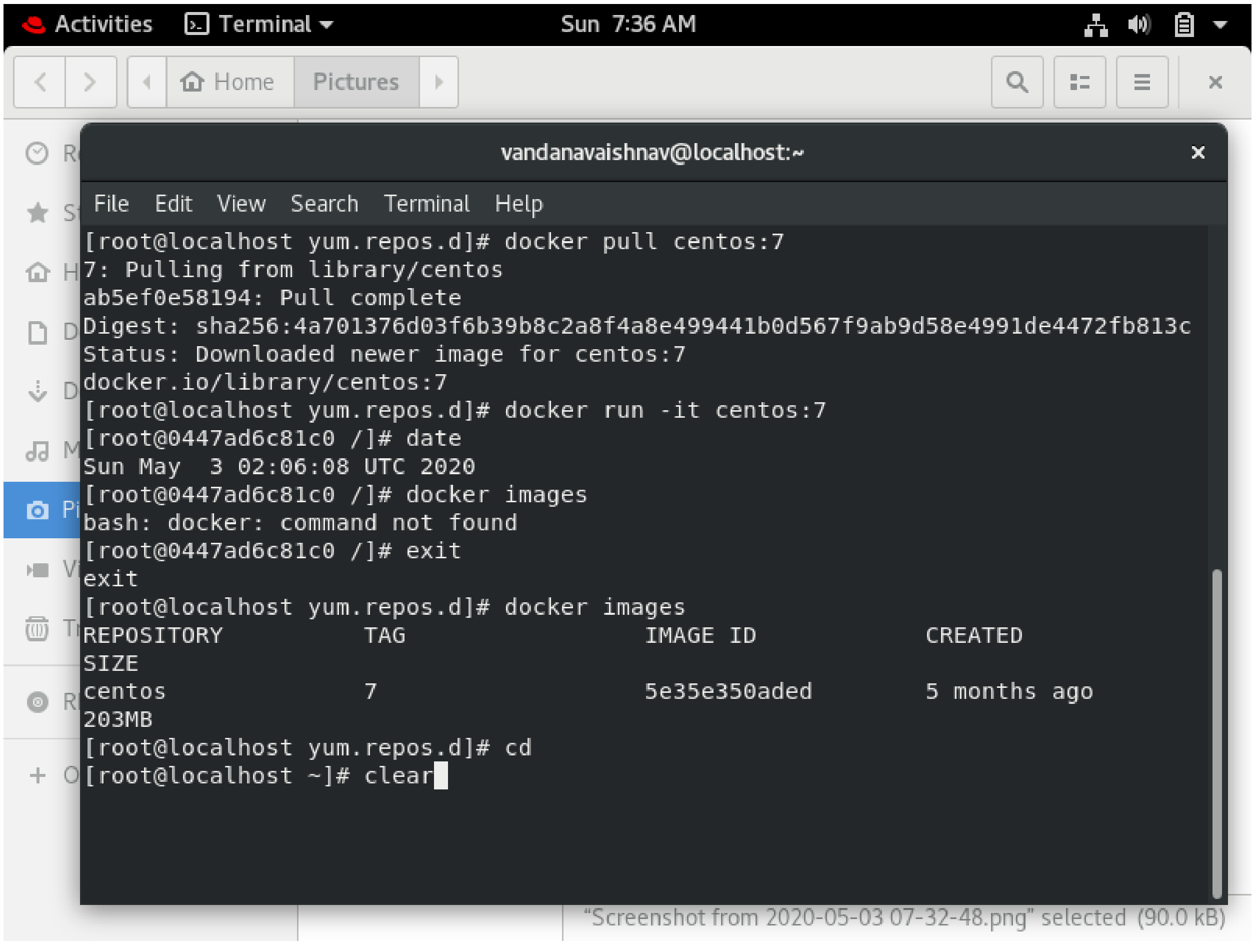
check all the images of docker using docker images



Activities
Terminal
Sun 7:32 AM
Home
Pictures
vandanavaishnav@localhost:/etc/yum.repos.d
File Edit View Search Terminal Help

```
[root@localhost yum.repos.d]# systemctl start docker
[root@localhost yum.repos.d]# docker version
Client: Docker Engine - Community
 Version:           19.03.8
 API version:       1.39 (downgraded from 1.40)
 Go version:        go1.12.17
 Git commit:        afacb8b
 Built:             Wed Mar 11 01:27:04 2020
 OS/Arch:           linux/amd64
 Experimental:      false

Server: Docker Engine - Community
 Engine:
  Version:          18.09.1
  API version:      1.39 (minimum version 1.12)
  Go version:       go1.10.6
  Git commit:       4c52b90
  Built:            Wed Jan  9 19:06:30 2019
  OS/Arch:          linux/amd64
  Experimental:     false
[root@localhost yum.repos.d]# docker images
REPOSITORY          TAG                 IMAGE ID            CREATED
SIZE
[root@localhost yum.repos.d]# 
```

Step 7: launch centos:7 image from hub.docker.com

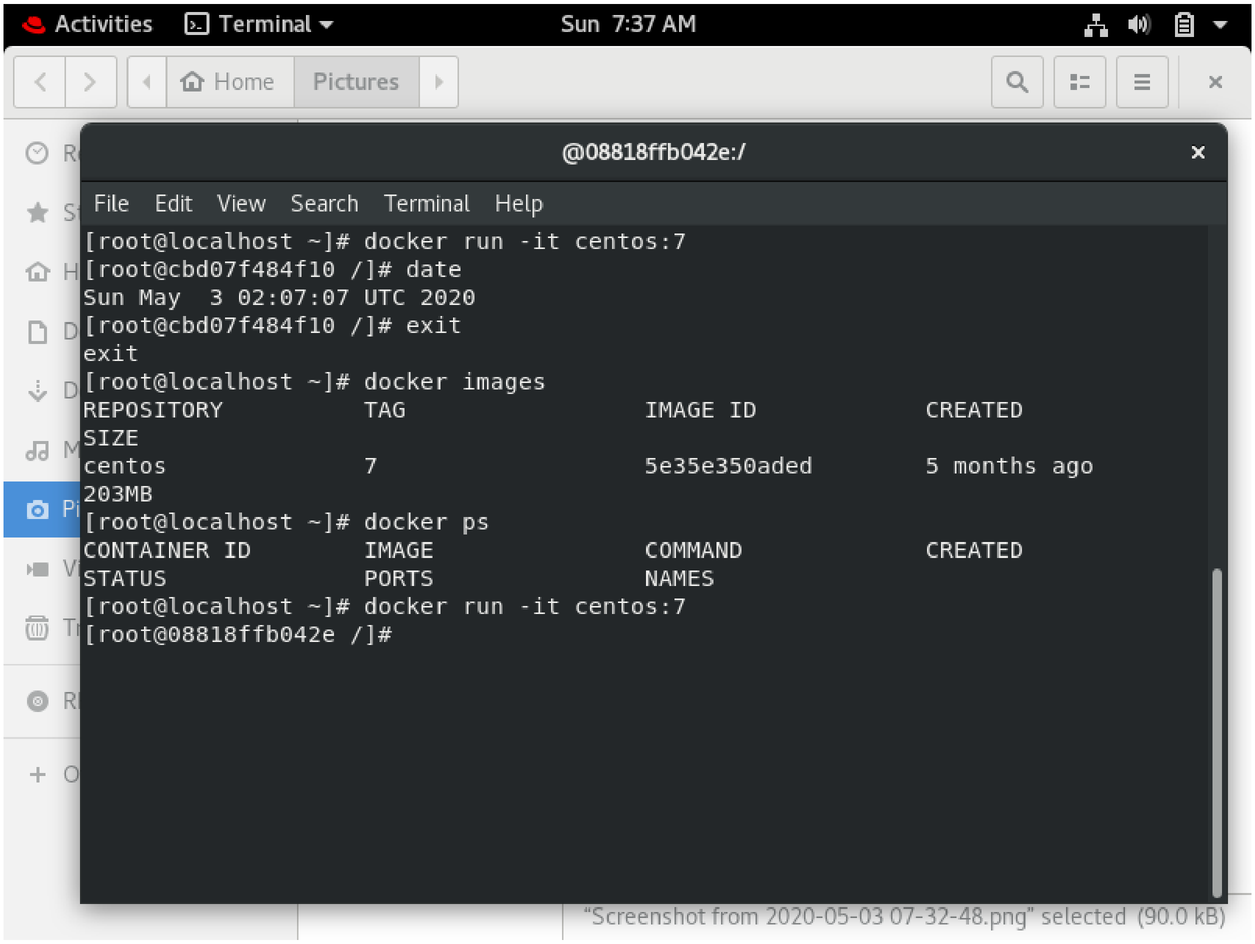


Activities
Terminal
Sun 7:36 AM
Home
Pictures
vandanavaishnav@localhost:~
File Edit View Search Terminal Help
"Screenshot from 2020-05-03 07-32-48.png" selected (90.0 kB)

```
[root@localhost yum.repos.d]# docker pull centos:7
7: Pulling from library/centos
ab5ef0e58194: Pull complete
Digest: sha256:4a701376d03f6b39b8c2a8f4a8e499441b0d567f9ab9d58e4991de4472fb813c
Status: Downloaded newer image for centos:7
docker.io/library/centos:7
[root@localhost yum.repos.d]# docker run -it centos:7
[root@0447ad6c81c0 /]# date
Sun May  3 02:06:08 UTC 2020
[root@0447ad6c81c0 /]# docker images
bash: docker: command not found
[root@0447ad6c81c0 /]# exit
exit
[root@localhost yum.repos.d]# docker images
REPOSITORY          TAG                 IMAGE ID            CREATED
SIZE
centos              7                   5e35e350aded        5 months ago
203MB
[root@localhost yum.repos.d]# cd
[root@localhost ~]# clear
```

Step 8: run the centos:7 container using this command:

