

1. Difference between docker and PODMAN

Docker and Podman are both containerization technologies that allow developers to create and deploy applications in a lightweight, isolated environment. However, there are some differences between these two technologies:

1. **Architecture:** Docker uses a client-server architecture, where the Docker daemon runs on the host machine and manages the containers. Podman, on the other hand, is a daemonless container engine, which means it doesn't require a daemon to be running to manage the containers.
2. **Security:** Podman runs containers as non-root by default, which provides better security and isolation. Docker requires additional configuration to run containers as non-root.
3. **Image format:** Docker uses the Docker Image format (.dockerfile), while Podman uses the Open Container Initiative (OCI) format (.oci).
4. **Compatibility:** Docker has been around for longer and has a larger user base, so it has more tools and services that integrate with it. However, Podman is gaining popularity and has been gaining compatibility with Docker tools.
5. **Licence:** Docker is licensed under the Apache License 2.0, while Podman is licensed under the Apache License 2.0 and the GNU General Public License v2.0.

Overall, both Docker and Podman are useful containerization technologies that have their own unique features and benefits. Which one to choose depends on the specific needs and requirements of the project.

2. Create a base image of ubuntu

Most Dockerfiles start from a parent image. If you need to completely control the contents of your image, you might need to create a base image instead. Here's the difference:

- A parent image is the image that your image is based on. It refers to the contents of the FROM directive in the Dockerfile. Each subsequent declaration in the Dockerfile modifies this parent image. Most Dockerfiles start from a parent image, rather than a base image. However, the terms are sometimes used interchangeably.
- A base image has FROM scratch in its Dockerfile.

This topic shows you several ways to create a base image. The specific process will depend heavily on the Linux distribution you want to package. We have some examples below, and you are encouraged to submit pull requests to contribute new ones.

Create a full image using tar

In general, start with a working machine that is running the distribution you'd like to package as a parent image, though that is not required for some tools like Debian's Debootstrap, which you can also use to build Ubuntu images.

It can be as simple as this to create an Ubuntu parent image:

```
$ sudo debootstrap focal focal > /dev/null  
$ sudo tar -C focal -c . | docker import - focal
```

```
sha256:81ec9a55a92a5618161f68ae691d092bf14d700129093158  
297b3d01593f4ee3
```

```
$ docker run focal cat /etc/lsb-release
```

```
DISTRIB_ID=Ubuntu
DISTRIB_RELEASE=20.04
DISTRIB_CODENAME=focal
DISTRIB_DESCRIPTION="Ubuntu 20.04 LTS"
```

There are more example scripts for creating parent images in the Docker GitHub repository.

Create a simple parent image using scratch

You can use Docker's reserved, minimal image, `scratch`, as a starting point for building containers. Using the `scratch` "image" signals to the build process that you want the next command in the `Dockerfile` to be the first filesystem layer in your image.

While `scratch` appears in Docker's repository on the hub, you can't pull it, run it, or tag any image with the name `scratch`. Instead, you can refer to it in your `Dockerfile`. For example, to create a minimal container using `scratch`:

```
# syntax=docker/dockerfile:1
FROM scratch
ADD hello /
CMD ["/hello"]
```

Assuming you built the "hello" executable example by using the source code at <https://github.com/docker-library/hello-world>, and you compiled it with the `-static` flag, you can build this Docker image using this `docker build` command:

- `docker build --tag hello .`

Don't forget this `.` character at the end, which sets the build context to the current directory.

```
docker run --rm -it -v $PWD:/build ubuntu:20.04
```

```
apt-get update && apt-get install build-essential
```

```
cd /build
```

```
gcc -o hello -static hello.c
```

To run your new image, use the `docker run` command:

