

**TO  
THE  
NEW**™



## **DOCKER**

Trainee Name : Chhavi Sharma

Newers ID : 4023

Mentor Name : Nishith Kulshrestha

College : UPES

## 1. Set the base image to Ubuntu

- Add File Author / Maintainer
- Install Nginx
- Install necessary tools: vim wget curl net-tools
- Remove the default Nginx configuration file
- Copy a configuration file from the current directory
- Expose ports (80)
- Set the default command to execute Nginx when creating a new container

Ans.

### DockerFile

```
FROM ubuntu
MAINTAINER Chhavi Sharma (chhavi.sharma@tothenew.com)
RUN apt-get update
RUN apt-get install vim wget curl net-tools -y
RUN apt-get install -y nginx
RUN rm /etc/nginx/sites-enabled/default
COPY new /etc/nginx/sites-available
RUN cd /etc/nginx/sites-enabled
RUN ln -s /etc/nginx/sites-available/new /etc/nginx/sites-enabled/
COPY new.html /var/www/html/
EXPOSE 80
CMD ["nginx", "-g", "daemon off;"]
```

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### Build the Dockerfile

```

chhavi@chhavi:~/docker$ sudo docker build .
Sending build context to Docker daemon 4.096kB
Step 1/12 : FROM ubuntu
--> 72300a873c2c
Step 2/12 : MAINTAINER Chhavi Sharma (chhavi.sharma@tothenew.com)
--> Running in 6dc9d289979e
Removing intermediate container 6dc9d289979e
--> 887008f0dc3f
Step 3/12 : RUN apt-get update
--> Running in 5c688abfd188
Get:1 http://archive.ubuntu.com/ubuntu bionic InRelease [242 kB]
Get:2 http://security.ubuntu.com/ubuntu bionic-security InRelease [88.7 kB]
Get:3 http://security.ubuntu.com/ubuntu bionic-security/restricted amd64 Packages [31.0 kB]
Get:4 http://archive.ubuntu.com/ubuntu bionic-updates InRelease [88.7 kB]
Get:5 http://security.ubuntu.com/ubuntu bionic-security/main amd64 Packages [836 kB]
Get:6 http://archive.ubuntu.com/ubuntu bionic-backports InRelease [74.6 kB]
Get:7 http://archive.ubuntu.com/ubuntu bionic/universe amd64 Packages [11.3 MB]
Get:8 http://security.ubuntu.com/ubuntu bionic-security/universe amd64 Packages [824 kB]
Get:9 http://security.ubuntu.com/ubuntu bionic-security/multiverse amd64 Packages [7641 B]
Get:10 http://archive.ubuntu.com/ubuntu bionic/multiverse amd64 Packages [186 kB]
Get:11 http://archive.ubuntu.com/ubuntu bionic/main amd64 Packages [1344 kB]
Get:12 http://archive.ubuntu.com/ubuntu bionic/restricted amd64 Packages [13.5 kB]
Get:13 http://archive.ubuntu.com/ubuntu bionic-updates/main amd64 Packages [1128 kB]
Get:14 http://archive.ubuntu.com/ubuntu bionic-updates/multiverse amd64 Packages [11.7 kB]
Get:15 http://archive.ubuntu.com/ubuntu bionic-updates/restricted amd64 Packages [44.7 kB]
Get:16 http://archive.ubuntu.com/ubuntu bionic-updates/universe amd64 Packages [1351 kB]

```

## Run Image

```

chhavi@chhavi:~/docker$ sudo docker images
[sudo] password for chhavi:

```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
<none>	<none>	2c1e3295c95d	About an hour ago	218MB
ubuntu	latest	72300a873c2c	6 days ago	64.2MB
hello-world	latest	fce289e99eb9	14 months ago	1.84kB

```

chhavi@chhavi:~/docker$ sudo docker run -itd --name nginx 2c1e3295c95d
7aa981f04045c7ca46b99dace94c71af8b5d5c45d4983aa3157755e1845683e7
chhavi@chhavi:~/docker$ sudo docker inspect 7aa981f04045

```

## Enter into the container and curl localhost

```

chhavi@chhavi:~/docker$ sudo docker exec -it nginx bash
root@7aa981f04045:/# cd /var/www/html/
root@7aa981f04045:/var/www/html# ls
index.nginx-debian.html new.html
root@7aa981f04045:/var/www/html# vim new.html
root@7aa981f04045:/var/www/html# sudo nginx -t
bash: sudo: command not found
root@7aa981f04045:/var/www/html# nginx -t
nginx: the configuration file /etc/nginx/nginx.conf syntax is ok
nginx: configuration file /etc/nginx/nginx.conf test is successful
root@7aa981f04045:/var/www/html# ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 172.17.0.2 netmask 255.255.0.0 broadcast 172.17.255.255

```

On host.

```
chhavi@chhavi:~/docker$ curl 172.17.0.2
<html>
  <head>
    <title>Nginx</title>
  </head>
  <body>
    Hello!Nginx Running
    (new.html)
  </body>
</html>
chhavi@chhavi:~/docker$
```

In container.

```
root@7aa981f04045:/var/www/html# curl localhost
<html>
  <head>
    <title>Nginx</title>
  </head>
  <body>
    Hello!Nginx Running
    (new.html)
  </body>
</html>
root@7aa981f04045:/var/www/html#
```

2. What is the difference between 'RUN', 'CMD', & 'ENTRYPOINT' in dockerfile?

Ans.

We choose CMD if we need to provide a default command and/or arguments that can be overwritten from command line when docker container runs. On the other hand we use ENTRYPOINT when building executable Docker image and we need a particular command always to be executed. And we use RUN instructions to build our image by adding layers on top of initial image.

3. How to connect a docker client to docker daemon running on another host?

Ans.

Create a remote instance.Install docker and awscli.

Create a docker daemon.(create file)

```
ubuntu@ip-172-31-126-153:~$ sudo mkdir -p /etc/systemd/system/docker.service.d
ubuntu@ip-172-31-126-153:~$ sudo nano /etc/systemd/system/docker.service.d/options.conf
ubuntu@ip-172-31-126-153:~$
ubuntu@ip-172-31-126-153:~$ sudo systemctl daemon-reload
ubuntu@ip-172-31-126-153:~$ sudo systemctl restart docker
ubuntu@ip-172-31-126-153:~$
```

On local machine.

```
File Edit View Search Terminal Help
chhavi@chhavi:~$ DOCKER_HOST=tcp://3.82.188.161:2375 docker info
Client:
 Debug Mode: false

Server:
 Containers: 0
  Running: 0
  Paused: 0
  Stopped: 0
 Images: 0
 Server Version: 19.03.6
 Storage Driver: overlay2
  Backing Filesystem: extfs
  Supports d_type: true
  Native Overlay Diff: true
 Logging Driver: json-file
 Cgroup Driver: cgroupfs
 Plugins:
  Volume: local
  Network: bridge host ipvlan macvlan null overlay
  Log: awslogs fluentd gcplogs gelf journald json-file local logentries splunk syslog
 Swarm: inactive
 Runtimes: runc
 Default Runtime: runc
 Init Binary: docker-init
 containerd version: b34a5c8af56e510852c35414db4c1f4fa6172339
 runc version: 3e425f80a8c931f88e6d94a8c831b9d5aa481657
 init version: fec3683
 Security Options:
  apparmor
  seccomp
   Profile: default
 Kernel Version: 4.15.0-1057-aws
 Operating System: Ubuntu 18.04.3 LTS
 OSType: linux
```

See the kernel version.The kernel is of aws.Hence the command is actually executed on the remote instance.