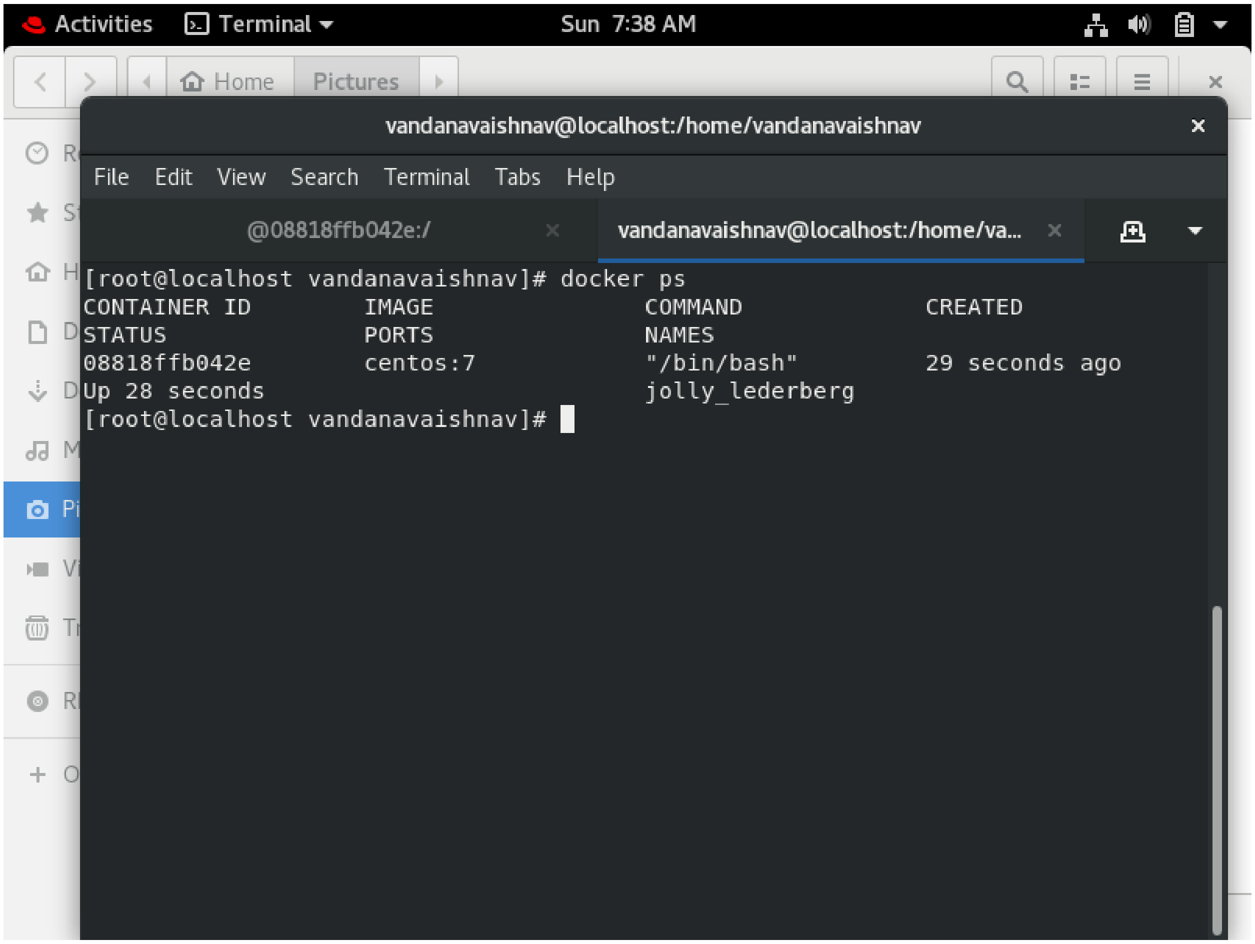
docker run –it centos:7



```
[root@localhost ~]# docker run -it centos:7
[root@cbd07f484f10 /]# date
Sun May  3 02:07:07 UTC 2020
[root@cbd07f484f10 /]# exit
exit
[root@localhost ~]# docker images
REPOSITORY          TAG                 IMAGE ID            CREATED
SIZE
centos              7                   5e35e350aded        5 months ago
203MB
[root@localhost ~]# docker ps
CONTAINER ID        IMAGE               COMMAND             CREATED
STATUS              PORTS               NAMES
[root@localhost ~]# docker run -it centos:7
[root@08818ffb042e /]#
```

Step 9: check all the os system that are currently running

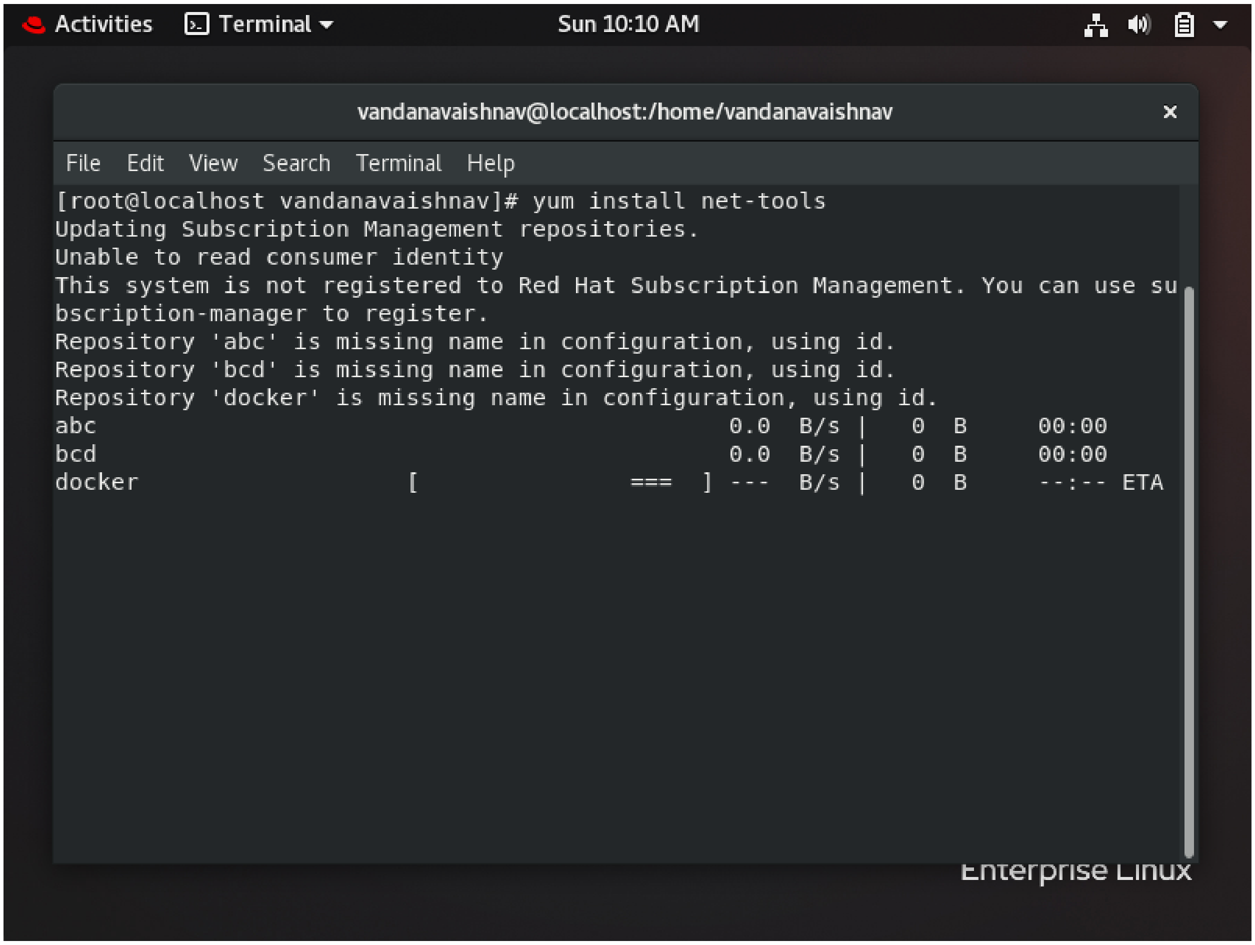
docker ps



```
[root@localhost vandanavaishnav]# docker ps
CONTAINER ID        IMAGE               COMMAND             CREATED
STATUS              PORTS               NAMES
08818ffb042e        centos:7            "/bin/bash"         29 seconds ago
Up 28 seconds                           jolly_lederberg
[root@localhost vandanavaishnav]# 
```