- `docker run --rm hello`

This example creates the hello-world image used in the tutorials. If you want to test it out, you can clone the image repo.

```
himanshu@himanshu: ~  
himanshu@himanshu:~$ docker --version  
Docker version 23.0.1, build a5ee5b1  
himanshu@himanshu:~$ docker images  
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE  
mysql          latest    4073e6a6f542   8 days ago    530MB  
ubuntu         latest    08d22c0ceb15   9 days ago    77.8MB  
wordpress      latest    8fec96b2307f   2 weeks ago   615MB  
postgres       latest    3b6645d2c145   2 weeks ago   379MB  
ubuntu         <none>    74f2314a03de   2 weeks ago   77.8MB  
debian         latest    72b624312240   2 weeks ago   124MB  
registry       2         0d153fadf70b   4 weeks ago   24.2MB  
hello-world    latest    feb5d9fea6a5   17 months ago 13.3kB  
himanshu@himanshu:~$ docker ps -a  
CONTAINER ID   IMAGE      COMMAND                  CREATED        STATUS  
8e38e251ca96   postgres   "docker-entrypoint.s..." 19 hours ago   Created  
93173766088c   wordpress  "docker-entrypoint.s..." 20 hours ago   Exited (0) 17 hou  
rs ago        wp-fronten  
695142d00ea2   mysql:late "docker-entrypoint.s..." 20 hours ago   Exited (0) 17 hou  
rs ago        wp-backen  
ce77a94a52cf   debian     "bash"                  20 hours ago   Exited (0) 20 hou  
rs ago        loving_sammet  
2d069cff981a   debian     "bash"                  20 hours ago   Exited (0) 20 hou  
rs ago        xenodochial_einstein  
b52c63db5690   debian     "bash"                  20 hours ago   Created  
77a0c9fd75ff   debian     "bash"                  20 hours ago   Created  
5f1a14a250f6   debian     "bash"                  21 hours ago   Exited (0) 21 hou  
rs ago        charming_kapitsa  
c97168d9aea5   debian     "alias"                  22 hours ago   Created  
abb7644642b3   debian     "bash"                  22 hours ago   Exited (0) 22 hou  
rs ago        inspiring_carver  
142b02a98132   debian     "bash"                  22 hours ago   Exited (0) 22 hou  
rs ago        vibrant_kowalevski  
ed6576b57978   registry:2 "/entrypoint.sh /etc..." 23 hours ago   Created  
36d02b607fbd   74f2314a03de "/bin/bash"              7 days ago     Exited (137) 7 da  
ys ago        ecstatic_bell  
5ae77af1cf21   hello-world "/hello"                  7 days ago     Exited (0) 7 days  
ago        cool_bohr  
himanshu@himanshu:~$ sudo docker run -it ubuntu  
[sudo] password for himanshu:  
Unable to find image 'ubuntu:latest' locally  
docker: Error response from daemon: pull access denied for ubuntu, repository does not  
exist or may require 'docker login': denied: requested access to the resource is denied  
.  
See 'docker run --help'.  
himanshu@himanshu:~$ docker run -it --entrypoint "/bin/bash" ubuntu:20.04  
Unable to find image 'ubuntu:20.04' locally  
20.04: Pulling from library/ubuntu  
06d39c85623a: Pull complete
```

```
himanshu@himanshu: ~  
Digest: sha256:24a0df437301598d1a4b62ddf59fa0ed2969150d70d748c84225e6501e9c36b9  
Status: Downloaded newer image for ubuntu:20.04  
root@d5665fdce9bd:/# ^C  
root@d5665fdce9bd:/# exit  
himanshu@himanshu:~$ sudo docker ps -a  
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS  
d5665fdce9bd   ubuntu:20.04   "/bin/bash"             46 seconds ago Exited (130) 13  
seconds ago   trusting_kowalevski  
8e38e251ca96   postgres      "docker-entrypoint.s..." 19 hours ago   Created  
