**Docker Basic Commands**

Below are some commonly used Docker Basic commands you will use frequently.

**1) docker**– To check all available Docker Commands

Example:

docker [option] [command] [arguments]

**2) docker version** – To show Docker version

Example:

docker version

**3) docker info** – Displays system wide information

Example

docker info

**4) docker pull** – To pull the docker Images from Docker Hub Repository

Example:

docker pull ubuntu

**5) docker build** – To Docker Image from Dockerfile

Example:

docker build <options> <directory path> OR <URL>

if you want to include files and folder from current/same directory then use below commands

docker build .

**6) docker run** – Run a container from a docker image.

Example:

docker run -i -t ubuntu /bin/bash

**-i  –**                               To start an interactive session.  
**-t  –**                               Allocates a tty and attaches stdin and stdout.  
**ubuntu**–                       Docker image that is used to create the container.  
**bash (or /bin/bash)**– command that is running inside the Ubuntu container.

**Note-** The container will stop when you leave it with the command exit. If you like to have a container that is running in the background, you just need to add the **-d** option in the command  
**OR**  
To exit from docker container type **CTRL + P + Q**. This will leave container running in background an provide you host system console.

Now Run Docker Container in background.

docker run -i -t --name=Ubuntu-Linux -d ubuntu /bin/bash

**7) docker commit** – To commit a changes in container file OR create new Docker Image

Example:

docker commit [options] <container-id> [REPOSITORY[:TAG]]

Lets commit to existing docker container (**023828e786e0**) and create new Docker Image (**Ubuntu-apache**) **OR** Docker commit to Same Image

docker commit 023828e786e0 ubuntu-apache

**8) docker ps** – List all the running containers. Add the -a flag to list all the containers.

Examples:

docker ps

To list all Docker Containers including stopped

docker ps -a

**9) docker start**– To start a docker container

docker start <container-id>

**10) docker stop**– To stop a docker container

docker stop <container-id>

**11) docker logs** -To view Logs for a Docker Container

$ docker logs <Container ID>

**12) docker rename** – To rename Docker Container

docker rename <Old\_Name> <New\_Name>

**13) docker rm** – To remove the Docker Container, stop it first and then remove it

docker rm <CONTAINER ID>

Run below command to remove all stopped containers

sudo docker rm -f $(sudo docker ps -a -q)

To remove untagged docker images

sudo docker images | grep none | awk '{ print $3; }' | xargs sudo docker rmi

We have covered docker basic commands which you should know.

**#1. Docker Image Commands**

[Docker Image](https://docs.docker.com/engine/reference/commandline/image/) is a application template including binaries and libraries needed to run a Docker container.

Below are some commonly used Docker Image commands while working with Docker.

**1) docker build**– To build Docker Image from Dockerfile

Example:

docker build <options> <directory path> OR <URL>

if you want to include files and folder from current/same directory then use below commands

docker build .

To add a tag for Docker Image

docker build -t fosstechnix/­nodejs:1.0

**2. docker pull**– To pull Docker Image from Docker Hub Registry

docker pull [OPTIONS] Image\_Name[:TAG]

Examples:

docker pull ubuntu

Docker pull Image from Private Registry

First login to your Docker Private Registry URL, UserName and Password

docker login docker-fosstechnix.com --username=USERNAME

Pull the Docker Image

docker pull docker-fosstechnix.com/nodejs

To specify a Tag while pulling Docker Image

docker pull "repoName"/"image\_name"[:tag]

To pull docker image from private IP based repository

docker image pull 192.168.100.50:5000 /ubuntu:latest

**3. docker tag** – To add Tag to Docker Image

docker tag IMAGE ID image/TAG

Examples:

docker tag nodejsdocker fosstechnix/nodejsdocker:v1.0

4. **docker images** – To list Docker Images

Docker command to list images

Examples

docker images

You can use ” docker image” command with “ls” argument also

docker image ls

To list out locally stored Docker Images

docker images list

To filter Docker Images list

docker images --filter "<key>=<value>"