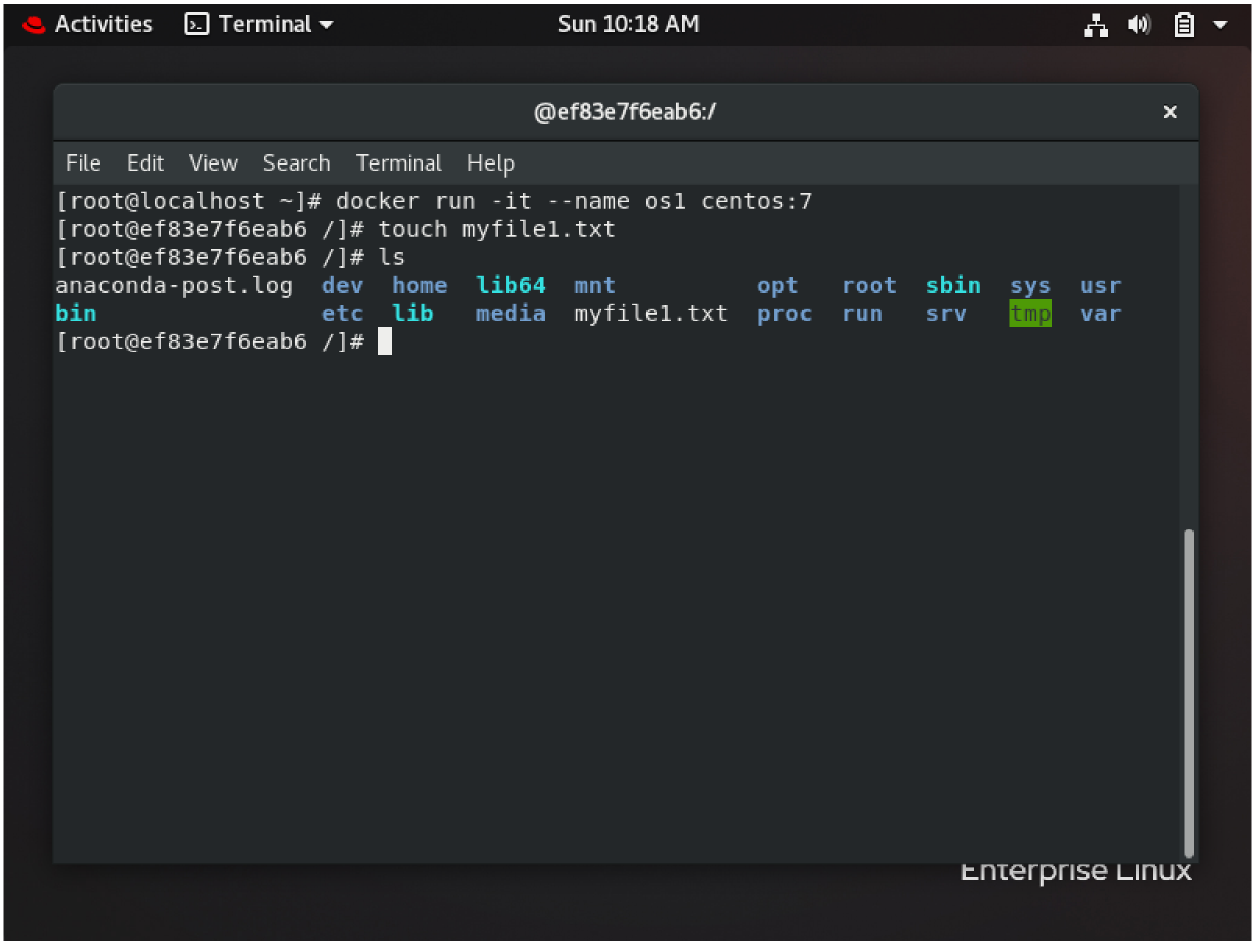
3. CREATE OUR OWN IMAGES

Step 1: install net-tools using yum



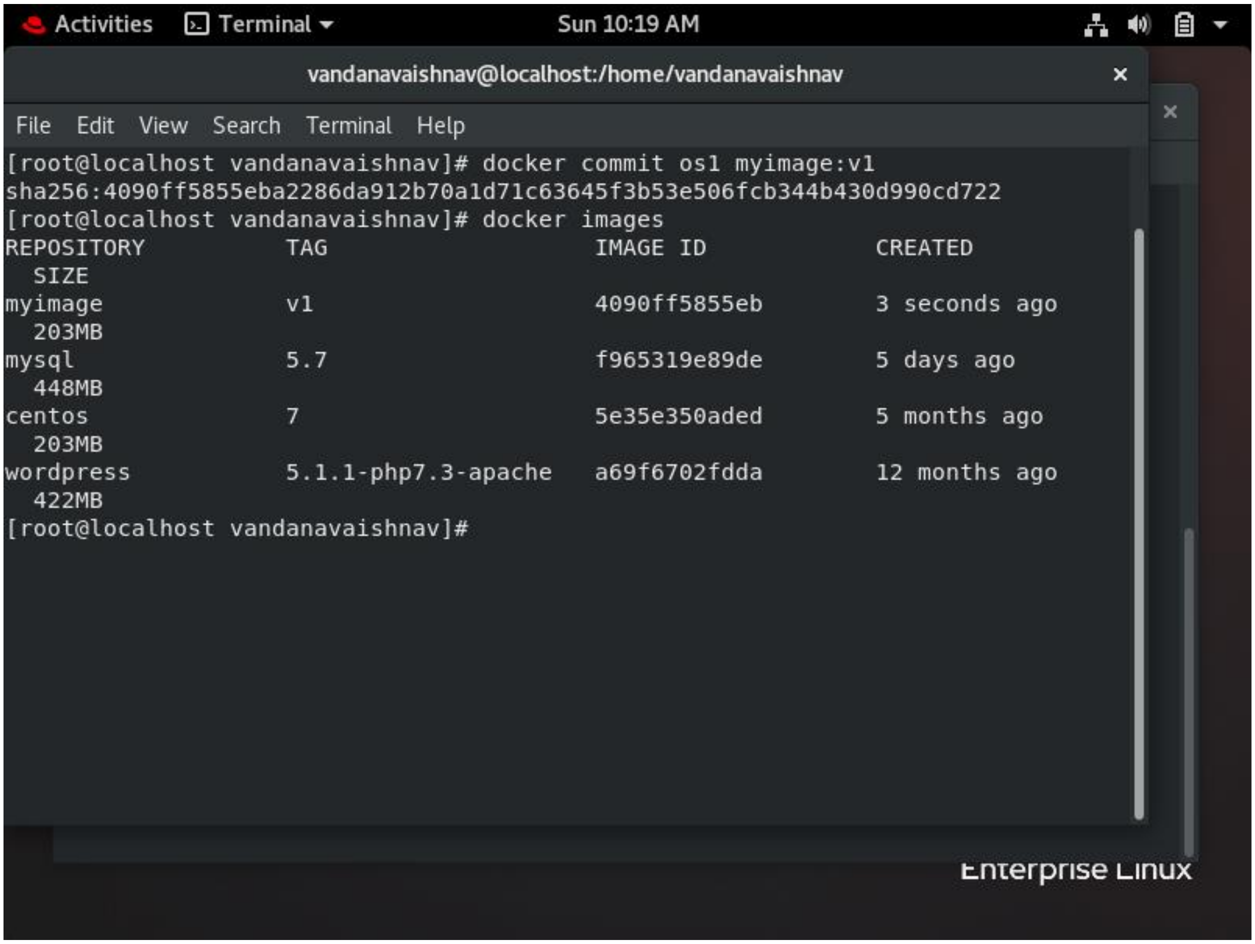
```
[root@localhost vandanavaishnav]# yum install net-tools
Updating Subscription Management repositories.
Unable to read consumer identity
This system is not registered to Red Hat Subscription Management. You can use su
bscription-manager to register.
Repository 'abc' is missing name in configuration, using id.
Repository 'bcd' is missing name in configuration, using id.
Repository 'docker' is missing name in configuration, using id.
abc                                                 0.0  B/s |   0  B     00:00
bcd                                                 0.0  B/s |   0  B     00:00
docker                   [               ===  ] ---  B/s |   0  B     --:-- ETA
```

Step 2: run the container named os1 which uses centos image



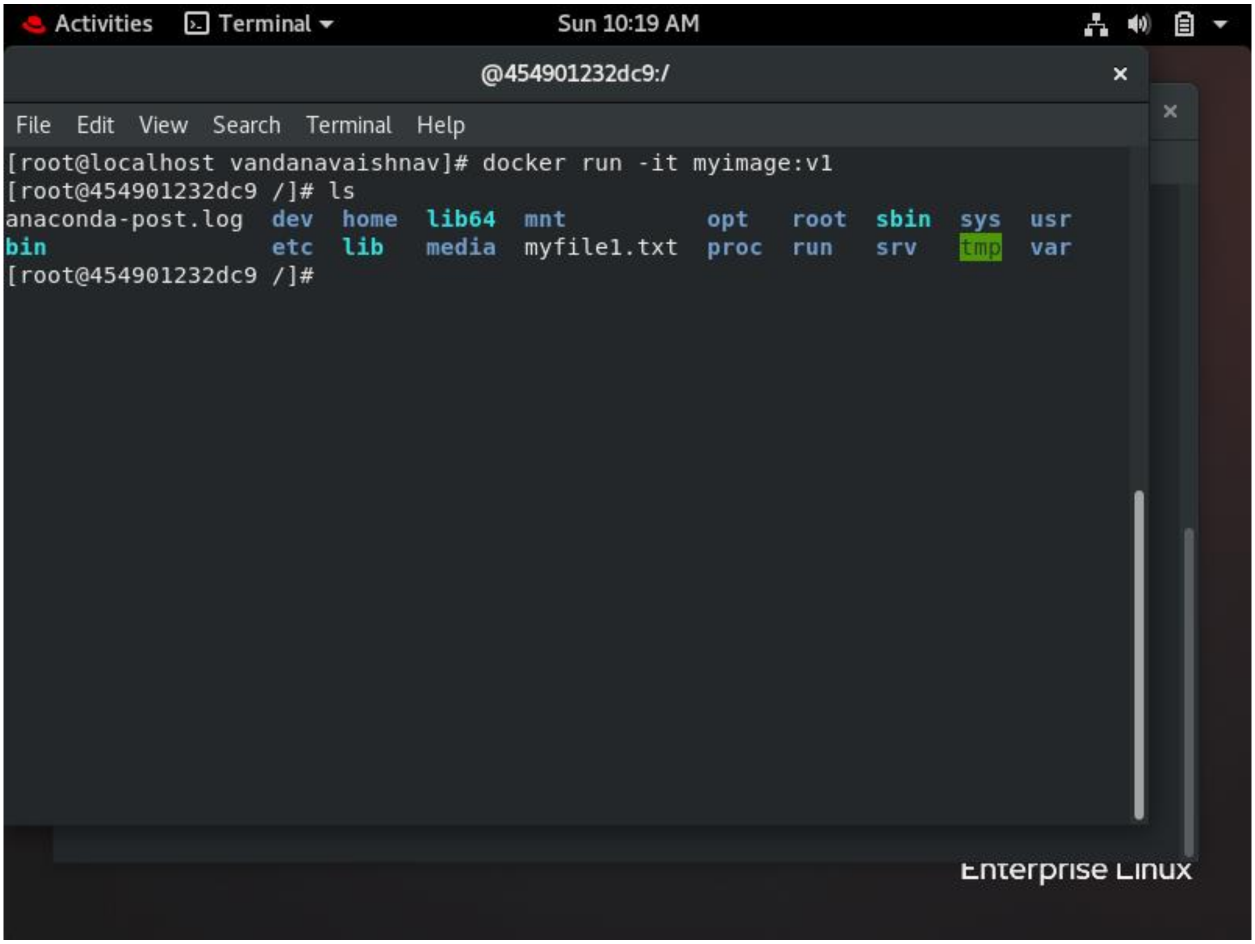
```
[root@localhost ~]# docker run -it --name os1 centos:7
[root@ef83e7f6eab6 /]# touch myfile1.txt
[root@ef83e7f6eab6 /]# ls
anaconda-post.log  dev  home  lib64  mnt          opt   root  sbin  sys  usr
bin                etc  lib   media  myfile1.txt  proc  run   srv   tmp  var
[root@ef83e7f6eab6 /]# 
```

Step 3: create own image by using commit command


Activities
Terminal
Sun 10:19 AM
vandanavaishnav@localhost:/home/vandanavaishnav
File Edit View Search Terminal Help
Enterprise Linux

```
[root@localhost vandanavaishnav]# docker commit os1 myimage:v1
sha256:4090ff5855eba2286da912b70a1d71c63645f3b53e506fcb344b430d990cd722
[root@localhost vandanavaishnav]# docker images
REPOSITORY          TAG                     IMAGE ID            CREATED
  SIZE
myimage             v1                      4090ff5855eb        3 seconds ago
  203MB
mysql               5.7                     f965319e89de        5 days ago
  448MB
centos              7                       5e35e350aded        5 months ago
  203MB
wordpress           5.1.1-php7.3-apache     a69f6702fdda        12 months ago
  422MB
[root@localhost vandanavaishnav]#
```

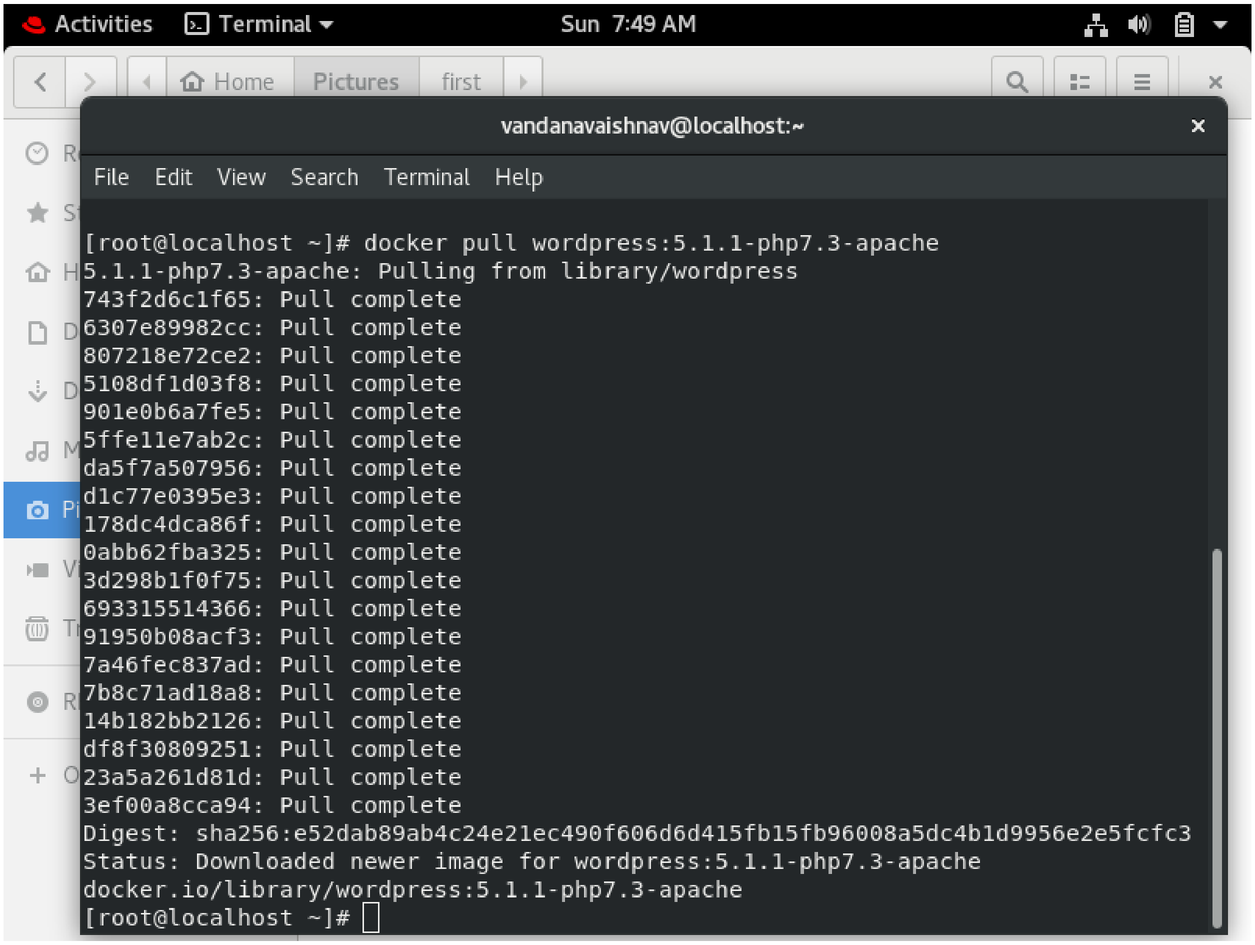
Step 4: run our own image



```
[root@localhost vandanavaishnav]# docker run -it myimage:v1
[root@454901232dc9 /]# ls
anaconda-post.log  dev  home  lib64  mnt         opt   root  sbin  sys  usr
bin                etc  lib   media  myfile1.txt  proc  run   srv   tmp  var
[root@454901232dc9 /]#
```