keenable-postgres  
93173766088c   wordpress     "docker-entrypoint.s..." 20 hours ago   Exited (0) 17 h  
ours ago     wp-frontent  
695142d00ea2   mysql:latest  "docker-entrypoint.s..." 20 hours ago   Exited (0) 17 h  
ours ago     wp-backend  
ce77a94a52cf   debian        "bash"                   20 hours ago   Exited (0) 20 h  
ours ago     loving_sammet  
2d069cff981a   debian        "bash"                   20 hours ago   Exited (0) 20 h  
ours ago     xenodochial_einstein  
b52c63db5690   debian        "bash"                   20 hours ago   Created  
simple_debian  
77a0c9fd75ff   debian        "bash"                   20 hours ago   Created  
simple_registry  
5f1a14a250f6   debian        "bash"                   22 hours ago   Exited (0) 22 h  
ours ago     charming_kapitsa  
c97168d9aea5   debian        "alias"                  22 hours ago   Created  
confident_snyder  
abb7644642b3   debian        "bash"                   22 hours ago   Exited (0) 22 h  
ours ago     inspiring_carver  
142b02a98132   debian        "bash"                   22 hours ago   Exited (0) 22 h  
ours ago     vibrant_kowalevski  
ed6576b57978   registry:2    "/entrypoint.sh /etc..." 23 hours ago   Created  
my-registry  
36d02b607fbd   74f2314a03de "/bin/bash"             7 days ago     Exited (137) 7  
days ago     ecstatic_bell  
5ae77af1cf21   hello-world   "/hello"                 7 days ago     Exited (0) 7 da  
ys ago       cool_bohr  
himanshu@himanshu:~$ docker exec -it my_container_name echo "Hello, World!"  
Error response from daemon: No such container: my_container_name  
himanshu@himanshu:~$ docker exec -it ubuntu echo "Hello, World!"  
Error response from daemon: No such container: ubuntu  
himanshu@himanshu:~$ docker exec -it d5665fdce9bd echo "Hello, World!"  
Error response from daemon: Container d5665fdce9bdab9b5d6a0ad3389aa3ebe7bacbb0a2a967822  
6c5647497973e0b is not running  
himanshu@himanshu:~$ sudo docker run -it ubuntu  
Unable to find image 'ubuntu:latest' locally  
docker: Error response from daemon: pull access denied for ubuntu, repository does not  
exist or may require 'docker login': denied: requested access to the resource is denied  
.  
See 'docker run --help'.  
himanshu@himanshu:~$ sudo docker run hello-world  
  
Hello from Docker!  
This message shows that your installation appears to be working correctly.
```

```
himanshu@himanshu: ~  
manifest unknown: manifest unknown  
himanshu@himanshu:~$ docker build -t myimage .  
[+] Building 0.0s (2/2) FINISHED  
  
=> [internal] load build definition from Dockerfile 0.0s  
=> => transferring dockerfile: 2B 0.0s  
=> [internal] load .dockerignore 0.0s  
=> => transferring context: 2B 0.0s  
WARNING: buildx: failed to get git commit: fatal: ambiguous argument 'HEAD': unknown revision or path not in the working tree.  
Use '--' to separate paths from revisions, like this:  
'git <command> [<revision>...] -- [<file>...]'  
ERROR: failed to solve: failed to read dockerfile: open /var/lib/docker/tmp/buildkit-mount3176212660/Dockerfile: no such file or directory  
himanshu@himanshu:~$ docker images  
REPOSITORY TAG IMAGE ID CREATED SIZE  
mysql latest 4073e6a6f542 8 days ago 530MB  
ubuntu latest 08d22c0ceb15 9 days ago 77.8MB  
ubuntu 20.04 1c5c8d0b973a 9 days ago 72.8MB  
wordpress latest 8fec96b2307f 2 weeks ago 615MB  
