Note:- We can't remove any docker image forcefully if that image runs any container, if we try to remove forcefully, then it will only be untagged but will not remove, to remove any docker image first we should make sure that no container is running with that particular image and if any container is running then first we need to remove the container in order to remove the images, once the container gets deleted then we can easily remove the docker image by using the command, "docker rmi image_name"

```
[root@ip-172-31-1-76 containers]# docker images
REPOSITORY          TAG          IMAGE ID          CREATED          SIZE
ubuntu              latest       7698f282e524      3 weeks ago      69.9MB
[root@ip-172-31-1-76 containers]# docker ps
CONTAINER ID        IMAGE        COMMAND           CREATED          STATUS
[root@ip-172-31-1-76 containers]# docker run -itd ubuntu
6bbb8d7b6202dd724f5743d00a3cda4714de4a5082afd23d855945b6e9627c7f
[root@ip-172-31-1-76 containers]# docker ps
CONTAINER ID        IMAGE        COMMAND           CREATED          STATUS
6bbb8d7b6202        ubuntu       "/bin/bash"       2 seconds ago    Up 2 seconds
[root@ip-172-31-1-76 containers]# docker rmi -f ubuntu
Untagged: ubuntu:latest
Untagged: ubuntu@sha256:f08638ec7ddc90065187e7eabdfac3c96e5ff0f6b2f1762cf31a4f49b53000a5
[root@ip-172-31-1-76 containers]# docker images
REPOSITORY          TAG          IMAGE ID          CREATED          SIZE
<none>              <none>       7698f282e524      3 weeks ago      69.9MB
[root@ip-172-31-1-76 containers]# docker rm -f 6bbb8d7b6202
6bbb8d7b6202
[root@ip-172-31-1-76 containers]# docker ps
CONTAINER ID        IMAGE        COMMAND           CREATED          STATUS
[root@ip-172-31-1-76 containers]# docker rmi 7698f282e524
Deleted: sha256:7698f282e5242af2b9d2291458d4e425c75b25b0008c1e058d66b717b4c06fa9
Deleted: sha256:027b23fdf3957673017df55aa29d754121aee8a7ed5cc2898856f898e9220d2c
Deleted: sha256:0dfbdc7dee936a74958b05bc62776d5310abb129cfde4302b7bcdf0392561496
Deleted: sha256:02571d034293cb241c078d7ecbf7a84b83a5df2508f11a91de26ec38eb6122f1
[root@ip-172-31-1-76 containers]# docker images
REPOSITORY          TAG          IMAGE ID          CREATED          SIZE
[root@ip-172-31-1-76 containers]#
```

If we create any container and the image of that container if don't exists in the host server then first docker will pull that image from docker hub and then will proceed to create the container, and if we don't mention the version of any image we pull then docker by default will always pull the latest image.

```
[root@ip-172-31-1-76 ~]# docker pull ubuntu
Using default tag: latest
latest: Pulling from library/ubuntu
6abc03819f3e: Pull complete
05731e63f211: Pull complete
0bd67c50d6be: Pull complete
Digest: sha256:f08638ec7ddc90065187e7eabdfac3c96e5ff0f6b2f1762cf31a4f49b53000a5
Status: Downloaded newer image for ubuntu:latest
[root@ip-172-31-1-76 ~]# docker images
REPOSITORY          TAG          IMAGE ID          CREATED          SIZE
ubuntu              latest       7698f282e524      3 weeks ago      69.9MB
[root@ip-172-31-1-76 ~]#
```

```
[root@ip-172-31-1-76 ~]# docker images
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE
ubuntu              latest              7698f282e524        3 weeks ago         69.9MB
[root@ip-172-31-1-76 ~]# docker run -it ubuntu
root@652112c8e1a7:/# hostname
652112c8e1a7
root@652112c8e1a7:/# exit
exit
[root@ip-172-31-1-76 ~]# docker ps
CONTAINER ID        IMAGE               COMMAND             CREATED             STATUS              PORTS
[root@ip-172-31-1-76 ~]# docker ps -a
CONTAINER ID        IMAGE               COMMAND             CREATED             STATUS
652112c8e1a7        ubuntu              "/bin/bash"         17 seconds ago      Exited (0) 7 seconds ago
[root@ip-172-31-1-76 ~]#
```

Here I created the container then the default command bash is taken, and I came out of container
with using command ctel+p+q so the container didn't die after coming out.

```
[root@ip-172-31-1-76 ~]# docker ps -a
CONTAINER ID        IMAGE               COMMAND             CREATED             STATUS
[root@ip-172-31-1-76 ~]# docker run -it ubuntu /bin/bash
root@0f723b3799ba:/# # here i will use ctrl+p+q to move out of container
root@0f723b3799ba:/# hostname
0f723b3799ba
root@0f723b3799ba:/# [root@ip-172-31-1-76 ~]#
[root@ip-172-31-1-76 ~]# docker ps
CONTAINER ID        IMAGE               COMMAND             CREATED             STATUS
0f723b3799ba        ubuntu              "/bin/bash"         33 seconds ago      Up 32 second
[root@ip-172-31-1-76 ~]#
```