Below are some “–filter” options

* **dangling**– Images are not used
* **label**– List the Docker Images those you added a label
* **before**– List the Docker Images which is created in specific time
* **since**– Created in specific time with another image creation
* **reference –** List Docker Images which has name or Tag

To list Docker Images which is not used or Dangling docker images

docker images -a

**5. docker push** – To push Docker Images to repository

docker push [OPTIONS] NAME[:TAG]

Examples:

docker tag nodejs my\_docker\_registry.com/nodejs:v1.0

To push a Docker Image to Private Registry

docker login docker-fosstechnix.com --username=USERNAME

docker tag ubuntu docker.fosstechnix.com/linux/ubuntu:latest

6. **docker history –**To show history of Docker Image

docker image history [OPTIONS] IMAGE

Examples:

docker history <image-id> --no-trunc

Get full history in tabular format:

docker history <image-id> --format "table{{.ID}}, {{.CreatedBy}}" --no-trunc

**7. docker inspect**– To show complete information in JSON format

docker inspect IMAGE\_ID OR CONTAINER\_ID

**8. docker save** – To save an existing Docker Image

docker save ubuntu\_image:tag | gzip > ubuntu\_image.tar.gz

**9. docker import** – Create Docker Image from Tarball

docker import [OPTIONS] file|URL|- [REPOSITORY[:TAG]]

Examples:

docker import ./ubuntu\_image.tar.gz ubuntu:latest

this will create “ubuntu:latest” images from compressed imported image

Import a Docker container as an image from file

cat docker\_container.tar.gz | docker import - my\_image:tag

**10. docker export** – To export existing Docker container

docker export container\_id | gzip > new\_container.tar.gz

**11. docker load**– To load Docker Image from file or archives

docker load < ubuntu\_image.tar.gz

**12. docker rmi**– To remove docker images

docker rmi IMAGE\_ID

To remove all Docker Images

docker rmi $(docker images -q)

To remove All Docker Images forcefully

docker rmi -f $(docker images -q)

To clean docker images, builds , ..etc

docker system prune

We have covered Docker Basic commands for Docker Image.

**#2. Docker Container Commands**

Docker container is a virtualized runtime environment created from Image.

Below are list of Docker container commands which will be useful for you.

**1) docker start** – To start a Docker container

docker start [OPTIONS] CONTAINER [CONTAINER]

Examples:

docker start container\_id

if you want to see output of your command

docker start -ai container\_id

**2) docker stop** – To stop a running docker container

docker stop [-t|--time[=10]] CONTAINER [CONTAINER]

**[-t|–time[=10]**– wait before stopping the container

Examples:

docker stop container\_id

To stop all the containers

docker stop 'docker ps -q'

To stop all Docker containers

docker stop $(docker ps -a -q)

**3) docker restart** – To restart docker container

docker restart container\_id

**4) docker pause** – To pause a running container

docker pause container\_id

**Docker pause vs stop** ?

Docker pause suspends all processes in the defined container .

Docker stop sends **SIGTERM** to the container’s main process to stop and stops the container.

**5) docker unpause** – To unpause a running container

Syntax:

docker unpause CONTAINER [CONTAINER…]

Example:

docker unpause CONTAINER\_ID

**6) docker run** – Creates a docker container from docker image

docker run [OPTIONS] IMAGE [COMMAND] [ARG]

docker container run command is used to create a docker container from docker images. Below are the example of docker run container with commands

To run Docker container in foreground

docker run ubuntu

you will see output of ubuntu docker container on your terminal, To stop the container type “CTRL + C”.

