

# DOCKER

Ques 1:-Set the base image to Ubuntu

- Add File Author / Maintainer
- Install Nginx
- Install necessary tools: vim wget curl net-tools

[RUN apt-get install -y nginx vim wget curl net-tools](#)

- Remove the default Nginx configuration file

[RUN rm -f /etc/nginx/sites-enabled/default.conf](#)

[RUN rm -f /etc/nginx/sites-available/default.conf](#)

- Copy a configuration file from the current directory

[RUN mkdir /var/www/html/abc](#)

[COPY index.html /var/www/html/abc/](#)

[COPY my.conf /etc/nginx/sites-available](#)

[RUN ln -s /etc/nginx/sites-available/my.conf  
/etc/nginx/sites-enabled/](#)

- Expose ports (80)

[EXPOSE 80](#)

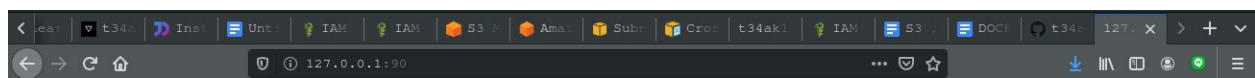
- Set the default command to execute Nginx when creating a new container

[CMD \["nginx","-g","daemon off;"\]](#)

```
root@fahad: ~/docker_practise x vi Dockerfile
FROM ubuntu:18.04
MAINTAINER T34aK<fahad.khan@tothenew.com>
RUN apt-get update
RUN apt-get upgrade
RUN apt-get install -y nginx vim wget curl net-tools
RUN rm -f /etc/nginx/sites-enabled/default.conf
RUN rm -f /etc/nginx/sites-available/default.conf
RUN mkdir /var/www/html/abc
COPY index.html /var/www/html/abc/
COPY my.conf /etc/nginx/sites-available
RUN ln -s /etc/nginx/sites-available/my.conf /etc/nginx/sites-enabled/
EXPOSE 80
CMD ["nginx","-g","daemon off;"]
```

Now we are going to map the port of localhost to docker

```
---> Running in 6d01bcb15138
Removing intermediate container 6d01bcb15138
---> 6ab57347e81e
Step 10/13 : RUN rm -rf /etc/nginx/sites-enabled/default.conf
---> Running in e5d4afe91250
Removing intermediate container e5d4afe91250
---> 71d996d9902b
Step 11/13 : RUN rm -rf /etc/nginx/sites-available/default.conf
---> Running in bbd0377dd886
Removing intermediate container bbd0377dd886
---> 310e1f3a9684
Step 12/13 : EXPOSE 80
---> Running in 3ee2e9124f50
Removing intermediate container 3ee2e9124f50
---> 738e0b45d9db
Step 13/13 : CMD ["nginx","-g","daemon off;"]
---> Running in 9096ede21503
Removing intermediate container 9096ede21503
---> 26594fbbea68
Successfully built 26594fbbea68
Successfully tagged t34ak:latest
root@fahad ~/docker_practise (master*)
> docker run -itd -p 90:80 --expose 80 --name t34ak t34ak
23500037ce0ce727eeefa57f350fda655a0d6ada5ee567db38be35d118dcda71
```



**T34aK**

This is the center

On curl we can see that nginx is running

```
root@fahad ~/docker_practise (master*)  
➤ curl -i 172.17.0.1:90  
HTTP/1.1 200 OK  
Server: nginx/1.14.0 (Ubuntu)  
Date: Sun, 01 Mar 2020 07:58:36 GMT  
Content-Type: text/html  
Content-Length: 74  
Last-Modified: Sun, 01 Mar 2020 06:22:40 GMT  
Connection: keep-alive  
ETag: "5e5b54b0-4a"  
Accept-Ranges: bytes  
  
<html>  
<body>  
  
<h1>T34aK</h1>  
  
<p>This is the center</p>  
</body>  
</html>  
  
root@fahad ~/docker_practise (master*)  
➤
```

172.0.01:90 - it is the docker ip address

127.0.0.1:90 - it is the localhost ip on which we are doing the port mapping

```
root@fahad ~/docker_practise (master*)  
➤ curl -i 127.0.0.1:90  
HTTP/1.1 200 OK  
Server: nginx/1.14.0 (Ubuntu)  
Date: Sun, 01 Mar 2020 08:00:53 GMT  
Content-Type: text/html  
Content-Length: 74  
Last-Modified: Sun, 01 Mar 2020 06:22:40 GMT  
Connection: keep-alive  
ETag: "5e5b54b0-4a"  
Accept-Ranges: bytes  
  
<html>  
<body>  
  
<h1>T34aK</h1>  
  
<p>This is the center</p>  
</body>  
</html>  
  
root@fahad ~/docker_practise (master*)  
➤
```

Ques 2:- What is the difference between 'RUN', 'CMD', & 'ENTRYPOINT' in dockerfile?