To enter into the running container, we use the exec command with option -it is must also we need
to run any command either bash or any command to enter into container.

```
[root@ip-172-31-1-76 ~]# docker ps
CONTAINER ID        IMAGE               COMMAND             CREATED             STATUS
0f723b3799ba        ubuntu              "/bin/bash"         5 minutes ago       Up 5 minutes
[root@ip-172-31-1-76 ~]# docker exec -it 0f723b3799ba bash
root@0f723b3799ba:/# hostname
0f723b3799ba
root@0f723b3799ba:/# [root@ip-172-31-1-76 ~]#
[root@ip-172-31-1-76 ~]#
```

Here the thing to notice is that inside container vi command is not working, means any container
contains the only package which is required by them to initialize the specific work, if we need other
command or file we can install it via yum.

```
[root@ip-172-31-1-76 ~]# docker ps
CONTAINER ID     IMAGE              COMMAND          CREATED           STATUS          PORTS
0f723b3799ba     ubuntu             "/bin/bash"      8 minutes ago     Up 8 minutes
[root@ip-172-31-1-76 ~]# docker exec -it 0f723b3799ba touch /amit.txt
[root@ip-172-31-1-76 ~]# docker exec -it 0f723b3799ba bash
root@0f723b3799ba:/# ls
amit.txt  bin  boot  dev  etc  home  lib  lib64  media  mnt  opt  proc  root  run  sbin  srv  sys  tmp  usr
root@0f723b3799ba:/# vi amit.txt
bash: vi: command not found
root@0f723b3799ba:/#
```

.

If we want to search the image of any file exist or not in docker hub and with what name do their official images exist, we can use the search command to do so: -

```
[root@ip-172-31-1-76 ~]# docker search tomcat
NAME                    DESCRIPTION                                STARS    OFFICIAL    AUTOMATED
tomcat                  Apache Tomcat is an open source implementa...  2417     [OK]
tomee                   Apache TomEE is an all-Apache Java EE cert...   66      [OK]
dordoka/tomcat          Ubuntu 14.04, Oracle JDK 8 and Tomcat 8 ba...   53                  [OK]
bitnami/tomcat          Bitnami Tomcat Docker Image                    28                  [OK]
kubeguide/tomcat-app    Tomcat image for Chapter 1                     23
consol/tomcat-7.0       Tomcat 7.0.57, 8080, "admin/admin"             16                  [OK]
cloudesire/tomcat       Tomcat server, 6/7/8                           14                  [OK]
aallam/tomcat-mysql     Debian, Oracle JDK, Tomcat & MySQL             11                  [OK]
tutum/tomcat            Base docker image to run a Tomcat applicat...   11
jeanblanchard/tomcat    Minimal Docker image with Apache Tomcat         8
arm32v7/tomcat          Apache Tomcat is an open source implementa...    6
rightctrl/tomcat        CentOS , Oracle Java, tomcat application s...    4                  [OK]
maluuba/tomcat7-java8   Tomcat7 with java8                              3
```

Here we ran a container tomcat, so as the images was not existing there so first docker pulled the images from docker hub and then run it, but the important thing to note here is tomcat default port is 8080 but we need to do port mapping before running any such applications which uses any specific ports, because we know that docker runs on top of host machine, so the default ports remains reserved for host machine, so if we try to run the IP address in browser with 8080 port we will get the error , to get the tomcat up in our container we must need to do port mapping.