postgres latest 3b6645d2c145 2 weeks ago 379MB  
ubuntu <none> 74f2314a03de 2 weeks ago 77.8MB  
debian latest 72b624312240 2 weeks ago 124MB  
registry 2 0d153fadf70b 4 weeks ago 24.2MB  
hello-world latest feb5d9fea6a5 17 months ago 13.3kB  
himanshu@himanshu:~$ docker build -t mysql  
ERROR: "docker buildx build" requires exactly 1 argument.  
See 'docker buildx build --help'.  
  
Usage: docker buildx build [OPTIONS] PATH | URL | -  
  
Start a build  
himanshu@himanshu:~$ docker build -t 4073e6a6f542  
ERROR: "docker buildx build" requires exactly 1 argument.  
See 'docker buildx build --help'.  
  
Usage: docker buildx build [OPTIONS] PATH | URL | -  
  
Start a build  
himanshu@himanshu:~$ sudo apt-get update  
Hit:1 http://archive.ubuntu.com/ubuntu jammy InRelease  
Hit:3 https://apt.releases.hashicorp.com jammy InRelease  
Hit:4 https://download.docker.com/linux/ubuntu jammy InRelease  
Hit:5 https://packages.grafana.com/oss/deb stable InRelease  
Hit:6 https://download.docker.com/linux/ubuntu focal InRelease  
Hit:2 https://packages.cloud.google.com/apt kubernetes-xenial InRelease  
Reading package lists... Done  
W: Target Packages (main/binary-amd64/Packages) is configured multiple times in /etc/apt/sources.list.d/archive_uri-https_apt_releases_hashicorp_com-jammy.list:1 and /etc/apt/sources.list.d/hashicorp.list:1  
W: Target Packages (main/binary-all/Packages) is configured multiple times in /etc/apt/sources.list.d/archive_uri-https_apt_releases_hashicorp_com-jammy.list:1 and /etc/apt/sources.list.d/hashicorp.list:1  
W: Target Translations (main/i18n/Translation-en_IN) is configured multiple times in /etc/apt/sources.list.d/archive_uri-https_apt_releases_hashicorp_com-jammy.list:1 and /etc
```



```
himanshu@himanshu: ~  
himanshu@himanshu:~$ docker images  
REPOSITORY      TAG      IMAGE ID      CREATED      SIZE  
mysql            latest   4073e6a6f542  8 days ago  530MB  
ubuntu           latest   08d22c0ceb15  9 days ago  77.8MB  
ubuntu           20.04    1c5c8d0b973a  9 days ago  72.8MB  
wordpress        latest   8fec96b2307f  2 weeks ago  615MB  
postgres         latest   3b6645d2c145  2 weeks ago  379MB  
ubuntu           <none>    74f2314a03de  2 weeks ago  77.8MB  
debian           latest   72b624312240  2 weeks ago  124MB  
registry         2        0d153fadf70b  4 weeks ago  24.2MB  
hello-world      latest   feb5d9fea6a5  17 months ago 13.3kB  
himanshu@himanshu:~$ docker login -u himanshuchaudhary123  
Password:  
Error response from daemon: Get "https://registry-1.docker.io/v2/": unauthorized: incor  
rect username or password  
himanshu@himanshu:~$ docker login -u himanshuchaudhary123  
Password:  
Error: Password Required  
himanshu@himanshu:~$ docker login -u himanshuchaudhary123  
Password:  
WARNING! Your password will be stored unencrypted in /home/himanshu/.docker/config.json  
.  
Configure a credential helper to remove this warning. See  
https://docs.docker.com/engine/reference/commandline/login/#credentials-store  
Login Succeeded  
himanshu@himanshu:~$ docker image tag ubuntu:latest himanshuchaudhary123/apache  
himanshu@himanshu:~$  
himanshu@himanshu:~$  
himanshu@himanshu:~$  
himanshu@himanshu:~$  
himanshu@himanshu:~$  
himanshu@himanshu:~$  
himanshu@himanshu:~$ docker image push himanshuchaudhary123/apache  
Using default tag: latest  
The push refers to repository [docker.io/himanshuchaudhary123/apache]  