To run Docker container in detached mode/in background **OR** you want to keep the docker container running when terminal exit , use option “**-d**“

docker container run -d ubuntu

To run Docker container under specific name

Syntax:

docker container run --name [CONTAINER\_NAME] [DOCKER\_IMAGE]

Example:

docker run -i -t --name=Ubuntu-Linux -d ubuntu

To run Docker container in interactive mode/ you can enter commands inside docker container while it is runnning

docker run -i -t --name=Ubuntu-Linux -d ubuntu /bin/bash

Expose Docker Container ports and access Apache outside

docker run -p 81:80 -itd 4e5021d210f6

**-p** – Exposes the host port to container port

To verify Apache is accessing from outside, Open your favourite browser , type the IP address of your system IP followed by port 81

http://SystemIP:81/

**7) docker ps** – To list Docker containers

To verify Docker Container running in background

docker ps

To list all Docker Containers including stopped

docker ps -a

**8) docker exec** – To Access the shell of Docker Container

Access the shell of Docker Container that runs in the background mode using “CONTAINER ID”

docker exec -i -t 023828e786e0 /bin/bash

Access the shell of Docker Container that runs in the background mode using “NAMES”

docker exec -i -t Ubuntu-Linux /bin/bash

Type “**Exit**” to exit from Docker Container shell.

To update the System Packages of Docker Container

docker exec 023828e786e0 apt-get update

Let’s install Apache2 in docker container

docker exec 023828e786e0 apt-get install apache2 -y

To check apache2 service status inside Docker Container

docker exec 023828e786e0 service apache2 status

Start Apache2 service inside Docker Container

docker exec 023828e786e0 service apache2 start

**9) docker logs** – To view logs of Docker container

To view Logs for a Docker Container

docker logs <Containe ID>

**10) docker rename** – To rename Docker container

To rename Docker Container

docker rename <Old\_Name> <New\_Name>

**11) docker rm** – To remove Docker container

To remove the Docker Container, stop it first and then remove it

docker rm <CONTAINER ID>

Run below command to remove all stopped containers

sudo docker rm -f $(sudo docker ps -a -q)

To remove untagged docker images

sudo docker images | grep none | awk '{ print $3; }' | xargs sudo docker rmi

**12) docker inspect** – Docker container info command

Syntax:

docker inspect [OPTIONS] NAME|ID [NAME|ID...]

**OR**

docker container inspect [OPTIONS] CONTAINER [CONTAINER...]

Example:

docker inspect 023828e786e0

To get Docker container IP Address

docker inspect --format='{{range .NetworkSettings.Networks}}{{.IPAddress}}{{end}}' $DOCKER\_CONTAINER\_NAME

To get list of all ports binds to Docker container

docker inspect --format='{{range $p, $conf := .NetworkSettings.Ports}} {{$p}} -> {{(index $conf 0).HostPort}} {{end}}' $DOCKER\_INSTANCE\_NAME

**12) docker attach** – Attach Terminal to Running container

Docker attach command is used to attach your terminal to running container to control Input/Output/Error operations.

Syntax:

docker attach [OPTIONS] CONTAINER\_ID / CONTAINER\_NAME

Example:

docker attach nodejs

**12) docker kill** – To stop and remove Docker containers

Syntax:

docker kill [OPTIONS] CONTAINER [CONTAINER…]

Example:

To stop all docker containers

docker kill $(docker ps -q)

To remove all docker containers

docker rm $(docker ps -a -q)

To remove all docker containers forcefully

docker rm -f $(docker ps -a -q)

**13) docker cp**– To copy files or folders between a container and from local filesystem.

Syntax:

docker cp [OPTIONS] CONTAINER:SRC\_PATH DEST\_PATH|-

docker cp [OPTIONS] SRC\_PATH|- CONTAINER:DEST\_PATH

Examples:

To copy directory from Docker host to container

sudo docker cp ./directory\_path 023828e786e0:/home/ubuntu

To copy directory from docker container to host

sudo docker cp 023828e786e0:/etc/apache2/sites-enabled .

To copy files from Docker container to host

sudo docker cp 023828e786e0:/etc/apache2 .

To copy files from Host to Docker container

Syntax:

docker cp SOURCE\_HOST\_PATH CONTAINER:DESTINATION\_PATH

Example:

sudo docker cp ./test.fosstechnix.com.conf 023828e786e0:/etc/apache2/sites-enabled

We have covered Docker Basic commands for Docker Container.

**#3. Docker Compose Commands**

Docker compose is used to run multiple containers in a single application.