2nd important thing to note here is that if we haven't run this container with any specific command then docker runs its default command "catalins.sh run" which is mandatory to install the tomcat, the path of Catalina has been shown in next image.

```
[root@ip-172-31-1-76 ~]# docker images
REPOSITORY          TAG               IMAGE ID            CREATED           SIZE
ubuntu              latest            7698f282e524        3 weeks ago       69.9MB
[root@ip-172-31-1-76 ~]# docker run -itd tomcat
Unable to find image 'tomcat:latest' locally
latest: Pulling from library/tomcat
c5e155d5a1d1: Pull complete
221d80d00ae9: Pull complete
4250b3117dca: Pull complete
3b7ca19181b2: Pull complete
acd9a038f588: Pull complete
2aa7bd799199: Pull complete
05b9cbca178d: Pull complete
07e346d8d312: Pull complete
f47d33a776bf: Pull complete
4986f827da91: Pull complete
86773080e434: Pull complete
49bdc32f36de: Pull complete
Digest: sha256:b974cf74dcf0e92d42c16a1a72482a51f66e501d2b7abbd874f21c987dcbd065
Status: Downloaded newer image for tomcat:latest
76e251b3905d50ab9a9bd4f712f920fd226367d166ec4ee15b929adaa940306c
[root@ip-172-31-1-76 ~]# docker ps
CONTAINER ID        IMAGE             COMMAND              CREATED           STATUS            PORTS
76e251b3905d        tomcat            "catalina.sh run"    5 seconds ago     Up 4 seconds      8080/tcp
0f723b3799ba        ubuntu            "/bin/bash"          16 minutes ago    Up 16 minutes
[root@ip-172-31-1-76 ~]#
```

```
[root@ip-172-31-1-76 ~]# docker ps
CONTAINER ID        IMAGE             COMMAND              CREATED           STATUS            PORTS
76e251b3905d        tomcat            "catalina.sh run"    5 seconds ago     Up 4 seconds      8080/tcp
0f723b3799ba        ubuntu            "/bin/bash"          16 minutes ago    Up 16 minutes
[root@ip-172-31-1-76 ~]# docker exec -it 76e251b3905d bash
root@76e251b3905d:/usr/local/tomcat# ls
BUILDING.txt        LICENSE     README.md       RUNNING.txt  conf      lib    native-jni-lib  webapps
CONTRIBUTING.md     NOTICE      RELEASE-NOTES   bin          include   logs   temp            work
root@76e251b3905d:/usr/local/tomcat# cd bin
root@76e251b3905d:/usr/local/tomcat/bin# ls
bootstrap.jar         catalina.sh                    commons-daemon.jar  daemon.sh   setclasspath.sh  startup.sh
catalina-tasks.xml    commons-daemon-native.tar.gz   configtest.sh       digest.sh   shutdown.sh      tomcat-ju
root@76e251b3905d:/usr/local/tomcat/bin# pwd
/usr/local/tomcat/bin
root@76e251b3905d:/usr/local/tomcat/bin#
```

See in below image I had used bash command to run tomcat container, so catalins.sh is not run, so if we will move inside this container and look for the tomcat server we will find that tomcat service is not running while in pervious container/pic if we will move inside container we will find that tomcat service is running fine.

```
[root@ip-172-31-1-76 ~]# docker run -itd tomcat bash
b5e5087b1624085bb2b7b6d3e1ed8a73b7963d016221e44bad536deea44d6349
[root@ip-172-31-1-76 ~]# docker ps
CONTAINER ID        IMAGE             COMMAND              CREATED           STATUS            PORTS
b5e5087b1624        tomcat            "bash"               2 seconds ago     Up 2 seconds      8080/tcp
76e251b3905d        tomcat            "catalina.sh run"    10 minutes ago    Up 10 minutes     8080/tcp
0f723b3799ba        ubuntu            "/bin/bash"          26 minutes ago    Up 25 minutes
[root@ip-172-31-1-76 ~]#
```

Here I am doing port mapping too, so once the tomcat container will be created automatically one random free IP will be assigned to tomcat service of the container, as we had used -P , however by using small p, we can also assign the IP of our wish to the container which has been shown below

```
[root@ip-172-31-1-76 ~]# docker ps -a
CONTAINER ID    IMAGE         COMMAND          CREATED        STATUS          PORTS                   NAME
[root@ip-172-31-1-76 ~]# docker run -itd -P tomcat
c235e795326e3d3042a11ca521c6c77c76e18b02dfbabb0cbf730af428b95b21
[root@ip-172-31-1-76 ~]# docker ps
CONTAINER ID    IMAGE         COMMAND          CREATED        STATUS          PORTS
c235e795326e    tomcat        "catalina.sh run"  3 seconds ago  Up 2 seconds    0.0.0.0:32768->8080/tcp
[root@ip-172-31-1-76 ~]#
```

ⓘ 52.66.237.238:32768

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Apache Tomcat/8.5.41

If you're seeing this, you've successfully installed

Recommended Reading:

Security Considerations HOW-TO
Manager Application HOW-TO
Clustering/Session Replication HOW-TO
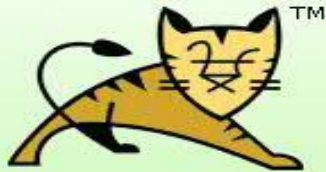
Here we have mapped the ip to 1234 port

```
[root@ip-172-31-1-76 ~]# docker ps
CONTAINER ID    IMAGE         COMMAND          CREATED        STATUS          PORTS                   NAME
[root@ip-172-31-1-76 ~]# docker run -itd -p 1234:8080 tomcat
068a3d563f7bcf4a7b6367a9459db25511b29d2380531f66a0fdfc63a9280258
[root@ip-172-31-1-76 ~]# docker ps
CONTAINER ID    IMAGE         COMMAND          CREATED        STATUS          PORTS
068a3d563f7b    tomcat        "catalina.sh run"  2 seconds ago  Up 2 seconds    0.0.0.0:1234->8080/tcp
[root@ip-172-31-1-76 ~]#
```

52.66.237.238:1234

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Apache Tomcat/8.5.41

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