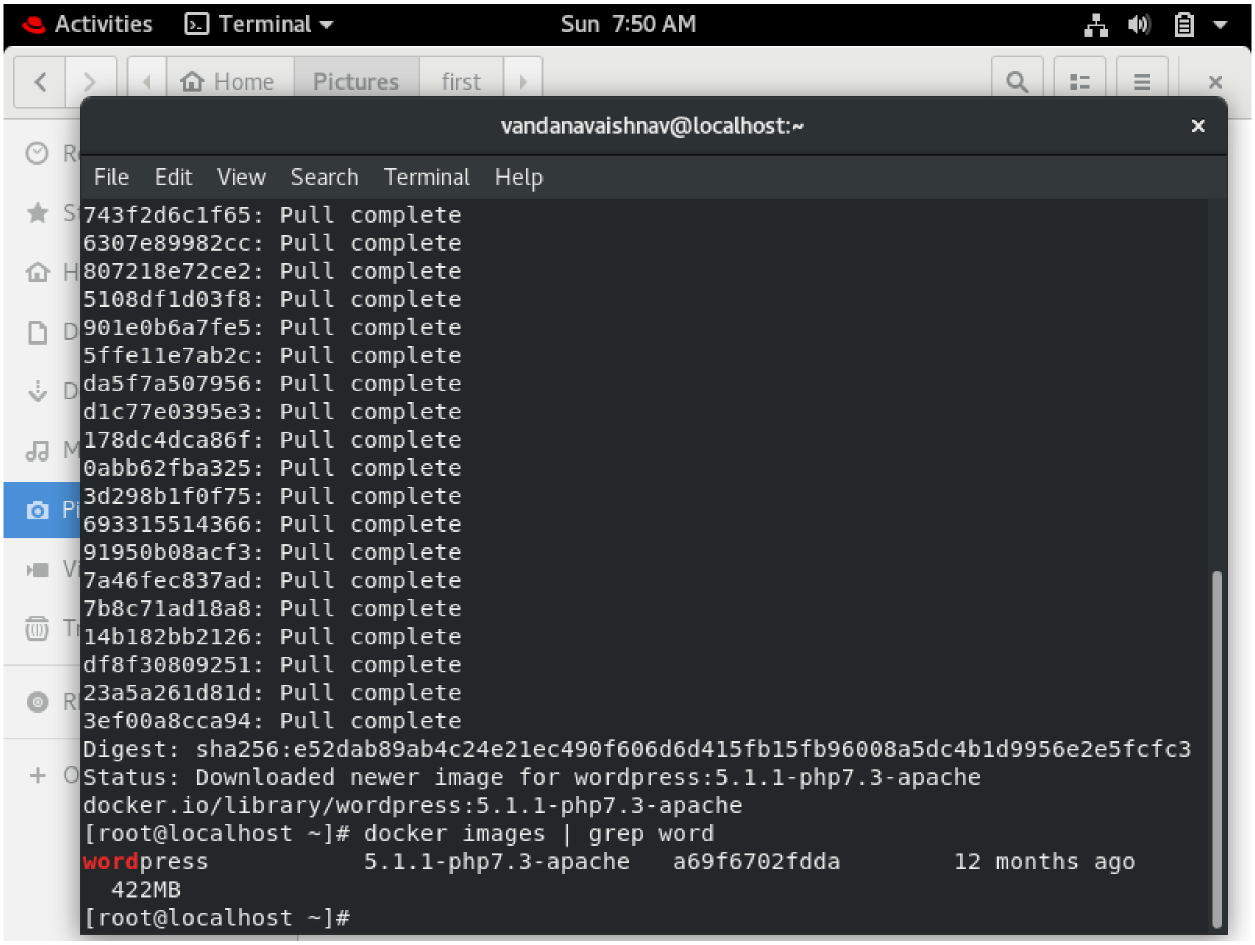
4. Multi-tier Architecture

Step 1: pull wordpress image from hub.docker.com



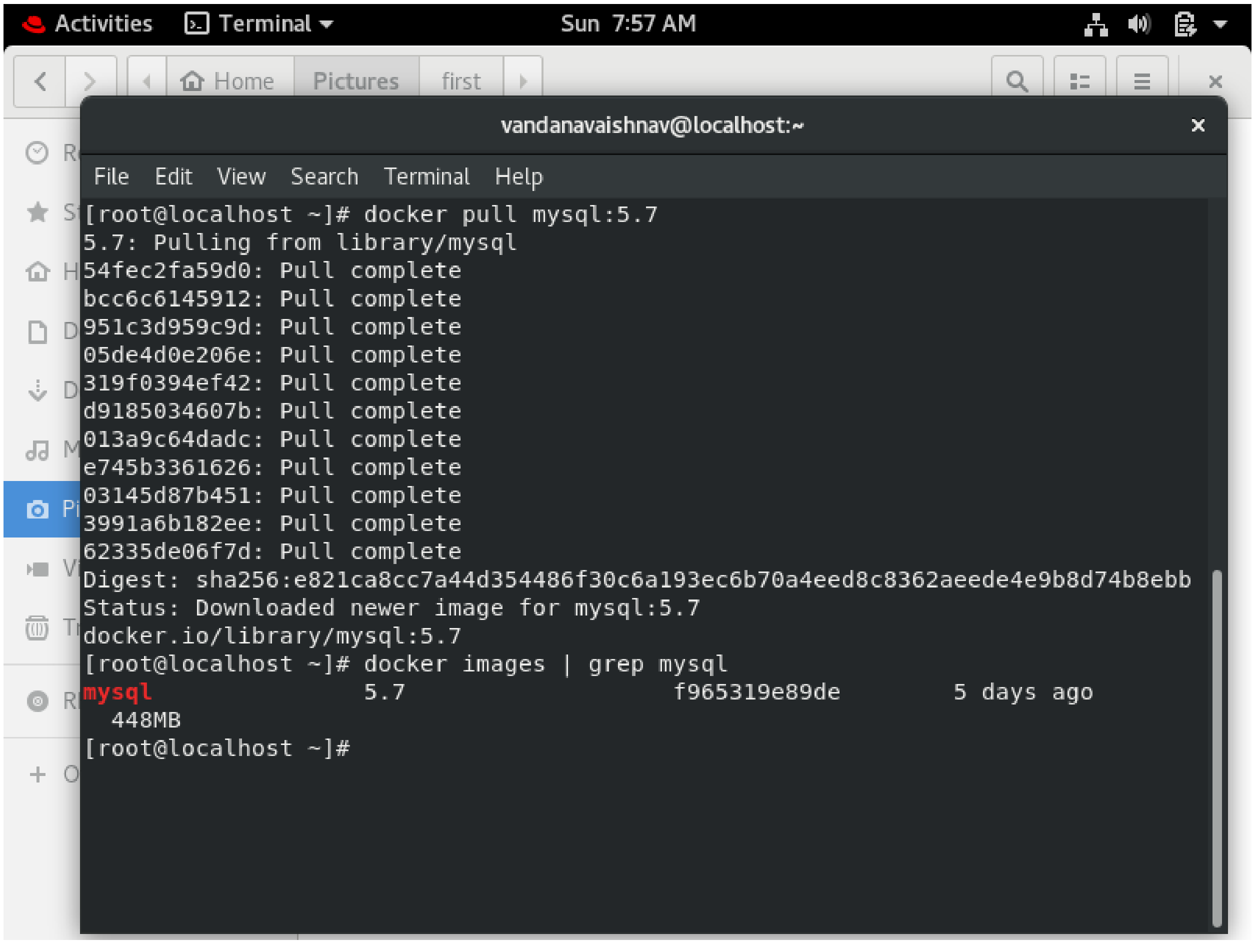
```
[root@localhost ~]# docker pull wordpress:5.1.1-php7.3-apache
5.1.1-php7.3-apache: Pulling from library/wordpress
743f2d6c1f65: Pull complete
6307e89982cc: Pull complete
807218e72ce2: Pull complete
5108df1d03f8: Pull complete
901e0b6a7fe5: Pull complete
5ffe11e7ab2c: Pull complete
da5f7a507956: Pull complete
d1c77e0395e3: Pull complete
178dc4dca86f: Pull complete
0abb62fba325: Pull complete
3d298b1f0f75: Pull complete
693315514366: Pull complete
91950b08acf3: Pull complete
7a46fec837ad: Pull complete
7b8c71ad18a8: Pull complete
14b182bb2126: Pull complete
df8f30809251: Pull complete
23a5a261d81d: Pull complete
3ef00a8cca94: Pull complete
Digest: sha256:e52dab89ab4c24e21ec490f606d6d415fb15fb96008a5dc4b1d9956e2e5fcfc3
Status: Downloaded newer image for wordpress:5.1.1-php7.3-apache
docker.io/library/wordpress:5.1.1-php7.3-apache
[root@localhost ~]# 
```

Step 2 check whether the image is created or not using docker images | grep word command