Below are some commonly used docker compose command line you should know

**1) docker-compose build** – To build docker compose file

Example:

docker-compose build

**2) docker-compose up** – To run docker compose file

docker-compose up

To run docker compose in background

docker-compose up -d

To re-run containers which has stopped in states

docker-compose up --no-recreate

**3) docker-compose ls**– To list docker images declared inside docker compose file

docker-compose ps

**4) docker-compose start** – To start containers which are already created using docker compose file

docker-compose start

**What is difference between docker-compose up and docker-compose start**?

**docker-compose up** – It creates new docker containers which are defined docker-compose file.

**docker-compose start**– used to only to restart docker containers which are already created using docker-compose file, never created new containers.

**5) docker-compose run** – To run one one of application inside docker-compose.yml

docker-compose run nodejs

**6) docker-compose rm** – To remove docker containers from docker compose

docker-compose rm -f

To auto remove docker containers with docker-compose.yml

docker-compose up && docker-compose rm -fsv

To stop docker containers and then remove

docker-compose stop && docker-compose rm -f

To stop a specific docker container from docker compose

docker-compose stop nodejs

To remove docker containers data inside docker compose

docker-compose rm -f nodejs

To remove volume which is attached to docker container

docker-compose rm -v

**7) docker-compose ps** – To check docker container status from docker compose

docker-compose ps

We have covered docker basic commands for Docker Compose.

**#4. Docker Volume Commands**

**1) docker volume create** – To create docker volume

docker volume create <volume\_name>

**2) docker volume inspect** – To inspect docker volume

docker volume create <volume\_name>

**3) docker volume rm** – To remove docker volume

First remove the docker container

docker rm –f $(docker ps -aq)

then remove the docker volume

docker volume rm <volume\_name>

To delete all docker volumes at once

docker volume prune

We have covered Docker Basic Commands for Docker Volume.

**#5. Docker Networking Commands**

**1) docker network create**– To create docker network

docker network create --driver=bridge --subnet=192.168.100.0/24 br0

**2) docker network ls** – To list docker networls

docker network ls

**3) docker network inspect**– To view network configuration details

docker network inspect bridge

We have covered Docker Basic Commands for Docker Networking.

**#6. Docker Logs and Monitoring Commands**

**1) docker ps -a** – To show running and stopped containers

docker ps -a

**2) docker logs** – To show Docker container logs

docker logs

**3) docker events** – To get all events of docker container

docker events

**4) docker top** – To show running process in docker container

docker top

**5) docker stats**– To check cpu, memory and network I/O usage

docker stats <container\_id>

**6) docker port** – To show docker containers public ports

docker port <container\_id>

We have covered Docker Basic Commands for Docker Logs and Monitoring.

**#7. Docker Prune Commands**

Using Docker prune we can delete unused or dangling containers, Images , volumes and networks

To clean all resources which are dangling or not associated with any docker containers

docker system prune

To remove unused and stopped docker images

docker system prune -a

To remove Dangling Docker images

docker image prune

docker image prune -a

To remove all unused docker containers

docker container prune

To remove all unused docker volumes

docker volume prune

To remove all unused docker networks

docker network prune

We have covered Docker Basic Commands for Docker Prune.

**#8. Docker Hub Commands**

To search docker image

docker search ubuntu

To pull image from docker hub

docker pull ubuntu

**Pushing Docker Image to Docker Hub Repository**

If you want to push the docker image to Docker Hub Registery. First login to [https://hub.docker.com](https://hub.docker.com/)  with ID and password using command line

docker login

Login with your Docker ID to push and pull images from Docker Hub. If you don't have a Docker ID, head over to https://hub.docker.com to create one.

Username: **fosstechnix**

Password:

Login Succeeded

Now push Docker Image to Docker Hub Repository

docker push nodejsdocker

Error: denied: requested access to the resource is denied:docker

If you are getting above error while pushing docker images to docker hub repository first time then first tag the Docker Image and try to push again

docker tag nodejsdocker fosstechnix/nodejsdocker

Push the Docker Image again

docker push fosstechnix/nodejsdocker

To logout from Docker Hub Registry

docker logout