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;"]

```
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
```

127.0.0.1:90
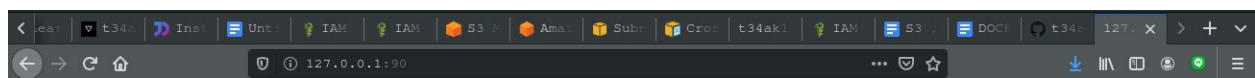
T34aK

This is the center

On curl we can see that nginx is running

172.0.01:90 - it is the docker ip aaddress

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

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:

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/dokcer.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 m
inute ago    Up About a minute            0.0.0.0:80->2375/tcp   infallible_beaver
551890172c21          hello-world                 "/hello"                  10 minute
s ago        Exited (0) 10 minutes ago                       sleepy_swanson
ubuntu@ip-172-31-184-215:~$
```

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-properti
es-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-botocore python3-colorama python3-docutils
  python3-jmespath python3-pyasn1 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-tran
sport-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.
```

Set the alias for docker using the host IP.

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