Ans 2:-

**RUN:-**

RUN is an image build step, the state of the container after a RUN command will be committed to the container image. A Dockerfile can have many RUN steps that layer on top of one another to build the image.

**CMD:-**

CMD is the command the container executes by default when you launch the built image.

**ENTRYPOINT:-**

*ENTRYPOINT* instruction allows you to configure a container that will run as an executable. It looks similar to *CMD*, because it also allows you to specify a *command* with parameters. The difference is *ENTRYPOINT command* and parameters are not ignored when *Docker* container runs with *command* line parameters.

Ques 3:-How to connect docker client to docker daemon running on other host?

Setting up docker on host machine:

```
ubuntu@ip-172-31-184-215:~$ sudo docker run hello-world
Unable to find image 'hello-world:latest' locally
latest: Pulling from library/hello-world
1b930d010525: Pull complete
Digest: sha256:fc6a51919cfeb2e6763f62b6d9e8815acbf7cd2e476ea353743570610737b752
Status: Downloaded newer image for hello-world:latest

Hello from Docker!
This message shows that your installation appears to be working correctly.

To generate this message, Docker took the following steps:
1. The Docker client contacted the Docker daemon.
2. The Docker daemon pulled the "hello-world" image from the Docker Hub.
   (amd64)
3. The Docker daemon created a new container from that image which runs the
   executable that produces the output you are currently reading.
4. The Docker daemon streamed that output to the Docker client, which sent it
   to your terminal.

To try something more ambitious, you can run an Ubuntu container with:
$ docker run -it ubuntu bash

Share images, automate workflows, and more with a free Docker ID:
https://hub.docker.com/

For more examples and ideas, visit:
https://docs.docker.com/get-started/
```



Then we will have to run a container for remote access

```
ubuntu@ip-172-31-184-215:~$ sudo docker run -p 80:2375 -v /var/run/dockcer.sock:/var/run/docker.sock jarkt/docker-remote-api
Unable to find image 'jarkt/docker-remote-api:latest' locally
latest: Pulling from jarkt/docker-remote-api
cfc728c1c558: Pull complete
342750649827: Pull complete
Digest: sha256:b744eb1c2d19a90f44ffd1cc1c9ceeacead67cfac25b79d48d7d2697a156e538
Status: Downloaded newer image for jarkt/docker-remote-api:latest
```

```
ubuntu@ip-172-31-184-215:~$ sudo docker ps -a
CONTAINER ID        IMAGE               COMMAND             CREATED
STATUS            PORTS              NAMES
9a0adae29312       jarkt/docker-remote-api  "/bin/sh -c 'socat T..."  About a minute ago
Up About a minute  0.0.0.0:80->2375/tcp  infallible_beaver
551890172c21       hello-world        "/hello"           10 minutes ago
Exited (0) 10 minutes ago  sleepy_swanson
```

Setting up docker client on remote machine:

Install the necessary dependencies.