b93c1bd012ab: Mounted from library/ubuntu  
latest: digest: sha256:5523f822d85895b0a75236aba20ff6bf4135721b031fcee7a5c4a74a700c1e6  
size: 529  
himanshu@himanshu:~$ docker images  
REPOSITORY      TAG      IMAGE ID      CREATED      SIZE  
mysql            latest   4073e6a6f542  8 days ago  530MB  
himanshuchaudhary123/apache  latest   08d22c0ceb15  9 days ago  77.8MB  
ubuntu           latest   08d22c0ceb15  9 days ago  77.8MB  
ubuntu           20.04    1c5c8d0b973a  9 days ago  72.8MB  
wordpress        latest   8fec96b2307f  2 weeks ago  615MB  
postgres         latest   3b6645d2c145  2 weeks ago  379MB  
ubuntu           <none>    74f2314a03de  2 weeks ago  77.8MB  
debian           latest   72b624312240  2 weeks ago  124MB  
registry         2        0d153fadf70b  4 weeks ago  24.2MB  
hello-world      latest   feb5d9fea6a5  17 months ago 13.3kB  
himanshu@himanshu:~$ docker rmi -f 08d22c0ceb15  
Untagged: himanshuchaudhary123/apache:latest  
Untaqqed: himanshuchaudharv123/apache@sha256:5523f822d85895b0a75236aba20ff6bf4135721b03
```



```
1fceee7a5c4a74a700c1e6
Untagged: ubuntu:latest
Untagged: ubuntu@sha256:67211c14fa74f070d27cc59d69a7fa9aeff8e28ea118ef3babc295a0428a6d2
1
Deleted: sha256:08d22c0ceb150ddeb2237c5fa3129c0183f3cc6f5eeb2e7aa4016da3ad02140a
himanshu@himanshu:~$ docker images
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE
mysql         latest    4073e6a6f542   8 days ago    530MB
ubuntu        20.04     1c5c8d0b973a   9 days ago    72.8MB
wordpress     latest    8fec96b2307f   2 weeks ago   615MB
postgres      latest    3b6645d2c145   2 weeks ago   379MB
ubuntu        <none>    74f2314a03de   2 weeks ago   77.8MB
debian        latest    72b624312240   2 weeks ago   124MB
registry      2         0d153fadf70b   4 weeks ago   24.2MB
hello-world   latest    feb5d9fea6a5   17 months ago 13.3kB
himanshu@himanshu:~$ docker pull himanshuchaudhary123
Using default tag: latest
Error response from daemon: pull access denied for himanshuchaudhary123, repository does not exist or may require 'docker login': denied: requested access to the resource is denied
himanshu@himanshu:~$ ^C
himanshu@himanshu:~$ docker pull himanshuchaudhary123/apache
Using default tag: latest
latest: Pulling from himanshuchaudhary123/apache
2ab09b027e7f: Already exists
Digest: sha256:5523f822d85895b0a75236aba20ff6bf4135721b031fceee7a5c4a74a700c1e6
Status: Downloaded newer image for himanshuchaudhary123/apache:latest
docker.io/himanshuchaudhary123/apache:latest
himanshu@himanshu:~$ docker run -it himanshuchaudhary123/apache
root@65731096d98c:/#
root@65731096d98c:/#
root@65731096d98c:/#
root@65731096d98c:/#
root@65731096d98c:/#
root@65731096d98c:/#
root@65731096d98c:/# apt list --installed | grep apache2
WARNING: apt does not have a stable CLI interface. Use with caution in scripts.

root@65731096d98c:/# ls
bin  dev  home  lib32  libx32  mnt  proc  run  srv  tmp  var
boot  etc  lib  lib64  media  opt  root  sbin  sys  usr
root@65731096d98c:/# exit
exit
himanshu@himanshu:~$ docker container commit 65731096d98c ubuntu
sha256:3195e1af789220ae08b9f31eac6f8467c83ca67111735b7710ef3c58a43515f1
himanshu@himanshu:~$
himanshu@himanshu:~$
himanshu@himanshu:~$
himanshu@himanshu:~$
himanshu@himanshu:~$
himanshu@himanshu:~$
himanshu@himanshu:~$ docker images
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE
```

```
himanshu@himanshu: ~  