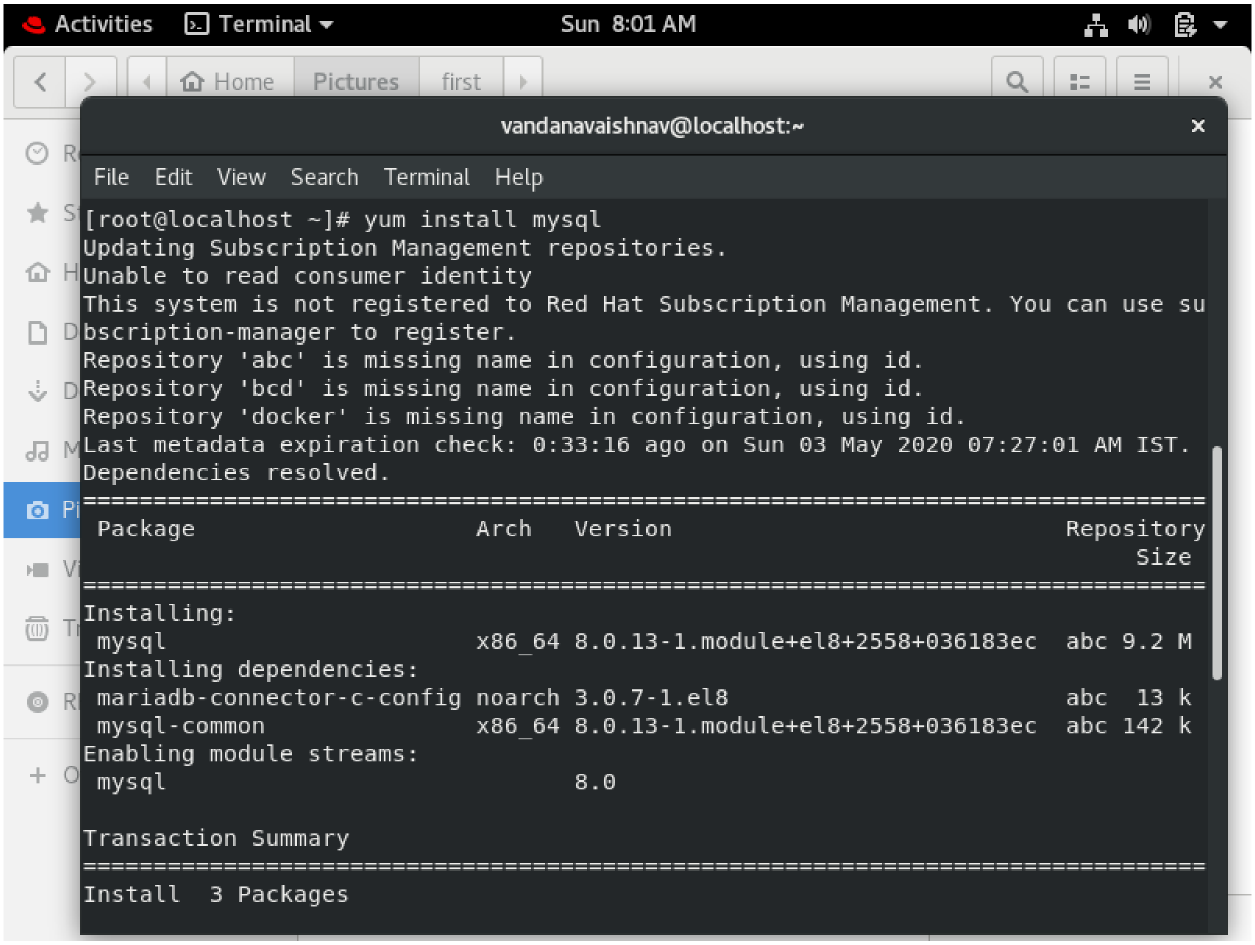
```
743f2d6c1f65: Pull complete
6307e89982cc: Pull complete
807218e72ce2: Pull complete
5108df1d03f8: Pull complete
901e0b6a7fe5: Pull complete
5ffe11e7ab2c: Pull complete
da5f7a507956: Pull complete
d1c77e0395e3: Pull complete
178dc4dca86f: Pull complete
0abb62fba325: Pull complete
3d298b1f0f75: Pull complete
693315514366: Pull complete
91950b08acf3: Pull complete
7a46fec837ad: Pull complete
7b8c71ad18a8: Pull complete
14b182bb2126: Pull complete
df8f30809251: Pull complete
23a5a261d81d: Pull complete
3ef00a8cca94: Pull complete
Digest: sha256:e52dab89ab4c24e21ec490f606d6d415fb15fb96008a5dc4b1d9956e2e5fcfc3
Status: Downloaded newer image for wordpress:5.1.1-php7.3-apache
docker.io/library/wordpress:5.1.1-php7.3-apache
[root@localhost ~]# docker images | grep word
wordpress           5.1.1-php7.3-apache   a69f6702fdda        12 months ago
  422MB
[root@localhost ~]#
```

Step 3: pull mysql image from hub.docker.com and check whether is it created or not



```
[root@localhost ~]# docker pull mysql:5.7
5.7: Pulling from library/mysql
54fec2fa59d0: Pull complete
bcc6c6145912: Pull complete
951c3d959c9d: Pull complete
05de4d0e206e: Pull complete
319f0394ef42: Pull complete
d9185034607b: Pull complete
013a9c64dadc: Pull complete
e745b3361626: Pull complete
03145d87b451: Pull complete
3991a6b182ee: Pull complete
62335de06f7d: Pull complete
Digest: sha256:e821ca8cc7a44d354486f30c6a193ec6b70a4eed8c8362aeede4e9b8d74b8ebb
Status: Downloaded newer image for mysql:5.7
docker.io/library/mysql:5.7
[root@localhost ~]# docker images | grep mysql
mysql                5.7                 f965319e89de        5 days ago
  448MB
[root@localhost ~]#
```

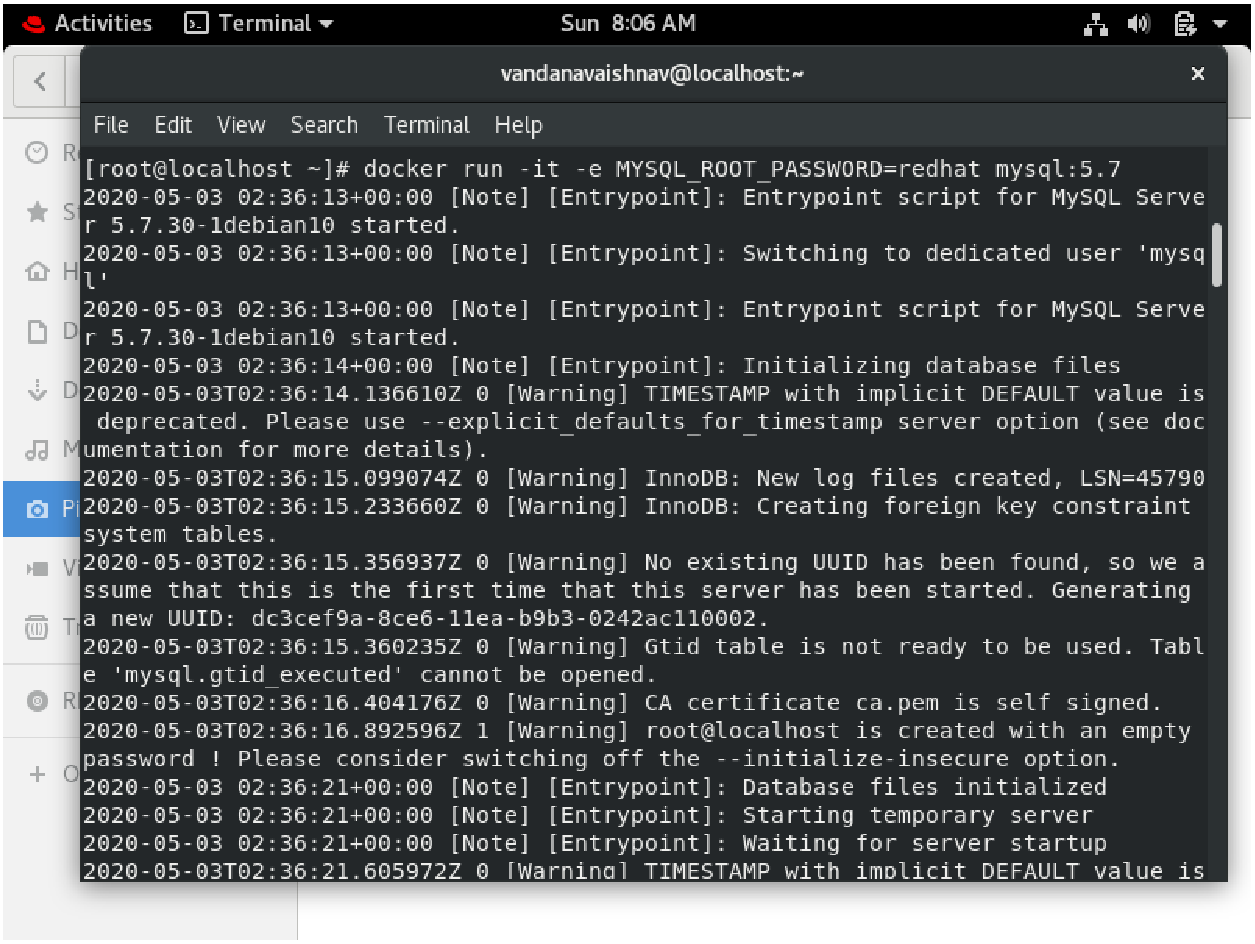
Step 4: install mysql using yum command



Activities
Terminal
Sun 8:01 AM
Home
Pictures
first
vandanavaishnav@localhost:~
File Edit View Search Terminal Help

```
[root@localhost ~]# yum install mysql
Updating Subscription Management repositories.
Unable to read consumer identity
This system is not registered to Red Hat Subscription Management. You can use su
bscription-manager to register.
Repository 'abc' is missing name in configuration, using id.
Repository 'bcd' is missing name in configuration, using id.
Repository 'docker' is missing name in configuration, using id.
Last metadata expiration check: 0:33:16 ago on Sun 03 May 2020 07:27:01 AM IST.
Dependencies resolved.
================================================================================
 Package                     Arch   Version                            Repository
                                                                             Size
================================================================================
Installing:
 mysql                       x86_64 8.0.13-1.module+el8+2558+036183ec  abc 9.2 M
Installing dependencies:
 mariadb-connector-c-config noarch 3.0.7-1.el8                         abc  13 k
 mysql-common                x86_64 8.0.13-1.module+el8+2558+036183ec  abc 142 k
Enabling module streams:
 mysql                              8.0

Transaction Summary
================================================================================
Install  3 Packages
```