Add the repositories, then update and install docker-ce

```
root@fahad ~ (master)
$ sudo apt install apt-transport-https ca-certificates curl software-properties-common
Reading package lists... Done
Building dependency tree
Reading state information... Done
ca-certificates is already the newest version (20180409).
curl is already the newest version (7.58.0-2ubuntu3.8).
software-properties-common is already the newest version (0.96.24.32.12).
The following packages were automatically installed and are no longer required:
  docutils-common python3-botocon python3-colorama python3-docutils
  python3-jmespath python3-pyasnl python3-pygments python3-roman python3-rsa
  python3-s3transfer sgml-base xml-core
Use 'sudo apt autoremove' to remove them.
The following NEW packages will be installed:
  apt-transport-https
0 upgraded, 1 newly installed, 0 to remove and 1 not upgraded.
Need to get 1,692 B of archives.
After this operation, 153 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://in.archive.ubuntu.com/ubuntu bionic-updates/universe amd64 apt-transport-https all 1.6.12 [1,692 B]
Fetched 1,692 B in 1s (2,323 B/s)
Selecting previously unselected package apt-transport-https.
(Reading database ... 184091 files and directories currently installed.)
Preparing to unpack .../apt-transport-https_1.6.12_all.deb ...
```

```
root@fahad ~ (master*)  
➤ curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo apt-key add  
-  
OK  
root@fahad ~ (master*)  
➤ sudo apt-key fingerprint 0EBFCD88  
pub  rsa4096 2017-02-22 [SCEA]  
     9DC8 5822 9FC7 DD38 854A  E2D8 8D81 803C 0EBF CD88  
uid   [ unknown] Docker Release (CE deb) <docker@docker.com>  
sub  rsa4096 2017-02-22 [S]
```

```
root@fahad /etc/apt  
➤ sudo add-apt-repository "deb [arch=amd64] https://download.docker.com/linux/  
ubuntu $(lsb_release -cs) stable"  
Get:1 https://download.docker.com/linux/ubuntu bionic InRelease [64.4 kB]  
Ign:2 http://dl.google.com/linux/chrome/deb stable InRelease  
Hit:3 http://security.ubuntu.com/ubuntu bionic-security InRelease  
Get:4 https://download.docker.com/linux/ubuntu bionic/stable amd64 Packages [10.  
7 kB]  
Hit:5 http://us.archive.ubuntu.com/ubuntu bionic InRelease  
Ign:6 http://pkg.jenkins.io/debian-stable binary/ InRelease  
Hit:7 http://us.archive.ubuntu.com/ubuntu bionic-updates InRelease  
Hit:8 http://pkg.jenkins.io/debian-stable binary/ Release  
Hit:9 http://dl.google.com/linux/chrome/deb stable Release  
Fetched 75.1 kB in 1s (67.4 kB/s)  
Reading package lists... Done
```

```
root@fahad /etc/apt  
➤ sudo add-apt-repository "deb [arch=amd64] https://download.docker.com/linux/  
ubuntu $(lsb_release -cs) stable edge test"  
Hit:1 https://download.docker.com/linux/ubuntu bionic InRelease  
Hit:2 http://security.ubuntu.com/ubuntu bionic-security InRelease  
Ign:3 http://dl.google.com/linux/chrome/deb stable InRelease  
Get:4 https://download.docker.com/linux/ubuntu bionic/edge amd64 Packages [10.8  
kB]  
Hit:5 http://us.archive.ubuntu.com/ubuntu bionic InRelease  
Ign:6 http://pkg.jenkins.io/debian-stable binary/ InRelease  
Get:7 https://download.docker.com/linux/ubuntu bionic/test amd64 Packages [24.4  
kB]  
Hit:8 http://us.archive.ubuntu.com/ubuntu bionic-updates InRelease  
Hit:9 http://pkg.jenkins.io/debian-stable binary/ Release  
Hit:10 http://dl.google.com/linux/chrome/deb stable Release  
Fetched 35.2 kB in 1s (27.8 kB/s)  
Reading package lists... Done
```

```
root@fahad /etc/apt  
➤ apt update  
Hit:1 https://download.docker.com/linux/ubuntu bionic InRelease  
Ign:2 http://dl.google.com/linux/chrome/deb stable InRelease  
Ign:3 http://pkg.jenkins.io/debian-stable binary/ InRelease  
Hit:4 http://us.archive.ubuntu.com/ubuntu bionic InRelease  
Hit:5 http://security.ubuntu.com/ubuntu bionic-security InRelease  
Hit:6 http://us.archive.ubuntu.com/ubuntu bionic-updates InRelease  
Hit:7 http://pkg.jenkins.io/debian-stable binary/ Release  
Hit:8 http://dl.google.com/linux/chrome/deb stable Release  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
1 package can be upgraded. Run 'apt list --upgradable' to see it.
```



```

root@fahad /etc/apt
> apt install docker-ce
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  bridge-utils docutils-common python3-botoecore python3-colorama
  python3-docutils python3-jmespath python3-pyasni python3-pygments
  python3-roman python3-rsa python3-s3transfer sgml-base ubuntu-fan xml-core
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  aufs-tools containerd.io docker-ce-cli
The following packages will be REMOVED:
  containerd docker.io runc
The following NEW packages will be installed:
  aufs-tools containerd.io docker-ce docker-ce-cli
0 upgraded, 4 newly installed, 3 to remove and 1 not upgraded.
Need to get 85.7 MB of archives.
After this operation, 110 MB of additional disk space will be used.
Do you want to continue? [Y/n] y

```

Set the alias for docker using the host IP.

```

root@fahad ~ (master*)
> usermod -aG docker $USER
root@fahad ~ (master*)
> alias dockerx="docker -H=52.90.5.140:80"

```

Now by alias "dockerx" you can can the run docker on the remote docker machine.

```

root@fahad ~ (master*)
> dockerx ps

```

CONTAINER ID	STATUS	IMAGE	PORTS	COMMAND	NAMES	CREATED
5c485625a57b	Up 42 seconds	jarkt/docker-remote-api	0.0.0.0:80->2375/tcp	"/bin/sh -c 'socat T..."	vigorous_proskuriakova	43 second

```

root@fahad ~ (master*)
>

```

```

root@fahad ~ (master*)
> dockerx ps -a

```

CONTAINER ID	STATUS	IMAGE	PORTS	COMMAND	NAMES	CREATED
5c485625a57b	Up About a minute	jarkt/docker-remote-api	0.0.0.0:80->2375/tcp	"/bin/sh -c 'socat T..."	vigorous_proskuriakova	About a minute ago
4860a61704df	Exited (0) 2 minutes ago	hello-world		"/hello"	wonderful_golick	2 minutes ago

```

root@fahad ~ (master*)
>

```