himanshu@himanshu:~$ docker images  
REPOSITORY          TAG          IMAGE ID          CREATED          SIZE  
ubuntu               latest       3195e1af7892     17 seconds ago  77.8MB  
mysql                latest       4073e6a6f542     8 days ago      530MB  
himanshuchaudhary123/apache latest       08d22c0ceb15     9 days ago      77.8MB  
ubuntu               20.04       1c5c8d0b973a     9 days ago      72.8MB  
wordpress            latest       8fec96b2307f     2 weeks ago     615MB  
postgres             latest       3b6645d2c145     2 weeks ago     379MB  
ubuntu               <none>       74f2314a03de     2 weeks ago     77.8MB  
debian               latest       72b624312240     2 weeks ago     124MB  
registry             2           0d153fadf70b     4 weeks ago     24.2MB  
hello-world          latest       feb5d9fea6a5     17 months ago   13.3kB  
himanshu@himanshu:~$ docker images  
REPOSITORY          TAG          IMAGE ID          CREATED          SIZE  
ubuntu               latest       3195e1af7892     About a minute ago 77.8MB  
mysql                latest       4073e6a6f542     8 days ago      530MB  
himanshuchaudhary123/apache latest       08d22c0ceb15     9 days ago      77.8MB  
ubuntu               20.04       1c5c8d0b973a     9 days ago      72.8MB  
wordpress            latest       8fec96b2307f     2 weeks ago     615MB  
postgres             latest       3b6645d2c145     2 weeks ago     379MB  
ubuntu               <none>       74f2314a03de     2 weeks ago     77.8MB  
debian               latest       72b624312240     2 weeks ago     124MB  
registry             2           0d153fadf70b     4 weeks ago     24.2MB  
hello-world          latest       feb5d9fea6a5     17 months ago   13.3kB  
himanshu@himanshu:~$ docker container commit 65731096d98c wordpress  
sha256:6791492bb4591e687f6fb2e9c087a0a80cb9fa0e2231abd0afb494dd8aa4993e  
himanshu@himanshu:~$  
himanshu@himanshu:~$  
himanshu@himanshu:~$  
himanshu@himanshu:~$  
himanshu@himanshu:~$ docker images  
REPOSITORY          TAG          IMAGE ID          CREATED          SIZE  
wordpress            latest       6791492bb459     11 seconds ago   77.8MB  
ubuntu               latest       3195e1af7892     2 minutes ago    77.8MB  
mysql                latest       4073e6a6f542     8 days ago      530MB  
himanshuchaudhary123/apache latest       08d22c0ceb15     9 days ago      77.8MB  
ubuntu               20.04       1c5c8d0b973a     9 days ago      72.8MB  
wordpress            <none>       8fec96b2307f     2 weeks ago     615MB  
postgres             latest       3b6645d2c145     2 weeks ago     379MB  
ubuntu               <none>       74f2314a03de     2 weeks ago     77.8MB  
debian               latest       72b624312240     2 weeks ago     124MB  
registry             2           0d153fadf70b     4 weeks ago     24.2MB  
hello-world          latest       feb5d9fea6a5     17 months ago   13.3kB  
himanshu@himanshu:~$ docker run --name apache -it mysql  
docker: Error response from daemon: Conflict. The container name "/apache" is already in use by container "c09226025f6d8a58e56185827e75fef2abd2a91d3efb47b9798962ab42eac3ce". You have to remove (or rename) that container to be able to reuse that name. See 'docker run --help'.  
himanshu@himanshu:~$ docker run --name -it mysql  
docker: Error response from daemon: Invalid container name (-it), only [a-zA-Z0-9][a-zA-Z0-9_-.] are allowed. See 'docker run --help'.  