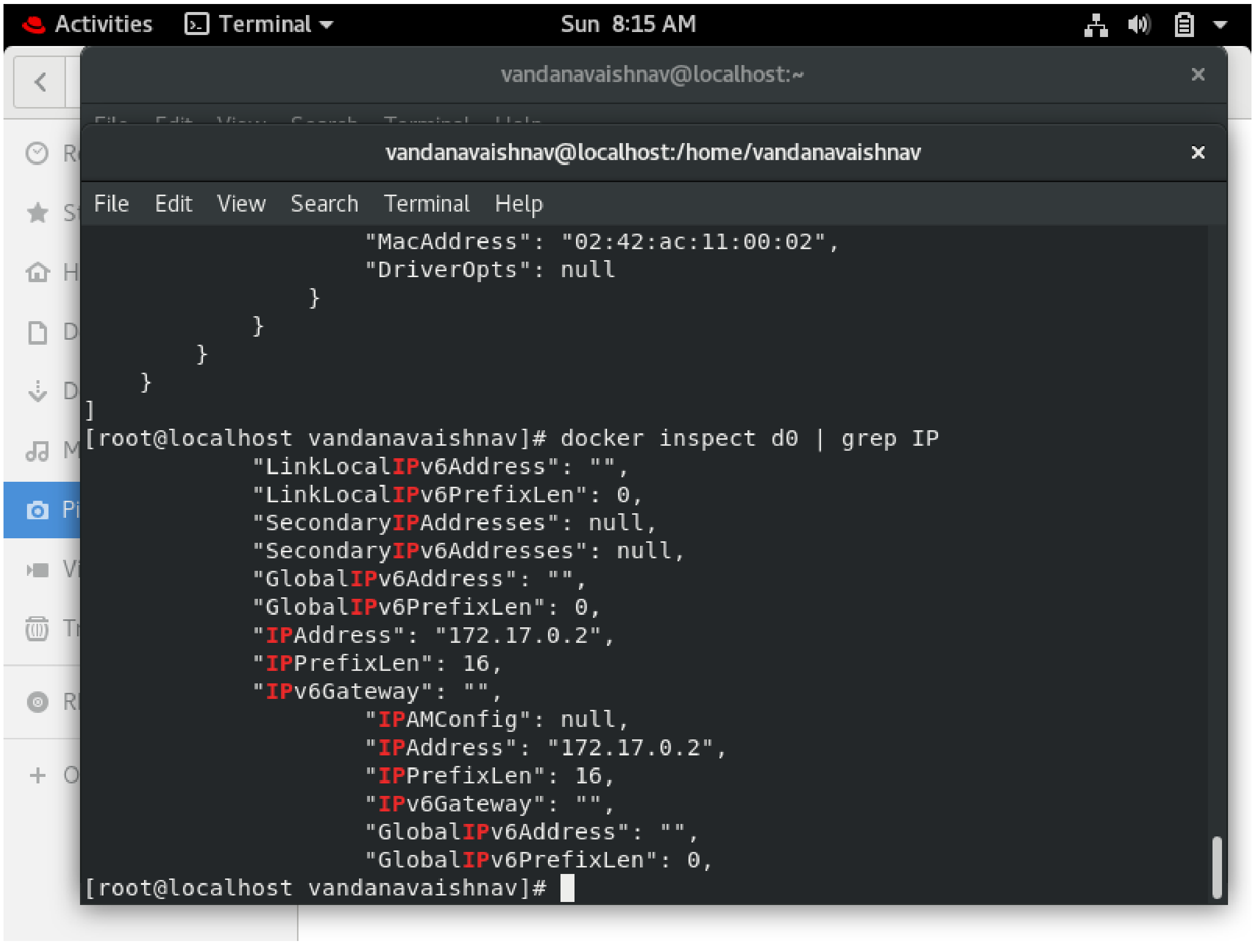
Step 5: run the docker using mysql:5.7 image



```
[root@localhost ~]# docker run -it -e MYSQL_ROOT_PASSWORD=redhat mysql:5.7
2020-05-03 02:36:13+00:00 [Note] [Entrypoint]: Entrypoint script for MySQL Serve
r 5.7.30-1debian10 started.
2020-05-03 02:36:13+00:00 [Note] [Entrypoint]: Switching to dedicated user 'mysq
l'
2020-05-03 02:36:13+00:00 [Note] [Entrypoint]: Entrypoint script for MySQL Serve
r 5.7.30-1debian10 started.
2020-05-03 02:36:14+00:00 [Note] [Entrypoint]: Initializing database files
2020-05-03T02:36:14.136610Z 0 [Warning] TIMESTAMP with implicit DEFAULT value is
 deprecated. Please use --explicit_defaults_for_timestamp server option (see doc
umentation for more details).
2020-05-03T02:36:15.099074Z 0 [Warning] InnoDB: New log files created, LSN=45790
2020-05-03T02:36:15.233660Z 0 [Warning] InnoDB: Creating foreign key constraint
system tables.
2020-05-03T02:36:15.356937Z 0 [Warning] No existing UUID has been found, so we a
ssume that this is the first time that this server has been started. Generating
a new UUID: dc3cef9a-8ce6-11ea-b9b3-0242ac110002.
2020-05-03T02:36:15.360235Z 0 [Warning] Gtid table is not ready to be used. Tabl
e 'mysql.gtid_executed' cannot be opened.
2020-05-03T02:36:16.404176Z 0 [Warning] CA certificate ca.pem is self signed.
2020-05-03T02:36:16.892596Z 1 [Warning] root@localhost is created with an empty
password ! Please consider switching off the --initialize-insecure option.
2020-05-03 02:36:21+00:00 [Note] [Entrypoint]: Database files initialized
2020-05-03 02:36:21+00:00 [Note] [Entrypoint]: Starting temporary server
2020-05-03 02:36:21+00:00 [Note] [Entrypoint]: Waiting for server startup
2020-05-03T02:36:21.605972Z 0 [Warning] TIMESTAMP with implicit DEFAULT value is
```

Step 6: check the ip address of the os using docker inspect d0 | grep IP command

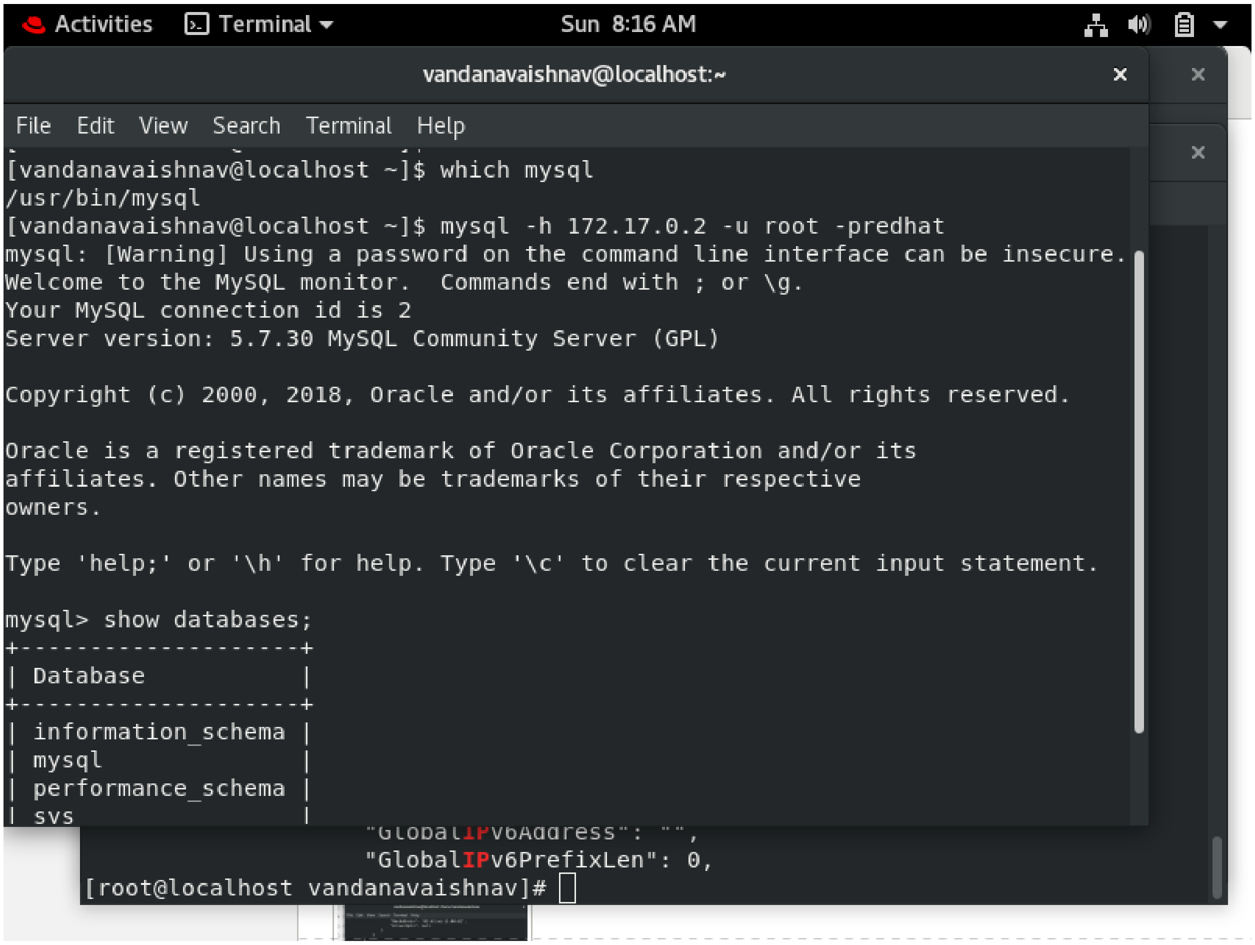
d0 is the id of the container



Activities
Terminal
Sun 8:15 AM
vandanavaishnav@localhost:~
vandanavaishnav@localhost:/home/vandanavaishnav
File Edit View Search Terminal Help

```
                    "MacAddress": "02:42:ac:11:00:02",
                    "DriverOpts": null
                }
            }
        }
    }
]
[root@localhost vandanavaishnav]# docker inspect d0 | grep IP
            "LinkLocalIPv6Address": "",
            "LinkLocalIPv6PrefixLen": 0,
            "SecondaryIPAddresses": null,
            "SecondaryIPv6Addresses": null,
            "GlobalIPv6Address": "",
            "GlobalIPv6PrefixLen": 0,
            "IPAddress": "172.17.0.2",
            "IPPrefixLen": 16,
            "IPv6Gateway": "",
                    "IPAMConfig": null,
                    "IPAddress": "172.17.0.2",
                    "IPPrefixLen": 16,
                    "IPv6Gateway": "",
                    "GlobalIPv6Address": "",
                    "GlobalIPv6PrefixLen": 0,
[root@localhost vandanavaishnav]# 
```