himanshu@himanshu:~$ docker run --name -it mysql  
docker: Error response from daemon: Invalid container name (-it), only [a-zA-Z0-9][a-zA-Z0-9_-.] are allowed.
```

```
himanshu@himanshu: ~  
Download an image from a registry  
himanshu@himanshu:~$ docker pull himanshuchaudhary123/apache  
Using default tag: latest  
latest: Pulling from himanshuchaudhary123/apache  
Digest: sha256:5523f822d85895b0a75236aba20ff6bf4135721b031fcee7a5c4a74a700c1e6  
Status: Image is up to date for himanshuchaudhary123/apache:latest  
docker.io/himanshuchaudhary123/apache:latest  
himanshu@himanshu:~$ docker rmi -f 08d22c0ceb15  
Error response from daemon: conflict: unable to delete 08d22c0ceb15 (cannot be forced)  
- image has dependent child images  
himanshu@himanshu:~$ docker rmi -f 08d22c0ceb15 /apache  
Error response from daemon: conflict: unable to delete 08d22c0ceb15 (cannot be forced)  
- image has dependent child images  
Error response from daemon: No such image: apache:latest  
himanshu@himanshu:~$ docker rmi -f 08d22c0ceb15  
Error response from daemon: conflict: unable to delete 08d22c0ceb15 (cannot be forced)  
- image has dependent child images  
himanshu@himanshu:~$ docker rmi -f 08d22c0ceb15  
Error response from daemon: conflict: unable to delete 08d22c0ceb15 (cannot be forced)  
- image has dependent child images  
himanshu@himanshu:~$ sudo rm himanshuchaudhary123  
[sudo] password for himanshu:  
rm: cannot remove 'himanshuchaudhary123': No such file or directory  
himanshu@himanshu:~$ sudo remove himanshuchaudhary123  
sudo: remove: command not found  
himanshu@himanshu:~$ sudo rm himanshuchaudhary123 /apache  
rm: cannot remove 'himanshuchaudhary123': No such file or directory  
rm: cannot remove '/apache': No such file or directory  
himanshu@himanshu:~$ sudo rm himanshuchaudhary123 apache  
rm: cannot remove 'himanshuchaudhary123': No such file or directory  
rm: cannot remove 'apache': No such file or directory  
himanshu@himanshu:~$ docker images  
REPOSITORY          TAG             IMAGE ID        CREATED         SIZE  
wordpress            latest          6791492bb459   29 minutes ago  77.8MB  
ubuntu               latest          3195e1af7892   32 minutes ago  77.8MB  
mysql                latest          4073e6a6f542   8 days ago     530MB  
himanshuchaudhary123/apache  latest          08d22c0ceb15   9 days ago     77.8MB  
ubuntu               20.04          1c5c8d0b973a   9 days ago     72.8MB  
wordpress            <none>          8fec96b2307f   2 weeks ago    615MB  
postgres             latest          3b6645d2c145   2 weeks ago    379MB  
ubuntu               <none>          74f2314a03de   2 weeks ago    77.8MB  
debian               latest          72b624312240   2 weeks ago    124MB  
registry              2              0d153fADF70b   4 weeks ago    24.2MB  
hello-world          latest          feb5d9fea6a5   17 months ago  13.3kB  
himanshu@himanshu:~$ docker images pull 4073e6a6f542 /apache  
"docker images" requires at most 1 argument.  
See 'docker images --help'.  
  
Usage:  docker images [OPTIONS] [REPOSITORY[:TAG]]  
  
List images  
himanshu@himanshu:~$ docker container commit 65731096d98c wordpress  
sha256:26bffc02708aaed1e1fb13a6e0a3c9d4a644646a06af63cdb89908bfa01ac7b6  
himanshu@himanshu:~$  
himanshu@himanshu:~$ docker create wordpress
```