Step 7 run the mysql to show the databases



Activities
Terminal
Sun 8:16 AM
vandanavaishnav@localhost:~
File Edit View Search Terminal Help

```
[vandanavaishnav@localhost ~]$ which mysql
/usr/bin/mysql
[vandanavaishnav@localhost ~]$ mysql -h 172.17.0.2 -u root -predhat
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 2
Server version: 5.7.30 MySQL Community Server (GPL)

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owners.

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

mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| mysql              |
| performance_schema |
| sys                |
```
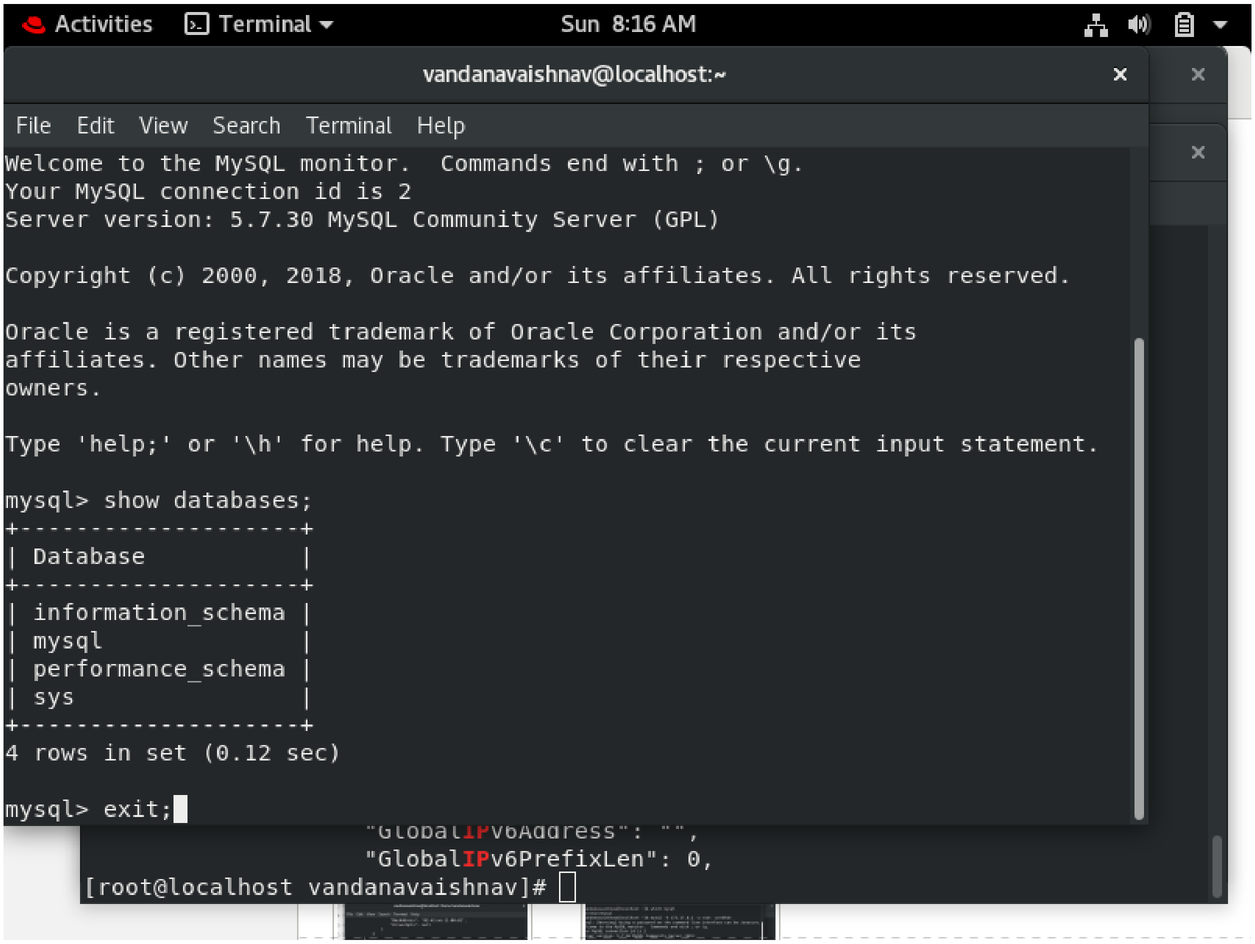

```
                    "GlobalIPv6Address": "",
                    "GlobalIPv6PrefixLen": 0,
[root@localhost vandanavaishnav]#
```



Activities
Terminal
Sun 8:16 AM
vandanavaishnav@localhost:~
File Edit View Search Terminal Help

```
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 2
Server version: 5.7.30 MySQL Community Server (GPL)

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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> show databases;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| mysql              |
| performance_schema |
| sys                |
+--------------------+
4 rows in set (0.12 sec)

mysql> exit;
```
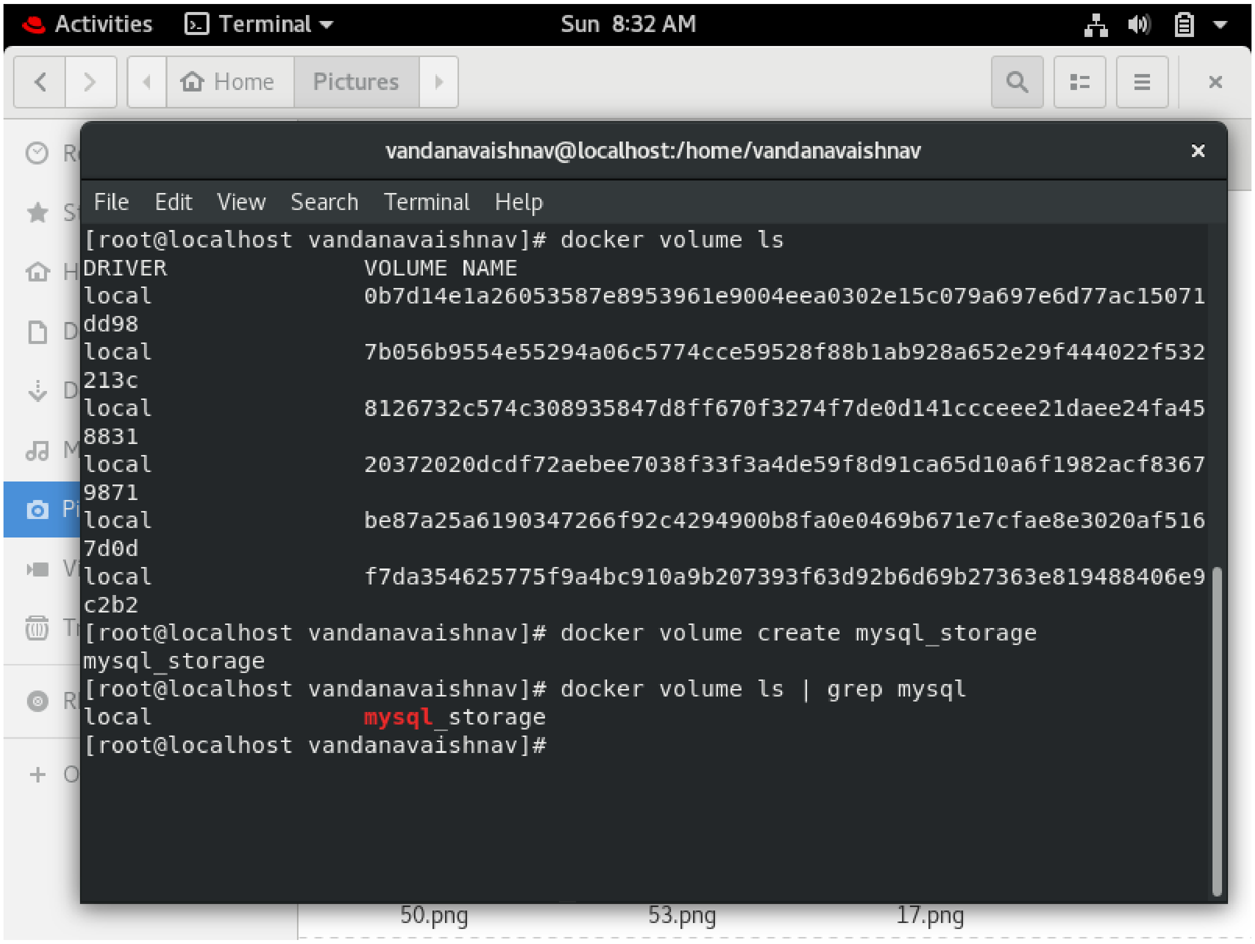

```
                    "GlobalIPv6Address": "",
                    "GlobalIPv6PrefixLen": 0,
[root@localhost vandanavaishnav]# 
```

Step 8: create volume for mysql to get the data persistent

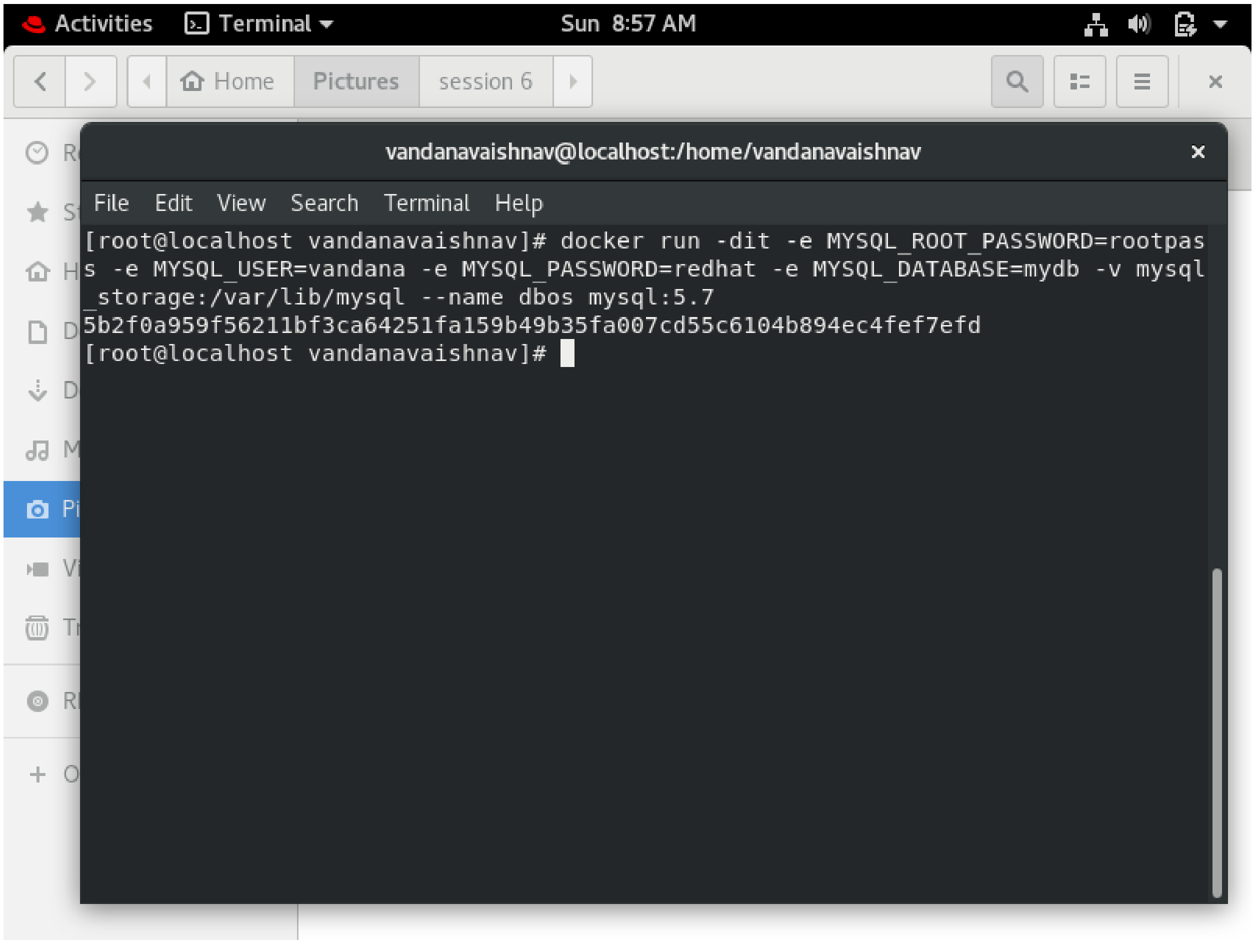
docker volume ls

docker volume create mysql_storage



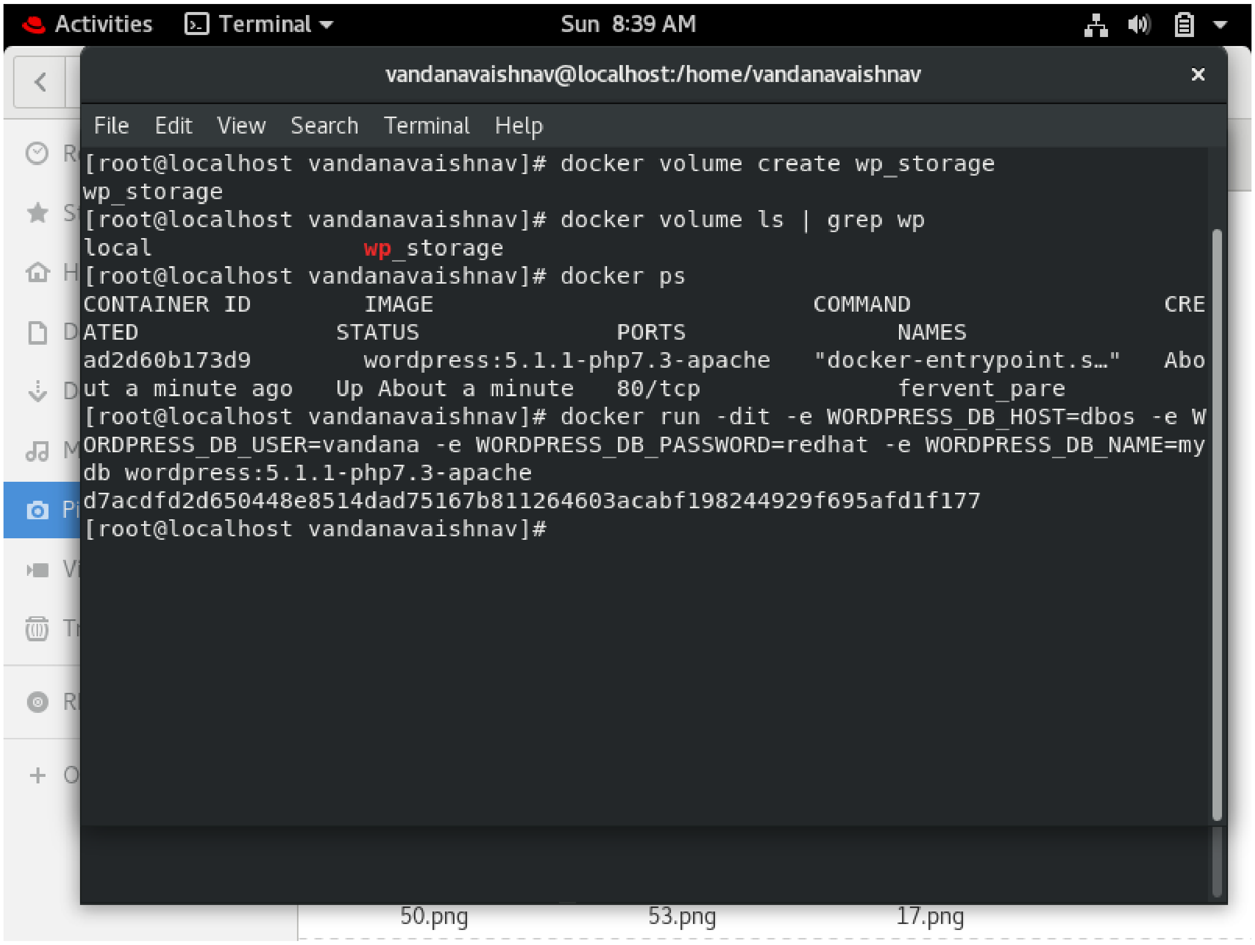
```
[root@localhost vandanavaishnav]# docker volume ls
DRIVER              VOLUME NAME
local               0b7d14e1a26053587e8953961e9004eea0302e15c079a697e6d77ac15071
dd98
local               7b056b9554e55294a06c5774cce59528f88b1ab928a652e29f444022f532
213c
local               8126732c574c308935847d8ff670f3274f7de0d141ccceee21daee24fa45
8831
local               20372020dcdf72aebee7038f33f3a4de59f8d91ca65d10a6f1982acf8367
9871
local               be87a25a6190347266f92c4294900b8fa0e0469b671e7cfae8e3020af516
7d0d
local               f7da354625775f9a4bc910a9b207393f63d92b6d69b27363e819488406e9
c2b2
[root@localhost vandanavaishnav]# docker volume create mysql_storage
mysql_storage
[root@localhost vandanavaishnav]# docker volume ls | grep mysql
local               mysql_storage
[root@localhost vandanavaishnav]#
```

Step 9: run the docker using mysql images



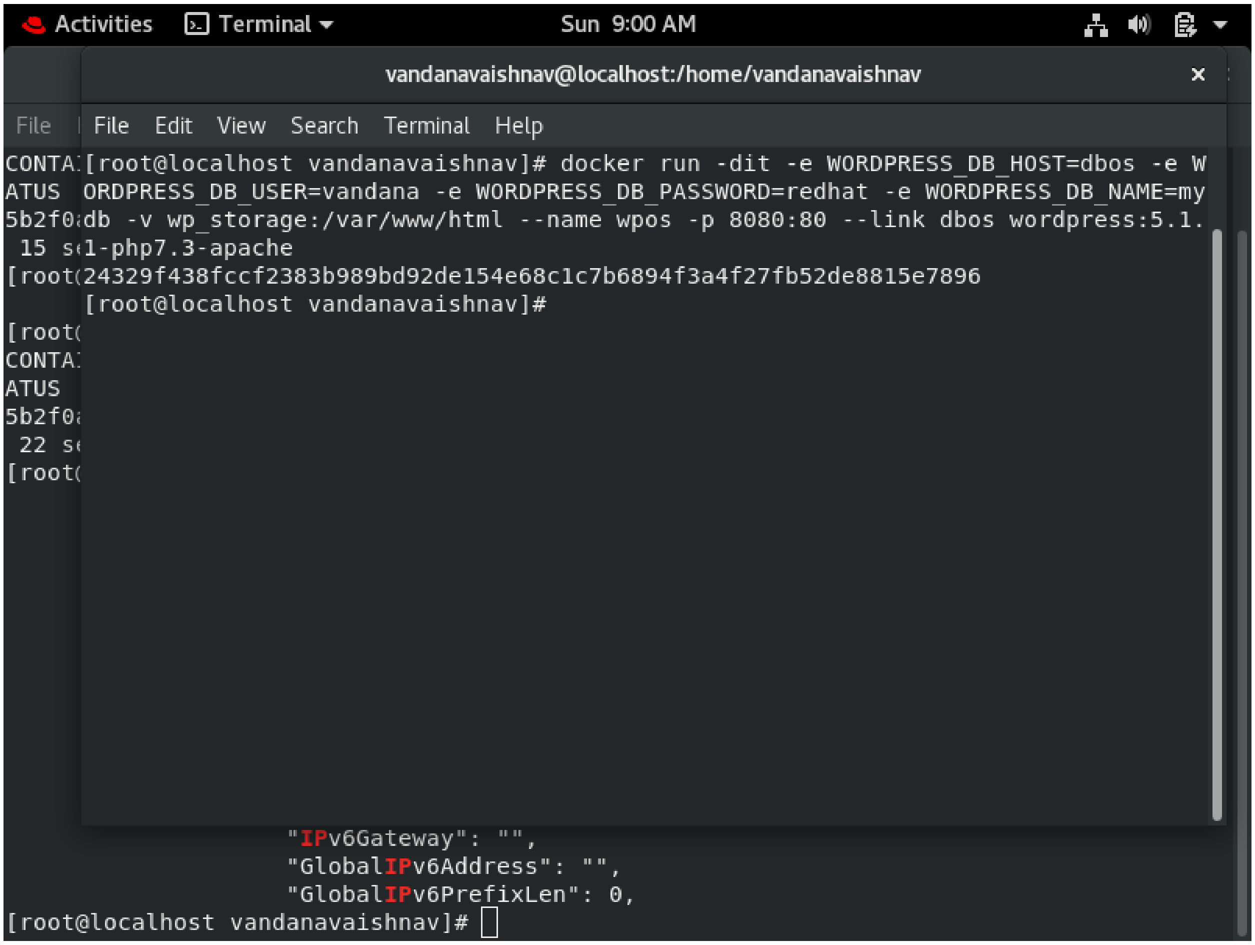
```
[root@localhost vandanavaishnav]# docker run -dit -e MYSQL_ROOT_PASSWORD=rootpas
s -e MYSQL_USER=vandana -e MYSQL_PASSWORD=redhat -e MYSQL_DATABASE=mydb -v mysql
_storage:/var/lib/mysql --name dbos mysql:5.7
5b2f0a959f56211bf3ca64251fa159b49b35fa007cd55c6104b894ec4fef7efd
[root@localhost vandanavaishnav]# 
```

Step 10 create volume for wordpress to get the data persistent



```
[root@localhost vandanavaishnav]# docker volume create wp_storage
wp_storage
[root@localhost vandanavaishnav]# docker volume ls | grep wp
local                wp_storage
[root@localhost vandanavaishnav]# docker ps
CONTAINER ID        IMAGE                            COMMAND                  CRE
ATED              STATUS              PORTS               NAMES
ad2d60b173d9        wordpress:5.1.1-php7.3-apache    "docker-entrypoint.s…"   Abo
ut a minute ago   Up About a minute   80/tcp              fervent_pare
[root@localhost vandanavaishnav]# docker run -dit -e WORDPRESS_DB_HOST=dbos -e W
ORDPRESS_DB_USER=vandana -e WORDPRESS_DB_PASSWORD=redhat -e WORDPRESS_DB_NAME=my
db wordpress:5.1.1-php7.3-apache
d7acdfd2d650448e8514dad75167b811264603acabf198244929f695afd1f177
[root@localhost vandanavaishnav]#
```

Step 11: run the docker using wordpress image and link with the dbos os


Activities
Terminal
Sun 9:00 AM
vandanavaishnav@localhost:/home/vandanavaishnav
File Edit View Search Terminal Help
File

```
[root@localhost vandanavaishnav]# docker run -dit -e WORDPRESS_DB_HOST=dbos -e W
ORDPRESS_DB_USER=vandana -e WORDPRESS_DB_PASSWORD=redhat -e WORDPRESS_DB_NAME=my
db -v wp_storage:/var/www/html --name wpos -p 8080:80 --link dbos wordpress:5.1.
1-php7.3-apache
24329f438fccf2383b989bd92de154e68c1c7b6894f3a4f27fb52de8815e7896
[root@localhost vandanavaishnav]#
```

```
CONTA
ATUS
5b2f0
 15 s
[root

[root
CONTA
ATUS
5b2f0
 22 s
[root
                     "IPv6Gateway": "",
                     "GlobalIPv6Address": "",
                     "GlobalIPv6PrefixLen": 0,
[root@localhost vandanavaishnav]#
```