3. Create a MYSQL container and access the mysql container from Base Machine

You can create and access a MYSQL container by following the steps given below:

1. First, you need to install Docker on your base machine. For this, you run these commands:

- `sudo apt update`
- `sudo apt install docker.io`

2. Now start the Docker service:

- `sudo SYSTEMCTL start docker`

3. Now you create a mysql container. For this, you run these commands:

- `sudo docker run --name mysql-container -e MYSQL_ROOT_PASSWORD=<your-password> -p 3306:3306 -d mysql`

With this command, you will create a MYSQL container named "mysql-container". Aapko ek password set karna hoga jise aap sakte kar kar sakte hain. The "-p" option allows you to do port mapping.

4. You can now access the mysql container. For this, you run these commands:

- `sudo docker exec -it mysql-container mysql -p`

With this command, you can use the "mysql" command in the MYSQL container. The "-it" option puts the terminal in interactive mode. "mysql" command aapko MYSQL prompt mein le jaayega. Aapko password enter karna hoga jo aapne container karte karte set kiya tha.

Here is the simple process of creating a MYSQL container and accessing it.

```
himanshu@himanshu: ~  
himanshu@himanshu:~$ docker pull mysql:latest  
latest: Pulling from library/mysql  
Digest: sha256:2596158f73606ba571e1af29a9c32bec5dc021a2495e4a70d194a9b49664f4d9  
Status: Image is up to date for mysql:latest  
docker.io/library/mysql:latest  
himanshu@himanshu:~$ docker images  
REPOSITORY          TAG             IMAGE ID        CREATED         SIZE  
wordpress           latest          26bffc02708a    3 hours ago    77.8MB  
<none>              <none>         6791492bb459    4 hours ago    77.8MB  
ubuntu              latest          3195e1af7892    4 hours ago    77.8MB  
mysql               latest          4073e6a6f542    8 days ago     530MB  
himanshuchaudhary123/apache latest          08d22c0ceb15    9 days ago     77.8MB  
ubuntu              20.04          1c5c8d0b973a    9 days ago     72.8MB  
wordpress           <none>         8fec96b2307f    2 weeks ago    615MB  
postgres            latest          3b6645d2c145    2 weeks ago    379MB  
ubuntu              <none>         74f2314a03de    2 weeks ago    77.8MB  
debian              latest          72b624312240    2 weeks ago    124MB  
registry            2              0d153fADF70b    4 weeks ago    24.2MB  
mysql/mysql-server  latest          1d9c2219ff69    8 weeks ago    496MB  
hello-world         latest          feb5d9fea6a5    17 months ago  13.3kB  
himanshu@himanshu:~$ docker run --name db -d -p 3306:3306 -e MYSQL_ROOT_PASSWORD=123 mysql:latest  
9ef0830e002193b6d2d58e42cbfbc2a915911184bfc8264055258573fb9eb816  
himanshu@himanshu:~$ docker ps  
CONTAINER ID   IMAGE          COMMAND                  CREATED         STATUS      PORTS                               NAMES  
9ef0830e0021   mysql:latest   "docker-entrypoint.s..." 19 seconds ago Up          0.0.0.0:3306->3306/tcp, :::3306->3306/tcp, 33060/tcp    db  
b0ea8992f3cb   mysql:latest   "docker-entrypoint.s..." 29 minutes ago  Up          33060/tcp, 0.0.0.0:13306->3306/tcp, :::13306->3306/tcp    mysql-  
docker-local  
c8ef85139161   mysql/mysql-server:latest "/entrypoint.sh mysql..." 53 minutes ago  Up          3306/tcp, 33060-33061/tcp    mysql_d  
ocker  
himanshu@himanshu:~$ docker exec -it db/bin/bash  
"docker exec" requires at least 2 arguments.  
See 'docker exec --help'.  
  
Usage:  docker exec [OPTIONS] CONTAINER COMMAND [ARG...]  
  
Execute a command in a running container  
himanshu@himanshu:~$ docker exec -it db /bin/bash  
bash-4.4# mysql -uroot -p123  
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 8  
Server version: 8.0.32 MySQL Community Server - GPL  
  
Copyright (c) 2000, 2023, Oracle and/or its affiliates.  
  
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.
```



```
himanshu@himanshu: ~  
Execute a command in a running container  
himanshu@himanshu:~$ docker exec -it db /bin/bash  
bash-4.4# mysql -uroot -p123  
mysql: [Warning] Using a password on the command line interface can be insecure.  
Welcome to the MySQL monitor.  Commands end with ; or \g.  
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Copyright (c) 2000, 2023, Oracle and/or its affiliates.  
  
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> ^C  
mysql> ^C  
mysql> ^C  
mysql> show databases  
-> ^C  
mysql> show databases;  
+-----+  
| Database |  
+-----+  
| information_schema |  
| mysql |  
| performance_schema |  
| sys |  
+-----+  
4 rows in set (0.00 sec)  
  
mysql> CREATE MYSQL DATABASES;  
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near 'MYSQL DATABASES' at line 1  
mysql> CREATE DATABASE Mysql;  
Query OK, 1 row affected (0.01 sec)  
  
mysql> /  
-> \^C  
mysql> \l  
ERROR:  
Unknown command '\l'.  
-> ^C  
mysql> \l  
ERROR:  
Unknown command '\l'.  
-> ^C  
mysql> \ls  
ERROR:  
Unknown command '\l'.  
-> ^C  
mysql> SHOW DATABASES;
```


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

mysql> ^C

mysql> ^C

mysql> ^C

mysql> show databases

-> ^C

mysql> show databases;

+-----+

| Database |

+-----+

| information_schema |

| mysql |

| performance_schema |

| sys |

+-----+

4 rows in set (0.00 sec)

mysql> CREATE MYSQL DATABASES;

ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near 'MYSQL DATABASES' at line 1

mysql> CREATE DATABASE Mysql;

Query OK, 1 row affected (0.01 sec)

mysql> /

-> \^C

mysql> \l

ERROR:

Unknown command '\l'.

-> ^C

mysql> \l

ERROR:

Unknown command '\l'.

-> ^C

mysql> \ls

ERROR:

Unknown command '\l'.

-> ^C

mysql> SHOW DATABASES;

+-----+

| Database |

+-----+

| Mysql |

| information_schema |

| mysql |

| performance_schema |

| sys |

+-----+

5 rows in set (0.00 sec)

mysql> █